United Republic of Tanzania

NATIONAL SAMPLE CENSUS OF AGRICULTURE
2002/2003

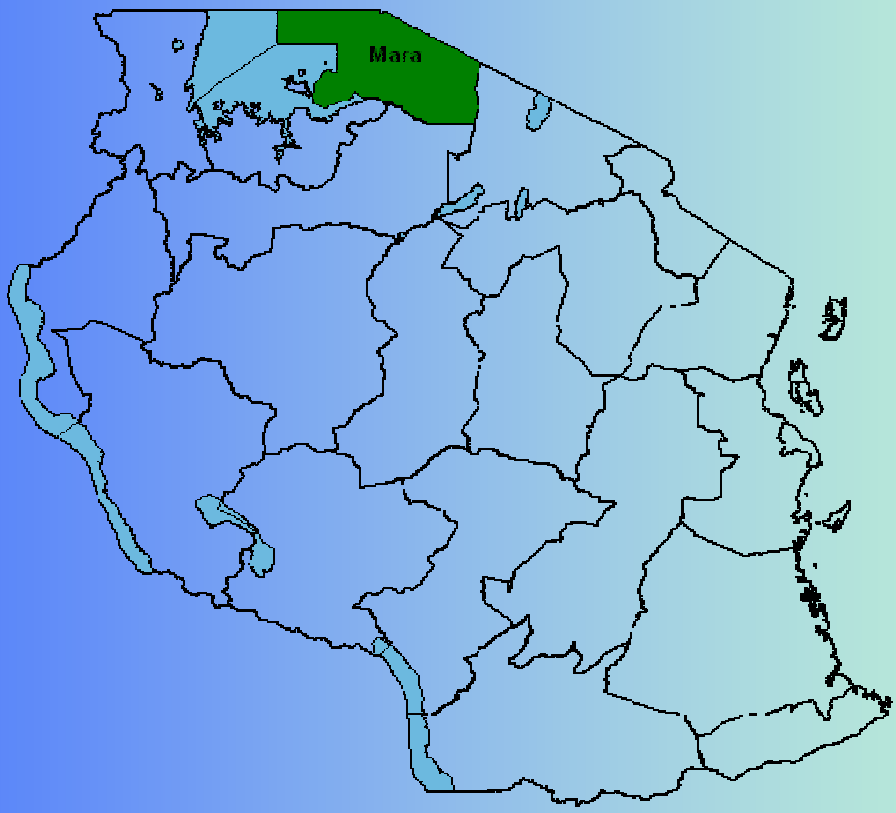
Volume Vt: REGIONAL REPORT: MARA REGION

Cattle Rearing

Fish Harvesting

Eggs Production

Maize Planting



Paddy Growing

Hand Cultivation

Indigenous Chicken

Irrigation Practice

Orange Marketing

Cassava Planting

Goats Rearing

National Bureau of Statistics, Ministry of Agriculture and Food Security, Ministry of Water and Livestock Development,
Ministry of Cooperatives and Marketing, Presidents Office, Regional Administration and Local Government
December 2007

United Republic of Tanzania

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VOLUME Vt: REGIONAL REPORT:MARA REGION

National Bureau of Statistics, Ministry of agriculture and Food Security,
Ministry of Water and Livestock Development, Ministry of Cooperatives and Marketing,
Presidents Office, Regional Administration and Local Government,
Ministry of Finance and Economic Affairs – Zanzibar

December 2007

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ABBREVIATIONS

ASDP	*Agricultural Sector Development Project*
CSPro	*Census and Survey Processing Program*
DFID	*Department For International Development*
DIAS	*District Integrated Agricultural Survey*
DS	*District Supervisor*
EAS	*Expanded Agricultural Survey*
EAs	*Enumeration Areas*
EU	*European Union*
FE	*Field Enumerator*
GDP	*Gross Domestic Product*
Ha	*Hectares*
IAS	*Integrated Agricultural Survey*
ICR	*Intelligent Character Recognition*
IEC	*Information, Education and Communication*
JICA	*Japanese International Cooperation Agency*
MAFS	*Ministry of Agriculture and Food Security*
MCM	*Ministry of Co-operatives and Marketing*
MWLD	*Ministry of Water and Livestock Development*
NBS	*National Bureau of Statistics*
NGO	*Non Governmental Organization*
NMS	*National Master Sample*
NSCA	*National Sample Census of Agriculture*
NSGRP	*National Strategy for Growth and Reduction of Poverty*
PORALG	*President's Office, Regional Administration and Local Government*
PPS	*Probability Proportional to Size*
PSU	*Primary Sampling Unit*
RAAS	*Rapid Appraisal Agricultural Survey*
RS	*Regional Supervisor*
RSM	*Regional Statistical Manager*
SAC	*Scotts Agriculture Consultancy Ltd*
SPSS	*Statistical Package for Social Science*
TOT	*Training of Trainers*
ULG	*Ultek Laurence Gould*
UNDP	*United Nations Development Programme*
UNFAO	*United Nations Food and Agriculture Organization*
VPO	*Vice President Office*

PREFACE

At the end of the 2002/03 Agriculture Year, the National Bureau of Statistics and the Office of the Chief Government Statistician in Zanzibar in collaboration with the Ministries of Agriculture and Food Security; Water and Livestock Development; Cooperatives and Marketing as well as the Presidents Office, Regional Administration and Local Government (PORALG) conducted the Agriculture Sample Census. This is the third Agriculture Census to be carried out in Tanzania, the first one was conducted in 1971/72, the second in 1993/94 and 1994/95 (during 1993/94 data on household characteristics and livestock count were collected and data on crop area and production in 1994/95).

It is considered that this census is one of the largest to be carried out in Africa and indeed in many other countries of the world. The census collected detailed data on crop production, crop marketing, crop storage, livestock production, fish farming, tree farming, access to infrastructures and services and poverty indicators.

In addition to this, the census was large in its coverage as it provides data that can be disaggregated at district level and thus allow comparisons with the 1998/99 District Integrated Agricultural Survey. The census covered smallholders in rural areas only and large scale farms. This report presents Dodoma region data disaggregated to district level. It was very difficult to discuss all variables collected in a single report hence the analysis was based on the most important smallholder variables. The rest of the variables are found in the e attached annex of table of results. The analysis in the report includes time series comparisons using data from the previous censuses and surveys.

The extensive nature of the census in relation to its scope and coverage is a result of the increasing demand for more detailed information to assist in the proper planning of this sector and in the administrative decentralization of planning to district level. It is hoped that this report will provide new insights for planners, policy makers, researchers and others involved in the agricultural sector in order to improve the prevailing conditions faced by crop producers and livestock keepers in the country.

On behalf of the Government of Tanzania, I wish to express my appreciation for the financial support provided by the development partners, in particular, the European Union as well as DFID, UNDP, Japanese Government, JICA and others who contributed through the pool fund mechanism.

Finally, my appreciation goes to all those who in one-way or the other contributed to the success of the survey. In particular, I would also like to mention the enormous effort made by the Planning Group composed of professionals from the Agriculture Statistics Department of the National Bureau of Statistics (NBS), the Office of the Chief Government Statistician in Zanzibar (OCGS) and the Statistics Unit of the Ministry of Agriculture and Food Security (MAFS) with technical assistance provided by Ultec Lawrence Gould (ULG), Scotts Agriculture Consultancy Ltd and the Food and Agriculture Organisation of the United Nations (FAO).

Additionally, I would like to extend my appreciation to all professional staff of the National Bureau of Statistics, the sector Ministries of Agriculture and PORALG, the Consultants as well as Regional and District Supervisors and field enumerators for their commendable work. Certainly without their dedication, the census would not have been such a success.

Cletus P. B. Mkai
The Director General
National Bureau of Statistics

EXECUTIVE SUMMARY

The executive summary highlights the main census results obtained during the National Sample Census of Agriculture 2002/03. This report covers small-scale agriculture households which were selected using statistical sampling techniques in rural areas of Mara region. The results in the report do not cover urban areas and large-scale farmers.

The highlights describe the important findings in relation to agricultural production, productivity, husbandry, access to resources, levels of involvement in agricultural related activities and poverty in Mara region. It provides an overview of the rural agricultural households and their levels of involvement in agricultural related activities at regional level.

I. Household Characteristics

The number of agricultural households in Mara region was 188,203, of which 103,379 (54.9%) were involved in growing crops only, 2,412 (1.3%) were involved in livestock keeping only and 82,412 (43.8%) were involved in both crop production and livestock keeping.

Most of the agricultural households ranked annual crop farming as an activity that provided most of their cash income, followed by tree/forest resources, permanent crop farming, off farm income, livestock keeping/herding, remittances and fishing/hunting & gathering.

Mara region had a total literacy rate of 72 percent. The highest literacy rate was found in Musoma Urban (81%), followed by Tarime and Musoma Rural districts (74% each). Serengeti and Bunda districts had the lowest literacy rates of 69 percent each. The literacy rate for the heads of households in the region was 73.5 percent.

The number of heads of agricultural households with formal education in Mara region was 135,160 (71.8%), those without any education were 50,764 (27.0%) and those with only adult education were 2,280 (1.2%). The majority of heads of agricultural households had primary level education (66.2%), whereas only 5.6 percent had post primary education.

In Mara region 72,002 households (38%) had only one member aged 5 and above involved in off-farm income generating activity, 25,816 households (14%) had two members involved in off-farm income generating activities and 11,969 households (6%) had more than two members involved in off-farm income generating activities.

II. Crop Production

- **Land Area**

The total area of land available to smallholders was 487,543 ha. The regional average land area utilised for agriculture per household was only 1.9 ha. This figure is close to the national average which is 2.0 hectares.

- **Planted Area**

The area planted with annual crops and vegetables was 333,525 hectares, of which 120,270 hectares (36%) were planted during the short rainy season and 213,255 hectares (64%) during the long rainy season.

The area planted with cereals was 161,701 ha (48.5% of the total planted area with annual and vegetable crops), followed by roots and tubers with 133,117 ha (39.9%), annual cash crops (20,587 ha, 6.2%), pulses (14,438 ha, 4.3%), fruit and vegetables (2,110 ha, 0.6%) and oil seeds (1,572 ha, 0.5%).

i) Cereal Crops

- **Maize**

Maize was the most important cereal crop in Mara region, however it had the second largest planted area after cassava. The number of households growing maize in Mara region during the long rainy season was 77,336 (62% of the total crop growing households in the region during the long rainy season). The total production of maize was 110,662 tonnes from a planted area of 91,804 hectares resulting in a yield of 1.2 t/ha.

There was a sharp drop in maize production from 106,000 tonnes in 1995 to 66,000 tonnes in 1996. This was followed by a gradual increase to 107,000 tonnes in 1999 after which the production remained more or less constant up to the year 2003. The average planted area with maize per household was 0.6 hectares, however it ranged from 0.33 hectares in Musoma Urban district to 0.65 hectares in Bunda district. Tarime district had the largest area of maize (39,273 ha), followed by Musoma Rural (19,326 ha), Serengeti (17,490 ha), Bunda (15,668 ha) and Musoma Urban (47 ha).

- **Sorghum**

Sorghum was the second most important cereal crop in the region in terms of planted area. The number of households that planted sorghum in Mara region during the long rainy season was 54,589. This represents 43.7 percent of the total crop growing households in Mara region in the long rainy season. The total production of sorghum was 54,506 tonnes from a planted area of 55,040 hectares resulting in a yield of 0.99 t/ha. The district with the largest area planted with sorghum was Tarime (22,060 ha), followed by Serengeti (17,040 ha), Bunda (10,188 ha), Musoma Rural (5,751 ha) and Musoma Urban (1 ha).

ii) Roots and Tubers

The total production of roots and tubers was 161,111 tonnes. Of all roots and tubers, cassava production was the most important with a total production of 115,747 tonnes representing 71.8 percent of the total root and tuber crop production. This was followed by sweet potatoes with 43,234 tonnes (26.8%), Irish potatoes (1,781 tonnes, 1.1%), yams (277 tonnes, 0.2%) and cocoyam (71 tonnes 0.0%).

- **Cassava**

The number of households growing cassava in Mara region during the long rainy season was 138,982. This represents 75.4 percent of the total crop growing households in the region. The total production of cassava during the census year was 115,747 tonnes from a planted area of 115,743 hectares resulting in a yield of 1.0 t/ha.

- **Sweet Potatoes**

The number of households growing sweet potatoes in Mara region during the long rainy season was 36,514 (19.3% of the total crop growing households in the region). The total production of sweet potatoes during the census year was 43,234 tonnes from a planted area of 16,621 hectares resulting in a yield of 2.6 t/ha.

- **Pulse Crops Production**

The total area planted with pulses was 14,438 hectares out of which 11,726 ha were planted with beans (81.2 percent of the total area planted with pulses), followed by chick peas (2,070 ha, 14.3%), cowpeas (278 ha, 1.9%), bambara nuts (256 ha, 1.8%) and mung beans (108 ha, 0.7%).

iii) Oil Seed Production

The total production of oilseed crops was 1,459 tonnes planted on an area of 1,572 hectares. Groundnuts were the most important oilseed crop with 1,338 ha (85.1% of the total area planted with oil seeds), followed by simsim (176 ha, 11.2%), soya beans (38 ha, 2.4%) and sunflower (21 ha, 1.3%).

iv) Fruit and Vegetables

The most cultivated fruit and vegetable crop was the tomato with a production of 3,801 tonnes (54% of the total fruits and vegetables produced), followed by cabbage (1,683t, 24%) and onions (907t, 10%). The production of the other fruit and vegetable crops was relatively small.

v) Annual Cash Crops

An area of 20,587 ha was planted with annual crops, mainly cotton and tobacco. The area planted with annual cash crops in short rainy season was 18,628 ha which represents 15.5 percent of the total area planted with annual crops in short rainy season. The area planted with annual cash crops in long rainy season was 1,959 ha representing 0.9 percent of the total area planted with annual crops during the long rainy season.

vi) Permanent Crops

The area of smallholders planted with permanent crops was 16,835 hectares (5% of the area planted with annual and permanent crops in the region). The most important permanent crop in Mara region was banana with a planted area of 4,376 ha, (27% of the planted area of all permanent crops), followed by coffee (3,771 ha, 22%), mango (1,701 ha, 10%), orange (1,169 ha, 7%), pawpaw (991 ha, 6%) and sugarcane (383 ha, 2%)

III Inputs/Implement Use

- **Methods of Soil Preparation**

Ox-ploughing was the most common method of soil preparation and it was used on an area of 144,491 ha which represented 66 percent of the total area cultivated, followed by hand hoe cultivation (72,166 ha, 33%) and tractor ploughing (1,822 ha, 1%)

- **Improved Seeds**

The area planted using improved seeds was 50,862 ha which represents 15 percent of the total area planted with the annual crops and vegetables. The use of improved seed in the short rainy season was 27 percent, much higher than the corresponding percentage use for the extended rainy season (9%).

- **Use of Fertilizers**

The use of fertilisers on annual crops was very small with a planted area of only 57,423 ha (17.2% of the total planted area in the region). Of the planted area with fertiliser application, farm yard manure was applied on 47,972 ha which represents 14 percent of the total planted area (83.5% of the area planted with fertiliser application in the region). This was followed by compost (6,719 ha, 2%). Inorganic fertilizers were used on a very small area which represented only 4.7 percent of the area planted with fertilizers.

- **Pesticide Use**

Insecticides were the most common pesticides used in the region (62% of the total area applied with pesticides). This was followed by fungicides (27%) and herbicides (11.3%). The planted area applied with insecticides was estimated at 21,719 ha which represented 6.5 percent of the total planted area for annual crops and vegetables, followed by fungicides (9,482 ha, 23%) and herbicides (5,011 ha, 12%).

- **Irrigation**

In Mara region, the area of annual crops under irrigation was 4,202 ha representing 1.3 percent of the total area planted. The area under irrigation during the short rainy season was 2,412 ha accounting for 57 percent of the total area under irrigation. Some crops, especially vegetables, were predominantly grown during the long rainy season with irrigation. In the long rainy season, 71 percent of the area planted with vegetables was irrigated, whilst 59 percent of the vegetables were irrigated in the short rainy season.

IV. Crop Storage, Processing and Marketing

- **Crop Storage**

There were 135,725 crop growing households (73% of the total crop growing households) that stored various agricultural products in the region.

The most important stored crop was maize with 102,693 households storing 11,353 tonnes as of 1st October 2003. This was followed by Sorghum and millet (78,632 households, 9,567t), beans and pulses (29,539 households, 961t), paddy (7,785 households, 697t) and groundnuts/bambara nuts (2,071 households, 87t). Other crops were stored in very small amounts.
The most common method of storage in the region was in locally made traditional structures.

- **Agro - processing**

Agro-processing was practiced by most crop growing households in Mara region (171,860 households, 91.3% of the total crop growing households). With exception of Musoma Urban district, the percent of households processing crops in the rest of the districts was very high (above 80%). Musoma Urban had the lowest percent of households processing crops (62% of crop growing households).

Most crop processing households processed their crops using neighbour's machines (67%, 115,059 households). This was followed by those processing on-farm by hand (42,052 households, 24.5%), on farm by machine (12,461 households, 7%) and by trader (1,918 households, 1%). The remaining methods of processing were used by very few households (less than 1%).

- **Crop Marketing**

The number of households that reported selling crops in Mara region was 130,438 which represented 70.2 percent of the total number of crop growing households. The percent of crop growing households selling crops was highest in Serengeti (77.3%), followed by Musoma Rural (69.5%), Tarime (69.1%), Bunda (67.7%) and Musoma Urban (21.9%).

V. Access to Crop Production Services

- **Access to Agricultural Credit**

In Mara region, very few agricultural households (675, 0.4%) accessed credit, out of which 419 (75%) were male-headed households and 256 (38%) were female headed households. In Musoma Rural district, only female headed households got agricultural credit whereas in Serengeti both male and female headed households accessed agricultural credits.

- **Crop Extension Services**

The number of agricultural households that received crop extension was 62,800 (34% of total crop growing households in the region). Some districts had more access to extension services than others, with Bunda having a relatively high proportion of households (60%) that received crop extension messages, followed by Musoma Rural (47%), Musoma Urban (25%), Serengeti (23%) and Tarime (18%). The main source of crop extension advice was from the Government.

- **Access to Inputs**

In Mara region farm yard manure was used by 48,514 households which represented 26.1 percent of the total number of crop growing households. This was followed by improved seeds (22.9%), insecticide/fungicide (11.6%), compost (3.6%), inorganic fertiliser (1.6%) and herbicide (0.1%).

The percent of households that use improved seeds was 22.9 percent of the total number of crop growing households. The district that used improved seeds most was Bunda with 36.7 percent of the total number of crop growing households using improved seeds in the district, followed by Musoma Urban (26.9%) and Musoma Rural (24.9%). Percentages of the crop growing households in Tarime and Serengeti districts that used improved seeds were 18.4 and 16.5 respectively

VI. Tree Planting

The number of households involved in tree farming was 53,900 representing 29 percent of the total number of agriculture households. The number of trees planted by smallholders on their allotted land was 4,540,084 trees. The average number of trees planted per household that plants trees on their land was 84 trees.

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VII. Irrigation and Erosion Control Facilities

The number of agricultural households that had soil erosion and water harvesting facilities on their farms was 18,282 which represented 10 percent of the total number of agricultural households in the region. The proportion of households with soil erosion control and water harvesting facilities was highest in Musoma Rural district (24%), followed by Musoma Urban (21%), Tarime (6%), Serengeti (2%) and Bunda (1%).

VIII. Livestock Results

i) Livestock Population

- **Cattle**

The total number of cattle in the region was 1,099,068. Cattle are the dominant livestock type in the region, followed by goats, sheep and pigs. The region had 6.5 percent of the total cattle population on Tanzania Mainland. The number of indigenous cattle in Mara region was 1,090,007 (99.2 % of the total number of cattle in the region). The number of dairy breeds was 8,797 cattle (0.8%) and 264 cattle (0.0%) were beef breeds.

- **Goats**

The number of goat-rearing households in Mara region was 72,575 (39% of all agricultural households in the region) with a total number of 634,044 goats giving an average of 9 heads of goats per goat-rearing household. Tarime district had the largest number of goats (237,710 goats, 37.5% of all goats in the region), followed by Musoma Rural (173,221 goats, 27.3%), Bunda (118,038 goats, 18.6%), Serengeti (103,574 goats, 16.3%) and Musoma Urban (1,501 goats, 0.2%).

- **Sheep**

The number of sheep-rearing households was 21,780 (12% of all agricultural households in Mara region) rearing 194,073 sheep, giving an average of 9 heads of sheep per sheep-rearing household. The district with the largest number of sheep was Tarime with 75,196 sheep (39% of total sheep in Mara region) followed by Serengeti (48,376 sheep, 25%), Musoma Rural (40,362 sheep, 21%) and Bunda (30,078 sheep, 16%).

- **Pigs**

The number of pig-rearing agricultural households in Mara region was 328 (0.2% of the total agricultural households in the region) rearing 2,409 pigs. This gives an average of 7 pigs per pig-rearing household. The district with the largest number of pigs was Tarime with 2,129 pigs (88.4% of the total pig population in the region), followed by Serengeti (279 pigs, 11.6%).

- **Chicken**

The number of households keeping chickens was 141,825 raising about 1,521,166 chickens mostly indigenous chickens. This gives an average of 11 chickens per chicken-rearing household. In terms of total number of chickens in the country, Mara region was ranked eleventh out of the 21 Mainland regions.

ii) Pests and Parasites Incidences and Control

About 69 percent and 17 percent of the total livestock-keeping households in Mara region reported to have encountered ticks and tsetse fly problems respectively. There was a predominance of tick related diseases over tsetse related diseases. While incidences of tick problems were highest in Musoma Urban district and lowest in Serengeti district, tsetse flies incidences were highest in Serengeti but lowest in Musoma Rural district and no tsetse flies incidences were reported in Musoma Urban district.

Livestock rearing households that de-wormed their animals were 44,155 (52% of the total livestock rearing households in Mara region).

iii) Access to Livestock Services

The total number of households that received livestock advice was 31,979, representing 38 percent of the total livestock-rearing households and 17 percent of the agricultural households in the region. The main livestock extension agent was the government which provided service to 65.2 percent of all households receiving livestock extension services, followed by NGOs/development projects (12.8%), large scale farmers (8.5%) and cooperatives (7.5%).

Many veterinary clinics were located very far from livestock rearing households. About 80 percent of the livestock rearing households accessed the services, at a distance of more than 14 kms. Only 20 percent of them accessed the services within 14 kms from their dwellings.

The number of livestock rearing households residing less than 5 kms from the nearest watering point was 23,302 (73% of the total livestock rearing households in Mara region), whilst 8,439 households (26%) resided between 5 and 14 kms.

iv) Animal Contribution to Crop Production

Mara region had the fourth largest proportion of households using draft animals on Tanzania Mainland with 89,548 households (48% of the total agricultural households in the region) using them. The number of households that used draft animals in Tarime district was 49,457 representing 55 percent of the households using draught animals in the region, followed by Serengeti (14,764 households, 16%), Musoma Rural (13,344 households, 15%) and Bunda (11,984 households, 13%). There were no households using draft animals in Musoma Urban district.

- **Use of Organic Feriliser**

The total area applied with organic fertiliser was 33,009 ha of which 29,792 hectares (90.5% of the total area applied with organic fertilizers or 23.8 percent of the area planted with annual crops and vegetables in Mara region during the long rainy season) was applied with farm yard manure.

IX. Fish Farming

The number of households involved in fish farming in Mara region was 255, representing 0.1 percent of the total agricultural households in the region. Tarime was the only district in the region practicing fish farming.

X. Poverty Indicators

i) Type of Toilets

Most households in Mara region (75.4% of all rural agricultural households) used traditional pit latrines, 1.7 percent used improved pit latrine and 1.7 percent used flush toilets. The remaining 0.2 percent of households had other unspecified types of toilets. However, households with no toilet facilities represented 21.0 percent of the total agriculture households in the region and most of these were found in Tarime district.

ii) Household Assets

Out of all assets, radios were ownership was most common (57.3% of households), followed by bicycle (50.4%), iron (26.9%), wheelbarrow (5.9%), mobile phones (2.2%), vehicle (0.9%), television/video (0.8%) and landline phones (0.5%).

iii) Source of Lighting Energy

Wick lamp was the most common source of lighting energy in Mara region with 63.1 percent of the total rural households using this source of energy followed by hurricane lamp (32.1%), pressure lamp (3.0%), firewood (0.7%), main electricity (0.5%), solar (0.3%), candle (0.2%) and biogas (0.1%).

iv) Energy for Cooking

The most common source of energy for cooking was firewood, which was used by 97.3 percent of all rural agricultural households in Mara region. This is followed by charcoal (1.8%) and mains electricity (0.3%). The rest of energy sources (i.e., bottled gas, crop residues, livestock dung, paraffin/kerosene and solar) accounted for 0.6 percent.

v) Roofing Materials

The most common roofing material for the main dwelling was grass and leaves and which was used by 60.4 percent of the rural agricultural households. This is followed by iron sheets (28.7%), grass and mud (9.8%), tiles (0.6%), concrete (0.4%) and asbestos (0.1%).

vi) Access to Drinking Water

The main source of drinking water for rural agricultural households in Mara region was unprotected wells (39% of households use unprotected wells during the wet season and 36 percent of the households during the dry seasons). This is followed by surface water (Lake / Dam / River / Stream) (20% of households during wet season and 29% in the dry season) and unprotected springs (16% of households in the wet season and 16% during dry season.

About 50 percent of the rural agricultural households in Mara region obtained drinking water within a distance of less than one kilometer during wet season compared to 32 percent of the households during the dry season.

vi) Number of Meals per Day

About 58.4 percent of the holders in the region took two meals per day, 39.2 percent took three meals, 2.0 percent took one meal and 0.3 percent took four meals per day. Serengeti district had the largest percent of households having 3 meals per day

About 69 percent of the agricultural households in Mara region consumed meat during the week preceding the census with 63,808 households (33.9 % of those who consumed meat) consuming it only once during the respective week. This was followed by those who had meat twice during the week (22.2%). Very few households had meat four times or more during the respective week. However, 30.8 percent of the agricultural households in Mara region did not eat meat during the week preceding the census.

Most of the total agricultural households in Mara region (88%) of the total agricultural households in the region) consumed fish during the week preceding the census, with 33,998 households (20.1% of those who consumed fish) consuming fish once during the respective week

vii) Food Security

About 42 percent of the agricultural households in Mara region said they did not experience any food sufficiency problems. The rest 58 percent of the households did experience food sufficiency problems at different levels from severe to mild.

XI. Main Source of Cash Income

The main cash income of the households in Mara region was from selling food crops (36.1 percent of smallholder households), followed by other casual cash earnings (13.3%), businesses (11.4%), selling of cash crops (9.6%), and fishing (9.5%). Only 5.9% of smallholder households reported the sale of livestock as their main source of income, followed by cash remittance (4.9%), wages and salaries (4.6%), sale of forest products (2.2%) and sale of livestock products (1.0%).

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1. BACKGROUND INFORMATION

1.1 Introduction

This part of the report presents a brief description of the region by providing information on geographical location, land area, climate, administrative set up, population and socio-economic indicators. The information will provide the user with a general understanding of the region and its resources.

1.2 Geographical Location and Boundaries

Mara region is located in the northern part of Mainland Tanzania. The region lies between latitudes 1^0 and 2^0 South and longitudes $31^0$10' and $35^0$15' East. The region is bordered by Kenya to the north, Mwanza and Shinyanga regions to the south, Arusha region to the east and Kagera region to the west.

1.3 Land Area

Mara region occupies a total area of 30,150 square kilometers of which 7,750 sq kms is occupied by Serengeti National Park.

1.4 Climate

1.4.1 Temperature

The region has a maximum temperature of 29.32^0c and a minimum temperature of 27.68^0 while the average temperature for this region is 28.5^0.

1.4.2 Rainfall

The region has bimodal rainfall pattern with short rainfall period between September and January and long rainfall period between February and June.

1.5 Administrative Setup

Mara region is divided into five administrative districts namely Musoma Rural, Musoma Urban, Bunda, Serengeti and Tarime. The headquarters of the region is located in Musoma Urban.

1.6 Population

According to the 2002 Population and Housing Census, there were 1,368,602 inhabitants in Mara region and an average household size of 5.5 persons. This was about 4 percent of Tanzania Mainland's population. The annual Average Population growth rate (1988 – 2002) was 2.5 percent.

1.7 Socio - Economic Indicators

The regional Gross Domestic Product (GDP) at current prices for the year 2003 was estimated to be TShs. 443,187 million. The region held 7th position among regions on GDP and contributed about 4.5 percent to the national GDP[1]

[1] National Bureau of Statistics

- There are a number of tourist attractions in the region. These are Serengeti National Park, Game Reserves, Game Controlled areas and Lake Victoria. Serengeti National Park occupies the area of 14,763 sq km of which 7,750 sq km (52.5%) are situated in Mara region.

- A small part of the population is engaged in fishing activities. This group includes people who live close to the shore of Lake Victoria

- Also there are some gold mining activities in the region

2. INTRODUCTION

This part of the report provides the technical and operational description of the National Sample Census of Agriculture (NSCA), carried out in the rural areas of Tanzania Mainland and Zanzibar during the 2002/03 agricultural year. It details the background and the rationale for carrying out the NSCA in 2002/03 agricultural year. It also explains the sampling procedures, designing and implementation of the data processing system.

2.1 The Rationale for Conducting the National Sample Census of Agriculture

In 2003, the Government of Tanzania launched the Agricultural Sample Census as an important part of the Poverty Monitoring Master Plan which supports the production of statistics for advocacy of effective public policy, including poverty reduction, access to services, gender, as well as the standard crop production data normally collected in an agriculture census. The census is intended to fill the information gap and support planning and policy formulation by high level decision making bodies. It is also meant to provide critical benchmark data for monitoring Agriculture Sector Development Programme (ASDP) and other agriculture and rural development programs as well as prioritising specific interventions of most agriculture and rural development programs.

Following the decentralisation of the Government's administration and planning functions, there has been a pressing need for agriculture and rural development data disaggregated at regional and district levels. The provision of district level estimates will provide essential baseline information on the state of agriculture and support decision making by the local government authorities in the design of District Agricultural Development and Investment Projects (DADIPS). The increase in investment is an essential element in the national strategy for growth and reduction of poverty.

This report (Volume V) is among the 21 regional reports for the Mainland. Other Census reports include the Technical Report (Volume I), Crop Sector at national and regional levels including Zanzibar estimates (Volume II), Livestock Report (Volume III), Smallholder Household Characteristics and Access to Natural Resources Report (Volume IV), 21 Regional Reports for the Mainland (Volume V), Large Scale Farms Report (Volume VI) and a separate report for Zanzibar (Volume VII). In order to address the specific issue of gender, a separate thematic report on gender has been published. Other thematic reports will be produced depending on the demand and availability of funds. In addition to these reports two dissemination applications have been produced to allow users to create their own tabulations, charts and maps.

The report is divided into five main sections: Background Information, Introduction, Results, Mara profiles (Regional and Districts) and Appendices. The definitions relating to all aspects of this report can be found in the questionnaire (Appendix III).

2.2 Census Objectives

The 2003 Agriculture Sample Census was designed to meet the data needs of a wide range of users down to district level including policy makers at local, regional and national levels, rural development agencies, funding institutions, researchers, non-government organisations (NGOs), farmer organisations, etc. As a result, the dataset is both more numerous in its sample and detailed in its scope compared to previous censuses and surveys. To date this is the most detailed Agricultural Census carried out in Africa. The census was carried out in order to:

- Identify structural changes if any, in the size of farm household holdings, crop and livestock production, farm input and implement use. It also seeks to determine if there are any improvements in rural infrastructure and in the level of agriculture household living conditions;
- Provide benchmark data on productivity, production and agricultural practices in relation to policies and interventions promoted by the Ministry of Agriculture and Food Security and other stake holders.
- Establish baseline data for the measurement of the impact of high level objectives of the Agriculture Sector Development Programme (ASDP), National Strategy for Growth and Reduction of Poverty (NSGRP) and other rural development programs and projects.
- Obtain benchmark data that will be used to address specific issues such as: food security, rural poverty, gender, agro-processing, marketing, service delivery, etc.

2.3 Census Coverage and Scope

The census was conducted for both large and small scale farms. The National Sample Census of Agriculture covered a total of 3,221 selected rural villages of Tanzania Mainland out of which 151 villages were from Mara region.

The census covered agriculture in detail as well as many other aspects of rural development and was conducted using three types of questionnaires:

- Small scale farm questionnaire
- Community level questionnaire
- Large scale farm questionnaire

The small scale farm questionnaire was the main census instrument and it includes questions related to crop and livestock production and practices; population demographics; access to services, resources and infrastructure; issues on poverty, gender and subsistence versus profit making production units. The main sections covered are as follows:

- Identification (i.e. region, district, ward and village)
- Household and holding characteristics
- Household information
- Land ownership/tenure
- Land use
- Access and use of resources
- Crop and vegetable production
- Agro processing and by-products
- Crop storage and marketing
- On-farm investment
- Access to farm inputs and implements
- Use of credit for agricultural purposes
- Tree farming/agro-forestry
- Crop extension services
- Livelihood constraints
- Animal contribution to crop production
- Livestock
- Livestock products

- Fish farming
- Livestock extension
- Labour use
- Access to infrastructure and other services
- Household facilities

The community level questionnaire was designed to collect village level data such as access and use of common resources, community tree plantation and seasonal farm gate prices.

The large scale farm questionnaire was administered to large scale farms that were either privately or corporately managed. There will be a national report on large scale farming on Tanzania Mainland.

2.4 Legal Authority of the National Sample Census of Agriculture

The NSCA 2002/03 was conducted under the legal authority of the Statistics Act 2002, among other things, makes data collected from individuals strictly confidential and to be used for statistical purposes only.

2.5 Reference Period

Two types of reference periods were used namely the agricultural year and the reference date for livestock enumeration. The agricultural year 2002/03 (that is October 2002 to September 2003) was used for the data items that are related to crop production. The reference date of enumeration for livestock and poultry count was 1st October 2003.

2.6 Census Methodology

The main focus at all stages of the census execution was on data quality and this is emphasised in this section. The main activities undertaken include:

- Census organisation
- Tabulation plan preparation
- Sample design
- Design of census questionnaires and other instruments.
- Field pre-testing of the census instruments
- Training of trainers, supervisors and enumerators
- Information Education and Communication (IEC) campaign
- Data Collection
- Field supervision and consistency checks
- Data processing:
    - Scanning
    - ICR extraction of data
    - Structure formatting application
    - Batch validation application
    - Manual data entry application
    - Tabulation preparation using SPSS
- Table formatting and charts using Excel and map generation using Mapinfo.
- Report preparation using Word and Excel.

2.6.1 Census Organization

The Census was conducted by the National Bureau of Statistics in collaboration with the sector ministries of agriculture, and the Office of the Chief Government Statistician in Zanzibar. At the national level the Census was headed by the Director General of the National Bureau of Statistics with assistance from the Director of Economic Statistics. The Planning Group, made up of staff from the National Bureau of Statistics, Department of Agricultural Statistics and three representatives from the Ministry of Agriculture and Food Security (Department of Policy and Planning), oversaw the overall operational aspects of the Census. At the regional level, implementation of census activities was overseen by the Regional Statistical Officer of NBS and the Regional Agriculture Supervisor from the Ministry of Agriculture and Food Security. At the District level, two supervisors from the President's Office, Regional Administration and Local Government (PORALG), managed the enumerators who also came from the same ministry.

Members of the Planning Group had a minimum qualification of a bachelor degree, the regional supervisors were either agricultural economists, statisticians or statistical officers. The district supervisors and enumerators had diploma level qualifications in agriculture.

The Census and Surveys Technical Working Group provided support in sourcing financing, approving budget allocations and technical assistance inputs as well as monitoring the progress of the census. A Technical Committee for the census was established with members from key stakeholder organisations (i.e. NBS, sector ministries of agriculture, President's Office, Planning and Privatization (POPP), PORALG, University of Dar es Salaam (UDSM), Tanzania Food and Nutrition Centre (TFNC) and the Office of Chief Government Statistician (OCGS) in Zanzibar). The main function of the committee was to approve the proposed instruments and procedures developed by the Planning Group. It also approved the tabulations and analytical reports prepared from the census data.

2.6.2 Tabulation Plan

The tabulation plan was developed following three user group workshops and thus reflects the information needs of the end users. It took into consideration the tabulations from previous census and surveys to allow trend analysis and comparisons.

2.6.3 Sample Design

The Mainland sample consisted of 3,221 villages. These villages were drawn from the National Master Sample (NMS) developed by the National Bureau of Statistics (NBS) to serve as a national framework for the conduct of household based surveys in the country. The National Master Sample was developed from the 2002 Population and Housing Census. In most cases, within each selected village, data was collected from a sub-sample of fifteen agricultural households. In few large villages thirty households were selected. The total Mainland sample was 48,315 agricultural households. In Zanzibar a total of 317 EAs were selected and 4,755 agricultural households were covered. Nationwide, all regions and districts were sampled with the exception of three urban districts (two from Mainland and one from Zanzibar).

In both Mainland and Zanzibar a stratified two stage sample was used. In the first stage, villages/enumeration areas (EAs) were selected with probability proportional to the number of villages in each district. In the second stage, 15 households were selected from a list of farming households in each Village/EA using systematic random sampling. Table 2.1 gives the sample size of households, villages and districts for Tanzania Mainland and Zanzibar.

Table 2.1: Census Sample Size

Number of	Mainland	Zanzibar	Total
Households	48,315	4,755	53,070
Villages/Eas	3,221	317	3,539
Districts	117	9	126
Regions	21	5	26

2.6.4 Questionnaire Design and Other Census Instruments

The census questionnaires were designed following user/producer meetings to ensure that the information collected was in line with their data needs. Several features were incorporated into the design of the questionnaire to increase the accuracy of the data:

- Where feasible all variables were extensively coded to reduce post enumeration coding error.
- The definitions for each section were printed on the opposite page so that the enumerator could easily refer to the instructions whilst interviewing the farmer.
- The responses to all questions were placed in boxes printed on the questionnaire, with one box per character. This feature made it possible to use scanning and ICR technologies for data entry.
- Skip patterns were used to avoid asking unnecessary questions
- Each section was clearly numbered, which facilitated the use of skip patterns and provided a reference for data type coding for the programming of CSPro, SPSS and the dissemination applications.

Besides the questionnaires, there were other instruments used:

- Village listing forms that were used for listing households in the villages and from these list a systematic sample of 15 agricultural households were selected from each village.
- Training manual which was used by the trainers for the cascade/pyramid training of supervisors and enumerators. This manual was the trainers' guiding document on the procedures to follow during tha training
- Enumerator Instruction Manual which was used as reference material.

2.6.5 Field Pre-Testing of the Census Instruments

The Questionnaire was pre-tested in five locations (Arusha, Dodoma,,Tanga, Unguja and Pemba). This was done for the purpose of testing the wording, flow and relevance of the questions and to finalise crop lists, questionnaire coding and manuals. In addition to this, several data collection methodologies had to be finalised, namely, livestock numbers in pastoralist communities, cut flower production, mixed cropping, use of percentages in the questionnaire and finalising skip patterns and documenting consistency checks.

2.6.6 Training of Trainers, Supervisors and Enumerators

Cascade/pyramid training techniques were employed to maintain statistical standards. The top level training was provided to 66 national and regional supervisors (3 per region plus Zanzibar). The trainers were members of the Planning Group and the trainees were from the National Bureau of Statistics and the sector ministries of agriculture. The second level training was for the district supervisors and enumerators. This training was conducted in the regions. In each region three training sessions were conducted for the district supervisors and enumerators. In addition to training in field level Census methodology and definitions, emphasis was placed on training the enumerators and supervisors in consistency checking. Tests were given to the enumerators and supervisors and the best 50 percent of the trainees were selected to administer the smallholder and community level questionnaires. This increased the number of interviews per enumerator but it also released finance to increase the number of supervisors and hence the Supervisor Enumerator Ratio. The household listing exercise was carried out by all trained enumerators.

2.6.7 Information, Education and Communication (IEC) Campaign

Information, Education and Communication (IEC) is an important aspect of any census/survey undertaking. This is due to the fact that inadequately informed and hence uncooperative citizens may jeopardize the entire census/survey. As far as the

2002/03 Agricultural Sample Census was concerned, the main objective of the IEC program was to sensitize and mobilize Tanzanians to support, cooperate and participate in the census exercise.

Radio, television, newspapers, leaflets, t-shirts and caps were used to publicise the Sample Census. T-shirts and caps were used by the field staff and the village chairmen as official uniforms during the field work. The village chairmen helped to locate the selected households.

2.6.8 Household Listing

The household listing exercise was done in seven days. During the listing exercise, forms ACLF1 and ACLF2 were administered. The information collected included the number of fields operated by the household, the number of different types of livestock and poultry. This information was used to determine the agricultural households. From the list of agricultural households, 15 households were selected for the interview. The selection was done using the Random Number Table.

2.6.9 Data Collection

Data collection activities for the 2002/2003 Agricultural Sample Census took three months from January to March 2004. The data collection method used during the census was by interview and no physical measurements, e.g., crop cutting and field area measurement were taken. Field work was monitored by a hierarchical system of supervisors at the top of which was the Mobile Response Team followed by the national, regional, and district supervisors.

The Mobile Response Team consisted of three principal supervisors who provided overall direction to the field operation and responded to queries arising outside the scope of the training exercise. The mobile response team consisted of the Manager of Agriculture Statistics Department, Long-term Consultant and Desk Officer for the Census. Decisions made on definitions and procedures were then communicated back to all enumerators via the national, regional and district supervisors.

District supervision and enumeration were done by staff from the President's Office, Regional Administration and Local Government (PORALG). National and regional supervisions were provided by senior staff of the National Bureau of Statistics and the sector ministries of agriculture. During the household listing exercise 3,221 extension staff were used. For the enumeration of the small holder questionnaire, 1,611 enumerators were used and additional 5 percent enumerators were held in reserve in case of drop outs during the enumeration exercise.

2.6.10 Field Supervision and Consistency Checks

Enumerators were trained to probe the respondents until they were satisfied with the responses given before they recorded them in the questionnaire. The first check of the questionnaires was done by enumerators in the field during enumeration. The second check was done by the district supervisors followed by regional and national supervisors. Supervisory visits at all levels of supervision focused on consistency checking of the questionnaires. Inconsistencies encountered were corrected, and where necessary a return visit to the respondent was made by the enumerator to obtain the correct information. Further quality control checks were made through a major post enumeration checking exercise where all questionnaires were checked for consistencies by all supervisors in the district offices.

2.6.11 Data Processing

Data processing consisted of the following processes:

- Manual editing
- Data entry
- Data structure formatting
- Batch validation
- Tabulation
- Illustration production
- Report formatting

Manual Editing

Prior to scanning, all questionnaires underwent a manual cleaning exercise. This involved checking that the questionnaire had a full set of pages, correct identification and good handwriting. A score was given to each questionnaire based on the legibility and the completeness of enumeration. This score will be used to assess the quality of enumeration and supervision in order to select the best field staff for future censuses/surveys.

Data entry/Scanning and ICR Extraction Technologies

Scanning and ICR data capture technology was used for the small holder questionnaire. This not only increased the speed of data entry, it also increased the accuracy due to the reduction in keystroke errors. Interactive validation routines were incorporated into the ICR software to track errors during the verification process. The scanning operation was so successful that it is highly recommended that this technology be adopted for future censuses/surveys.

The Census and Surveys Processing Program (CSPro) was used to enter 2,880 of small holder questionnaires that were rejected by the Intelligent Character Recognition (ICR) extraction application.

Data Structure Formatting

A program was developed in visual basic to automatically alter the structure of the output from the scanning/extraction process in order to harmonise it with the manually entered data. The program automatically checked and changed the number of digits for each variable, the record type code, the number of questionnaires in the village, the consistency of the Village Identification (ID) code and saved the data of one village in a file named after the village code.

Batch Validation

A batch validation program was developed in order to identify inconsistencies within a questionnaire. This is in addition to the interactive validation during the ICR extraction process. The procedures varied from simple range checking within each variable to more complex checking between variables. It took six months to screen, edit and validate the data from the smallholder questionnaire. After the long process of data cleaning, the results were prepared based on a pre-designed tabulation plan.

Tabulations

Statistical Package for Social Sciences (SPSS) was used to produce the Census results and Microsoft Excel was used to organize the tables and compute additional indicators.

Analysis and Report Preparation

The analysis in this report focuses on regional and district production estimates, districts comparisons and time series analysis. Microsoft Excel was used to produce charts; whereas Microsoft Word was used to compile the report.

Data Quality

A great deal of emphasis was placed on data quality throughout the whole exercise from planning, questionnaire design, training, supervision, data entry, validation and cleaning/editing. As a result of this NBS believes that the Census is highly accurate and representative of what was experienced at field level during the Census year. With very few exceptions the variables in the questionnaire are within the norms for Tanzania and they follow expected time series trends when compared to historical data. Standard Errors and Coefficients of Variation for the main variables can be found in the Technical Report (Volume I).

2.7 Funding Arrangements

The Agricultural Sample Census was supported mainly by the European Union (EU) who financed most of the operational activities. Other funds for operational activities came from the Government of Tanzania, Government of Japan, United Nations Development Programme (UNDP) and other partners in the Pool Fund of the Vice President's Office (VPO). In addition to this, technical assistance was provided by the European Union (EU), Department for International Development (DFID) and Japanese International Cooperation Agency (JICA). Technical assistances were managed by Ultek Laurence Gould Consultants (ULG), Scotts Agriculture Consultancy Ltd (SAC) and the Food and Agriculture Organisation (FAO).

PART III: RESULTS AND ANALYSIS

This part of the report presents the results of the census data for Mara region which are based on the data tables presented in Appendix II. The results are presented in different forms including brief summaries, charts, condensed tables, graphs and maps in order to make it easier for the users to understand. Comparisons are made between related variables and between districts. Comparisons are also made with past censuses/surveys results such as the 1994/95 National Sample Census of Agriculture (NSCA), the 1995/96, the 1996/97 Expanded Agricultural Surveys, the 1997/98 Integrated Agricultural Survey, the 1998/99 District Integrated Agricultural Survey and the 1999/00 Rapid Agricultural Appraisal Survey. The presentation of results is divided into four main sections which are household characteristics, crop results, livestock results and poverty indicators.

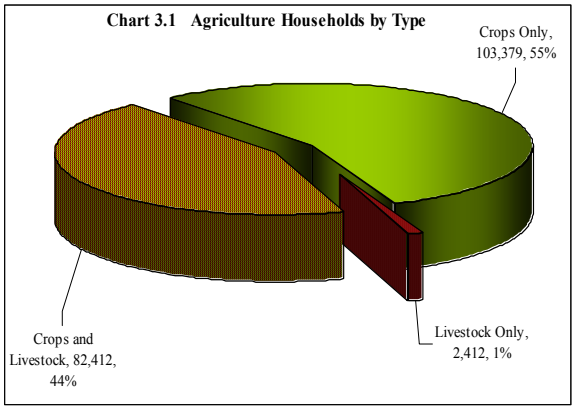
3.1 Household Characteristics

3.1.1 Type of Households

The number of agricultural households in Mara region was 188,203. The largest number of agriculture households was in Tarime (79,170) followed by Musoma Rural (49,995), Bunda (30,721), Serengeti (27,864) and Musoma Urban (453). The highest density of household was found in Musoma Rural district (32 households/km^2), Tarime (21 households/km^2) and Bunda (20 households/km^2).

Most households (103,379 households, 54.9% of the total agriculture households in the region) were involved in growing crops only, 2,412 households (1.3%) were involved in livestock keeping only and 82,412 households (43.8%) were involved in crop production as well as livestock keeping. There were no pastoralists in the region (Chart 3.1 and Maps 3.1, 3.2, 3.3, 3.4, 3.5 and 3.6).

Chart 3.1 Agriculture Households by Type



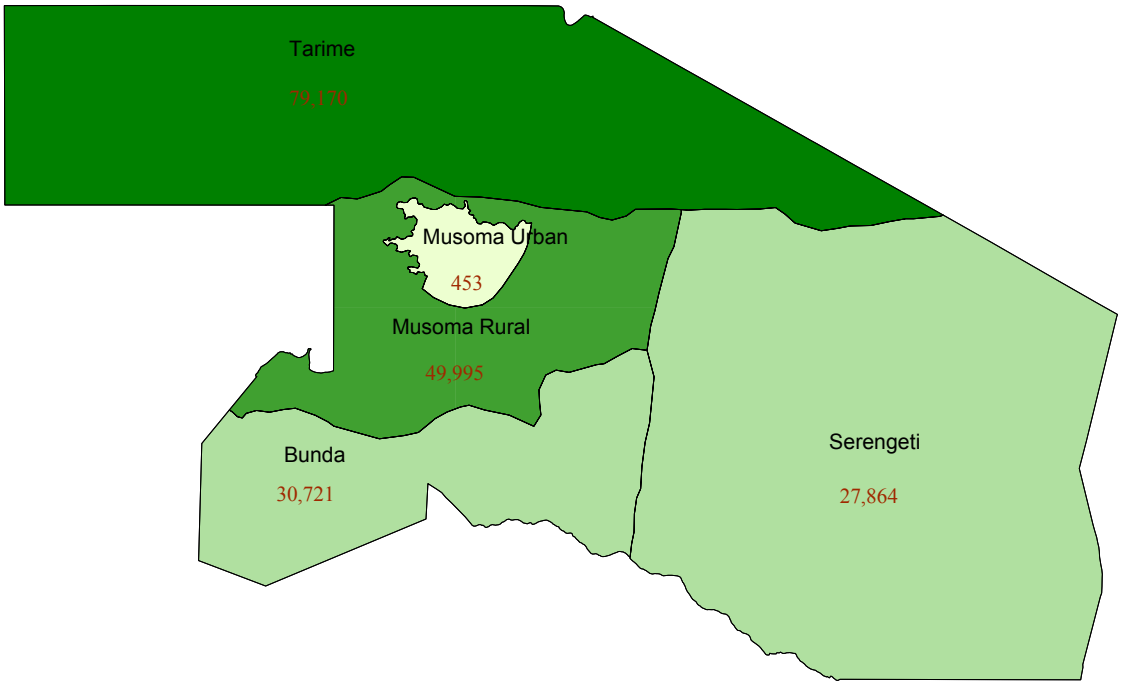
3.1.2 Livelihood Activities/Source of Income

The census results for Mara region indicate that most of the agricultural households ranked annual crop farming as an activity that provides most of their livelihood/cash income followed by tree/forest resources, permanent crop farming, off - farm income, livestock keeping/herding, remittances and fishing/hunting & gathering. Musoma Urban district is the only district whereby tree/forest resources is not the second most important livelihood activity, being replaced by off-farm income (Table 3.1).

Table 3.1 Rank in Order of Importance Livelihood Activities/Source of Income of the Household in Order of Importance By District

District	Livelihood Activity						
	Annual Crop Farming	Permanent Crop Farming	Livestock Keeping / Herding	Off Farm Income	Remittances	Fishing / Hunting & Gathering	Tree / Forest Resources
Tarime	1	3	4	5	6	7	2
Serengeti	1	3	5	4	6	7	2
Musoma Rural	1	4	5	3	7	6	2
Bunda	1	4	5	3	7	6	2
Musoma Urban	1	3	6	2	7	5	4
Total	1	3	5	4	6	7	2

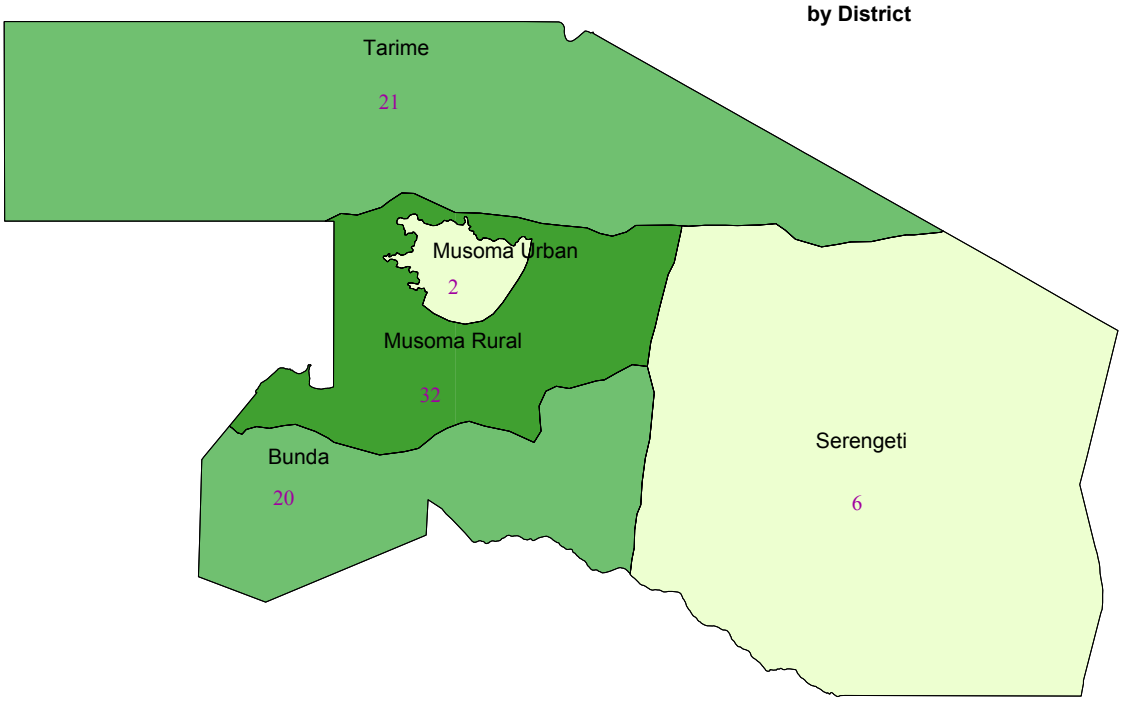
MAP 3.1 MARA
Total Number of Agricultural Households by District



Number of Agricultural Households
- 64,000 to 80,000
- 48,000 to 64,000
- 32,000 to 48,000
- 16,000 to 32,000
- 0 to 16,000

Number of Agricultural Households

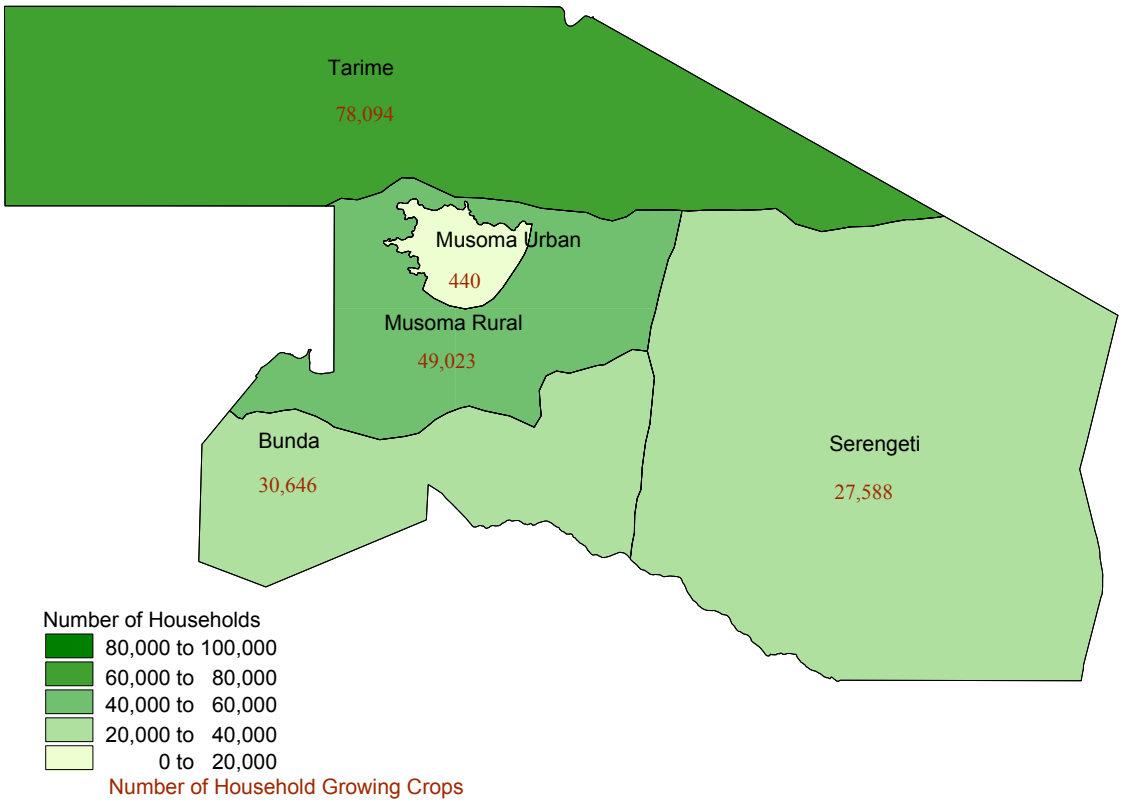
MAP 3.2 MARA
Number of Agricultural Households Per Square Kilometer of Land by District



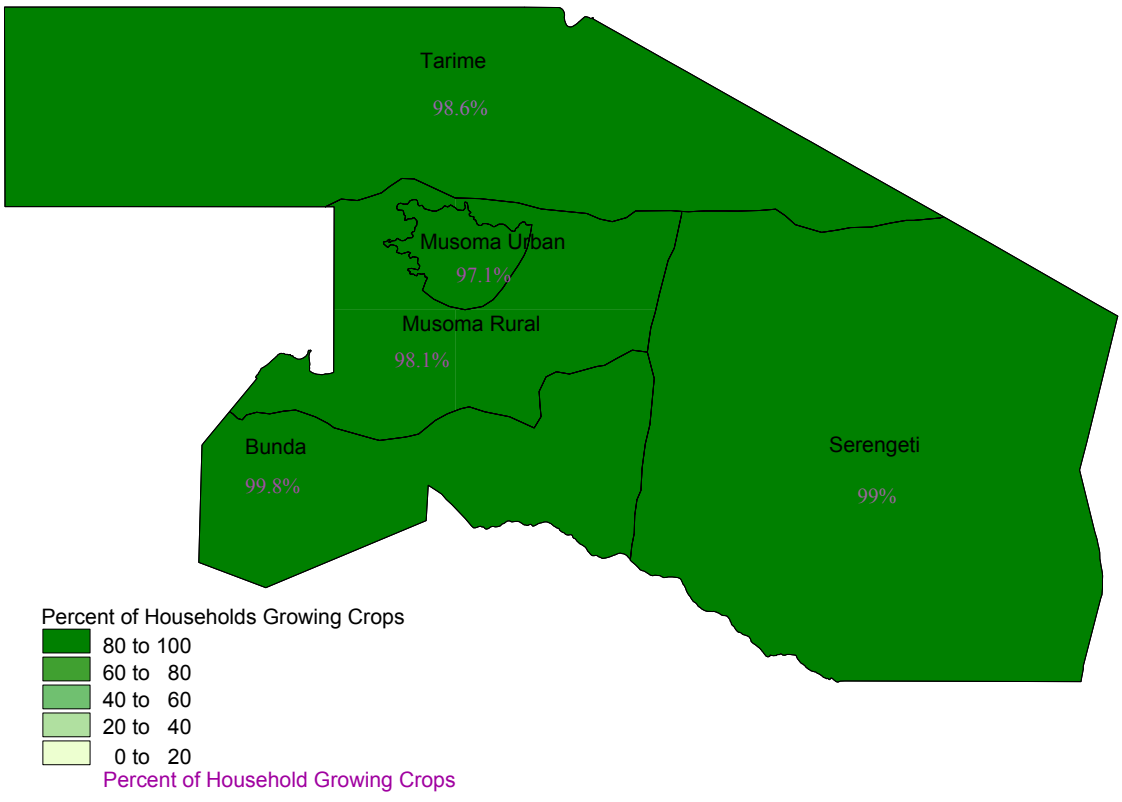
Number of Agricultural Households Per Square Kilometer
- 40 to 50
- 30 to 40
- 20 to 30
- 10 to 20
- 0 to 10

Number of Agricultural Households Per Square Kilometer

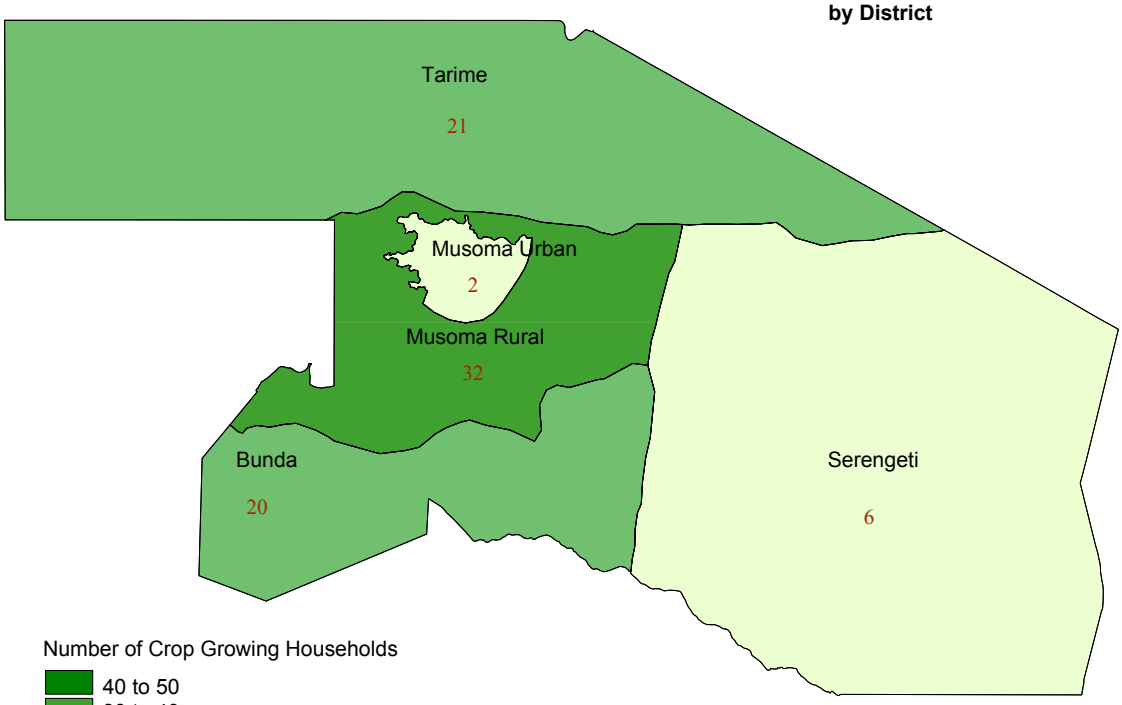
MAP 3.3 MARA
Number of Crop Growing Households by District



MAP 3.4 MARA
Percent of Crop Growing Households by District



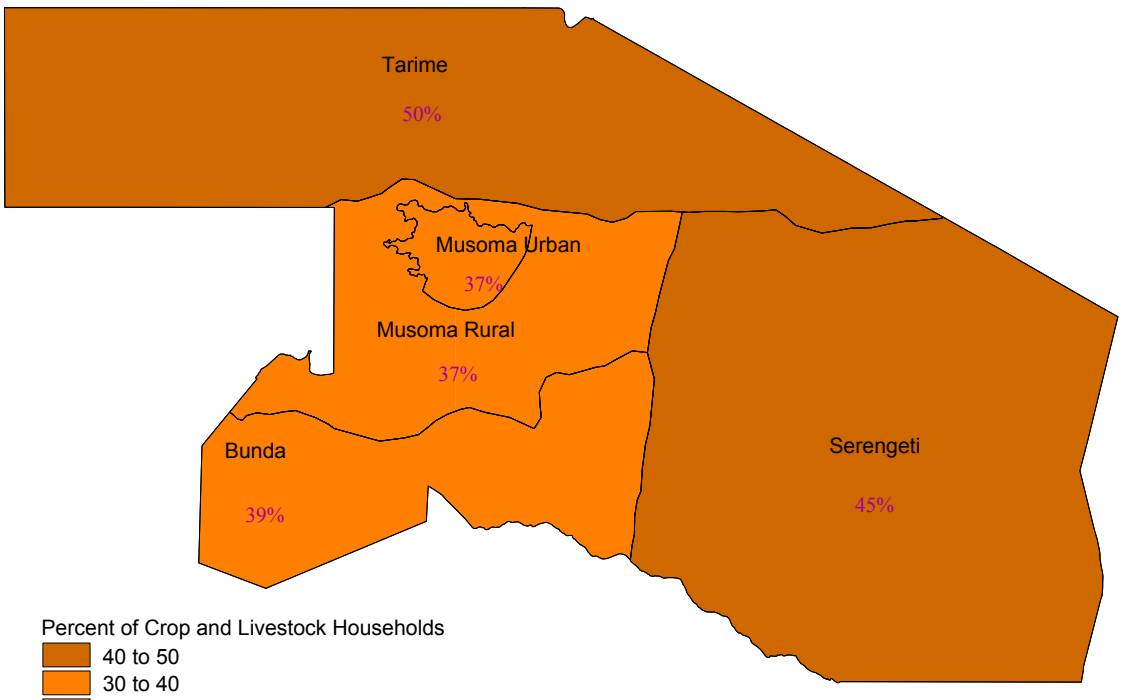
MAP 3.5 MARA
Number of Crop Growing Households
Per Square Kilometer of Land
by District



Number of Crop Growing Households
- 40 to 50
- 30 to 40
- 20 to 30
- 10 to 20
- 0 to 10

Number of Crop Growing Households Per Square Kilometer of Land

MAP 3.6 MARA
Percent of Crop and Livestock
Households by District

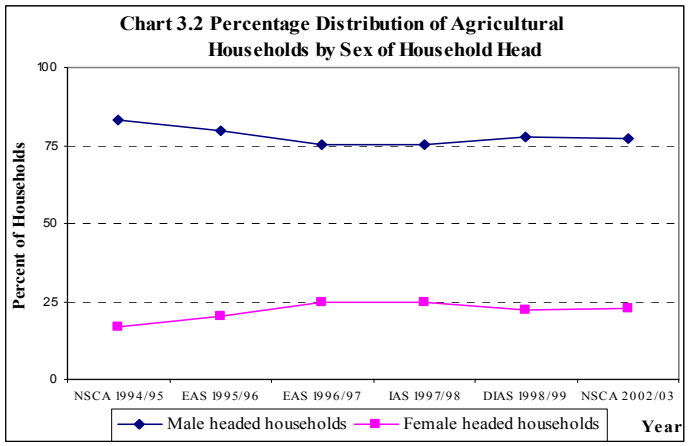


Percent of Crop and Livestock Households
- 40 to 50
- 30 to 40
- 20 to 30
- 10 to 20
- 0 to 10

Percent of Crop and Livestock Household

3.1.3 Sex and Age of Heads of Households

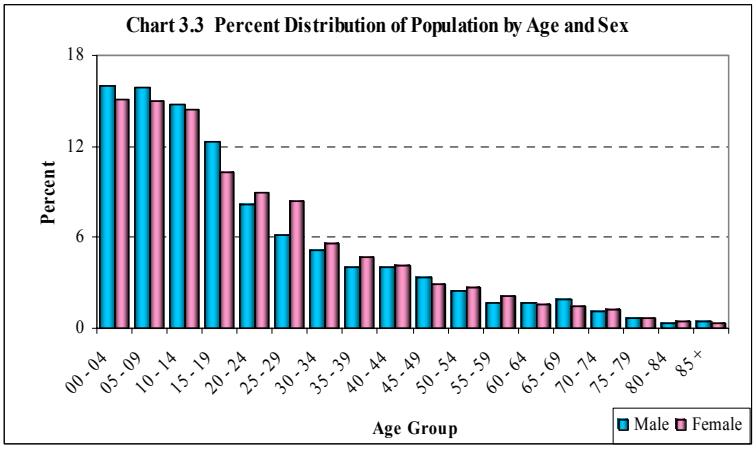
The number of male-headed agricultural households in Mara region was 145,187 (77% of the total regional agricultural households) while the female-headed households were 43,016 (23%). The mean age of household heads in Mara region was 46 years (45 years for male heads and 48 years for female heads).



The percentage trend based on six census/survey years shows that there has been a very small change in the distribution of agricultural households between male and female headed households (Chart 3.2).

3.1.4 Number and Age of Household Members

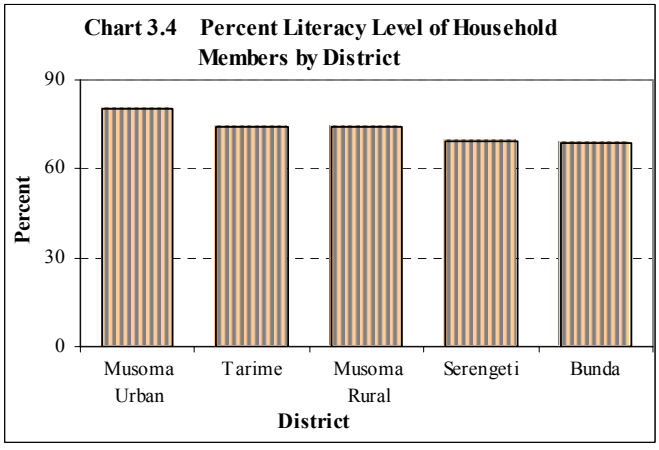
Mara region had a total rural agricultural population of 1,097,742 of which 548,314 (50%) were males and 549,427 (50%) were females. Whereas age group 0-14 constituted 46 percent of the total rural agricultural population, age group 15–64 (active population) was only 50 percent (Chart 3.3).



Mara region had an average household size of 5.8 persons with Musoma Rural and Bunda having the highest household size of 6.7 and Tarime district having the lowest household size of 4.9.

3.1.5 Level of Education

In order to obtain information on the level of education, information on literacy and education attainment were obtained for all persons aged five years and above in all selected households.



Literacy

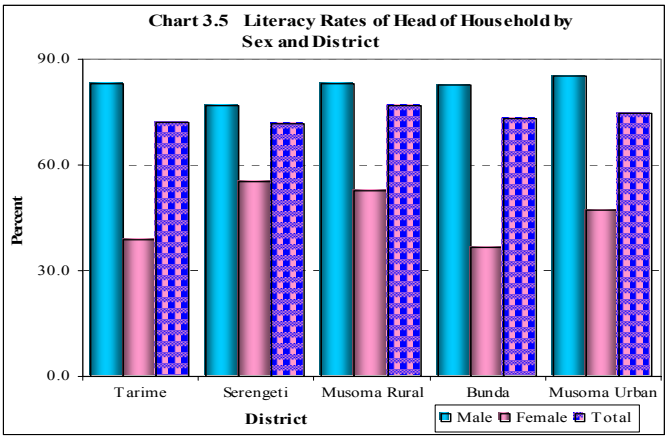
The information on literacy level for family members aged five years and above was obtained by asking individual private households if their respective family members could read and write in Kiswahili only, English only, both English and Swahili or in any other language. Literacy was based on the ability to read and write Swahili, English or both.

Literacy Level for Household Members

Mara region had a total literacy rate of 72 percent. The highest literacy rate was found in Musoma Urban (81%), followed by Tarime district (74%) and Musoma Rural district (74%), Serengeti and Bunda districts had the lowest literacy rates of 69 percent each (Chart 3.4).

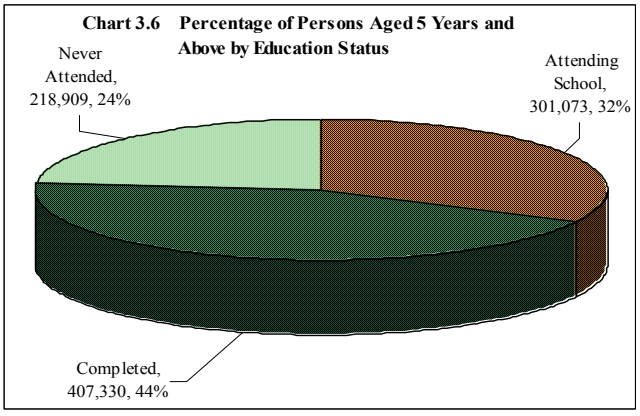
Literacy Rates for Heads of Households

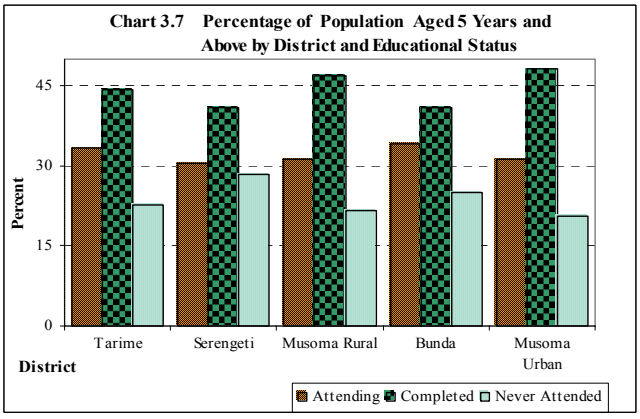
The literacy rate for the heads of households in Mara region was 73.5 percent. The literacy rate for male heads was 82.1 and that of female heads was 44.2 percent. The literacy rate of male heads was higher than that of female heads in all districts. The district with the highest literacy rate amongst heads of households was Musoma Rural (76.8%), followed by Musoma Urban (74.6%), Bunda (73.1%), Tarime (72.2%) and Serengeti (71.6%) (Chart 3.5).



Educational Status

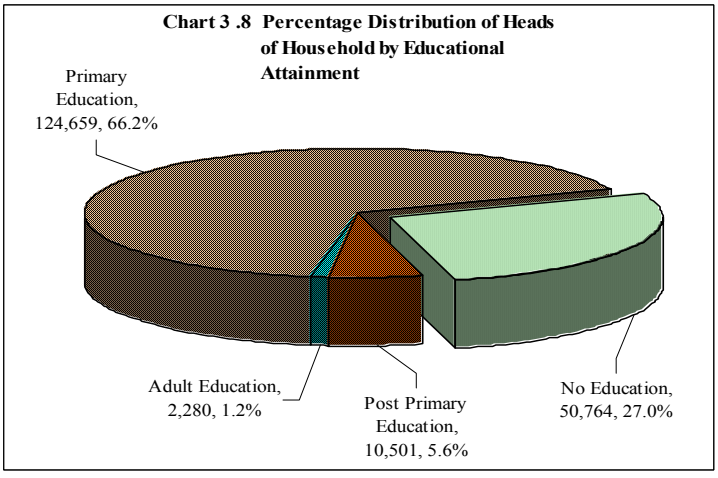
Information on educational status was collected from individual agricultural households. The results show that 44 percent of the population aged 5 years and above in agricultural households in Mara region had completed different levels of education and 32 percent were still attending school. Those who have never attended school were 24 percent (Chart 3.6).





Agricultural households in Musoma Urban district had the highest percentage of population aged 5 years and above who had completed different levels of education (48.2%). This was followed by Musoma Rural (46.9%), Tarime district (44.2%), Serengeti district (41.0%) and Bunda district with 41 percent (Chart 3.7).

The number of heads of agricultural households with formal education in Mara region was 135,160 (71.8%), those without any education were 50,764 (27.0%) and



those with only adult education were 2,280 (1.2%). The majority of heads of agricultural households in Mara region had primary level education (66.2%), whereas only 5.6 percent had post primary education (Chart 3.8).

With regard to the heads of agricultural households with primary or secondary education in Mara region, Musoma Rural district had the highest percentage of household heads with primary education (70.5%) and the second lowest percent of household heads with secondary education (3.6%). This was followed by Bunda (69.1% for primary and 3.7% for secondary), Serengeti (65.9% for primary and 2.4% for secondary), Tarime (62.6% for primary and 6.7% for secondary) and Musoma Urban (55.7% for primary and 14.5% for secondary). The district with the highest percent of households with no education was Serengeti (30.2%), followed by Tarime (27.7%), Bunda (26%), Musoma Urban (25.4%) and Musoma Rural (24.6%).

3.1.6 Off-farm Income

Off-farm income refers to cash generated from non-agricultural activities. This can be either from permanent employment (i.e., government, private sector or other), temporary employment or labourers. It also includes cash generated from working on farms belonging to other farmers. Off-farm income is important amongst agriculture households in Mara with 58.3 percent of households having at least one member with off-farm income. In the region, 72,002 households (38%) had only one member aged 5 and above involved in off-farm income generating activity, 25,816 households (14%) had two members involved in off-farm income generating activities and 11,969 households (6%) had more than two members involved in off-farm income generating activities. Households with no off-farm income in Mara region constitute 42 percent of the total agricultural households in the region (Chart 3.9).

Chart 3.9 Number of Households by Number of Members with Off-farm Income

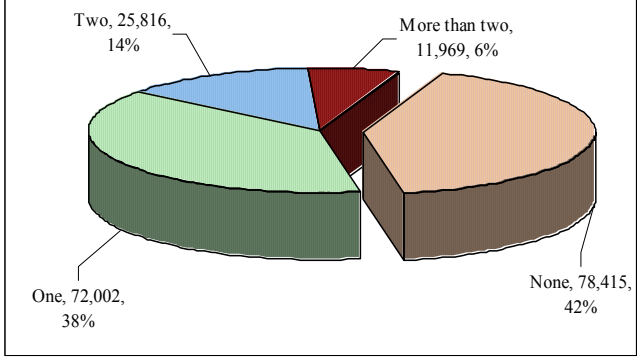
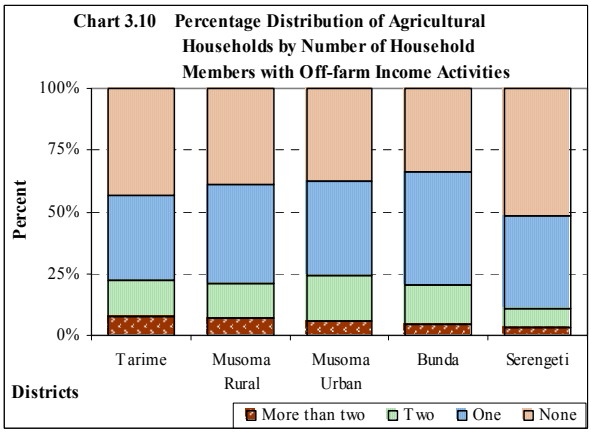


Chart 3.10 Percentage Distribution of Agricultural Households by Number of Household Members with Off-farm Income Activities



Bunda district had the highest percentage of agriculture households with off-farm income (66.3% of total agriculture households in the district), followed by Musoma Urban (62.5%), Musoma Rural (561.1%) and Tarime (56.8%). Serengeti district had the lowest percentage of agriculture households with off-farm income in the region (48.7%). The district with the highest percent of agriculture households with more than one member with off-farm income was Musoma Urban (24.5%), however Serengeti district had the lowest percent of households with more than one member having off-farm income (10.6%) (Chart 3.10).

3.2 Land Use

Land area and planted area are two different types of area measurements. Land area refers to the physical area of land and is the same regardless of the number of crops planted on the land in one year. Planted area is the total area of crops planted in a year and the area is summed if there were more than one crop on the same land per year. A number of terms are used in this section which requires defining for clarification as follows:

Land available refers to the area of land that has been allocated to smallholders through customary law, official title or other forms of ownership. Land available does NOT mean the total area of land that is designated as agriculture land in the country, however it is the land that is available to smallholders given the location of villages and lack of access to more remote parcels of unused agriculture designated land.

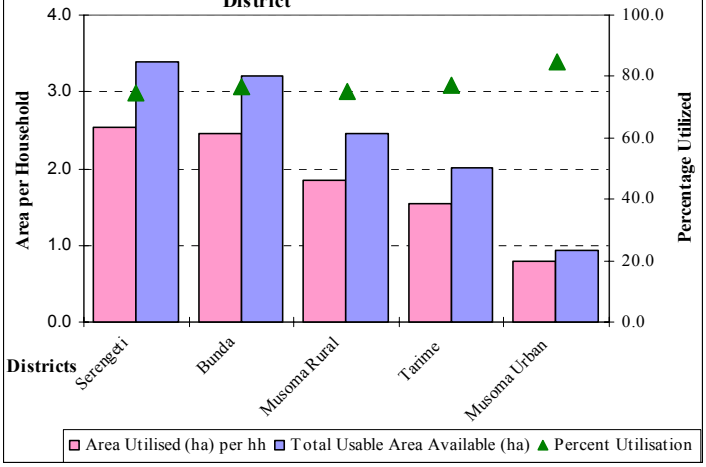
Usable land refers to the available land minus the land that cannot be used e.g. bare rock, shallow soils, steep slopes, swamp areas etc. It does however include un-cleared bush, Utilised land refers to the land that was used during the year.

3.2.1 Area of Land Utilised

The total area of land available to smallholders in Mara region was 487,543 ha, however the utilisable land was 475,576 ha (95% of the land area available in the region). The regional average land area utilised for agriculture per household was only 1.9 ha. This figure is below the national average of 2.0 hectares.

Large differences in land area utilised per household exist between districts with Serengeti and Bunda utilizing 2.5 ha per household in each district. The smallest land area utilised per household was found in Musoma Urban (0.8 ha). The percentage utilized of the usable land per household was highest in Musoma Urban (84.5%) and lowest in Serengeti (74.6%). About seventy six percent of the total land available to smallholders was utilised implying that only 24 percent of usable land available to smallholders was not used (Chart 3.11 and Map 3.7).

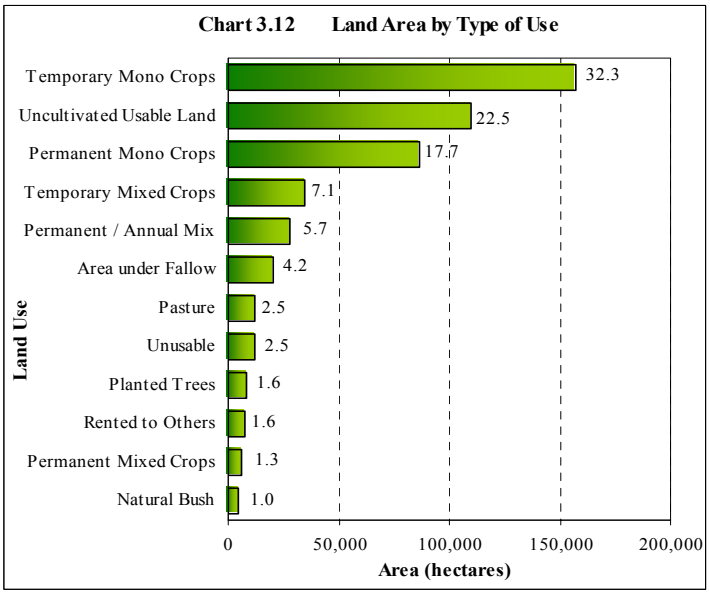
Chart 3.11 Utilized and Usable Land per Household by District



3.2.2 Types of Land Use

The area of land under temporary monocrop was 157,427 hectares (32.3% of the total land available to smallholders in Mara region), followed by uncultivated usable land (109,823 ha, 22.5%), area under permanent mono crops (86,423 ha, 17.7%), area under temporary mixed crops (34,674 ha, 7.1%), area under permanent /annual mix (27,613 ha, 5.7%), area under fallow (20,348 ha, 4.2%), area under pasture (12,382 ha, 2.5%), area unusable (11,967 ha, 2.5%), area under planted tree (7,956 ha, 1.6%), area rented to others (7,836 ha, 1.6%), Area under permanent mixed crops (6,373 ha, 1.3%) and area under natural bush (4,720 ha, 1.0%) (Chart 3.12).

Chart 3.12 Land Area by Type of Use



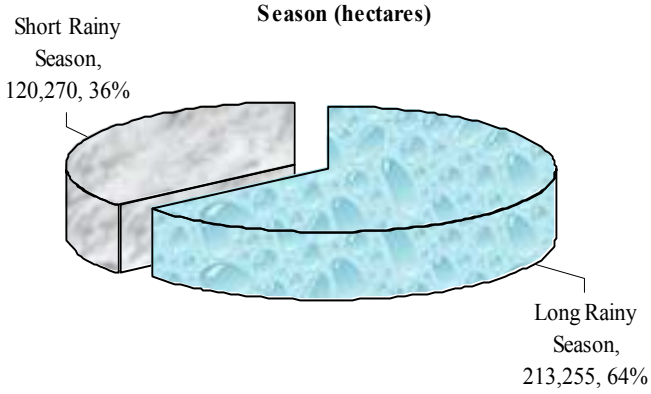
3.3 Annual Crops and Vegetable Production

Mara region has two rainy seasons, namely the short rainy season (October to December) and the long rainy season (March to May). The quantity of crops produced in both seasons will be used as a base for comparison with the past surveys and censuses.

3.3.1 Planted Area

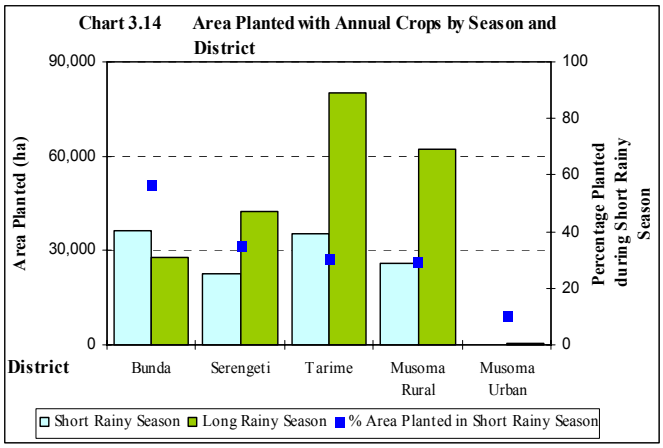
The area planted with annual crops and vegetables in Mara region was 333,525 hectares out of which 120,270 hectares (36%) were planted during the short rainy season and 213,255 hectares (64%) during long rainy season (Chart 3.13).

Chart 3.13 Area Planted with Annual Crops by Season (hectares)



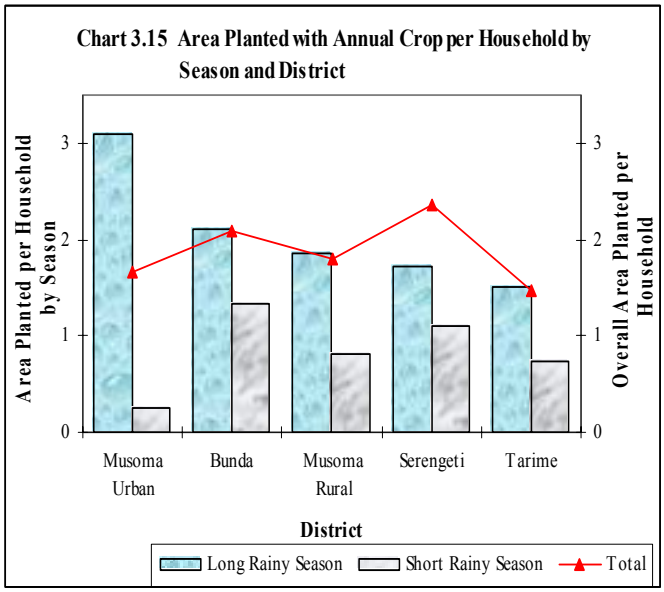
The average areas planted per household during the short and long rainy seasons was 0.65 and 1.15 ha respectively. The district with the largest area planted per household in Mara region was Serengeti (2.4 ha), followed by Bunda (2.1 ha) and Musoma Rural (1.8 ha). The district with the smallest average area planted per household was Tarime (1.5 ha). While in Bunda average planted area per household during the short rainy season is higher than that of the long rainy season, the reverse is true for the rest of the districts in the region (Chart 3.14 and Map 3.8).

Chart 3.14 Area Planted with Annual Crops by Season and District

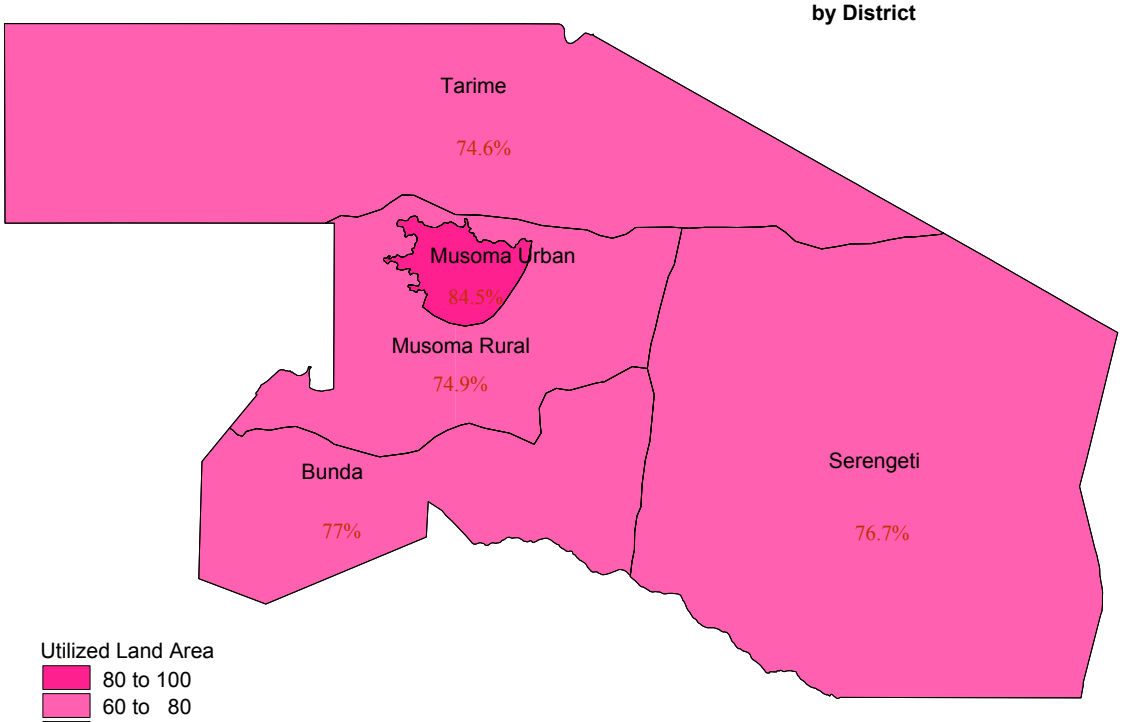


The average area planted per household during the long rainy season in Mara region was 1.7 hectares, however, there were large district differences. Although Musoma Urban had the largest planted area per household of 3.10 ha, it is difficulty to make concrete comments because of the small numbers involved. Bunda had the second largest planted area per household (2.10 ha), followed by Musoma Rural (1.85%) and Serengeti (1.73 ha). The smallest planted area per household during the long rainy season was in Tarime (1.51 ha). During the short rainy season, Bunda district had the largest planted area per household, followed by Serengeti, Musoma Rural and Tarime districts. In Mara region, there is a planted area of 0.8 ha more in the long rainy season compared to the short rainy season and most of the difference is in Musoma Rural district (Chart 3.15 and Map 3.9).

Chart 3.15 Area Planted with Annual Crop per Household by Season and District

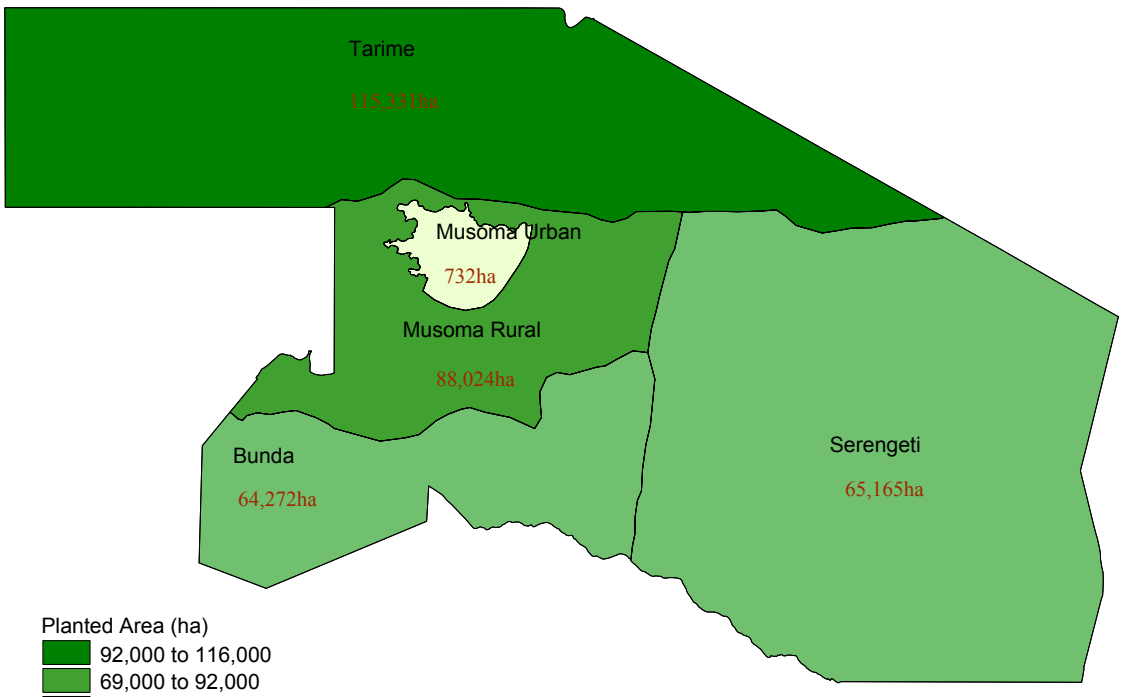


MAP 3.7 MARA
Utilized Land Area Expressed as a Percent of Available Land by District



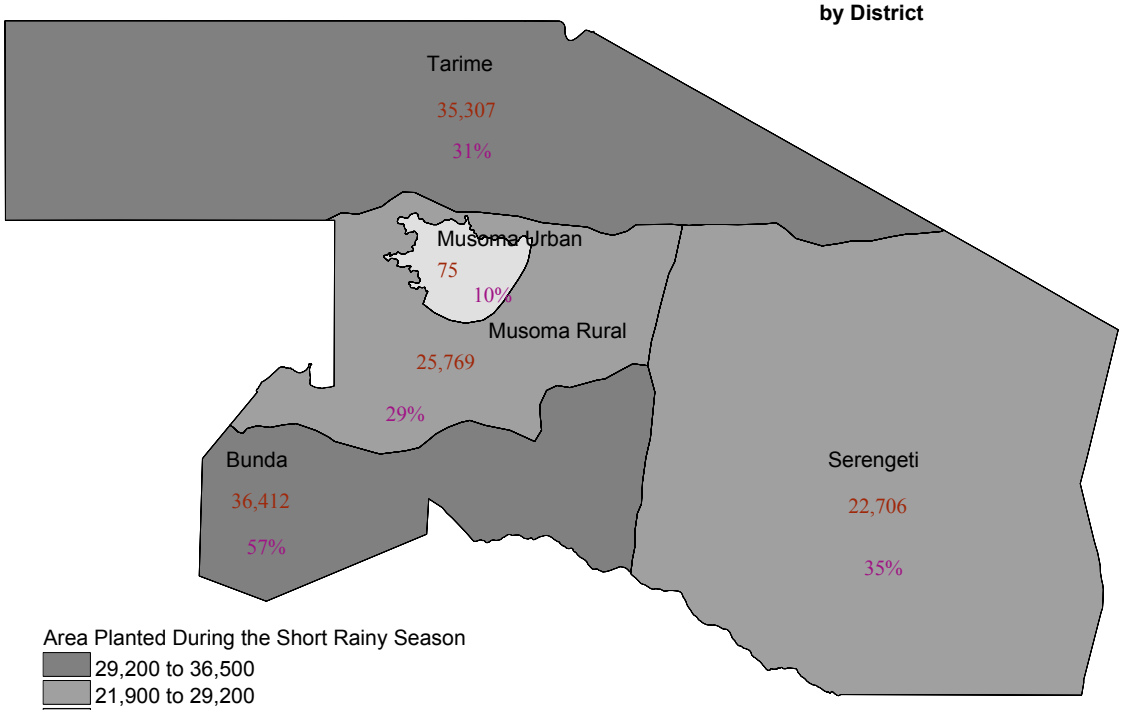
Utilized Land Area
80 to 100
60 to 80
40 to 60
20 to 40
0 to 20
Utilized Land Area Expressed as a Percent

MAP 3.8 MARA
Total Planted Area (Annual Crops) by District



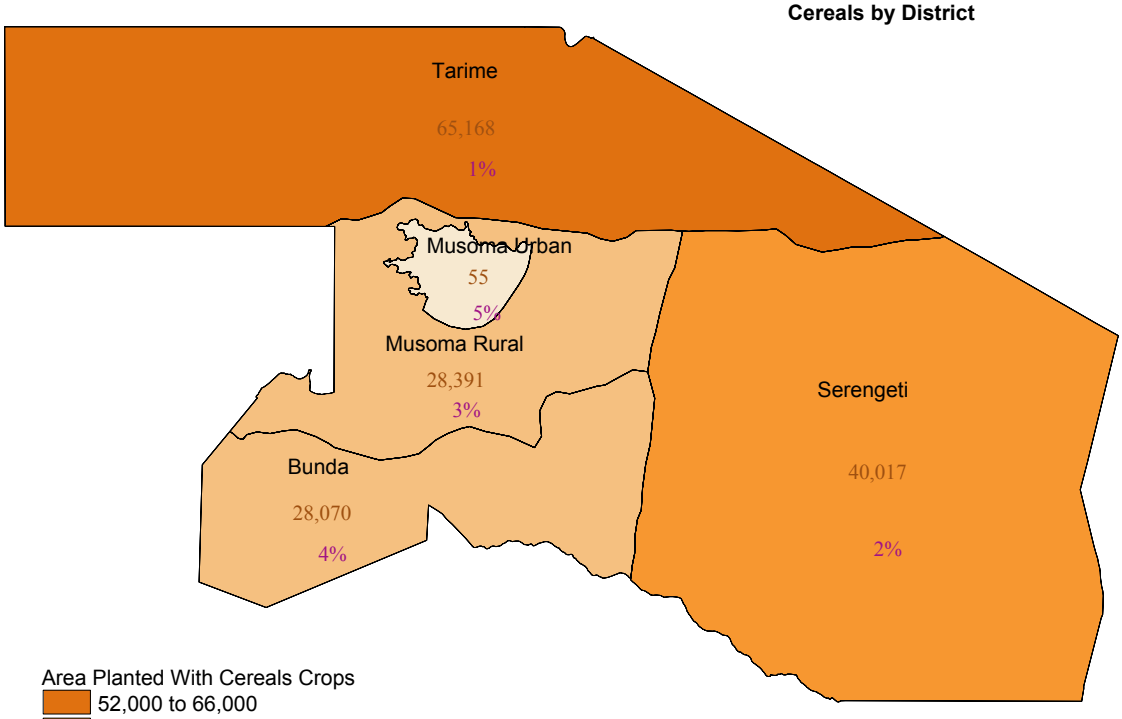
Planted Area (ha)
92,000 to 116,000
69,000 to 92,000
46,000 to 69,000
23,000 to 46,000
0 to 23,000
Planted Area (ha)

MAP 3.9 MARA
Area Planted and Percentage During the Short Rainy Season by District



Area Planted During the Short Rainy Season
29,200 to 36,500
21,900 to 29,200
14,600 to 21,900
7,300 to 14,600
0 to 7,300
Area Planted During the Short Rainy Season
Percentage of Area Planted During Short Rainy Season

MAP 3.10 MARA
Area Planted With Cereals and Percent of Total Land Planted With Cereals by District



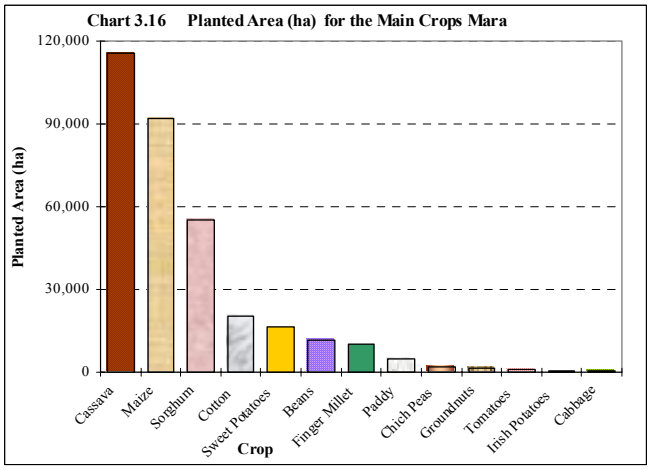
Area Planted With Cereals Crops
52,000 to 66,000
39,000 to 52,000
26,000 to 39,000
13,000 to 26,000
0 to 13,000
Area Planted With Cereals
Percent of Total Land Planted With Cereals Crops

Analysis of the Most Important Crops

Results on crop production are presented in two different sections. The first section compares the importance of each crop regardless of whether they are annual or permanent. The second section contains a more detailed analysis on production based on crop types.

3.3.2 Crop Importance

Cassava is the dominant annual crop grown in Mara region and it had a planted area 1.3 times greater than Maize, which had the second largest planted area. The area planted with cassava constituted 34.7 percent of the total area planted with annual crops in the region. Other crops in order of their importance (based on area planted) are sorghum, cotton, sweet potatoes, beans and finger millet (Chart 3.16).



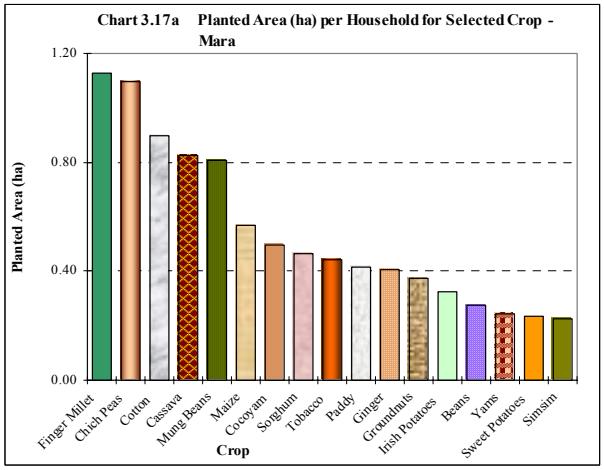
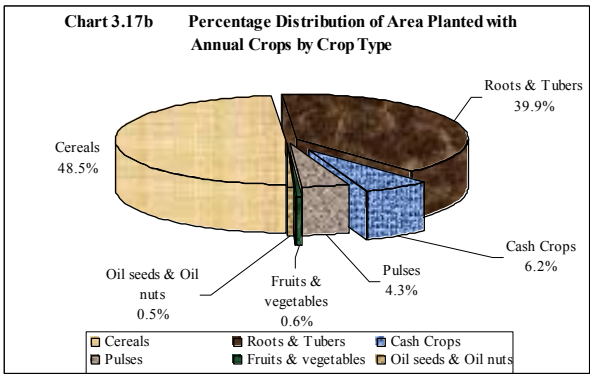
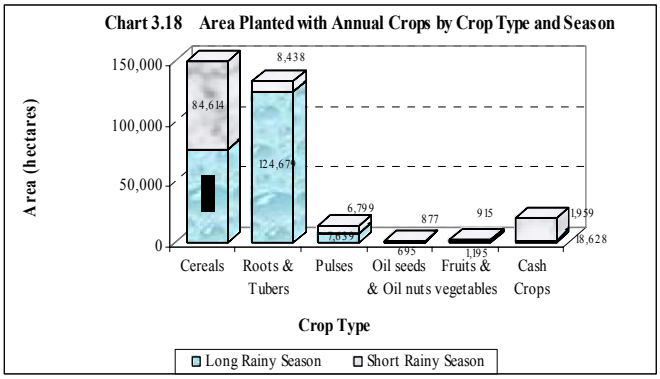


Chart 3.17a shows the area planted per household for selected crops. Households that grew finger millet, chick peas, cotton, cassava and mung beans had larger planted areas per household than those growing other crops.

3.3.3 Crop Types

Cereals are the main crop type grown in Mara region. The area planted with cereals was 161,701 ha (48.5% of the total planted area), followed by roots and tubers with 133,117 ha (39.9%), annual cash crops (20,614 ha, 6.2%), pulses (14,438 ha, 4.3%), fruits and vegetables (2,110 ha, 0.6%) and oil seeds (1,572 ha, 0.5%) (Chart 17b).





About 52 percent of cereals, 47 percent of pulses, 56 percent of oil seeds, 43 percent of fruit and vegetables and 90 percent of cash crops were planted during the short rainy season.

3.3.4 Cereal Crop Production

The total production of cereals was 180,022 tonnes. Maize was the dominant cereal crop with a production of 110,662 tonnes which was 61.5 percent of total cereal crop production, followed by sorghum (30.3%), finger millet (4.8%) and paddy (3.5%). Tarime district had the largest planted area of cereals in the region (65,168 ha) followed by Serengeti (40,017 ha), Musoma Rural district (28,391 ha), Bunda district (28,070 ha) and Musoma Urban (55 ha) (Map 3.10).

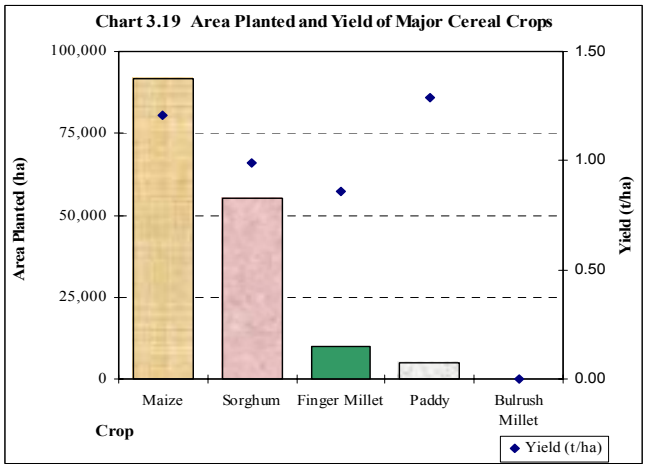
Table 3.2: Area, Production and Yield of Cereal Crops by Season

Crop	Short Rainy Season			Long Rainy Season			Total		
	Area Planted (ha)	Quantity Harvested (tons)	Yield (kg/ha)	Area Planted (ha)	Quantity harvested (tons)	Yield (Kg/ha)	Area Planted (ha)	Quantity Harvested (tons)	Yield (Kg/ha)
Maize	48,177	55,996	1,162	43,628	54,666	1,253	91,804	110,662	1,205
Paddy	2,270	2,366	1,043	2,603	3,905	1,500	4,873	6,271	1,287
Sorghum	29,922	28,842	964	25,118	25,664	1,022	55,040	54,506	990
Finger Millet	4,245	3,776	889	5,712	4,807	842	9,957	8,583	862
Bulrush Millet	0	0	0	27	0	0	27	0	0
Total	**84,614**	**90,980**		**77,087**	**89,042**		**161,701**	**180,022**	

The total area planted with cereals during both the short and long rainy seasons was 161,701 ha out of which 84,614 ha (52%) were planted in short rainy season and 77,087 ha (48%) were planted during the long rainy season. The long rainy season accounted for 49.5 percent of the total cereals produced in both seasons. The area planted with maize during the long rainy season was 56.6 percent of the total area planted with cereals in that season followed by sorghum (32.6%) and finger millet (7.4%) (Table 3.2).

The area planted with maize was dominant and it represented 57 percent of the total area planted with cereal crops, then followed by sorghum (34%), finger millet (6%), paddy (3%) and bulrush millet (0.02%).

The yields of the main cereal crops were as follows; paddy 1,287 kg/ha, maize 1,205 kg/ha, sorghum 990 kg/ha and finger millet 862 kg/ha (Chart 3.19).



Maize

Maize dominates the production of cereal crops in the region. The number of households growing maize in Mara region during the long rainy season was 77,336 (41.1% of the total crop growing households in the region). The total production of maize was 110,662 tonnes from a planted area of 91,804 hectares resulting in a yield of 1.21 t/ha.

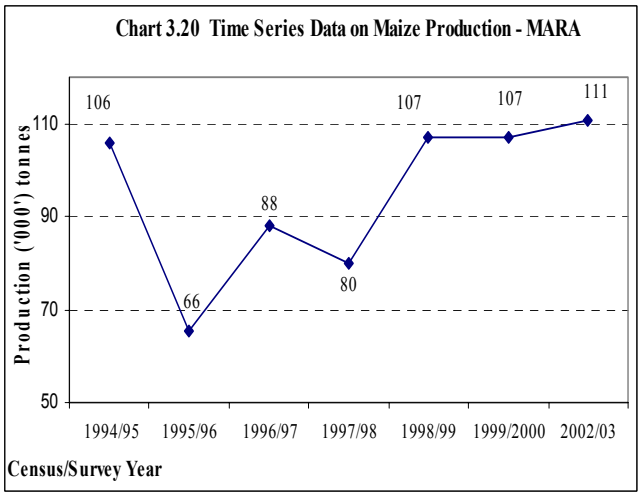
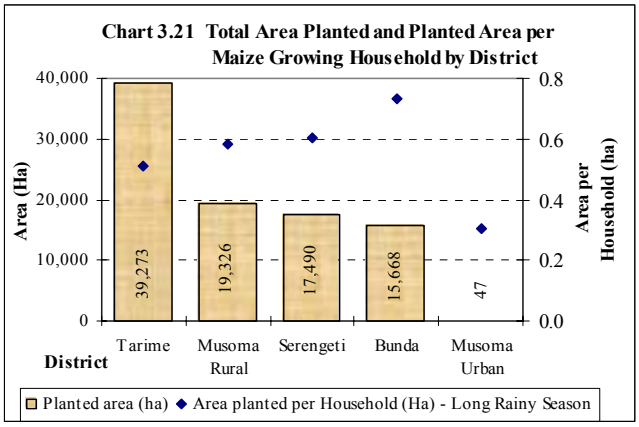
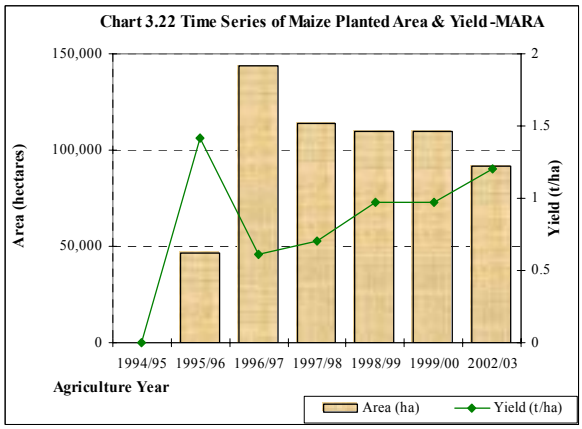


Chart 3.20 shows the maize production trend (in thousand metric tonnes) for Mara region (combined long and short rainy seasons). There was a sharp drop in maize production from 106,000 tonnes in 1995 to 66,000 tonnes in 1996. This was followed by a gradual increase to 107,000 tonnes in 1999 after which the production remained more or less constant up to year 2003. The average area planted with maize per

household in the long rainy season was 0.56 hectares, however it ranged from 0.30 hectares in Musoma Urban district to 0.73 hectares in Bunda district (Map 3.11). Tarime district had the largest area of maize (39,273 ha), followed by Musoma Rural (19,326 ha), Serengeti (17,490 ha), Bunda (15,668 ha) and Musoma Urban (47 ha) (Chart 3.21 & Map 3.11 & 3.12).

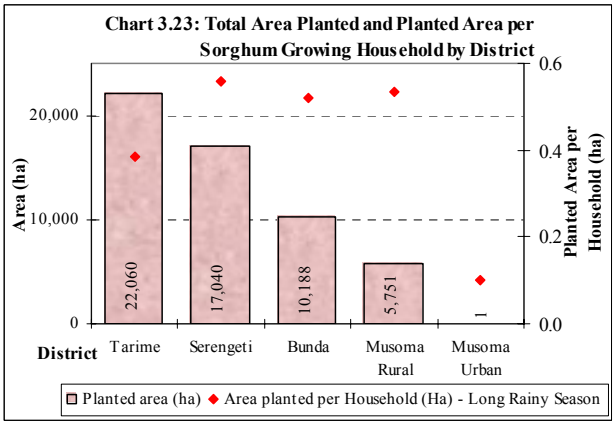


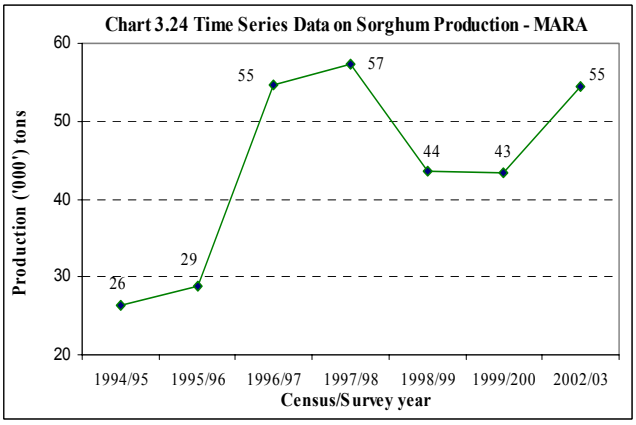


Charts 3.20 and 3.22 show that, from the year 1997 to 2003 there has been a gradual increase in yield from 0.6 tons/ha to 1.2 tons/ha as well as gradual decrease in area planted from 143,500 to 91,804 hectares. The quantity produced increased gradually over the same period from 88,200 tonnes to 110,665 tonnes. This trend indicates that the increase in maize production in the region was associated with the increase in yield (Chart 3.22).

Sorghum

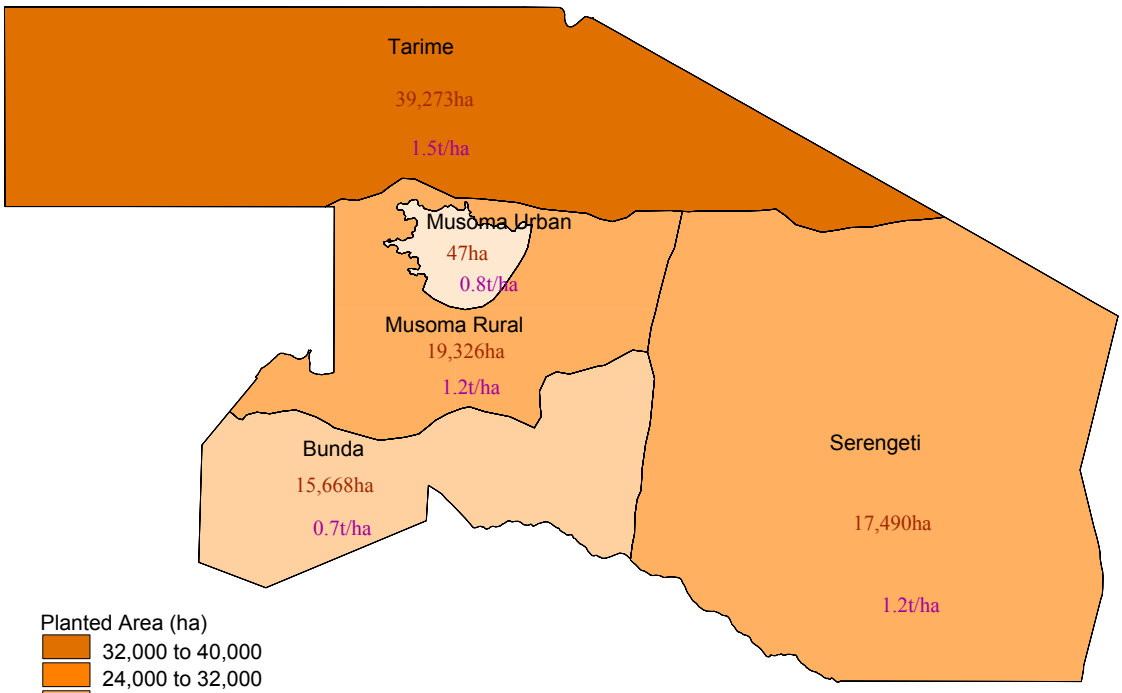
Sorghum was the second most important cereal crop in the region in terms of planted area. The number of households that grew sorghum in Mara region during the long rainy season was 54,589. This represents 43.7 percent of the total crop growing households in Mara region in the long rainy season. The total production of sorghum was 54,506 tonnes from a





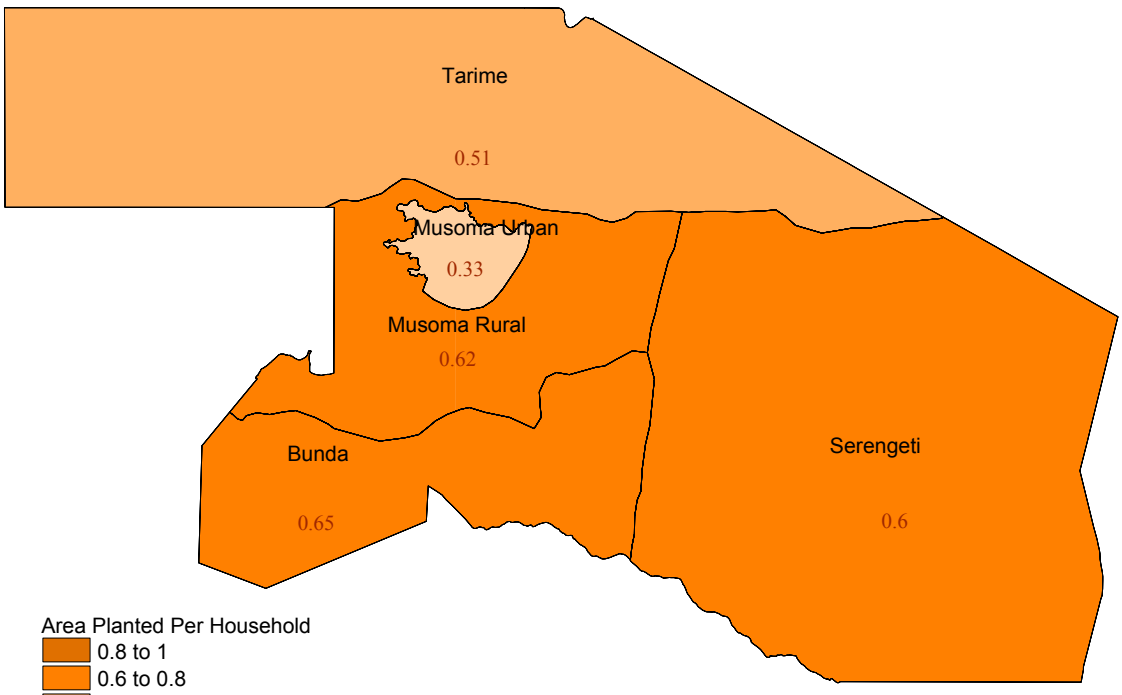
planted area of 55,040 hectares resulting in a yield of 0.99 t/ha. The district with the largest area planted with sorghum was Tarime (22,060 ha) followed by Serengeti (17,040 ha), Bunda (10,188 ha), Musoma Rural (5,751 ha) and Musoma Urban (1 ha) (Map 3.13). There are significant variations in the average area planted per sorghum growing household among the districts in the long rainy season ranging from 0.10 ha in Musoma Urban to 0.55 ha in Bunda (Chart 3.23 and Map 3.14).

MAP 3.11 MARA
Planted Area and Yield of Maize
by District



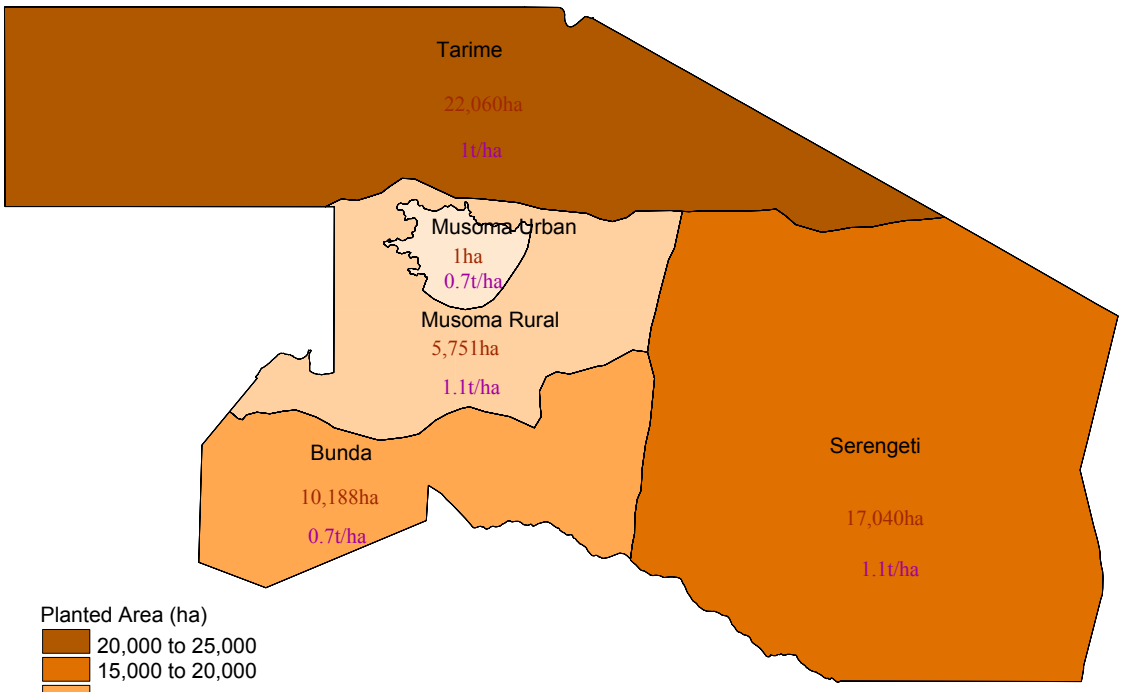
Planted Area (ha)
32,000 to 40,000
24,000 to 32,000
16,000 to 24,000
8,000 to 16,000
0 to 8,000
Planted Area (ha)
Yield (t/ha)

MAP 3.12 MARA
Area Planted Per Maize Growing
Household by District



Area Planted Per Household
0.8 to 1
0.6 to 0.8
0.4 to 0.6
0.2 to 0.4
0 to 0.2
Area Planted Per Household

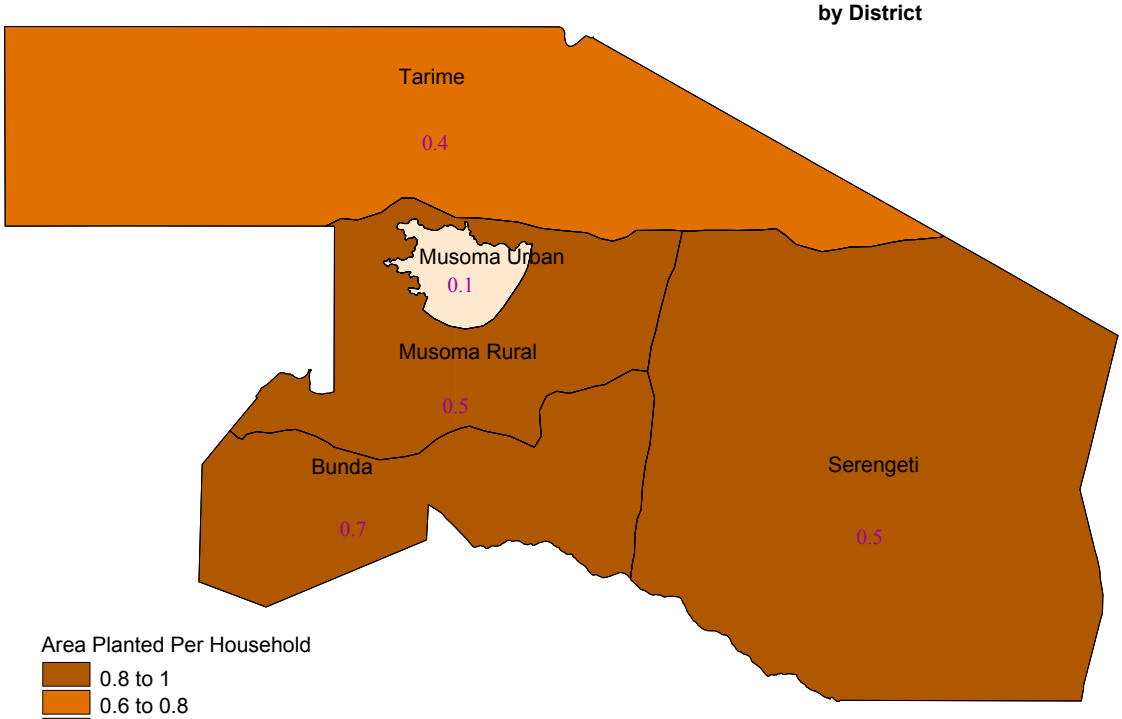
MAP 3.13 MARA
Planted Area and Yield of Sorghum
by District



Planted Area (ha)
- 20,000 to 25,000
- 15,000 to 20,000
- 10,000 to 15,000
- 5,000 to 10,000
- 0 to 5,000

Planted Area (ha)
Yield (t/ha)

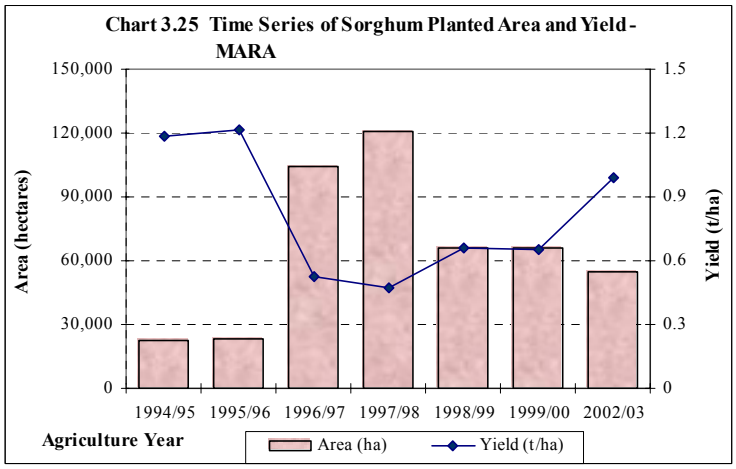
MAP 3.14 MARA
Area Planted Per Sorghum
Growing Household
by District



Area Planted Per Household
- 0.8 to 1
- 0.6 to 0.8
- 0.4 to 0.6
- 0.2 to 0.4
- 0 to 0.2

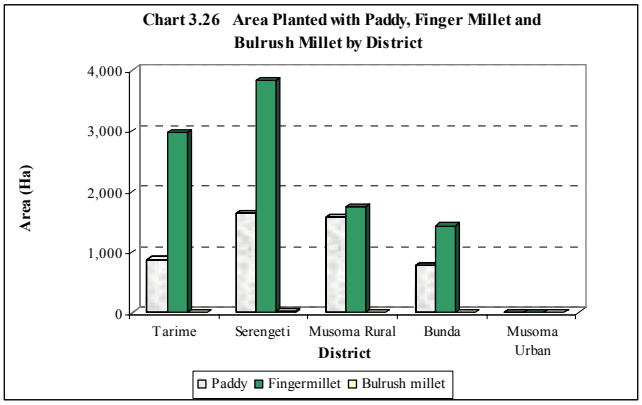
Area Planted Per Household

There was an increase in sorghum production from 26,000 tonnes in 1995 to 57,000 tonnes in 1998 after which the production dropped to 43,000 tons by 2000. The production rose again to 55,000 tonnes in 2003. The area planted with sorghum has increased over the three year period from 1996 to 1998. During this period the region experienced decreasing yield in maize. Gradual increase in sorghum production during this period was mainly due to increase in area planted with sorghum. On the other hand, whilst the area planted with sorghum during the four year period from 1999 to 2003 was decreasing, the productivity per unit of land planted with sorghum was increasing. Increasing production from 2000 to 2003 is mainly attributed to the increasing yield (Charts 3.24 and 3.25).



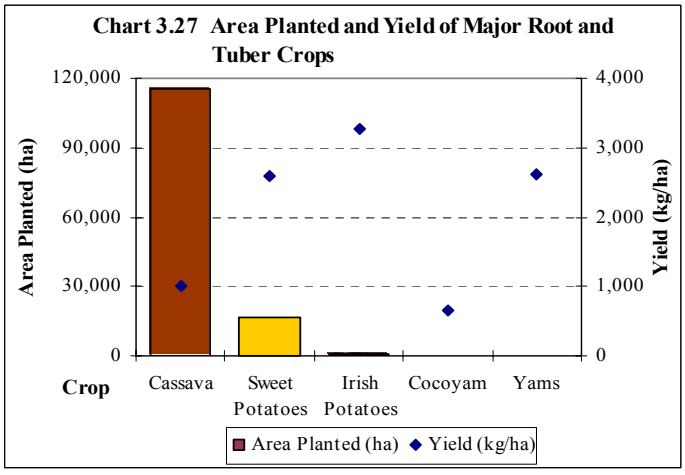
Other Cereals

Other cereals (finger millet, paddy and bulrush millet) were produced in relatively small quantities compared to maize and sorghum. The district with the largest area planted with finger millet was Serengeti (3,820 ha, 38%) followed by Tarime (2,962 ha, 30%), Musoma Rural (1,742 ha, 17%) and Bunda (1,433 ha, 14%). There was no finger millet produced in Musoma Urban. The district with the highest area planted with paddy was Serengeti (1,641 ha, 33.7%) closely followed by Musoma Rural (1,572 ha, 32.3%), Tarime (872 ha, 17.9%), Bunda (781 ha, 16.0%) and Musoma Urban (7 ha, 0.1%). A small planted area (27ha) of bulrush millet was found in Serengeti district (Chart 3.26).



3.3.5 Roots and Tuber Crops Production

The total production of roots and tubers was 161,111 tonnes. Cassava production was higher than any other root and tuber crop in the region with a total production of 115,747 tonnes representing 71.8 percent of the total root and tuber crops production in the region. This was followed by sweet potatoes with 43,234 tonnes (26.8%), Irish potatoes (1,781 tonnes, 1.1%), yams (277 tonnes, 0.2%) and cocoyam (71 tonnes 0.0%) (Chart 3.27 and Table 3.3).



The area planted with cassava was larger than any other root and tuber crop and it was the most important crop in Mara in terms of planted area (34.7% of the total area planted with annual crops and vegetables and it accounted for 86.9 percent of

the area planted with roots and tubers), followed by sweet potatoes (12.5%), Irish potatoes (0.4%), cocoyams (0.1%) and yams (0.1%).

Cassava is produced in both the long and the short rainy seasons. However, it was not possible to separate cassava production by season as the growth period spans both seasons, even over a year for certain varieties. Because of this, cassava has been combined and reported under the long rainy season only. Because of this it is difficult to determine the total planted area and production for roots and tubers for individual seasons. However, excluding cassava, 53 percent of the area planted with roots and tubers was during the long rainy season. Sweet potatoes had the largest planted area in each season (95% and 96% in short and long rainy seasons respectively). The yield of Irish potatoes was 3.28 t/ha, that of yams was 2.62 t/ha, sweet potatoes 2.60 t/ha, cassava 1.00 t/ha and cocoyams 0.66 t/ha (Table 3.3).

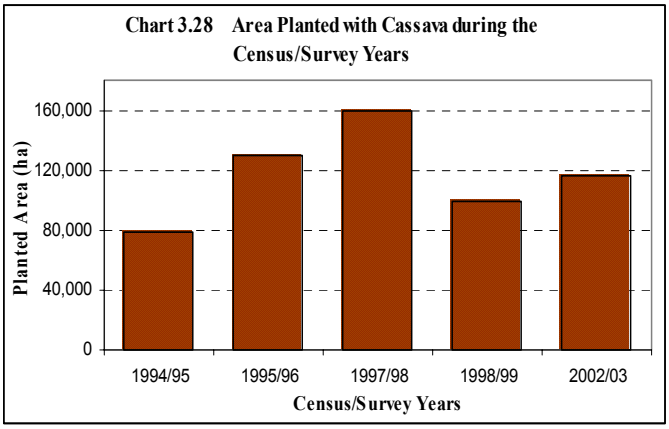
Table 3.3: Area, Quantity and Yield of Roots and Tuber Crops by Season

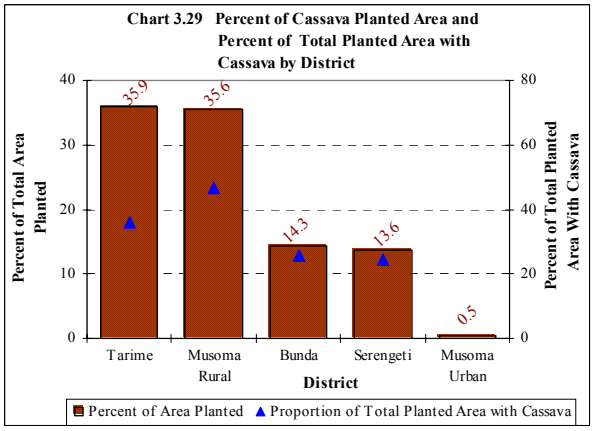
Crop	Short Rainy Season			Long Rainy Season			Total		
	Area Planted (ha)	Quantity Harvested (tons)	Yield (kg/ha)	Area Planted (ha)	Quantity harvested (tons)	Yield (Kg/ha)	Area Planted (ha)	Quantity Harvested (tons)	Yield (Kg/ha)
Cassava	0	0	0	115,739	115,747	1,000	115,739	115,747	1,000
Sweet Potatoes	7,714	20,906	2,710	8,907	22,328	2,507	16,621	43,234	2,601
Irish Potatoes	299	1,372	4,584	244	409	1,679	543	1,781	3,281
Yams	23	14	603	83	263	3,190	106	277	2,623
Cocoyam	94	2	21	14	70	4,883	108	71	661
Total	**8,130**	**22,294**		**124,987**	**138,817**		**133,117**	**161,111**	

Cassava

The number of households growing cassava in Mara region during the long rainy season was 138,982. This represented 74 percent of the total crop growing households in the region. The total production of cassava during the census year was 115,747 tonnes from a planted area of 115,739 hectares resulting in a yield of 1.0 t/ha.

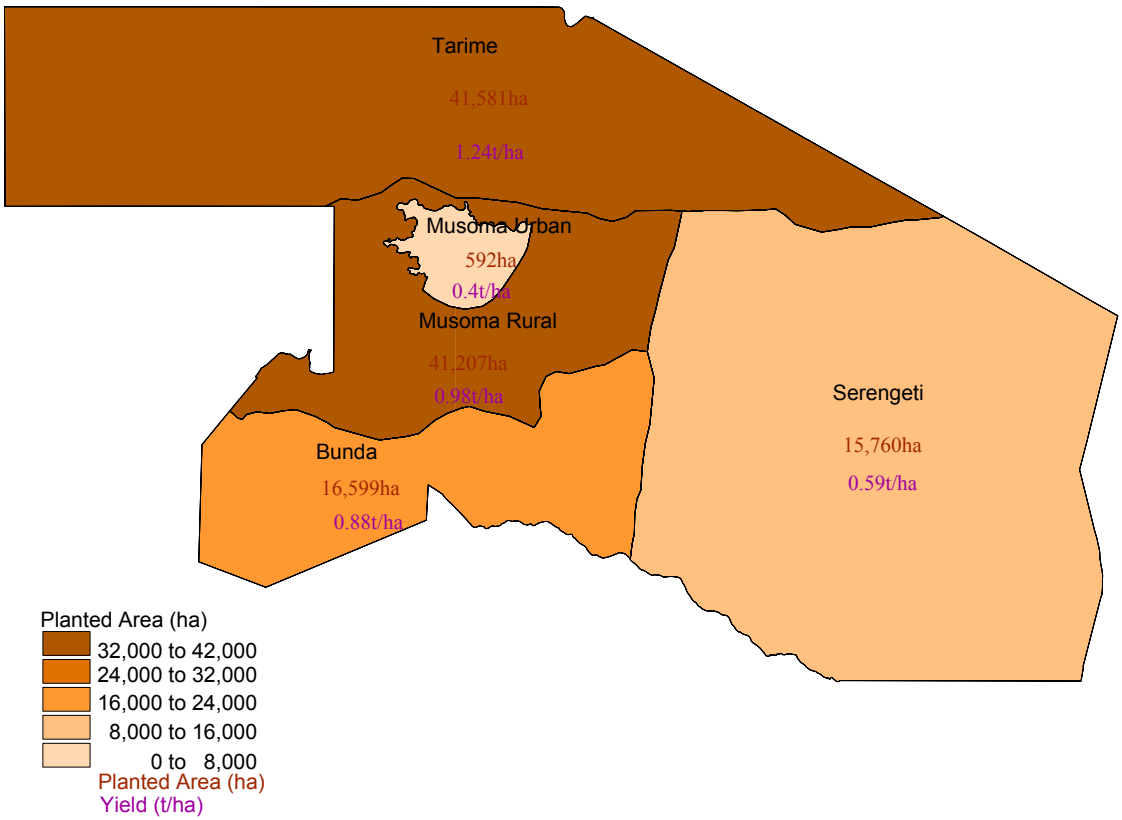
Previous censuses and surveys indicate that the area planted with cassava increased gradually over the period 1995 to 1998 after which it decreased in the year 1999 after which there was a small increase in year 2003 (Chart 3.28).



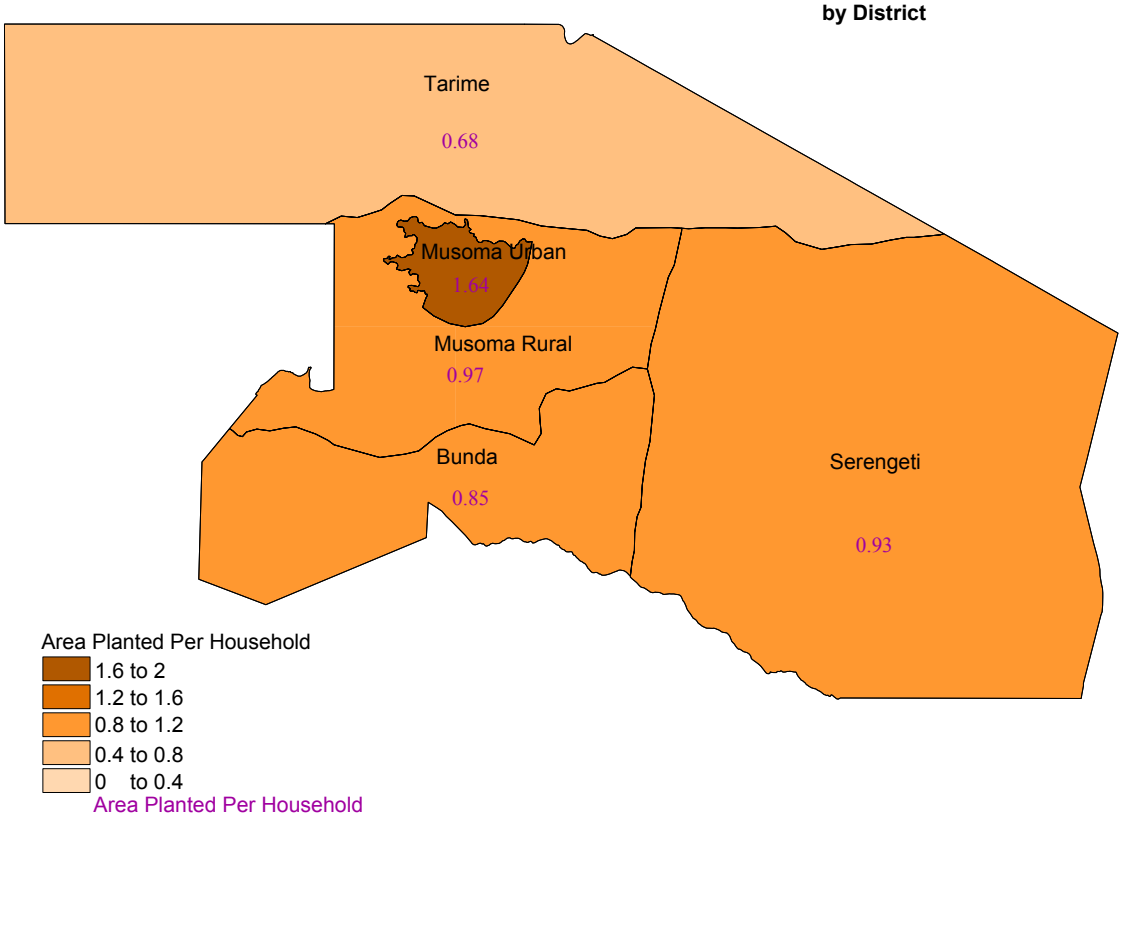


The area planted with cassava accounted for 34.7 percent of the total area planted with annual crops and vegetables in the census year. Tarime district had the largest planted area of cassava (41,581 ha, 35.9% of the cassava planted area in the region), followed by Musoma Rural (41,207 ha, 35.6 %), Bunda (16,599 ha, 14.3%), Serengeti (15,760 ha, 13.6%) and Musoma Urban (592 ha, 0.5%) (Map 3.15). However, the percent of the total with cassava for Musoma Urban is comparably high and is considered as unrepresentative due to the small number of observations in the district. The second highest proportion of land planted with cassava, was Musoma Rural district (46.8%), followed by Tarime (36.1%), Bunda (25.8%) and Serengeti (24.2%) (Chart 3.29).

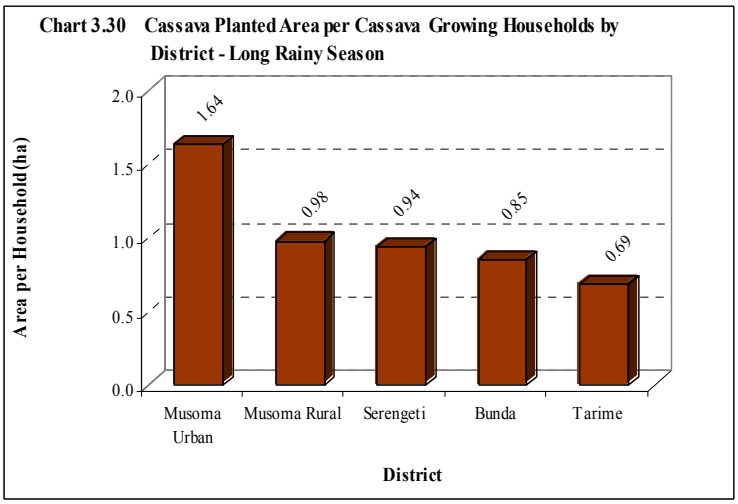
MAP 3.15 MARA
Planted Area and Yield of Cassava
by District



MAP 3.16 MARA
Area Planted Per Cassava
Growing Household
by District



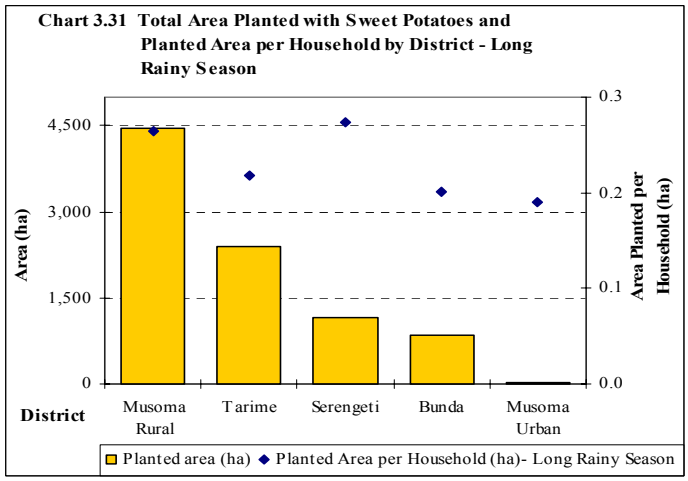
The average cassava planted area per cassava growing households was 0.83 hectares. However, with exception of Musoma Urban, there were small district variations in average area planted with cassava per household among the rest of the districts. The largest planted area per cassava growing household was found in Musoma Urban (1.64 ha). This is followed by Musoma Rural (0.98 ha), Serengeti (0.94 ha), Bunda (0.85 ha) and Tarime (0.69 ha) (Chart 3.30 and Map 3.16).



Sweet Potatoes

The number of households growing sweet potatoes in Mara region during the long rainy season was 36,514 (19.3% of the total crop growing households in the region). The total production of sweet potatoes during the census year was 43,234 tonnes from a planted area of 16,621 hectares resulting in a yield of 2.6 t/ha.

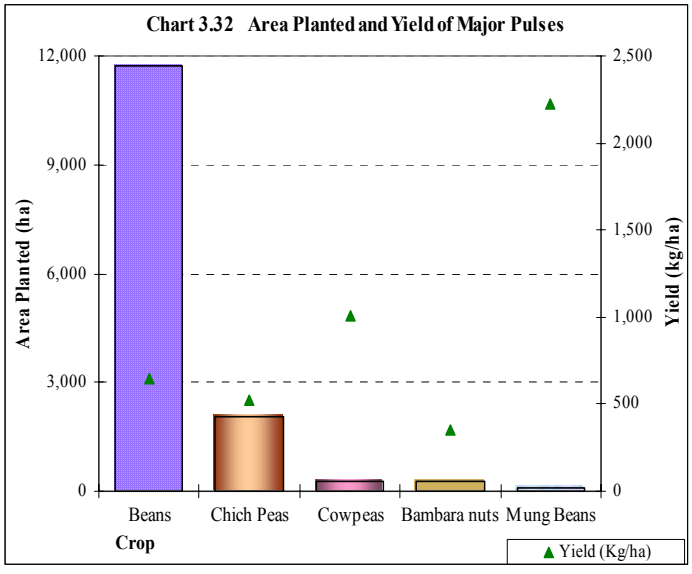
The district with the largest planted area with sweet potatoes was Musoma Rural (7,458 ha, 44.9%), followed by Tarime (4,347 ha, 26.2%), Bunda (2,633 ha, 15.8%), Serengeti (2,119 ha, 12.7%) and Musoma Urban (63 ha, 0.4).



However, the largest planted area per sweet potato growing household during the long rainy season was found in Serengeti (0.27 ha, followed by Musoma Rural (0.26 ha), Tarime (0.22 ha), Bunda (0.200 ha), and Musoma Urban (0.19ha) (Chart 3.31).

3.3.6 Pulse Crops Production

The total area planted with pulses was 14,438 hectares out of which 11,726 ha were planted with beans (81.2 percent of the total area planted with pulses), followed by chick peas (2,070 ha, 14.3%), cowpeas (278 ha, 1.9%), bambaranuts (256 ha, 1.8%) and mung beans (108 ha, 0.7%)(Chart 3.32).



The area planted with pulses in the short rainy season was 6,799 ha which represented 47.1 percent of total area planted with pulses during the year. Beans were the dominant pulse crop grown during the short rainy

season with 6,383 ha (93.9 % of the total area planted with pulses in that particular season), followed by chick peas (186 ha, 2.7%), bambaranuts (134 ha, 2.0%) and cowpeas (97 ha, 1.4%). Mung beans were not grown in the short rainy season. Beans were also the dominant pulse crop grown during the long rainy season in Mara region (Table 3.4).

Table 3.4: Area, Quantity and Yield of Pulses by Season

Crop	Short Rainy Season			Long Rainy Season			Total		
	Area Planted (ha)	Quantity Harvested (tons)	Yield (kg/ha)	Area Planted (ha)	Quantity harvested (tons)	Yield (Kg/ha)	Area Planted (ha)	Quantity Harvested (tons)	Yield (Kg/ha)
Mung Beans	0	0	0	108	240	2,223	108	240	2,223
Beans	6,383	4,093	641	5,343	3,519	659	11,726	7,612	649
Cowpeas	97	22	228	181	258	1,425	278	280	1,008
Chich Peas	186	123	661	1,884	950	504	2,070	1,073	518
Bambaranuts	134	57	430	122	33	266	256	90	351
Total	**6,799**	**4,295**		**7,639**	**4,999**		**14,438**	**9,295**	

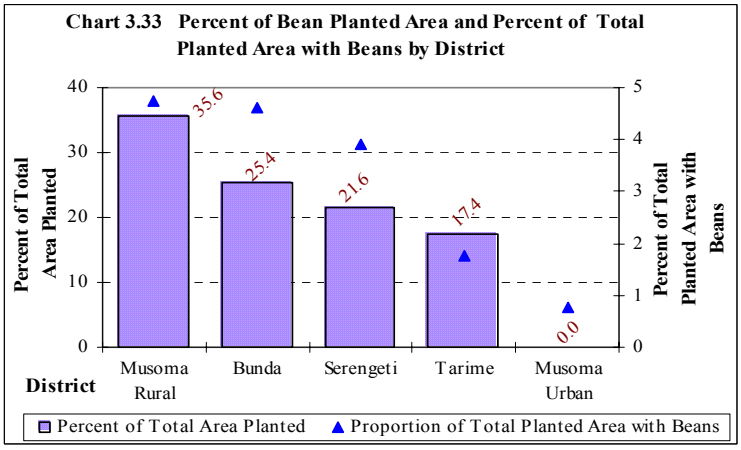
The total production of pulses was 9,295 tonnes. Beans were the most cultivated crop producing 7,612 tonnes which accounted for 82 percent of the total pulse production. This was followed by chick peas (1,073t, 12%), cow peas (280t, 3%), mung beans (240t, 2.6%) and bambara nuts (90t, 1.0%). The yield for mung beans is very high and this may be the results of the small number of observations involved, however cow peas had a relatively high yields of 1,008 kgs/ha. The yields of the rest of the pulses in kilograms per hectare were beans 649 kgs/ha, chick peas 518 kgs/ha and bambara nuts 351 kgs/ha. (Table 3.4)

3.3.6.1 Beans

Beans dominated the production of pulse crops in the region. The number of households growing beans in Mara region during the long rainy season was 20,683. The total production of beans in the region was 7,612 tonnes from a planted area of 11,726 hectares resulting in a yield of 0.65 t/ha.

The largest planted area with beans in the region was in Musoma Rural district (4,173 ha, 35.6%), followed by Bunda (2,974 ha, 25.4%), Serengeti (2,538 ha, 21.6%), Tarime (2,035 ha, 17.4%) and Musoma Urban (6 ha, 0.05%) (Chart 3.33 and Map 3.17).

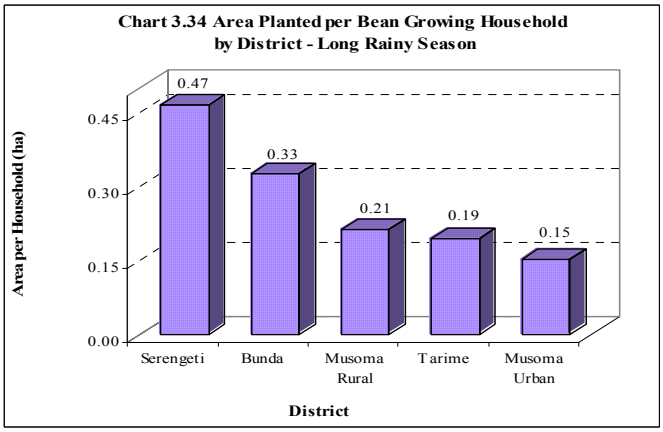
Chart 3.33 Percent of Bean Planted Area and Percent of Total Planted Area with Beans by District



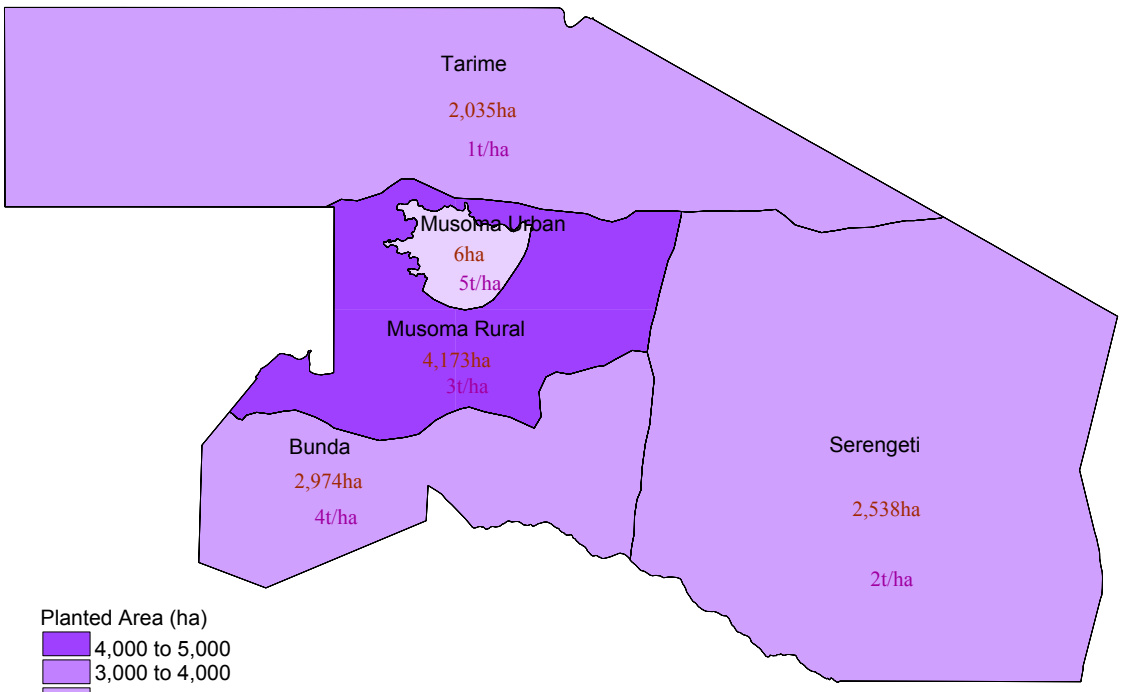
The average area planted per household in the region during the long rainy season was 0.26 ha. However, there were great variations in the area planted with beans per household among the districts ranging from 0.47 ha in Serengeti district to 0.15 ha in Musoma Urban district.

The district with the largest area planted with beans per household was Serengeti (0.47 ha), followed by Bunda (0.33 ha), Musoma Rural (0.21 ha), Tarime (0.19 ha) and Musoma Urban (0.15 ha) (Chart 3.34 and Map 3.18).

Chart 3.34 Area Planted per Bean Growing Household by District - Long Rainy Season



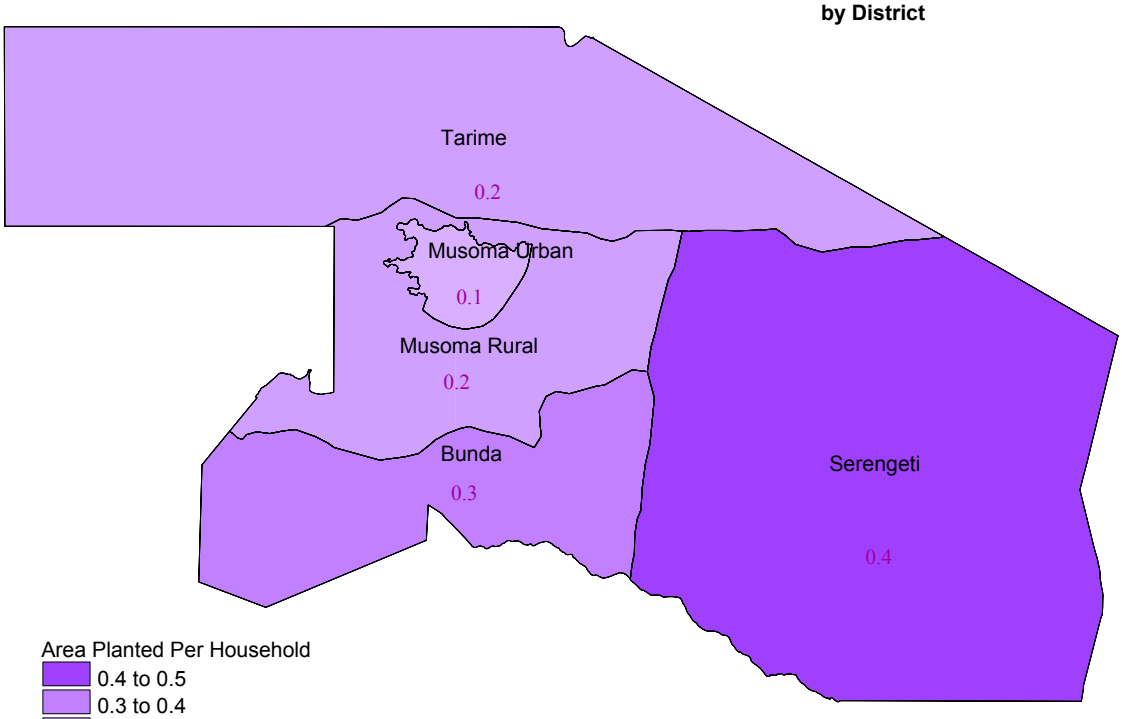
MAP 3.17 MARA
Planted Area and Yield of Beans
by District



Planted Area (ha)
- 4,000 to 5,000
- 3,000 to 4,000
- 2,000 to 3,000
- 1,000 to 2,000
- 0 to 1,000

Planted Area (ha)
Yield (t/ha)

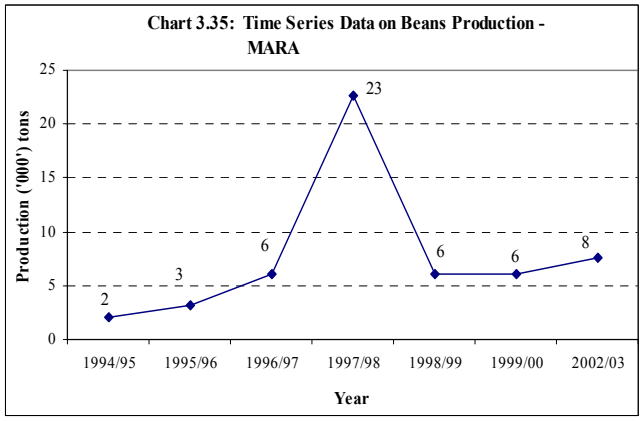
MAP 3.18 MARA
Area Planted Per Beans
Growing Household
by District

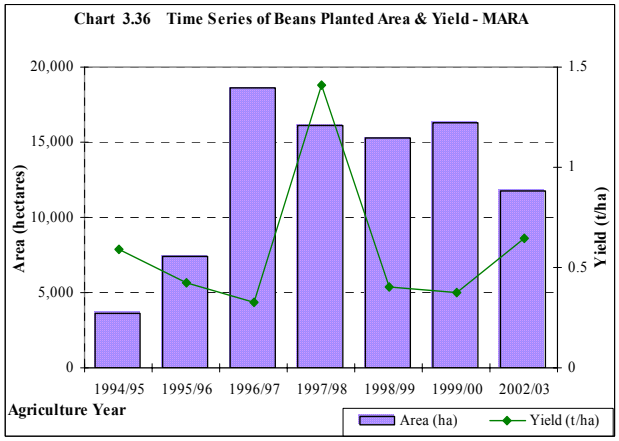


Area Planted Per Household
- 0.4 to 0.5
- 0.3 to 0.4
- 0.2 to 0.3
- 0.1 to 0.2
- 0 to 0.1

Area Planted Per Household

Apart from a large increase in the quantity of beans produced in the region during 1997/98, there has been a gradual increase in production from 2,000 tonnes in 1994 to 8,000 tonnes in 2003. The reason for the peak in 1997/98 may be due to the El - Nino or it may be the result of the sampling technique used that year (Chart 3.35).





The area planted with beans increased sharply over the period from 1995 to 1997 and has remained constant up to the year 2000. The planted area has declined slightly over the period 2000 to 2003 (Chart 3.36).

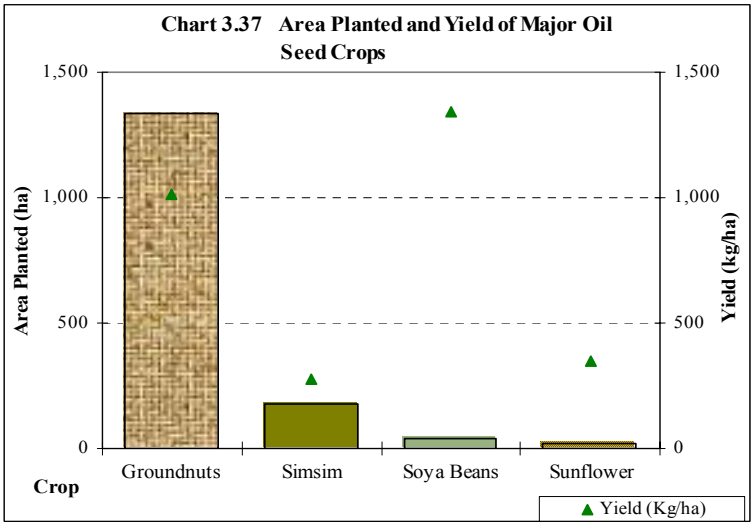
3.3.7 Oil Seed Production

The total production of oilseed crops was 1,459 tonnes planted on an area of 1,572 hectares. The total planted area with oilseeds in the long rainy season was 695 ha representing 44.2 percent of the total area planted with oil seeds.

Table 3.5: Area, Quantity Harvested and Yield of Oil Seed Crops by Season

Crop	Short Rainy Season			Long Rainy Season			Total		
	Area Planted (ha)	Quantity Harvested (tons)	Yield (kg/ha)	Area Planted (ha)	Quantity harvested (tons)	Yield (Kg/ha)	Area Planted (ha)	Quantity Harvested (tons)	Yield (Kg/ha)
Sunflower	21	7	346	0	0	0	21	7	346
Simsim	73	21	293	103	27	262	176	48	275
Groundnuts	761	797	1,047	577	555	964	1,337	1,352	1,011
Soya Beans	22	27	1,235	16	24	1,482	38	51	1,341
Total	**877**	**853**		**695**	**607**		**1,572**	**1,459**	

Groundnuts were the most important oilseed crop with 1,337 ha (85.0% of the total area planted with oil seeds), followed by simsim (176 ha, 11.2%), soya beans (38 ha, 2.4%) and sunflower (21 ha, 1.3%). The yield of soya beans was high (1,341 kg/ha), that of groundnuts was 1,011 kg/ha, for sunflower it was 346 kg/ha) and for simsim it was 275 kg/ha (Chart 3.37).

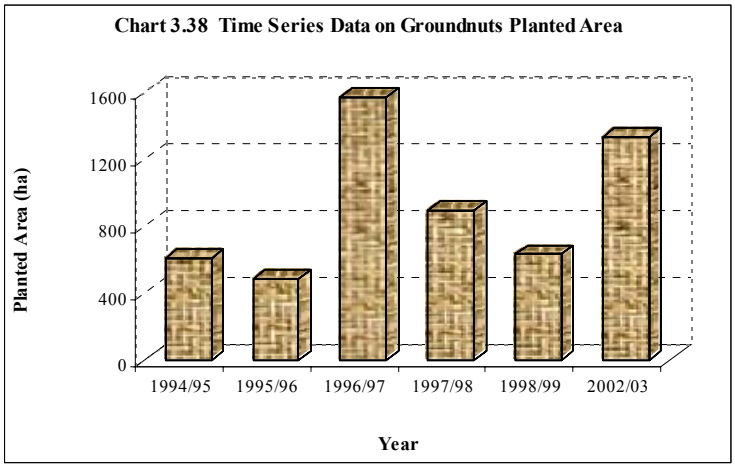


The production of groundnut was 1,352 tonnes accounting for 92.7 percent of the total production of oil seeds, followed by soya beans (57 ha, 3.5%), simsim (48 ha, 3.3%) and sunflower (7 ha, 0.5%). (Table 3.5)

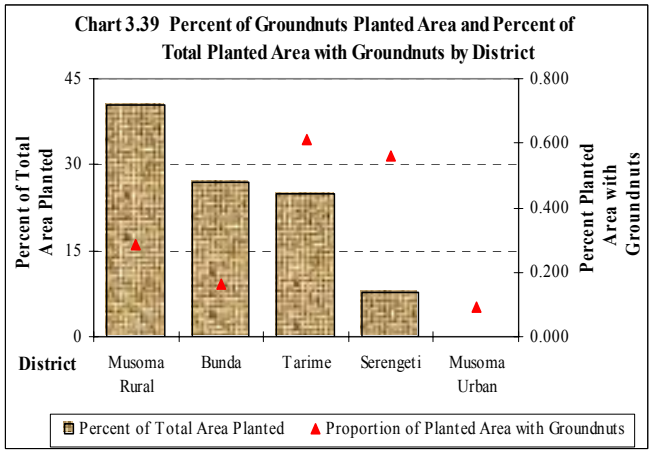
Groundnuts

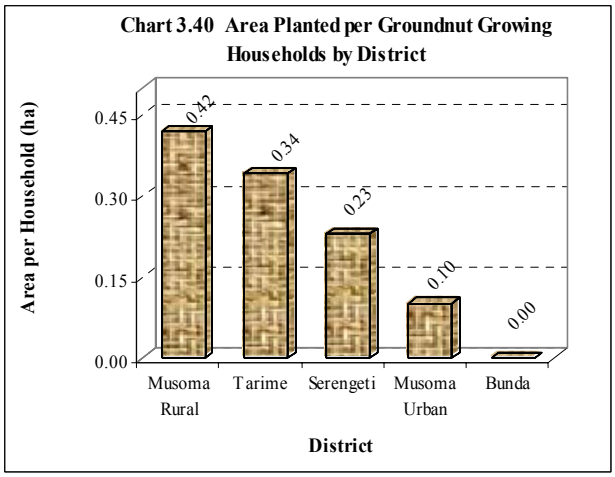
The number of households growing groundnuts in Mara region during the short rainy season was only 1,978. The total production of groundnuts in the region was 1,352 tonnes from a planted area of 1,337 hectares resulting in a yield of 1.0 t/ha.

With exception of the year 1997 and 2003 in which the area planted were 1,571 and 1,337 hectares respectively, the area planted with groundnut from 1995 to 2003 in Mara region has remained almost constant at around 650 hectares (Chart 3.38).



Fourty percent of the area planted with groundnuts was located in Musoma Rural district (539 ha) followed by Bunda (361ha, 27.0%), Tarime (332 ha, 24.8%), Serengeti (105 ha, 7.8%) and Musoma Urban (1 ha, 0.05%) (Map 3.19). The district with the highest proportion of land for groundnuts was Tarime, followed by Serengeti, Musoma Rural, Bunda and Musoma Urban (Chart 3.39 and Map 3.19).



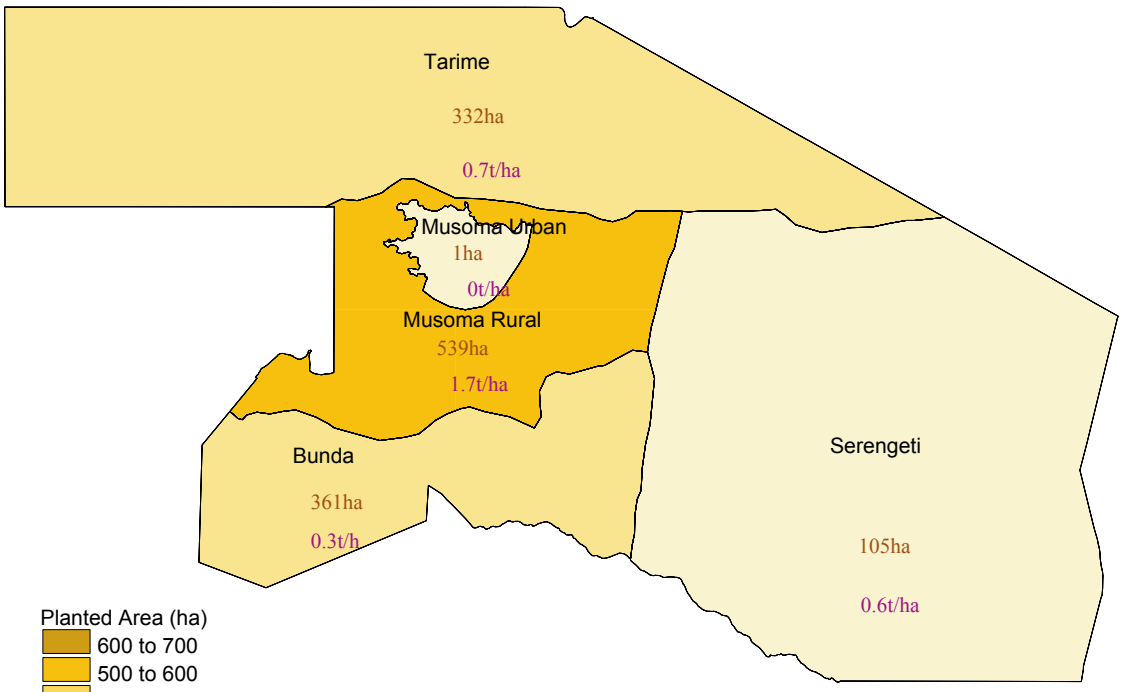


The area planted per groundnut growing household was largest in Musoma Rural district (0.42 ha) and the lowest in Bunda (0.00). The planted area with groundnuts per housegold in other districts range from 0.34 ha in Tarime to 0.23 ha in Serengeti and 0.10 ha in Musoma Urban (Chart 3.40 and Map 3.20).

3.3.8 Fruits and Vegetables

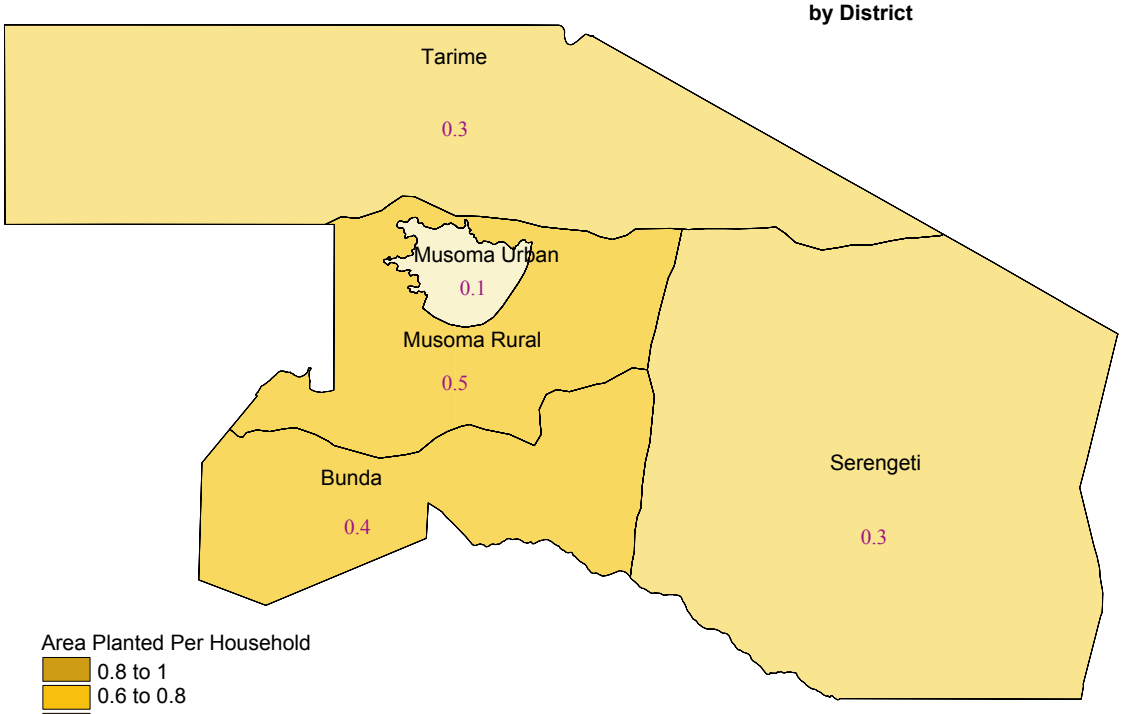
The collection of fruit and vegetable production data was difficult due to the small quantities produced per household. Most of the data presented here gives the production of small holders who grew these crops as cash crops and not merely for household consumption. Most fruit production is from permanent crops. Both short and long rainy seasons are almost equally important in fruit and vegetable production. While 43 percent of the total planted area with fruits and vegetables was found in the short rainy season, 57 percent was in the long rainy season. While 100 percent of the planted area for bitter aubergine, garlic, cucumber and water mellon was produced during the short rainy season, 100 percent of ginger was produced during the long rainy season. The rest of the fruit and vegetables were produced in both seasons. Reliable historical data for time series analysis of fruit and vegetables were not available

MAP 3.19 MARA
Planted Area and Yield of Groundnuts
by District



Planted Area (ha)
600 to 700
500 to 600
400 to 500
200 to 400
0 to 200
Planted Area (ha)
Yield (t/ha)

MAP 3.20 MARA
Area Planted per Groundnuts
Growing Household
by District



Area Planted Per Household
0.8 to 1
0.6 to 0.8
0.4 to 0.6
0.2 to 0.4
0 to 0.2
Area Planted Per Household

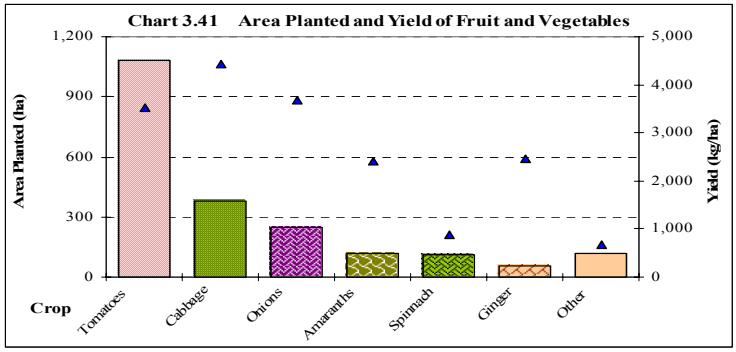
The total production of fruits and vegetables was 6,981 tonnes. The most cultivated fruit and vegetable crop was the tomato with a production of 3,801 tonnes (54% of the total fruits and vegetables produced), followed by cabbage (1,683t, 24%) and onions (906t, 13%). The production of the other fruit and vegetable crops was relatively small (Table 3.6).

Table 3.6: Area, Production and Yield of Fruits and Vegetables by Season

Crop	Short Rainy season			Long Rainy season			Total		
	Area Planted (ha)	Quantity Harvested (tons)	Yield (kg/ha)	Area Planted (ha)	Quantity harvested (tons)	Yield (Kg/ha)	Area Planted (ha)	Quantity Harvested (tons)	Yield (Kg/ha)
Bitter Aubergine	16	16	988	0	0	0	16	16	988
Garlic	27	0	0	0	0	0	27	0	0
Onions	95	362	3,829	152	544	3,578	247	907	3,674
Cabbage	123	333	2,702	257	1,350	5,249	381	1,683	4,423
Tomatoes	479	1,603	3,346	603	2,198	3,647	1,082	3,801	3,514
Spinnach	53	48	889	58	49	853	111	97	871
Amaranths	57	51	896	59	228	3,857	116	279	2,404
Pumpkins	12	1	59	12	2	158	24	3	109
Cucumber	24	24	1,039	0	0	0	24	24	1,039
Water Mellon	29	37	1,263	0	0	0	29	37	1,263
Ginger	0	0	0	54	135	2,470	54	135	2,470
Total	**915**	**2,475**		**1,195**	**4,506**		**2,110**	**6,981**	

Cabbage had a yield of 4,423 kg/ha, onions 3,674 kg/ha, tomatoes 3,514 kg/ha and ginger 2,470 kg/ha. Spinnach and pumpkins had yields of 871 and 109 kg/ha respectively (Chart 3.41 and Table 3.6).

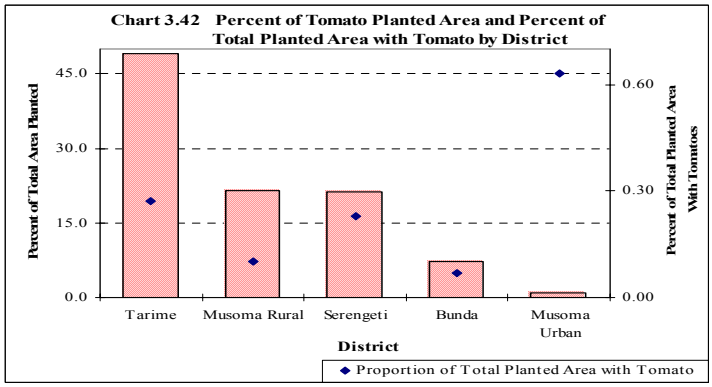
Chart 3.41 Area Planted and Yield of Fruit and Vegetables



Tomatoes

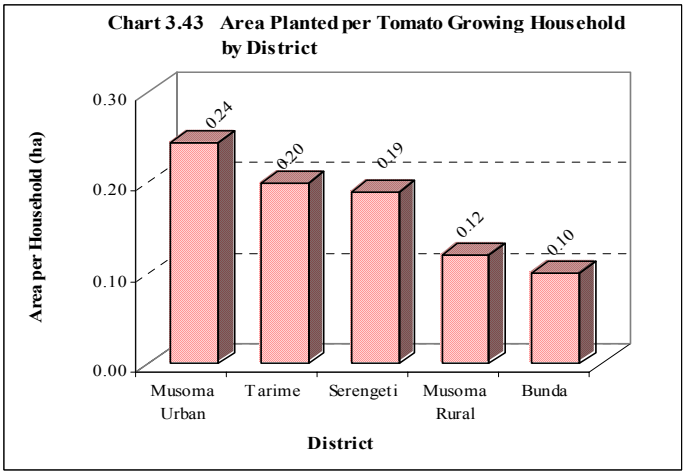
The number of households growing tomatoes in the region during the long rainy season was 3,662 which represent 2.9 percent of the total crop growing households in the region during the long rainy season.

Chart 3.42 Percent of Tomato Planted Area and Percent of Total Planted Area with Tomato by District



Tarime district had the largest planted area of tomatoes (49.2% of the total area planted with tomatoes in the region), followed by Musoma Rural (21.4%), Serengeti (21.3%), Bunda (7.1%) and Musoma Urban (1.0%) (Chart 3.42 and Map 3.21)

Chart 3.43 Area Planted per Tomato Growing Household by District



The proportion of total planted area with tomatoes in the region was very high in Musoma Urban district and this is probably the result of the small number of observations involved, however when compared with other districts in the region, Tarime had a relatively high proportion of its total planted area with tomatoes. This is followed by Serengeti, Musoma Rural and Bunda (Chart 3.42).

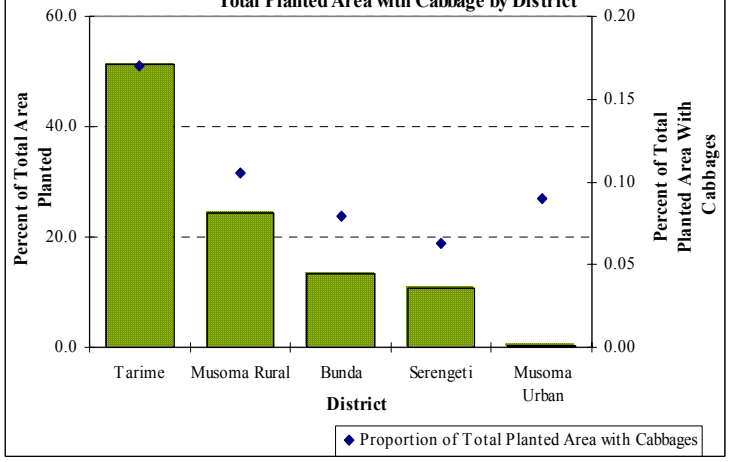
The distrct with the largest planted area per tomato growing household was in Musoma Urban district (0.24 ha), followed by Tarime (0.20 ha), Serengeti (0.19 ha), Musoma Rural (0.12 ha) and Bunda (0.10 ha) (Chart 3.43 and Map 3.22). The total area planted with tomatoes accounted for 0.3 percent of the total area planted with annual crops and vegetables during the short and long rainy seasons.

Cabbage

The number of households growing cabbages in the region during the long rainy season was 1,491 and 1,008 in the short rainy season. This represented 1.2 percent of the total crop growing households in the region in the long rainy season and 0.8 percent in the short rainy season.

Tarime district had the largest planted area of cabbage (196 ha, 51.4% of the total area planted with cabbage in the region), followed by Musoma Rural (92 ha, 24.3%), Bunda (51 ha, 13.4%), Serengeti (41 ha, 10.7%) and Musoma Urban (1 ha, 0.2%) (Chart 3.44 and Map 3.23 and 3.24). The total area planted with cabbages accounted for 0.1 percent of the total area planted with annual crops and vegetables during the short and long rainy seasons.

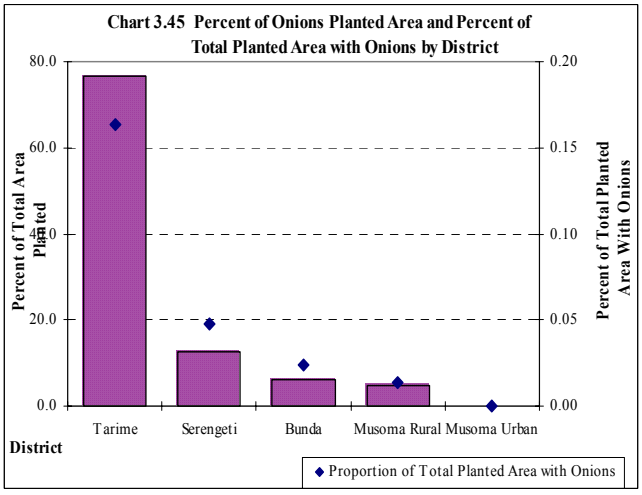
Chart 3.44 Percent of Cabbage Planted Area and Percent of Total Planted Area with Cabbage by District



Onions

The number of households growing onions in the region during the long rainy season was 1,010 households and 538 in the short rainy season. This represented 0.81 percent of the total crop growing households in the region in the long rainy season and 0.42 percent in the short rainy season. Tarime district had the largest planted area of onions (189 ha, 76.5% of the total area planted with onions in the region), followed by Serengeti (31 ha, 12.5%), Bunda (15 ha, 6.3%) and Musoma Rural (12 ha, 4.7%). There was no onion production in Musoma Urban district (Map 3.25 and 3.26).

Chart 3.45 Percent of Onions Planted Area and Percent of Total Planted Area with Onions by District

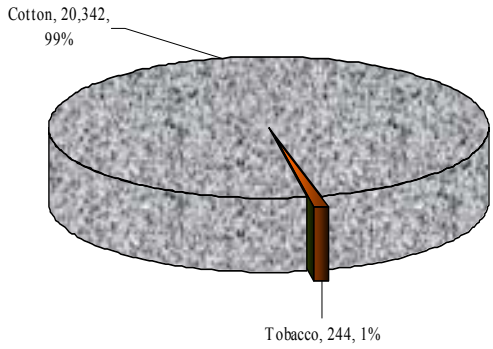


The total area planted with onions accounted for 0.07 percent of the total area planted with annual crops and vegetables during the short and long rainy seasons.

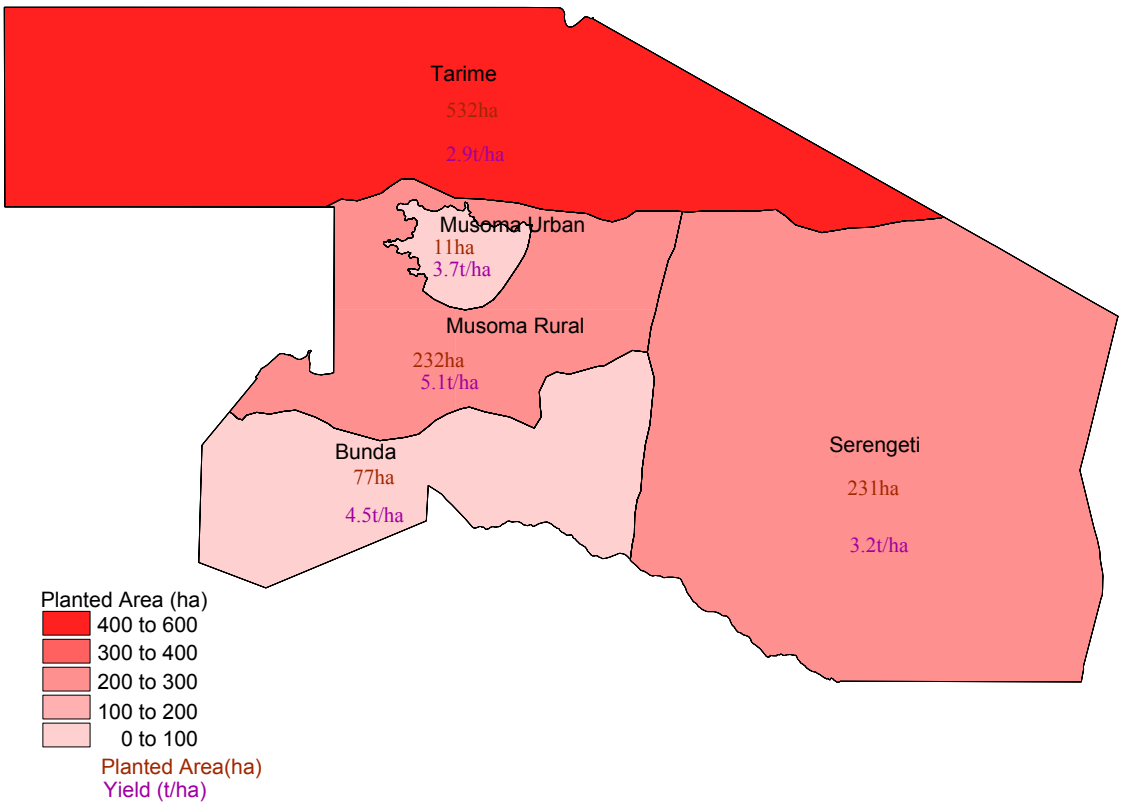
3.3.9 Other Annual Crop Production

Most of the other annual crops are cash crops. An area of 20,587 ha was planted with other annual crops mainly cotton and tobacco representing 6.2 percent of total planted area in the region. The area planted with annual cash crops in the short rainy season was 18,628 ha which represents 15.5 percent of the total area planted with annual crops in short rainy season. The area planted with annual cash crops in long rainy season was 1,959 ha representing 0.9 percent of the total area planted with annual crops during the long rainy season

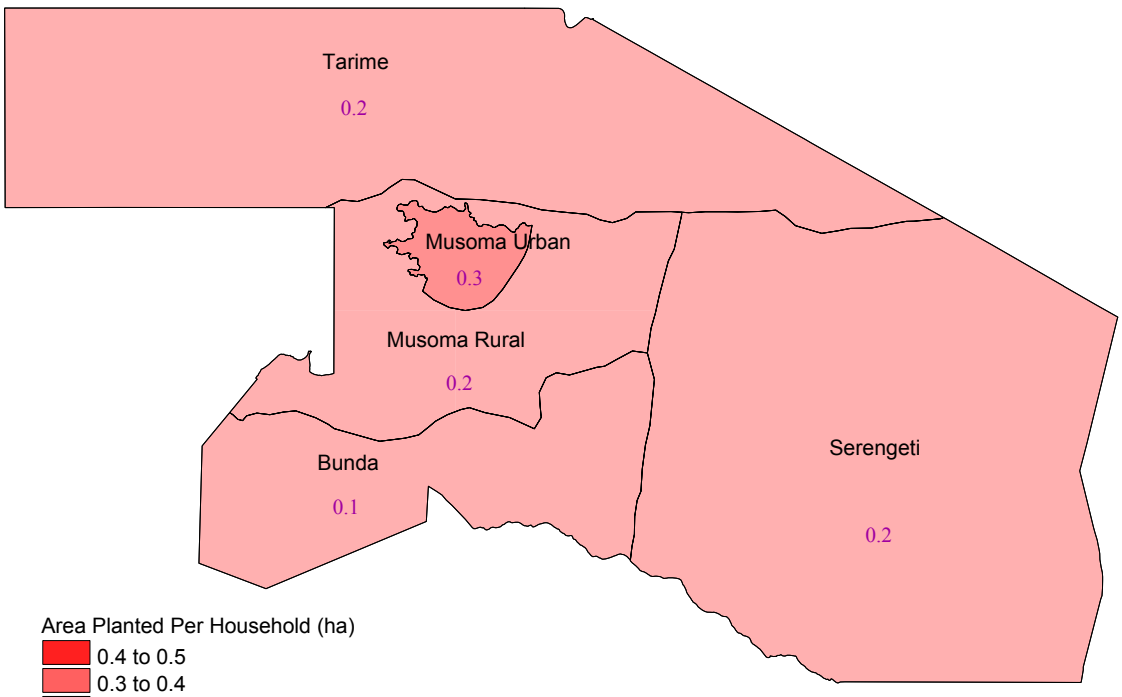
Chart 3.46 Area planted with Annual Cash Crops



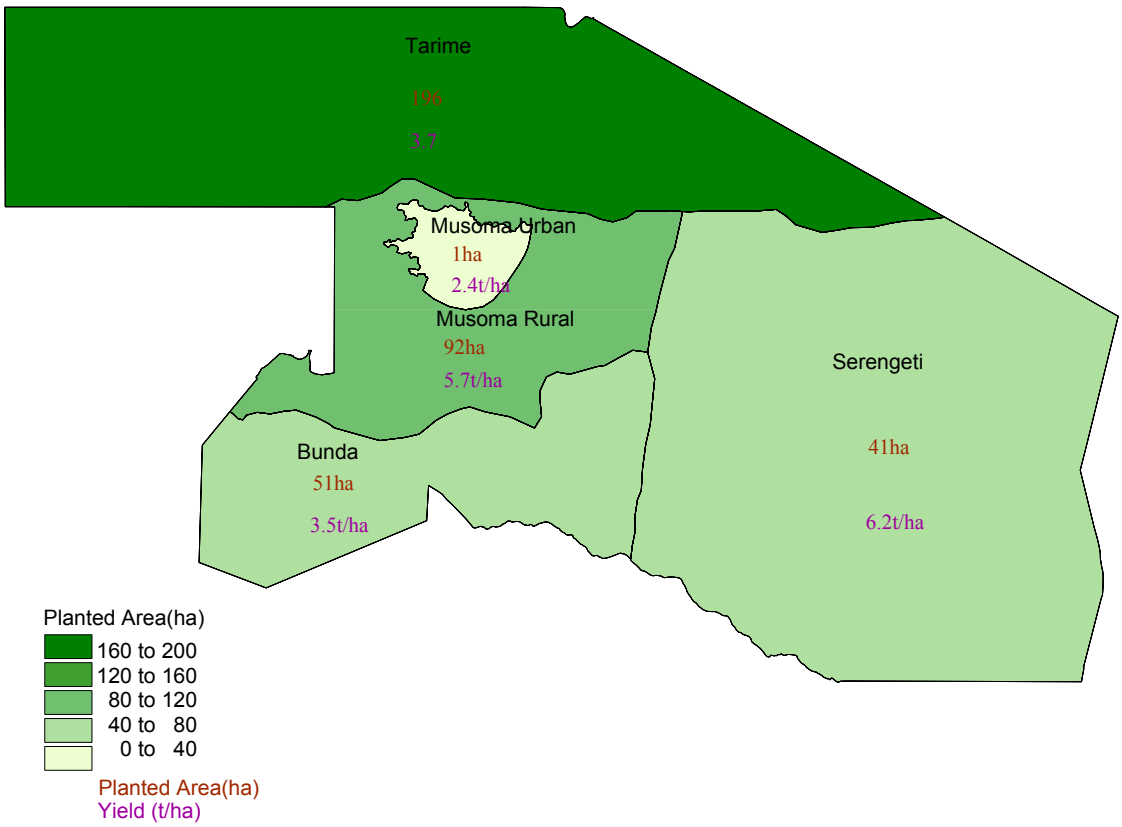
MAP 3.21 MARA
Planted Area and Yield of Tomatoes by District



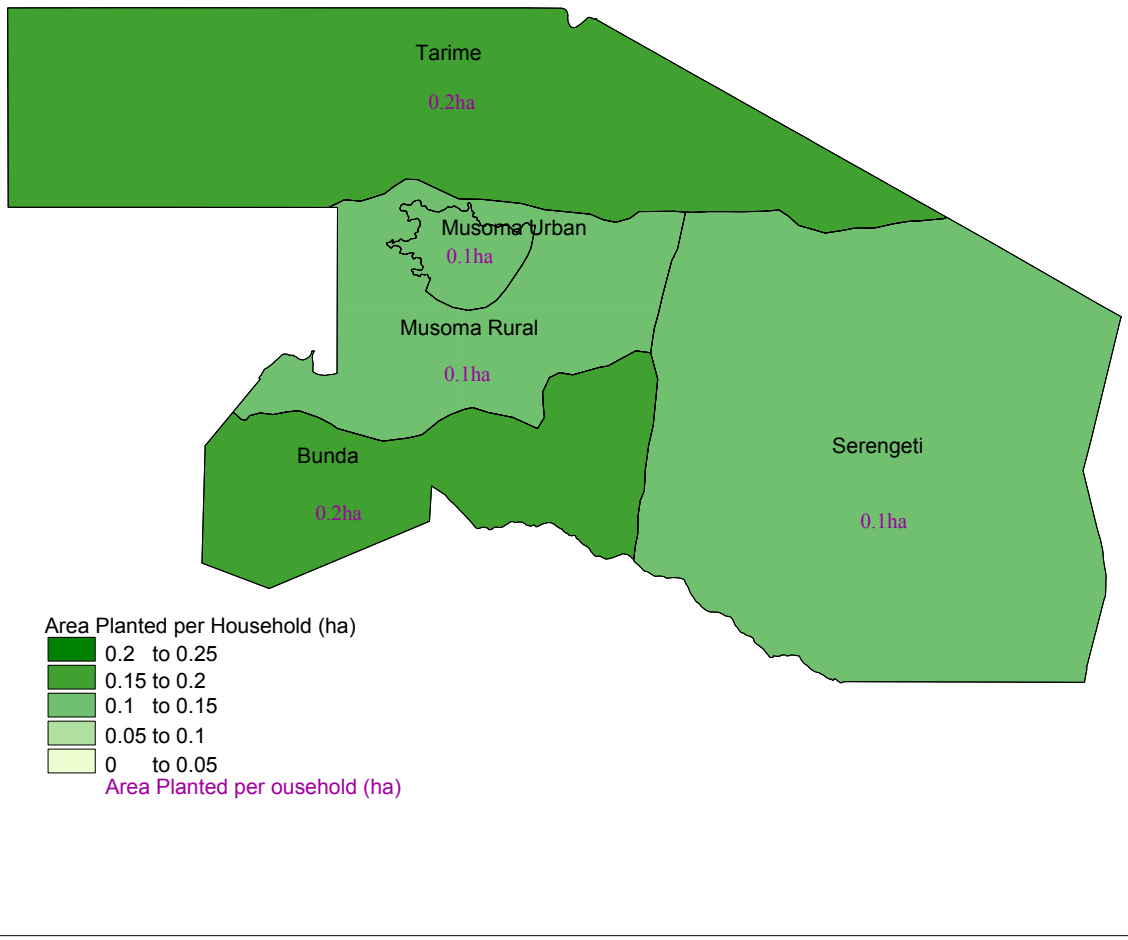
MAP 3.22 MARA
Area Planted Per Tomato Growing Household by District



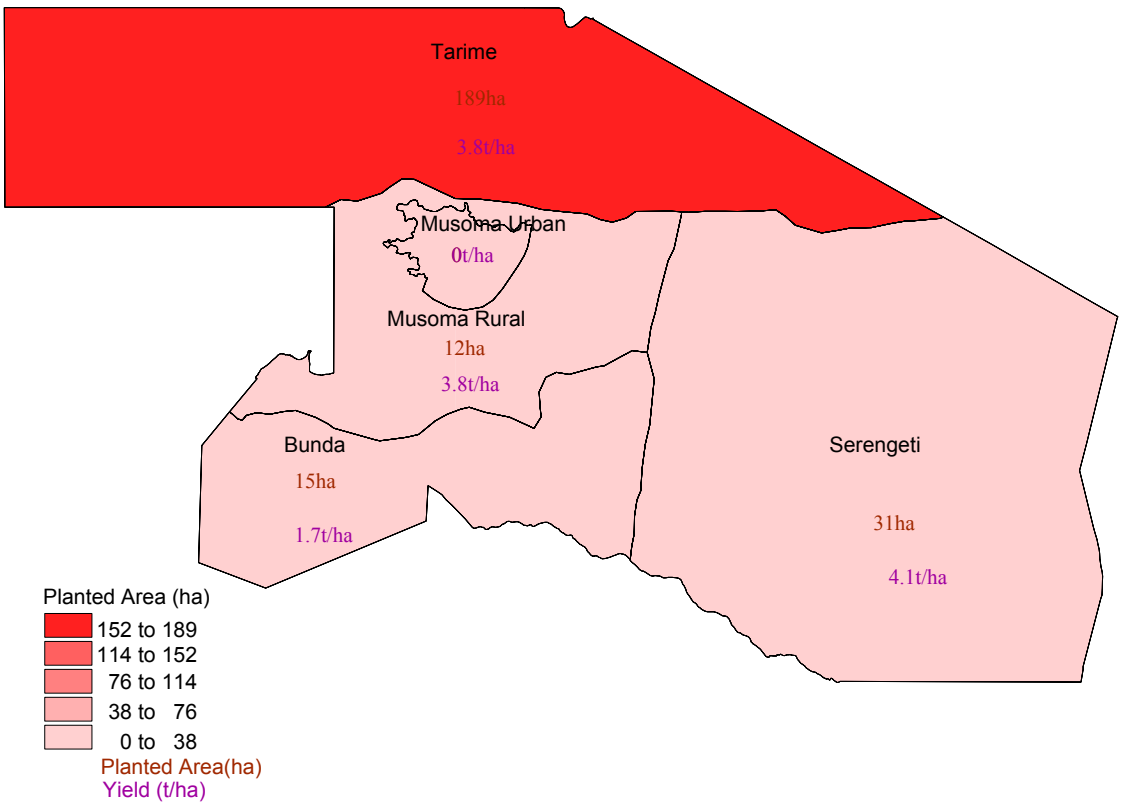
MAP 3.23 MARA
Planted Area and Yield of Cabbages by District



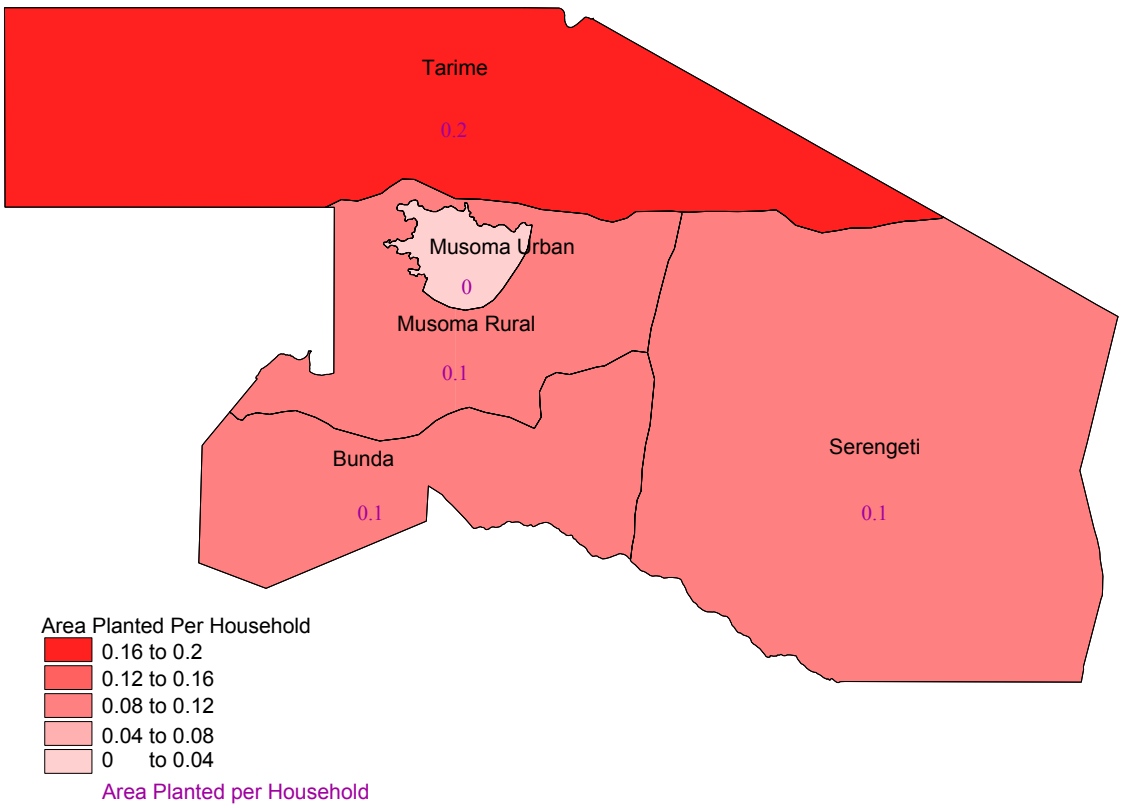
MAP 3.24 MARA
Area Planted Per Cabbage Growing Household by District



MAP 3.25 MARA
Planted Area and Yield of Onions
by District

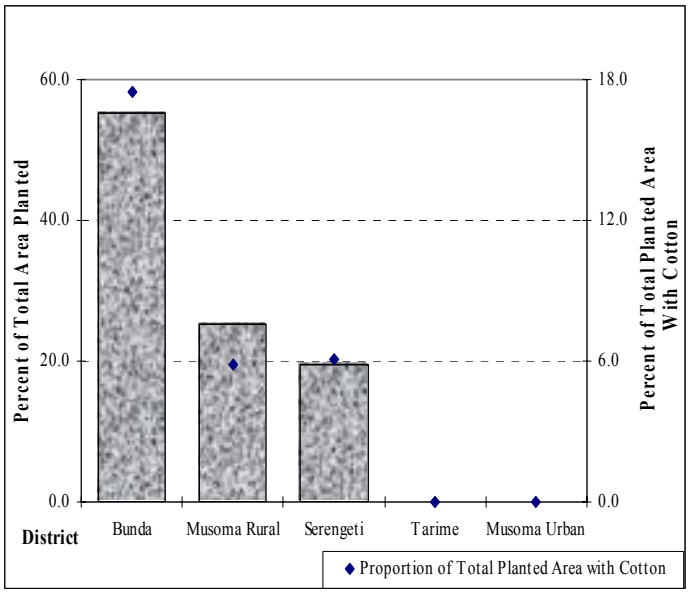


MAP 3.26 MARA
Area Planted Per Onions Growing
Household by District



Cotton

The quantity of cotton produced was 14,191 tonnes. Cotton had a total planted area of 20,342 ha (18,443 and 1,899 ha planted during short and long rainy seasons respectively). Cotton production is concentrated in 3 districts with Bunda having the largest planted area (55.3% of total area planted with cotton in the region), followed by Musoma Rural (25.2%) and Serengeti (19.5%) (Chart 3.47 Map 3.27 and 3.28).

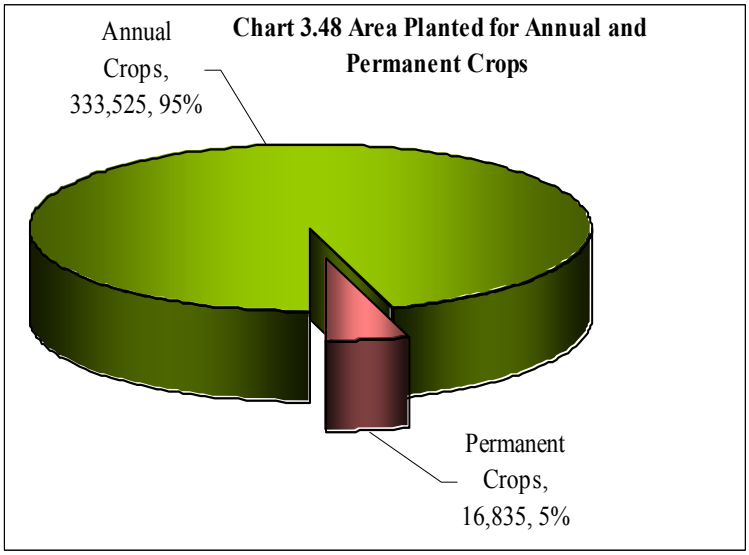


Tobbaco

Only 93 tonnes of tobacco were produced in Mara region from a planted area of 244 ha and virtually all of it was produced during the short rainy season. The crop is grown in Tarime, Musoma Rural and Serengeti districts (Map 3.29). The district with the largest planted area per household was Musoma Rural (0.8 ha), followed by Tarime (0.3 ha) and Serengeti (0.1 ha) (Map 3.30).

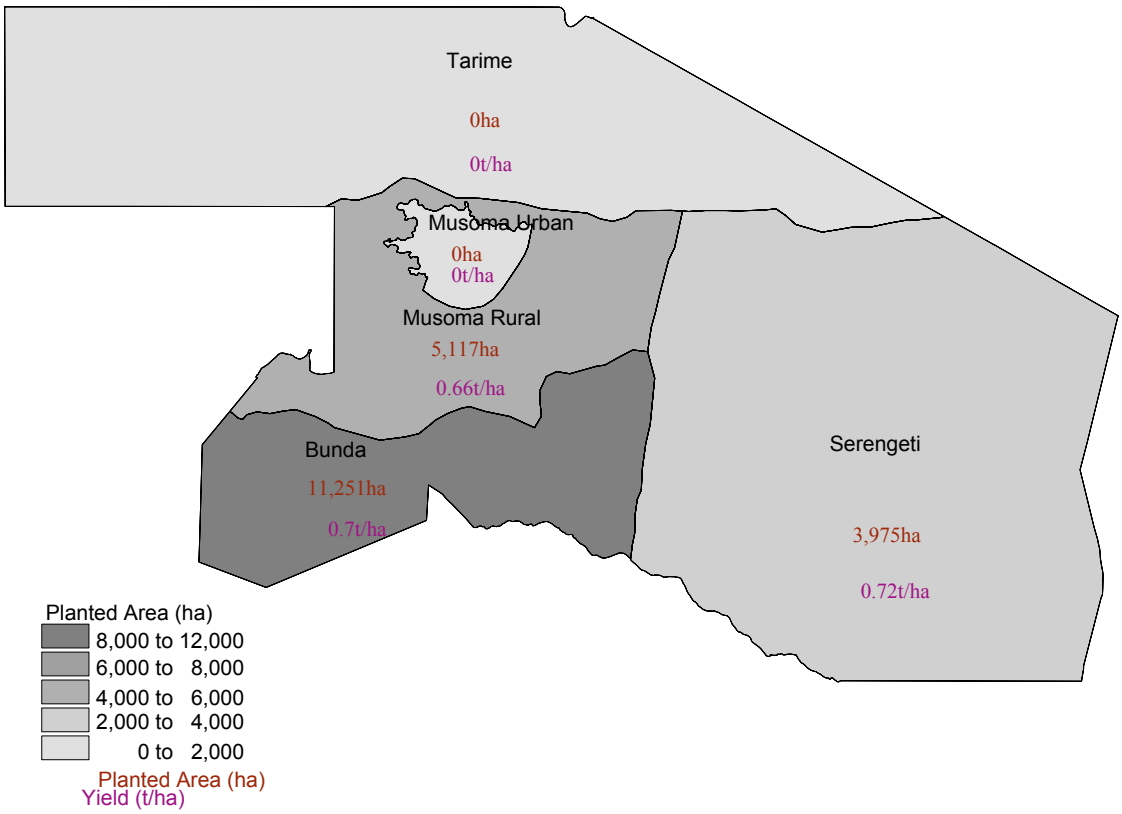
3.4 Permanent Crops

Permanent crops (sometimes referred as perennial crops) are crops that normally take over a year to mature and once mature can be harvest for a number of years. For most crops, it is easy to determine if they are annual or permanent. However, for crops like cassava and bananas the distinction is not so clear. Cassava has varieties that mature within a year and produces only one harvest, whilst other varieties survive for more than one year and produce several harvests. In this census, cassava was treated as an annual crop. Conversely, bananas normally take less than a year to mature, survive for more than one year and are thus treated as a permanent crops. In this report the agriculture census results are presented for the most important permanent crops in terms of area planted, production and yield. Previous censuses and surveys did not measure these variables for permanent crops, therefore no time series analysis is made in this section.

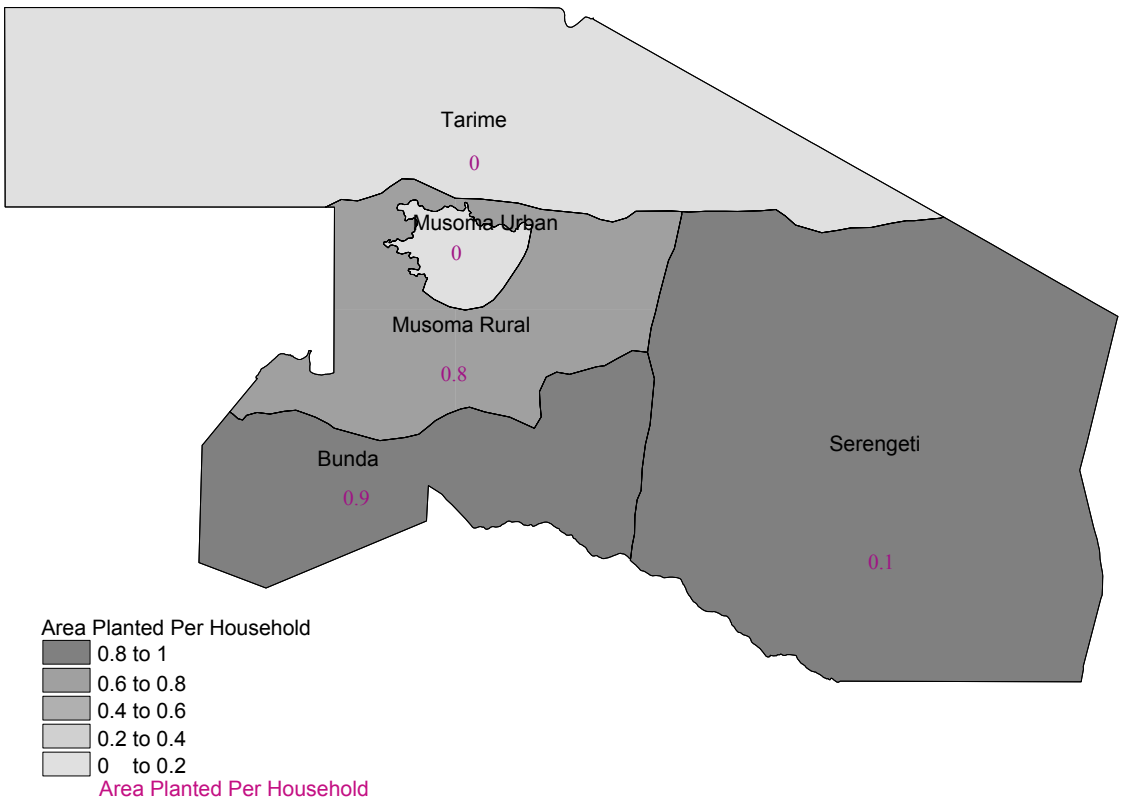


The smallholder planted area of permanent crops was 16,835 hectares (5% of the total plated area of annual and permanent crops in the region). However, the area planted with annual crops is not the actual physical land area as it includes the area of annual crops planted more than once on the same land, whilst the planted area for permanent crops is the same as physical planted land area. So the percentage area planted with permanent crops would be higher than indicated in Chart 3.48.

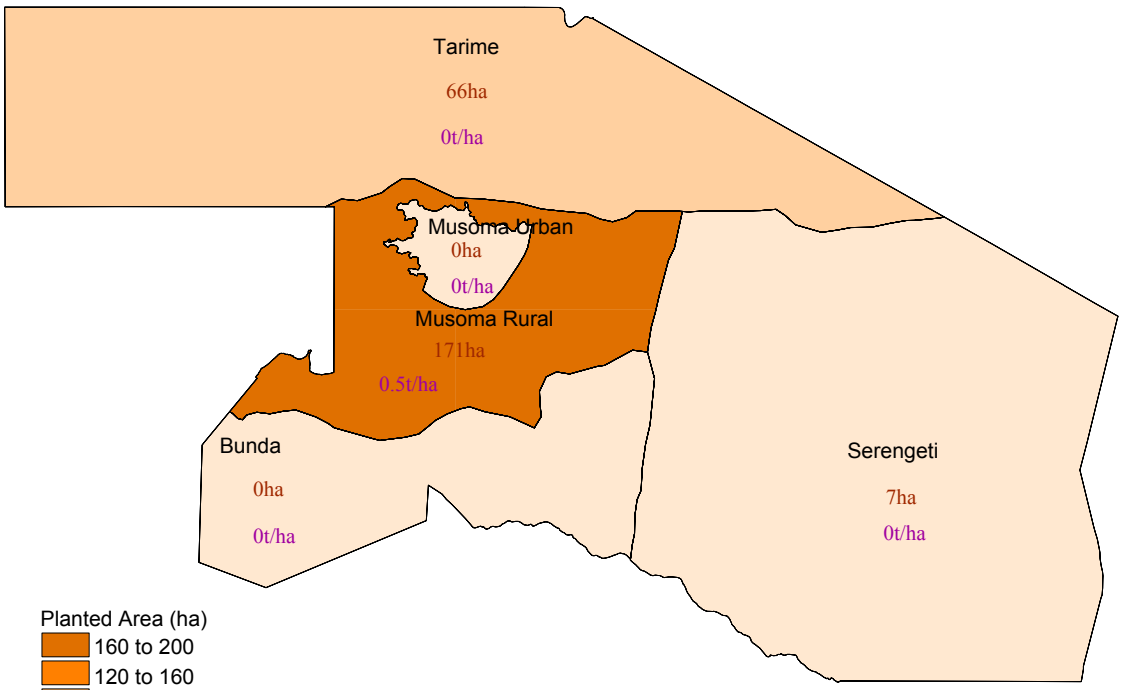
MAP 3.27 MARA
Planted Area and Yield of Cotton by District



MAP 3.28 MARA
Area Planted per Cotton Growing Household by District

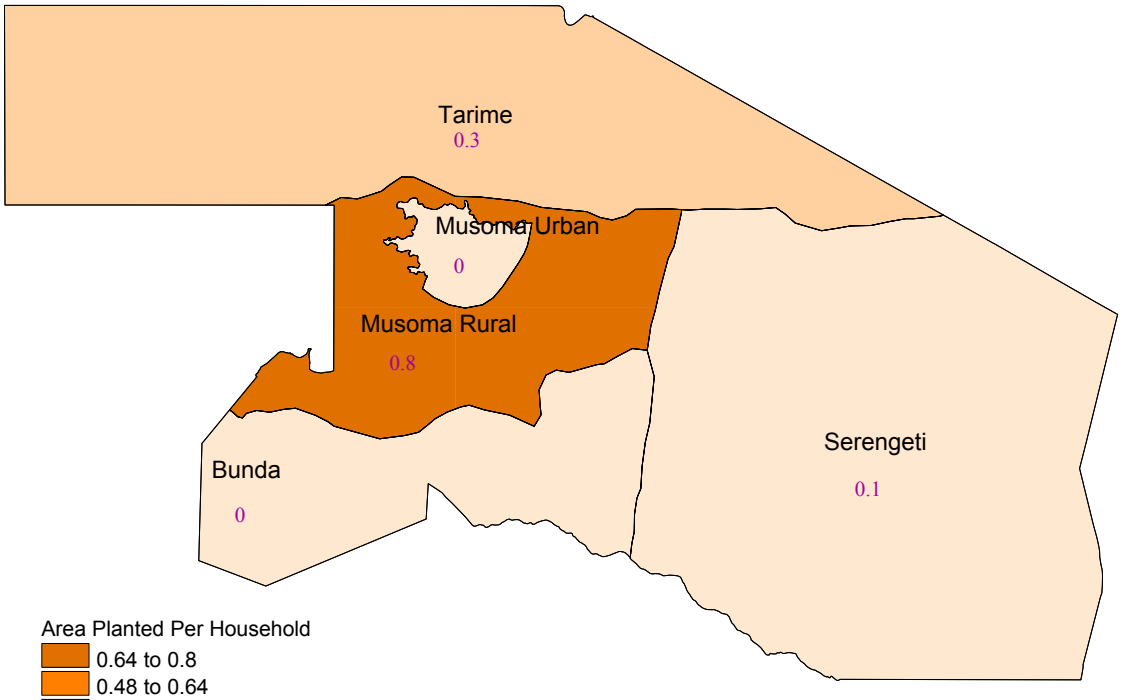


MAP 3.29 MARA
Planted Area and Yield of Tobbaco by District



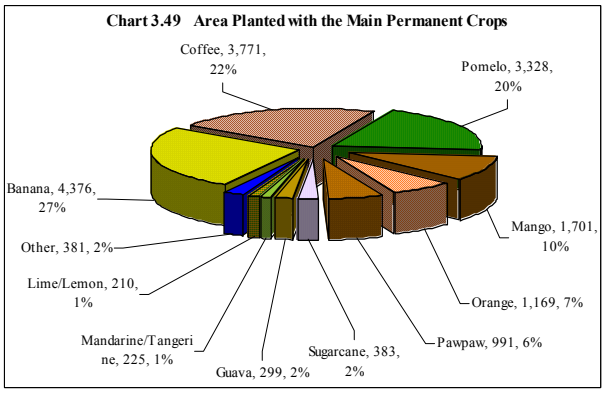
Planted Area (ha)
160 to 200
120 to 160
80 to 120
40 to 80
0 to 40
Planted Area (ha)
Yield (t/ha)

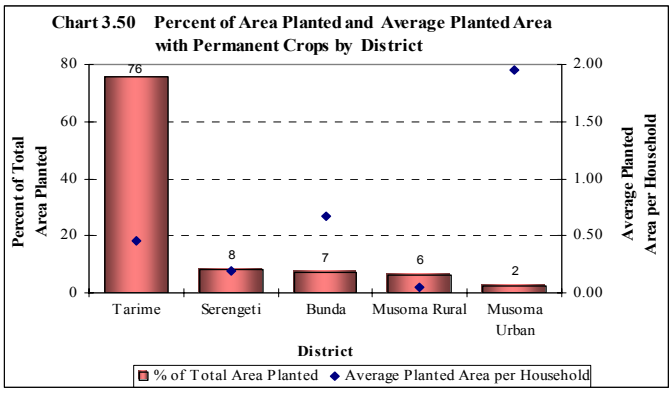
MAP 3.30 MARA
Area Planted Per Tobbaco Growing Households by District



Area Planted Per Household
0.64 to 0.8
0.48 to 0.64
0.32 to 0.48
0.16 to 0.32
0 to 0.16
Area Planted Per Household

The most important permanent crop in Mara region was banana which had a planted area of 4,376 ha (27% of the planted area with permanent crops), followed by coffee (3,771 ha, 22%), pomelo (3,328 ha, 20%)[2], mango (1,701 ha, 10%), orange (1,169 ha, 7%), pawpaw (991 ha, 6%) and sugarcane (383 ha, 2%). Each of the remaining permanent crops had an area of less than 2 percent of the total area planted with permanent crops in Mara region (Chart 3.49).





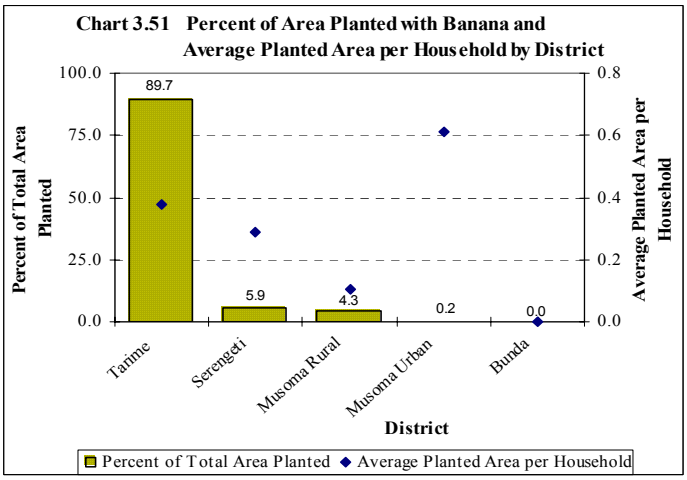
Tarime district had the largest area under smallholder permanent crops (12,727 ha, 76%). This was followed by Serengeti (1,399 ha, 8%), Bunda (1,248 ha, 7%), Musoma Rural (1,056 ha, 6%) and Musoma Urban (405 ha, 2%). Musoma Urban had the largest planted area per permanent crop growing household (1.96 ha), however this may have resulted from the small number of observations. This is followed by Bunda (0.68 ha), Tarime (0.46 ha), Serengeti (0.20 ha) and Musoma Rural (0.05 ha) (Chart 3.50).

In terms of planted area of permanent crops expressed as a percentage of the total area planted with crops, Musoma Urban had the highest percent (35.6%), followed by Tarime (9.9%), Serengeti (2.1%), Bunda (1.9%) and Musoma Rural (1.2%).

3.4.1 Banana

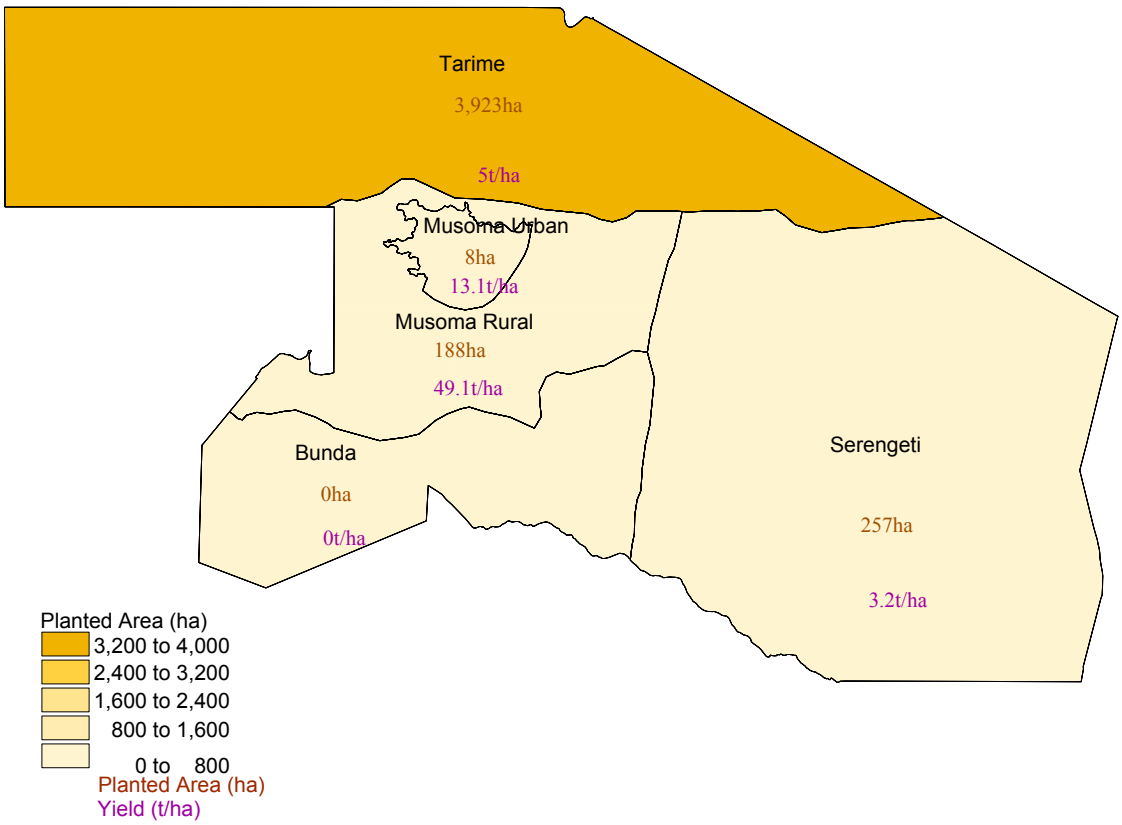
The total production of banana by smallholders was 12,953 tonnes. Banana was the most important permanent crop grown by smallholders in the region. They were grown by 13,118 households (7.1% of the total crop growing households). The average planted area per banana growing household was relatively small (0.33 ha per banana growing household) and the average yield obtained by smallholders was 5.25 t/ha from a harvest area of 2,467 hectares.

Tarime had the largest area of bananas in the region (3,923 ha, 89.7%), followed by Serengeti (257 ha, 5.9%), Musoma Rural (188 ha, 4.3%) and Musoma Urban (8 ha, 0.2%). There was no banana production in Bunda district (Map 3.31). Although the average area planted with banana per banana growing household was highest in Musoma Urban (0.6 ha), caution must be taken in using these figures because of the small number of observations involved. This is followed by Tarime (0.4 ha), Serengeti (0.3 ha) and Musoma Rural (0.1 ha) (Chart 3.51 Map 3.32).

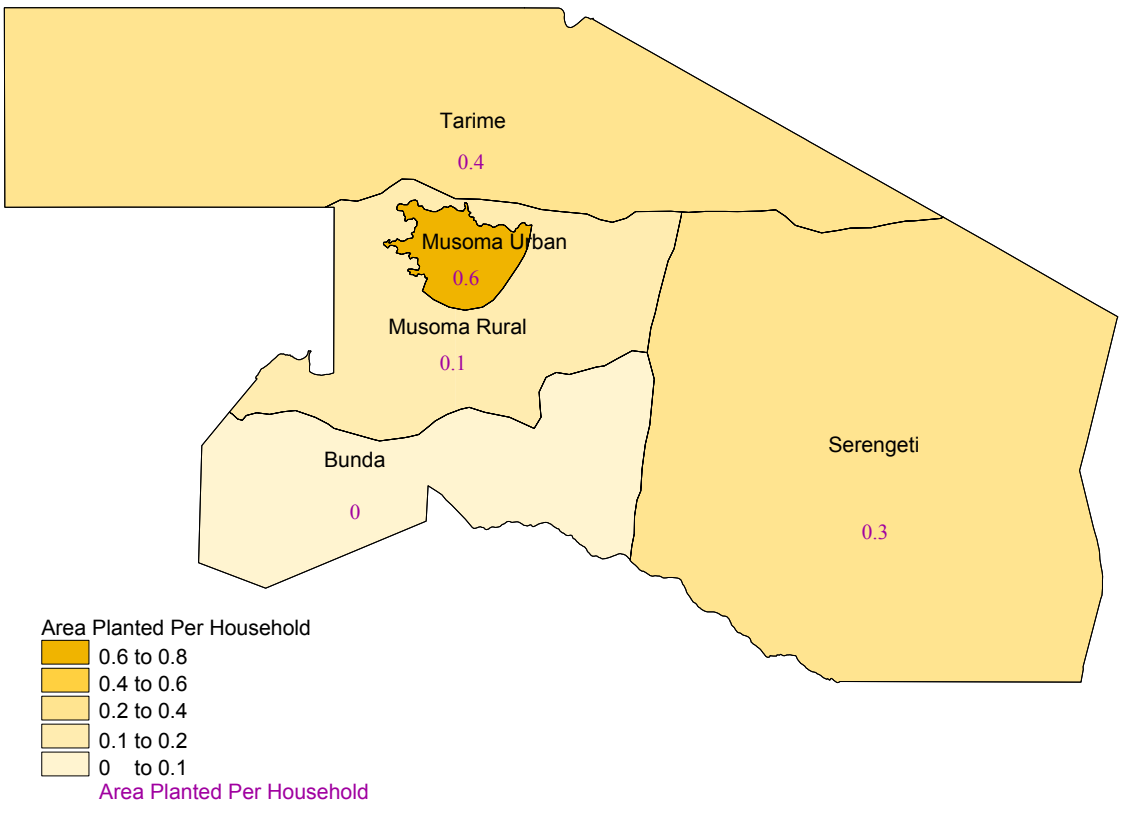


[2] The data for pomello seems to be very high and unrepresentative of the situation found at field level. It is therefore not considered an important crop in the region and will not be analysed separately in the following sections.

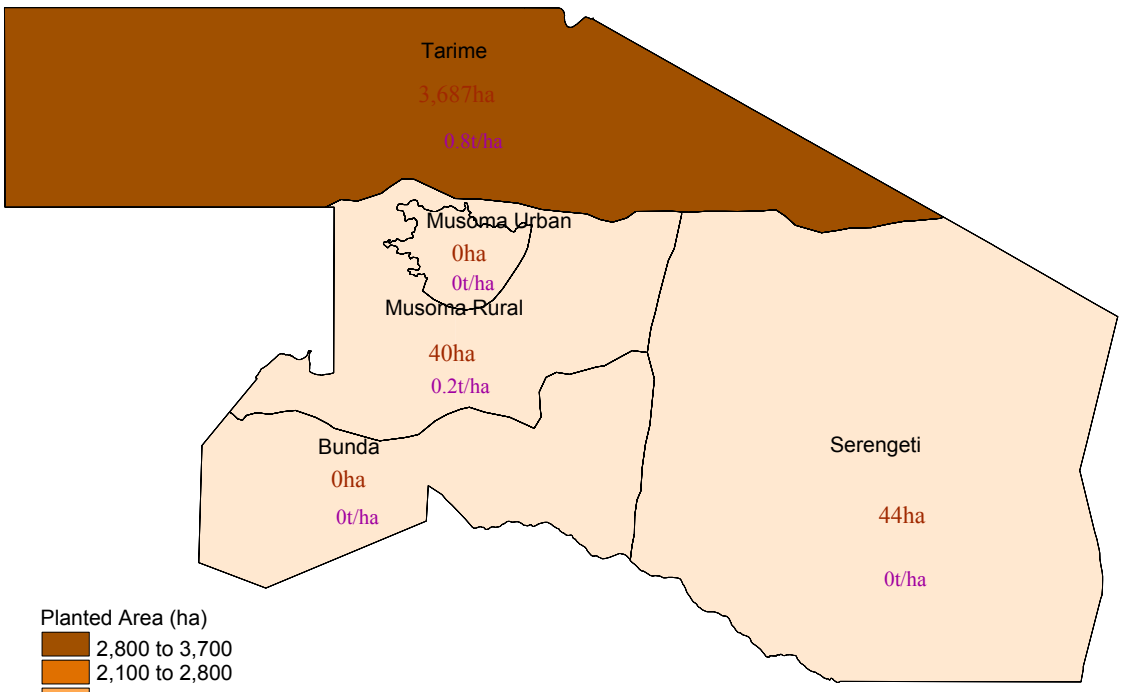
MAP 3.31 MARA
Planted Area and Yield of Banana by District



MAP 3.32 MARA
Area Planted Per Banana Growing Households by District

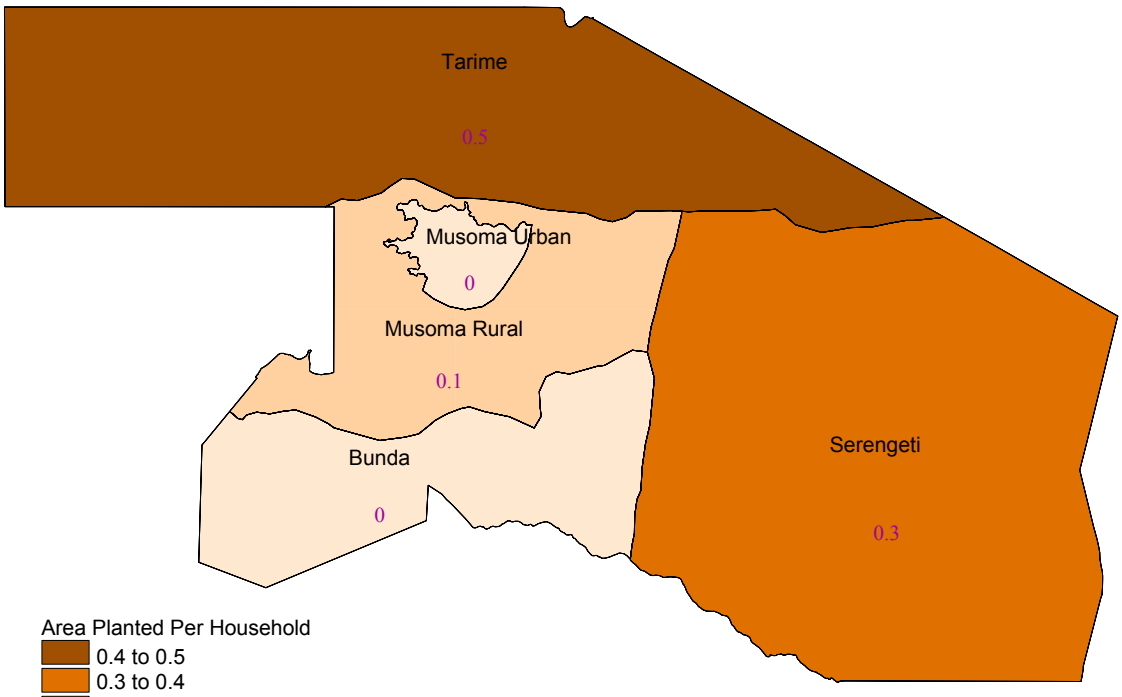


MAP 3.33 MARA
Planted Area and Yield of Coffee by District



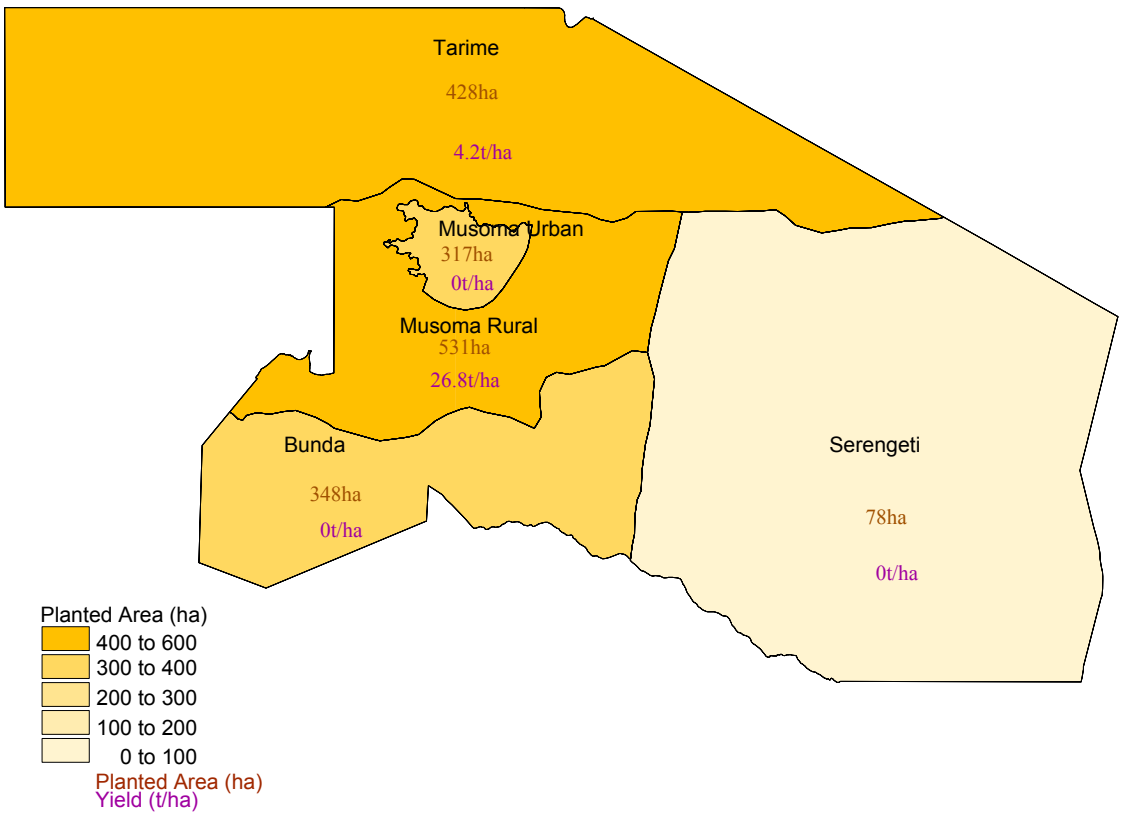
Planted Area (ha)
2,800 to 3,700
2,100 to 2,800
1,400 to 2,100
700 to 1,400
0 to 700
Planted Area (ha)
Yield (t/ha)

MAP 3.34 MARA
Area Planted Per Coffee Growing Household by District

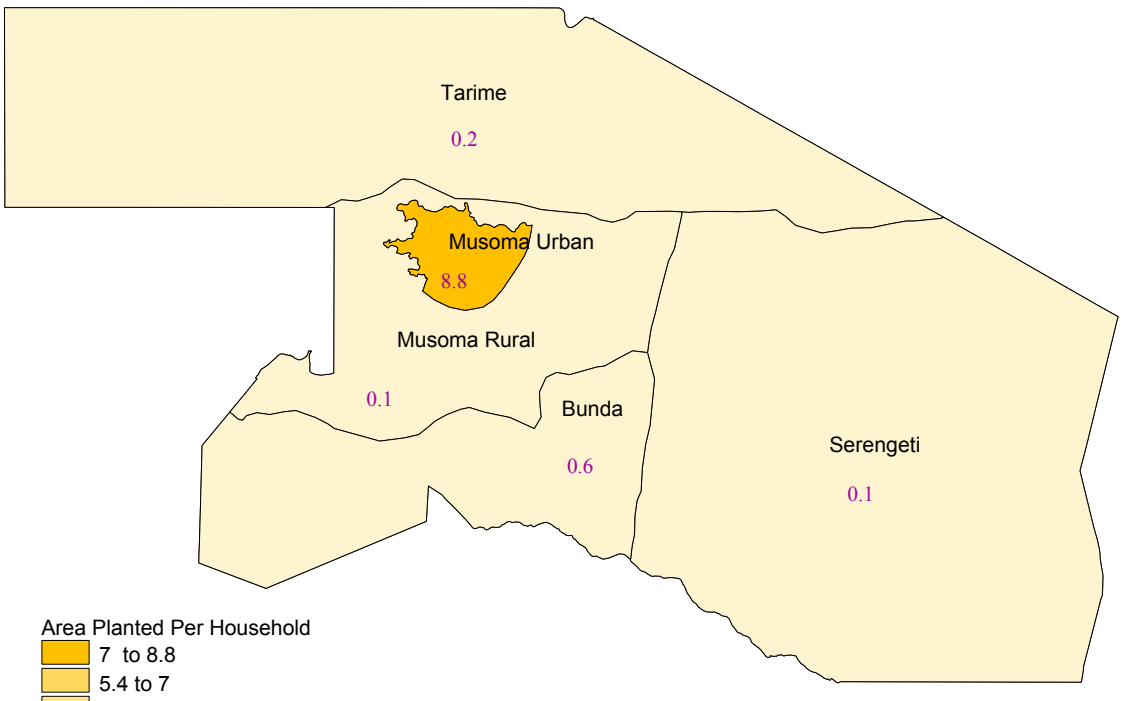


Area Planted Per Household
0.4 to 0.5
0.3 to 0.4
0.2 to 0.3
0.1 to 0.2
0 to 0.1
Area Planted Per Household

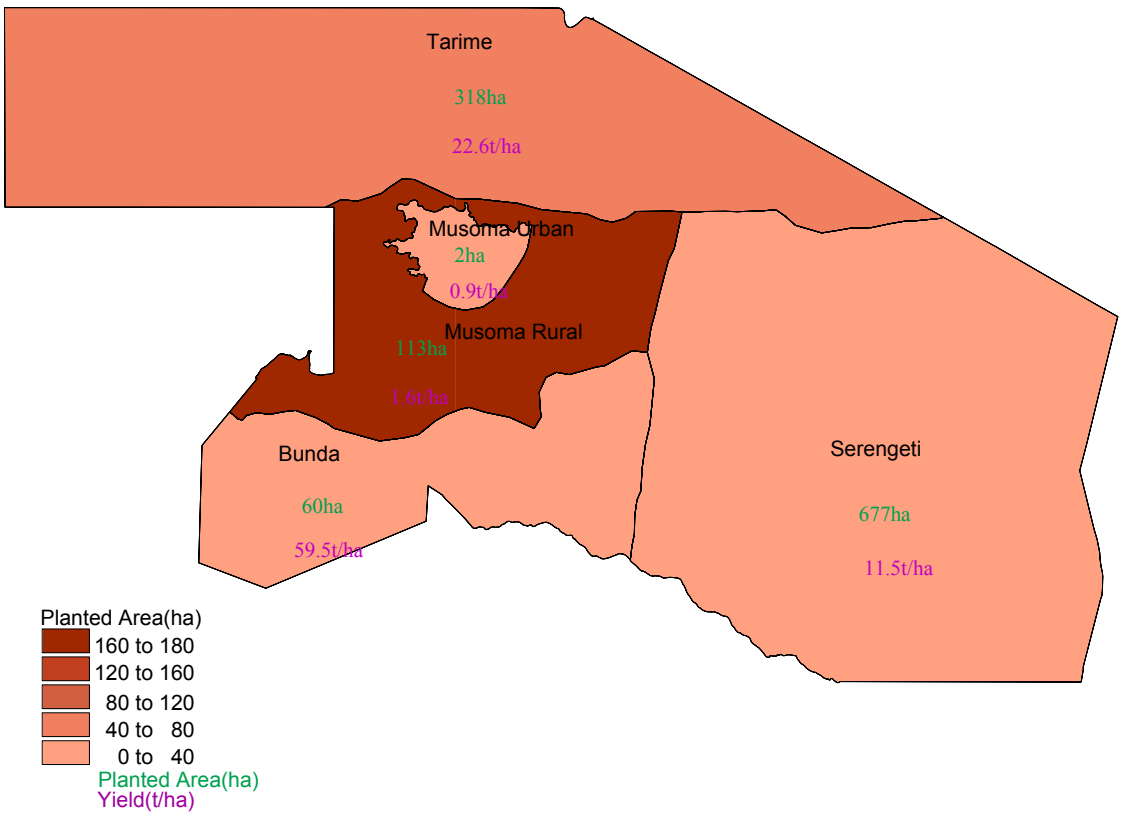
MAP 3.35 MARA
Planted Area and Yield of Mango by District



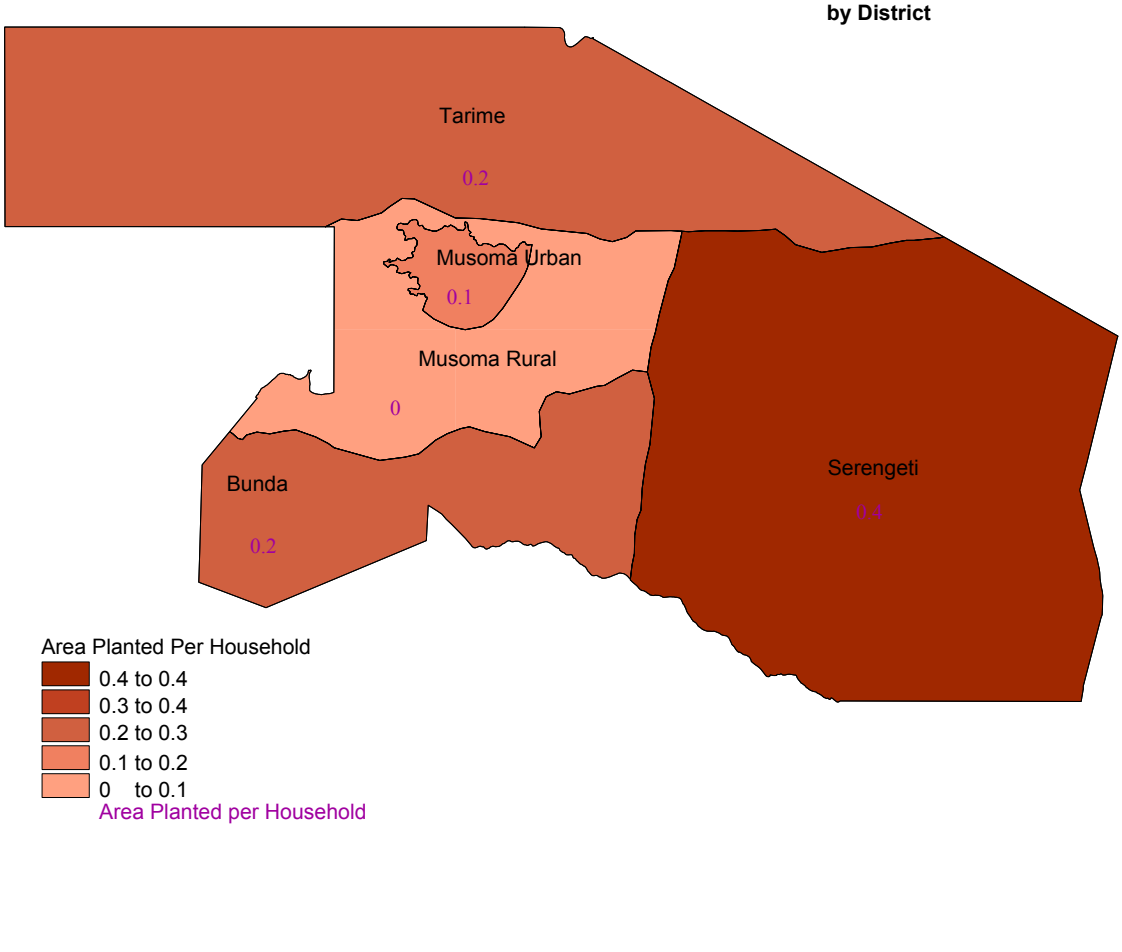
MAP 3.36 MARA
Area Planted Per Mango Growing Households by District



MAP 3.37 MARA
Planted Area and Yield of Orange
by District



MAP 3.38 MARA
Area Planted Per Orange
Growing Household
by District

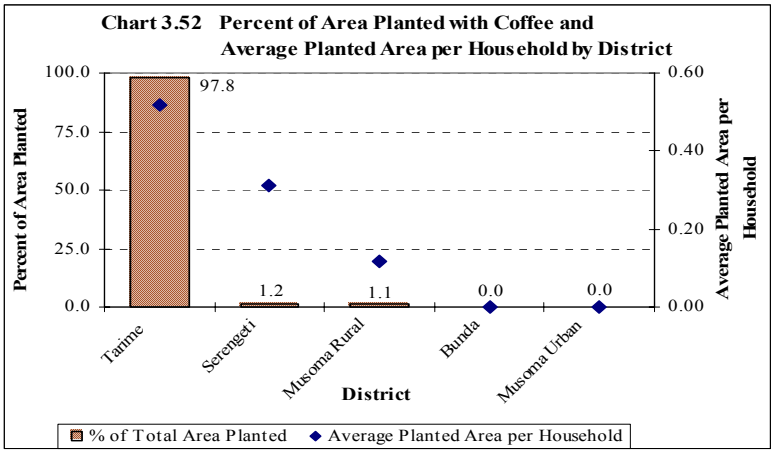


3.4.2 Coffee

The total production of coffee by smallholders was 2,246 tonnes. In terms of area planted, coffee was the second most important permanent crop, grown by smallholders in the region. It was grown by 7,581 households (4.1% of the total crop growing households). The average area planted with coffee per household was relatively small at around 0.50 ha per coffee growing household and the average yield obtained by smallholders was 820 kg/ha from a harvest area of 2,738 hectares.

Tarime had the largest area of coffee in the region (3,687 ha, 97.8%), followed by Serengeti (44 ha, 1.2%) and Musoma Rural (40 ha, 1.1%) (Map 3.33). The average area planted with coffee per coffee planting household was highest in Tarime (0.52 ha), followed by Serengeti (0.31 ha) and Musoma Rural (0.12 ha) (Chart 3.52). There was no coffee production in Bunda and Musoma Urban districts (Chart 3.52 and Map 34).

Chart 3.52 Percent of Area Planted with Coffee and Average Planted Area per Household by District

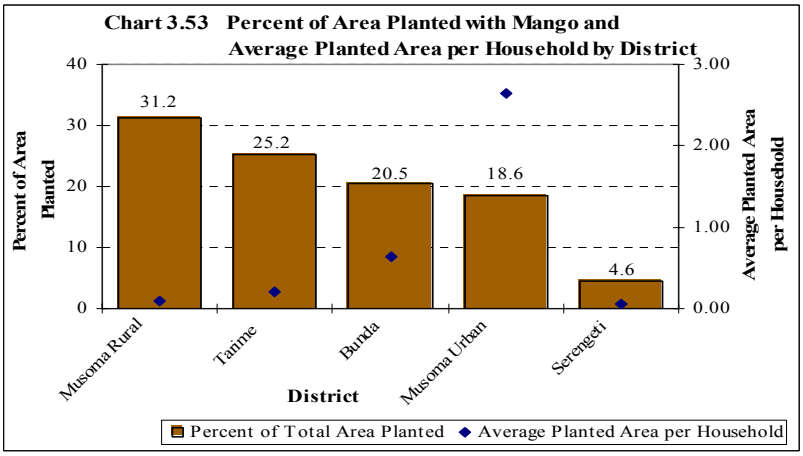


3.4.3 Mango

The total production of mango by smallholders was 5,573 tonnes. In terms of area planted, mango was the third most important permanent crop grown by smallholders in the region. It was grown by 10,065 households (5.4% of the total crop growing households). The average area planted with mango per household was relatively small (0.17 ha per mango growing household) and the average yield obtained by smallholders was 22.4 t/ha from a harvest area of 249 hectares.

Musoma Rural district had the largest area of mango in the region (531 ha, 31.2%), followed by Tarime (428 ha, 25.2%), Bunda (348 ha, 20.5%), Musoma Urban (317 ha, 18.6%) and Serengeti (78 ha, 4.6%) (Map 3.35). The average area planted per mango growing household was highest in Musoma Urban (2.6 ha), followed by Bunda (0.64 ha), Tarime (0.21 ha), Musoma Rural (0.09 ha) and Serengeti (0.06 ha) (Chart 3.53 and Map 3.36).

Chart 3.53 Percent of Area Planted with Mango and Average Planted Area per Household by District

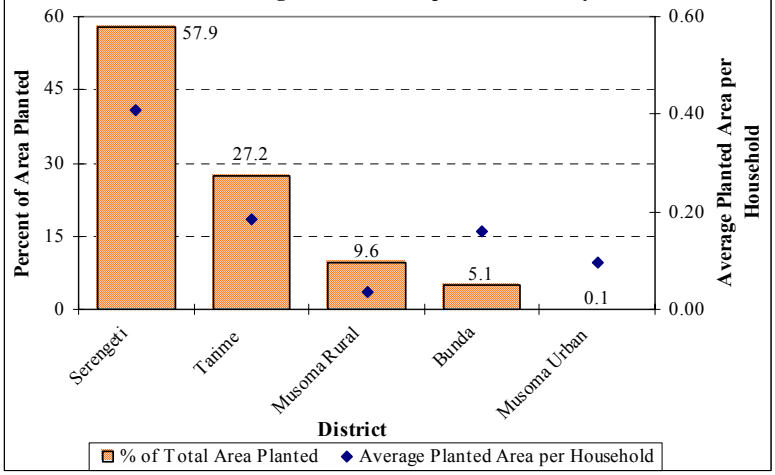


3.4.4 Orange

The total production of orange by smallholders was 3,854 tonnes. In terms of area planted, orange was the fourth most important permanent crop grown by smallholders in the region. It was grown by 6,978 households (3.8% of the total crop growing households). The average area planted with orange per household was relatively small at around 0.16 ha per orange growing household and the average yield obtained by smallholders was 6.3 t/ha from a harvested area of 613 hectares.

Serengeti had the largest planted area of orange in the region (677 ha, 57.9%), followed by Tarime (318 ha, 27.2%), Musoma Rural (113 ha, 9.6%), Bunda (60 ha, 5.1%) and Musoma Urban (2 ha, 0.1%) (Map 3.37). The area planted with orange per orange growing household was highest in Serengeti (0.41 ha), followed by Tarime (0.18 ha) and Bunda (0.16 ha). Musoma Rural had the smallest area planted with orange per orange growing household (Chart 3.54 and Map 3.38).

Chart 3.54 Percent of Area Planted with Orange and Average Planted Area per Household by District



3.5 Inputs/Implements Use

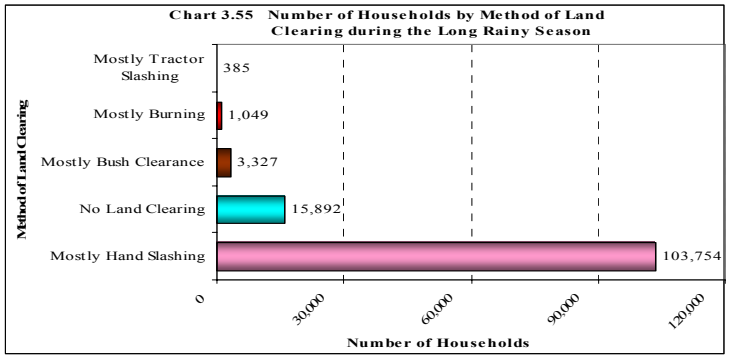
3.5.1 Methods of Land Clearing

Land clearing is a common pre-tillage operation practiced by most farmers in Mara region. Land clearing is divided into two categories: bush clearing, which by definition implies either expansion into virgin areas or into areas which have been left fallow for a long period. The other category, which includes burning, hand slashing or tractor slashing, is normally an annual clearing exercise to remove vegetation growth from the previous season. Hand slashing is the most widespread method used for land clearing. The area cleared by hand slashing in Mara region during the long rainy season was 82,625 ha which represents 84.2 percent of the total planted area. Bush clearance, burning and tractor slashing are less important methods for land clearing and they represent 3.2, 1.0 and 0.4 percent respectively (Chart 3.55 and Table 3.7).

Table 3.7 Number of Households and planted Area during the Long and Short Rainy Seasons by Land Clearing Methods

Method of Land Clearing	Short Rainy Season			Long Rainy Season			Total		
	Number of House -holds	Area Planted (ha)	%	Number of House -holds	Area Planted (ha)	%	Number of House -holds	Area Planted (ha)	%
Mostly Hand Slashing	101,696	94,207	78.3	103,754	82,625	84.2	205,450	176,8319	80.9
No Land Clearing	19,893	20,119	16.7	15,892	11,530	11.7	35,785	31,649	14.5
Mostly Bush Clearance	3,819	4,302	3.6	3,327	2737	2.8	7,146	7,039	3.2
Mostly Burning	1,162	1,112	0.9	1,049	1,019	1.0	2,210	2,250	1.0
Mostly Tractor Slashing	518	28	0.4	385	272	0.3	903	800	0.4
Total	**127,087**	**120,270**	**100.0**	**124,407**	**98,183**	**100.0**	**251,494**	**218,452**	**100.0**

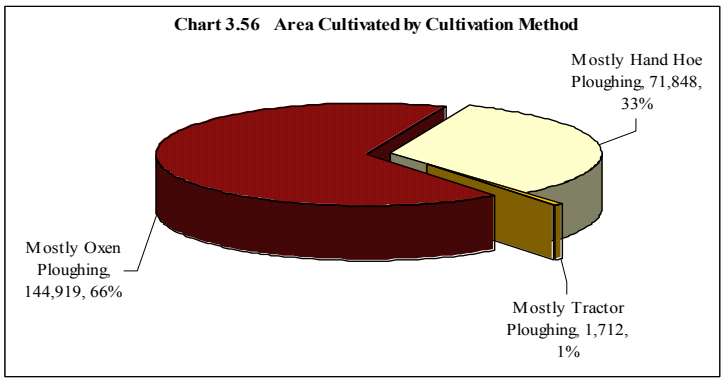
Chart 3.55 Number of Households by Method of Land Clearing during the Long Rainy Season



3.5.2 Methods of Soil Preparation

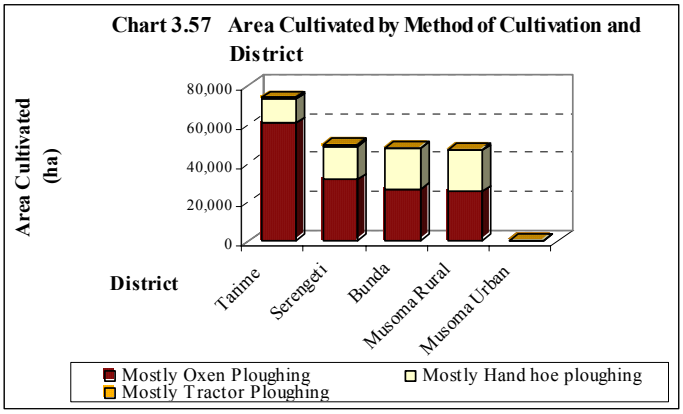
Ox-ploughing was the most used method of soil preparation as was used on an area of 144,920 ha which represented 66 percent of the total area cultivated, followed by hand hoe cultivation (71,848 ha, 33%) and tractor ploughing (1,711 ha, 1%) (Chart 3.56). More ox-ploughing was used during long rainy season with 70 percent of the planted area cultivated using that method against 63 percent for the planted area in the short

Chart 3.56 Area Cultivated by Cultivation Method



rainy season. The use of tractor for cultivation in the region during the short rainy season was the same as that of the long rainy season.

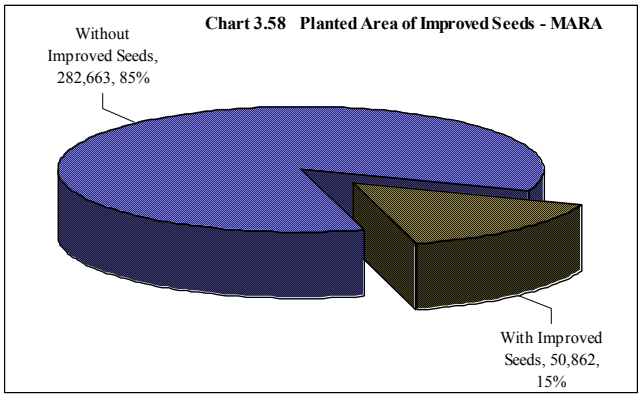
In Mara region, Tarime district had the largest planted area cultivated using oxen (60,822 hectares, 42.0%), followed by Serengeti (31,649 ha, 21.8%), Bunda (27.003 ha, 18.6%) and Musoma Rural (25,445 ha, 17.6%). There was no planted area cultivated using oxen in Musoma Urban district (Chart 3.57).

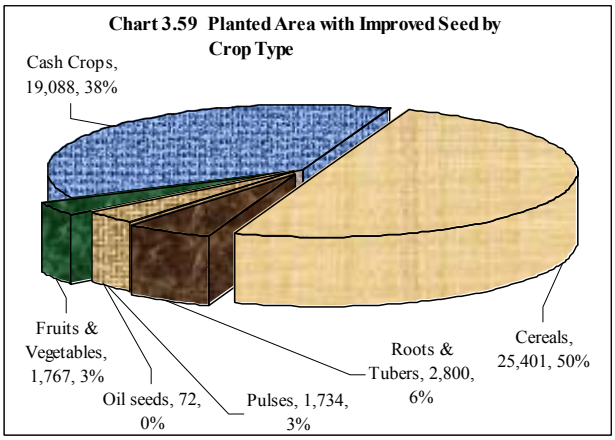


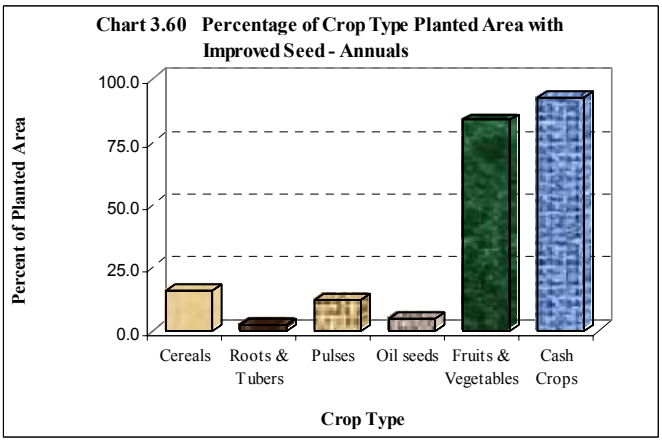
During the long rainy season, 85.1 percent of the total area cultivated using oxen was planted with cereals, followed by pulses (6.3%), roots and tubers (5.2%), cash crops (1.6%), fruit & vegetables (1.1%) and oil seeds (0.7%).

3.5.3 Improved Seeds Use

The total planted area using improved seeds was 50,862 ha which represents 15 percent of the total area planted with the annual crops and vegetables. The percentage use of improved seed in the short rainy season was 27 percent, much higher than the corresponding percentage use for the long rainy season (8.6%). Cereals had the largest planted area with improved seeds (25,401 ha, 49.9% of the planted area with improved seeds), followed by cash crops (19,088 ha, 37.5%), roots and tubers (2,800 ha, 5.5%), fruit and vegetables (1,767 ha, 3.5%), pulses (1,734 ha, 3.4%) and oil seed (72 ha, 0.1%) (Chart 3.59). However, the use of





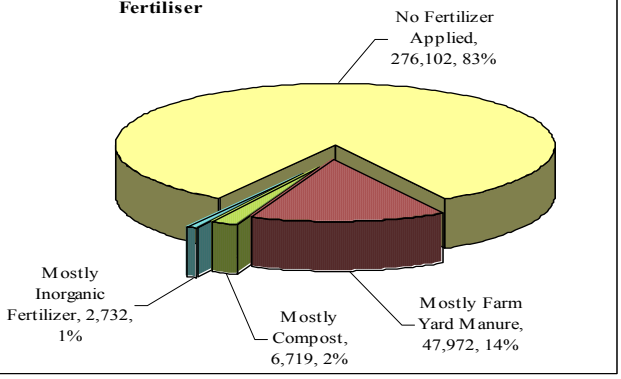


improved seeds in cash crops and fruit & vegetables is much greater than in other crop types (92.7%). Improved seeds were used on only 2.1 percent of the planted area with roots and tubers and 4.6 percent of planted area of oil seeds (Chart 3.60).

3.5.4 Fertilizer Use

The use of fertilisers on annual crops was very small with a planted area of only 57,423 ha (17.2% of the total annual crops planted area in the region). The planted area without fertiliser for annual crops was 276,102 hectares representing 82.8 percent of the total planted area with annual crops. Of the planted area with fertiliser application, farm yard manure was applied on 47,972 ha representing 14.4 percent of the total planted area (83.5% of the planted area with fertiliser application in the region). This was followed by compost (6,719 ha, 2%). Inorganic fertilizers were used on a very small area which represents only 4.7 percent of the area planted with fertilizers (Chart 3.61).

Chart 3.61 Area of Fertiliser Application by Type of Fertiliser



The highest percentage of the area planted with fertilizer (all types) was in Tarime district (47.8%), followed by Musoma Rural (24.3%), Bunda (15.4%), Serengeti (12.4%) and Musoma Urban (0.1%) (Chart 3.62 and Table 3.8). Most annual crop growing households do not use any fertiliser (Approximately 1478,477 households, 79%) (Map 3.39).

Chart 3.62 Area of Fertiliser Application by Type of Fertiliser and District

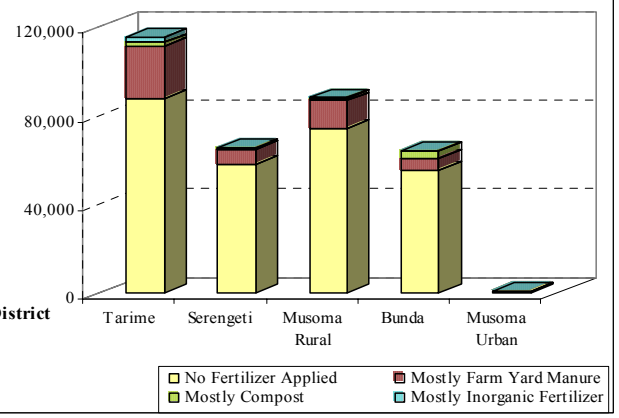


Table3.8 Planted Area by Type of Fertiliser Use and District - Short and Long Rainy Season

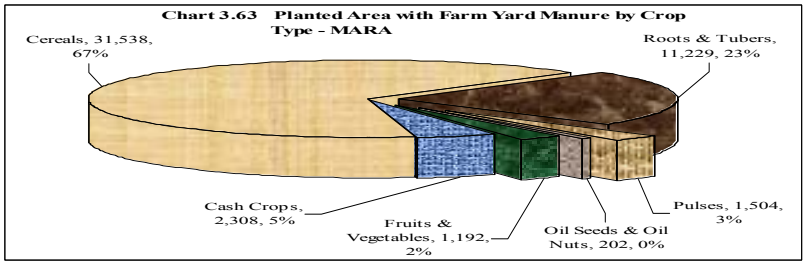
District	Fertilizer Use				No Fertilizer Applied
	Mostly Farm Yard Manure	Mostly Compost	Mostly Inorganic Fertilizer	Total	
Tarime	23,258	1,895	2,306	27,459	87,871
Serengeti	6,678	301	149	7,127	58,038
Musoma Rural	12,668	1,092	178	13,938	74,086
Bunda	5,312	3,431	93	8,836	55,436
Musoma Urban	56	0	7	63	670
Total	**47,972**	**6,719**	**2,732**	**57,423**	**276,102**

The percentage of the planted area with applied fertilizer was highest for fruit and vegetables (70.7% of the area planted with these fruit and vegetables during the long rainy season had an application of fertilizers). This was followed by cereals (23.4%), oil seeds (13.9%), pulses (12.9%), roots and tubers (10.4%) and cash crops (7.2%) (Table 3.9).

Table 3.9 Number of Crop Growing Households and Planted Area by Type of Fertiliser Use - Long Rainy Season

District	Fertilizer Use							
	Mostly Farm Yard Manure		Mostly Compost		Mostly Inorganic Fertilizer		No Fertilizer Applied	Total
	Number of House -holds	Planted Area (ha)	Number of House -holds	Planted Area (ha)	Number of House -holds	Planted Area (ha)	Planted Area (ha)	Planted Area (ha)
Cereals	27,743	14,736	3,568	2,271	1,938	1,032	59,049	77,087
Roots & Tubers	12,381	10,626	3,000	1,813	1,012	587	111,653	124,679
Pulses	2,397	755	519	117	547	110	6,657	7,639
Oil Seeds	341	80	0	0	135	16	599	695
Fruit & Vegetables	4,430	729	0	0	573	116	350	1,195
Cash Crops	232	141	0	0	0	.	1,818	1,959
Total	**47,523**	**27,067**	**7,087**	**4,201**	**4,205**	**1,861**	**180,126**	**213,255**

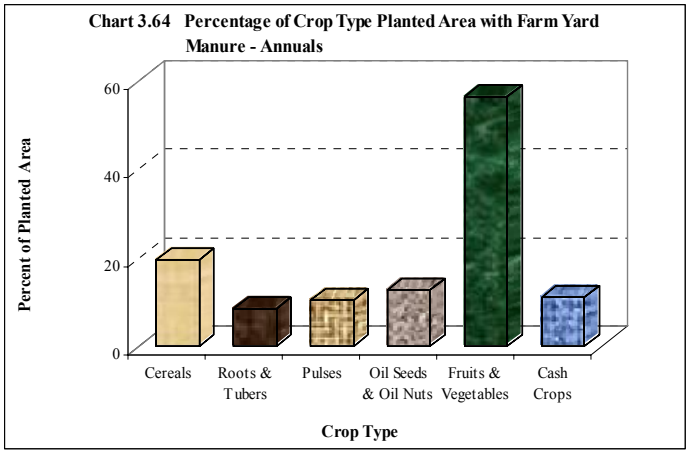
Chart 3.63 Planted Area with Farm Yard Manure by Crop Type - MARA



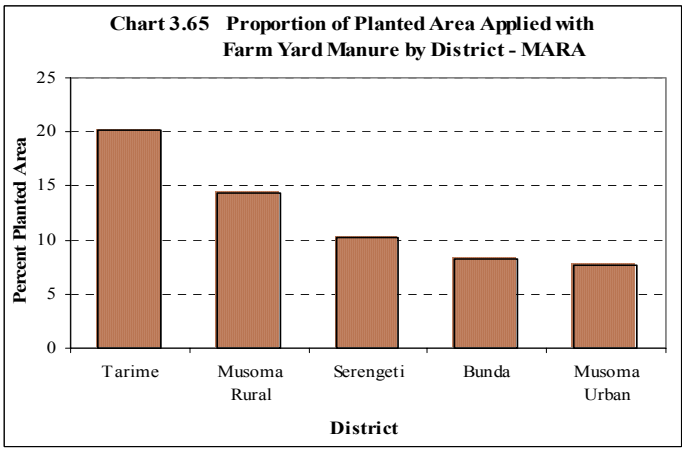
Farm Yard Manure Use

The number of households that applied farm yard manure on their annual crops during the long rainy season was 47,523 and it was

applied to 27,067 ha representing 13 percent of the total area planted during that season (Table 3.9). Cereals had the largest planted area with applied farm yard manure (67% of the total planted area with farm yard manure), followed by roots and tubers (23%), cash crops (5%), pulses (3%), fruits & vegetables (2%) and oil seeds (0.4%) (Chart 3.63).



However, fruit and vegetables had the highest proportion of the planted area applied with farm yard manure (56.5% of the total area of fruit and vegetables in Mara region). This was followed by cereals (19.5%), oil seeds (12.8%), cash crops (11.2%), pulses (10.4%) and roots & tubers (8.4%) (Chart 3.64).

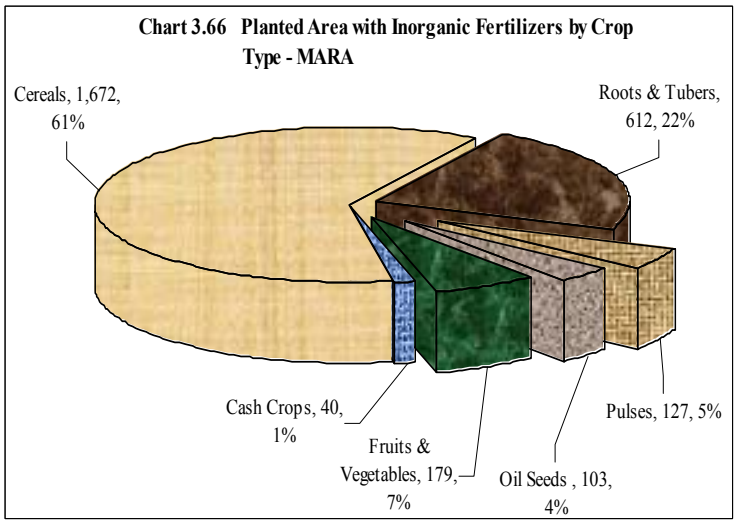


Farm yard manure is mostly used in Tarime (20.2% of the total planted area in the district), followed by Musoma Rural (14.4%), Serengeti (10.2%), Bunda (8.3%) and Musoma Urban (7.6%) (Chart 3.65).

For permanent crops, malay apple had the highest proportion of planted area applied with farm yard manure (99.8%), followed by star fruit (85.9%) and guavas (66.7%).

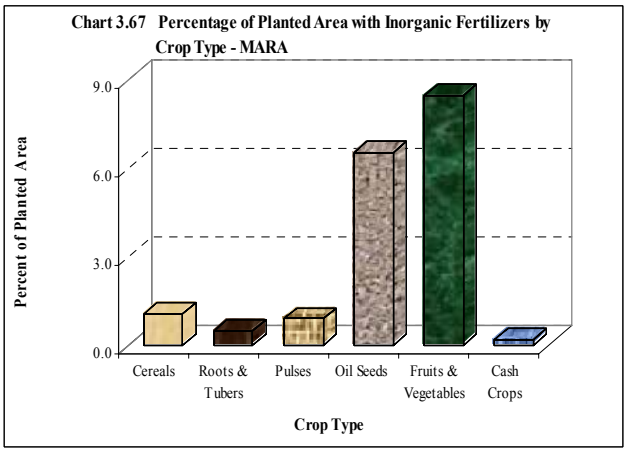
Inorganic Fertiliser Use

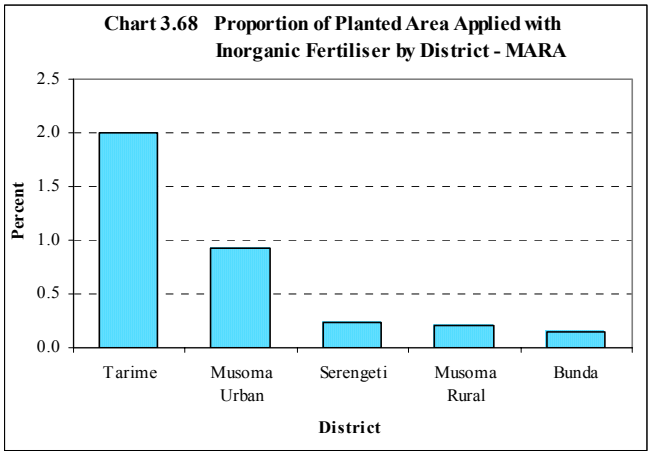
The total planted area applied with inorganic fertilisers in Mara region was 2,732 ha which represents 0.82 percent of the total planted area with annuals in the region and 4.76 percent of the total planted area with fertiliser in Mara region. The number of households that applied inorganic fertilizer on their annual crops during the long rainy season was 4,205 and it was applied to 1,861 ha representing 0.87 percent of the total area planted during that season (Table 3.9).



The largest area applied with inorganic fertilizers was that of cereals (61% of the total area applied with inorganic fertilizers), followed by roots and tubers (22%), fruit and vegetables (7%), pulses (5%), oil seeds (4%) and cash crops (1%) (Chart 3.66). However, the proportion of fruit and vegetables with inorganic fertilizers was higher than other crop types (8.5% of the planted area in the district), followed by oil seeds (6.5%), cereals (1.0%), pulses (0.9%), roots and tubers (0.5%) and cash crops (0.2%) (Chart 3.67). Inorganic fertiliser was mostly used in Tarime (1.00% of the total planted area in the district),

followed by Musoma Urban (0.93%), Serengeti (0.23%), Musoma Rural (0.20%) and Bunda (0.14%) (Chart 3.68). Inorganic fertilisers were not applied on permanent crops.

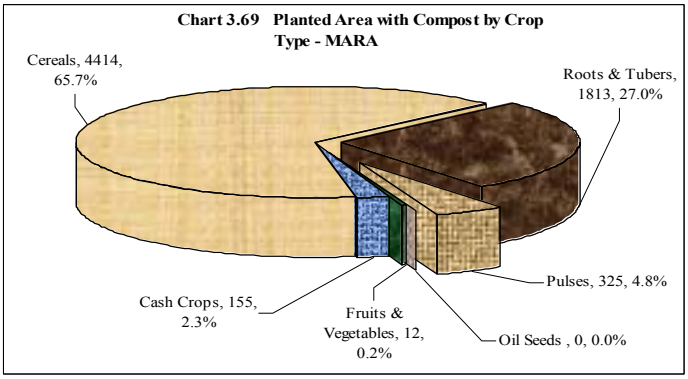


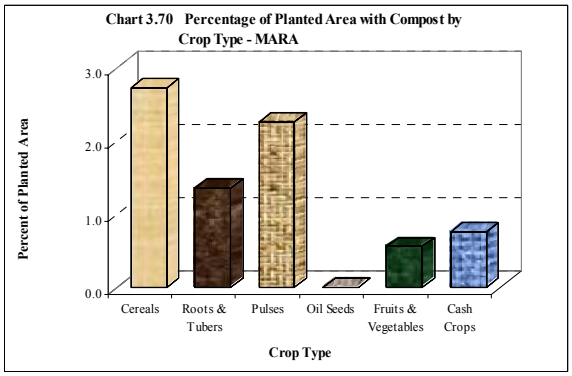


Compost Use

The total planted area applied with compost was 6,719 ha which represents only 2.0 percent of the total planted area with annual crops in the region and 11.7 percent of the total planted area with fertiliser in the region. The number of households that applied compost manure on their annual crops during the long rainy season was 7,087 and it was applied to 4,201 ha representing 1.97 percent of the total area planted in the region during the long rainy season. The number of households that applied compost manure on their farm during the short rainy season was 3,935 and it was applied to 2,518 ha representing 2.1 percent of the total area planted in Mara region during the short rainy season (Table 3.9).

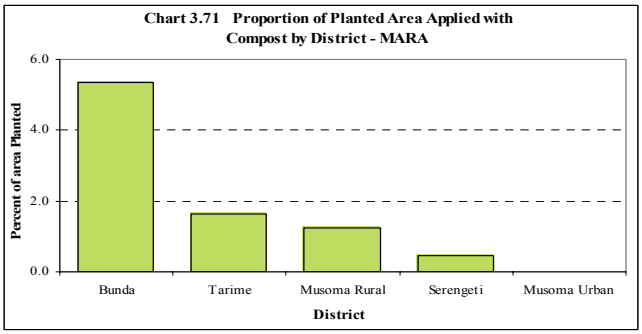
The proportion of area applied with compost was very low for each type of crop (0 to 2.7%), however the distribution of the total area using compost manure shows that 65.7 percent of this area was cultivated with cereals, followed by roots and tubers (27.0%), pulses (4.8%), cash crops (2.3%) and fruits and vegetables (0.2%). There were no compost application on oil seed crops (Charts 3.69 and 3.70).





Compost is mostly used in Bunda (5.3% of the total planted area in the district), followed by Tarime (1.6%), Musoma Rural (1.2%) and Serengeti (0.5%). There was no compost use in Musoma Urban district (Chart 3.71).

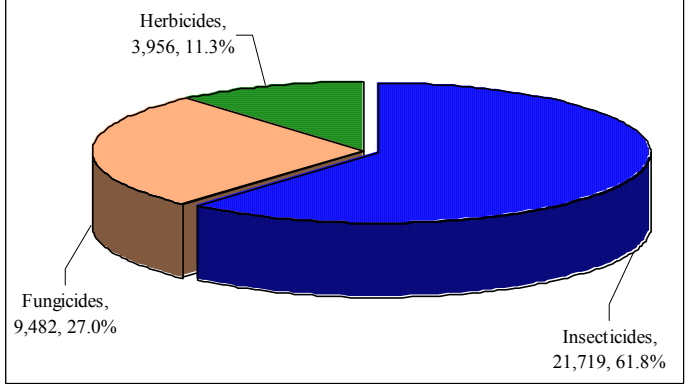
In permanent crops, the only crops that compost was mostly used were banana (6.1%) and mango (0.5%).



3.5.5 Pesticides Use

Pesticides are chemicals used for controlling insects, diseases and weeds. This section analyses the use of these chemicals by smallholders in both annual and permanent crops in the region. Pesticides were applied to a planted area of 35,157 ha of annual crops and vegetables.

Chart 3.72 Planted Area (ha) by Pesticide Use



Insecticides are the most common pesticide used in the region (61.8% of the total area applied with pesticides). This was followed by fungicides (27%) and herbicides (11.3%) (Chart 3.72).

3.5.5.1 Insecticide Use

The planted area applied with insecticides was 21,719 ha which represented 6.5 percent of the total planted area for annual crops and vegetables. Cash crops had the largest planted area applied with insecticides (15,653 ha, 72.1% of the total planted area with insecticides), followed by roots an tubers (2,116 ha, 9.6%), cereals (2,033 ha, 9.4%), fruits and vegetables (1,605 ha, 7.4%) and pulses (312 ha, 1.4%). There was no application of insecticides on oil seed crops (Chart 3.73).

Chart 3.73 Planted Area Applied with Insecticides by Crop Type

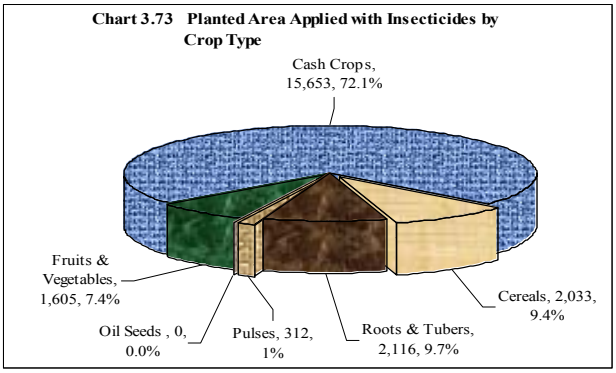
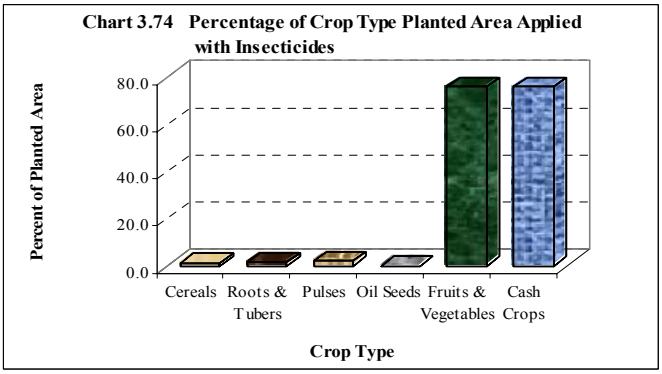


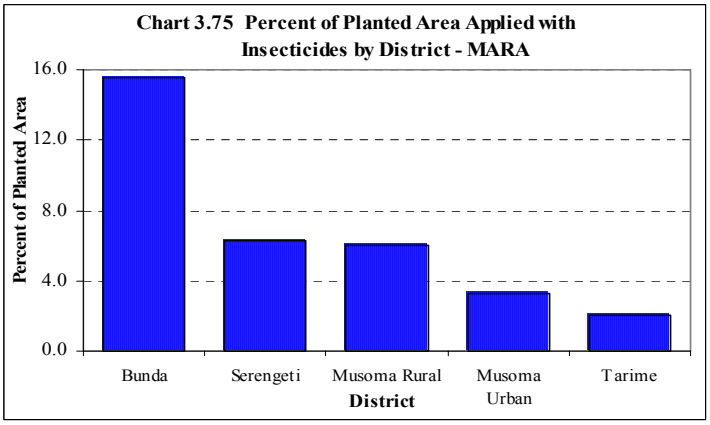
Chart 3.74 Percentage of Crop Type Planted Area Applied with Insecticides



However, the percent of insecticides used on fruit and vegetables and cash crops was much greater than in other crop types (76.1% and 76.0% respectively), whilst only 1.3 percent of the planted area with cereals was applied with insecticides (Chart 3.74).

Annual crops with more than 50 percent insecticide use were spinach (100%), water melon (100%), tomatoes (90.1%), cabbages (89.0%), cotton (76.8%) and cucumber (50.1%).

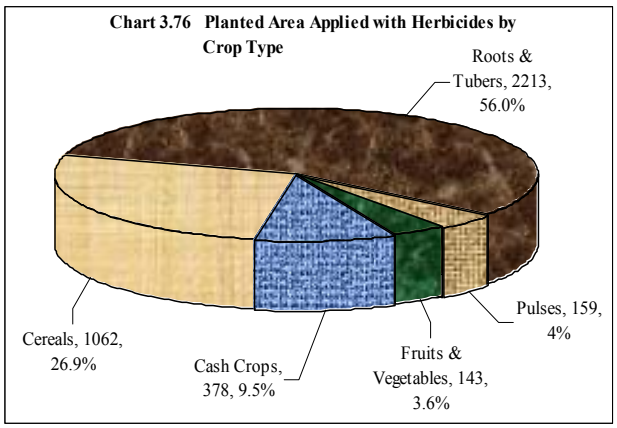
Chart 3.75 Percent of Planted Area Applied with Insecticides by District - MARA

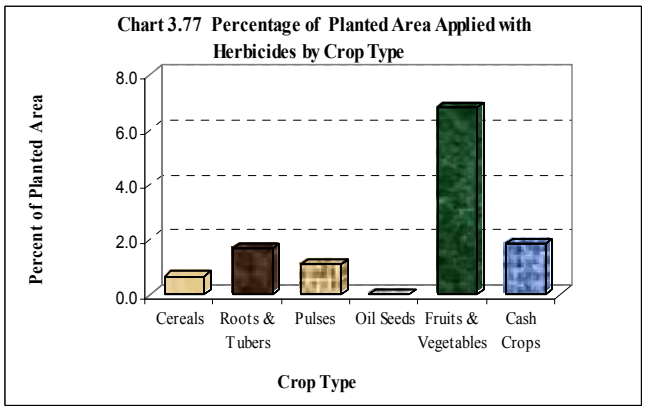


Bunda had the highest percent of planted area with insecticides (15.6% of the total planted area with annual crops in the district). This was followed by Serengeti (6.3%), Musoma Rural (6.0%) and Musoma Urban (6.0%). The smallest percentage use was recorded in Tarime district (2.0%) (Chart 3.75).

3.5.5.2 Herbicide Use

The planted area applied with herbicides was 3,956 ha which represents 1.2 percent of the total planted area for annual crops and vegetables. Roots and tubers had the largest planted area applied with herbicides (2,213 ha, 56%), followed by cereals (1,062 ha, 27%), cash crops (378 ha, 9.5%), pulses (159 ha, 4%) and fruits and vegetables (143 ha, 3.6%) (Chart 3.76).

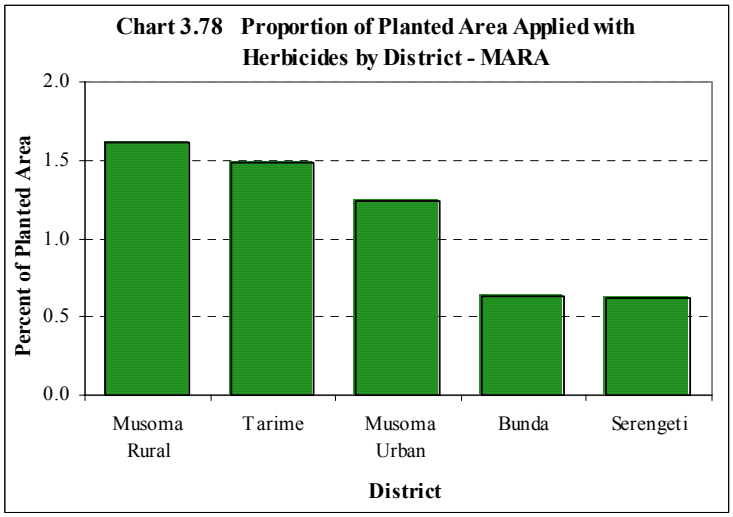




However, the percent of herbicide use on fruit and vegetables was much greater than in other crop types (6.8% of the total planted area with fruit and vegetables in the region), whilst only 1.1 percent of pulses was applied with herbicides (Chart 3.77).

The top five annual crops with highest percentage use of herbicides in terms of planted area were cucumber (50.1%), spinnach (12%), tomatoes (9.8%), bambaranuts (4.6%) and cabbages (3.1%).

Musoma Rural had the highest percent of planted area with herbicides (1.6% of the total planted area with annual crops in the district). This was followed by Tarime (1.5%), then Musoma Urban (1.2%) and Bunda (0.6%). The smallest percentage use was recorded in Serengeti district (0.6%) (Chart 3.78).



3.5.5.3 Fungicide Use

The planted area applied with fungicides was 5,953ha which represented 1.8 percent of the total planted area for annual crops and vegetables. The percentage use of fungicides in the short rainy season at (1.9%) was slightly higher than the corresponding percentage for the long rainy season (1.7%). Roots and tubers had the largest planted area applied with fungicides (2,391 ha, 40.2%) followed by cereals (1,633 ha, 27.4%), fruit and vegetables (1,083 ha, 18.2%), cash crops (655 ha, 11.0%) and pulses (192 ha, 3.2%) (Chart 3.79). There was no fungicide application in oil seed crops.

However, the percentage use of fungicide in fruit and vegetables was much greater than in other crop types (51.3%), while only 1.0 percent of cereal crops was applied with fungicides (Chart 3.80).

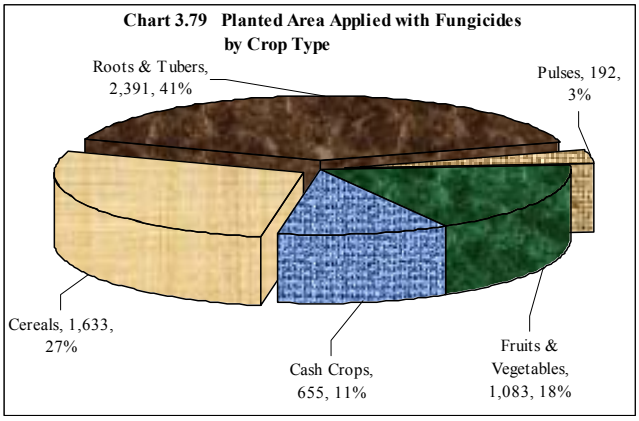


Chart 3.79 Planted Area Applied with Fungicides by Crop Type

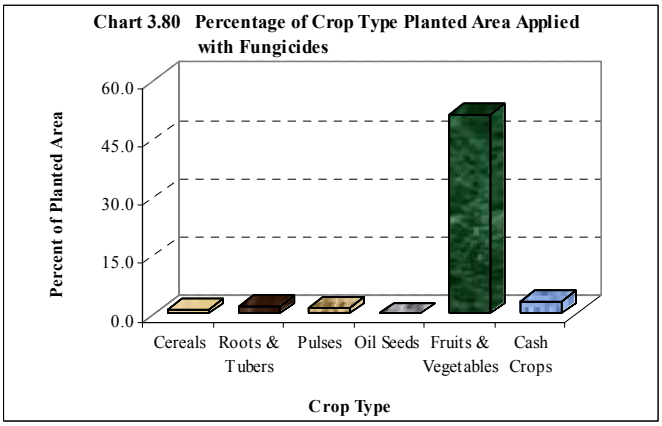


Chart 3.80 Percentage of Crop Type Planted Area Applied with Fungicides

Annual crops with more than 20 percent fungicide use were tomatoes (79.5%), tobacco (59.2%), cucumber (50.1%), spinnach (30.7%), Irish potatoes (29.5%), cabbages (27.8%) and onions (20.2%).

Musoma Rural had the highest percent of planted area with fungicide (2.4% of the total planted area with annual crops in the district). This was closely followed by Serengeti (1.8%). The smallest percentage use was recorded in Bunda district (1.0%) (Chart 3.81).

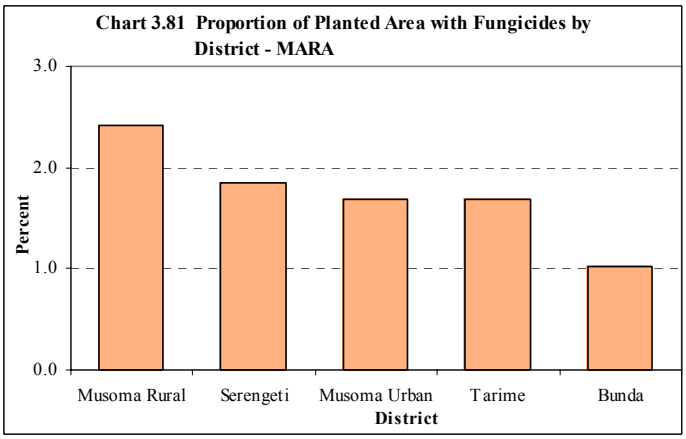


Chart 3.81 Proportion of Planted Area with Fungicides by District - MARA

3.5.6 Harvesting Methods

The main harvesting method for cereals was by hand. Very small amounts of maize were harvested using machines (0.2%). All other cereals and annual crops were mainly harvested by hand.

3.5.7 Threshing Methods

Hand threshing was the most common method used, with crops from 91.0 percent of the total area planted with cereals during the long rainy season threshed using this method. Draft animals, human powered tools and engine driven machines were only used on crops harvested from 0.4%, 2.2 percent and 0.1 percent of the total planted area respectively.

3.6 Irrigation

Water is the limiting factor to crop production in the majority of areas in Tanzania and without water most other agricultural practices applied to crops do not result in significant increases in yields. This section deals with the area under irrigation for different crops and the means by which water was extracted from the source and applied to the field.

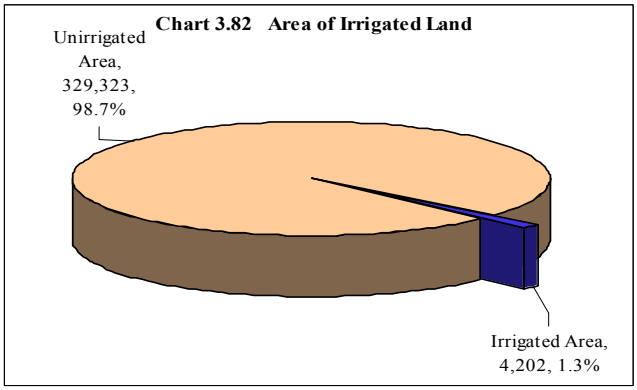
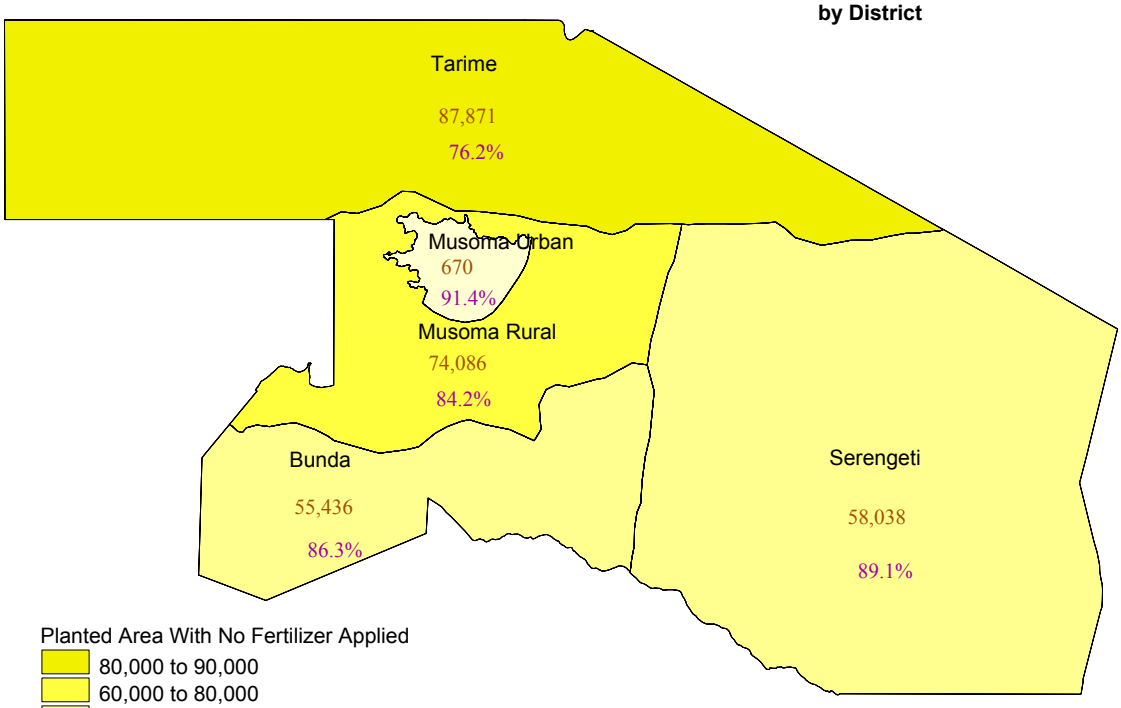


Chart 3.82 Area of Irrigated Land

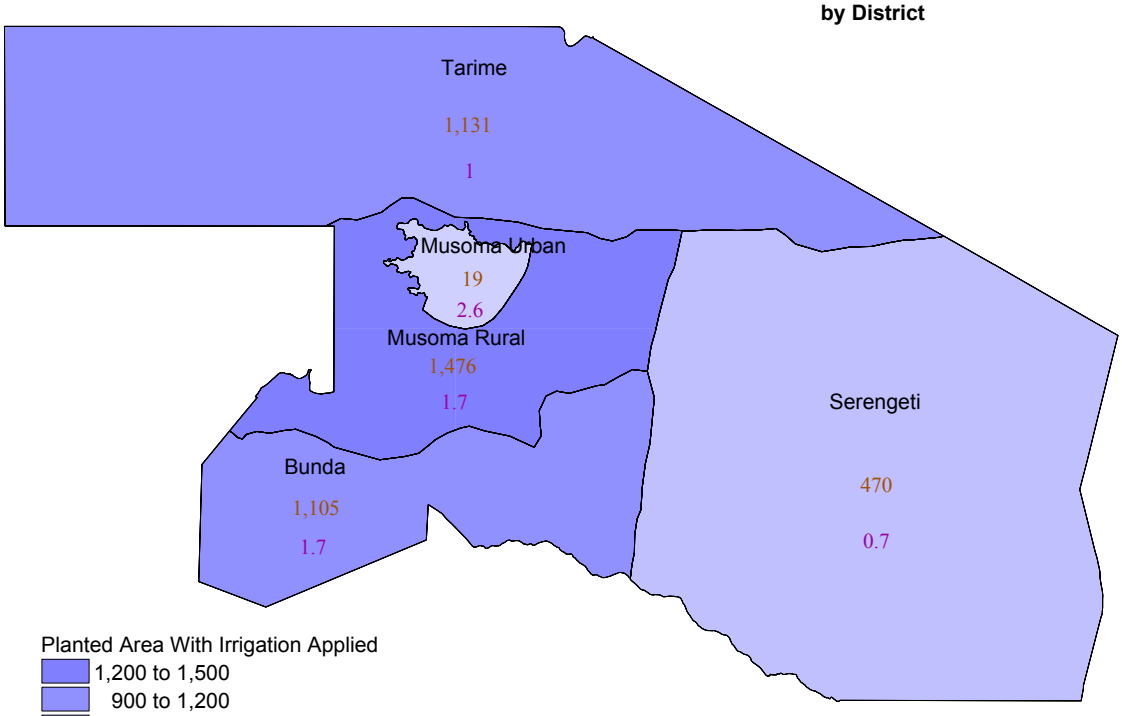
MAP 3.39 MARA
Planted Area and Percent of Planted Area With No Application of Fertilizer by District



Planted Area With No Fertilizer Applied
- 80,000 to 90,000
- 60,000 to 80,000
- 40,000 to 60,000
- 20,000 to 40,000
- 0 to 20,000

Planted Area With No Fertilizer Applied
Percent of Planted Area With No Fertilizer Applied

MAP 3.40 MARA
Area Planted and Percent of Total Planted Area With Irrigation by District



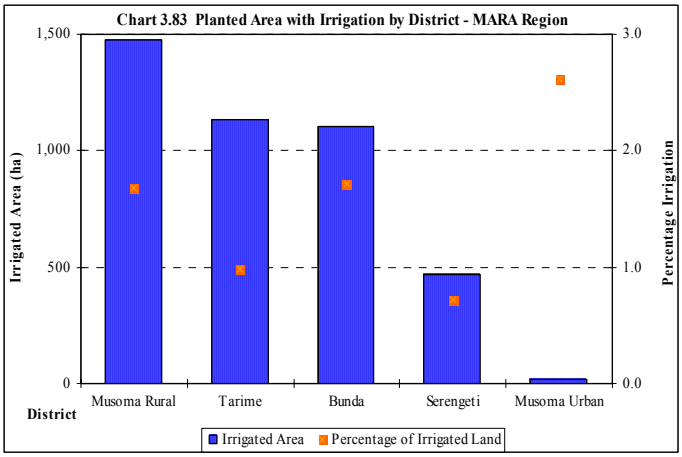
Planted Area With Irrigation Applied
- 1,200 to 1,500
- 900 to 1,200
- 600 to 900
- 300 to 600
- 0 to 300

Planted Area With Irrigation Applied
Percent of Planted Area with Irrigation

Tanzania Agriculture Sample Census

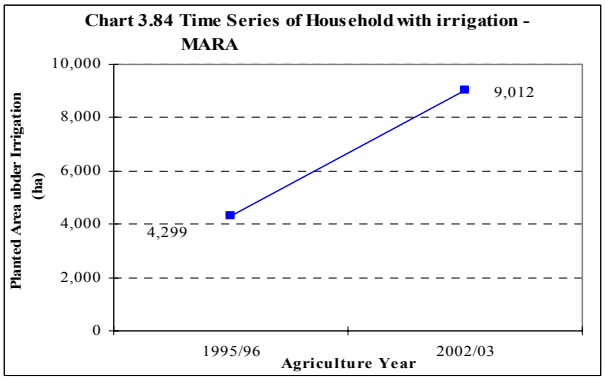
3.6.1 Area Planted with Annual Crops and Under Irrigation

In Mara region, the area of annual crops under irrigation was 4,202 ha representing 1.3 percent of the total area planted (Chart 3.82). The area under irrigation during the short rainy season was 2,412 ha accounting for 57 percent of the total area under irrigation. Some crops, especially vegetables, were predominantly grown during the long rainy season with irrigation. In the long rainy season, 71 percent of the area planted with vegetables was irrigated, whilst 59 percent of the vegetables were irrigated in the short rainy season.



The district with the largest planted area under irrigation with annual crops was Musoma Rural (1,476 ha, 35.1% of the total annual crops irrigated planted area in the region). This is followed by Tarime with (1,131 ha, 26.9%), Bunda (1,105 ha, 26.3%), Serengeti (470 ha, 11.2%) and Musoma Urban (19 ha, 0.5%). When expressed as a percentage of the total area planted in each district, Musoma Urban had the highest percentage with 2.6% of the planted area in the district under irrigation. This was followed by Bunda (1.7%), Musoma Rural (1.7%), Tarime (1.0%) and Serengeti (0.7%) (Chart 3.83 and Map 3.40).

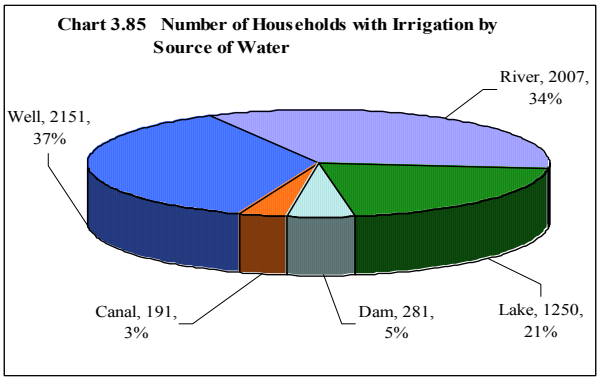
Of all the different crops and in terms of proportion of the planted are that was irrigated, water melon was the most irrigated crop with 100 percent irrigation followed by tomatoes (77.7%), cabbages (74.3%), cucumber (50.1%), onions (47.7%) and amaranths (41.0%).



In terms of crop type, the area under irrigation with cereals was 1,912 ha (45.5% of the total area under irrigation), followed by fruits and vegetables with 1,387 ha (33.0%), cash crops (396 ha, 9.4%), pulses (304 ha, 7.2%) and roots and tubers (204 ha, 4.8%). Oil seed crops were not irrigated.

The area of fruit and vegetables under irrigation was 1,387 ha which represents 65.7 percent of the total planted area with fruit and vegetables. Water mellon, tomatoes, cabbages and spinnach were the most irrigated crops.

The number of households practicing irrigation in Mara region appears to have increased over the last seven years from 4,299 to 9,012 households (Chart 3.84). This may not be statically significant due to the small number of households sampled with irrigation.



3.6.2 Sources of Water Used for Irrigation

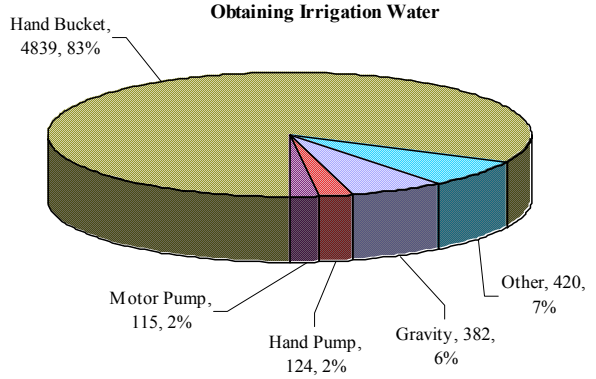
The main source of water used for irrigation was from wells (37% of households with irrigation). This was followed by river (34%), lake (21%), dam (5%) and canal (3%) (Chart 3.85).

While most households using irrigation in Bunda district get irrigation water from the Lake (50%), most household in Musoma Urban get their irrigation water from wells (49 %). However, most of the households in Serengeti district get irrigation water from rivers (43%).

3.6.3 Methods of Obtaining Water for Irrigation

Hand bucket was the most common method of obtaining water for irrigation with 83 percent of households using this method. This is followed by gravity with 6 percent of households, hand pump (2%) and motor pump (2%) (Chart 3.86).

Chart 3.86 Number of Households by Method of Obtaining Irrigation Water

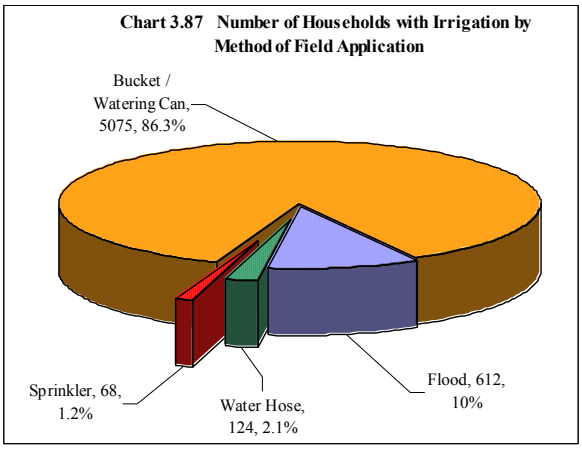


All households with irrigation in Serengeti and Musoma Urban districts used hand bucket in obtaining water from the source, followed by Musoma Rural (85%), Tarime (77%) and Bunda (70%). Gravity method was used by few households in Musoma Rural (11%) and Bunda (10%). Hand pump was used in Tarime only (7%) and motor pump was used in Musoma Rural district only (4%).

3.6.4 Methods of Water Application

Most households used buckets/watering cans (87% of households using irrigation) as a method of field application. This was followed by flood irrigation (10%). Water hose and sprinklers were not widely used (2% and 1% respectively) (Chart 3.87).

Chart 3.87 Number of Households with Irrigation by Method of Field Application



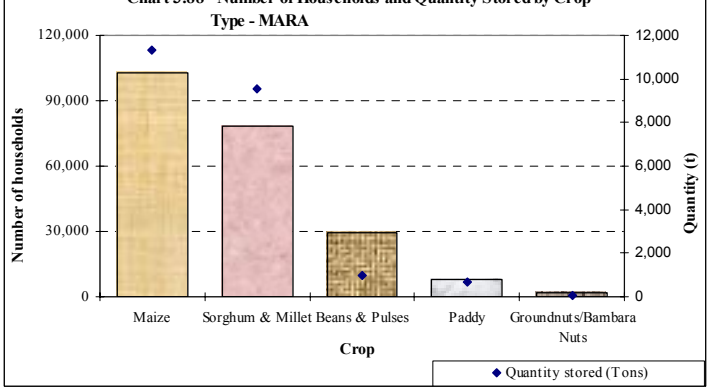
All households with irrigation in Musoma Urban districts used hand bucket/watering cans in applying irrigation water from the source, followed by Tarime (93%), Serengeti (86%), Musoma Rural (84%) and Bunda (80%). Flood method was used by a few households in Bunda and Musoma Rural (20% and 16% respectively) whilst sprinkler was used by few households in Serengeti district (14%). Water hose was used in Tarime only (7%).

3.7 Crop Storage, Processing & Marketing

3.7.1 Crop Storage

Crop storage means keeping a crop for a certain period of time as food for the household, in order to sell at higher prices and as seed for planting in the following season.

Chart 3.88 Number of Households and Quantity Stored by Crop Type - MARA

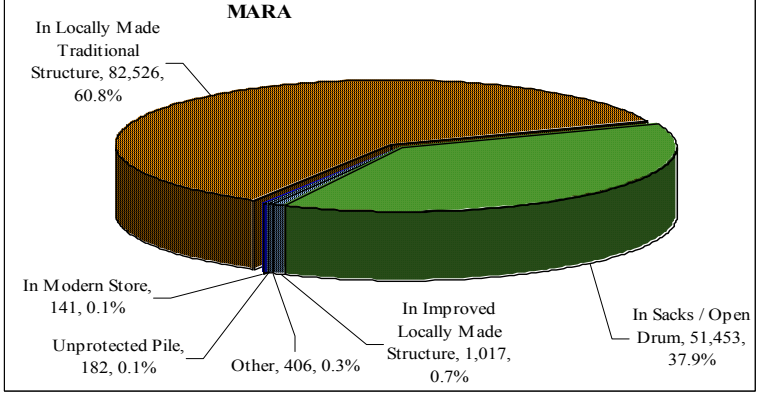


The results for Mara region show that there were 135,725 crop growing households (73% of the total crop growing households) that stored various agricultural products in Mara region.

3.7.1.1 Methods of Storage

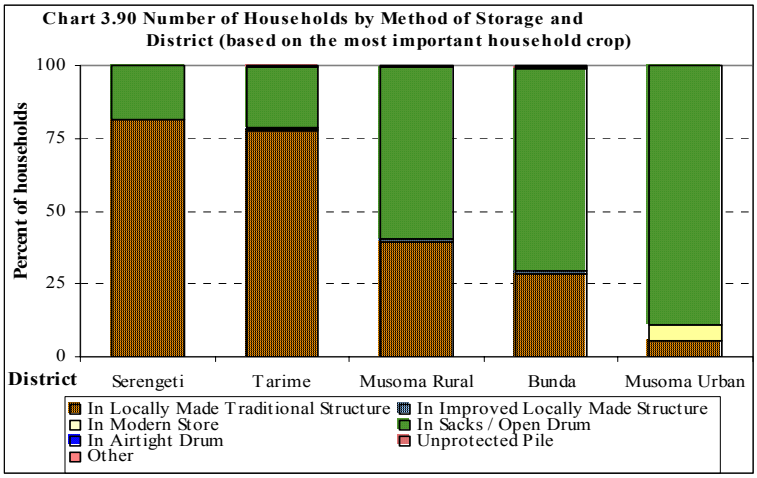
The region had 82,526 crop growing households storing their produce in locally made traditional structure (60.8% of households that stored crops in the region). The number of households that stored their produce in sacks/open drum was 51,453 (37.9%). This was followed by improved locally made structure (1,017 households, 0.7%), unprotected pile (182 households, 0.1%) and modern stores (141 households, 0.1%) (Chart 3.89).

Chart 3.89 Number of Households by Storage Methods - MARA



Storage in locally made traditional structures was the dominant storage method in the region, with Serengeti district having the highest percentage of households using this method (82% of the total number of households storing crops in the district). This was followed by Tarime (78%), Musoma Rural (39%), Bunda (29%) and Musoma Urban (5%) (Chart 3.90).

Chart 3.90 Number of Households by Method of Storage and District (based on the most important household crop)



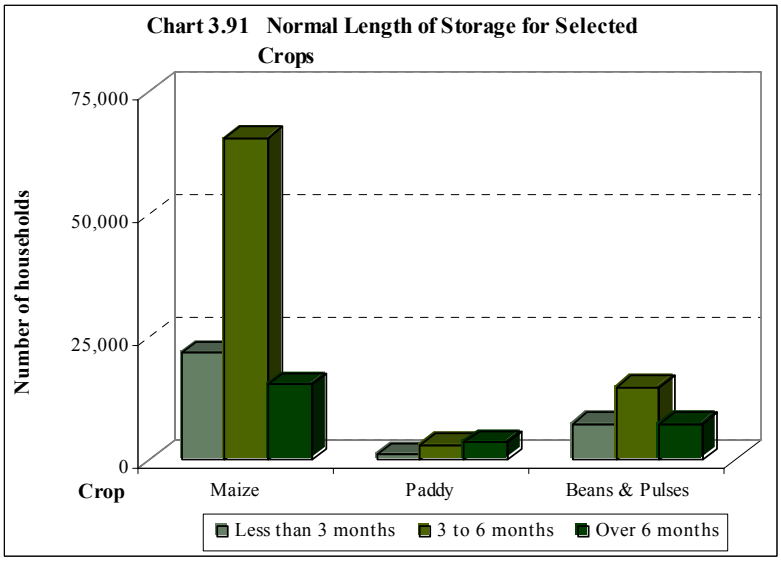
Although the highest percent of households using sacks/open drums was in Musoma Urban district (89% of the total number of households storing crops in the district), the figure should be used with caution because of the small number of observations involved. This is followed by Bunda (69%), Tarime (21%) and Serengeti (18%).

3.7.1.2 Duration of Storage

Most households (52.9% of the households storing crops) stored their produce for a period of 3 to 6 months followed by those who stored for a period of over 6 months. The minority of households stored their crop for a period of less than 3 months (7.6%).

However, most households that stored paddy stored for a period of over 6 months, followed by those who stored for a period of 3 to 6 months. A small number of households stored paddy for the period of less than 3 months (Chart 3.91).

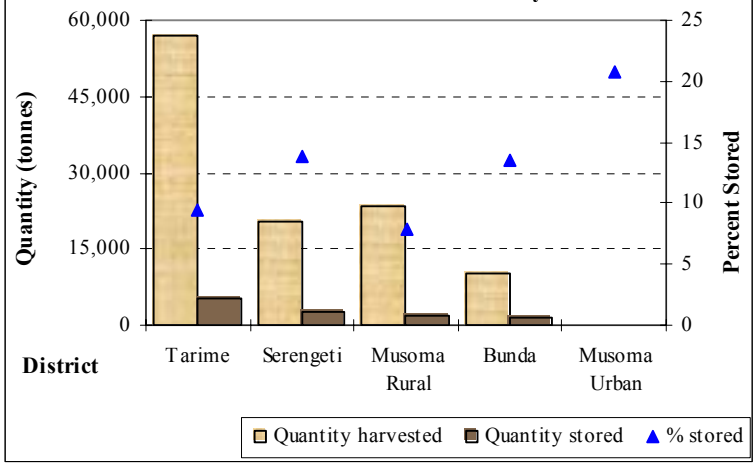
Chart 3.91 Normal Length of Storage for Selected Crops



The proportion of households whose normal duration of storage is duration of 3 to 6 months was highest in Tarime district (74%), followed by Serengeti (65%), Bunda (50%), Musoma Rural (40%) and Musoma Urban (37%) (Map 3.41).

District comparison of duration of storage cannot be done for all crops combined. However, the analysis has been done for maize only as it is the most commonly stored crop. In general, quantity stored was related to the quantity produced. Districts with greater production had a higher percent of their crop stored as on 1st October 2003. However, households in Tarime district stored relatively little maize in comparison to the quantity produced indicating that the quantity stored was determined by the food and seed requirements of the household and not to sell during the "off-season" when the farm gate price of maize is higher (Chart 3.92).

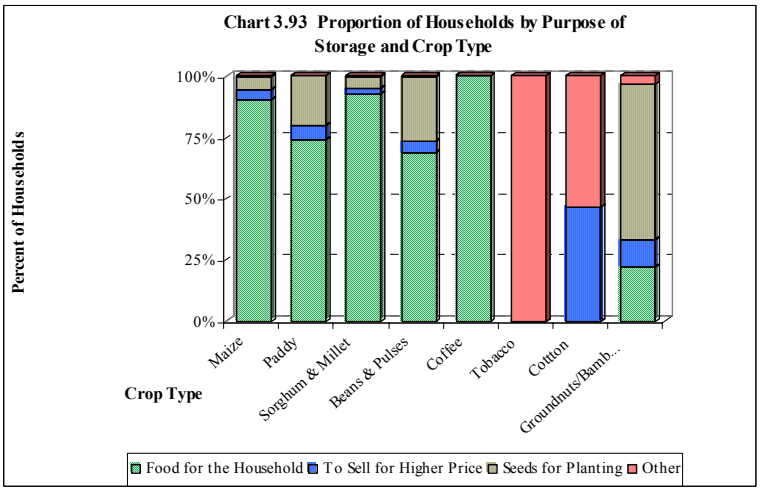
Chart 3.92 Quantity of Maize Produced (tonnes), Stored and Percent Stored by District



Purposes of Storage

Subsistence food crops (maize, paddy, sorghum and millets, beans and pulses) were mainly stored for household consumption. Ninety percent of households stored maize for household consumption as the main purpose of storage, followed by seed for planting (6%) and selling at higher price (4%). The highest percentage of the households that stored groundnuts/bambara nuts did so for the purpose of reserving seeds for planting (63%) (Chart 3.93).

Chart 3.93 Proportion of Households by Purpose of Storage and Crop Type



The Magnitude of Storage Loss

About 79.7 percent of households that stored crops had little or no loss. However the proportion of households that experienced a loss of more than a quarter was higher for food crops than crops that are produced for sale and other purposes such as tobacco, cotton and bambara nuts.

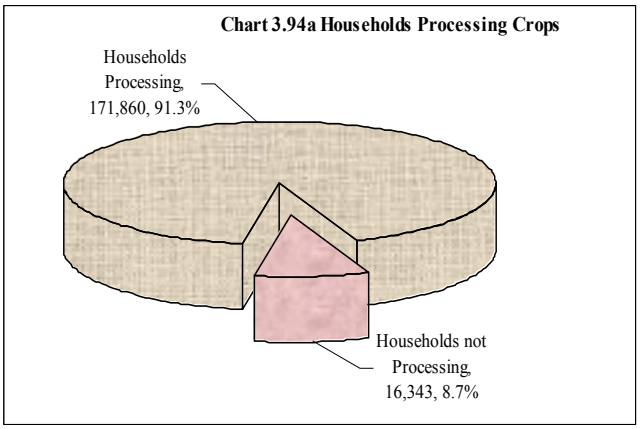
Table 3.10: Number of Households Storing Crops by Estimated Storage Loss and Crop

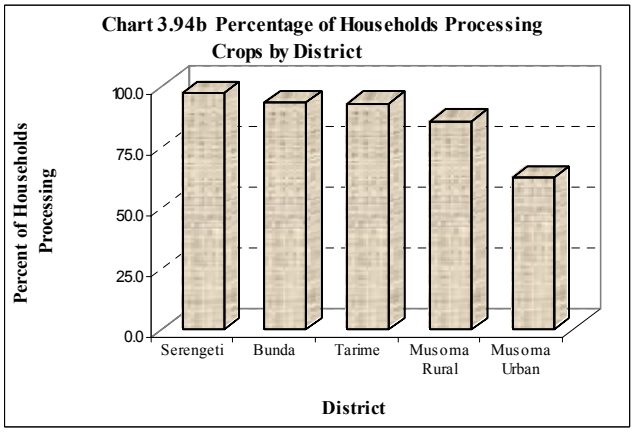
Crop	Estimated Storage Loss								Total
	Little or no Loss		Up to 1/4 Loss		Between 1/4 and 1/2 Loss		Over 1/2 Loss		
	Number of House -holds	%	Number of House -holds	%	Number of House -holds	%	Number of House -holds	%	
Maize	81,503	79.4	14,844	14.5	5,054	4.9	1,293	1.3	102,693
Paddy	7,472	96.0	195	2.5	0	0.0	117	1.5	7,785
Sorghum and Millets	59,687	75.8	13,596	17.3	4,250	5.4	1,231	1.6	78,764
Beans and Pulses	25,150	85.1	3,054	10.3	455	1.5	879	3.0	29,539
Coffee	132	100.0	0	0.0	0	0.0	0	0.0	132
Tobacco	70	100.0	0	0.0	0	0.0	0	0.0	70
Cotton	149	100.0	0	0.0	0	0.0	0	0.0	149
Groundnuts/Bambara Nuts	2,071	100.0	0	0.0	0	0.0	0	0.0	2,071

The proportion of households that reported a loss of more than a quarter was greatest for sorghum and millets (7.0% of the total number of households that stored crops). This was followed by maize (6.2%), pulses (4.5%) and paddy (1.5%) (Table 3.10).

3.7.2 Agro-processing and By-products

Agro processing refers to a process that converts a crop product from one form to another form in order to add value or increase the palatability of the product. Agro-processing was practiced by most crop growing households in Mara region (171,860 households, 91.3% of the total crop growing households) (Chart 3.94a).



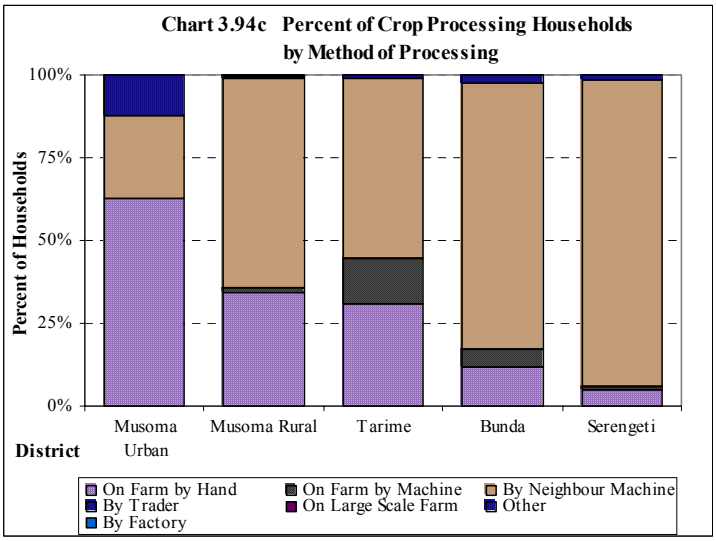


With exception of Musoma Urban district, the percent of households processing crops in the rest of the districts was very high (above 80%). Musoma Urban had the lowest percent of households processing crops (62% of crop growing households in the district) (Chart 3.94b).

3.7.2.1 Processing Methods

Most crop processing households processed their crops using neighbour's machines representing 67 percent (115,059 households). This was followed by those processing on-farm by hand (42,052 households, 24.5%), on farm by machine (12,461 households, 7%) and by trader (1,918 households, 1%). The remaining methods of processing were used by very few households (less than 1%).

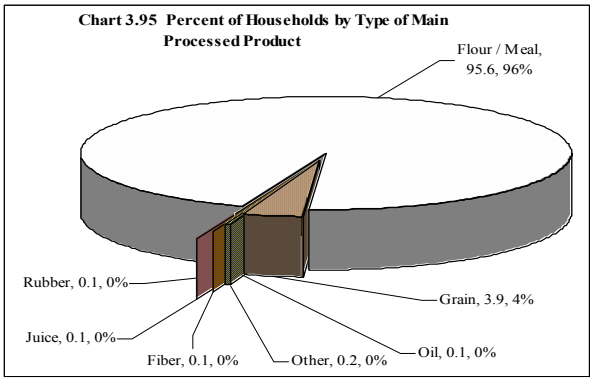
Although processing by neighbours machine was the most common processing method in most of districts in Mara region, district differences existed. Serengeti had the highest percent of households processing using neighbour's machine (93%), followed by Bunda (80%), Musoma Rural (63%), Tarime (55%) and Musoma Urban (25%). Processing by trader was more common in Musoma Urban (12.3%), whilst processing on farm by machine was more prevalent in Tarime (13.8%) (Chart 3.94c).

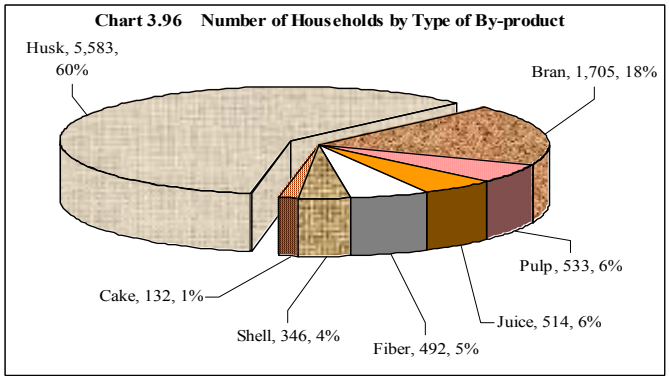


Main Agro-processing Products

Two types of products can be produced from agro-processing namely, main product and by-product. The main product is the major product after processing and the by-product is the secondary after processing. For example the main product after processing maize is normally flour whilst the by-product is normally the bran.

The main processed product was flour/meal with 164,261 households processing crops into flour (95.6%) followed by grain with 6,649 households (3.9%). The remaining products were produced by a small number of households (Chart 3.95).



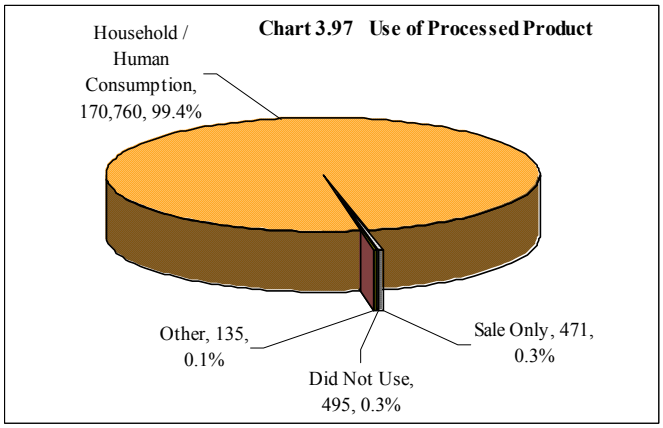


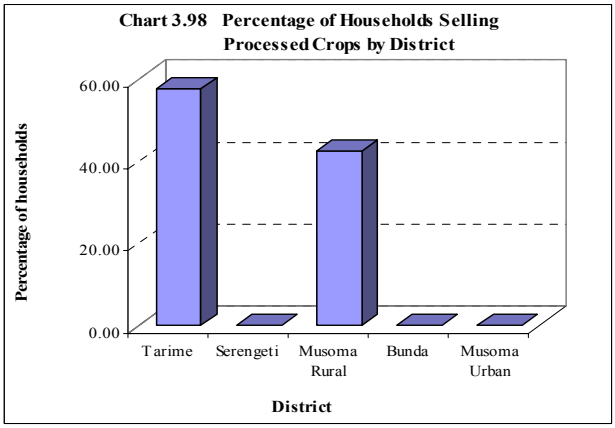
The number of households producing by-products accounted for 5.4 percent of the households processing crops. The most common by-product produced by crop processing households was husk with 5,583 households (60% of the households producing by-products), followed by bran (1,705 households, 18%), pulp (533 households, 6%) and juice (514 households, 6%). The remaining by-products were produced by a small number of households (Chart 3.96).

Main Use of Primary Processed Products

Primary processed products were used for households/ human consumption and for selling. The most important use was for household/human consumption which represented 99.4 percent of the total households that used primary processed products (Chart 3.97). Districts that sold primary processed products were Tarime and Musoma Rural.

Out of 471 households that sold processed products, 271 were from Tarime (58% of the total number of households selling processed products in the region) and 199 households (42%) were from Musoma Rural District. Other districts did not sell processed products (Chart 3.98). Musoma Rural had the highest proportion of households that sold processed products (0.4%). This was followed by Tarime (0.3%).

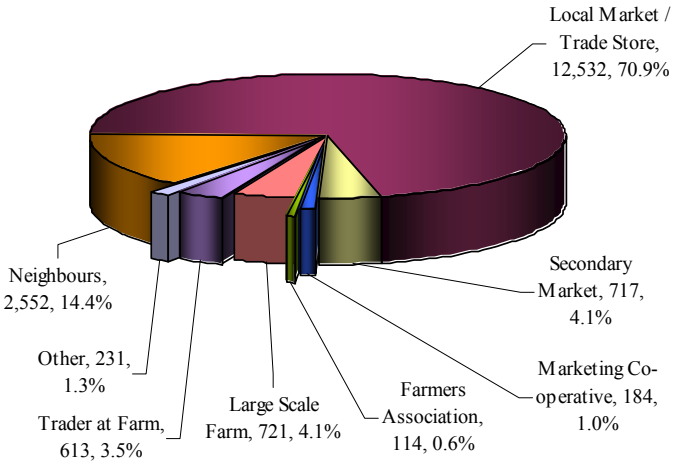




Outlets for Sale of Processed Products

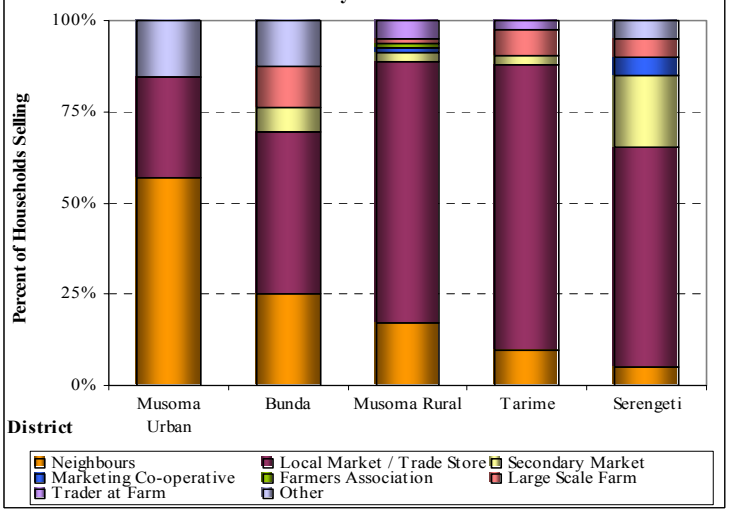
Most households that sold processed products sold to local market and trade stores (12,532 households, 72% of households that sold crops). This was followed by selling to neighbours (2,552 households, 14%), large scale farm (721 households, 4%), secondary markets (717 households, 4%) and traders at farm (613 households, 3%). Households that sold to the remaining outlet accounted for less than 1.5 percent for each location (Chart 3.99).

Chart 3.99 Location of Sale of Processed Products



There were large differences between districts in the proportion of households selling processed products to neighbours, with Musoma Urban district having the largest proportion (57% of the households selling processed products in the district), whereas Serengeti had only 5 percent. With exception of Musoma Urban which had the highest percentage of households selling processed products to neighbours, the rest of the districts sold mostly to local markets and trade stores.

Chart 3.100 Percent of Households Selling Processed Products by Outlet for Sale and District

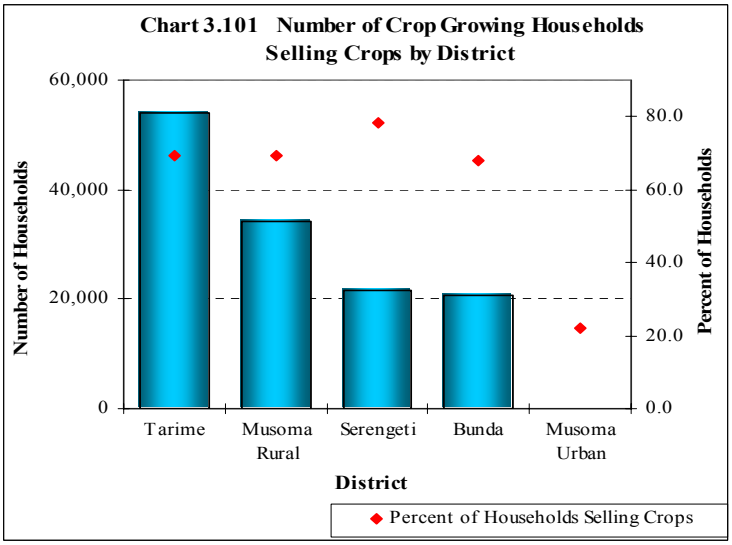


Compared to other districts, Musoma Rural had the highest percent of households selling processed products to traders at farm and farmers associations. The sale of processed products to secondary markets was most prominent in Serengeti compared to other districts, whilst selling to large scale farms was most prominent in Bunda district. The district which had the highest proportion of households selling processed products to marketing cooperative was Serengeti (Chart 3.100).

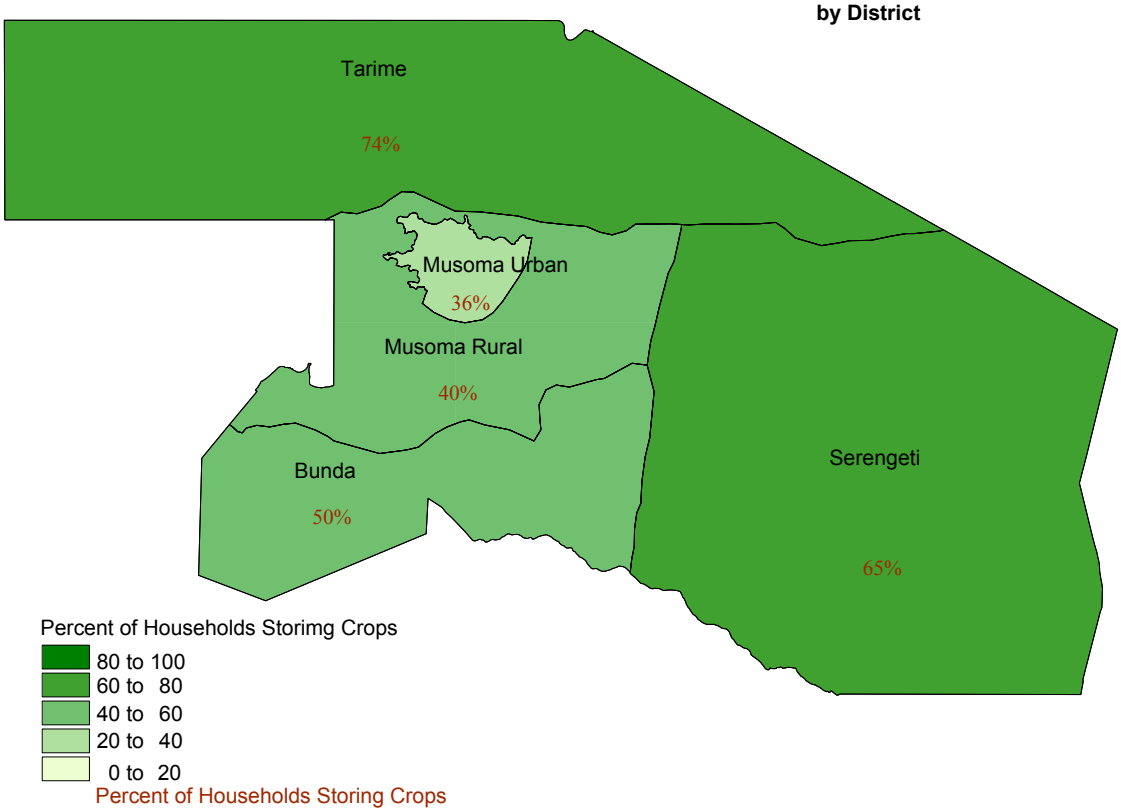
3.7.3 Crop Marketing

The number of households that reported selling crops was 130,438 which represent 70.2 percent of the total number of crop growing households. The proportion of crop growing households selling crops was highest in Serengeti (77.3%) followed by Musoma Rural (69.5%), Tarime (69.1%), Bunda (67.7%) and Musoma Urban (21.9%) (Chart 3.101 and Map 3.42).

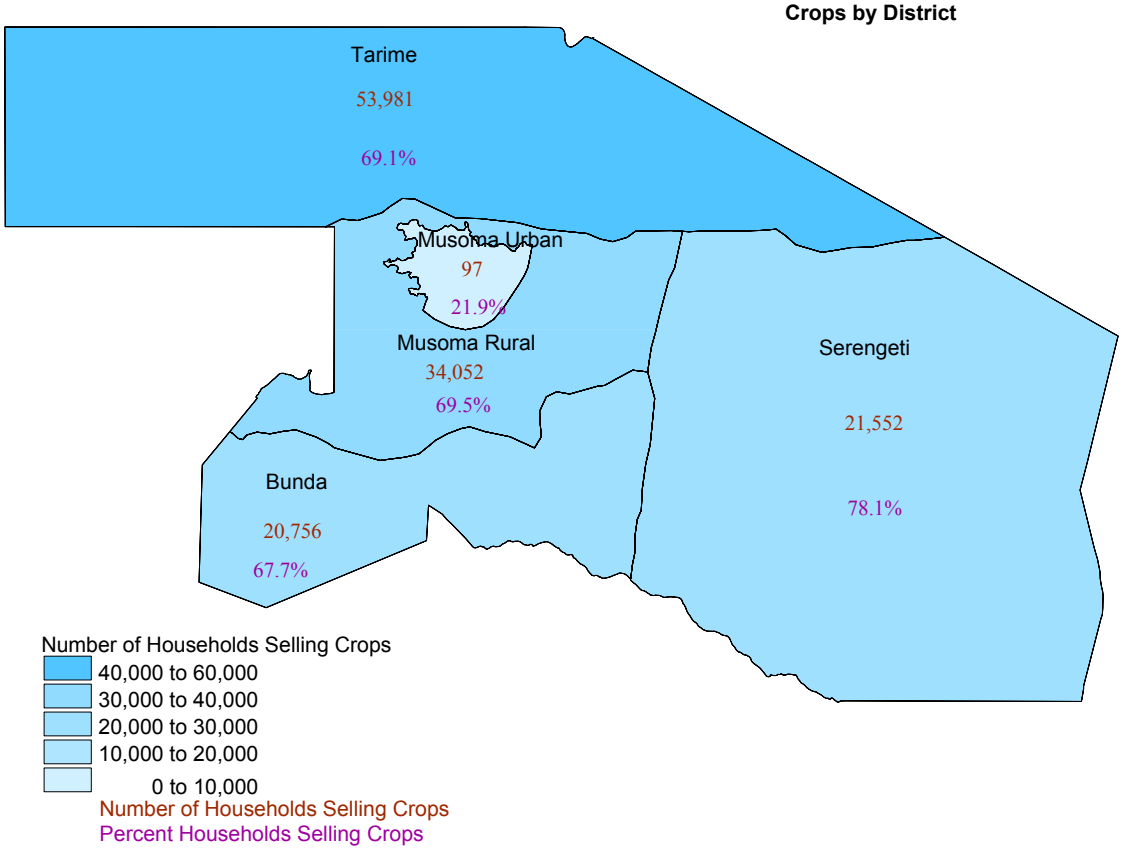
Chart 3.101 Number of Crop Growing Households Selling Crops by District



MAP 3.41 MARA
Percent of Households Storing Crops For 3 to 6 Months by District



MAP 3.42 MARA
Number of Households and Percent of Total Households Selling Crops by District



Main Marketing Problems

Low price for agricultural produce was the main marketing problem reported by households (76% of crop growing households that reported main marketing problems).

Apart from low market prices, other problems were longer distances to the markets (11%), lack of transport (6%), high transport costs (3%) and lack of buyers (2%). Other marketing problems were minor and represented less than 2 percent of the total reported problems (Chart 3.102).

Chart 3.102 Percentage Distribution of Households that Reported Marketing Problems by Type of Problem

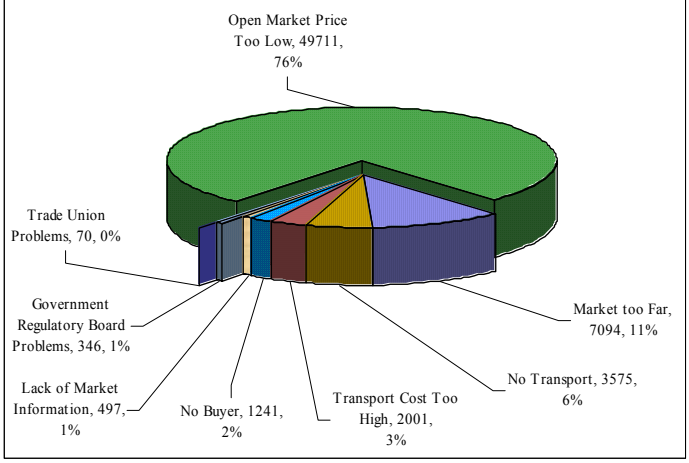


Table 3.11 Reasons for Not Selling Crop Produce

Main Reason	Household Number	%
Production Insufficient to Sell	62,229	84.5
Other	6,103	8.3
Price Too Low	3,085	4.2
Trade Union Problems	1,534	2.1
Market Too Far	304	0.4
Co-operative Problems	251	0.3
Government Regulatory Board Problems	136	0.2
Total	**73,642**	**100**

Reasons for Not Selling Crops

The main reason for not selling crops was reported as "insufficient production to sell", representing 84.5 percent of the agricultural households that reported reasons for not selling, followed by low price (4.2%), trade union problems (2.1%), markets location being too far (0.4%), cooperative problems (0.3%) and Government regulatory board problems (0.2%) (Table 3.11).

3.8 Access to Crop Production Services

3.8.1 Access to Agricultural Credit

The census result shows that in Mara region very few agricultural households (675, 0.4% of agricultural households in the region) accessed credit out of which 419 (75%) were male-headed households and 256 (38%) were female headed households. In Musoma Rural district, only female headed households got agricultural credit whereas in Serengeti both male and female headed households accessed agricultural credit (Table 3.12).

Table 3.12 Number of Agricultural Households that Received Credit by Sex of Household Head and District

District	Male		Female		Total Number
	Number	%	Number	%	
Tarime	0	0	0	0	0
Serengeti	419	75	140	25	559
Musoma Rural	0	0	117	100	117
Bunda	0	0	0	0	0
Musoma Urban	0	0	0	0	0
Total	**419**	**75**	**256**	**38**	**675**

3.8.1.1 Source of Agricultural Credit

The major agricultural credit providers in Mara region were traders and/or trade stores which collectively provided credit to 489 agricultural households (73% of the total number of households that accessed credit), followed by saving and credit societies (17%) and family and friends and relatives (10%) (Chart 3.103). Family, friends and relatives were the sole source of credit in Serengeti district and Saving and Credit Societies provided credit to households in Musoma Rural district only (Chart 3.104).

Chart 3.103 Percentage Distribution of Households Receiving Credit by Main Source

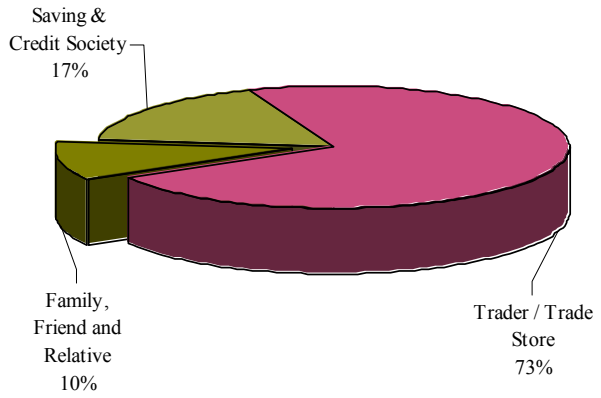
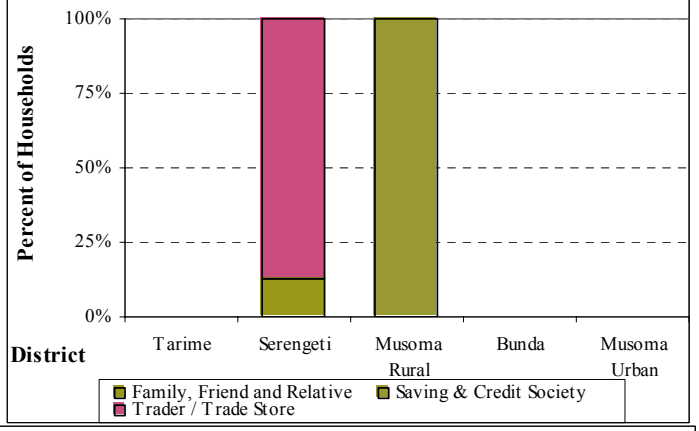


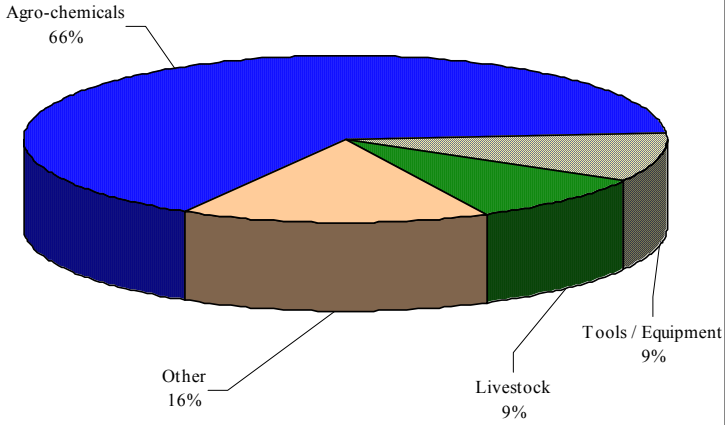
Chart 3.104 Number of Households Receiving Credit by Main Source of Credit and District



Use of Agricultural Credits

A large proportion of the agricultural credit provided to agricultural households in Mara region was used for buying agrochemicals (66%), followed by tools and equipment (9%), purchasing of livestock (9%) and other unspecified activities (16%)(Chart 3.105).

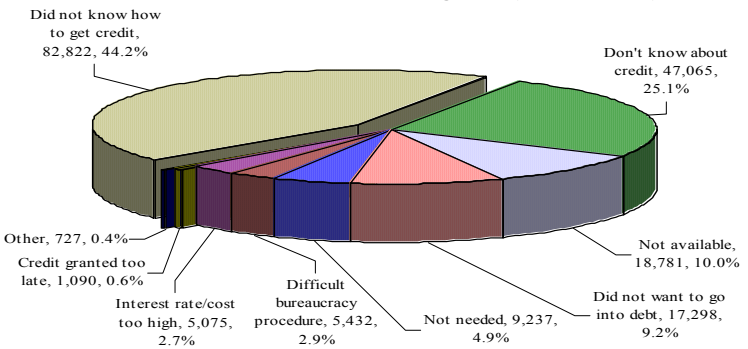
Chart 3.105 Proportion of Credits Received by Main Purposes



Reasons for Not Using Agricultural Credits

The main reason for not using agricultural credit was little credit awareness accounting for 69.3 percent of the agricultural households ("did not know how to get credit" and "don't know about credit"). This was followed by households reporting "un-availability of credit" (10.0%), followed by "not wanting to go into debt" (9.2%). The rest of the reasons accounted for 11.5 percent of the households (Chart 3.106).

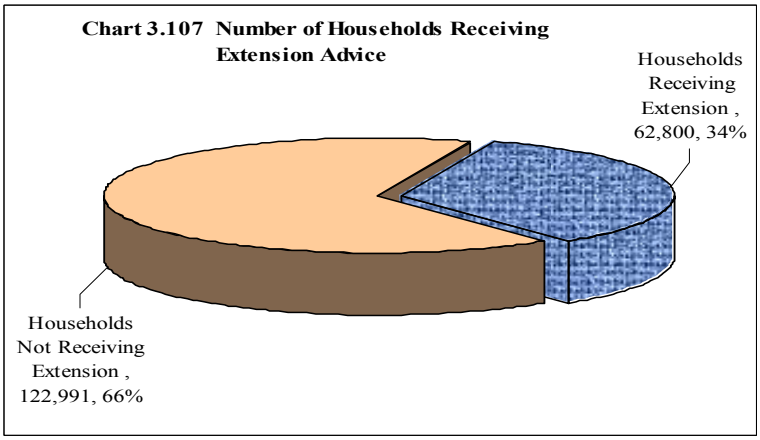
Chart 3.106 Reasons for not Using Credit (% of Households)



3.8.2 Crop Extension

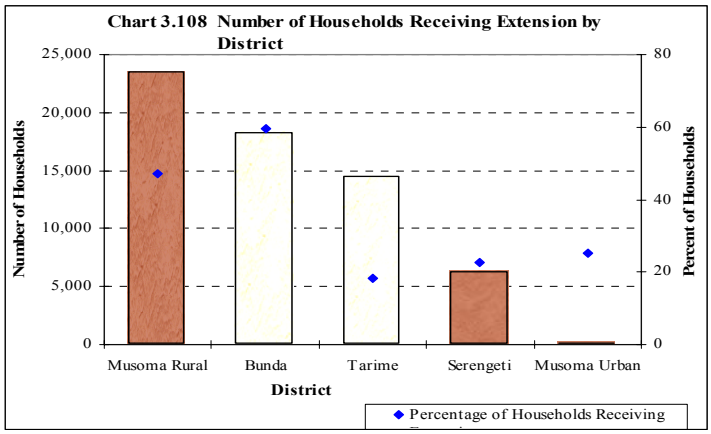
The number of Agricultural households that received crop extension was 62,800 (34% of the total crop growing households in the region) (Chart 3.107). Some districts had more access to extension services than others, with Bunda having a relatively high proportion of households (60% of the crop growing households) that received crop extension messages, followed by Musoma Rural (48%), Musoma Urban (26%), Serengeti (23%) and Tarime (19%) (Chart 3.108 and Map 3.43).

Chart 3.107 Number of Households Receiving Extension Advice



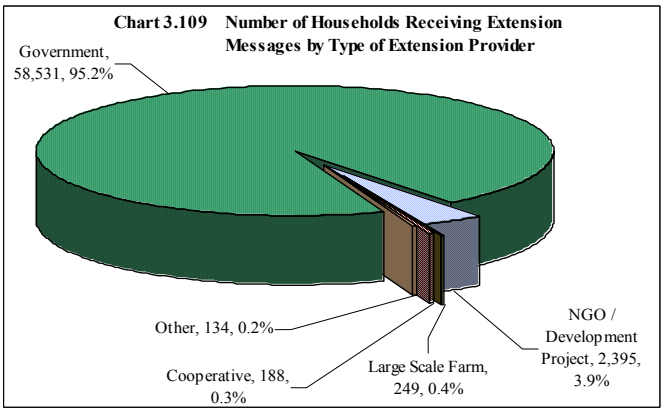
Sources of Crop Extension Messages

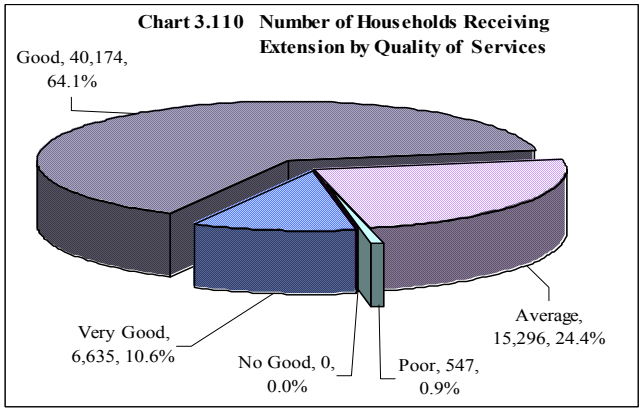
Of the households receiving extension advice the Government provided the greatest proportion (95.2%, 58,531 households). NGOs/Development projects provided 3.9 percent, large scale farms 0.4 percent and the remaining providers less than 0.6 percent (Chart 3.109), however district differences exist with the proportion of the households receiving advice from government services ranging from between 81.0 percent in Musoma Urban to 98.8 percent in Serengeti.



Quality of Extension

An assessment of the quality of extension indicates that 64 percent of the households receiving extension ranked the service as being good, followed by average (24 %) and very good (11%) (Chart 3.110).





However, care should be exercised when making decisions on quality of extension and also other variables in the extension report as all the enumerators were extension agents and some degree of bias is expected.

3.9 Access to Inputs

Access to inputs in this section refers to all crop growing households in Mara regardless of whether the household grew annual or permanent crops. In previous sections, the reference was on annual crops only. Because of this, the figures presented in this section may differ from those in the previous section on inputs (Section 3.5). Data on source of inputs is only found in this section and applies to both annual and permanent crops.

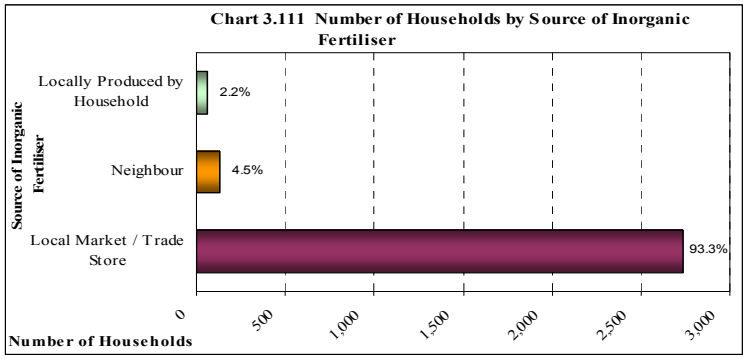
A small number of households use inputs and this is particularly true of inputs that are not produced on the farm i.e., improved seeds, fungicides, inorganic fertiliser and herbicides. In Mara region farm yard manure was used by 48,514 households which represented 26.1 percent of the total number of crop growing households. This was followed by improved seeds (22.9%), insecticide/fungicide (11.6%), compost (3.6%), inorganic fertiliser (1.6%) and herbicide (0.1%) (Table 3.13).

Table 3.13 Access to Inputs

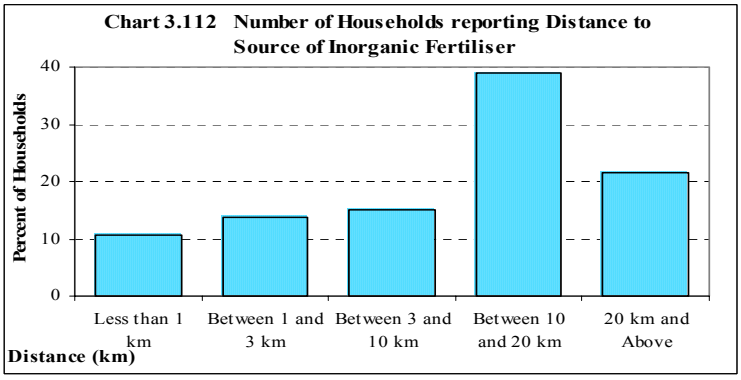
Type of Input	Households With Access to Input		Households Without Access to Input	
	Number	%	Number	%
Farm Yard Manure	48,514	26.1	137,277	73.9
Improved Seeds	42,530	22.9	143,261	77.1
Insecticide/Fungicide	21,587	11.6	164,204	88.4
Compost	6,716	3.6	179,075	96.4
Inorganic Fertiliser	2,932	1.6	182,859	98.4
Herbicide	206	0.1	185,584	99.9

3.9.2 Inorganic Fertilisers

Smallholders that use inorganic fertilisers in Mara region mostly purchased them from the local market/trade store (93.3% of the total number of inorganic fertiliser users). The remaining sources of inorganic fertilisers were of minor importance (Chart 3.111).



Most households reside between 10 and 20 km from the source of inorganic fertilizers (39%), followed by 20 km and above (22%) and between 3 and 10 km (15%) (Chart 3.112).

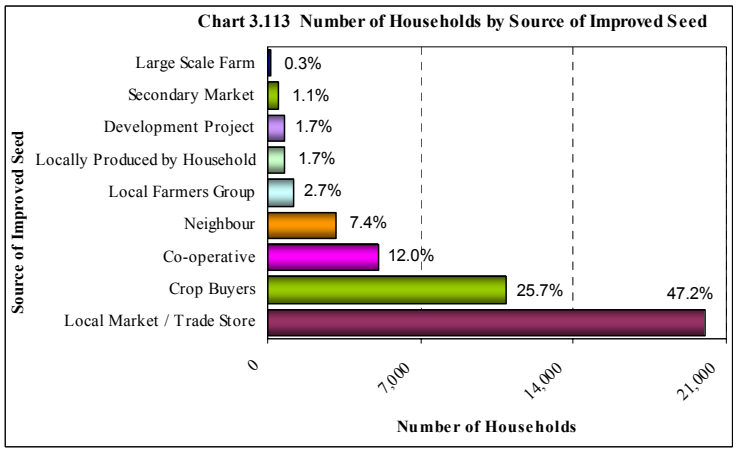


Due to the very small number of households using inorganic fertilisers coupled with the small number of households responding to "non availability" as the reason for not using (32%), it may be assumed that access to inorganic fertiliser is not the main reason for not using. Other reasons such as cost are more important with 57 percent of households responding to cost factors as the main reason for not using. In other words, it is assumed that if the cost was affordable, the demand would be higher and inorganic fertiliser would be made more available.

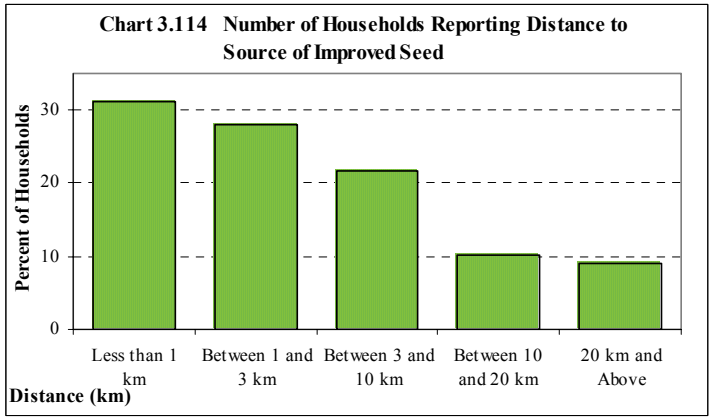
More smallholders use inorganic fertilisers in Tarime than in other districts in Mara region (73% of households using inorganic fertilisers), followed by Musoma Rural (20%), Serengeti (5%), Bunda (3%) and Musoma Urban (0.6%).

3.9.3 Improved Seeds

The percent of households that use improved seeds was 22.9 percent of the total number of crop growing households. Most of the improved seeds were from the local markets/trade stores (47.2%). Other less important sources of improved seeds were crop buyers (25.7%), co-operatives (12.0%), neighbours (7.4%), local farmers group (2.7%), locally produced by the household (1.7%), development project (1.7%) and secondary market (1.1%). Only 0.3 percent of households using improved seeds obtained them from large scale farms (Chart 3.113).



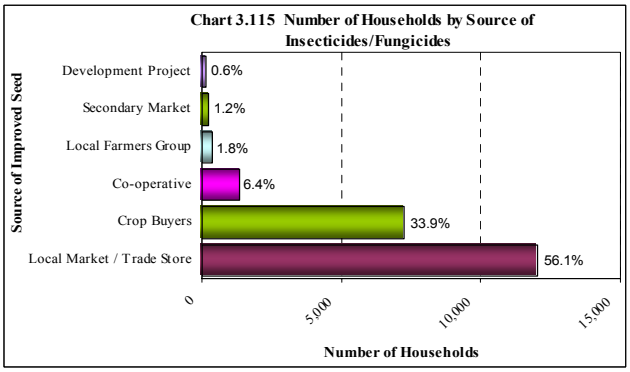
Access to improved seeds were better than access to chemical inputs with 31 percent of households obtaining the input within 1 km of the household (Chart 3.114) compared to 11 percent for chemical fertilizer input. The higher use of improved seeds compared to other inputs is an indication that the availability is not the main prohibiting factor for the use of inputs but rather other factors such as cost.

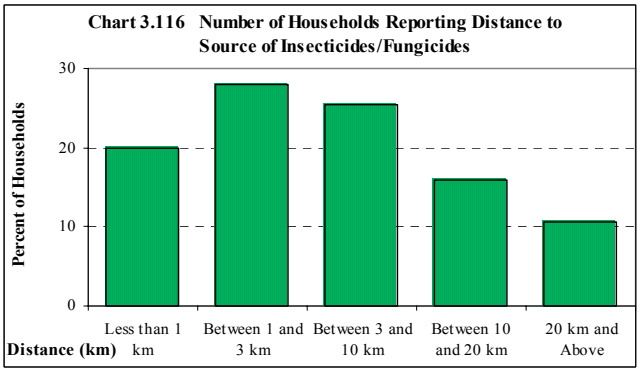


The district that used improved seeds most was Bunda with 36.7 percent of the total number of crop growing households using improved seeds in the district, followed by Musoma Urban (26.9%) and Musoma Rural (24.9%). Percentages of the crop growing households in Tarime and Serengeti districts that used improved seeds were 18.4 and 16.5 respectively (Map 3.44).

3.9.4 Insecticides and Fungicides

Most smallholder households using insecticides and fungicides mainly purchase them from local markets/trade stores (56.1% of the total number of fungicide users), followed by crop buyers (33.9%) and from co-operatives (6.4). Other sources of insecticides/ fungicides are of minor importance (Chart 3.115). Chart 3.116 shows that 74 percent of the crop growing households which used insecticides and pesticides obtained them from the distance of less than or equal to ten kilometres.

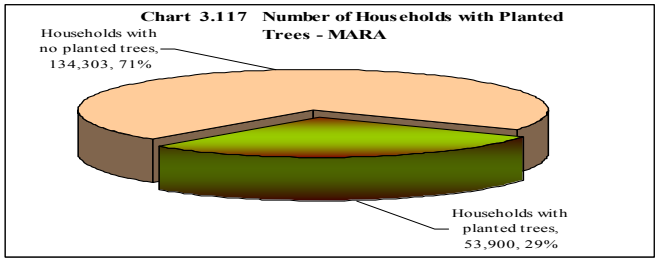




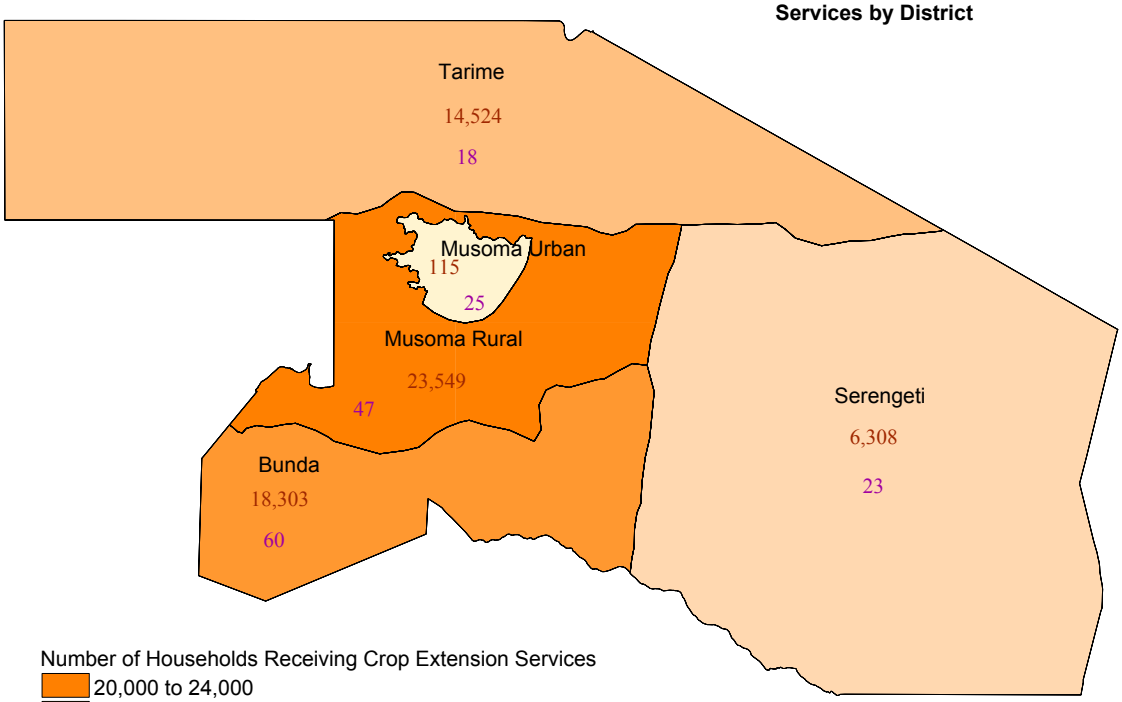
The small number of households using insecticides/fungicides, coupled with the 15 percent of households responding to "not available" as the reason for not using, then it may be assumed that access was not the main reason for not using the input. Other reasons such as costs were more important with 52 percent of households responding to cost factors as the main reason for not using the inputs. In other words, it may be assumed that if the cost was affordable, the demand would be higher and insecticides/fungicides would be made more available. Insecticide/Fungicide were mostly used in Bunda district with 29 percent of the total number of crop growing households using them, followed by Serengeti (14%), Musoma Rural (12%), Musoma Urban (11%) and Tarime (3%).

3.10 Tree Planting

The number of households involved in tree farming was 53,900 representing 29 percent of the total number of agriculture households (Chart 3.117).



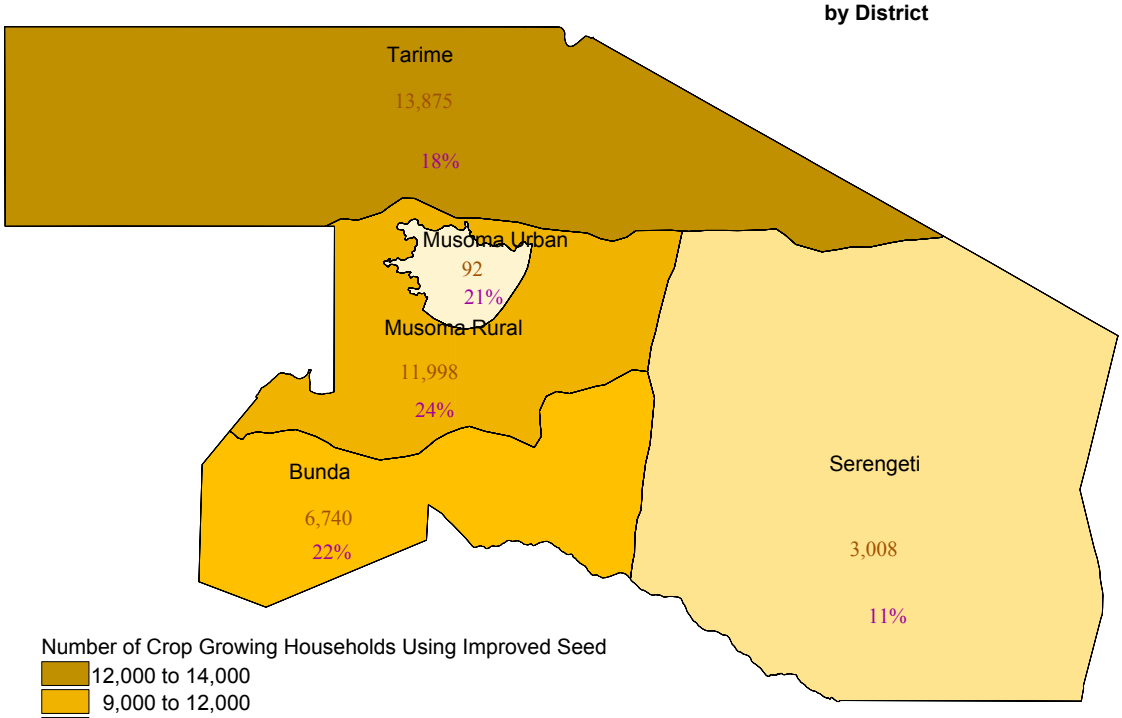
MAP 3.43MARA
Number of Households and Percent of Total Households Receiving Crop Extension Services by District



Number of Households Receiving Crop Extension Services
- 20,000 to 24,000
- 15,000 to 20,000
- 10,000 to 15,000
- 5,000 to 10,000
- 0 to 5,000

Number of Households Receiving Crop Extension Services
Percent of Households Receiving Crop Extension Services

MAP 3.44 MARA
Number and Percent of Crop Growing Households using Improved Seed by District



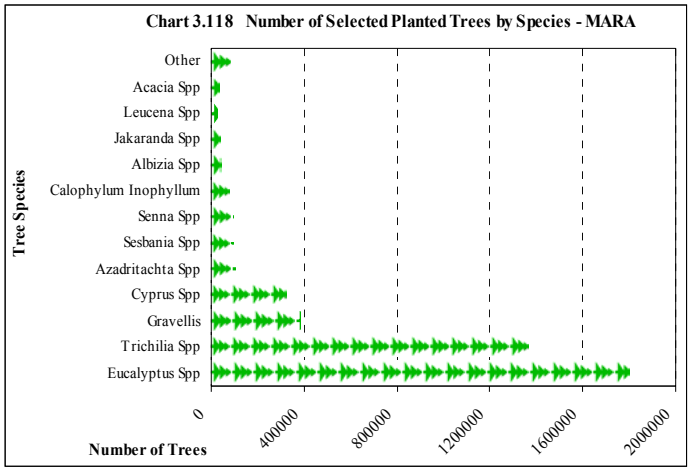
Number of Crop Growing Households Using Improved Seed
- 12,000 to 14,000
- 9,000 to 12,000
- 6,000 to 9,000
- 3,000 to 6,000
- 0 to 3,000

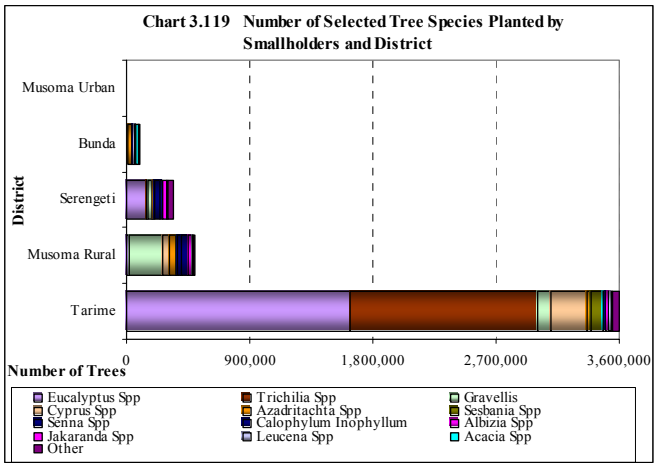
Number of Crop Growing Households Using Improved Seed
Percent of Crop Growing Households Using Improved Seed

Tanzania Agriculture Sample Census

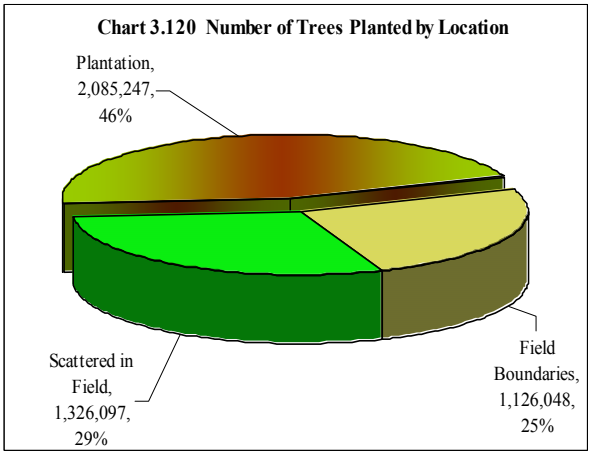
The number of trees planted by smallholders on their allotted land was 4,540,084 trees. The average number of trees planted per household that plants trees on their land was 84 trees

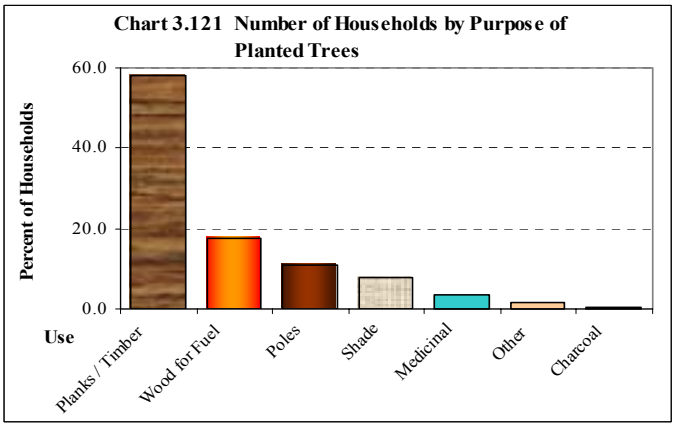
The main species planted by smallholders was Eucalyptus spp (1,807,591 trees, 39.8%), followed by Trichilia spp (1,371,363 trees, 30.2%), then Gravellis spp (388,923 trees, 8.6%), Cyprus spp (324,484 trees, 7.1%), Azadrachta spp (107,041, 2.4%), Sesbania spp (105,817 trees, 2.3%) and Senna spp (101,615 trees, 2.2%). The remaining trees species were planted in comparatively small numbers (Chart118.). Tarime has the largest number of trees planted by smallholders than any other district with 79.3 percent of the total number of trees in Mara region and is dominated by Eucalyptus spp. This is followed by Musoma Rural (11.0%) which was dominated by Gravellia spp, then Serengeti (7.6%) dominated by Eucalyptus spp, Bunda (2.1%) dominated by Azadrachta spp and Musoma Urban (0.1%) which was mainly planted with Gravellis spp (Chart 3.119 and Map 3.45).





Trees planted in plantations or coppice are more common among smallholder households. The proportion of trees that were planted in plantations/coppice was 46 percent, followed by trees scattered in fields 29 percent and then trees planted in field boundaries 25 percent (Chart 3.120).





The main purpose of planting trees was to obtain planks/timber (56.0%). This is followed by obtaining wood for fuel (18.9%), poles (10.7%), shade (9.4%) and charcoal (0.2%) (Chart 3.121).

3.11 Irrigation and Erosion Control Facilities

Erosion control and water harvesting facilities are grouped together as they normally have dual purposes of reducing erosion and increasing the amount of water available for crop production.

The number of agricultural households that had soil erosion and water harvesting facilities on their farms was 18,282 which represented 10 percent of the total number of agricultural households in the region (Chart 3.122).

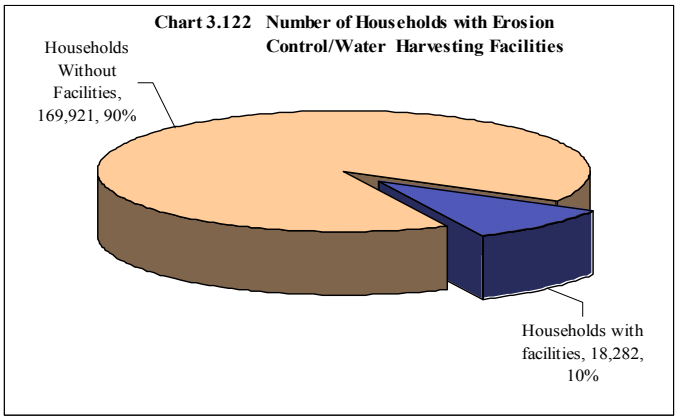


Chart 3.122 Number of Households with Erosion Control/Water Harvesting Facilities

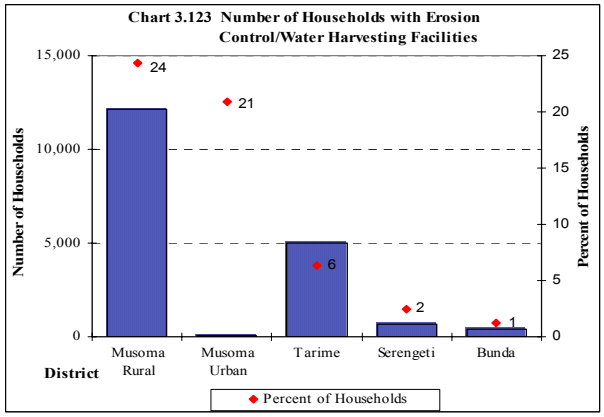


Chart 3.123 Number of Households with Erosion Control/Water Harvesting Facilities

The proportion of households with soil erosion control and water harvesting facilities was highest in Musoma Rural district (24% of the total agricultural households in the district), followed by Musoma Urban (21%), Tarime (6%), Serengeti (2%) and Bunda (1%) (Chart 3.123 and Map 46).

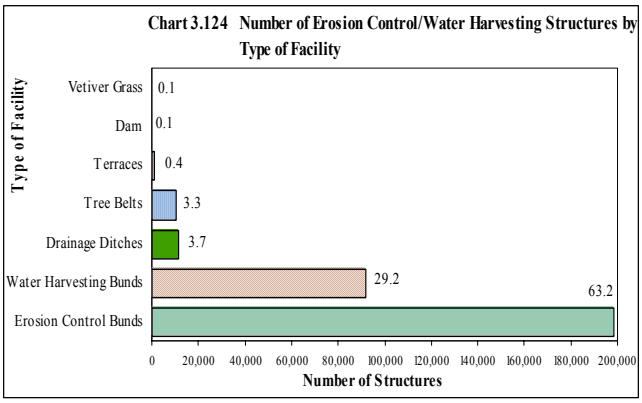


Chart 3.124 Number of Erosion Control/Water Harvesting Structures by Type of Facility

Erosion control bunds accounted for 63.2 percent of the total number of structures, followed by water harvesting bunds (29.2%), drainage ditches (3.7%), tree belts (3.3%), terraces (0.4%), dams (0.1%) and vetiver grass (0.1%) (Chart 3.124).

Erosion control bunds and tree belts, together had 290,125 structures. This represented 92.4 percent of the total structures in the region. The remaining 7.5 percentages were shared among the rest of the erosion control methods mentioned above. Musoma Rural district had 282,054 erosion control structures representing 90 percent of the total erosion structures in Mara region.

3.12 Livestock Results

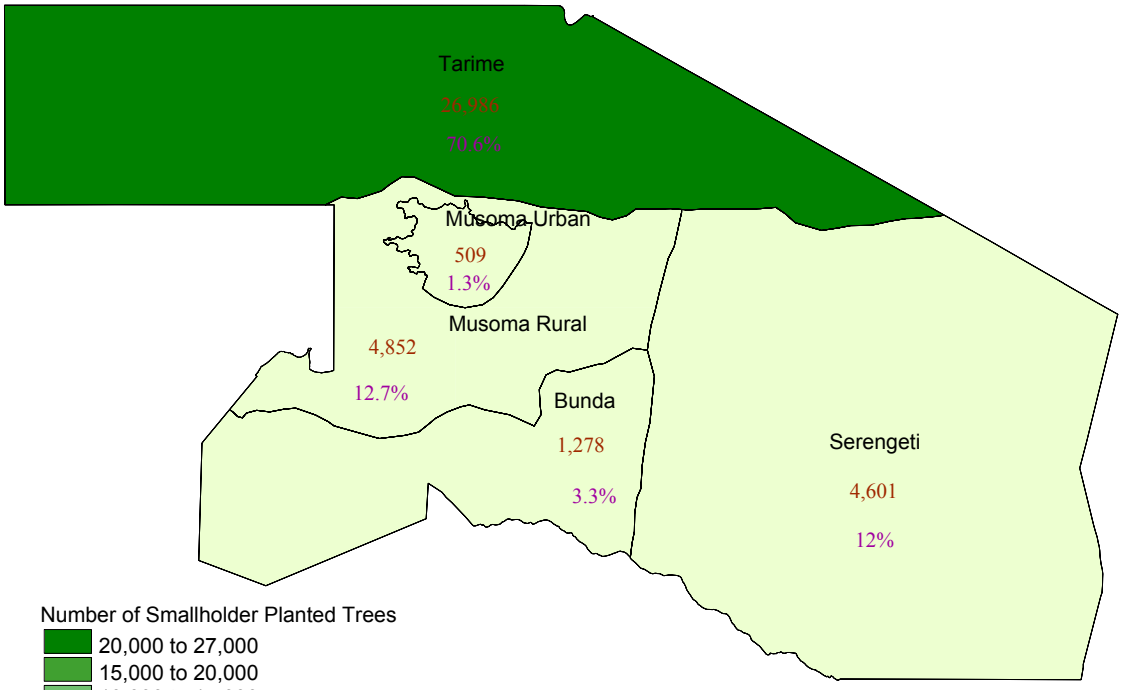
3.12.1 Cattle Production

The total number of cattle in the region was 1,099,068. Cattle were the dominant livestock type in the region, followed by goats, sheep and pigs. The region had 6.5 percent of the total cattle population on Tanzania Mainland.

Cattle Population

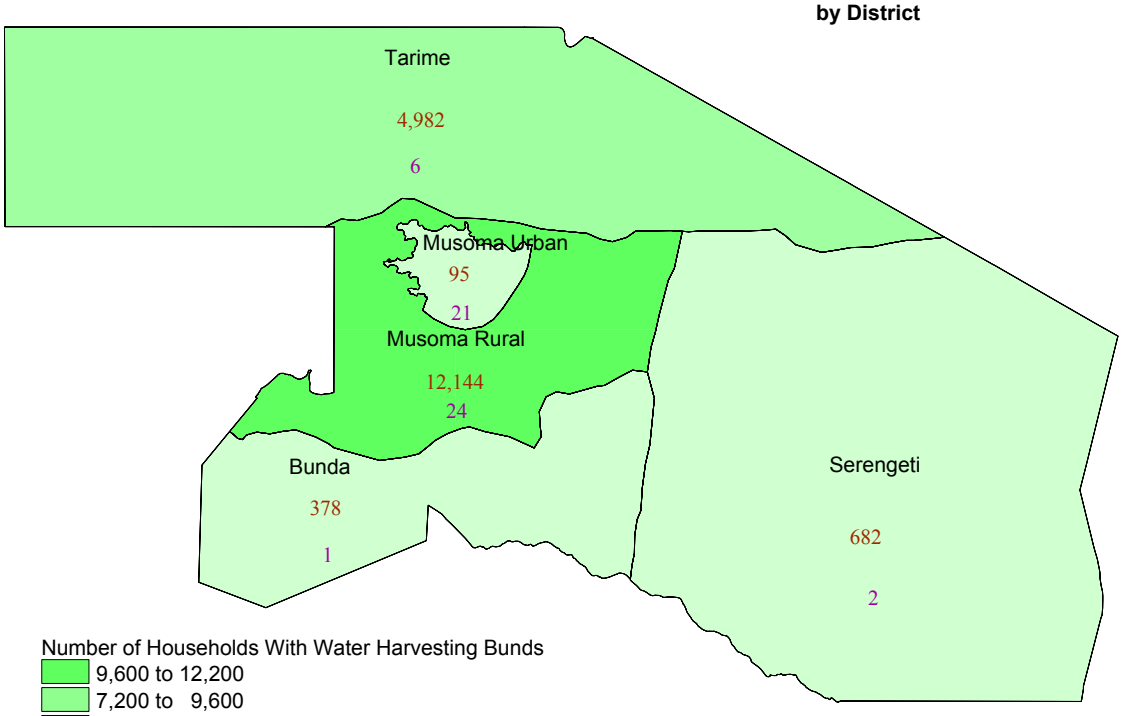
The number of indigenous cattle in Mara region was 1,090,007 (99.2 % of the total number of cattle in the region). The number of dairy breeds was 8,797 cattle (0.8%) and 264 cattle (0.02%) were beef breeds.

MAP 3.45 MARA
Number and Percent of Smallholder Planted Trees by district



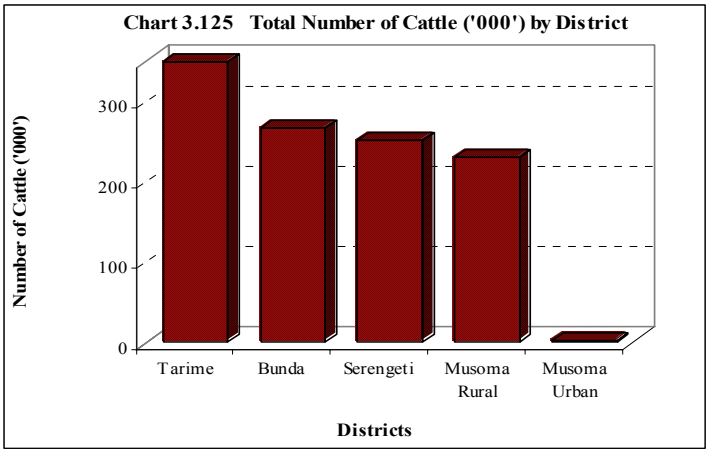
Number of Smallholder Planted Trees
20,000 to 27,000
15,000 to 20,000
10,000 to 15,000
5,000 to 10,000
0 to 5,000
Number of Smallholder Planted Trees
Percent of Smallholder Planted Trees

MAP 3.46 MARA
Number and Percent of Households With Water Harvesting Bunds by District

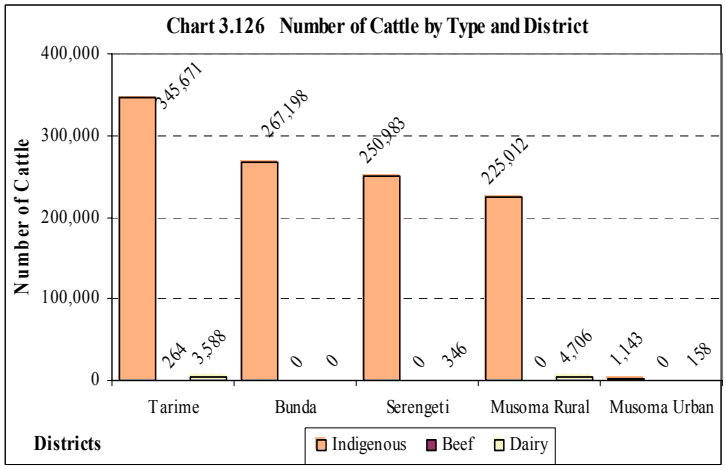


Number of Households With Water Harvesting Bunds
9,600 to 12,200
7,200 to 9,600
4,800 to 7,200
2,400 to 4,800
0 to 2,400
Number of Households With Water Harvesting Bunds
Percent of Households with Water Harvesting Bunds

The census results show that 63,430 agricultural households in the region (33.7% of total agricultural households) kept about 1.1 million cattle. This was equivalent to an average of 17 heads of cattle per cattle-keeping-household. The district with the largest number of cattle was Tarime which had about 349,523 cattle (31.8 % of the total cattle in Mara region). This is followed by Bunda (267,198 cattle, 24.3%), Serengeti (251,329 cattle, 22.9%) and Musoma Rural (229,719 cattle, 20.9%). Musoma Urban had the least number of cattle (1,301 cattle, 0.1%) (Chart 3.125 and Map 47). However, Bunda district had the highest density of cattle in the region (175 heads per sq km) (Map 3.48).



Although Tarime district had the largest number of cattle in the region, most of them were indigenous. The number of dairy cattle was very small and the number of beef cattle was insignificant. Musoma Rural district had the largest numbers of diary and beef cattle in the region. In general, the number of beef cattle in the region was insignificant (Chart 3.126).

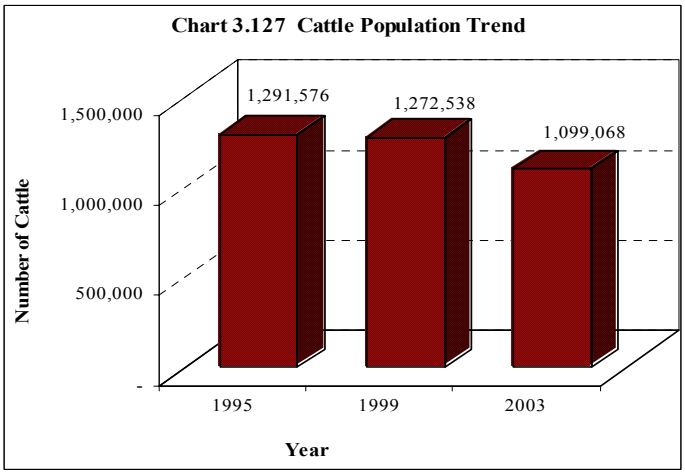


Herd Size

Thirty one percent of the cattle-rearing households had herds of size 1-5 cattle with an average of 3 cattle per household. Herd sizes of 31-40 accounted for about 7 percent of all cattle-rearing households and 14 percent of all cattle in the region. Only 12 percent of the cattle rearing households had herd sizes of 31- 100 cattle. About 87 percent of total cattle rearing households had herds of size 1-30 cattle and owned 49 percent of total cattle in the region, resulting in an average of 10 cattle per cattle rearing household. There were about 557 households with a herd size of more than 151 cattle each (163,616 cattle in total) resulting in an average of 294 cattle per household.

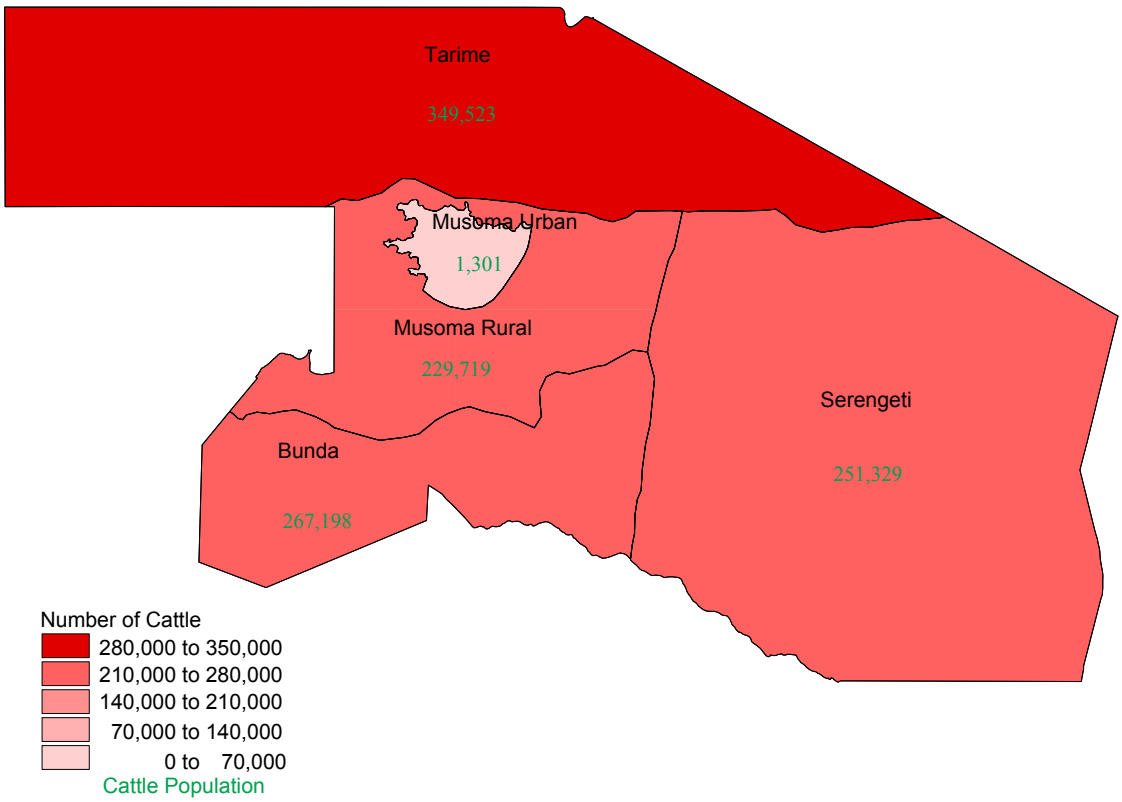
Cattle Population Trend

Cattle population in Mara decreased during the period of eight years from 1,291,576 in 1995 to 1,099,068 cattle in 2003. This implies an overall annual negative growth rate of -2.00 percent (Chart 3.127). However, the rate of decrease was lower for the period of four years from 1995 to 1999 (-0.37) as compared to that of the period from 1999 to 2003 (-3.60).

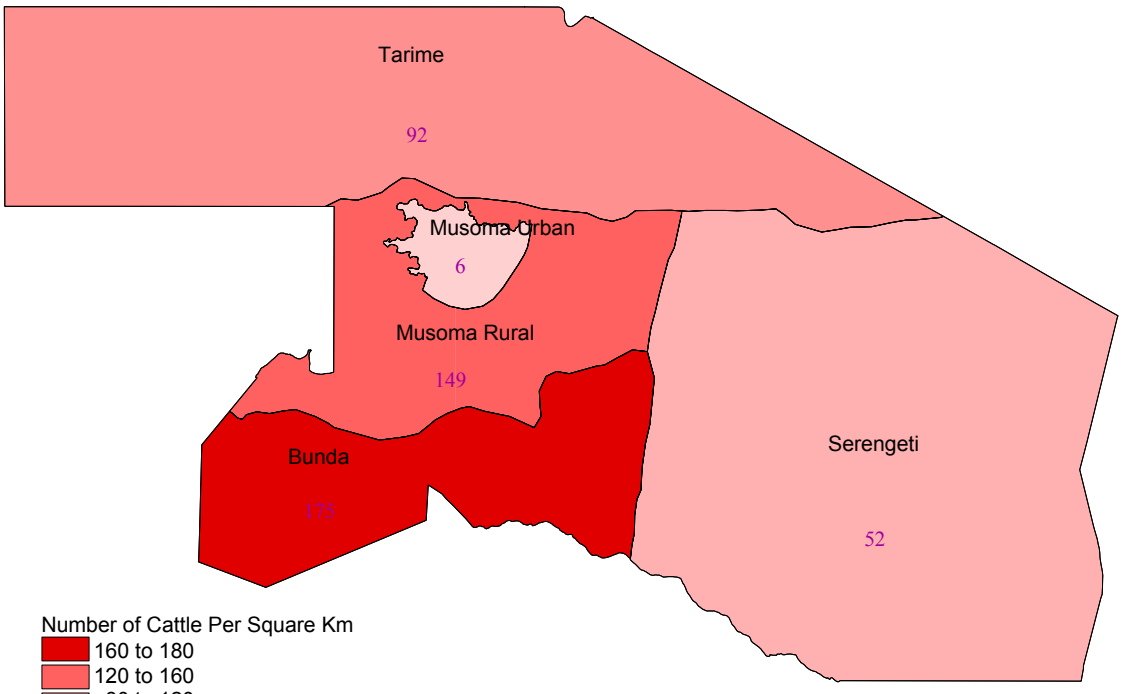


However, the rate of decrease was lower for the period of four years from 1995 to 1999 (-0.37) as compared to that of the period from 1999 to 2003 (-3.60).

MAP 3.47 MARA
Cattle Population as of 1st Octobers 2003
by District

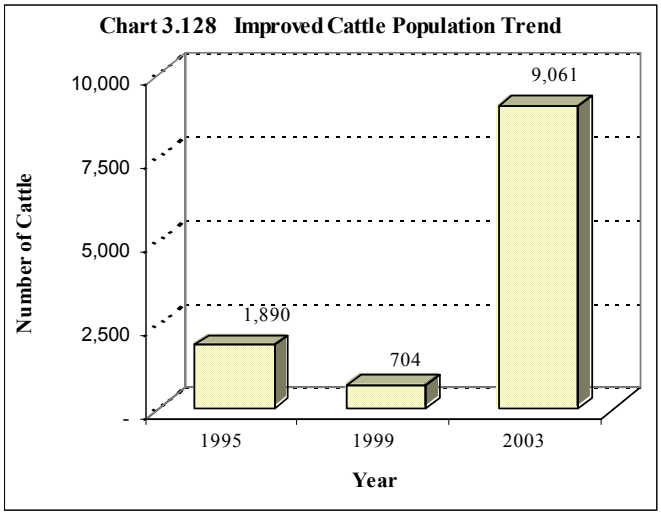


MAP 3.48 MARA
Cattle Density as of 1st October 2003
by District



Improved Cattle Breeds

The total number of improved cattle in Mara region was 9,061 (8,797 dairy and 264 improved beef). The diary cattle constituted 0.8 percent of the total cattle and 97.1 percent of improved cattle in the region. The number of beef cattle in the region constituted 2.9 percent of the total number of the improved cattle and 0.02 percent of the total cattle. The number of improved cattle increased from 1,890 in 1995 to 9,061 in 2003 at an annual rate of 21.6 percent. From the year 1995 to 1999 the number of improved cattle decreased from 1,890 to 704 (an annual decrease rate of -21.9). The population shot from 704 in 1999 to 9,061 at an annual rate of 89.4 percent (Chart.128).

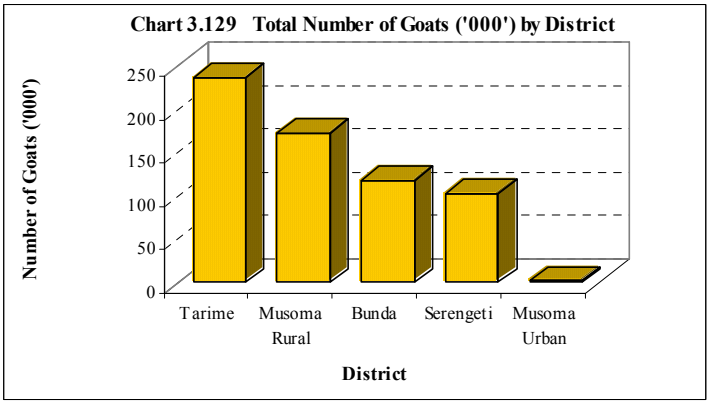


3.12.2. Goat Production

Goat rearing was the second most important livestock keeping activity in the region, followed by sheep and pig rearing. In terms of total number of goats, Mara region ranked 9 out of the 21 regions of Tanzania Mainland with 5.4 percent of the total goats.

Goat Population

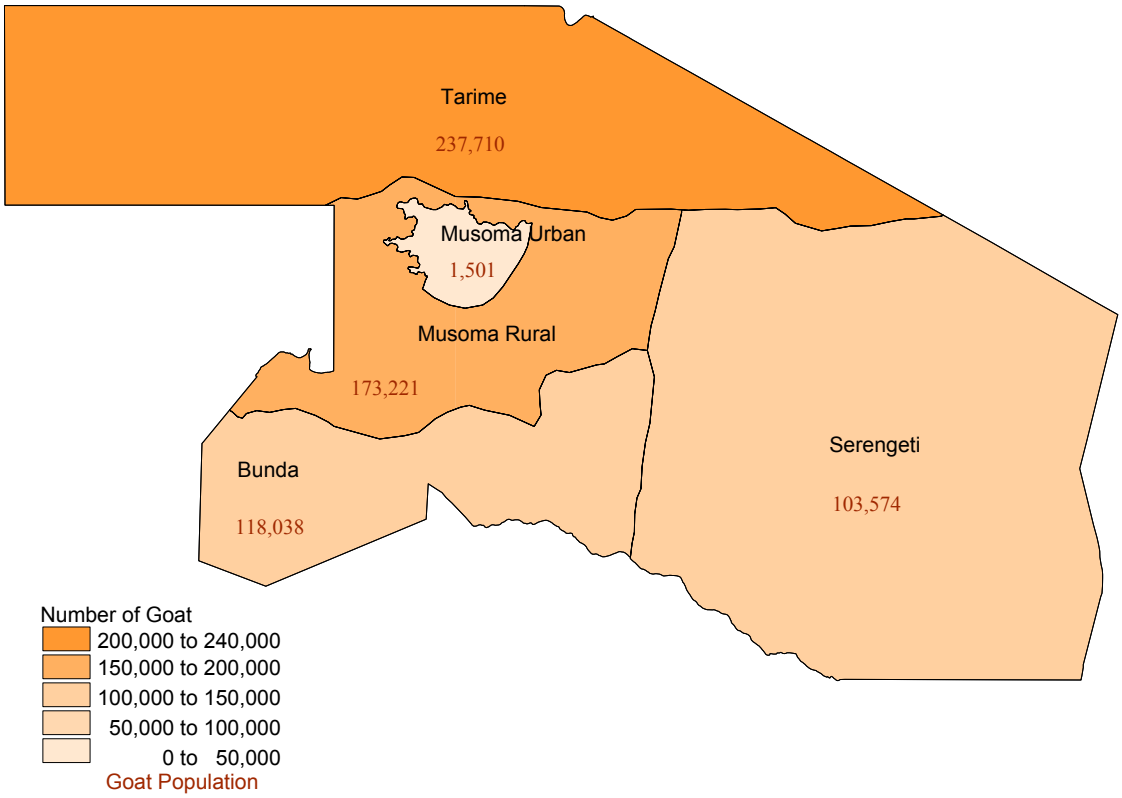
The number of goat-rearing households in Mara region was 72,575 (39% of all agricultural households in the region) with a total number of 634,044 goats giving an average of 9 head of goats per goat-rearing household. Tarime district had the largest number of goats (237,710 goats, 37.5% of all goats in the region), followed by Musoma Rural (173,221 goats, 27.3%), Bunda (118,038 goats, 18.6%), Serengeti (103,574 goats, 16.3%) and Musoma Urban (1,501 goats, 0.2%) (Chart 3.129 and Map 3.49). However Musoma Rural district had the highest density of goats in the region (109 head per km^2) (Map 3.50).



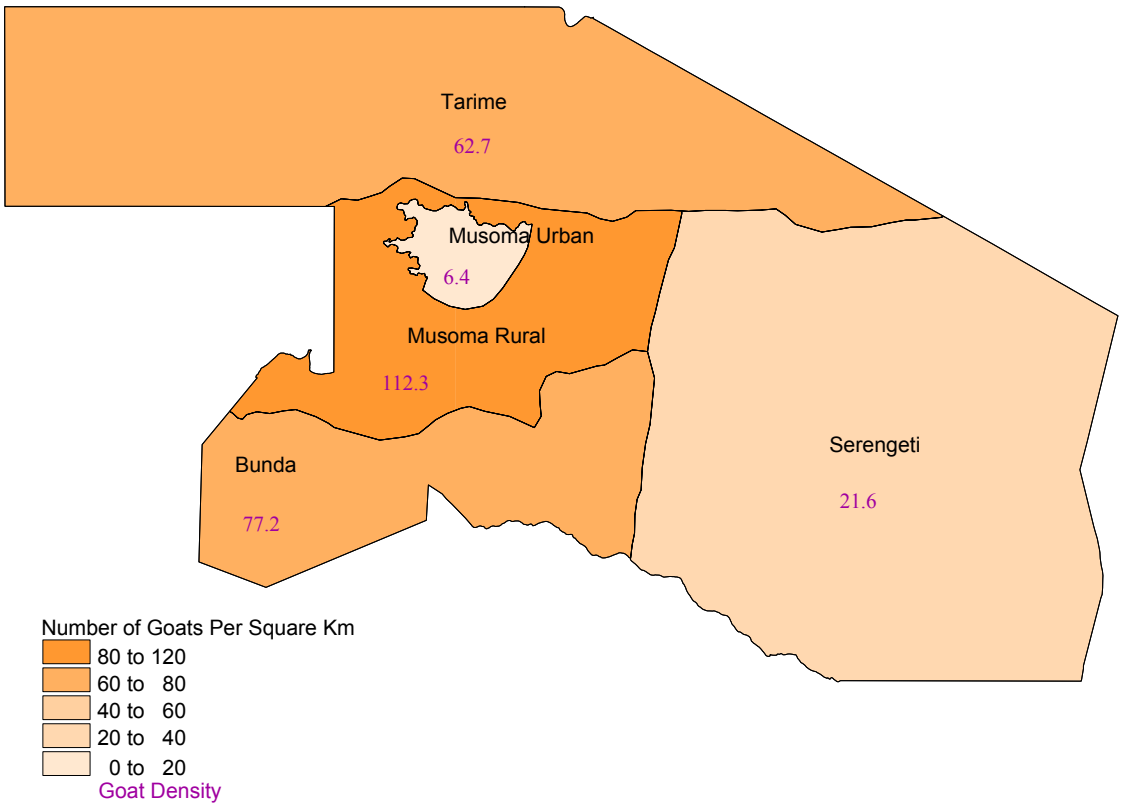
Goat Herd Size

Thirty seven percent of the goat-rearing households had herd size of 1-4 goats with an average of 3 goats per goat rearing household. About 84 percent of total goat-rearing households had herd size of 1-14 goats and owned 56 percent of the total goats in the region resulting in an average of 6 goats per goat-rearing households. The region had 1,405 households (1.9%) with herd sizes of 40 or more goats each (66,416 goats in total), resulting in an average of 47 goats per goat rearing household.

MAP 3.49 MARA
Goat Population as of 1st Octobers 2003
by District



MAP 3.50 MARA
Goat Density as of 1st October 2003
by District

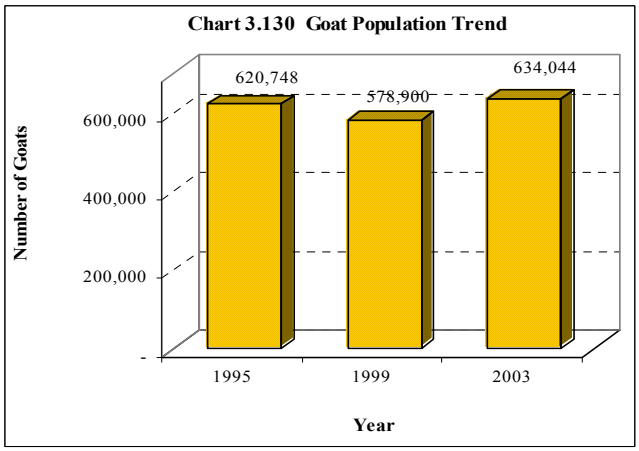


Goat Breeds

Goat husbandry in the region was dominated by the indigenous breeds that constituted 98.8 percent of the total goats in Mara region. Improved goats for meat and diary goats constituted 0.8 and 0.4 percent of total goats respectively.

Goat Population Trend

The overall annual growth rate of goat population from 1995 to 2003 was 0.3 percent. This positive trend implied eight years of population increase from 620,748 in 1995 to 634,044 in 2003. The number of goats decreased from 620,748 in 1995 at an annual rate of -1.7 percent to 578,900 in 1999. From 1999 to 2003, the goat population increased at an annual rate of 2.3 percent (Chart 130).

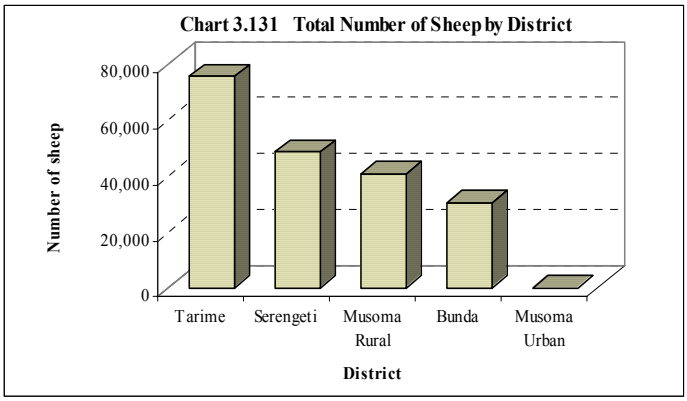


3.12.3. Sheep Production

Sheep rearing was the third most important livestock keeping activity in Mara region after cattle and goats. The region ranked 7 out of 21 Mainland regions and had 4.9 percent of all sheep on Tanzania Mainland.

Sheep Population

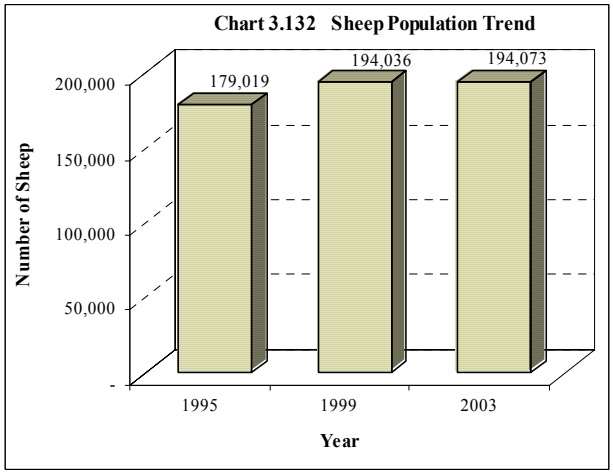
The number of sheep-rearing households was 21,780 (12% of all agricultural households in Mara region) rearing 194,073 sheep, giving an average of 9 heads of sheep per sheep-rearing household. The district with the largest number of sheep was Tarime with 75,196 sheep (39% of total sheep in Mara region) followed by Serengeti (48,376 sheep, 25%), Musoma Rural (40,362 sheep, 21%) and Bunda (30,078 sheep, 16%). Musoma Urban district had the least number of sheep (61 sheep) (Chart 3.131 and Map 3.51). However Musoma Rural district had the highest density of sheep in the region (26 head per km^2) (Map 3.52).



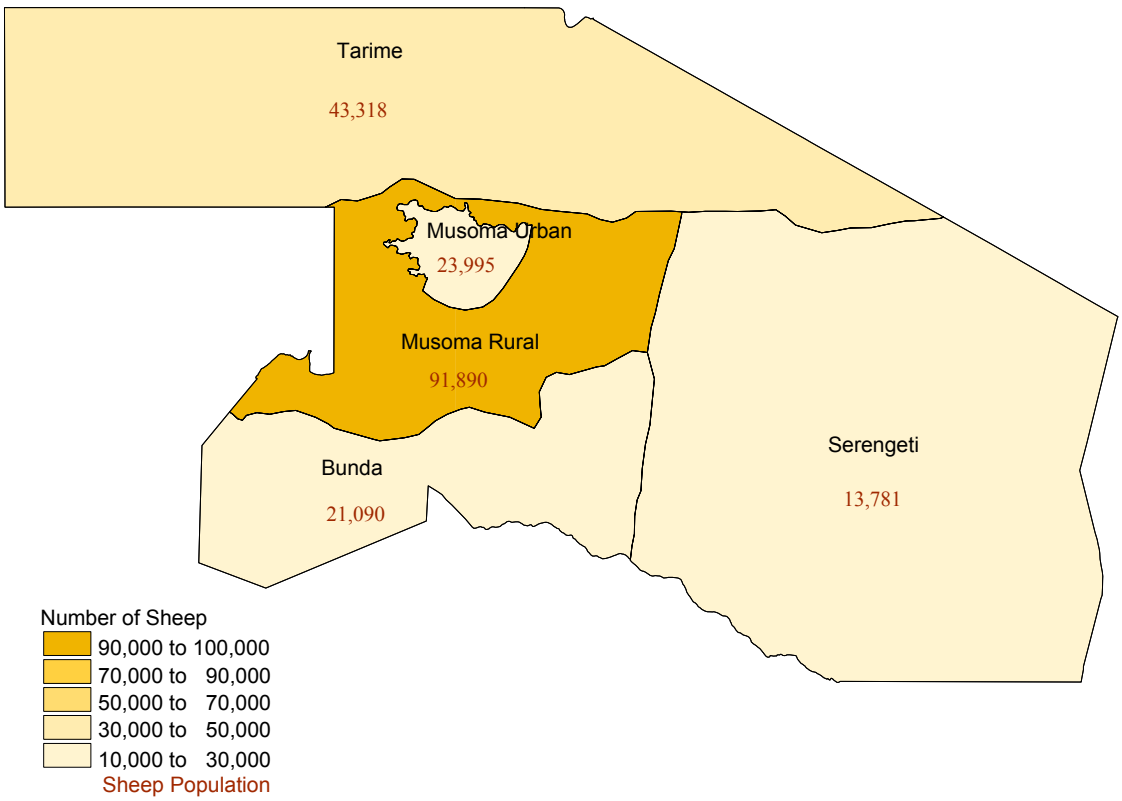
Sheep rearing was dominated by indigenous breeds that constituted 99.8 percent of all sheep kept in the region. Only 0.2 percent of the total sheep in the region were improved breeds.

Sheep Population Trend

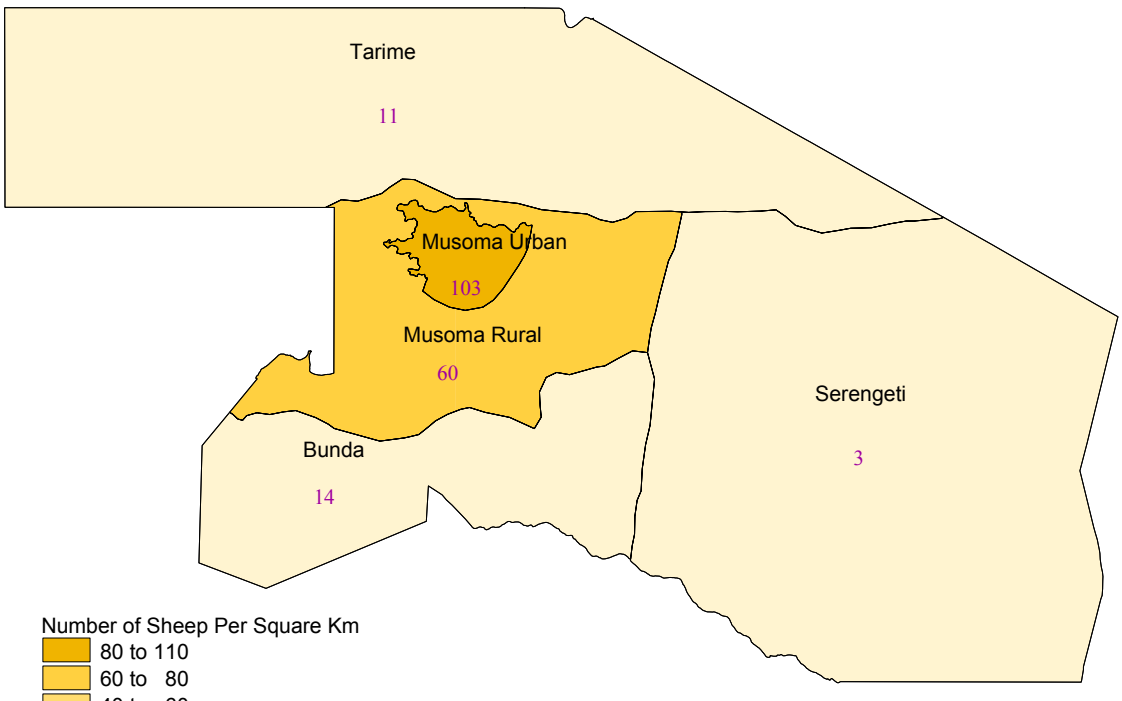
The overall annual growth rate of the sheep population for the eight year period from 1995 to 2003 was 1 percent. The population increased at an annual rate of 2 percent from 179,019 in 1995 to 194,036 in 1999. The sheep population remained fairly constant at around 194,000 from year 1999 to 2003 (Chart 3.132).



MAP 3.51 MARA
Sheep Population as of 1st Octobers 2003
by District

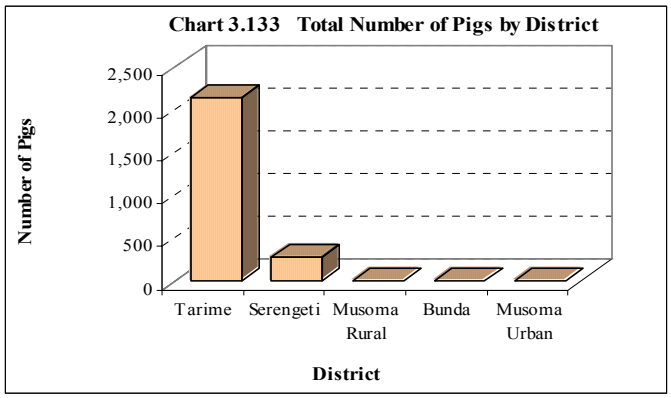


MAP 3.52 MARA
Sheep Density as of 1st October 2003
by District



3.12.4. Pig Production

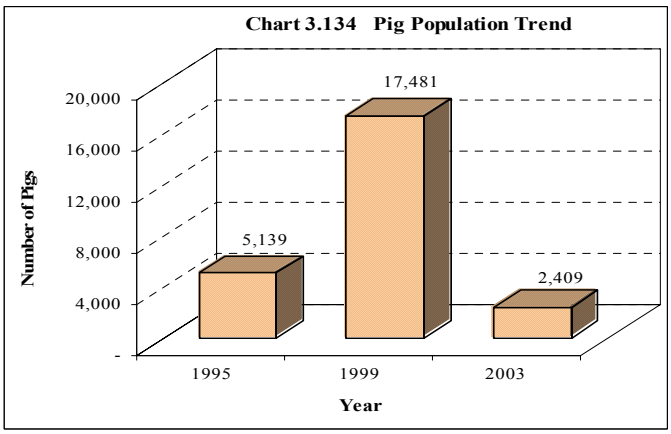
Pig rearing is the least important livestock keeping activity in the region after cattle, goats and sheep. The region ranks 20th out of 21 Mainland regions and had 0.2 percent of the total pigs on the Mainland.



The number of pig-rearing agricultural households in Mara region was 328 (0.2% of the total agricultural households in the region) rearing 2,409 pigs. This gives an average of 7 pigs per pig-rearing household. The district with the largest number of pigs was Tarime with 2,129 pigs (88.4% of the total pig population in the region), followed by Serengeti (279 pigs, 11.6%). There was no pig rearing in the rest of the districts (Chart 3.133 and Map 3.53). However, Tarime district had the highest density (0.6 head per km^2) (Map 3.54).

Pig Population Trend

The overall annual growth rate of the pig population for the eight years period from 1995 to 2003 was -9 percent. During this period, the pig population dropped from 5,139 to 2,409. The pig population increased from 5,139 in 1995 to 17,481 in 1999 at a rate of 36 percent, after which it decreased to 2,409 in 2003 (an annual rate of -39) (Chart 3.134).

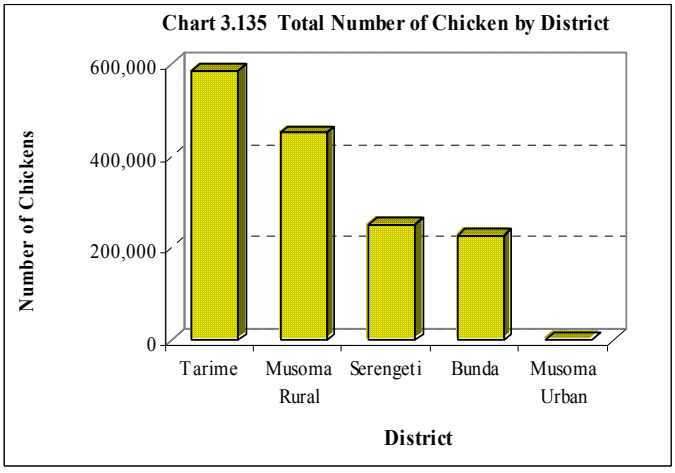


3.12.5 Chicken Production

The poultry sector in Mara region was dominated by chicken production. The region contributed 4.6 percent to the total chicken population on Tanzania Mainland.

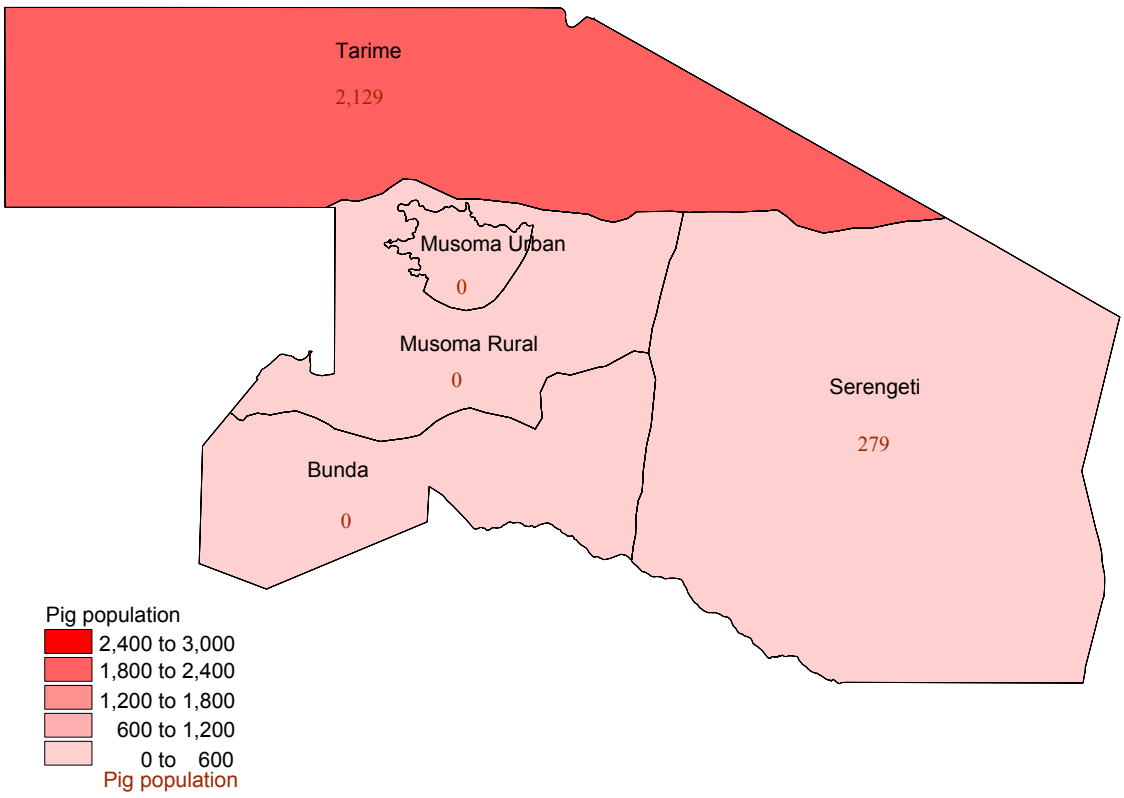
Chicken Population

The number of households keeping chickens was 141,825 raising about 1,521,166 chickens. This gives an average of 11 chickens per chicken-rearing household. In terms of total number of chickens in the country, Mara region was ranked 11th out of the 21 Mainland regions.

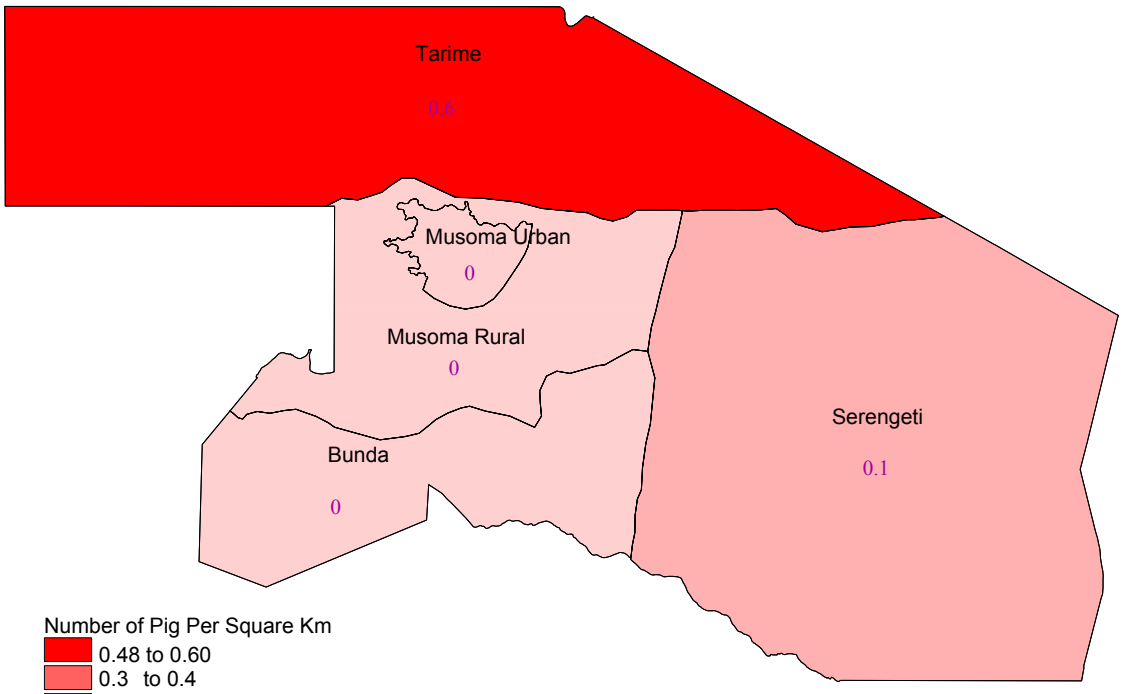


The district with largest number of chickens was Tarime with 585,983 chickens (38.5% of the total chickens in the region), followed by Musoma Rural (451,007 chickens, 29.6%), Serengeti (252,277 chickens, 16.6%) and Bunda (228,644 chickens, 15.0%). Musoma Urban district had the smallest number of chickens (3,255 chickens, 0.2%) (Chart 3.135 and Map 55). However Musoma Rural district had the highest chicken density in the region (292 chickens per km^2) (Map 3.56).

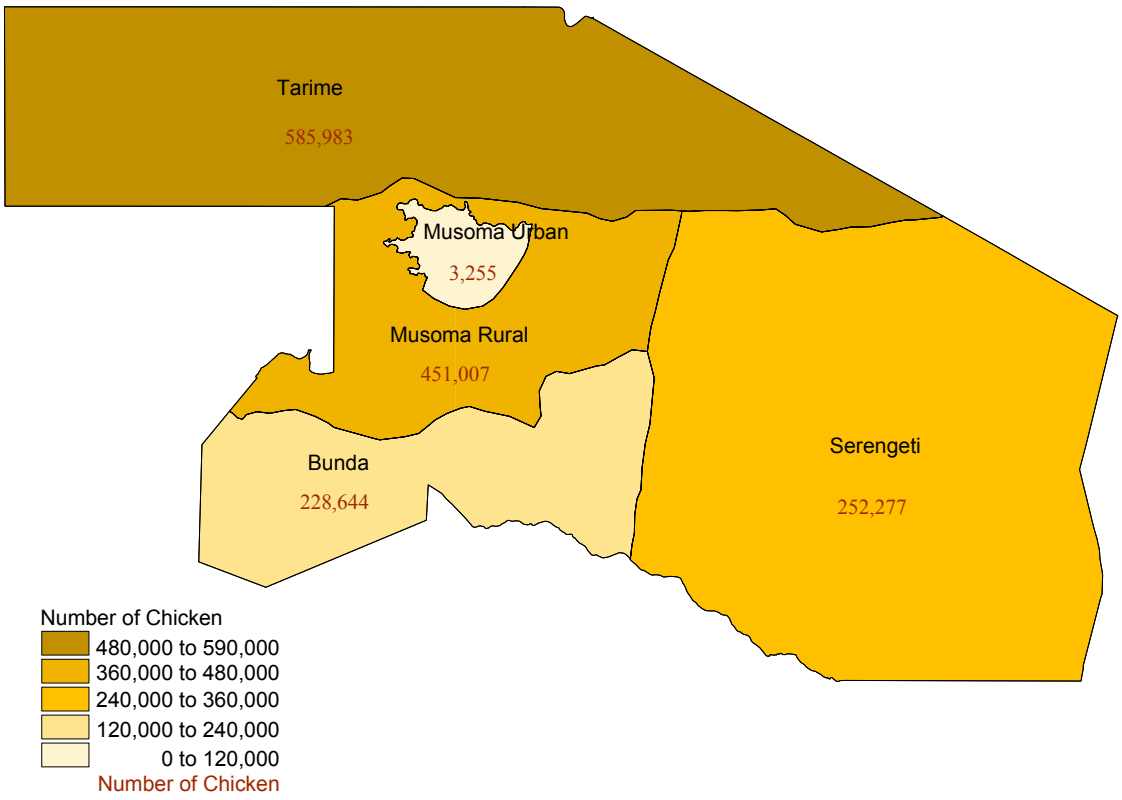
MAP 3.53 MARA
Pig Population as of 1st Octobers 2003
by District



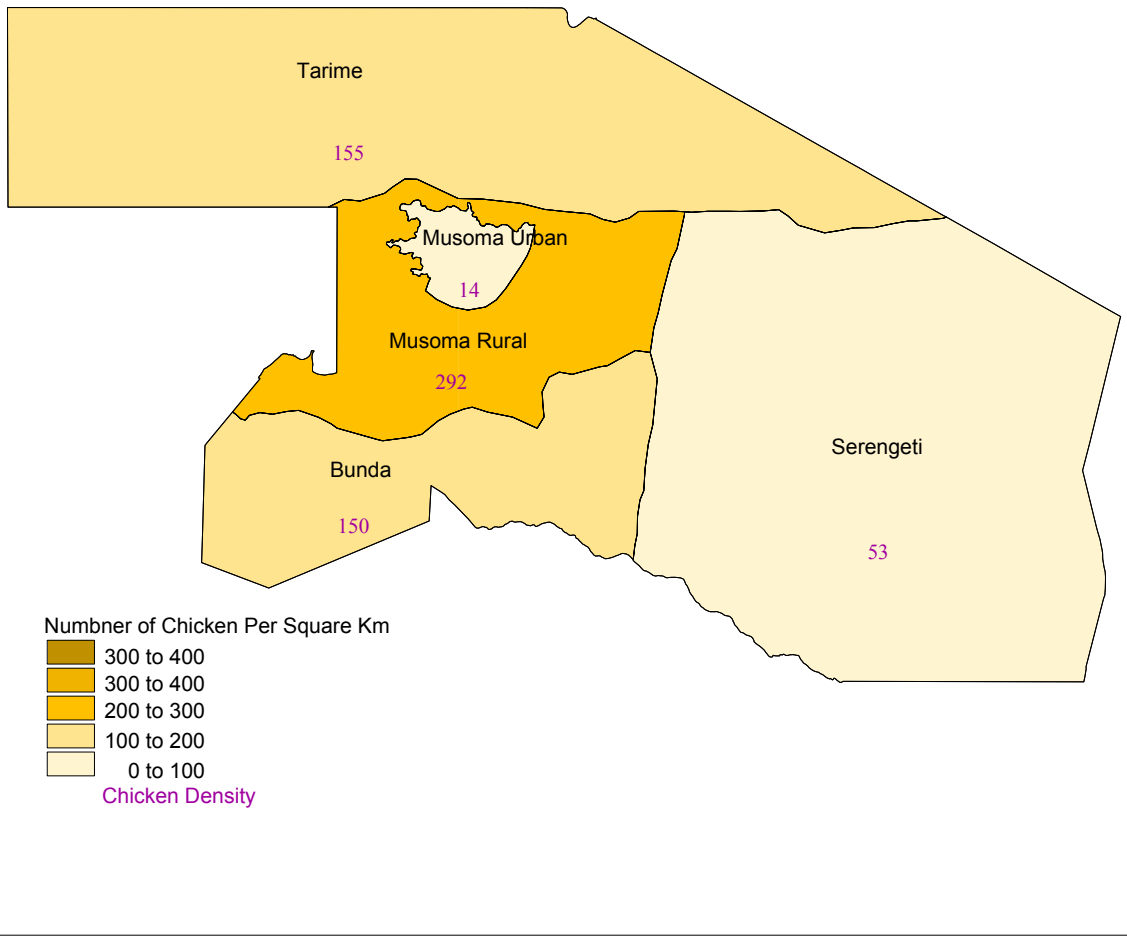
MAP 3.54 MARA
Pig Density as of 1st October 2003
by District



MAP 3.55 MARA
Number of Chicken as of 1st October 2003
by District

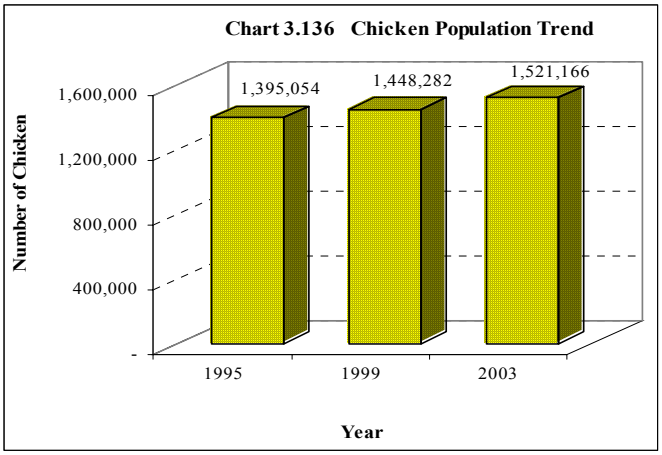


MAP 3.56 MARA
Density of Chicken as of 1st October 2003
by District



Chicken Population Trend

The overall annual chicken population growth rate during the eight-year period from 1995 to 2003 was 1.1 percent. The chicken population increased at a rate of 0.9 percent from 1995 to 1999, after which it increased at a rate of 1.2 percent for the four year period from 1999 to 2003 (Chart 3.136).



Ninety nine percent of all chicken in Mara region were of indigenous breed. The dominance of indigenous breed makes the population trend for the indigenous chicken more-or-less the same as that of the total chickens in the region.

Chicken Flock Size

The results indicate that about 86 percent of all chicken-rearing households were keeping 1-19 chickens with an average of 11 chickens per chicken rearing household. About 14 percent of holders were reported to be keeping the flock size of 20 to 99 chickens with an average of 28 chickens per household.

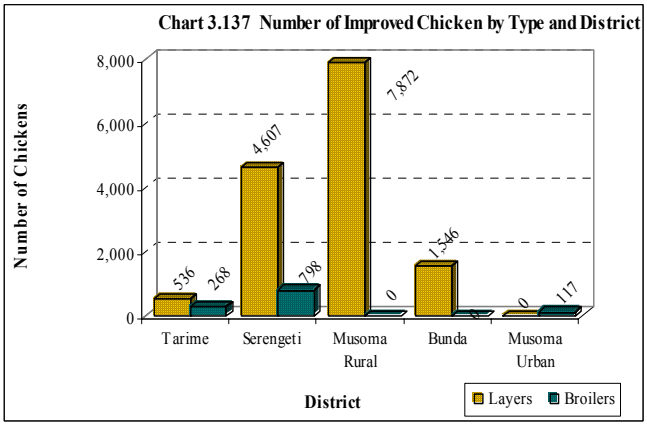
Only 0.1 percent of households kept the flock sizes of more than 100 chickens at an average of 120 chickens per household (Table 3.14).

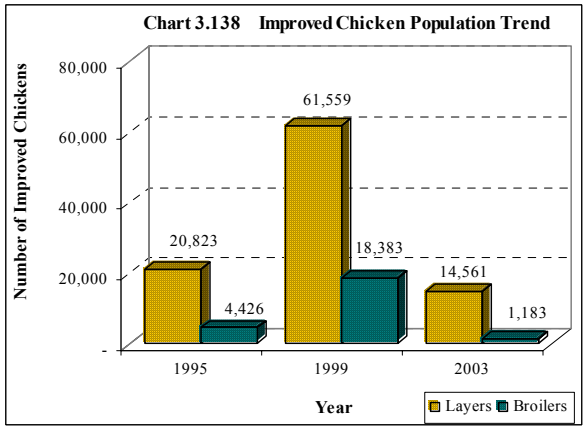
Table 3.14 Total Number of Households and Chickens Raised by Flock Size

	Number of Households	%	Number of Chicken	Average Chicken per Households
1 - 4	36,629	26	103,477	3
5 - 9	42,208	30	278,665	7
10 - 19	41,850	30	535,628	13
20 - 29	14,714	10	325,261	22
30 - 39	3,088	2	98,709	32
40 - 49	1,511	1	63,439	42
50 - 99	1,646	1	94,714	58
100+	178	0	21,273	120
Total	**141,825**	**100**	**1,521,166**	**11**

Improved Chickens (layers and broilers)

The layer population in Mara Region decreased at an overall annual rate of -4.4 percent over the period of eight years from 20,823 in 1995 to 14,561 in 2003. The number of improved chicken was most significant in Musoma Rural district followed by Serengeti district (Chart 3.137).





The overall annual growth rate for broilers during the eight-year period from 1995 to 2003 was -15.2 percent during which the population dropped from 4,426 to 1,183. The annual growth rate for the period of four years from 1995 to 1999 was 42.7 percent which resulted in an increase of broiler chicken from 4,426 to 18,383. The broiler chicken population

exhibited a decreasing trend at the rate of -49.6 percent per annum for the period of four years from 18,383 chickens in 1999 to 1,183 chickens in 2003 (Chart 3.138).

3.12.6. Other Livestock

There were 64,254 ducks, 12,737 turkeys, 37,053 rabbits and 3,104 donkeys raised by rural agricultural households in Mara region. Table 3.15 indicates the number of livestock kept in each district. The largest number of ducks in the region was found in Musoma Rural district with 40,623 ducks (63% of all ducks in the region), followed by Tarime (8,963 ducks, 14%), Bunda (8,167 ducks, 13%), Serengeti (4,826 ducks, 14%) and Musoma Urban (1,675 ducks, 3%). Turkeys were reported in Tarime and Serengeti districts only. The biggest number of rabbits was found in Musoma Rural district (94% of the total rabbits in Mara region), however the largest number of donkeys was found in Tarime district (35% of the total number of donkeys in the region) (Table 3.15).

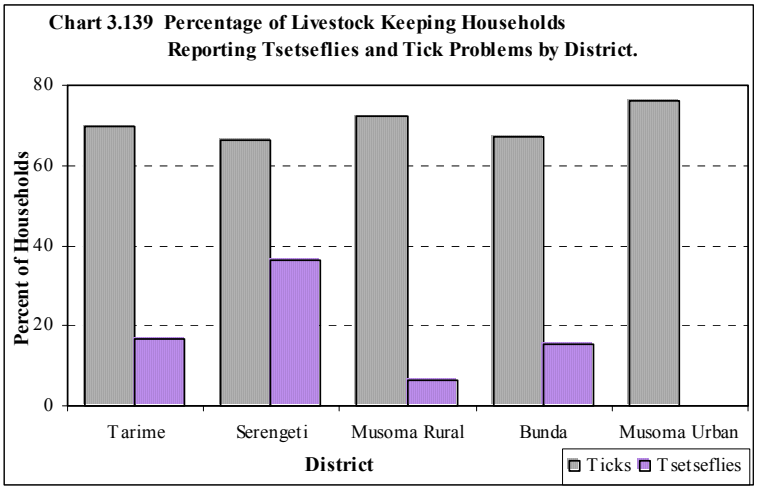
Table 3.15 Head Number of Other Livestock by Type of Livestock and District

District	Type of Livestock				
	Ducks	Turkeys	Rabbit	Donkeys	Other
Tarime	8,963	5,782	1,333	1,071	2,522
Serengeti	4,826	6,955	419	272	4,733
Musoma Rural	40,623	0	34,865	819	9,498
Bunda	8,167	0	437	942	875
Musoma Urban	1,675	0	0	0	0
Total	**64,254**	**12,737**	**37,053**	**3,104**	**17,629**

3.12.7 Pests and Parasites Incidences and Control

The results indicate that 69 percent and 17 percent of the total livestock-keeping households reported to have encountered ticks and tsetse fly problems respectively. The census results show that there was a predominance of tick related diseases over tsetse related diseases. While incidences of tick problems were highest in Musoma Urban district and lowest in Serengeti district, tsetse flies incidences were highest in Serengeti but lowest in Musoma Rural district and no tsetse flies incidences were reported in Musoma Urban district (Chart 3.139 Map 3.57).

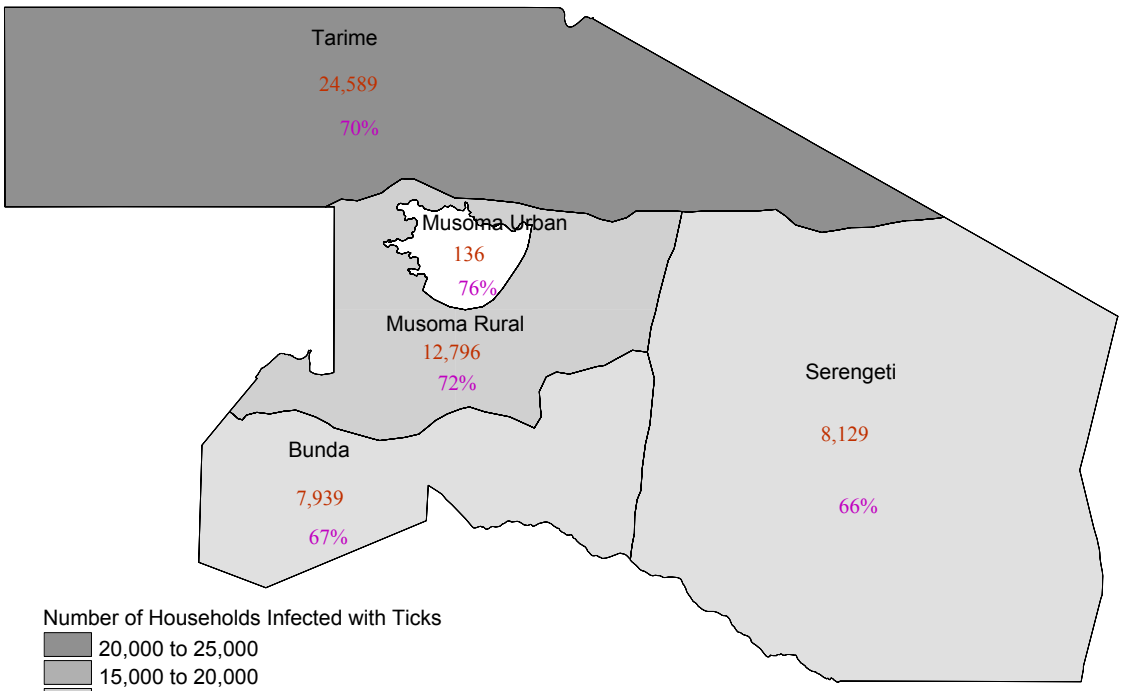
Chart 3.139 Percentage of Livestock Keeping Households Reporting Tsetseflies and Tick Problems by District.



The most common method of tick control was spraying which was used by 56 percent of all livestock-rearing households having tick problems. Other methods used were dipping (4%), smearing (4%) and other traditional methods like hand picking (19%). However, 18 percent of livestock-keeping households did not use any method.

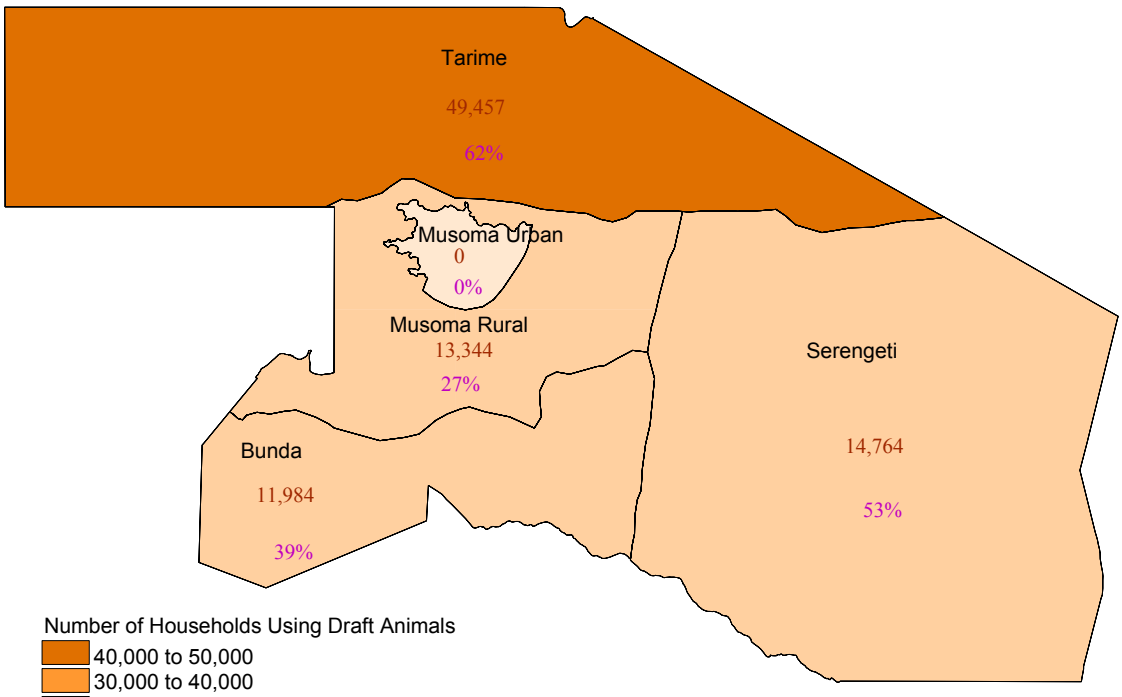
The most common method used to control tsetse flies was spraying which was practiced by 34.6 percent of livestock-rearing households. This was followed by dipping (3.4%) and trapping (3.3%) and other methods (2.8%). However, 55.9 percent of the livestock rearing households did not use any of the three aforementioned methods.

MAP 3.57 MARA
Number and Percent of Households Infected with Ticks by District



Number of Households Infected with Ticks
20,000 to 25,000
15,000 to 20,000
10,000 to 15,000
5,000 to 10,000
0 to 5,000
Number of Households Infected With Ticks
Percent of Households Infected With Ticks

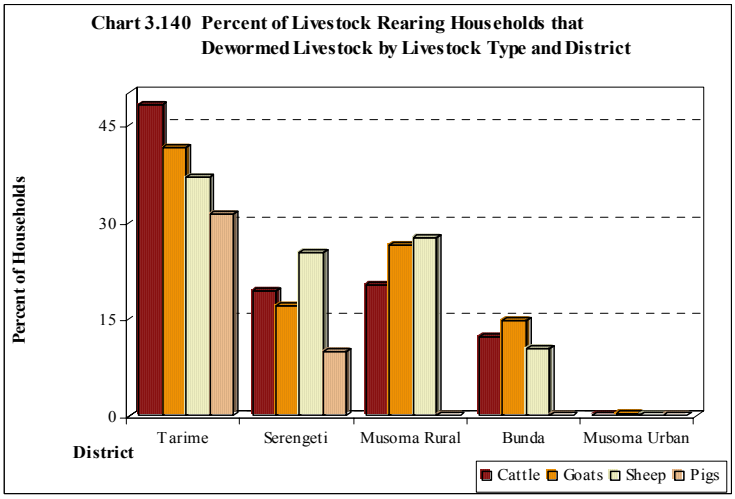
MAP 3.58 MARA
Number and Percent of Households Using Draft Animals by District



Number of Households Using Draft Animals
40,000 to 50,000
30,000 to 40,000
20,000 to 30,000
10,000 to 20,000
0 to 10,000
Number of Households Using Draft Animals
Percent of Households Using Draft Animals

De-worming

Livestock rearing households that de-wormed their animals were 44,155 (52% of the total livestock rearing households in Mara region). The percentage of cattle keeping households that de-wormed cattle was 48 percent, goats (35.6%) and sheep (41%). The district with the highest number of households that de-wormed cattle was Tarime (48% of total households that de-wormed cattle) followed by Musoma Rural (20.2%), Serengeti (19.2%), Bunda (12.3%) and Musoma Urban (0.2%) (Chart 3.138).

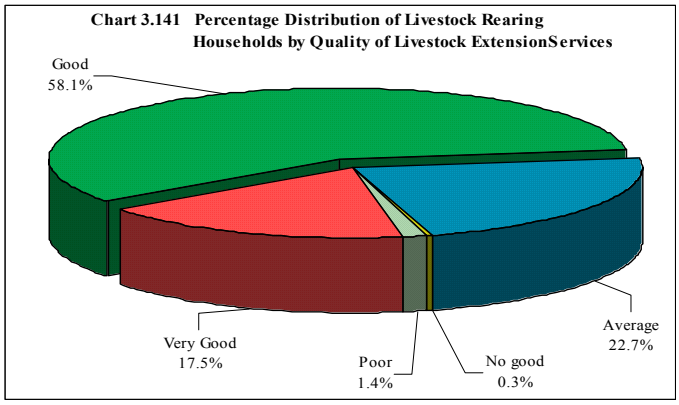


3.12.8. Access to Livestock Services

Access to Livestock Extension Services

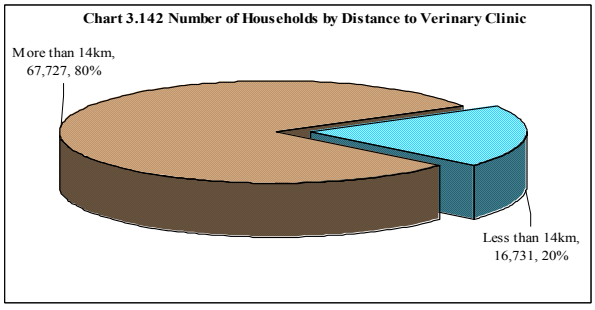
The total number of households that received livestock advice was 31,979, representing 38 percent of the total livestock-rearing households and 17 percent of the agricultural households in the region. The main livestock extension agent was the government which provided service to about 65 percent of all households receiving livestock extension services. This was followed by NGOs/development projects (12.8%), large scale farmers (8.5%) and cooperatives (7.5%).

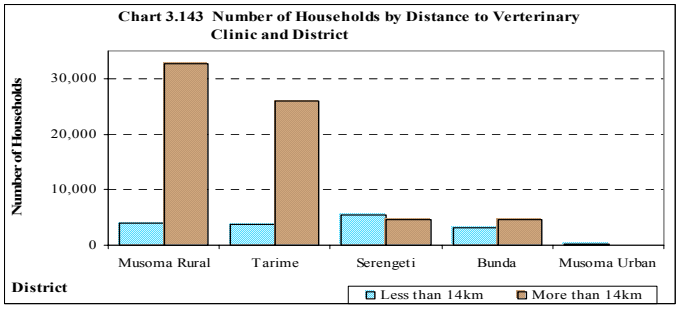
About 58.1 percent of livestock rearing households described the general quality of livestock extension services as being good, 22.7 percent said they were average and 17.5 percent said they were very good. However, 0.3 percent of the livestock rearing households said the quality was not good and 1.4 percent described them as poor (Chart 3.141).



3.12.8.2 Access to Veterinary Clinic

Many veterinary clinics were located very far from livestock rearing households. About 80 percent of the livestock rearing households accessed the services, at a distance of more than 14 kms. Only 20 percent of them accessed the services within 14 kms from their dwellings (Chart 3.142).

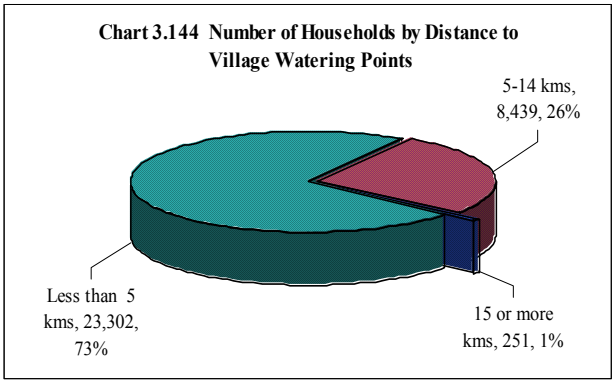


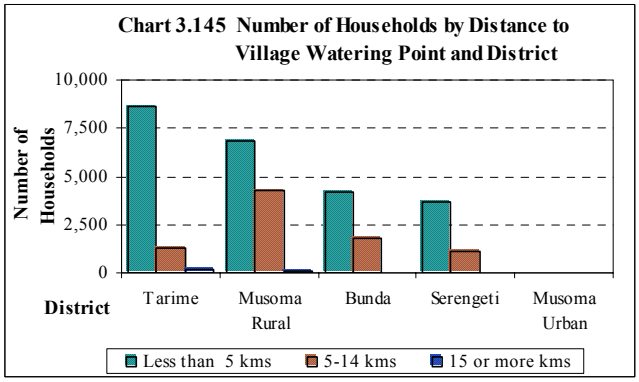


The most affected district was Musoma Rural district with 89 percent of livestock rearing households accessing the services at a distance of more than 14 kms. Musoma Urban was the least affected because all households could access the service within a distance of 14 kilometres (Chart 3.143).

Access to Village Watering Points/dam

The number of livestock rearing households residing less than 5 kms from the nearest watering point was 23,302 (73% of the total livestock rearing households in Mara region), whilst 8,439 households (26%) resided between 5 and 14 kms. However, 251 households (1%) had to travel a distance of 15 or more kms to the nearest watering point (Chart 3.144).



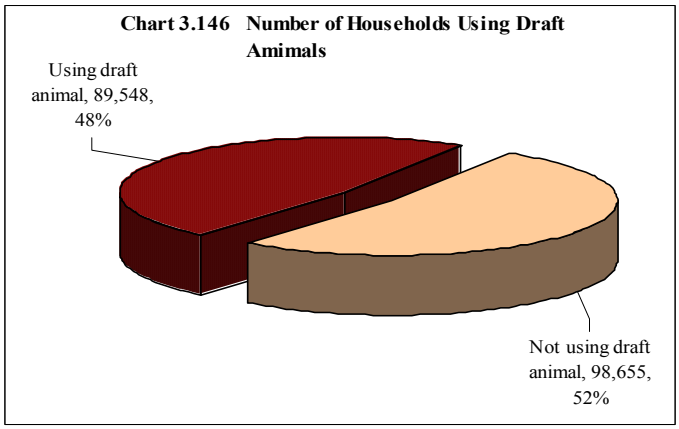


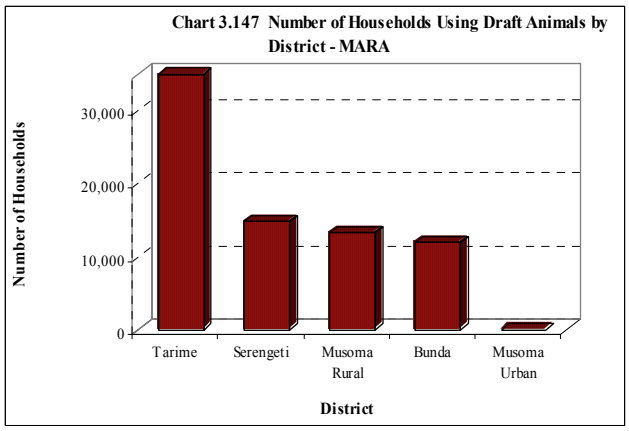
Tarime district had the best livestock water supply with the majority of livestock rearing households residing within 5 kilometres from the nearest watering point. This was followed by Musoma Rural, Bunda, Serengeti and Musoma Urban districts. In Musoma Rural district about 39 percent of the livestock rearing households had to travel a distance of more than five kilometers to the nearest watering point (Chart 3.145).

3.12.9. Animal Contribution to Crop Production

Use of Draft Power

Mara region had the fourth largest proportion of households using draft animals on Tanzania Mainland after Shinyanga, Manyara and Singida. The region had 89,548 households (48% of the total agricultural households in the region) using this technology (Chart 3.146).





The number of households that used draft animals in Tarime district was 49,457 representing 55 percent of the households using draught animals in the region followed by Serengeti (14,764 households, 16%), Musoma Rural (13,344 households,

15%) and Bunda (11,984 households, 13%). There were no households using draft animals in Musoma Urban district (Chart 3.147 and Map 3.58).

The region had 377,058 oxen that were used to cultivate 107,673 hectares of land. This represents only 9 percent of the total oxen found on the Mainland. The largest area cultivated using oxen was found in Tarime district (41,905 ha, 39% of the total area cultivated using oxen in the region). Other types of draft animals used to cultivate in Mara region were bulls (57,522 bulls, 9,659 ha), cows (13,915 cows, 3,453 ha) and donkeys (5,613 donkeys, 679 ha).

Use of Farm Yard Manure

The number of Households using organic fertilizer in Mara region was 47,632 (26% of total crop growing households in the

region) (Chart 3.148). The total area applied with organic fertiliser was 33,009 ha of which 29,792 hectares (90.3% of the total area applied with organic fertilizers or 14% of the area planted with annual crops and vegetables in Mara region during the long rainy season) was applied with farm yard manure.

Chart 3.148 Number of Crop Growing Households Using Organic Fertiliser

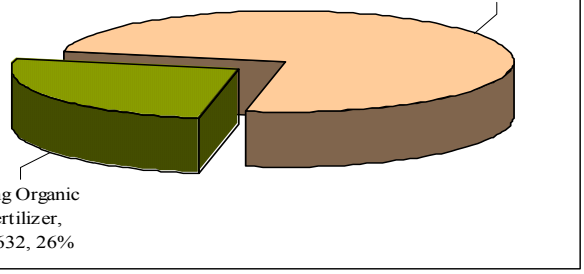
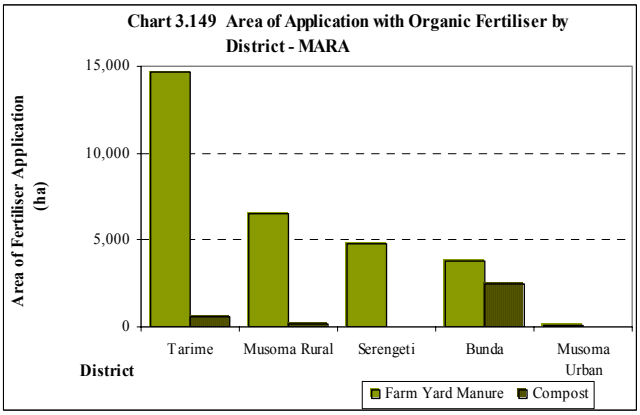


Chart 3.149 Area of Application with Organic Fertiliser by District - MARA



The largest area applied with farm yard manure was found in Tarime district with 14,657 hectares (49.2% of the total area applied with farm yard manure in the region), followed by Musoma Rural (6,531 ha, 21.9%), Serengeti (4,758 ha, 16.0%), Bunda (3,765 ha, 12.6%) and Musoma Urban (83 ha, 0.3%) (Chart 3.149 and Map 59).

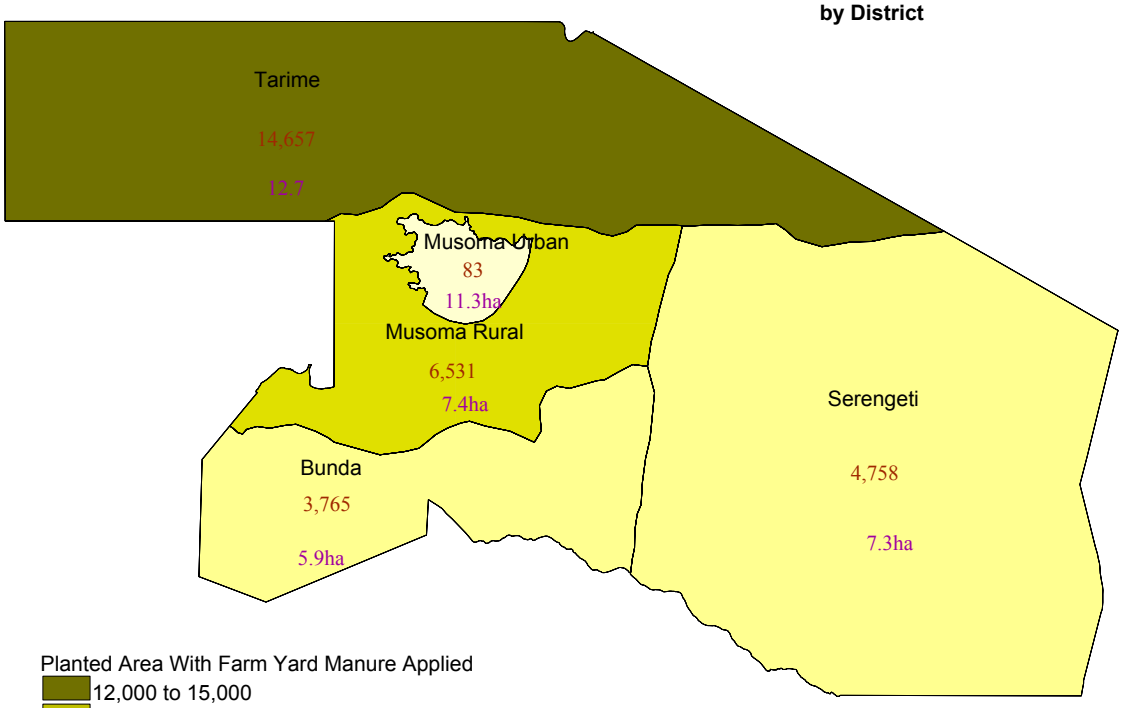
3.12.9.4 Use of Compost

Only 3,217 ha (9.7% of the area of organic fertilizer application) was applied with compost. The largest area applied with compost was found in Bunda district with 2,470 hectares (77% of the total area applied with compost in Mara region), followed by Tarime (538 ha, 17%) and Serengeti (27 ha, 1%). No compost application was found in Musoma Urban district (Chart 3.149 and Map 3.60).

3.12.10 Fish Farming

The number of households involved in fish farming in Mara region was 255, representing 0.1 percent of the total agricultural households in the region (Chart 3.150). Tarime was the only district in the region practicing fish farming. (Chart 3.151 and Map 3.61). Non governmental organizations and/or projects were the only suppliers of fingerings. All fish farming households in the region used the dug-out-pond system and the only fish specie planted was tilapia. The number of fish harvested in Mara region was 44,845, all of which were tilapia. None of the fish farming households sold any fish.

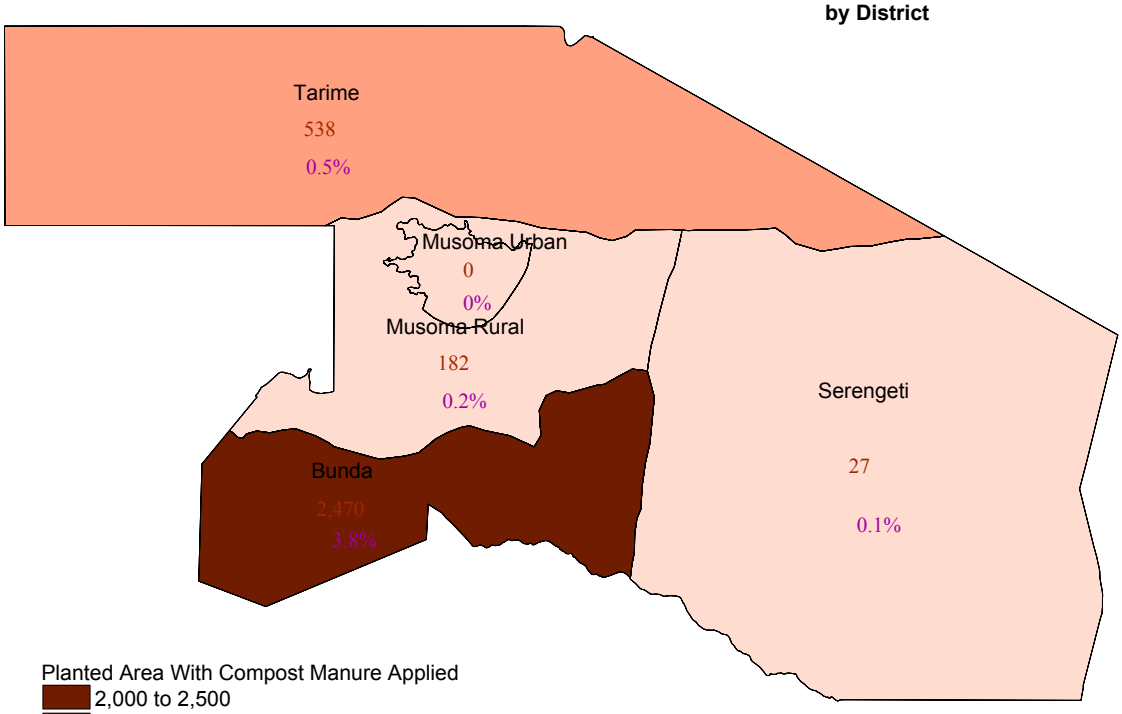
MAP 3.59 MARA
Planted Area and Percent of Planted Area With Farm Yard Manure Application by District



Planted Area With Farm Yard Manure Applied
- 12,000 to 15,000
- 9,000 to 12,000
- 6,000 to 9,000
- 3,000 to 6,000
- 0 to 3,000

Planted Area With Farm Yard Manure Applied
Percent of Planted Area With Farm Yard Manure Applied

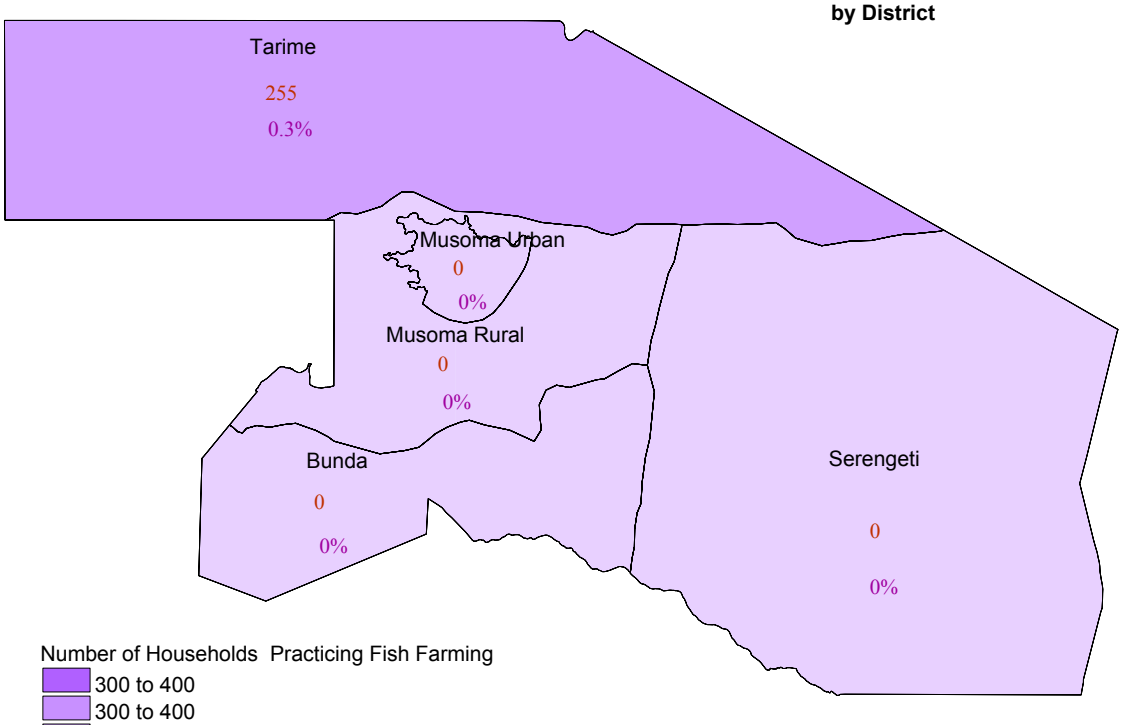
MAP 3.60 MARA
Planted Area and Percent of Planted Area With Compost Manure Application by District



Planted Area With Compost Manure Applied
- 2,000 to 2,500
- 1,500 to 2,000
- 1,000 to 1,500
- 500 to 1,000
- 0 to 500

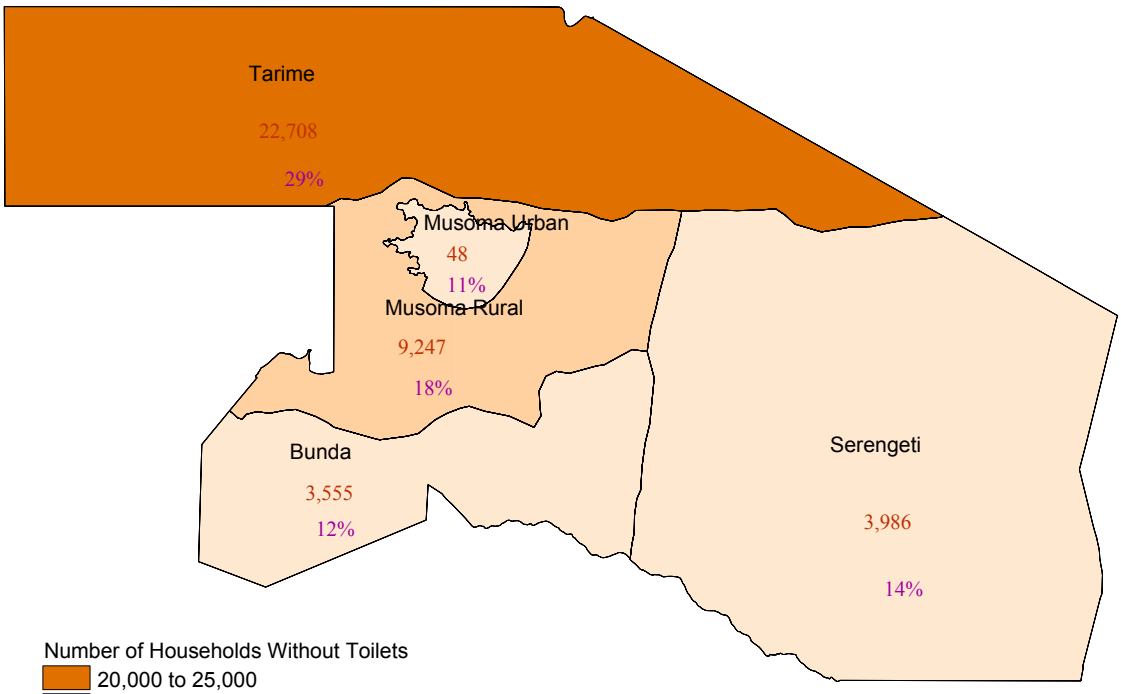
Planted Area With Compost Applied
Percent of Planted Area With Compost Manure Applied

MAP 3.61 MARA
Number and Percent of Households Practicing Fish Farming by District

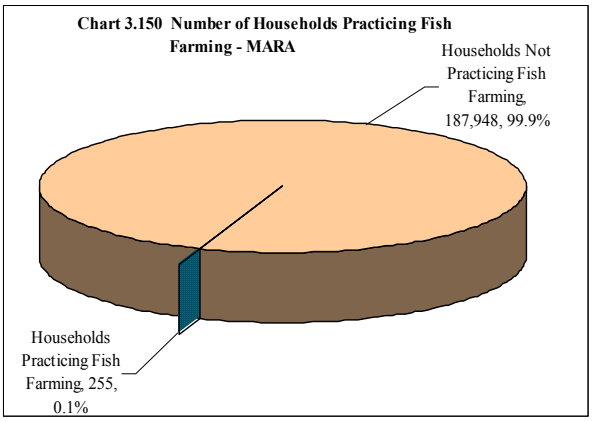


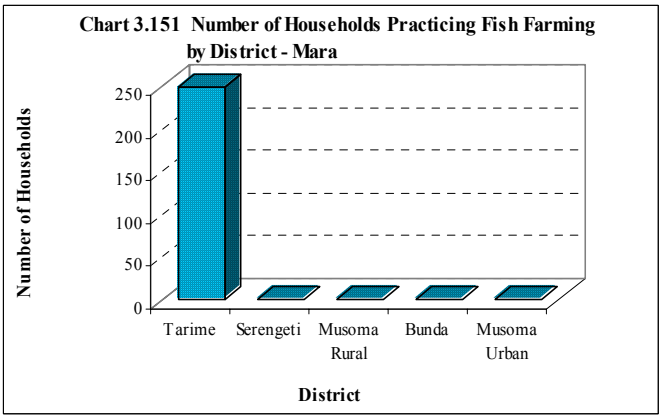
Number of Households Practicing Fish Farming
300 to 400
300 to 400
200 to 300
100 to 200
0 to 100
Number of Households Practicing Fish Farming
Percent of Households Practicing Fish Farming

MAP 3.62 MARA
Number and Percent of Households Without Toilets by District



Number of Households Without Toilets
20,000 to 25,000
15,000 to 20,000
10,000 to 15,000
5,000 to 10,000
0 to 5,000
Number of Households Without Toilets
Percent of Households Without Toilets





3.12.11 Access to Infrastructure and Other Services

The results indicate that regional capital was located very far from most of the households' dwellings. It was located at an average distance of 81 kilometers from the agricultural household's dwellings. Other services and their respective average distances in kilometers from the households' dwellings were district capital (42), tarmac road (40), tertiary market (37), hospital (33), secondary market (13), secondary school (11), health clinic (7), primary market (6), all weather road (3), primary school (3) and feeder road (1) (Table 3.16).

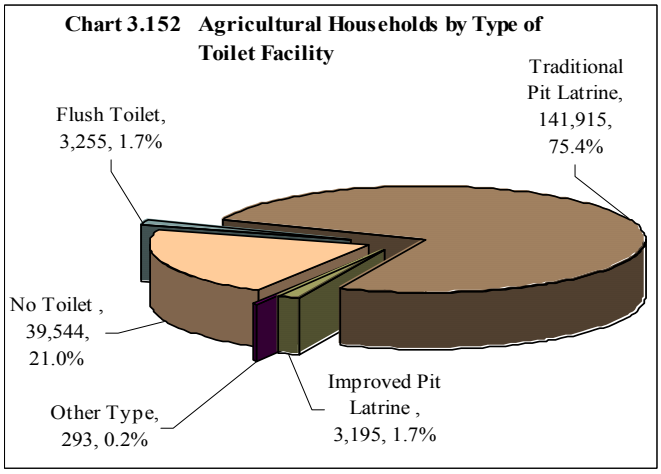
Table 3.16: Mean Distances from Household Dwellings to Infrastructures and Services by District

District	Mean Distance to											
	Secondary School	Primary School	All weather road	Feeder Road	Hospital	Health Clinic	Regional Capital	Primary Market	Secondary Market	Tertiary Market	Tarmac Road	District Capital
Tarime	11	3	3	1	32	9	91	7	16	40	31	43
Serengeti	10	2	6	3	37	6	109	9	13	34	87	37
Musoma Rural	11	2	2	1	37	6	43	3	11	37	29	42
Bunda	13	2	4	1	27	5	91	4	10	31	37	41
Musoma Urban	4	1	0	1	6	3	6	5	28	5	5	6
Overall Mean	**11**	**3**	**3**	**1**	**33**	**7**	**81**	**6**	**13**	**37**	**40**	**42**

Only 8 percent of the agricultural households reported the available infrastructures and services as 'very good' whereas 14 percent reported them to be average. Twenty five percent of the agricultural households said the infrastructure and services were poor and 24 percent said they were 'no good'. Eighteen percent of the agricultural households said the infrastructure and services were good.

3.13 POVERTY INDICATORS

The agricultural census collected data on poverty for the purpose of providing a base for tracking progress in poverty reduction strategies undertaken by the government.



3.13.1 Type of Toilets

A large number of rural agricultural households in Mara region used traditional pit latrines (141,915 households, 75.4% of all rural agricultural households), 3,195

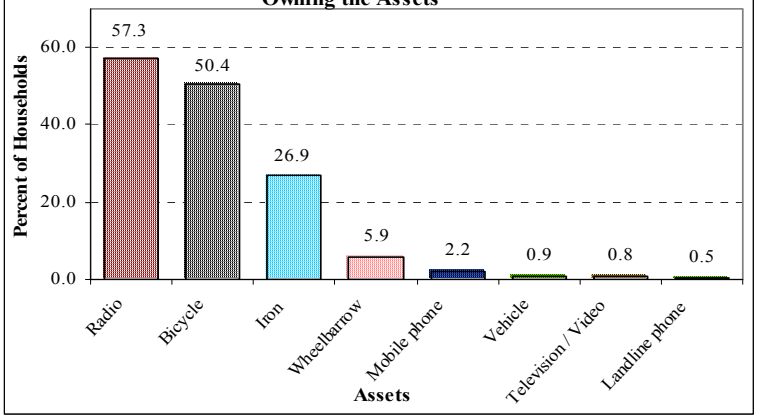
households (1.7%) used improved pit latrines, 3,255 households (1.7%) used flush toilets and 293 household (0.2%) used other toilets facilities. However, 39,544 households (21.0%) in the region had no toilet facilities (Chart 3.152).

The distribution of the households without toilets within the region indicates that 57.4 percent of them were found in Tarime district and 0.1 percent were in Musoma Urban. The percentages of households without toilets in the other districts were as follows: Serengeti (10.1%), Musoma Rural (23.4%) and Bunda (9.0%) (Map 3.62).

3.13.2 Household's Assets

Radios were owned by most rural agricultural households in Mara region with 107,845 households (57.3% of the agriculture households in the region) owning them, followed by bicycles (94,942 households, 50.4%), irons (50,680 households, 26.9%), wheelbarrows (11,057 households, 5.9%), mobile phones (4,098 households, 2.2%), vehicles (1,696 households, 0.9%), television/video (1,550 households, 0.8%) and landline phones (977 households, 0.5%) (Chart 3.153).

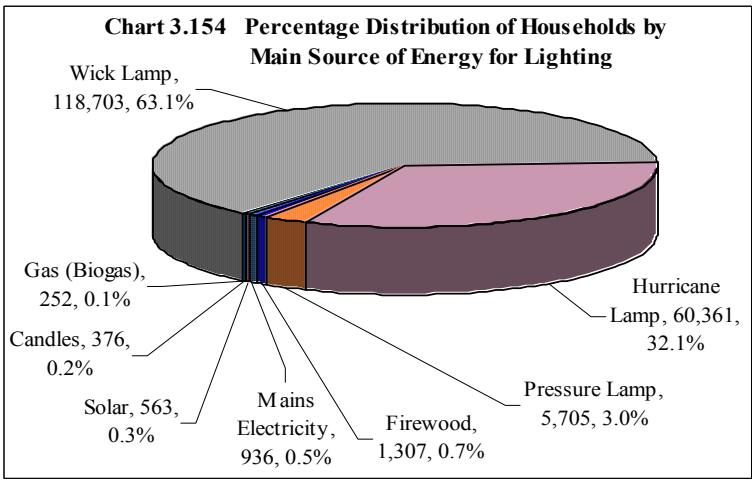
Chart 3.153 Percentage Distribution of Households Owning the Assets



3.13.3 Sources of Energy for Lighting

Wick lamp was the most common source of energy for lighting in the region, with 63.1 percent of the total rural households using this source of energy, followed by hurricane lamp (32.1%), pressure lamp (3.0%), firewood (0.7%), mains electricity (0.5%), solar (0.3%), candle (0.2%) and gas (biogas) (0.1%) (Chart 3.154).

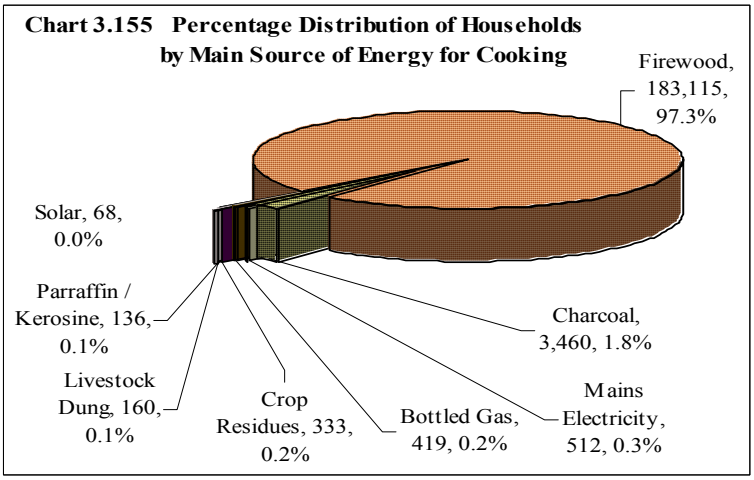
Chart 3.154 Percentage Distribution of Households by Main Source of Energy for Lighting



3.13.4 Sources of Energy for Cooking

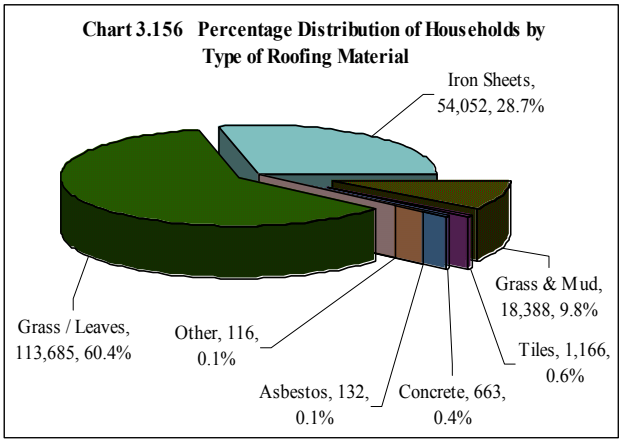
The most prevalent source of energy for cooking in Mara region was firewood, which was used by 97.3 percent of all agricultural households in the region. This is followed by charcoal (1.8%) and mains electricity (0.3%). The rest of energy sources accounted for 0.6 percent. These were bottled gas (0.22%), crop residues (0.18%), livestock dung (0.08%), paraffin/kerosine (0.07%) and solar (0.04%) (Chart 3.155).

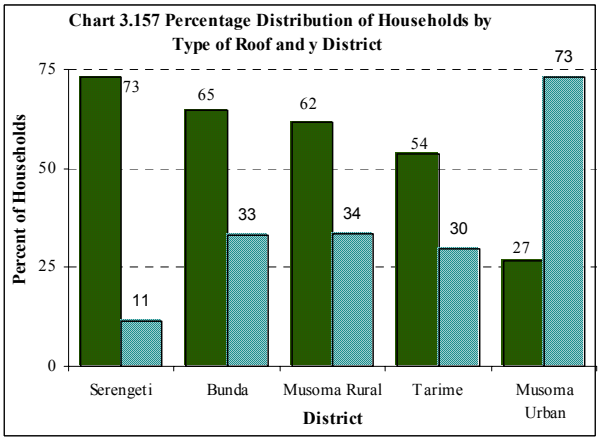
Chart 3.155 Percentage Distribution of Households by Main Source of Energy for Cooking



3.13.5 Roofing Materials

The most common material used for roofing the main dwelling was grass and leaves and it was used by 60.4 percent of the rural agricultural households in Mara region. This was followed by iron sheets (28.7%), grass and mud (9.8%), tiles (0.6%), concrete (0.4%), asbestos (0.1%) and other materials (0.1%) (Chart 3.156).



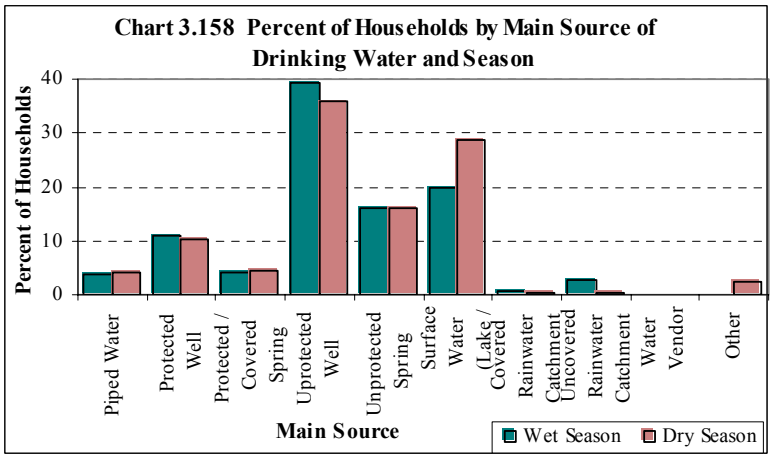


Serengeti district had the highest percentage of households with grass/leaves roofing material in Mara region (73%), followed by Bunda (65%), Musoma Rural (62%), Tarime (54%) and Musoma Urban (27%) On the other hand, Iringa Urban district had the highest percentage of households whose roofing material for the main building was iron sheets, (73%), followed by Musoma Rural (34%), Bunda (33%), Tarime (30%) and Serengeti (10%) (Chart 3.157 and Map 3.63).

3.13.6 Access to Drinking Water

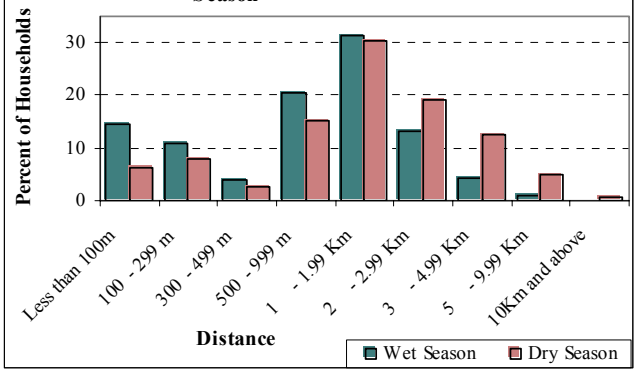
The main source of drinking water for rural agricultural households in Mara region was unprotected wells (39% of households use unprotected wells during the wet season and 36 percent of the households during the dry seasons). This is followed by surface water (Lake / Dam / River / Stream) (20% of households during wet season and 29% in the dry season), unprotected springs (16% of households in the wet season and 16% during dry season), protected wells (11% of households in the wet season and 10% during dry season) and protected /covered springs with 4 percent of households using the source in each season.

Other sources of drinking water and their respective percentages of households using the source for drinking water during wet and dry season were piped water (3.8% during wet season, 4.0 during dry season), uncovered rainwater catchments (2.8% during wet season, 0.3% during dry season), covered rainwater catchments (0.8% during wet season, 0.2% during dry season), water vendors (0.04% during dry season) and other unmentioned sources (2.4% during wet season) (Chart 3.158).



About 50 percent of the rural agricultural households in Mara region obtained drinking water within a distance of less than one kilometer during wet season compared to 32 percent of the households during the dry season. However, 50 percent of the agricultural households obtained drinking water from a distance of one or more kilometers during the wet season compared to 68 percent of households in the dry season. The most common distance from the source of drinking water was between 1 and 2 km (Chart 3.159).

Chart 3.159 Percent of Households by Distance to Main Source of Drinking Water and Season

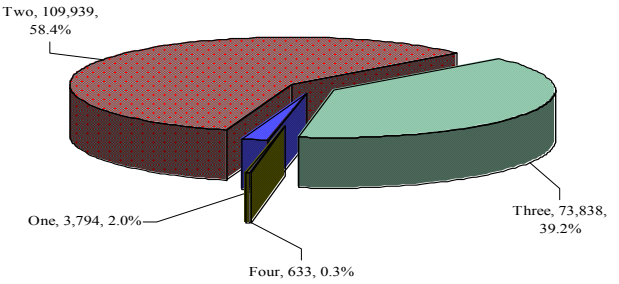


3.13.7 Food Consumption Pattern

Number of Meals per Day

The majority of households in Mara region normally had 2 meals per day (58.4 percent of the agricultural households in the region). This was followed by 3 meals per day (39.2 percent) and 1 meal per day (2.0 percent). Only 0.3 percent of the agricultural households had 4 meals per day (Chart 3.160).

Chart 3.160 Number of Agricultural Households by Number of Meals per Day



Serengeti district had the largest percent of households having one meal per day as well as the highest percent of households having 3 meals per day (Table 3.17 and Map 3.64).

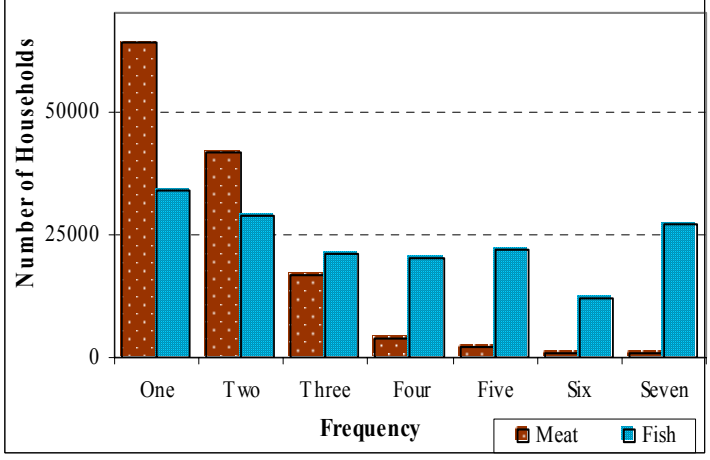
Chart 3.17: Number of Households by Number of Meals the Household Normally Takes per Day and District

District	Number of Meals per Day								
	One	%	Two	%	Three	%	Four	%	Total
Tarime	2149	2.7	37,161	46.9	39,727	50.2	132	0.2	79,170
Serengeti	1251	4.5	8,781	31.5	17,487	62.8	346	1.2	27,864
Musoma Rural	317	0.6	39,515	79.0	10,164	20.3	0	0.0	49,995
Bunda	78	0.3	24,235	78.9	6,253	20.4	155	0.5	30,721
Musoma Urban	0	0.0	247	54.4	207	45.6	0	0.0	453
Total	**3,794**	**2.0**	**109,939**	**58.4**	**73,838**	**39.2**	**633**	**0.3**	**188,203**

Meat Consumption Frequency

The number of agricultural households that consumed meat during the week preceding the census was 130,134 (69% of the agricultural households in Mara region) with 63,808 households (49% of the households that consumed meat), consumed meat only once during the respective week. This was followed by those who had meat twice during the week (41,712 households, 32.1%). Very few households had meat four times or more during the respective week. About 58,069 agricultural households (30.8% of the agricultural households in Mara region) did not eat meat during the week preceding the census (Chart 3.161a and Map 3.65).

Chart 3.161a Number of Households by Frequency of Meat and Fish Cosumption



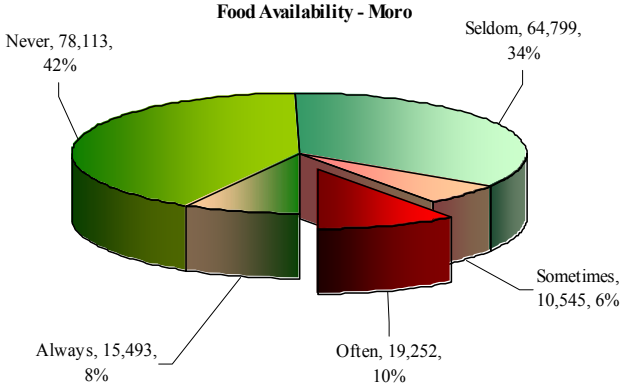
Fish Consumption Frequencies

The number of agricultural households that consumed fish during the week preceding the census was 164,796 (88% of the total agricultural households in Mara region) with 33,998 households (20.1% of those who consumed fish) consuming fish once during the respective week. This was followed by those who had fish twice (17.5%) and seven times (16.3%). In general, the number of households that consumed fish twice or more during the week in Mara region was 130,798 (79.4% of the agricultural households that ate fish in the region during the respective period). About 12.4 percent of the agricultural households in Mara region did not eat fish during the week preceding the census (Chart 3.161a and Map 66).

3.13.8 Food Security

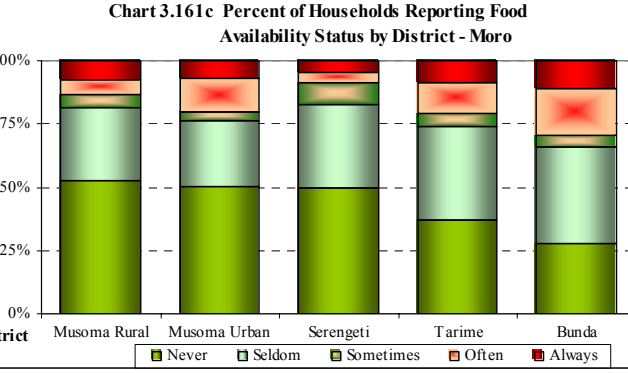
In Mara region, 63,989 households (34% of the total agricultural households in the region) said they rarely experienced problems in satisfying the household food requirement, whilst 11,292households (6%) said they sometimes experience problems. The number of households that often experienced problems was 18,820 households (10%), however 15,056 households (8%) said they always had problems in satisfying the household food requirement. About 79,045 agricultural households (42%) said they did not experience any food sufficiency problems (Chart 3.161b, Map 67).

Chart 3.161b Number of Households by Level of Food Availability - Moro



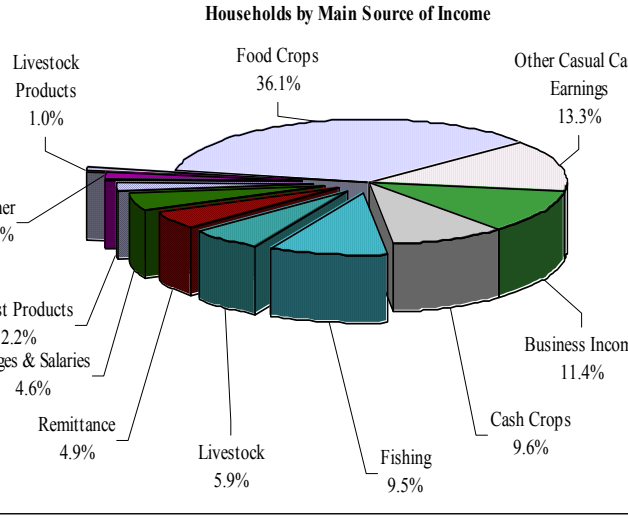
Bunda district has the highest percent of households that have problems in satisfying their household food requirements (29% of the agricultural households always or often having food problems). The percentage of households with food problems is also higher in Tarime and Musoma Urban districts (21% and 20% respectively).

Chart 3.161c Percent of Households Reporting Food Availability Status by District - Moro



Serengeti district had the lowest percent of households that always or often face food problems (9% of the agricultural households) followed by Musoma Rural (13%) (Chart 3.161c).

Chart 3.162 Percentage Distribution of the Number of Households by Main Source of Income

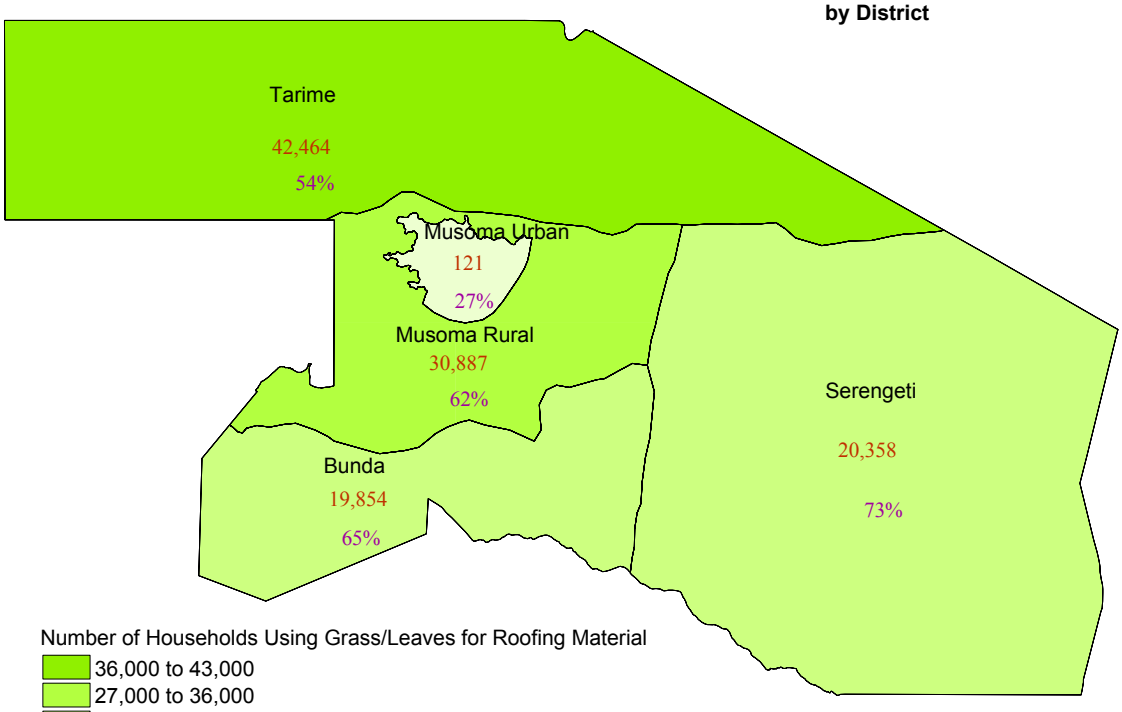


3.13.9 Main Sources of Cash Income

The main cash income of the households in Mara region was from selling food crops (36.1 percent of smallholder households), followed by other casual cash earnings (13.3%), businesses (11.4%), selling of cash crops (9.6%), and fishing (9.5%). Only 5.9% of

smallholder households reported the sale of livestock as their main source of income, followed by cash remittance (4.9%), wages and salaries (4.6%), sale of forest products (2.2%) and sale of livestock products (1.0%) (Chart 3.162).

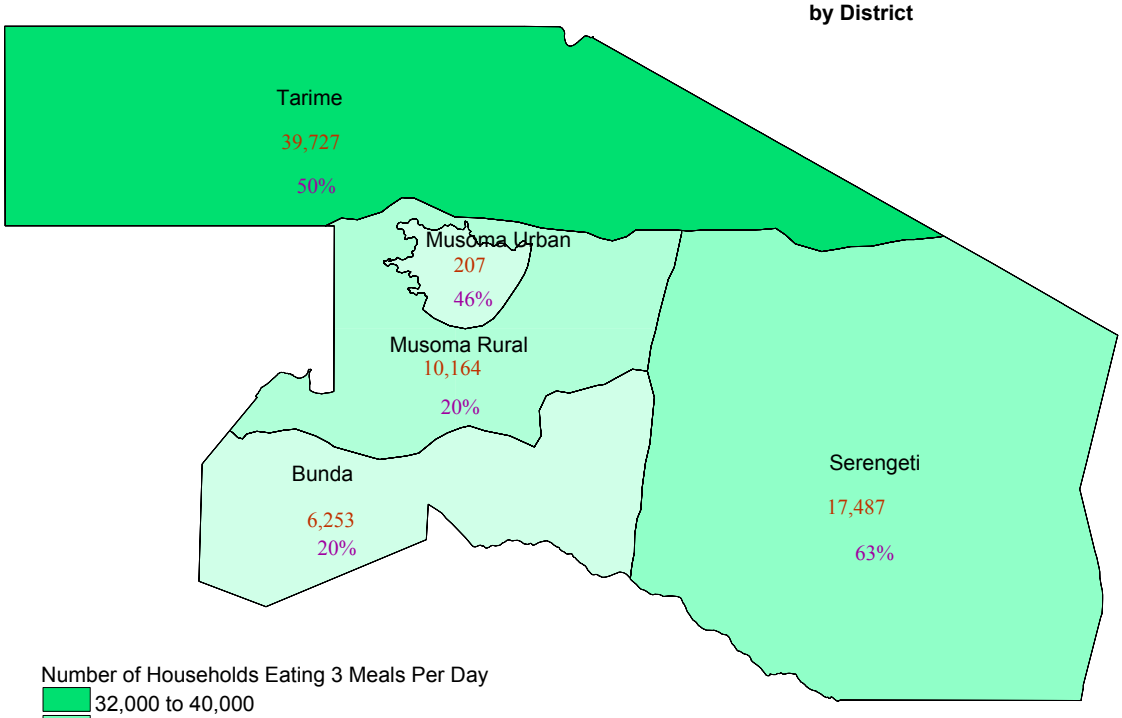
MAP 3.63 MARA
Number and Percent of Households Using Grass/Leaves for Roofing Material by District



Number of Households Using Grass/Leaves for Roofing Material
- 36,000 to 43,000
- 27,000 to 36,000
- 18,000 to 27,000
- 9,000 to 18,000
- 0 to 9,000

Number of Households Using Grass/Leaves
Percent of Households Using Grass/Leaves

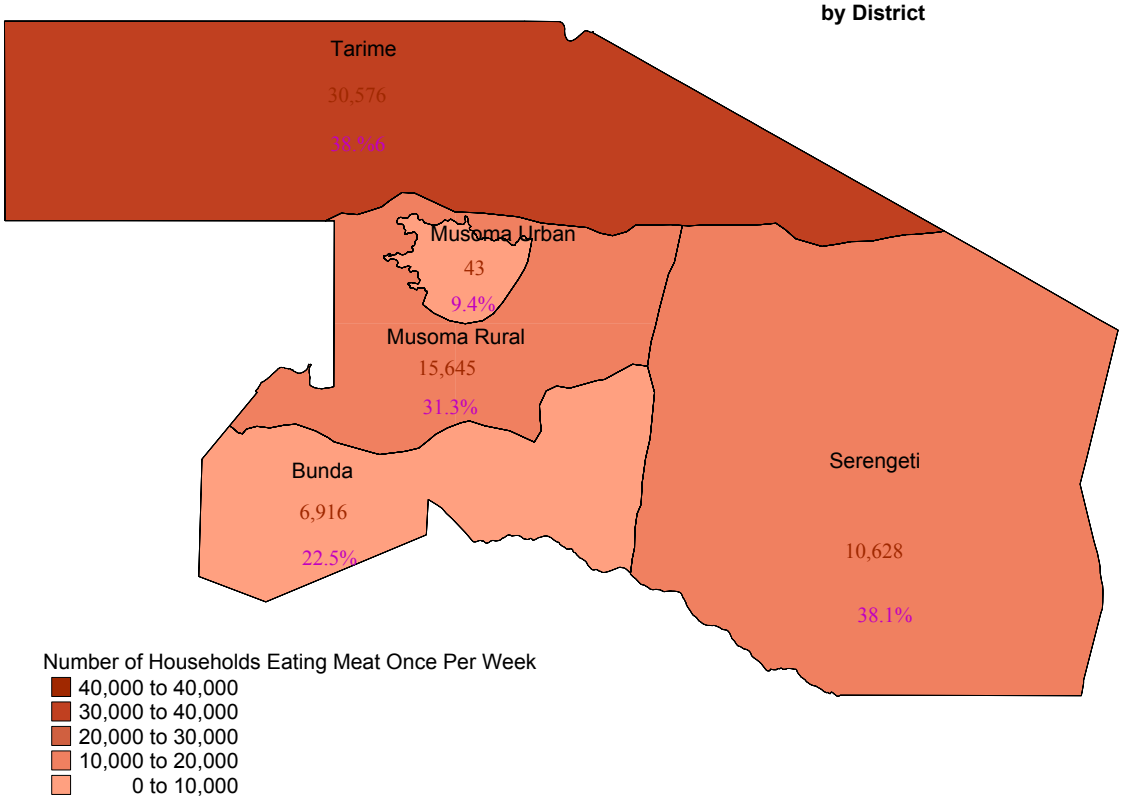
MAP 3.64 MARA
Number and Percent of Households Eating 3 Meals Per Day by District



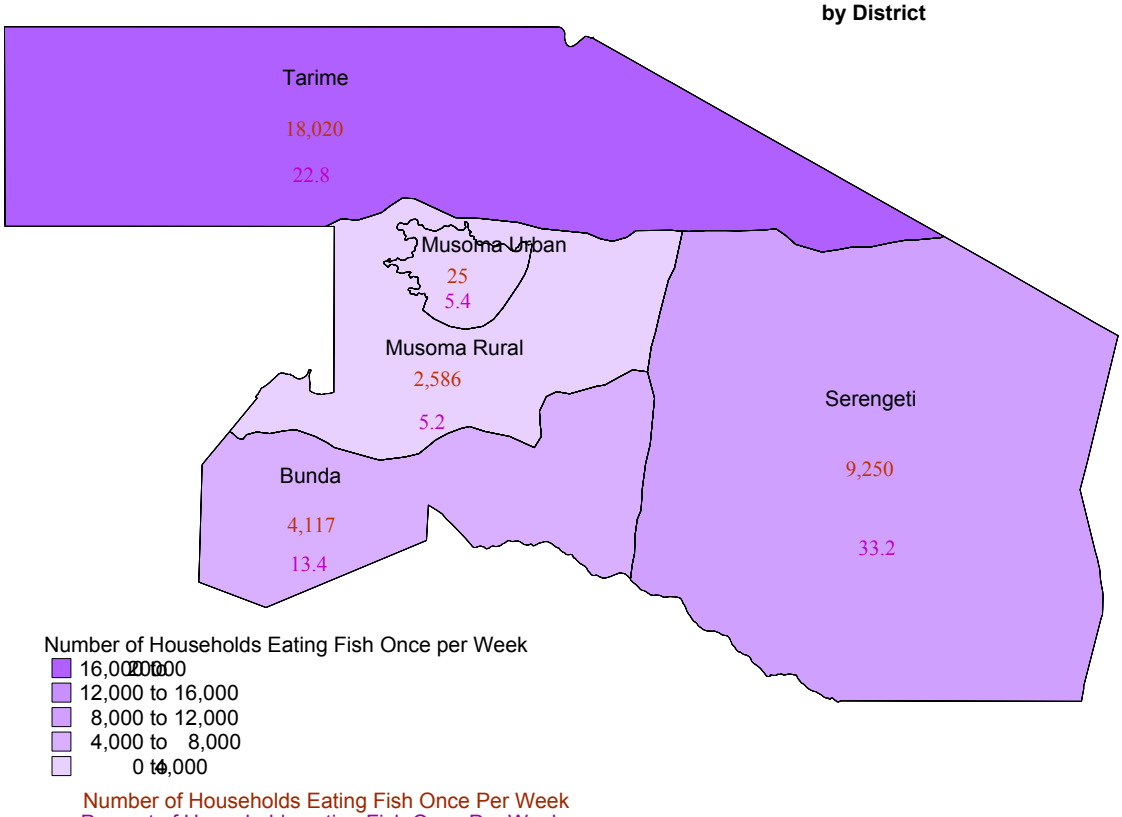
Number of Households Eating 3 Meals Per Day
- 32,000 to 40,000
- 24,000 to 32,000
- 16,000 to 24,000
- 8,000 to 16,000
- 0 to 8,000

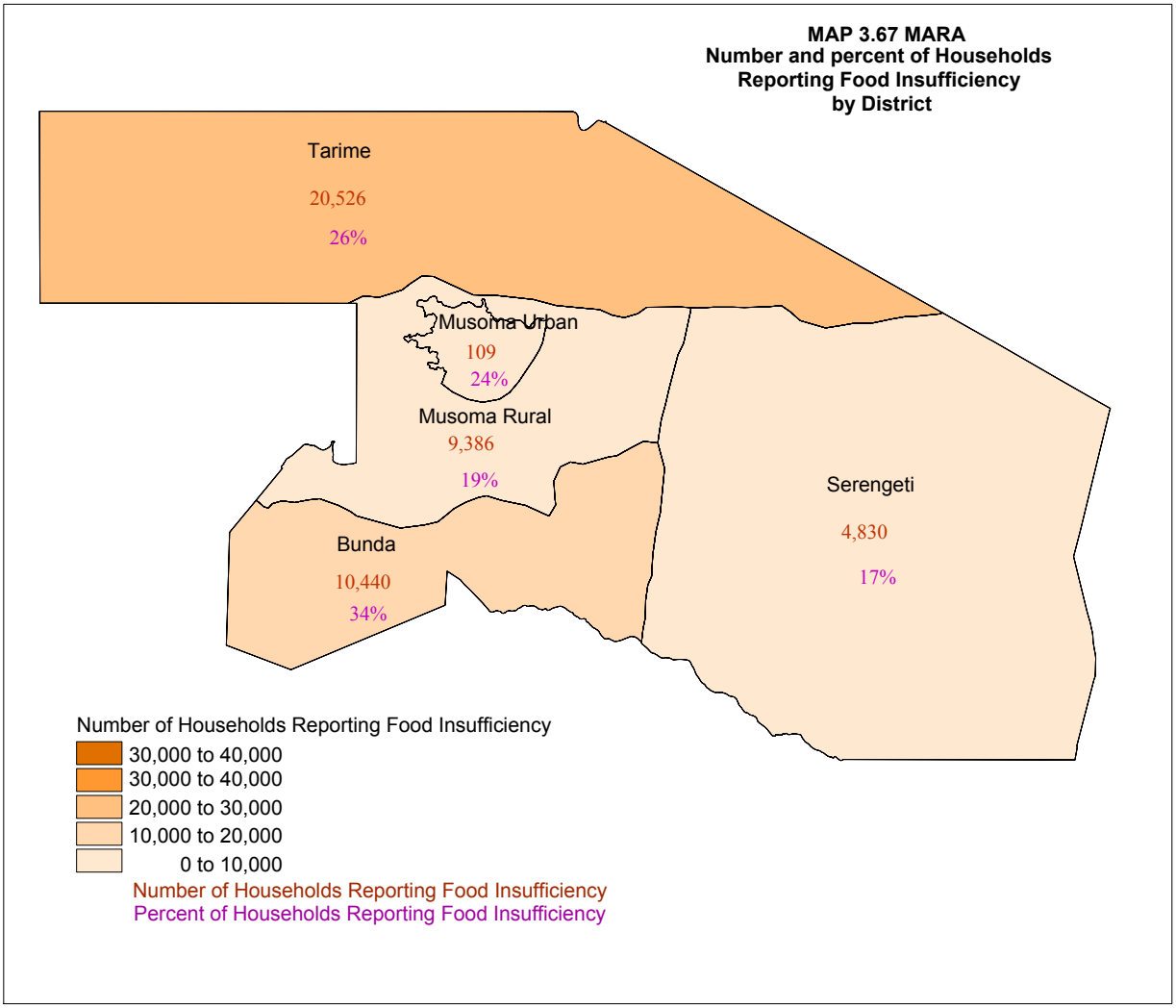
Number of Households eating 3 meals
Percent of Households eating 3 meals

MAP 3.65 MARA
Number and Percent of Households Eating Meat Once Per Week by District



MAP 3.66 MARA
Number and Percent of Households Eating Fish Once Per Week by District




MAP 3.67 MARA
Number and percent of Households
Reporting Food Insufficiency
by District
Tarime
20,526
26%
Musoma Urban
109
24%
Musoma Rural
9,386
19%
Bunda
10,440
34%
Serengeti
4,830
17%
Number of Households Reporting Food Insufficiency
30,000 to 40,000
30,000 to 40,000
20,000 to 30,000
10,000 to 20,000
0 to 10,000
Number of Households Reporting Food Insufficiency
Percent of Households Reporting Food Insufficiency

PART IV: MARA PROFILES

4.1 Region Profile

Mara has a land area of 330,000 hectares under crop production and the number of crop growing households was small compared to most regions, however it had a relatively high number of livestock and crops growing households. The region had a moderate to high number of smallholder households per square kilometer. The land area available per household was moderate to high, however the utilized land area was below the average for the country resulting in one of the lowest land utilization rates in the country. The region had one of the highest areas of permanent mono-crops in the country. It had two seasons and the planted area in the short rainy season is about half that of the long rainy season. The average area planted per crop growing household in the long rainy season was 1.7ha and 0.9 ha in the short rainy season.

The region had a moderate to low planted area of cereals. Although maize had the largest planted area, the area of sorghum was fourth largest in the country and its production was the highest. The region had the second largest planted area of cassava, however beans and groundnuts were produced in very small quantities. The region had a moderate to low production of tomato and cabbage and produced minor quantities of onions. A small amount of cotton was grown in the region. Minor quantities of coffee, mangoes, sugar cane and oranges were also produced.

Moderate to low planted areas of irrigation exist in the region. Very few households practice irrigation and the number of households with irrigation had not changed significantly for 10 years. Most cultivation was done by using oxen. A small amount of farm yard manure was applied and virtually no pesticides are used.

Normally, storage was in locally made traditional cribs. The percentage of households selling crops was average for the country. Most processing was done using neighbours machines and only small amounts of the processed crops were sold and mostly to local markets/trade store (the highest percent using this marketing outlet in the country). The receipt of extension per household was moderate.

Mara had the fifth largest number of trees in the country and the dominant species were trichillia and eucalyptus. A moderate number of households have erosion control/water harvesting facilities and erosion control bunds was the most common followed by water harvesting bunds.

Mara region has a moderate livestock population compared to other regions. Although it is one of the smallest regions in terms of available land it has a high density of livestock. Livestock is dominated by indigenous cattle; very low numbers of improved breeds are present. Compared to other regions the density of goats is moderate. However, it has a relatively high density of goats. Sheep and pig production is insignificant in the region.

The region has a moderate population of chickens and very small numbers of improved layers and broilers. Egg production is low indicating that most chickens are kept for meat. It has a moderate milk production; however the farm gate price of milk is amongst the lowest in the country.

The area of organic fertilizer application is moderate to low compared to other regions. The use of draft animals is high however the area cultivated is comparatively low, which indicates that draft animals are probably used less for cultivation purposes.

Mara has the highest rate of foot and mouth infection and there is a high incidence of foot rot possibly a result of the wetter conditions in the region. Mara has the worst access to veterinary clinics compared to other regions. In general, access to other infrastructure and services is moderate to good. However a small number of households received extension advice. Mara Region has the eleventh highest rural agriculture population in Tanzania (1,097,741 persons of which 548,314 are males and 549,427 females). It has a moderate number of rural households involved in agriculture (188,203) compared to other regions. It has 96 percent of rural households and 76 percent of total households in the region (including urban) that are involved in agriculture. The region has the fourth highest average household size in the country (5.8 persons per household) and it has a high percent of female headed households (20%) compared to other regions. Crop only and both crop and livestock production are the important types of farming in the region. The number of livestock only households in the region is very small and it also has no pastoralist households.

Land under customary law is the predominant type of land ownership, accounting for almost 80 percent of the total rural smallholder owned land and represents the second highest in the country.. There is a small amount of land under official titles. The region has a moderate access to fields with about 45 percent of the rural agriculture households having their nearest field less than 100m from the homestead. Access from the field to the nearest road is moderate to poor compared to other regions.

Mara has a high percent of literate rural agriculture population (68%) compared to other regions, however the difference between the literacy rate of males and females is high with 13 percent more literate males than females. It has a comparatively high percent of the rural agriculture population that have completed school and a low percent of household heads with no education.

The most important livelihood activity is crop farming followed by livestock keeping and tree/forest resources. Off farm Income is the least important. The percent of the rural agriculture population working full time in farming is high (74%). The main source of cash income for Mara is from the sale of food crops and It has the highest percent of rural agriculture households depending on fishing as a source of cash income. Mara receives virtually no credit.

A low percent of households use modern roofing material in the region (around 30%) and the rest is mainly with grass/leaves/mud. The region has the third lowest number of households with no toilet facilities (21%). Energy for lighting is mainly from wick lamps (50%) and about 30 percent of households use hurricane lamps. Mara has the second lowest percent of households using piped drinking water. Most water is from unprotected wells and open water (lake/river etc) About 25 percent of households in Mara region obtain drinking water from piped supplies, with the remaining households mainly using protected and unprotected wells and open water (lake, river etc).

Most rural agriculture smallholders are living a subsistence existence. However, it has the fourth highest number of households (15%) that use over 50% of their livelihood activities for non-subsistence purposes. It has the lowest number of households that do not eat animal protein in one week and the highest percent of households that eat animal protein every day. Most households in the region either never or seldom face problems with food shortage. The region has poor access to services and infrastructure in the country. About 60% of the households reported insufficiency of land which is the third highest in the country.

4.2 DISTRICT PROFILES

The following district profiles highlights the characteristics of each district and compares them in relation to population, main crops and livestock, production and productivity, access to services and resources and levels of poverty.

4.2.1 Tarime

Tarime district had the largest number of households in the region and it had the third highest percent of households involved in smallholder agriculture in the region. Most smallholders were involved in crop and livestock production, followed by crop production only. It had a very small number of households involved in livestock keeping only and no pastoralists were found in the district.

The most important livelihood activity for smallholder households in Tarime district was annual crop farming, followed by forestry products and permanent crop farming. However, the district had the second lowest percent of households with off-farm activities and the second highest percent of households with more than one member with off-farm income. Compared to other districts in the region, Tarime had the second highest percent of female headed households (24.8%) and it had the second lowest average age of the household head. The district had the lowest average household size in Mara region (4.9 members per household). Tarime had the second highest literacy rate among smallholder household members and second lowest literacy rate for the heads of household in the region.

It had the second lowest utilized land area per household (1.5 ha) and the allocated area was almost fully utilized (77% land utilization) indicating an impending high level of land pressure. The district had the largest total planted area and the second smallest area per household (1.5 ha).

The district was the largest maize and sorghum production in the region with a planted area of 39,273 and 22,060 hectares respectively, however the planted area of maize per maize growing household was the second lowest in the region. Paddy production with a planted area of 872 ha (18% of the total planted area in the region). The district was the second largest producer of finger millet in the region and had the largest area planted with cassava. The district was the second largest producer of sweet potatoes with a planted area of 4,347 ha accounting for 26.2 percent of the total area planted with sweet potatoes in the region. Although the district had the second lowest area planted with beans in the region, the area planted with beans is relatively large (2,035 ha). Oilseed crops were not important in Tarime, it had a moderate area planted with groundnuts compared to other districts in the region. Vegetable production was important in the district. It had the largest planted area with spinach (78% of the total area planted with spinach in the region), onions (76%), cabbages (51%) and tomatoes (49%). It was the only district in which garlic and ginger are produced.

Tarime had the largest planted area with permanent crops which was dominated by banana (3,923 ha), followed by coffee (3,687 ha). Other permanent crops were grown in small quantities.

As with other districts in the region, most land clearing and preparation was done by hand. It had also the largest area of bush clearance in the region, however it had the largest area of land prepared using oxen.

Tarime had the largest area planted with improved seed and the largest area planted with fertilizers (farm yard manure, compost and inorganic fertiliser) in Mara. However, most of the applied fertilizer was farm yard manure. Compared to

other districts in the region, Tarime district had the lowest level of insecticide/fungicide use. It had the second largest area with irrigation compared to other districts having 634 ha of irrigated land. The most common sources of water for irrigation were rivers and wells using hand buckets. Hand buckets/watering cans were the most common means of irrigation water application and very little hand pump was used.

The most common method of crop storage was locally made traditional structures followed by sacks/open drums and the proportion of households storing crops in the district was moderate. The district had the largest number of households selling crops, however for those who did not sell, the main reason for not selling was insufficient production. The proportion of households processing crops was moderate and more than 50 percent were processed using neighbor machines. The district had the second highest percent of households selling processed crops to large scale farms compared to other districts and no sales were made to marketing cooperatives and farmers associations. No households reported to have accessed agricultural credit.

The district had the smallest proportion of households receiving extension services in the region and almost all of this was from the government. The quality of extension services was rated between good and average by the majority of the households (80%).

Tree farming was very important in Tarime district (with 3,598,493 planted trees) and the trees were mostly eucalyptus and trichillia spp. The number of households with erosion control and water harvesting structures in Tarime district was moderate and most of them were erosion control bunds, however it also had the largest number of terraces in the region.

The district had the largest number of cattle, goats and sheep in the region and they were almost all indigenous. Tarime also had the highest number of pigs and chickens. The latter was dominated by indigenous chickens. Small numbers of ducks, turkeys, rabbits and donkeys were also found in the district. It had the largest number of households reporting tsetse and tick problems in the region and it had the largest number of households de-worming livestock. The use of draft animals in the district was most prominent and it was the only district in the region in which fish farming was practiced.

It is amongst the districts with the best access to feeder roads in Mara region. However, it had one of the worst access to health clinics, primary markets, tertiary markets and district capital.

Tarime district had the highest percent of households with no toilet facilities and it had one of the highest percent of households owning radios, bicycles and irons. The most common source of energy for lighting was the wick lamp and practically all households used firewood for cooking. The district had relatively high percent of households with grass roofs (53.6%) and 29.9 percent of households having iron sheet roofs. The most common source of drinking water was unprotected wells. It had the second highest percent of households having three meal per day compared to other districts. The district had the second lowest percent of households that did not eat meat during the week prior to enumeration, however it had the highest percent of households that did not eat fish during that period. Most households seldom had problems with food satisfaction.

4.2.2 Serengeti

Serengeti was the second district with the least number of households in the region and it was the district with the second highest percent of households involved in smallholder agriculture in the region. Most smallholders were involved in crop

production only, followed by crop and livestock production and livestock keeping only. No pastoralists were found in the district.

The most important livelihood activity for smallholder households in Serengeti district was annual crop farming, followed by tree/forestry resources and permanent crop farming. However, the district had the lowest percentage of households with off-farm activities and the lowest percentage of households with more than one member with off-farm income. Compared to other districts in the region, Serengeti had moderate percentage of female headed households (24.1%) and it had the lowest average age of the household head in the region (6.1 members per household). The district had the second lowest average household size in the region. Serengeti had a comparatively low literacy rate among smallholder household members, however it had the lowest literacy rate for the head of households.

It had the largest utilized land area per household (2.5 ha) and the lowest proportion of the allocated area was utilized (75% land utilization). The district had moderate planted area as well as planted area per crop growing household (2.4 ha).

Maize production in the district was moderate compared to other districts in the region with a planted area of 17,490 ha and the planted area per household was also moderate. Bulrush millet production was less important with a planted area of only 27 hectares. The district was the second sorghum producer in the region. While paddy production was not important, it had the largest planted area for finger millet. Serengeti had the second smallest area planted with cassava as well as sweet potatoes and the second largest area planted with Irish potatoes. While bean production in the district was moderate, it had the largest area planted with cowpeas. Serengeti district had the second smallest groundnuts planted area in Mara region with area planted per groundnut growing household of 0.25 ha. Vegetable production was not important in the district. Though small the district had the second largest planted area with onions and spinach.

Compared to other districts in the region, Serengeti had a moderate area with permanent crops which were dominated by oranges (677 ha), banana (257 ha) and mandarine/tangerine (199 ha). Other permanent crops were either not grown or were grown in very small quantities.

As with other districts in the region, most land clearing was done by hand, however the second largest land area prepared by oxen in the region.

Serengeti had the second smallest planted area with improved seed in Mara region, however it had the lowest proportion of households using improved seeds. The district had the second lowest planted area with fertilizers (farm yard manure, compost and inorganic fertiliser), and most of this was farm yard manure. Compared to other districts in the region, Serengeti district had a moderate level of insecticide use. The use of fungicides was the second highest in the region. It had the smallest proportion of planted area applied with herbicides in the region. It had the second smallest area with irrigation compared to other districts, with 109 ha of irrigated land. The most common sources of water for irrigation were from rivers and wells using hand buckets. Buckets/watering cans were the most common means of irrigation water application.

The most common methods of crop storage in Serengeti district were locally made traditional structures and sacks and/or open drum; however the proportion of households storing crops in the district was the highest in the region. Serengeti

district had the highest proportion of households selling crops, however for those who did not sell, the main reason for not selling was insufficient production. Serengeti had the highest percent of households processing crops in Mara region and 93 percent of those households used neighbours machine. The district also had the highest percent of households selling processed crops to secondary markets and marketing cooperatives than other districts in the region. No sales were made to farmers associations and traders at farm. Serengeti was the only district in the region in which both male and female headed households accessed agricultural credits. The main source of credit was traders/trade stores, followed by family, friends and relatives.

A comparatively low number of households received extension services in Serengeti district and 98.8 percent of this was from the government. The quality of extension services was rated between good and average by the majority of the households (83.3%).

The district had moderate number of trees in the region (with 344,415 planted trees) and most of these were eucalyptus spp. Serengeti district had a relatively small number of households with erosion control and water harvesting structures and most of them were erosion control bunds, however it also had the a number of tree belts and water harvesting bunds.
The district had the third lowest number of cattle in the region and they were almost all indigenous. While the district had the second smallest number of goats in the region, it also had the second largest number of sheep. The district was among two districts in the region in which pig rearing was practiced and had the second largest number of pigs in the region after Tarime district. Some ducks, turkeys, rabbits and donkeys were also found in the district. The number of households reporting tick problems in Serengeti district was relatively small, however the district had the largest proportion of households reporting tsetse problems in the region. It also had a moderate proportion of households de-worming livestock. The district had the second number of households using draft animals in the region. There was no fish farming in Serengeti district.

It is amongst the districts with the best access to primary schools, however it had one of the worst access to all weather roads, feeder roads, primary markets, tarmac roads and regional capital.

The percentage of households without toilet facility in Serengeti district was 14 and it was among the districts with the lowest percent of households owning mobile phones, bicycles and televisions/videos in the region. The most common source of energy for lighting was the wick lamp and practically all households used firewood for cooking. The roofing materials for most of the households in the district were grass and leaves (73.1%), however the district had the lowest percent of households with iron sheet roofing (11.4% of households in the district). The most common source of drinking water was unprotected wells. It had the highest percent of households having three meals per day. The district had the lowest percent of households that did not eat meat and the highest percentage of households that did not eat fish during the week prior to enumeration, however it had the lowest proportion of households who were always facing food shortage.

4.2.3 Musoma Rural

Musoma Rural district had the second largest number of households in the region and the highest percent of households involved in smallholder agriculture in the region. Most smallholders were involved in crop production only, followed by those involved in both crop and livestock production and livestock keeping only. No pastoralists were found in the district.

The most important livelihood activity for smallholder households in Musoma Rural district was annual crop farming, followed by tree/forestry resources and off farm input. However, the district had moderate percent of households with no off-farm activities as well as moderate percentage of households with more than one member with off-farm income. Compared to other districts in the region, Musoma Rural had the lowest percent of female headed households (20.3%) and it had the third highest average age of the household head in the region. The district had one of the highest average household size (6.7 members per household) in the region. Musoma Rural had a comparatively moderate literacy rate among smallholder households and this was reflected by the concomitant relatively moderate level of school attendance in the region. However, it had the highest literacy rate for the heads of household in the region.

It had a slightly lower utilized land area per household (1.84 ha) than the regional average of 1.9 ha and 75 percent of the allocated area is currently being utilized. The district had the second largest planted area and the third lowest area planted per crop growing household in the region (2.6 ha).
The district was the second maize producer in the region with a planted area of about 19,326 ha. Sorghum and finger millet production were not important with a planted areas of only 5,751 and 1,742 hectares respectively. The district had the second largest area of cassava accounting for 36 percent of the cassava planted area in the region, however Irish potato production was not important. Sweet potato production in the district was relatively important accounting for 45 percent of the total area planted with sweet potatoes in the region. Beans production is important with a planted area of 4,173 ha which was the largest in the region accounting for 36 percent of the total area planted with beans in the region. Oilseed crops were important in Musoma Rural with 40 percent of the total groundnuts grown in the region. Vegetable production was moderate. Though small, the district had the largest planted area of tomatoes and cabbage in the region.

Annual cash crop production was important in the district. It had the largest area planted with tobacco and the second largest area planted with cotton.

Permanent crops were of little importance in Musoma Rural district (6.3% of the total permanent crop planted area in Mara region was found in the district). The most prominent permanent crop in the district pigeon was mango (531 ha) accounting for 50 percent of the total area planted with permanent crops in the district (1,056 ha), followed by banana (188 ha), oranges (113 ha), pawpaw (78 ha) and sugarcane (65 ha). Other permanent crops were either not grown or were grown in very small quantities.

As with other districts in the region, most land clearing was done by hand, however it had the second largest area planted with “no land clearing” indicating the presence of a large area of bare land before cultivation. The district had the smallest area cultivated using oxen in the region.

Musoma Rural district had a moderate area planted with improved seed in Mara region. The district also had the second largest proportion of planted area with fertilisers (farm yard manure, compost and inorganic fertiliser), most of this being farm yard manure. Compared to other districts in the region, Musoma Rural district had the highest proportion of planted area applied with fungicides. However, it has a small proportion of planted area with insecticides and largest proportion of planted area applied with herbicides. It had the second largest area with irrigation compared to other districts with 554 ha of irrigated land. The main sources of water for irrigation in the district were from wells and rivers using hand buckets. Buckets/watering cans were the main means of irrigation water application.

The most common method of crop storage in Musoma Rural was in sacks/open drums and in locally made traditional structures, however the percent of households storing crops in the district was the second lowest in the region. The district had moderate percent of households selling crops, however for those who did not sell, the main reason for not selling was insufficient production. Musoma Rural had the second lowest percentage of households processing crops, with 63 percent of the households processing by neighbours machines and 34 percent processing on farm by hand. The district was one of the districts with the lowest percent of households selling processed crops. The district had the second highest percentage of households receiving credit in the region, all of which were for the female headed households. All credits were provided by saving and credit societies.

A moderate number of households received extension services in Musoma Rural district and almost all of this was from the government. The quality of extension services was rated between good and average by the majority of the households.

Tree farming was moderately important in Musoma Rural district (with 497,262 planted trees) and most trees were gravellis with some calophlum inophylum spp. The highest proportion of households with erosion control and water harvesting facilities was found in Musoma Rural district and most of them are erosion control bunds and water harvesting bunds.

The district had the second smallest number of cattle in the region, however it had the largest number of dairy cattle in the region. Although the district had the second largest number of goats in the region it had the third largest number of sheep. It had the largest number of chicken in the region but there were no pig rearing. The district had the largest number of improved chickens dominated by layers. It also had the largest number of ducks and rabbits in the region and a moderate number of donkeys. No turkeys were found in the district. The second largest number of households reporting tick problems was found in Musoma Rural district, however the district had the smallest number of households reporting tsetse problems in the region. The district had the second highest proportion of household de-worming livestock. The use of draft animals in the district was the largest in the region. There was no fish farming in the district.

It is amongst the districts with the best access to feeder roads, primary schools primary markets and all weather roads, however it had one of the worst access to hospitals, tertiary markets and district capital.

Musoma Rural district had the second highest percent of households with no toilet facilities. The most common source of energy for lighting was the wick lamp and a large proportion of households (98%) used firewood for cooking. The district had the third largest percent of households with grass/leaves roofing, however it had second highest percent of households with iron sheets roofing (33.5%). The main source of drinking water was the unprotected wells. Musoma Rural had the largest proportion of households having two meals per day and smallest proportion of households having three meals per day. The district had the lowest percent of households that ate meat three times during the week prior to enumeration, however it had the highest percent of the households that consumed fish six times during that particular week. The district had the highest percent of households that never experience food shortage problems.

4.2.4 Bunda

Bunda district had the third largest number of households in the region, however it had the second smallest percentage of households involved in smallholder agriculture in the region. Most smallholders were involved in crop farming only,

followed by crop and livestock production. Very few households were involved in livestock keeping only. No pastoralists were found in the district.

The most important livelihood activity for smallholder households in Bunda district was annual crop farming, followed by tree/forest resources, off farm income, permanent crop farming, livestock keeping/herding, remittances and fishing/hunting and gathering. The district had the highest percent of households with off-farm activities however it had the second lowest percent of households with more than one member with off-farm income. Compared to other districts in the region, Bunda had the second lowest percent of female headed households (21%) and it had the second highest average age of the household head. The average household size of 6.7 members per household was one of the highest in the region. The literacy rate among smallholder households in Bunda was the lowest compared to other districts in the region and this is associated with this was the relatively higher proportion of household members who have never attended school. The district had a moderate literacy rate for the heads of households

It had the second largest utilized land area per household (2.5 ha) and 77 percent of the allocated area was being utilized. The district had the second smallest total planted area in the region and the largest average area planted per household (3.4 ha) in the region. However, the district had the second smallest planted area per household in the long rainy season (2.1 ha) and largest area planted per household during short season (1.3 ha).

Maize production with a planted area of 15,668 ha was moderate, however the planted area per household was the largest in the region. Finger millet production with a planted area of 1,433 hectares was not important in the region, however, the district had the third largest planted area of sorghum (10,188 ha). The district had the second smallest area planted with paddy in the region, however it had largest area planted with cocoyams (101 ha), a moderate planted area of cassava (16,599 ha) and the third largest planted area for sweet potatoes (2,633 ha). It also had the largest area planted with chickpeas and second largest planted area with beans (2,974 ha). Oilseed crops were of moderate importance in Bunda with the second largest planted area of groundnuts (361 ha) as well as second largest planted area for simsim in the region. Vegetable production was not important in the district, however tomatoes, onions, cabbages and amaranths were produced in very small quantities. Bunda district was important for cotton production accounting for 55 percent of the total area planted with cotton in the region.

Compared to other districts in the region, Bunda had the third largest area planted with permanent crops which were dominated by pawpaw (747 ha), mango (348 ha), malay apple (92 ha) and oranges (60 ha). Other permanent crops were either not grown or were grown in small quantities.

Most land clearing was done by hand slashing, however it had the largest area planted with “no land clearing” indicating the presence of a large area of bare land before cultivation. Most land preparation was done by oxen, followed by hand cultivation. Compared to other districts, Bunda district had the smallest land prepared by tractor.

Bunda had the highest proportion of area planted with improved seed in Mara region. The use of fertilizer was moderate compared to other districts and most of it was farm yard manure and compost. It had a relatively small area applied with inorganic fertilizers. Compared to other districts in the region, Bunda district had the smallest percentage of the planted area in the district with fungicides application and the second smallest area of herbicide use. The district had the largest

percent of area planted with insecticide use. It had the third largest area with irrigation with a planted area of 181 ha under irrigation. The sources of water for irrigation were the lake, rivers and wells using hand buckets. Buckets/watering cans were the main means of irrigation water application in the district, followed by flood.

The most common method of crop storage in Bunda district was in sacks/open drums, however the proportion of households storing crops in the district was the second highest when compared to other districts in Mara region. The district had the second lowest proportion of households selling crops, however for those who did not sell, the main reason for not selling was insufficient production. Bunda had the second highest percent of households processing crops and was mostly done by neighbours machines. The district had the highest percent of households selling processed crops to large scale farms. There was no access to agricultural credit in the district.

The district had the highest proportion of households receiving extension services in the region and mostly was from the government. The quality of extension services was rated between good and average by the majority of the households.

Tree farming was not important in Bunda (with 95,956 trees) and most trees were azadrachta spp with some acacia spp. A small number of households had erosion control and water harvesting structures in Bunda district, most of which were erosion control bunds and water harvesting bunds.

The district had the second largest number of cattle in the region comprised of indigenous breeds only. While goat population was moderate, sheep population was the second smallest in the region. There was no pig rearing in the district, however it had the second smallest number of chicken in the region, dominated by indigenous breeds. It had a considerable number of ducks, a small numbers of rabbits and the second largest number of donkeys. It had the second lowest proportion of households reporting ticks problems and third largest proportion of households reporting tsetse fly problems in the region. It had the second largest number of households de-worming livestock compared to other districts. Use of draft animals in the district was moderate and fish farming was not practiced.

It was amongst the districts with the best access to feeder roads and secondary markets, however it had one of the worst access to secondary schools.

Bunda district had the second lowest percentage of households with no toilet facilities. It had the lowest proportion of households with landline phones and vehicles; however it had the largest proportion of households with bicycles. It had the largest proportion of households using hurricane lamps and pressure lamps; however it was the only district in the region with households using cow dung as source of energy for cooking. The main source of energy for lighting was the wick lamp and the largest percent of households used firewood for cooking. The district had the second highest percent of households with grass/leaves roofs and 33 percent of households in the district had iron sheet roofing. The main sources of drinking water were the unprotected wells and surface water (lake/river/dam/stream). It had the second smallest percentage of households having three meals per day. The district had the highest percentage of households that did not eat meat and moderate to low percentage of households that did not eat fish during the week prior to enumeration. The district had the highest proportion of households that always face food problems.

4.2.5 Musoma Urban

Musoma Urban district had the smallest number of households as well as the smallest proportion of households involved in smallholder agriculture in the region. Most smallholders were involved in crop farming only, followed by those involved in

both crop and livestock production. Very few households were involved in livestock keeping only. No pastoralists were found in the district.

The most important livelihood activity for smallholder households in Musoma Urban district was annual crop farming, followed by off farm income, permanent crop farming and tree/forest resources. However, the district had the second lowest proportion of households with no off-farm activities and the highest percent of households with more than one member with off-farm income compared to other districts in the region. Musoma Urban had the highest percentage of female headed households in the region (28%) and it had the highest average age for the household head. Its average household size of 6.4 members per household was the third largest in the region. Musoma Urban had the highest literacy for smallholder households members and this was reflected in the relatively high level of those attending school in the region. The literacy rate for the heads of household was the second highest in the region.

It had the lowest utilized land area per household (0.8 ha) in the region and 84 percent of the available land is currently being utilised. Compared to other districts in the region, the total planted area was the smallest, however it had the second largest planted area per household during long rainy season (3.1 ha) and the smallest planted area per household during the short rainy season (0.3 ha).

The district had the smallest area planted with maize and smallest area planted per maize growing household in the region. The district had the lowest planted area of paddy (7 ha) and sorghum (1 ha). Finger millet was not grown in the district. Cassava and sweet potato production were small accounting for only 0.5 and 0.4 percent of the cassava and sweet potato planted area in the region respectively. The production of beans in Musoma Urban was comparatively small (6 ha) and the area planted with bambara nuts was also very small (4 ha). Oilseed crops were not important in Musoma Urban, with the smallest area planted with groundnuts in the region. The district had the smallest area planted with fruits and vegetables in the region which were dominated by tomatoes (11 ha).

Compared to other districts in the region, Musoma Urban had a small planted area with permanent crops which were dominated by mango (317 ha). Small quantities of pawpaw, banana and avocado were also grown. Other permanent crops were either not grown or were grown in very small quantities.

The only practiced land clearing method in the district was by hand slashing and land preparation method was also done by hand.

Musoma Urban had the smallest proportion of its planted area applied with fertilizers (compost, farm yard manure and inorganic manure), however most of this was farm yard manure. It had the second smallest proportion of area planted with improved seeds, however the district had the second lowest level of insecticide use and moderate level herbicide use. However, the use of fungicides was the second highest in the region. It had the smallest irrigated area (12 ha). The main source of water for irrigation was from wells using hand buckets. Buckets/watering cans were the only available means of irrigation water application.

The most common method of crop storage was in sacks/open drums. The proportion of households storing crops in the district was the lowest in the region. The district had the smallest proportion of households selling crops, however for those that did not sell, the main reason for not selling was insufficient production. The smallest percent of households

processing crops in Mara region was found in Musoma Urban district and most of the the processing was done on farm by hand, followed by neighbours' machines. Virtually no processing was done on farm by machine, however the district had the highest proportion of households processing by trader. The district had a small number of households selling processed crops mostly to neighbours and local markets/trade stores. There was no access to agricultural credit in the district.

A comparatively low number of households received extension services in Musoma Urban district and a large percentage of this was from the government. The quality of extension services was rated between "very good" and "good" by the majority of the households.

Tree farming was relatively unimportant in Musoma Urban (with 3,958 planted trees) and most of the trees were gravellis spp. The district had a relatively small number of households with erosion control and water harvesting structures mostly erosion control bunds and water harvesting bunds.

The district had the second smallest number of cattle in the region and these were dominated by indigenous breeds. There was no pig husbandry in Musoma Urban district. It had the smallest number of goat, sheep and chicken populations compared to other districts in the region with a small broilers population. Small numbers of ducks were also found in the district. Whilst a small number of households reported tick related problems in the district, there were no households reporting tsetse related problems, however the district had the smallest proportion of households de-worming livestock. Use of draft animals in the district was not reported and no fish farming was practiced.

It was among the districts with the best access to primary schools, all weather roads, secondary schools, hospitals, regional capital, tertiary markets, district capital, feeder roads, health clinics and tarmac roads; however it had one of the worst accesses to secondary markets.

Musoma Urban district had the lowest percent of households with no toilet facilities and it had the highest proportion of households owning radios, irons, landline phones, mobile phones, vehicles and televisions/videos. The main source of energy for lighting was the wick lamp. Most households used firewood for cooking, however the district had the highest percent of households in the region that used electricity for cooking. It was the district with the lowest percent of households with grassy/leaves roofing, and 73 percent of households having iron sheet roofing. The most common sources of drinking water were surface water (lake/river/dam/stream) and piped water. It had the least percentage of households having one meal per day compared to other districts, however most households normally had 3 meals per day. The district had the second highest percent of households that did not eat meat during the week prior to enumeration, however it had the lowest percent of households that did not eat fish during the respective period. Most households never had problems with food satisfaction.

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TYPE OF AGRICULTURE HOUSEHOLD

2.1 TYPE OF AGRICULTURE HOUSEHOLD: Number of Agricultural Households by type of household and District during 2002/03 Agriculture Year

District	Agriculture, Non Agriculture and Urban Households								
	Rural households involved in Agriculture	% of Total rural households	Rural households NOT involved in Agriculture	% of Total Rural households	Total Rural Households	% of Total households	Urban Households	% of Total households	Total Number of Households (from 2002 Pop. Census)
	Number	%	Number	%	Number	%	Number	%	Number
Tarime	79,170	82	1628.40773	2.0	80,798	84	15,810	16	96,608
Serengeti	27,864	89	2769.75176	9.0	30,634	98	579	2	31,213
Musoma Rural	49,995	92	122.526415	0.2	50,118	92	4,095	8	54,213
Bunda	30,721	72	412.872001	1.3	31,133	73	11,472	27	42,605
Musoma Urban	453	2	2531.44728	84.8	2,985	14	18,976	86	21,961
Total	188,203	76	7465.00519	3.8	195,668	79	50,932	21	**246,600**

2.2 TYPE OF AGRICULTURE HOUSEHOLD:Number of Agriculture Households By Type of Holding and District, 2002/03 Agricultural Year

District	Type of Agriculture Household								Total Number of Agricultural Households	Total Number of Households Growing Crops	Total Number of Agricultural Households Rearing Livestock
	Crops Only		Livestock Only		Crops & Livestock		Total				
	Number	Percent	Number	Percent	Number	Percent	Number	Percent			
Tarime	38,817	38	1,076	45	39,277	48	79,170	42	79,170	78,094	40,352
Serengeti	15,064	15	276	11	12,524	15	27,864	15	27,864	27,588	12,800
Musoma Rural	30,527	30	973	40	18,496	22	49,995	27	49,995	49,023	19,468
Bunda	18,695	18	75	3	11,951	15	30,721	16	30,721	30,646	12,025
Musoma Urban	275	0	13	1	166	0	453	0	453	440	179
Total	103,379	100	2,412	100	82,412	100	188,203	100	188,203	185,791	84,824

NUMBER OF AGRICULTURE HOUSEHOLDS

3.0: HOUSEHOLDS DEMOGRAPHS: Number of Agricultural Households and Average Household Size By Sex of the Head of Household and District, 2002/03 Agricultural Year

District	Male			Female			Total		
	Number of Househod Members	Number of Households	Average Household Size	Number of Househod Members	Number of Households	Average Household Size	Number of Househod Members	Number of Households	Average Household Size
Tarime	313,791	59,514	5.3	72,878	19,655	3.7	386,670	79,170	4.9
Serengeti	133,881	21,137	6.3	36,647	6,727	5.4	170,529	27,864	6.1
Musoma Rural	279,742	39,870	7.0	53,475	10,126	5.3	333,217	49,995	6.7
Bunda	168,997	24,339	6.9	35,414	6,382	5.5	204,411	30,721	6.7
Musoma Urban	2,193	327	6.7	723	126	5.7	2,916	453	6.4
Total	898,604	145,187	6.2	199,138	43,016	4.6	1,097,742	188,203	5.8

3.1 The livelyhood Activities/Source of Income of the Households Ranked in Order of Importance by District

District	livelihood activity						
	Annual Crop Farming	Permanent Crop Farming	Livestock Keeping / Herding	Off Farm Income	Remittances	Fishing / Hunting & Gathering	Tree / Forest Resources
Tarime	1	3	4	5	6	7	2
Serengeti	1	3	5	4	6	7	2
Musoma Rural	1	4	5	3	7	6	2
Bunda	1	4	5	3	7	6	2
Musoma Urban	1	3	6	2	7	5	4
Total	1	3	5	4	6	7	2

RANK OF IMPORTANCE OF LIVELIHOOD ACTIVITIES

3.1a RANK OF IMPORTANCE OF LIVELIHOOD ACTIVITIES: First Most Importance

District	Annual Crop Farming	Permanent Crop Farming	Livestock Keeping / Herding	Off Farm Income	Remittances	Fishing / Hunting & Gathering	Tree / Forest Resources
Tarime	37,795	7,099	4,460	16,967	3,978	6,333	1,334
Serengeti	16,874	3,102	1,859	4,431	345	0	903
Musoma Rural	13,240	14,503	1,173	13,224	2,148	5,154	350
Bunda	13,973	2,284	2,848	6,571	1,046	2,966	436
Musoma Urban	63	59	47	175	12	92	7
Total	81,945	27,047	10,387	41,367	7,528	14,546	3,031

3.1b RANK OF IMPORTANCE OF LIVELIHOOD ACTIVITIES: Second Most Importance

District	Annual Crop Farming	Permanent Crop Farming	Livestock Keeping / Herding	Off Farm Income	Remittances	Fishing / Hunting & Gathering	Tree / Forest Resources
Tarime	23,028	28,417	12,982	7,690	1,337	935	5,580
Serengeti	7,460	10,162	3,971	2,679	959	0	2,571
Musoma Rural	15,215	17,979	5,530	5,484	1,486	2,137	1,886
Bunda	10,812	11,541	3,410	2,692	434	232	2,119
Musoma Urban	156	192	26	13	12	48	0
Total	56,671	68,290	25,919	18,558	4,227	3,353	12,157

3.1c RANK OF IMPORTANCE OF LIVELIHOOD ACTIVITIES: Third Most Importance

District	Annual Crop Farming	Permanent Crop Farming	Livestock Keeping / Herding	Off Farm Income	Remittances	Fishing / Hunting & Gathering	Tree / Forest Resources
Tarime	8,162	16,679	16,596	8,388	3,187	650	22,797
Serengeti	2,703	5,768	5,098	3,631	1,091	0	7,983
Musoma Rural	12,686	6,369	5,810	6,311	1,943	1,508	13,201
Bunda	4,600	4,530	3,678	5,464	712	398	10,263
Musoma Urban	169	43	50	59	7	12	89
Total	28,320	33,390	31,231	23,854	6,940	2,569	54,333

3.1d RANK OF IMPORTANCE OF LIVELIHOOD ACTIVITIES: Fourth Most Importance

District	Annual Crop Farming	Permanent Crop Farming	Livestock Keeping / Herding	Off Farm Income	Remittances	Fishing / Hunting & Gathering	Tree / Forest Resources
Tarime	2,850	8,593	8,552	5,136	3,199	536	27,325
Serengeti	209	1,247	2,277	2,407	681	70	10,630
Musoma Rural	2,867	4,114	6,921	3,505	2,343	460	19,884
Bunda	570	1,223	2,621	2,411	1,088	234	12,813
Musoma Urban	23	48	61	49	12	24	140
Total	6,520	15,225	20,431	13,508	7,322	1,323	70,792

3.1e RANK OF IMPORTANCE OF LIVELIHOOD ACTIVITIES: Fifth Most Importance

District	Annual Crop Farming	Permanent Crop Farming	Livestock Keeping / Herding	Off Farm Income	Remittances	Fishing / Hunting & Gathering	Tree / Forest Resources
Tarime	649	4,050	2,929	2,780	1,582	135	11,907
Serengeti	206	140	551	901	276	70	3,084
Musoma Rural	1,270	1,246	4,766	1,717	1,824	347	8,068
Bunda	79	613	1,222	1,899	677	76	4,493
Musoma Urban	12	13	12	61	7	0	109
Total	2,216	6,062	9,479	7,357	4,365	627	27,660

3.1f RANK OF IMPORTANCE OF LIVELIHOOD ACTIVITIES: Sixth Most Importance

District	Annual Crop Farming	Permanent Crop Farming	Livestock Keeping / Herding	Off Farm Income	Remittances	Fishing / Hunting & Gathering	Tree / Forest Resources
Tarime	0	1,676	1,202	542	133	0	1,560
Serengeti	0	0	0	67	70	0	209
Musoma Rural	69	0	1,057	902	581	0	806
Bunda	0	80	459	307	0	76	307
Musoma Urban	0	0	24	12	0	0	12
Total	69	1,756	2,742	1,829	783	76	2,895

3.1g RANK OF IMPORTANCE OF LIVELIHOOD ACTIVITIES: Seventh Most Importance

District	Annual Crop Farming	Permanent Crop Farming	Livestock Keeping / Herding	Off Farm Income	Remittances	Fishing / Hunting & Gathering	Tree / Forest Resources
Tarime	0	381	0	267	129	135	0
Serengeti	0	136	0	0	0	0	0
Musoma Rural	0	0	117	0	0	0	117
Bunda	80	158	0	0	0	0	0
Musoma Urban	0	0	0	0	0	0	0
Total	80	676	117	267	129	135	117

HOUSEHOLDS DEMOGRAPHS

3.2 HOUSEHOLDS DEMOGRAPHS: Number of Agricultural Household Members By Sex and Age Group for the 2002/03 Agricultural Year (row %)

	Sex					
	Male		Female		Total	
Age Group	Number	%	Number	%	Number	%
Less than 4	87,572	51	82,857	49	170,429	100
05 - 09	87,006	51	82,180	49	169,187	100
10 - 14	80,907	51	79,168	49	160,075	100
15 - 19	67,562	55	56,254	45	123,817	100
20 - 24	44,635	48	49,168	52	93,803	100
25 - 29	33,988	42	46,097	58	80,085	100
30 - 34	28,467	48	30,935	52	59,403	100
35 - 39	22,217	46	26,056	54	48,273	100
40 - 44	21,808	49	22,947	51	44,755	100
45 - 49	18,154	53	16,278	47	34,432	100
50 - 54	13,305	48	14,630	52	27,935	100
55 - 59	9,337	44	11,696	56	21,034	100
60 - 64	9,204	52	8,627	48	17,830	100
65 - 69	10,151	56	7,817	44	17,968	100
70 - 74	6,065	48	6,546	52	12,611	100
75 - 79	3,870	51	3,710	49	7,581	100
80 - 84	1,740	39	2,724	61	4,464	100
Above 85	2,325	57	1,736	43	4,060	100
Total	548,314	50	549,427	50	1,097,742	100

3.3 HOUSEHOLDS DEMOGRAPHS: Number of Agricultural Household Members By Sex and Age Group for the 2002/03 Agricultural Year (column %)

	Sex					
	Male		Female		Total	
Age Group	Number	%	Number	%	Number	%
Less than 4	87,572	16	82,857	15	170,429	16
05 - 09	87,006	16	82,180	15	169,187	15
10 - 14	80,907	15	79,168	14	160,075	15
15 - 19	67,562	12	56,254	10	123,817	11
20 - 24	44,635	8	49,168	9	93,803	9
25 - 29	33,988	6	46,097	8	80,085	7
30 - 34	28,467	5	30,935	6	59,403	5
35 - 39	22,217	4	26,056	5	48,273	4
40 - 44	21,808	4	22,947	4	44,755	4
45 - 49	18,154	3	16,278	3	34,432	3
50 - 54	13,305	2	14,630	3	27,935	3
55 - 59	9,337	2	11,696	2	21,034	2
60 - 64	9,204	2	8,627	2	17,830	2
65 - 69	10,151	2	7,817	1	17,968	2
70 - 74	6,065	1	6,546	1	12,611	1
75 - 79	3,870	1	3,710	1	7,581	1
80 - 84	1,740	0	2,724	0	4,464	0
Above 85	2,325	0	1,736	0	4,060	0
Total	548,314	100	549,427	100	1,097,742	100

3.4 HOUSEHOLDS DEMOGRAPHS: Number of Agricultural Household Members by Sex and District for the 2002/03 Agricultural Year

	Sex					
	Male		Female		Total	
District	Number	%	Number	%	Number	%
Tarime	195,948	51	190,721	49	386,670	100
Serengeti	85,070	50	85,459	50	170,529	100
Musoma Rural	163,225	49	169,992	51	333,217	100
Bunda	102,638	50	101,772	50	204,411	100
Musoma Urban	1,433	49	1,483	51	2,916	100
Total	548,314	50	549,427	50	1,097,742	100

3.5 HOUSEHOLDS DEMOGRAPHS: Number of Agriculture Household Members 5 years and above Who Can Read and Write Languages by Type of Language and District, 2002/03 Agricultural Year

	Read & Write									
	Swahili		Swahili & English		Any Other Language		Don't Read / Write		Total	
District	Number	%	Number	%	Number	%	Number	%	Number	%
Tarime	48,077	60.7	8,639	10.9	407	0.5	22,046	27.8	79,170	100
Serengeti	18,014	64.7	1,862	6.7	67	0.2	7,922	28.4	27,864	100
Musoma Rural	33,064	66.1	5,335	10.7	0	0.0	11,596	23.2	49,995	100
Bunda	19,459	63.3	2,997	9.8	0	0.0	8,265	26.9	30,721	100
Musoma Urban	223	49.2	115	25.3	0	0.0	115	25.4	453	100
Total	118,838	63.1	18,947	10.1	474	0.3	49,944	26.5	188,203	100

3.6 HOUSEHOLDS DEMOGRAPHS: Number of Agricultural Household Members 5 years and above By School Attendance and District , 2002/03 Agricultural Year

	School Attendancy							
	Attending School		Completed		Never Attended to School		Total	
District	Number	%	Number	%	Number	%	Number	%
Tarime	113,608	33	150,752	44	76,943	23	341,303	100
Serengeti	42,617	31	57,111	41	39,616	28	139,344	100
Musoma Rural	86,233	31	129,030	47	59,671	22	274,934	100
Bunda	57,839	34	69,237	41	42,165	25	169,240	100
Musoma Urban	777	31	1,201	48	514	21	2,492	100
Total	301,073	32	407,330	44	218,909	24	927,312	100

3.7 HOUSEHOLDS DEMOGRAPHS: Number of Agricultural Household Members by Main Activity and District, 2002/03 Agricultural Year

	Main Activity									
	Crop/Seaweed Farming		Livestock Keeping / Herding		Livestock Pastoralist		Fishing		Government / Parastatal	
District	Number	%	Number	%	Number	%	Number	%	Number	%
Tarime	158,115	46	5,295	2	0	0	9,900	3	4,752	1
Serengeti	69,192	50	1,522	1	140	0	70	0	960	1
Musoma Rural	130,354	47	3,499	1	233	0	8,955	3	1,794	1
Bunda	80,267	47	2,260	1	80	0	3,453	2	825	0
Musoma Urban	760	30	72	3	0	0	182	7	53	2
Total	438,687	47	12,649	1	452	0	22,560	2	8,385	1

cont… Number of Agricultural Household Members By Main Activity and District, 2002/03 Agricultural Year

	Main Activity									
	Private - NGO / Mission / etc		Self Employed (Non Farmimg) with Employees		Self Employed (Non Farmimg) without Employees		Unpaid Family Helper (Non Agriculture)		Not Working & Available	
District	Number	%	Number	%	Number	%	Number	%	Number	%
Tarime	4,548	1	5,326	2	6,862	2	1,865	1	2,341	1
Serengeti	1,244	1	1,666	1	1,109	1	3,260	2	278	0
Musoma Rural	2,908	1	2,693	1	4,653	2	2,728	1	904	0
Bunda	912	1	230	0	613	0	1,829	1	1,041	1
Musoma Urban	92	4	45	2	89	4	0	0	12	0
Total	9,704	1	9,960	1	13,325	1	9,683	1	4,576	0

cont… Number of Agricultural Household Members By Main Activity and District, 2002/03 Agricultural Year

	Main Activity											
	Not Working & Unavailable		Housemaker / Housewife		Student		Unable to Work / Too Old / Retired / Sick / Disabled		Other		Total	
District	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Tarime	398	0	3,433	1	108,738	32	24,848	7	4,882	1	341,303	100
Serengeti	278	0	679	0	41,033	29	13,020	9	4,893	4	139,344	100
Musoma Rural	609	0	1,311	0	82,361	30	27,708	10	4,223	2	274,934	100
Bunda	311	0	761	0	54,458	32	18,867	11	3,333	2	169,240	100
Musoma Urban	13	1	18	1	765	31	355	14	37	1	2,492	100
Total	1,609	0	6,201	1	287,356	31	84,798	9	17,367	2	927,312	100

3.8 HOUSEHOLDS DEMOGRAPHS: Number of Agricultural Household Members By Level of involvement in Farming Activivty and District, 2002/03 Agricultural Year

	Involvement in Farming									
	Works Full-time on Farm		Works Part-time on Farm		Rarely Works on Farm		Never Works on Farm		Total	
District	Number	%	Number	%	Number	%	Number	%	Number	%
Tarime	142,942	42	22,359	7	98,655	29	77,347	23	341,303	100
Serengeti	68,432	49	4,839	3	38,779	28	27,294	20	139,344	100
Musoma Rural	119,103	43	26,954	10	65,224	24	63,652	23	274,934	100
Bunda	74,624	44	2,516	1	53,297	31	38,803	23	169,240	100
Musoma Urban	606	24	68	3	779	31	1,038	42	2,492	100
Total	405,707	44	56,737	6	256,734	28	208,134	22	927,312	100

3.9 HOUSEHOLDS DEMOGRAPHS: Number of Agricultural Household Members By Level of Formal Education Completion and District, 2002/03 Agricultural Year

District	Education Level									
	Under Standard One		Standard One		Standard Two		Standard Three		Standard Four	
	Number	%	Number	%	Number	%	Number	%	Number	%
Tarime	399	0	810	1	1,207	1	2,531	2	10,186	7
Serengeti	551	1	136	0	818	1	818	1	4,267	7
Musoma Rural	817	1	1,466	1	3,755	3	2,363	2	12,491	10
Bunda	470	1	473	1	2,304	3	1,592	2	5,063	7
Musoma Urban	12	1	7	1	13	1	37	3	115	10
Total	2,250	1	2,891	1	8,097	2	7,340	2	32,122	8

cont... HOUSEHOLDS DEMOGRAPHS: Number of Agricultural Household Members By Level of Formal Education Completion and District, 2002/03 Agricultural Year

District	Education Level									
	Standard Seven		Standard Eight		Training After Primary Education		Pre Form One		Form One	
	Number	%	Number	%	Number	%	Number	%	Number	%
Tarime	110,250	73	2,466	2	664	0	260	0	666	0
Serengeti	45,116	79	344	1	481	1	0	0	272	0
Musoma Rural	93,948	73	1,812	1	221	0	116	0	341	0
Bunda	52,956	76	781	1	139	0	134	0	306	0
Musoma Urban	785	65	30	2	0	0	0	0	7	1
Total	303,055	74	5,431	1	1,505	0	510	0	1,592	0

cont... HOUSEHOLDS DEMOGRAPHS: Number of Agricultural Household Members By Level of Formal Education Completion and District, 2002/03 Agricultural Year

District	Education Level									
	Form Two		Form Three		Form Four		Form Six		Training After Secondary Education	
	Number	%	Number	%	Number	%	Number	%	Number	%
Tarime	2,541	2	535	0	6,910	5	670	0	271	0
Serengeti	481	1	70	0	1,291	2	0	0	0	0
Musoma Rural	974	1	312	0	2,893	2	198	0	231	0
Bunda	232	0	134	0	1,379	2	159	0	0	0
Musoma Urban	0	0	12	1	96	8	31	3	0	0
Total	4,228	1	1,063	0	12,569	3	1,058	0	502	0

cont... HOUSEHOLDS DEMOGRAPHS: Number of Agricultural Household Members By Level of Formal Education Completion and District, 2002/03 Agricultural Year

District	Education Level					
	University & Other Tertiary Education		Adult Education		Total	
	Number	%	Number	%	Number	%
Tarime	0	0	2,690	2	150,752	100
Serengeti	0	0	482	1	57,111	100
Musoma Rural	0	0	321	0	129,030	100
Bunda	0	0	311	0	69,237	100
Musoma Urban	7	1	13	1	1,201	100
Total	7	0	3,817	1	407,330	100

3.14 Time Series of Male and Female Headed Households

	NSCA 1994/95	EAS 1995/96	EAS 1996/97	IAS 1997/98	DIAS 1998/99	NSCA 2002/03
Male Heads	210,881	135,180	138,250	148,765	148,981	145,187
Female Heads	43,259	34,646	45,301	48,677	42,537	43,016
Total	254,140	169,826	183,551	197,442	191,518	188,203
Male headed (percentage)	83	80	75	75	78	77
Female headed (percentage)	17	20	25	25	22	23
Total	100	100	100	100	100	100

3.15 Literacy Rate of Heads of Households by Sex and District

	Literacy								
	Know			Don't know			Total		
District	Male	Female	Total	Male	Female	Total	Male	Female	Total
Tarime	49,527	7,597	57,124	9,987	12,059	22,046	59,514	19,655	79,170
Serengeti	16,238	3,704	19,943	4,898	3,023	7,922	21,137	6,727	27,864
Musoma Rural	33,080	5,319	38,399	6,790	4,806	11,596	39,870	10,126	49,995
Bunda	20,111	2,345	22,456	4,227	4,037	8,265	24,339	6,382	30,721
Musoma Urban	279	59	338	49	67	115	327	126	453
Total	119,235	19,024	138,259	25,951	23,993	49,944	145,187	43,016	188,203

3.16 Number of Agricultural Households by Number of Household Members Involved in Off Farm Income Generating Activities and District, 2002/03 Agricultural Year

	Number of Household Members Involved in Off-farm Income Generating Activities							
	One Person		Two Persons		More than Two Persons		Total	
District	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Tarime	27,130	60	11,650	26	6,227	14	45,007	100
Serengeti	10,601	78	1,995	15	971	7	13,567	100
Musoma Rural	20,062	66	7,064	23	3,444	11	30,571	100
Bunda	14,036	69	5,021	25	1,302	6	20,359	100
Musoma Urban	172	61	86	30	25	9	284	100
Total	72,002	66	25,816	24	11,969	11	109,788	100

LAND ACCESS/OWNERSHIP

4.1 LAND ACCESS/OWNERSHIP: Number of Farming Households by Type of Land Ownership/Tenure and District for the 2002/03 Agricultural Year

District	Land Access														
	Leased/Certificate of Ownwership		Owned under Customary Law		Bought		Rented		Borrowed		Households with Area Shared Cropped		Households with Area under Other Forms of Tenure		Total Number of Households
	No of Households	%	No of Households	%	No of Households	%	No of Households	%	No of Households	%	No of Households	%	No of Households	%	
Tarime	7,354	9	71,739	91	10,694	14	7,750	10	8,708	11	2,118	3	3,830	5	79,170
Serengeti	3,751	13	23,299	84	1,856	7	688	2	2,683	10	612	2	1,039	4	27,864
Musoma Rural	1,722	3	40,501	81	6,382	13	8,907	18	7,730	15	2,023	4	7,395	15	49,995
Bunda	3,038	10	27,170	88	2,643	9	2,976	10	4,954	16	80	0	216	1	30,721
Musoma Urban	97	21	193	43	70	15	187	41	49	11	0	0	25	5	453
Total	15,961	8	162,902	87	21,645	12	20,508	11	24,123	13	4,833	3	12,506	7	188,203

4.2 LAND ACCESS/OWNERSHIP: Area of Land (ha) by Ownership/Tenure (Hectare) and District for the 2002/03 Agricultural Year

District	Land Access/ Ownership (Hectare)							
	Area Leased/Certificate of Ownership	Area Owned Under Customary Law	Area Bought	Area Rented	Area Borrowed	Area Shared Cropped	Area under Other Forms of Tenure	Total
Tarime	8,312	129,541	8,759	5,964	4,482	1,476	2,699	161,234
Serengeti	7,981	85,015	2,696	774	1,895	916	358	99,634
Musoma Rural	6,902	88,328	9,669	7,169	4,918	1,130	8,163	126,279
Bunda	9,863	78,519	3,817	3,105	4,505	32	132	99,973
Musoma Urban	62	177	53	98	14	.	19	423
Total	33,120	381,581	24,993	17,110	15,814	3,554	11,370	487,543
%	7	78	5	4	3	1	2	100

LAND USE

5.1 LAND USE: Number of Agricultural Households By Type of Land Use and District for the 2002/03 Agricultural Year

Districts	Type of Land Use													
	Households with Temporary Mono Crops	Households with Temporary Mixed Crops	Households with Permanent Mono Crops	Households with Permanent Mixed Crops	Households with Permanent / Annual Mix	Households with Pasture	Households with Fallow	Households with Natural Bush	Households with Planted Trees	Households Rented to Others	Households Unusable	Households of Uncultivated Usable Land	Area of land Utilized by household	Total Number of Households
Tarime	60,430	12,904	57,173	4,517	6,157	4,984	5,570	2,403	10,738	2,749	3,151	29,385	200,162	79,170
Serengeti	26,762	4,952	16,280	755	1,738	961	2,399	1,503	4,836	480	5,465	13,528	79,660	27,864
Musoma Rural	33,031	14,898	31,394	1,740	13,932	1,349	4,658	626	12,983	1,827	2,417	25,931	144,785	49,995
Bunda	23,711	9,719	10,798	1,607	7,083	591	5,739	608	3,699	942	548	13,008	78,053	30,721
Musoma Urban	156	43	117	53	204	0	7	0	55	24	12	104	774	453
Total	144,089	42,515	115,763	8,672	29,114	7,885	18,372	5,139	32,312	6,022	11,594	81,956	503,434	188,203

5.2 LAND USE: Area of Land (Ha) by type of Land Use and District for the 2002/03 Agricultural Year

District	**Land use area**												
	Area under Temporary Mono Crops	Area under Temporary Mixed Crops	Area under Permanent Mono Crops	Area under Permanent Mixed Crops	Area under Permanent / Annual Mix	Area under Pasture	Area under Fallow	Area under Natural Bush	Area under Planted Trees	Area Rented to Others	Area Unusable	Area of Uncultivated Usable Land	Total
Tarime	50,950	10,297	35,774	3,271	3,390	6,311	4,654	2,281	3,458	4,320	2,169	34,358	161,234
Serengeti	40,721	5,177	14,431	532	1,326	3,276	3,245	1,953	1,091	821	4,993	22,069	99,634
Musoma Rural	27,177	10,915	27,523	924	15,422	2,498	3,644	301	2,915	1,090	3,279	30,591	126,279
Bunda	38,519	8,266	8,647	1,612	7,324	298	8,796	185	473	1,590	1,523	22,740	99,973
Musoma Urban	60	20	48	33	151	.	9	.	20	14	2	65	423
Total	157,427	34,674	86,423	6,373	27,613	12,382	20,348	4,720	7,956	7,836	11,967	109,823	487,543

5.3: Number of Agricultural Households by Whether All Land Available to the Household Was Used and District, 2002/03 Agricultural Year

District	Was all Land Available to the Hh Used During 2002/03?					
	Yes		No		Total	
	Number	Percent	Number	Percent	Number	Percent
Tarime	41,265	53	36,829	47	78,094	100
Serengeti	11,320	41	16,268	59	27,588	100
Musoma Rural	19,359	39	29,664	61	49,023	100
Bunda	12,004	39	18,642	61	30,646	100
Musoma Urban	325	74	116	26	440	100
Total	84,273	45	101,519	55	185,791	100

5.4: Number of Agricultural Households by Whether they Consider Having Sufficient Land for the Household and District, 2002/03 Agricultural Year

District	Do you Consider that you have sufficient land for the Hh?					
	Yes		No		Total	
	Number	Percent	Number	Percent	Number	Percent
Tarime	27,992	36	50,102	64	78,094	100
Serengeti	14,392	52	13,196	48	27,588	100
Musoma Rural	17,850	36	31,173	64	49,023	100
Bunda	12,200	40	18,446	60	30,646	100
Musoma Urban	139	32	301	68	440	100
Total	72,573	39	113,218	61	185,791	100

5.5: Number of Agricultural Households by whether Female Members of the Household Own or Have Customary Right to Land and District, 2002/03 Agricultural Year

District	Do any Female Members of the Hh own or have customary right					
	Yes		No		Total	
	Number	Percent	Number	Percent	Number	Percent
Tarime	15,953	20	62,141	80	78,094	100
Serengeti	6,977	25	20,612	75	27,588	100
Musoma Rural	12,224	25	36,799	75	49,023	100
Bunda	5,701	19	24,944	81	30,646	100
Musoma Urban	25	6	416	94	440	100
Total	40,879	22	144,912	78	185,791	100

TOTAL ANNUAL CROP & VEGETABLES PRODUCTION SHORT & LONG RAINY SEASONS

7.1 & 7.2a TOTAL ANNUAL CROP AND VEGETABLE PRODUCTION: Number of Crop Growing Households and Area Planted (ha) by Season and District.

District	Short Rainy Season		Long Rainy Season		Total Area Planted (Hectare)	% Area planted in Short Rainy Season
	Number of household	Planted area (hectare)	Number of household	Planted Area (hectare)		
Tarime	47725	35,307	53,074	80,024	115,331	31
Serengeti	20,452	22,706	24,548	42,459	65,165	35
Musoma Rural	31,894	25,769	33,698	62,255	88,024	29
Bunda	27,140	36,412	13,266	27,860	64,272	57
Musoma Urban	296	75	212	657	732	10
Total	127,507	120,270	124,798	213,255	333,525	36

7.1 & 7.2b TOTAL ANNUAL CROPS AND VEGETABLE PRODUCTION: Number of Crop Growing Households Planting Crops by Season and District.

District	Short Rainy Season		Long Rainy Season		Total Number of Crop Growing Households
	Number of households Growing Crops	Number of households NOT Growing Crops	Number of households Growing Crops	Number of households NOT Growing Crops	
Tarime	47725	30,369	53,074	25,020	78,094
Serengeti	20452	7,136	24,548	3,040	27,588
Musoma Rural	31894	17,128	33,698	15,324	49,023
Bunda	27140	3,506	13,266	17,380	30,646
Musoma Urban	296	144	212	229	440
Total	127507	58,284	124,798	60,993	185,791

7.1 and 7.2c TOTAL ANNUAL CROP AND VEGETABLE PRODUCTION: Area planted (ha) and Quantity Harvested by Season and Crop for the 2002/03 agriculture year, Mara Region

Crop	Short Rainy Season			Long Rainy Season			Total		
	Area Planted (ha)	Quantity Harvested (tons)	Yield (kg/ha)	Area Planted (ha)	Quantity harvested (tons)	Yield (Kg/ha)	Area Planted (ha)	Quantity Harvested (tons)	Yield (Kg/ha)
Maize	48,177	55,996	1,162	43,628	54,666	1,253	91,804	110,662	1,205
Paddy	2,270	2,366	1,043	2,603	3,905	1,500	4,873	6,271	1,287
Sorghum	29,922	28,842	964	25,118	25,664	1,022	55,040	54,506	990
Finger Millet	4,245	3,776	889	5,712	4,807	842	9,957	8,583	862
Bulrush Millet	0	0	0	27	0	0	27	0	0
CEREALS	**84,614**	**90,980**		**77,087**	**89,042**		**161,701**	**180,021**	
Cassava	307	552	1,796	115,432	115,195	998	115,739	115,747	1,000
Sweet Potatoes	7,714	20,906	2,710	8,907	22,328	2,507	16,621	43,234	2,601
Irish Potatoes	299	1,372	4,584	244	409	1,679	543	1,781	3,281
Yams	23	14	603	83	263	3,190	106	277	2,623
Cocoyam	94	2	21	14	70	4,883	108	71	661
ROOTS & TUBERS	**8,438**	**22,846**		**124,679**	**138,265**		**133,117**	**161,111**	
Mung Beans	0	0	0	108	240	2,223	108	240	2,223
Beans	6,383	4,093	641	5,343	3,519	659	11,726	7,612	649
Cowpeas	97	22	228	181	258	1,425	278	280	1,008
Chich Peas	186	123	661	1,884	950	504	2,070	1,073	518
Bambaranuts	134	57	430	122	33	266	256	90	351
PULSES	**6,799**	**4,295**		**7,639**	**4,999**		**14,438**	**9,295**	
Sunflower	21	7	346	0	0	0	21	7	346
Simsim	73	21	293	103	27	262	176	48	275
Groundnuts	761	797	1,047	577	555	964	1,337	1,352	1,011
Soya Beans	22	27	1,235	16	24	1,482	38	51	1,341
OIL SEEDS & OIL NUTS	**877**	**853**		**695**	**607**		**1,572**	**1,459**	
Bitter Aubergine	16	16	988	0	0	0	16	16	988
Garlic	27	0	0	0	0	0	27	0	0
Onions	95	362	3,829	152	544	3,578	247	907	3,674
Cabbage	123	333	2,702	257	1,350	5,249	381	1,683	4,423
Tomatoes	479	1,603	3,346	603	2,198	3,647	1,082	3,801	3,514
Spinnach	53	48	889	58	49	853	111	97	871
Amaranths	57	51	896	59	228	3,857	116	279	2,404
Pumpkins	12	1	59	12	2	158	24	3	109
Cucumber	24	24	1,039	0	0	0	24	24	1,039
Water Mellon	29	37	1,263	0	0	0	29	37	1,263
Ginger	0	0	0	54	135	2,470	54	135	2,470
FRUITS & VEGETABLES	**915**	**2,475**		**1,195**	**4,506**		**2,110**	**6,981**	
Cotton	18,443	12,680	687	1,899	1,418	747	20,342	14,097	693
Tobacco	185	93	506	60	0	0	244	93	382
CASH CROPS	**18,628**	**12,773**		**1,959**	**1,418**		**20,587**	**14,191**	
Total	**120,270**			**213,255**			**333,525**		

*The total area planted include the sum of the planted area for both Short and Long Rainy Seasons and it is an overestimation of the actual area due to being produced on the same land during the two seasons. Previous surveys have used the Long Rainy Season to estimate physical land area under production to different crops

7.1 & 7.2d TOTAL ANNUAL CROP AND VEGETABLE PRODUCTION: Number of Agriculture Households by Area Planted (ha) and crop for the Agriculture Year 2002/03 - Short and Long Rainy Seasons, Mara Region

Crop	Short Rainy Season		Long Rainy Season		Total Area Planted Short & Long Rainy Season	% Area Planted in Short Rainy Season
	Number of Households	Planted area (ha)	Number of Households	Planted area (ha)		
CEREALS	***161,538***	***84,614***	***153,732***	***77,087***	***161,701***	***52.3***
Maize	84,630	48,177	77,336	43,628	91,804	52.5
Paddy	4,697	2,270	6,982	2,603	4,873	46.6
Sorghum	63,432	29,922	54,589	25,118	55,040	54.4
Finger Millet	8,779	4,245	66	5,712	9,957	42.6
Bulrush Millet	0	0	14,759	27	27	0.0
ROOTS & TUBERS	***36,271***	***8,438***	***176,754***	***124,679***	***133,117***	***6.3***
Cassava	1,057	307	138,982	115,432	115,739	0.3
Sweet Potatoes	34,153	7,714	36,514	8,907	16,621	46.4
Irish Potatoes	869	299	798	244	543	55.1
Yams	115	23	318	83	106	21.9
Cocoyam	77	94	141	14	108	86.8
PULSES	***24,094***	***6,799***	***24,009***	***7,639***	***14,438***	***47.1***
Mung Beans	0	0	133	108	108	0.0
Beans	21,927	6,383	20,683	5,343	11,726	54.4
Cowpeas	688	97	917	181	278	34.9
Chich Peas	266	186	1,625	1,884	2,070	9.0
Bambaranuts	1,213	134	650	122	256	52.2
OIL SEEDS & OIL NUTS	***2,538***	***877***	***2,183***	***695***	***1,572***	***55.8***
Sunflower	103	21	0	0	21	100.0
Simsim	322	73	453	103	176	41.7
Groundnuts	1,978	761	1,596	577	1,337	56.9
Soya Beans	135	22	135	16	38	57.1
FRUITS & VEGETABLES	***5,859***	***915***	***7,257***	***1,195***	***2,110***	***43.4***
Bitter Aubergine	80	16	0	0	16	100.0
Garlic	132	27	0	0	27	100.0
Onions	538	95	1,010	152	247	38.4
Cabbage	1,008	123	1,491	257	381	32.4
Tomatoes	2,770	479	3,662	603	1,082	44.3
Spinnach	264	53	332	58	111	48.1
Amaranths	564	57	510	59	116	49.1
Pumpkins	116	12	116	12	24	50.0
Cucumber	233	24	0	0	24	100.0
Water Mellon	154	29	0	0	29	100.0
Ginger		0	135	54	54	0.0
CASH CROPS	***20,232***	***18,628***	***2,945***	***1,959***	***20,587***	***90.5***
Cotton	19,853	18,443	2,771	1,899	20,342	90.7
Tobacco	379	185	174	60	244	75.5
Total		***120,270***		***213,255***	***333,525***	***36.1***

7.1 & 7.2e TOTAL ANNUAL CROP AND VEGETABLE PRODUCTION: Number of Crop Growing Households and Planted Area (ha) By Means of Soil Preparation and District Short and Long Rainy Season, Mara

	Soil Preparation							
	Mostly Tractor Ploughing		Mostly Oxen Ploughing		Mostly Hand Cultivation		Total	
District	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area
Tarime	1,597	879	76,425	60,734	22,777	12,450	100,799	74,063
Serengeti	538	588	24,561	31,724	19,901	17,254	45,000	49,566
Musoma Rural	576	271	21,801	25,145	43,216	21,561	65,593	46,977
Bunda	235	84	16,279	26,888	23,892	20,761	40,406	47,733
Musoma Urban	0	0	0	0	508	140	508	140
Total	2,946	1,822	139,066	144,491	110,294	72,166	252,305	218,479
%		1		66		33		100

7.1 & 7.2f TOTAL ANNUAL CROP AND VEGETABLE PRODUCTION: Total Number of Agriculture Households and Planted Area by Fertilizer Use and District for the 2002/03 Agriculture Year - Short and Long Rainy , Mara

	Fertilizer Use									
	Mostly Farm Yard Manure		Mostly Compost		Mostly Inorganic Fertilizer		No Fertilizer Applied		Total	
District	Number of Household	Planted Area	Number of Household	Planted Area	Number of Household	Planted Area	Number of Household	Planted Area	Number of Household	Planted Area
Tarime	20,170	23,258	2,554	1,895	1,719	2,306	95,498	87,871	119,941	115,331
Serengeti	4,092	6,678	334	301	134	149	42,367	58,038	46,927	65,165
Musoma Rural	11,773	12,668	917	1,092	795	178	65,244	74,086	78,730	88,024
Bunda	5,740	5,312	2,113	3,431	78	93	42,978	55,436	50,910	64,272
Musoma Urban	97	56	0	0	25	7	572	670	694	732
Total	41,873	47,972	5,919	6,719	2,751	2,732	246,660	276,102	297,203	333,525

7.1 & 7.2g TOTAL ANNUAL CROP AND VEGETABLE PRODUCTION:Total Number of Agriculture Households and Planted Area by Irrigation Use and District during Short and Long Rainy Season, 2002/03 Agriculture Year

	Irrigation Use						% of Area Planted Under Irrigation
	Households Using Irrigation		Households not Using Irrigation		Total		
District	Number of Household	Planted Area (Ha)	Number of Household	Planted Area (Ha)	Number of Household	Planted Area (Ha)	
Tarime	56,628	41,456	15,589	14,448	72,217	115,331	35.95
Serengeti	15,361	15,673	11,114	12,054	26,475	65,165	24.05
Musoma Rural	38,183	40,769	8,652	10,812	46,835	88,024	46.32
Bunda	18,646	17,523	5,123	7,087	23,770	64,272	27.26
Musoma Urban	362	612	36	9	398	732	83.50
Total	129,180	116,033	40,515	44,410	169,695	333,525	34.79

7.1 & 7.2h TOTAL ANNUAL CROP & VEGETABLE PRODUCTION: Total Number of Agriculture Households and Planted Area by Insecticide Use and District for the 2002/03 Agriculture Year - Short & Long Rainy Season.

District	Insecticide Use						% of Planted Area Using Insecticides
	Households Using Insecticides		Households Not Using Insecticides		Total		
	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area	
Tarime	4,376	2,316	115,565	113,014	119,941	115,331	2.0
Serengeti	3,637	4,076	43,290	61,090	46,927	65,165	6.3
Musoma Rural	8,234	5,275	70,496	82,750	78,730	88,024	6.0
Bunda	4,950	10,028	45,960	54,245	50,910	64,272	15.6
Musoma Urban	68	24	627	708	694	732	3.3
Total	21,265	21,719	275,938	311,806	297,203	333,525	6.5

7.1 & 7.2i TOTAL ANNUAL CROP & VEGETABLE PRODUCTION: Total Number of Agriculture Households and Planted Area by Herbicide Use and District for the 2002/03 Agriculture Year - Short & Long Rainy Season.

District	Herbicide Use						% of Planted Area Using Herbicides
	Households Using Herbicide		Households Not Using Herbicide		Total		
	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area	
Tarime	2,132	1,718	117,809	113,613	119,941	115,331	1.5
Serengeti	412	404	46,515	64,761	46,927	65,165	0.6
Musoma Rural	2,416	1,422	76,314	86,602	78,730	88,024	1.6
Bunda	396	402	50,514	63,870	50,910	64,272	0.6
Musoma Urban	12	9	683	723	694	732	1.2
Total	5,368	3,956	291,835	329,570	297,203	333,525	1.2
%	1.8	1.2	98.2	98.8	100	100	

7.1 & 7.2j TOTAL ANNUAL CROP & VEGETABLE PRODUCTION: Total Number of Agriculture Households and Planted Area by Fungicides Use and District for the 2002/03 Agriculture Year - Short & Long Rainy Season.

District	Fungicide Use						% of Planted Area Using Fungicides
	Households Using Fungicide		Households Not Using Fungicide		Total		
	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area	
Tarime	2,915	3,660	117,026	111,671	119,941	115,331	3.2
Serengeti	1,651	2,117	45,276	63,048	46,927	65,165	3.2
Musoma Rural	3,271	2,403	75,459	85,621	78,730	88,024	2.7
Bunda	1,094	1,283	49,815	62,990	50,910	64,272	2.0
Musoma Urban	48	20	646	713	694	732	2.7
Total	8,980	9,482	288,223	324,043	297,203	333,525	2.8

7.1 & 7.2k TOTAL ANNUAL CROP & VEGETABLE PRODUCTION: Total Number of Agriculture Households and Planted Area by Improved Seed Use and District for the 2002/03 Agriculture Year - Short & Long Rainy Season.

District	Improved Seed Use						% of Planted Area Using Improved Seeds
	Households Using Improved Seed		Households Not Using Improved Seed		Total		
	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area	
Tarime	13,875	13,653	106,066	101,677	119,941	115,331	11.8
Serengeti	3,008	3,703	43,919	61,462	46,927	65,165	5.7
Musoma Rural	11,998	9,474	66,732	78,550	78,730	88,024	10.8
Bunda	6,740	8,656	44,170	55,616	50,910	64,272	13.5
Musoma Urban	92	46	602	687	694	732	6.2
Total	35,714	35,532	261,489	297,993	297,203	333,525	10.7

ANNUAL CROP & VEGETABLES PRODUCTION
SHORT RAINY SEASON

7.1a ANNUAL CROP AND VEGETABLE PRODUCTION: Number of Households and Planted Area by Means Used for Soil Preparation and District - SHORT RAINY SEASON, Mara Region.

District	Soil Preparation							
	Mostly Tractor Ploughing		Mostly Oxen Ploughing		Mostly Hand Cultivation		Total	
	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area
Tarime	539	229	36,348	28,226	10,837	6,879	47,725	35,334
Serengeti	209	254	11,109	13,858	9,134	8,594	20,452	22,706
Musoma Rural	351	237	11,107	14,024	20,436	11,507	31,894	25,769
Bunda	235	84	10,963	19,652	15,943	16,676	27,140	36,412
Musoma Urban	0	.	0	.	296	75	296	75
Total	1,335	805	69,527	75,761	56,646	43,731	127,507	120,297
%	1	1	55	63	44	36	100	100

7.1b ANNUAL CROP AND VEGETABLE PRODUCTION: Total Number of Crop Growing Households and Planted Area by Fertilizer Use and District during 2002/03 Agriculture Year - SHORT RAINY SEASON, Mara Region

District	Fertilizer Use									
	Mostly Farm Yard Manure		Mostly Compost		Mostly Inorganic Fertilizer		No Fertilizer Applied		Total	
	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area
Tarime	12,833	9,645	938	604	941	713	33,013	24,345	47,725	35,307
Serengeti	2,808	2,948	133	61	0	0	17,511	19,698	20,452	22,706
Musoma Rural	6,152	4,657	199	400	570	90	24,973	20,622	31,894	25,769
Bunda	3,516	3,628	1,174	1,454	0	65	22,450	31,266	27,140	36,412
Musoma Urban	50	27	0	.	12	4	235	45	296	75
Total	25,359	20,905	2,444	2,518	1,522	871	98,183	95,976	127,507	120,270
%	20	17	2	2	1	1	77	80	100	100

7.1c ANNUAL CROP AND VEGETABLE PRODUCTION:Total Number of Crop Growing Households and Planted Area by Irrigation Use and District during Short Rainy Season, 2002/03 Agriculture Year, Mara Region

District	Irrigation Use						% of planted area under irrigation in short rainy season
	Households Using Irrigation		Households Not Using Irrigation		Total		
	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area	
Tarime	800	405	46,925	34,902	47,725	35,307	1
Serengeti	271	159	20,181	22,548	20,452	22,706	1
Musoma Rural	1,647	858	30,248	24,911	31,894	25,769	3
Bunda	540	983	26600	35,430	27140	36412	3
Musoma Urban	30	9	266	67	296	75	11
Total	3,287	2,412	124,220	117,858	127,507	120,270	2
%	3	2	97	98	100	100	

7.1d ANNUAL CROP & VEGETABLE PRODUCTION: Total Number of Agriculture Households and Planted Area by Insecticide Use and District for the 2002/03 Agriculture Year - Short Rainy Season.

	Insecticide Use						% of Planted Area Using Insecticides
	Household Using Insecticides		Households Not Using Insecticides		Total		
	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area	
Tarime	933	703	46,792	34,604	47,725	35,307	2.0
Serengeti	1,711	2,636	18,741	20,070	20,452	22,706	11.6
Musoma Rural	4,556	3,686	27,338	22,083	31,894	25,769	14.3
Bunda	4,102	9,703	23,038	26,709	27,140	36,412	26.6
Musoma Urban	37	17	260	59	296	75	21.9
Total	11,338	16,745	116,169	103,525	127,507	120,270	13.9

7.1e ANNUAL CROP & VEGETABLE PRODUCTION: Total Number of Agriculture Households and Planted Area by Herbicides Use and District for the 2002/03 Agriculture Year - Short Rainy Season.

	Herbicide Use						% of Planted Area Using Herbicides
	Household Using Herbicidess		Households Not Using Herbicidess		Total		
	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area	
Tarime	923	306	46,802	35,001	47,725	35,307	0.9
Serengeti	206	178	20,246	22,528	20,452	22,706	0.8
Musoma Rural	1,048	397	30,846	25,371	31,894	25,769	1.5
Bunda	239	321	26,901	36,091	27,140	36,412	0.9
Musoma Urban	0	0	296	75	296	75	0.0
Total	2,416	1,203	125,091	119,067	127,507	120,270	1.0

7.1f ANNUAL CROP & VEGETABLE PRODUCTION: Total Number of Agriculture Households and Planted Area by Fungicide Use and District for the 2002/03 Agriculture Year - Short Rainy Season.

	Fungicide Use						% of Planted Area Using Fungicides
	Household Using Fungicides		Households Not Using Fungicides		Total		
	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area	
Tarime	791	588	46,933	34,746	47,725	35,334	1.66
Serengeti	616	597	19,836	22,109	20,452	22,706	2.63
Musoma Rural	1,676	833	30,218	24,936	31,894	25,769	3.23
Bunda	547	731	26,593	35,681	27,140	36,412	2.01
Musoma Urban	24	6	273	70	296	75	7.91
Total	3,655	2,755	123,853	117,541	127,507	120,297	2.29

7.1g ANNUAL CROP AND VEGETABLE PRODUCTION: Number of Crop Growing Households and Planted Area By Improved Seed Use and District During 2002/03 Crop Year - Short Rainy Season

District	Improved Seed Use						% of Planted Area Using Improved Seed
	Households Using Improved Seed		Households Not Using Improved Seed		Total		
	Number of Household	Planted Area	Number of Household	Planted Area	Number of Household	Planted Area	
Tarime	11,751	10,581	35,973	24,752	47,725	35,334	29.95
Serengeti	1,973	2,183	18,479	20,523	20,452	22,706	9.62
Musoma Rural	10,404	7,904	21,491	17,865	31,894	25,769	30.67
Bunda	6,193	8,104	20,947	28,308	27,140	36,412	22.26
Musoma Urban	68	32	229	43	296	75	42.50
Total	30,389	28,805	97,119	91,492	127,507	120,297	23.94
%	24	24	76	76	100	100	

ANNUAL CROP & VEGETABLES PRODUCTION
LONG RAINY SEASON

7.2a ANNUAL CROP AND VEGETABLE PRODUCTION: Number of Households and Planted Area by Means Used for Soil Preparation and District - LONG RAINY SEASON, Mara Region.

District	Soil Preparation							
	Mostly Tractor Ploughing		Mostly Oxen Ploughing		Mostly Hand Cultivation		Total	
	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area
Tarime	1,058	649	40,077	32,509	11,940	5,572	53,074	38,730
Serengeti	329	334	13,452	17,866	10,767	8,660	24,548	26,859
Musoma Rural	225	34	10,693	11,120	22,780	10,054	33,698	21,209
Bunda	0	.	5,316	7,236	7,950	4,085	13,266	11,321
Musoma Urban	0	.	0	.	212	64	212	64
Total	1,611	1,017	69,539	68,730	53,648	28,435	124,798	98,183
%	1	1	56	70	43	29	100	100

7.2b ANNUAL CROP AND VEGETABLE PRODUCTION: Total Number of Crop Growing Households and Planted Area by Fertilizer Use and District during 2002/03 Agriculture Year - LONG RAINY SEASON, Mara Region

	Fertilizer Use									
	Mostly Farm Yard Manure		Mostly Compost		Mostly Inorganic Fertilizer		No Fertilizer Applied		Total	
	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area
Tarime	7,338	13,613	1,616	1,291	778	1,594	62,485	63,527	72,217	80,024
Serengeti	1,284	3,730	201	240	134	149	24,856	38,340	26,475	42,459
Musoma Rural	5,621	8,011	718	692	225	88	40,271	53,464	46,835	62,255
Bunda	2,224	1,684	940	1,978	78	28	20,528	24,170	23,770	27,860
Musoma Urban	48	29	0	0	13	3	337	624	398	657
Total	16,515	27,067	3,475	4,201	1,229	1,861	148,477	180,126	169,695	213,255

7.2c ANNUAL CROP AND VEGETABLE PRODUCTION:Total Number of Crop Growing Households and Planted Area by Irrigation Use and District during Long Rainy Season, 2002/03 Agriculture Year, Mara Region

District	Irrigation Use						% of planted area under irrigation in long rainy season
	Households Using Irrigation		Households Not Using Irrigation		Total		
	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area	
Tarime	56,628	41,052	15,589	38,972	72,217	80,024	51
Serengeti	15,361	15,515	11,114	26,944	26,475	42,459	37
Musoma Rural	38,183	39,911	8,652	22,345	46,835	62,255	64
Bunda	18,646	16,540	5,123	11,320	23,770	27,860	59
Musoma Urban	362	603	36	54	398	657	92
Total	129,180	113,620	40,515	99,635	169,695	213,255	53
%	76	53	24	47	100	100	

7.2d ANNUAL CROP & VEGETABLE PRODUCTION: Total Number of Agriculture Households and Planted Area by Insecticide Use and District for the 2002/03 Agriculture Year - Long Rainy Season.

District	Insecticide Use						% of Planted Area Using Insecticides
	Households Using Insecticides		Households Not Using Insecticides		Total		
	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area	
Tarime	3,443	1,613	68,773	78,411	72,217	80,024	2.02
Serengeti	1,927	1,439	24,549	41,020	26,475	42,459	3.39
Musoma Rural	3,677	1,589	43,158	60,666	46,835	62,255	2.55
Bunda	848	324	22,921	27,536	23,770	27,860	1.16
Musoma Urban	31	8	367	649	398	657	1.18
Total	9,927	4,974	159,768	208,282	169,695	213,255	2.33

7.2e ANNUAL CROP & VEGETABLE PRODUCTION: Total Number of Agriculture Households and Planted Area by Herbicide Use and District for the 2002/03 Agriculture Year - Long Rainy Season.

District	Herbicide Use						% of Planted Area Using Herbicides
	Households Using Herbicide		Households Not Using Herbicide		Total		
	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area	
Tarime	1,210	1,412	71,007	78,612	72,217	80,024	1.76
Serengeti	206	226	26,269	42,233	26,475	42,459	0.53
Musoma Rural	1,368	1,025	45,468	61,230	46,835	62,255	1.65
Bunda	156	81	23,613	27,779	23,770	27,860	0.29
Musoma Urban	12	9	387	648	398	657	1.38
Total	2,952	2,753	166,744	210,502	169,695	213,255	1.29
%	1.7	1.3	98.3	98.7	100	100	

7.2f ANNUAL CROP & VEGETABLE PRODUCTION: Total Number of Agriculture Households and Planted Area by Fungicide Use and District for the 2002/03 Agriculture Year - LONG RAINY SEASON

District	Fungicide Use						% of Planted Area Using Fungicides
	Households Using Fungicide		Households Not Using Fungicide		Total		
	Number of Households	Planted Area	Number of Households	Planted Area	Number of Households	Planted Area	
Tarime	2,124	3,072	70,093	76,952	72,217	80,024	3.84
Serengeti	1,035	1,520	25,440	40,939	26,475	42,459	3.58
Musoma Rural	1,594	1,570	45,241	60,686	46,835	62,255	2.52
Bunda	547	552	23,223	27,308	23,770	27,860	1.98
Musoma Urban	25	14	373	643	398	657	2.08
Total	5,325	6,727	164,370	206,528	169,695	213,255	

7.2g ANNUAL CROP AND VEGETABLE PRODUCTION: Number of Crop Growing Households and Planted Area By Improved Seed Use and District During 2002/03 Crop Year - LONG RAINY SEASON

District	Improved Seed Use						% of planted area under irrigation in dry season
	Households Using Improved Seed		Households Not Using Improved Seed		Total		
	Number of Household	Planted Area	Number of Household	Planted Area	Number of Household	Planted Area	
Tarime	12,425	10,345	40,650	28,385	53,074	38,730	26.71
Serengeti	2,285	2,752	22,263	24,107	24,548	26,859	10.25
Musoma Rural	10,061	4,611	23,637	16,597	33,698	21,209	21.74
Bunda	683	397	12,583	10,923	13,266	11,321	3.51
Musoma Urban	43	14	169	50	212	64	21.78
Total	25,496	18,120	99,302	80,063	124,798	98,183	18.46
%	20	18	80	82	100	100	

Table 7.2h: Planted Area and Number of Crop Growing Households During Long Rainy Season by Method of Land Clearing and Crops; 2002/03 Agriculture Year

Crop	Land Clearing											
	Mostly Bush Clearance		Mostly Hand Slashing		Mostly Tractor Slashing		Mostly Burning		Not cleared		Total	
	Number of House holds	Planted Area	Number of House holds	Planted Area	Number of House holds	Planted Area	Number of House holds	Planted Area	Number of House holds	Planted Area	Number of House holds	Planted Area
CEREALS		**2,239**		**65,968**		**246**		**936**		**7,450**		**76,838**
Maize	2,418	1,129	64,201	36,162	320	177	650	597	9,508	5,402	77,098	43,467
Paddy	379	213	5,630	2,128	0	.	0	.	973	262	6,982	2,603
Sorghum	1,686	660	48,786	22,538	200	68	533	325	3,321	1,501	54,526	25,093
Bulrush Millet	0	.	66	27	0	.	0	.	0	.	66	27
Finger Millet	403	236	13,543	5,113	0	.	70	14	664	284	14,681	5,648
ROOTS & TUBERS		**205**		**7,343**		**0**		**27**		**2,031**		**9,605**
Cassava	0	.	1,136	344	0	.	0	.	75	15	1,211	359
Sweet Potatoes	701	165	28,803	6,735	0	.	135	27	6,863	1,979	36,502	8,906
Irish Potatoes	132	40	666	203	0	.	0	.	0	.	798	244
Yams	0	.	229	46	0	.	0	.	90	36	318	83
Cocoyam	0	.	141	14	0	.	0	.	0	.	141	14
PULSES		**231**		**5,923**		**26**		**56**		**1,308**		**7,543**
Mung Beans	0	.	133	108	0	.	0	.	0	.	133	108
Beans	450	231	16,119	3,905	0	.	224	56	3,651	1,055	20,445	5,247
Cowpeas	0	.	662	140	65	26	0	.	191	15	917	181
Chich Peas	0	.	1,398	1,670	0	.	0	.	228	214	1,625	1,884
Bambaranuts	0	.	533	99	0	.	0	.	116	24	650	122
OIL SEEDS & OIL NUTS		**0**		**410**		**0**		**0**		**285**		**695**
Simsim	0	.	453	103	0	.	0	.	0	.	453	103
Groundnuts	0	.	1,003	291	0	.	0	.	593	285	1,596	577
Soya Beans	0	.	135	16	0	.	0	.	0	.	135	16
FRUITS & VEGETABLES		**6**		**1,126**		**0**		**0**		**63**		**1,195**
Onions	0	.	1,010	152	0	.	0	.	0	.	1,010	152
Ginger	0	.	135	54	0	.	0	.	0	.	135	54
Cabbage	0	.	1,491	257	0	.	0	.	0	.	1,491	257
Tomatoes	108	6	3,131	534	0	.	0	.	423	63	3,662	603
Spinnach	0	.	332	58	0	.	0	.	0	.	332	58
Amaranths	0	.	510	59	0	.	0	.	0	.	510	59
Pumpkins	0	.	116	12	0	.	0	.	0	.	116	12
CASH CROPS		**57**		**1,856**		**0**		**0**		**47**		**1,959**
Cotton	70	57	2,586	1,796	0	.	0	.	116	47	2,771	1,899
Tobacco	0	.	174	60	0	.	0	.	0	.	174	60
Total		**2,737**		**82,625**		**272**		**1,019**		**11,184**		**97,836**
%		**3**		**84**		**0**		**1**		**11**		**100**

Table 7.2.1: Number of Agricultural Households, Area Planted (ha) and Quantity of Maize Harvested (tons) by Season and District;2002/03 Agricultural Year

Maize											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	37,237	18,911	27,290	1.443	39,725	20,362	29,562	1.452	39,273	56,852	1.448
Serengeti	13,657	8,039	8,589	1.068	15,672	9,450	11,677	1.236	17,490	20,266	1.159
Musoma Rural	15,970	10,376	12,547	1.209	15,281	8,950	10,765	1.203	19,326	23,312	1.206
Bunda	17,691	10,824	7,551	0.698	6,590	4,844	2,643	0.546	15,668	10,195	0.651
Musoma Urban	75	27	18	0.681	68	21	19	0.927	47	37	0.788
Total	84,630	48,177	55,996	1.162	77,336	43,628	54,666	1.253	91,804	110,662	1.205

Table 7.2.2: Number of Agricultural Households, Area Planted (ha) and Quantity of Paddy Harvested (tons) by Season and District;2002/03 Agricultural Year

Paddy											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	1,297	427	358	0.838	1,294	445	379	0.852	872	737	0.845
Serengeti	1,221	744	980	1.317	1,512	897	1,404	1.566	1,641	2,385	1.453
Musoma Rural	1,246	460	635	1.381	3,923	1,112	1,997	1.796	1,572	2,632	1.675
Bunda	927	637	393	0.617	235	144	113	0.788	781	506	0.649
Musoma Urban	7	1	0	0.000	18	6	11	1.871	7	11	1.516
Total	4,697	2,270	2,366	1.043	6,982	2,603	3,905	1.500	4,873	6,271	1.287

Table 7.2.3: Number of Agricultural Households, Area Planted (ha) and Quantity of Sorghum Harvested (tons) by Season and District;2002/03 Agricultural Year

Sorghum											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	31,564	10,803	10,547	0.976	29,306	11,257	11,127	0.988	22,060	21,674	0.982
Serengeti	14,319	7,374	7,769	1.054	17,299	9,666	11,235	1.162	17,040	19,004	1.115
Musoma Rural	6,648	3,586	4,249	1.185	4,064	2,165	2,250	1.039	5,751	6,500	1.130
Bunda	10,901	8,159	6,277	0.769	3,913	2,029	1,052	0.518	10,188	7,328	0.719
Musoma Urban	0	0	0	0.000	7	1	0	0.741	1	0	0.741
Total	63,432	29,922	28,842	0.964	54,589	25,118	25,664	1.022	55,040	54,506	0.990

Table 7.2.4: Number of Agricultural Households, Area Planted (ha) and Quantity of Burlush Millet Harvested (tons) by Season and District;2002/03 Agricultural Year

Burlush Millet											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	0	0	0		0	0	0	0.000	0	0	0.000
Serengeti	0	0	0		66	27	0	0.000	27	0	0.000
Musoma Rural	0	0	0		0	0	0	0.000	0	0	0.000
Bunda	0	0	0		0	0	0	0.000	0	0	0.000
Musoma Urban	0	0	0		0	0	0	0.000	0	0	0.000
Total	0	0	0		66	27	0	0.000	27	0	0.000

Table 7.2.5: Number of Agricultural Households, Area Planted (ha) and Quantity of Finger millet Harvested (tons) by Season and District;2002/03 Agricultural Year

Finger millet											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	3,250	1,041	813	0.780	7,194	1,921	1,652	0.860	2,962	2,464	0.832
Serengeti	2,610	1,111	924	0.831	5,637	2,709	2,541	0.938	3,820	3,466	0.907
Musoma Rural	1,463	1,042	1,368	1.313	1,015	700	448	0.640	1,742	1,816	1.042
Bunda	1,456	1,050	671	0.639	914	382	166	0.433	1,433	837	0.584
Musoma Urban	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Total	8,779	4,245	3,776	0.889	14,759	5,712	4,807	0.842	9,957	8,583	0.862

Table 7.2.6: Number of Agricultural Households, Area Planted (ha) and Quantity of Cassava Harvested (tons) by Season and District;2002/03 Agricultural Year

Cassava											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	543	164	293	1.785	60,373	41,417	51,097	1.234	41,581	51,390	1.236
Serengeti	209	85	137	1.614	16,739	15,675	9,227	0.589	15,760	9,364	0.594
Musoma Rural	227	30	92	3.016	42,101	41,177	40,096	0.974	41,207	40,187	0.975
Bunda	78	28	31	1.098	19,408	16,571	14,537	0.877	16,599	14,568	0.878
Musoma Urban	0	0	0	0.000	362	592	239	0.403	592	239	0.403
Total	1,057	307	552	1.796	138,982	115,432	115,195	0.998	115,739	115,747	1.000

Table 7.2.7: Number of Agricultural Households, Area Planted (ha) and Quantity of Sweet Potatoes Harvested (tons) by Season and District;2002/03 Agricultural Year

Sweet Potatoes											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	9,462	1,956	4,553	2.328	10,953	2,392	4,478	1.872	4,347	9,031	2.077
Serengeti	3,580	951	1,617	1.701	4,279	1,168	2,240	1.918	2,119	3,857	1.821
Musoma Rural	12,832	2,999	12,020	4.008	16,853	4,459	14,012	3.142	7,458	26,032	3.490
Bunda	8,038	1,774	2,615	1.474	4,280	860	1,546	1.798	2,633	4,161	1.580
Musoma Urban	242	34	101	2.935	150	28	52	1.850	63	153	2.445
Total	34,153	7,714	20,906	2.710	36,514	8,907	22,328	2.507	16,621	43,234	2.601

Table 7.2.8: Number of Agricultural Households, Area Planted (ha) and Quantity of Irish Potatoes Harvested (tons) by Season and District;2002/03 Agricultural Year

Irish Potatoes											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	539	177	1,086	6.130	663	174	294	1.686	351	1,380	3.927
Serengeti	135	83	102	1.235	135	69	115	1.660	152	217	1.429
Musoma Rural	115	23	183	7.904	0	0	0	0.000	23	183	7.904
Bunda	80	16	0	0.025	0	0	0	0.000	16	0	0.025
Musoma Urban	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Total	869	299	1,372	4.584	798	244	409	1.679	543	1,781	3.281

Table 7.2.9: Number of Agricultural Households, Area Planted (ha) and Quantity of Yams Harvested (tons) by Season and District;2002/03 Agricultural Year

Yams											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Serengeti	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Musoma Rural	115	23	14	0.603	318	83	263	3.190	106	277	2.623
Bunda	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Musoma Urban	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Total	115	23	14	0.603	318	83	263	3.190	106	277	2.623

Table 7.2.10: Number of Agricultural Households, Area Planted (ha) and Quantity of Cocoyams Harvested (tons) by Season and District;2002/03 Agricultural Year

Cocoyams											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Serengeti	0	0	0	0.000	67	7	67	9.880	7	67	9.880
Musoma Rural	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Bunda	77	94	2	0.021	74	8	3	0.395	101	5	0.048
Musoma Urban	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Total	77	94	2	0.000	141	14	70	4.883	108	71	0.661

Table 7.2.11: Number of Agricultural Households, Area Planted (ha) and Quantity of Mung Beans Harvested (tons) by Season and District;2002/03 Agricultural Year

Mung Beans											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	0	0	0	0.000	133	108	240	2.223	108	240	2.223
Serengeti	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Musoma Rural	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Bunda	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Musoma Urban	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Total	0	0	0	0.000	133	108	240	2.223	108	240	2.223

Table 7.2.12: Number of Agricultural Households, Area Planted (ha) and Quantity of Beans Harvested (tons) by Season and District;2002/03 Agricultural Year

Beans											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	4,932	1,128	910	0.807	4,662	907	759	0.837	2,035	1,670	0.821
Serengeti	3,304	1,174	718	0.611	2,931	1,364	989	0.725	2,538	1,707	0.672
Musoma Rural	7,433	1,967	1,638	0.833	10,422	2,206	1,301	0.590	4,173	2,940	0.704
Bunda	6,222	2,110	824	0.391	2,656	865	469	0.542	2,974	1,293	0.435
Musoma Urban	36	4	3	0.694	13	2	1	0.280	6	3	0.548
Total	21,927	6,383	4,093	0.641	20,683	5,343	3,519	0.659	11,726	7,612	0.649

Table 7.2.13: Number of Agricultural Households, Area Planted (ha) and Quantity of Cowpeas Harvested (tons) by Season and District;2002/03 Agricultural Year

Cowpeas											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	0	0	0	0.000	387	60	43	0.720	60	43	0.720
Serengeti	0	0	0	0.000	260	98	210	2.139	98	210	2.139
Musoma Rural	532	75	18	0.239	116	12	2	0.198	87	20	0.234
Bunda	155	22	4	0.192	154	11	2	0.205	33	7	0.196
Musoma Urban	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Total	688	97	22	0.228	917	181	258	1.425	278	280	1.008

Table 7.2.14: Number of Agricultural Households, Area Planted (ha) and Quantity of Chick Peas Harvested (tons) by Season and District;2002/03 Agricultural Year

Chick Peas											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Serengeti	0	0	0	0.000	70	28	28	0.988	28	28	0.988
Musoma Rural	113	91	68	0.741	0	0	0	0.000	91	68	0.741
Bunda	154	94	55	0.584	1,556	1,856	922	0.497	1,951	977	0.501
Musoma Urban	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Total	266	186	123	0.661	1,625	1,884	950	0.504	2,070	1,073	0.518

Table 7.2.15: Number of Agricultural Households, Area Planted (ha) and Quantity of Bambaranuts Harvested (tons) by Season and District;2002/03 Agricultural Year

Bambaranuts											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	0	0	0	0.000	132	16	8	0.494	16	8	0.494
Serengeti	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Musoma Rural	1,039	95	38	0.400	517	106	25	0.231	201	63	0.311
Bunda	151	35	18	0.520	0	0	0	0.000	35	18	0.520
Musoma Urban	23	4	1	0.329	0	0	0	0.000	4	1	0.329
Total	1,213	134	57	0.430	650	122	33	0.266	256	90	0.351

Table 7.2.16: Number of Agricultural Households, Area Planted (ha) and Quantity of Sunflower Harvested (tons) by Season and District;2002/03 Agricultural Year

Sunflower											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	103	21	7	0.346	0	0	0	0.000	21	7	0.346
Serengeti	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Musoma Rural	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Bunda	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Musoma Urban	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Total	103	21	7	0.346	0	0	0	0.000	21	7	0.346

Table 7.2.17: Number of Agricultural Households, Area Planted (ha) and Quantity of Simsim Harvested (tons) by Season and District;2002/03 Agricultural Year

Simsim											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	103	10	2	0.198	270	66	6	0.084	76	8	0.100
Serengeti	66	13	13	0.988	69	14	19	1.359	27	32	1.178
Musoma Rural	0	0	0	0.000	113	23	2	0.099	23	2	0.099
Bunda	152	50	6	0.125	0	0	0	0.000	50	6	0.125
Musoma Urban	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Total	322	73	21	0.293	453	103	27	0.262	176	48	0.275

Table 7.2.18: Number of Agricultural Households, Area Planted (ha) and Quantity of Groundnuts Harvested (tons) by Season and District;2002/03 Agricultural Year

Groundnuts											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	738	162	172	1.061	496	169	70	0.414	332	242	0.731
Serengeti	139	42	32	0.758	272	63	34	0.546	105	66	0.632
Musoma Rural	235	195	474	2.437	820	344	451	1.312	539	926	1.719
Bunda	865	361	118	0.327	0	0	0	0.000	361	118	0.327
Musoma Urban	0	0	0	0.000	7	1	0	0.000	1	0	0.000
Total	1,978	761	797	1.047	1,596	577	555	0.964	1,337	1,352	1.011

Table 7.2.19: Number of Agricultural Households, Area Planted (ha) and Quantity of Soya Beans Harvested (tons) by Season and District;2002/03 Agricultural Year

Soya Beans											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	135	22	27	1.235	135	16	24	1.482	38	51	1.341
Serengeti	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Musoma Rural	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Bunda	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Musoma Urban	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Total	135	22	27	1.235	135	16	24	1.482	38	51	1.341

Table 7.2.20: Number of Agricultural Households, Area Planted (ha) and Quantity of Bitter Aubergine Harvested (tons) by Season and District;2002/03 Agricultural Year

Bitter Aubergine											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	0	0	0	0.000	0	0	0	0	0	0	0.000
Serengeti	0	0	0	0.000	0	0	0	0	0	0	0.000
Musoma Rural	0	0	0	0.000	0	0	0	0	0	0	0.000
Bunda	80	16	16	0.988	0	0	0	0	16	16	0.988
Musoma Urban	0	0	0	0.000	0	0	0	0	0	0	0.000
Total	80	16	16	0.988	0	0	0	0	16	16	0.988

Table 7.2.21: Number of Agricultural Households, Area Planted (ha) and Quantity of Garlic Harvested (tons) by Season and District;2002/03 Agricultural Year

Garlic											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	132	27	0	0.000	0	0	0	0.000	27	0	0.000
Serengeti	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Musoma Rural	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Bunda	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Musoma Urban	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Total	132	27	0	0.000	0	0	0	0.000	27	0	0.000

Table 7.2.22: Number of Agricultural Households, Area Planted (ha) and Quantity of Onions Harvested (tons) by Season and District;2002/03 Agricultural Year

Onions											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	403	81	302	3.732	536	108	410	3.797	189	712	3.769
Serengeti	135	14	60	4.402	205	17	65	3.793	31	125	4.064
Musoma Rural	0	0	0	0.000	115	12	44	3.754	12	44	3.754
Bunda	0	0	0	0.000	153	15	26	1.671	15	26	1.671
Musoma Urban	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Total	538	95	362	3.829	1,010	152	544	3.578	247	907	3.674

Table 7.2.23: Number of Agricultural Households, Area Planted (ha) and Quantity of Ginger Harvested (tons) by Season and District;2002/03 Agricultural Year

Ginger											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	0	0	0	0.000	135	54	135	2.470	54	135	2.470
Serengeti	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Musoma Rural	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Bunda	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Musoma Urban	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Total	0	0	0	0.000	135	54	135	2.470	54	135	2.470

Table 7.2.24: Number of Agricultural Households, Area Planted (ha) and Quantity of Cabbage Harvested (tons) by Season and District;2002/03 Agricultural Year

Cabbage											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	398	42	78	1.850	652	154	646	4.200	196	723	3.696
Serengeti	66	7	0	0.000	269	34	253	7.437	41	253	6.209
Musoma Rural	234	24	76	3.211	564	69	450	6.540	92	526	5.688
Bunda	311	51	180	3.520	0	0	0	0.000	51	180	3.520
Musoma Urban	0	0	0	0.000	7	1	2	2.371	1	2	2.371
Total	1,008	123	333	2.702	1,491	257	1,350	5.249	381	1,683	4.423

Table 7.2.25: Number of Agricultural Households, Area Planted (ha) and Quantity of Tomatoes Harvested (tons) by Season and District;2002/03 Agricultural Year

Tomatoes											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	1,194	215	539	2.508	1,556	317	977	3.084	532	1,516	2.851
Serengeti	468	81	267	3.284	809	149	464	3.107	231	731	3.170
Musoma Rural	853	147	724	4.927	888	85	446	5.271	232	1,170	5.053
Bunda	231	30	57	1.898	389	47	288	6.089	77	345	4.464
Musoma Urban	24	6	16	2.724	20	5	23	4.954	11	39	3.695
Total	2,770	479	1,603	3.346	3,662	603	2,198	3.647	1,082	3,801	3.514

Table 7.2.26: Number of Agricultural Households, Area Planted (ha) and Quantity of Spinach Harvested (tons) by Season and District;2002/03 Agricultural Year

Spinach											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	264	53	48	0.889	256	33	42	1.242	87	89	1.025
Serengeti	0	0	0	0.000	70	23	6	0.268	23	6	0.268
Musoma Rural	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Bunda	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Musoma Urban	0	0	0	0.000	7	1	1	1.976	1	1	1.976
Total	264	53	48	0.889	332	58	49	0.853	111	97	0.871

Table 7.2.27: Number of Agricultural Households, Area Planted (ha) and Quantity of Amaranths Harvested (tons) by Season and District;2002/03 Agricultural Year

Amaranths											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	0	0	0	0.000	386	47	50	1.067	47	50	1.067
Serengeti	66	7	2	0.296	0	0	0	0.000	7	2	0.296
Musoma Rural	417	42	37	0.879	117	12	176	14.820	54	213	3.937
Bunda	80	8	12	1.482	0	0	0	0.000	8	12	1.482
Musoma Urban	0	0	0	0.000	7	1	3	3.952	1	3	3.952
Total	564	57	51	0.896	510	59	228	3.857	116	279	2.404

Table 7.2.28: Number of Agricultural Households, Area Planted (ha) and Quantity of Pumpkins Harvested (tons) by Season and District;2002/03 Agricultural Year

Pumpkins											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Serengeti	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Musoma Rural	116	12	1	0.059	116	12	2	0.158	24	3	0.109
Bunda	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Musoma Urban	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Total	116	12	1	0.059	116	12	2	0.158	24	3	0.109

Table 7.2.29: Number of Agricultural Households, Area Planted (ha) and Quantity of Cucumber Harvested (tons) by Season and District;2002/03 Agricultural Year

Cucumber											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Serengeti	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Musoma Rural	233	24	24	1.039	0	0	0	0.000	24	24	1.039
Bunda	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Musoma Urban	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Total	233	24	24	1.039	0	0	0	0.000	24	24	1.039

Table 7.2.30: Number of Agricultural Households, Area Planted (ha) and Quantity of Water mellon Harvested (tons) by Season and District;2002/03 Agricultural Year

Water mellon											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Serengeti	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Musoma Rural	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Bunda	154	29	37	1.263	0	0	0	0.000	29	37	1.263
Musoma Urban	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Total	154	29	37	1.263	0	0	0	0.000	29	37	1.263

Table 7.2.31: Number of Agricultural Households, Area Planted (ha) and Quantity of Cotton Harvested (tons) by Season and District;2002/03 Agricultural Year

Cotton											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Serengeti	2,617	2,981	2,097	0.704	1,393	994	783	0.788	3,975	2,880	0.725
Musoma Rural	5,770	4,439	2,916	0.657	928	677	477	0.704	5,117	3,393	0.663
Bunda	11,467	11,023	7,666	0.695	451	228	158	0.693	11,251	7,824	0.695
Musoma Urban	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Total	19,853	18,443	12,680	0.687	2,771	1,899	1,418	0.747	20,342	14,097	0.693

Table 7.2.32: Number of Agricultural Households, Area Planted (ha) and Quantity of Tobbaco Harvested (tons) by Season and District;2002/03 Agricultural Year

Tobacco											
	Short Rainy Season				Long Rainy Season				Total		
District	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Number of Households	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)	Planted Area (ha)	Quantity Harvested (tons)	Yield (tons/ha)
Tarime	262	66	0	0.000	0	0	0	0.000	66	0	0.000
Serengeti	0	0	0	0.000	70	7	0	0.000	7	0	0.000
Musoma Rural	117	118	93	0.790	104	53	0	0.000	171	93	0.546
Bunda	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Musoma Urban	0	0	0	0.000	0	0	0	0.000	0	0	0.000
Total	379	185	93	0.506	174	60	0	0.000	244	93	0.382

PERMANENT CROPS

7.3.1 PERMANENT CROPS: Production of Permanent Crops by Crop Type and District - Mara

District/Crop		Area planted (ha)	Area Harvested (ha)	Quantity Harvested (tons)	Yield (Kgs/ha)
Tarime	Star Fruit	94	13	5	40
	Sisal	14	5	20	371
	Coffee	3,687	2,727	2,244	82
	Sugarcane	253	120	3,372	2,811
	Pomelo	3,328	49	41	82
	Banana	3,923	2,286	11,395	498
	Avocado	28	40	184	454
	Mango	428	151	636	422
	Pawpaw	104	21	133	621
	Pineapple	54	0	5	
	Orange	318	76	1,713	2,261
	Mandarine/Tangerine	26	0	694	
	Guava	266	24	34	139
	Lime/Lemon	202	48	1,170	2,412
	Total	**12,727**	**5,562**	**21,646**	
Serengeti	Coffee	44	0	0	0
	Sugarcane	64	35	684	1,939
	Jack Fruit	9	0	3	
	Banana	257	159	508	320
	Mango	78	0	507	
	Pawpaw	28	0	347	
	Pineapple	40	27	13	49
	Orange	677	51	584	1,154
	Mandarine/Tangerine	199	198	25	13
	Guava	2	0	154	
	Lime/Lemon	2	0	142	
	Total	**1,399**	**469**	**2,966**	
Musoma Rural	Coffee	40	12	2	20
	Sugarcane	65	23	446	1,911
	Banana	188	21	1,029	4,914
	Mango	531	98	2,633	2,682
	Pawpaw	78	31	779	2,494
	Orange	113	473	778	164
	Mandarine/Tangerine	1	0	71	
	Guava	30	0	170	
	Lime/Lemon	3	0	172	
	Bilimbi	9	0	32	
	Total	**1,056**	**2,343**	**6,167**	**263**
Bunda	Malay Apple	92	0	51	
	Mango	348	0	1,746	
	Pawpaw	747	0	165	
	Orange	60	13	779	59
	Total	**1,248**	**13**	**3,063**	

/ No area harvested or area harvested too small to get accurate yield figures

cont… PERMANENT CROPS: Production of Permanent Crops by Crop Type and District - Mara

District/Crop		Area planted (ha)	Area Harvested (ha)	Quantity Harvested (tons)	Yield (Kgs/ha)
Musoma Urban	Sugarcane	2	2	10	463
	Banana	8	2	21	1,309
	Avocado	5	0	.	
	Mango	317	0	51	
	Pawpaw	34	1	8	1,571
	Orange	2	1	1	86
	Lime/Lemon	3	0	.	
	Bilimbi	35	0	.	
	Total	**405**	**5**	**91**	
Total	Malay Apple	92	0	51	
	Star Fruit	94	13	5	40
	Sisal	14	5	20	371
	Coffee	3,771	2,738	2,246	82
	Sugarcane	383	181	4,512	2,497
	Pomelo	3,328	49	41	82
	Jack Fruit	9	0	34	
	Banana	4,376	2,467	12,980	526
	Avocado	33	40	184	454
	Mango	1,701	249	5,573	2,239
	Pawpaw	991	53	1,432	2,691
	Pineapple	94	27	19	69
	Orange	1,169	613	3,854	628
	Mandarine/Tangerine	225	198	806	407
	Guava	299	24	487	1,991
	Lime/Lemon	210	48	1,601	3,301
	Bilimbi	43	0	36	
	Total	**16,834**	**6,708**	**33,881**	

/ No area harvested or area harvested too small to get accurate yield figures

7.3.2 PERMANENT CROP: Area Planted by Crop Type - Mara Region

Crop	Area Planted	%
Banana	4,376.12	26.00
Coffee	3,770.67	22.40
Pomelo	3,328.40	19.77
Mango	1,700.53	10.10
Orange	1,169.44	6.95
Pawpaw	990.68	5.88
Sugarcane	383.32	2.28
Guava	299.20	1.78
Mandarine/Tangerine	225.37	1.34
Lime/Lemon	209.80	1.25
Pineapple	94.25	0.56
Star Fruit	94.04	0.56
Malay Apple	92.34	0.55
Bilimbi	43.28	0.26
Avocado	33.12	0.20
Sisal	13.64	0.08
Jack Fruit	9.00	0.05
Apples	0.47	0.00
Mpesheni	0.26	0.00
Sour Soup	0.19	0.00
Nutmeg	0.07	0.00
Plums	0.07	0.00
Tamarin	0.04	0.00
Total	16,834	100.00

7.3.3 PERMANENT CROPS: Area Planted with Banana by District

Banana					
District	Area Planted with Banana	Total Area Planted (Ha)	% of Total Area Planted	Households with Banana	Average Planted Area per Household
Tarime	3,923	80,024	4.9	10,413	0.4
Serengeti	257	42,459	0.6	894	0.3
Musoma Rural	188	62,255	0.3	1,798	0.1
Bunda	0	27,860	0.0	0	0.0
Musoma Urban	8	657	1.2	13	0.6
Total	4,376	213,255	2.1	13,118	0.3

7.3.4 PERMANENT CROPS: Area planted with Coffee by District

Coffee					
District	Area Planted with Coffee	Total Area Planted (Ha)	% of Total Area Planted	Households with Coffee	Average Planted Area per Household
Tarime	3,687	80,024	4.6	7,095	0.5
Serengeti	44	42,459	0.1	140	0.3
Musoma Rural	40	62,255	0.1	346	0.1
Bunda	0	27,860	0.0	0	0.0
Musoma Urban	0	657	0.0	0	0.0
Total	3,771	213,255	1.8	7,581	0.5

7.3.5 PERMANENT CROPS: Area planted with Orange by District

Orange					
District	Area Planted with Oranges	Total Area Planted (Ha)	% of Total Area Planted	Households with Oranges	Average Planted Area per Household
Tarime	318	80,024	0.4	1734	0.2
Serengeti	677	42,459	1.6	1658	0.4
Musoma Rural	113	62,255	0.2	3198	0.0
Bunda	60	27,860	0.2	370	0.2
Musoma Urban	2	657	0.3	18	0.1
Total	1169	213,255	0.5	6978	0.2

7.3.6 PERMANENT CROPS: Area Planted with Mango by District

Mango					
District	Area Planted with Mango	Total Area Planted (Ha)	% of Total Area Planted	Households with Mango	Average Planted Area per Household
Tarime	428	80,024	0.5	2,003	0.2
Serengeti	78	42,459	0.2	1,249	0.1
Musoma Rural	531	62,255	0.9	6,145	0.1
Bunda	348	27,860	1.2	548	0.6
Musoma Urban	317	657	48.2	120	2.6
Total	1,701	213,255	0.8	9,981	0.2

7.3.7 PERMANENT CROPS: Planted Area with Fertilizer by Fertilizer Type and Crop

Crop	Fertilizer Use				
	Mostly Farm Yard Manure	Mostly Compost	Mostly Inorganic Fertilizer	No Fertilizer Applied	Total
Sour Soup	0.00	0.00	0.00	0.19	0.19
Malay Apple	92.18	0.00	0.00	0.16	92.34
Star Fruit	80.76	0.00	0.00	13.28	94.04
Sisal	0.00	0.00	0.00	13.64	13.64
Coffee	1,171.19	0.00	0.00	2,599.48	3,770.67
Sugarcane	170.71	0.00	0.00	212.61	383.32
Tamarin	0.00	0.00	0.00	0.04	0.04
Nutmeg	0.00	0.00	0.00	0.07	0.07
Pomelo	3,328.40	0.00	0.00	0.00	3,328.40
Jack Fruit	0.00	0.00	0.00	9.44	9.44
Mpesheni	0.07	0.00	0.00	0.19	0.26
Banana	2,148.49	266.18	0.00	1,948.08	4,362.75
Avocado	0.13	0.00	0.00	32.98	33.12
Mango	376.01	9.18	0.00	1,289.53	1,674.72
Pawpaw	372.41	0.31	0.00	617.96	990.68
Pineapple	40.41	0.00	0.00	53.84	94.25
Orange	233.24	0.14	0.00	936.06	1,169.44
Mandarine/Tangerine	26.09	0.00	0.00	199.29	225.37
Guava	199.50	0.00	0.00	99.70	299.20
Plums	0.00	0.00	0.00	0.07	0.07
Apples	0.00	0.00	0.00	0.47	0.47
Lime/Lemon	95.22	0.00	0.00	114.58	209.80
Bilimbi	0.23	5.60	0.00	37.45	43.28
Total	8,335.05	281.40	0.00	8,179.11	16,795.56

cont… Planted Area with Fertilizer by Fertilizer Type and Crop

Crop	Mostly Farm Yard Manure	Total	%
Sour Soup	0	0	0.0
Malay Apple	92	92	99.8
Star Fruit	81	94	85.9
Sisal	0	14	0.0
Coffee	1,171	3,771	31.1
Sugarcane	171	383	44.5
Tamarin	0	0	0.0
Nutmeg	0	0	0.0
Pomelo	3,328	3,328	100.0
Jack Fruit	0	9	0.0
Mpesheni	0	0	27.2
Banana	2,148	4,363	49.2
Avocado	0	33	0.4
Mango	376	1,675	22.5
Pawpaw	372	991	37.6
Pineapple	40	94	42.9
Orange	233	1,169	19.9
Mandarine/Tangerine	26	225	11.6
Guava	200	299	66.7
Plums	0	0	0.0
Apples	0	0	0.0
Lime/Lemon	95	210	45.4
Bilimbi	0	43	0.5
Total	8,335	16,796	49.6

cont… Planted Area with Fertilizer by Fertilizer Type and Crop

Crop	Mostly Compost	Total	%
Sour Soup	0.0	0.19	0.00
Malay Apple	0.0	92.34	0.00
Star Fruit	0.0	94.04	0.00
Sisal	0.0	13.64	0.00
Coffee	0.0	3,770.67	0.00
Sugarcane	0.0	383.32	0.00
Tamarin	0.0	0.04	0.00
Nutmeg	0.0	0.07	0.00
Pomelo	0.0	3,328.40	0.00
Jack Fruit	0.0	9.44	0.00
Mpesheni	0.0	0.26	0.00
Banana	266.2	4,362.75	6.10
Avocado	0.0	33.12	0.00
Mango	9.2	1,674.72	0.55
Pawpaw	0.3	990.68	0.03
Pineapple	0.0	94.25	0.00
Orange	0.1	1,169.44	0.01
Mandarine/Tangerine	0.0	225.37	0.00
Guava	0.0	299.20	0.00
Plums	0.0	0.07	0.00
Apples	0.0	0.47	0.00
Lime/Lemon	0.0	209.80	0.00
Bilimbi	5.6	43.28	12.93
Total	281.4	16,795.56	1.68

AGROPROCESSING

8.1.1a: Number of Crop Growing Households Reported to have Processed Products by District; 2002/03 Agriculture Year

	Households That Processed Crops		Households That did not Process Crops		Total	
	Number	%	Number	%	Number	%
Tarime	73,341	92.6	5,828	7	79,170	100
Serengeti	26,969	96.8	895	3	27,864	100
Musoma Rural	42,709	85.4	7,286	15	49,995	100
Bunda	28,558	93.0	2,162	7	30,721	100
Musoma Urban	282	62.3	171	38	453	100
Total	171,860	91.3	16,343	9	188,203	100

8.1.1b Number of Crop Growing Households by Method of Processing and District; 2002/03 Agricultural Year

	Method of Processing							
District	On Farm by Hand	On Farm by Machine	By Neighbour Machine	By Trader	On Large Scale Farm	By Factory	Other	Total
Tarime	22,502	10,085	40,088	530	0	0	135	73,341
Serengeti	1,387	135	25,040	408	0	0	0	26,969
Musoma Rural	14,602	684	26,958	232	117	116	0	42,709
Bunda	3,384	1,557	22,903	714	0	0	0	28,558
Musoma Urban	178	0	70	35	0	0	0	282
Total	42,052	12,461	115,059	1,918	117	116	135	171,860

8.1.1c AGRO PROCESSING: Number of Crop Growing Households Processing Crops During 2002/03 Agricultural Year by Location and Crop, Mara Region

	Method of Processing							
Crop	On Farm by Hand	On Farm by Machine	By Neighbour Machine	By Trader	On Large Scale Farm	Other	By Factory	Total
Tarime	22,502	10,085	40,088	530	0	0	135	73,341
Serengeti	1,387	135	25,040	408	0	0	0	26,969
Musoma Rural	14,602	684	26,958	232	117	116	0	42,709
Bunda	3,384	1,557	22,903	714	0	0	0	28,558
Musoma Urban	178	0	70	35	0	0	0	282
Total	42,052	12,461	115,059	1,918	117	116	135	171,860

8.1.1d AGRO PROCESSING: Number of Crop Growing Households Reporting Processing of Farm Products Produced During 2002/03 Agricultural Year by Use of Product and Crop, Mara Region

Crop	Product Use						
	Household / Human Consumption	Fuel for Cooking	Sale Only	Animal Consumption	Did Not Use	Other	Total
Maize	107,200	129	665	129	247	135	108,504
Paddy	8,001	0	450	0	0	66	8,518
Sorghum	83,619	0	129	0	199	0	83,947
Finger Millet	17,627	0	617	0	177	0	18,422
Cassava	94,590	0	456	0	232	0	95,279
Sweet Potatoes	1,907	0	116	0	0	0	2,023
Beans	1,586	0	135	0	0	0	1,721
Cowpeas	69	0	0	0	0	0	69
Chick Peas	234	0	0	0	0	0	234
Simsim	201	0	135	0	0	0	336
Groundnut	135	0	0	0	0	0	135
Cotton	75	0	0	0	70	0	144
Coffee	0	0	268	0	0	0	268
Sugarcane	0	0	0	0	0	115	115
Banana	402	0	0	0	0	0	402
Orange	79	0	0	0	0	0	79
Total	315,726	129	2,972	129	924	316	320,196

8.1.1e AGRO PROCESSING: Number of Crop Growing Households Reporting Processing of Farm Products Produced During 2002/03 Agricultural Year by Location of Sale of Product and Crop, Mara Region

Crop	Where Sold									
	Neighbours	Local Market / Trade Store	Secondary Market	Marketing Co-operative	Farmers Association	Large Scale Farm	Trader at Farm	Other	Did not Sell	Total
Maize	698	7,686	716	114	114	631	225	144	98,176	108,504
Paddy	632	756	400	0	0	0	0	0	6,730	8,518
Sorghum	841	3,531	206	204	0	135	134	155	78,742	83,947
Finger Millet	232	723	0	0	0	245	0	137	17,085	18,422
Cassava	2,129	7,141	195	132	0	438	253	7	84,984	95,279
Sweet Potatoes	205	233	0	0	0	80	0	0	1,506	2,023
Beans	0	133	0	0	0	0	0	0	1,588	1,721
Cowpeas	0	0	0	0	0	0	0	0	69	69
Chick Peas	0	0	0	74	0	0	0	0	160	234
Simsim	0	0	0	0	0	0	0	0	336	336
Groundnut	0	0	0	0	0	0	0	0	135	135
Cotton	0	0	0	70	0	0	0	0	75	144
Coffee	0	0	0	268	0	0	0	0	0	268
Sugarcane	0	0	0	0	0	0	0	0	115	115
Banana	0	0	0	0	0	0	0	0	402	402
Orange	0	0	0	0	0	0	0	0	79	79
Total	4,738	20,201	1,516	862	114	1,529	613	442	290,181	320,196

8.1.1f AGRO PROCESSING: Number of Crop Growing Households By Main Product and District During 2002/03 Agriculture Year, Mara Region

District	Main Product							
	Flour / Meal	Grain	Oil	Juice	Fiber	Rubber	Other	Total
Tarime	70,547	2,253	134	134	136	0	136	73,341
Serengeti	26,557	209	68	0	67	0	69	26,969
Musoma Rural	38,406	4,097	0	0	0	90	116	42,709
Bunda	28,480	78	0	0	0	0	0	28,558
Musoma Urban	271	12	0	0	0	0	0	282
Total	164,261	6,649	202	134	203	90	321	171,860

8.1.1g AGRO PROCESSING: Number of Crop Growing Households By Use of Primary Processed Product and District During 2002/03 Agriculture Year, Mara Region

District	Product Use				
	Household / Human Consumption	Sale Only	Did Not Use	Other	Total
Tarime	72,935	271	0	135	73,341
Serengeti	26,701	0	268	0	26,969
Musoma Rural	42,283	199	227	0	42,709
Bunda	28,558	0	0	0	28,558
Musoma Urban	282	0	0	0	282
Total	170,760	471	495	135	171,860

8.1.1h AGRO PROCESSING: Number of Crop Growing Households By Where Product Sold and District During 2002/03 Agriculture Year, Mara Region

District	Where Sold									
	Neighbours	Local Market / Trade Store	Secondary Market	Marketing Co-operative	Farmers Association	Large Scale Farm	Trader at Farm	Other	Did not Sell	Total
Tarime	530	4,402	135	0	0	402	134	0	67,738	73,341
Serengeti	70	831	272	70	0	70	0	70	25,588	26,969
Musoma Rural	1,619	6,745	232	114	114	111	479	0	33,295	42,709
Bunda	310	542	78	0	0	139	0	155	27,334	28,558
Musoma Urban	24	12	0	0	0	0	0	7	241	282
Total	2,552	12,532	717	184	114	721	613	231	154,196	171,860

8.1.1i AGRO PROCESSING: Number of Crop Growing Households By type of By-Product and District During 2002/03 Agriculture Year, Mara Region

District	By Product								
	Bran	Cake	Husk	Juice	Fiber	Pulp	Shell	No by-product	Total
Tarime	654	0	507	397	377	533	266	70,608	73,341
Serengeti	554	132	1,225	0	0	0	0	25,058	26,969
Musoma Rural	314	0	3,533	117	115	0	0	38,630	42,709
Bunda	160	0	311	0	0	0	80	28,007	28,558
Musoma Urban	23	0	7	0	0	0	0	253	282
Total	1,705	132	5,583	514	492	533	346	162,555	171,860

MARKETING

10.1: Number of Crop Producing Households Reported to have Sold Agricultural Produce by District During 2002/03; Mara Region

	Households that Sold		Households that Did not Sell		Total Number of households
	Number	%	Number	%	
Kondoa	53,981	68.2	25,188	31.8	79,170
Mpwapwa	21,552	77.3	6,312	22.7	27,864
Kongwa	34,052	68.1	15,944	31.9	49,995
Dodoma Rural	20,756	67.6	9,965	32.4	30,721
Dodoma Urban	97	21.3	357	78.7	453
Total	130,438	69.3	57,765	30.7	188,203

10.2: Number of Households who Reported Main Reasons for Not Selling their Crops by District During 2002/03Agriccultural Year, Mara Region

	Main Reasons for Not Selling Crops								
District	Price Too Low	Production Insufficient to Sell	Market Too Far	Co-operative Problems	Trade Union Problems	Government Regulatory Board Problems	Other	Not applicable	Total
Tarime	1211	25673	130	135	668	136	3105	47075	78133
Serengeti	548	7345	69	0	70	0	344	19217	27594
Musoma Rural	1158	15974	104	116	796	0	2083	29420	49652
Bunda	156	12943	0	0	0	0	546	16530	30174
Musoma Urban	12	294	0	0	0	0	25	111	441
Total	3085	62229	304	251	1534	136	6103	112353	185994

10.3 Proportion of Households who Reported Main Reason for Not Selling Their Crops by District during 2002/03 Agricultural Year, Mara Region

	Main Reasons for Not Selling Crops								
District	Price Too Low	Production Insufficient to Sell	Market Too Far	Co-operative Problems	Trade Union Problems	Government Regulatory Board Problems	Other	Not applicable	Total
Tarime	1.55	32.86	0.17	0.17	0.86	0.17	3.97	60.25	100.00
Serengeti	1.99	26.62	0.25	0.00	0.25	0.00	1.25	69.64	100.00
Musoma Rural	2.33	32.17	0.21	0.23	1.60	0.00	4.20	59.25	100.00
Bunda	0.52	42.89	0.00	0.00	0.00	0.00	1.81	54.78	100.00
Musoma Urban	2.62	66.65	0.00	0.00	0.00	0.00	5.57	25.16	100.00
Total	1.66	33.46	0.16	0.14	0.82	0.07	3.28	60.41	100.00

IRRIGATION/EROSION CONTROL

11.1 Number and Percent of Households Reporting use of irrigation during 2002/03 Agricultural year by District

	Households Practicing Irrigation		Households not Practicing Irrigation		Total	
	Number of Household	%	Number of Household	%	Number of Household	%
Tarime	1,688	2	77,481	98	79,170	100
Serengeti	471	2	27,393	98	27,864	100
Musoma Rural	2,890	6	47,105	94	49,995	100
Bunda	780	3	29,941	97	30,721	100
Musoma Urban	50	11	404	89	453	100
Total	5,879	3	182,324	97	188,203	100

11.2 IRRIGATION: Area (ha) of Irrigatable and NON irrigated land by district during 2002/03 agriculture year

District	Irrigatable Area (ha)	Irrigated Land (ha)	%
Tarime	989	634	64.1
Serengeti	128	109	85.1
Musoma Rural	675	554	82.0
Bunda	208	181	87.0
Musoma Urban	13	12	89.6
Total	2,014	1,490	74.0

11.3: IRRIGATION: Number of Agriculture Households using irrigation by Source of Irrigation Water by districts during the 2002/03 agricultural Year

	Source of Irrigation Water					
District	River	Lake	Dam	Well	Canal	Total
Tarime	666	401	103	518	0	1,688
Serengeti	202	0	70	199	0	471
Musoma Rural	896	439	108	1,256	191	2,890
Bunda	236	391	0	152	0	780
Musoma Urban	7	19	0	25	0	50
Total	2,007	1,250	281	2,151	191	5,879

11.4: IRRIGATION: Number of Agriculture Households by Method used to obtain water and District during 2002/03 Agricultural Year

	Method of Obtaining Water					
District	Gravity	Hand Bucket	Hand Pump	Motor Pump	Other	Total
Tarime	0	1,301	124	0	264	1,688
Serengeti	0	471	0	0	0	471
Musoma Rural	308	2,467	0	115	0	2,890
Bunda	74	549	0	0	156	780
Musoma Urban	0	50	0	0	0	50
Total	382	4,839	124	115	420	5,879

11.5 IRRIGATION: Number of Agricultulture Households by Method of Field Application of Irrigation Water and District for the 2002/03 Agricultural Year

District	Method of Application				
	Flood	Sprinkler	Water Hose	Bucket / Watering Can	Total
Tarime	0	0	124	1,564	1,688
Serengeti	0	68	0	403	471
Musoma Rural	455	0	0	2,435	2,890
Bunda	156	0	0	623	780
Musoma Urban	0	0	0	50	50
Total	612	68	124	5,075	5,879

11.6: Number of Households with Erosion Control/Water Harvesting Facilities on their Land By District

District	Presence of Erosion Control/Water Harvesting Facilities				
	Have Facility		Does Not Have Facility		Number of Households
	Number	%	Number	%	
Tarime	4,982	6	74,187	94	79,170
Serengeti	682	2	27,182	98	27,864
Musoma Rural	12,144	24	37,851	76	49,995
Bunda	378	1	30,342	99	30,721
Musoma Urban	95	21	359	79	453
Total	18,282	10	169,921	90	188,203

11.7 EROSION CONTROL: Number of Erosion Control/Water Harvesting Structures By Type and District as of 2002/03 Agricultural Year

District	Type of Erosion Control								
	Terraces	Erosion Control Bunds	Gabions / Sandbag	Vetiver Grass	Tree Belts	Water Harvesting Bunds	Drainage Ditches	Dam	Total
Tarime	1,177	15,043	0	0	0	4,870	2,654	0	23,744
Serengeti	0	2,441	0	0	209	279	0	0	2,929
Musoma Rural	0	177,250	0	216	10,222	85,448	8,689	229	282,054
Bunda	0	303	0	0	0	316	148	0	767
Musoma Urban	0	3,343	0	0	0	832	0	12	4,188
Total	1,177	198,380	0	216	10,431	91,745	11,491	241	313,682

ACCESS TO FARM INPUTS

Table 12.1.1 ACCESS TO INPUTS: Number of Crop Growing Households Using Chemical Fertilizer by District, 2002/03 Agricultural Year

District	Using Chemical Fertilizer		NOT Using Chemical Fertilizer		Total Number of Crop growing households
	No of households	%	No of households	%	
Tarime	2,127	2.7	75,967	97.3	78,094
Serengeti	134	0.5	27,454	99.5	27,588
Musoma Rural	575	1.2	48,448	98.8	49,023
Bunda	78	0.3	30,568	99.7	30,646
Musoma Urban	18	4.1	422	95.9	440
Total	2,932	1.6	182,859	98.4	185,791

Table 12.1.2 ACCESS TO INPUTS: Number of Crop Growing Households Using Farm Yard Manure by District during 2002/03 Agricultural Year

District	Using Farm Yard Manure		Not Using Farm Yard Manure		Total Number of Crop growing households
	No of households	%	No of households	%	
Tarime	25,814	33	52,280	67	78,094
Serengeti	5,807	21	21,781	79	27,588
Musoma Rural	11,276	23	37,747	77	49,023
Bunda	5,502	18	25,144	82	30,646
Musoma Urban	116	26	324	74	440
Total	48,514	26	137,277	74	185,791

Table 12.1.3 ACCESS TO INPUTS: Number of Crop Growing Households Using COMPOST Manure by District during 2002/03 Agricultural Year

District	Using Compost		Not Using Compost		Total Number of Crop growing households
	No of households	%	No of households	%	
Tarime	3,495	4.5	74,599	95.5	78,094
Serengeti	267	1.0	27,321	99.0	27,588
Musoma Rural	1,627	3.3	47,395	96.7	49,023
Bunda	1,326	4.3	29,320	95.7	30,646
Musoma Urban	0	0.0	440	100.0	440
Total	6,716	3.6	179,075	96.4	185,791

Table 12.1.4 ACCESS TO INPUTS: Number of Crop Growing Households Using Insecticide/Fungicides by District during 2002/03 Agricultural Year

District	Using Insecticides/Fungicide		Not Using Insecticide/Fungi		Total Number of Crop growing households
	No of households	%	No of households	%	
Tarime	2,651	3.4	75,443	96.6	78,094
Serengeti	3,987	14.5	23,601	85.5	27,588
Musoma Rural	6,030	12.3	42,993	87.7	49,023
Bunda	8,869	28.9	21,777	71.1	30,646
Musoma Urban	50	11.3	391	88.7	440
Total	21,587	11.6	164,204	88.4	185,791

Table 12.1.5 ACCESS TO INPUTS: Number of Crop Growing Households Using Herbicides by District during 2002/03 Agricultural Year

District	Using Herbicides		Not Using Herbicides		Total Number of Crop growing households
	No of households	%	No of households	%	
Tarime	0	0.0	78,094	100.0	78,094
Serengeti	0	0.0	27,588	100.0	27,588
Musoma Rural	207	0.4	48,816	99.6	49,023
Bunda	0	0.0	30,646	100.0	30,646
Musoma Urban	0	0.0	440	100.0	440
Total	207	0.1	185,584	99.9	185,791

Table 12.1.6 ACCESS TO INPUTS: Number of Crop Growing Households using Improved Seeds by District during 2002/03 Agricultural Year

District	Using Improved Seeds		Not Using Improved Seeds		Total Number of Crop growing households
	No of households	%	No of households	%	
Tarime	14,395	18.4	63,698	81.6	78,094
Serengeti	4,554	16.5	23,035	83.5	27,588
Musoma Rural	12,206	24.9	36,817	75.1	49,023
Bunda	11,257	36.7	19,389	63.3	30,646
Musoma Urban	118	26.9	322	73.1	440
Total	42,530	22.9	143,261	77.1	185,791

Table 12.1.7 ACCESS TO INPUTS: Number of Agricultural Households by Source of Chemical Fertilizer and District, 2002/03 Agricultural Year

District	Local Market / Trade Store		Locally Produced by Household		Neighbour		Not applicable		Total
	Number	%	Number	%	Number	%	Number	%	
Tarime	1,995	2.5	0	0.0	132	0.2	77,043	97.3	79,170
Serengeti	70	0.2	65	0.2	0	0.0	27,730	99.5	27,864
Musoma Rural	575	1.1	0	0.0	0	0.0	49,421	98.9	49,995
Bunda	78	0.3	0	0.0	0	0.0	30,642	99.7	30,721
Musoma Urban	18	4.0	0	0.0	0	0.0	435	96.0	453
Total	2,735	1.5	65	0.0	132	0.1	185,271	98.4	188,203

Table 12.1.8 ACCESS TO INPUTS: Number of Agricultural Households by Source of Farm Yard Manure and District, 2002/03 Agricultural Year

	Co-operative		Local Farmers Group		Local Market / Trade Store		Secondary Market		Development Project	
District	Number	%	Number	%	Number	%	Number	%	Number	%
Tarime	132	0	0	0	124	0	132	0	0	0
Serengeti	0	0	209	1	66	0	0	0	0	0
Musoma Rural	0	0	117	0	0	0	0	0	116	0
Bunda	0	0	0	0	0	0	0	0	0	0
Musoma Urban	0	0	0	0	12	3	0	0	0	0
Total	132	0	327	0	203	0	132	0	116	0

cont…..Table 12.1.8 ACCESS TO INPUTS: Number of Agricultural Households by Source of Farm Yard Manure and District, 2002/03 Agricultural Year

	Locally Produced by Household		Neighbour		Other		Not applicable		Total
District	Number	%	Number	%	Number	%	Number	%	
Tarime	15,040	19	10,251	13	135	0	53,356	67	79,170
Serengeti	3,471	12	2,060	7	0	0	22,127	79	27,934
Musoma Rural	3,900	8	7,142	14	0	0	38,719	77	49,995
Bunda	2,444	8	3,058	10	0	0	25,219	82	30,721
Musoma Urban	79	18	25	5	0	0	337	74	453
Total	24,935	13	22,535	12	135	0	139,759	74	188,273

Table 12.1.9 ACCESS TO INPUTS: Number of Agricultural Households and Source of COMPOST Manure by District, 2002/03 Agricultural Year

	Co-operative		Local Farmers Group		Local Market / Trade Store		Secondary Market		Development Project	
District	Number	%	Number	%	Number	%	Number	%	Number	%
Tarime	1,081	1.4	135	0.2	270	0.3	135	0.2	135	0.2
Serengeti	70	0.3	0	0.0	0	0.0	0	0.0	0	0.0
Musoma Rural	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Bunda	78	0.3	0	0.0	0	0.0	0	0.0	0	0.0
Musoma Urban	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	1,229	0.7	135	0.1	270	0.1	135	0.1	135	0.1

cont... Table 12.1.9 ACCESS TO INPUTS: Number of Agricultural Households and Source of COMPOST Manure by District, 2002/03 Agricultural Year

	Locally Produced by Household		Neighbour		Not applicable		Total
District	Number	%	Number	%	Number	%	
Tarime	1,332	1.7	406	0.5	75,675	95.6	79,170
Serengeti	198	0.7	0	0.0	27,527	99.0	27,794
Musoma Rural	1,354	2.7	273	0.5	48,368	96.7	49,995
Bunda	1,248	4.1	0	0.0	29,395	95.7	30,721
Musoma Urban	0	0.0	0	0.0	453	100.0	453
Total	4,132	2.2	678	0.4	181,417	96.4	188,133

Table 12.1.10 ACCESS TO INPUTS: Number of Agricultural Households and Source of Insecticides/Fungicides by District, 2002/03 Agricultural Year

	Co-operative		Local Farmers Group		Local Market / Trade Store		Secondary Market		Development Project		Crop Buyers	
District	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Tarime	0	0.0	130	0.2	2,262	2.9	134	0.2	124	0.2	0	0.0
Serengeti	0	0.0	0	0.0	944	3.4	0	0.0	0	0.0	3,043	10.9
Musoma Rural	117	0.2	111	0.2	3,801	7.6	117	0.2	0	0.0	1,767	3.5
Bunda	1,248	4.1	148	0.5	4,955	16.1	0	0.0	0	0.0	2,444	8.0
Musoma Urban	0	0.0	0	0.0	50	11.0	0	0.0	0	0.0	0	0.0
Total	1,365	0.7	389	0.2	12,012	6.4	251	0.1	124	0.1	7,254	3.9

cont...Table 12.1.10 ACCESS TO INPUTS: Number of Agricultural Households and Source of Insecticides/Fungicides by District, 2002/03 Agricultural Year

District	Locally Produced by Household		Neighbour		Not applicable		Total
	Number	%	Number	%	Number	%	
Tarime	0	0.0	0	0.0	76,518	96.7	79,170
Serengeti	0	0.0	0	0.0	23,877	85.7	27,864
Musoma Rural	117	0.2	0	0.0	43,965	87.9	49,995
Bunda	0	0.0	74	0.2	21,852	71.1	30,721
Musoma Urban	0	0.0	0	0.0	404	89.0	453
Total	117	0.1	74	0.0	166,616	88.5	188,203

Table 12.1.11 ACCESS TO INPUTS: Number of Agricultural Households by Source of Herbicides and District, 2002/03 Agricultural Year

District	Co-operative		Local Market / Trade Store		Not applicable		Total
	Number	%	Number	%	Number	%	
Tarime	0	0.0	0	0.0	79,170	100.0	79,170
Serengeti	0	0.0	0	0.0	27,933	100.0	27,933
Musoma Rural	117	0.2	90	0.2	49,788	99.6	49,995
Bunda	0	0.0	0	0.0	30,721	100.0	30,721
Musoma Urban	0	0.0	0	0.0	453	100.0	453
Total	117	0.1	90	0.0	188,065	99.9	188,272

12.1.12 ACCESS TO INPUTS: Number of Agricultural Households by Source of Improved Seeds and District, 2002/03 Agricultural Year

District	Co-operative		Local Farmers Group		Local Market / Trade Store		Secondary Market		Development Project		Crop Buyers		Large Scale Farm		Locally Produced by Household		Neighbour	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Tarime	135	0.2	234	0.3	12,428	15.7	407	0.5	124	0.2	0	0.0	0	0.0	131	0.2	805	1.0
Serengeti	69	0.2	70	0.3	954	3.4	69	0.2	70	0.3	3,042	10.9	70	0.2	140	0.5	70	0.3
Musoma Rural	933	1.9	466	0.9	4,275	8.6	0	0.0	456	0.9	3,516	7.0	0	0.0	464	0.9	2,096	4.2
Bunda	3,958	12.9	381	1.2	2,262	7.4	0	0.0	74	0.2	4,346	14.1	79	0.3	0	0.0	157	0.5
Musoma Urban	0	0.0	0	0.0	86	18.9	0	0.0	7	1.4	0	0.0	0	0.0	0	0.0	26	5.7
Total	5,094	2.7	1,151	0.6	20,006	10.6	476	0.3	731	0.4	10,905	5.8	148	0.1	735	0.4	3,154	1.7

cont...12.1.12 ACCESS TO INPUTS: Number of Agricultural Households by Source of Improved Seeds and District, 2002/03 Agricultural Year

District	Other		Not applicable		Total
	Number	%	Number	%	
Tarime	131	0.2	64,774	81.8	79,170
Serengeti	0	0.0	23,311	83.7	27,864
Musoma Rural	0	0.0	37,789	75.6	49,995
Bunda	0	0.0	19,463	63.4	30,721
Musoma Urban	0	0.0	335	73.9	453
Total	131	0.1	145,673	77.4	188,203

12.1.13 ACCESS TO INPUTS: Number of Agricultural Households and Distance to Source of Chemical Fertilizer by District, 2002/03 Agricultural Year

District	Less than 1 km		Between 1 and 3 km		Between 3 and 10 km		Between 10 and 20 km		20 km and Above		Total
	Number	%	Number	%	Number	%	Number	%	Number	%	
Tarime	132	6	400	19	131	6	948	45	515	24	2,127
Serengeti	65	48	0	0	70	52	0	0	0	0	134
Musoma Rural	117	20	0	0	225	39	115	20	117	20	575
Bunda	0	0	0	0	0	0	78	100	0	0	78
Musoma Urban	0	0	0	0	18	100	0	0	0	0	18
Total	313	11	400	14	444	15	1,142	39	632	22	2,932

12.1.14 ACCESS TO INPUTS: Number of Agricultural Households and Distance to Source of Farm Yard Manure by District, 2002/03 Agricultural Year

District	Less than 1 km		Between 1 and 3 km		Between 3 and 10 km		Between 10 and 20 km		20 km and Above		Total
	Number	%	Number	%	Number	%	Number	%	Number	%	
Tarime	25,553	91	1,703	6	572	2	0	0	141	1	27,968
Serengeti	11,276	95	387	3	201	2	0	0	0	0	11,865
Musoma Rural	6,512	80	815	10	813	10	0	0	0	0	8,140
Bunda	31,310	95	1,141	3	370	1	0	0	229	1	33,050
Musoma Urban	12,337	78	2,594	16	689	4	194	1	0	0	15,814
Total	86,988	90	6,640	7	2,645	3	194	0	370	0	96,837

12.1.14 ACCESS TO INPUTS: Number of Agricultural Households and Distance to Source of Farm Yard Manure by District, 2002/03 Agricultural Year

District	Less than 1 km		Between 1 and 3 km		Between 3 and 10 km		Between 10 and 20 km		Total
	Number	%	Number	%	Number	%	Number	%	
Tarime	21,953	85	2,923	11	538	2	400	2	25,814
Serengeti	4,988	86	480	8	209	4	129	2	5,807
Musoma Rural	9,748	86	1,411	13	117	1	0	0	11,276
Bunda	4,799	87	566	10	138	3	0	0	5,502
Musoma Urban	110	94	0	0	7	6	0	0	116
Total	41,597	86	5,380	11	1,009	2	529	1	48,514

12.1.15 ACCESS TO INPUTS: Number of Agricultural Households and Distance to Source of COMPOST Manure by District, 2002/03 Agricultural Year

District	Less than 1 km		Between 1 and 3 km		Between 3 and 10 km		Between 10 and 20 km		Total Number
	Number	%	Number	%	Number	%	Number	%	
Tarime	3,360	96	0	0	135	4	0	0	3,495
Serengeti	133	50	70	26	0	0	65	24	267
Musoma Rural	1,512	93	0	0	115	7	0	0	1,627
Bunda	1,326	100	0	0	0	0	0	0	1,326
Musoma Urban	0	0	0	0	0	0	0	0	0
Total	6,331	94	70	1	251	4	65	1	6,716

12.1.16 ACCESS TO INPUTS: Number of Agricultural Households and Distance to Source of Improved Seeds by District, 2002/03 Agricultural Year

District	Less than 1 km		Between 1 and 3 km		Between 3 and 10 km		Between 10 and 20 km		20 km and Above		Total Number
	Number	%	Number	%	Number	%	Number	%	Number	%	
Tarime	3,747	26	3,222	22	3,084	21	2,412	17	1,930	13	14,395
Serengeti	954	21	1,319	29	1,591	35	136	3	553	12	4,554
Musoma Rural	5,078	42	2,864	23	2,353	19	1,040	9	870	7	12,206
Bunda	3,471	31	4,496	40	2,137	19	691	6	462	4	11,257
Musoma Urban	13	11	25	21	68	57	0	0	13	11	118
Total	13,263	31	11,926	28	9,234	22	4,280	10	3,828	9	42,530

12.1.17 ACCESS TO INPUTS: Number of Agricultural Households and Distance to Source of Insecticide/Fungicides by District, 2002/03 Agricultural Year

District	Less than 1 km		Between 1 and 3 km		Between 3 and 10 km		Between 10 and 20 km		20 km and Above		Total Number
	Number	%	Number	%	Number	%	Number	%	Number	%	
Tarime	396	15	652	25	531	20	936	35	135	5	2,651
Serengeti	884	22	1,307	33	1,592	40	136	3	68	2	3,987
Musoma Rural	1,352	22	1,384	23	1,026	17	797	13	1,470	24	6,030
Bunda	1,685	19	2,708	31	2,307	26	1,557	18	612	7	8,869
Musoma Urban	0	0	7	13	43	87	0	0	0	0	50
Total	4,317	20	6,058	28	5,499	25	3,427	16	2,285	11	21,587

12.1.18 ACCESS TO INPUTS: Number of Agricultural Households and Reason for NOT using Chemical Fertilizer by District, 2002/03 Agricultural Year

District	Not Available		Price Too High		No Money to Buy		Too Much Labour Required		Do not Know How to Use		Input is of No Use		Other		Total
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	
Tarime	14,049	18	54,921	71	1,576	2	269	0	1,823	2	2,577	3	1,828	2	77,043
Serengeti	12,463	45	11,643	42	416	1	0	0	1,303	5	1,085	4	821	3	27,730
Musoma Rural	16,027	32	27,498	56	460	1	114	0	688	1	3,939	8	694	1	49,421
Bunda	16,529	54	11,238	37	472	2	80	0	706	2	1,086	4	532	2	30,642
Musoma Urban	0	0	316	73	12	3	0	0	72	17	35	8	0	0	435
Total	59,068	32	105,616	57	2,936	2	463	0	4,592	2	8,721	5	3,875	2	185,271

12.1.19 ACCESS TO INPUTS: Number of Agricultural Households and Reason for NOT using Farm Yard Manure by District, 2002/03 Agricultural Year

	Not Available		Price Too High		No Money to Buy		Too Much Labour Required		Do not Know How to Use		Input is of No Use		Locally Produced by Household		Other		
District	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Total
Tarime	8,141	15	4,621	9	28,503	53	4,933	9	1,994	4	2,424	5	134	0	2,607	5	53,356
Serengeti	1,422	6	1,093	5	12,783	58	1,111	5	971	4	2,764	12	0	0	1,985	9	22,127
Musoma Rural	9,599	25	7,271	19	14,782	38	3,516	9	113	0	2,630	7	116	0	692	2	38,719
Bunda	6,308	25	1,726	7	13,791	55	1,154	5	550	2	1,078	4	0	0	612	2	25,219
Musoma Urban	23	7	178	53	46	13	0	0	67	20	12	4	0	0	12	3	337
Total	25,493	18	14,889	11	69,904	50	10,714	8	3,694	3	8,908	6	250	0	5,907	4	139,759

12.1.20 ACCESS TO INPUTS: Number of Agricultural Households and Reason for NOT using COMPOST Manure by District, 2002/03 Agricultural Year

	Not Available		Price Too High		No Money to Buy		Too Much Labour Required		Do not Know How to Use		Input is of No Use		Locally Produced by Household		Other		
District	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Total
Tarime	8,601	11	7,968	11	34,310	45	3,163	4	16,710	22	2,062	3	130	0	2,729	4	75,675
Serengeti	2,698	10	1,577	6	12,489	45	409	1	5,603	20	3,108	11	269	1	1,375	5	27,527
Musoma Rural	2,681	6	8,797	18	22,194	46	1,061	2	9,155	19	3,553	7	0	0	926	2	48,368
Bunda	5,734	20	1,544	5	9,824	33	1,558	5	8,661	29	1,000	3	148	1	926	3	29,395
Musoma Urban	47	10	46	10	235	52	0	0	113	25	12	3	0	0	0	0	453
Total	19,760	11	19,932	11	79,054	44	6,190	3	40,242	22	9,735	5	548	0	5,957	3	181,417

12.1.21 ACCESS TO INPUTS: Number of Agricultural Households and Reason for NOT using Insecticides/Fungicides by District, 2002/03 Agricultural Year

	Not Available		Price Too High		No Money to Buy		Too Much Labour Required		Do not Know How to Use		Input is of No Use		Other		
District	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Total
Tarime	6,207	8	48,165	63	1,604	2	532	1	3,770	5	11,627	15	4,612	6	76,518
Serengeti	5,726	24	13,487	56	347	1	0	0	2,187	9	1,649	7	482	2	23,877
Musoma Rural	7,302	17	26,075	59	1,149	3	0	0	2,008	5	6,848	16	582	1	43,965
Bunda	6,168	28	11,198	51	549	3	0	0	769	4	2,403	11	766	4	21,852
Musoma Urban	12	3	271	67	12	3	0	0	67	17	42	10	0	0	404
Total	25,415	15	99,196	60	3,662	2	532	0	8,801	5	22,569	14	6,442	4	166,616

12.1.22 ACCESS TO INPUTS: Number of Agricultural Households and Reason for NOT using Herbicides by District, 2002/03 Agricultural Year

	Not Available		Price Too High		No Money to Buy		Too Much Labour Required		Do not Know How to Use		Input is of No Use		Locally Produced by Household		Other		
District	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Total
Tarime	8,323	11	51,343	65	1,201	2	398	1	4,350	5	10,815	14	270	0	2,470	3	79,170
Serengeti	7,739	28	14,381	51	481	2	0	0	3,218	12	1,425	5	0	0	689	2	27,933
Musoma Rural	11,025	22	24,408	49	1,153	2	0	0	3,617	7	9,006	18	0	0	580	1	49,788
Bunda	16,306	53	7,806	25	709	2	0	0	3,043	10	2,085	7	0	0	772	3	30,721
Musoma Urban	31	7	295	65	30	7	0	0	72	16	25	6	0	0	0	0	453
Total	43,424	23	98,233	52	3,575	2	398	0	14,299	8	23,355	12	270	0	4,510	2	188,065

12.1.23 ACCESS TO INPUTS: Number of Agricultural Households and Reason for NOT using Improved Seeds by District, 2002/03 Agricultural Year

	Not Available		Price Too High		No Money to Buy		Too Much Labour Required		Do not Know How to Use		Input is of No Use		Other		
District	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Total
Tarime	12,264	19	45,010	69	1,081	2	116	0	942	1	1,117	2	4,245	7	64,774
Serengeti	6,133	26	14,972	64	485	2	0	0	760	3	409	2	551	2	23,311
Musoma Rural	12,083	32	22,012	58	804	2	226	1	446	1	1,529	4	690	2	37,789
Bunda	10,579	54	7,583	39	313	2	160	1	0	0	376	2	453	2	19,463
Musoma Urban	72	22	190	57	0	0	0	0	61	18	12	4	0	0	335
Total	41,132	28	89,767	62	2,682	2	502	0	2,209	2	3,443	2	5,938	4	145,673

Table 12.1.24 ACCESS TO INPUTS: Number of Agricultural Households and Quality of Chemical Fertilizer by District, 2002/03 Agricultural Year

District	Excellent		Good		Total
	Number	%	Number	%	
Tarime	1,205	57	922	43	2,127
Serengeti	65	48	70	52	134
Musoma Rural	225	39	349	61	575
Bunda	0	0	78	100	78
Musoma Urban	12	64	7	36	18
Total	1,506	51	1,426	49	2,932

12.1.25 ACCESS TO INPUTS: Number of Agricultural Households and Quality of Farm Yard Manure by District, 2002/03 Agricultural Year

District	Excellent		Good		Average		Total
	Number	%	Number	%	Number	%	
Tarime	11,647	45	12,684	49	1,482	6	25,814
Serengeti	2,015	35	3,658	63	133	2	5,807
Musoma Rural	3,962	35	6,075	54	1,238	11	11,276
Bunda	1,186	22	4,241	77	75	1	5,502
Musoma Urban	77	66	33	28	7	6	116
Total	18,888	39	26,692	55	2,935	6	48,514

12.1.26 ACCESS TO INPUTS: Number of Agricultural Households and Quality of COMPOST Manure by District, 2002/03 Agricultural Year

District	Excellent		Good		Average		Total
	Number	%	Number	%	Number	%	
Tarime	1,619	46	1,741	50	135	4	3,495
Serengeti	65	24	203	76	0	0	267
Musoma Rural	276	17	815	50	536	33	1,627
Bunda	778	59	468	35	80	6	1,326
Musoma Urban	0	0	0	0	0	0	0
Total	2,737	41	3,227	48	751	11	6,716

12.1.27 ACCESS TO INPUTS: Number of Agricultural Households and Quality of Insecticides/Fungicides by District, 2002/03 Agricultural Year

District	Excellent		Good		Average		Poor		Does not Work		Total
	Number	%	Number	%	Number	%	Number	%	Number	%	
Tarime	1,327	50	1,192	45	132	5	0	0	0	0	2,651
Serengeti	410	10	3,101	78	133	3	66	2	278	7	3,987
Musoma Rural	802	13	4,304	71	573	9	351	6	0	0	6,030
Bunda	1,889	21	5,608	63	1,297	15	75	1	0	0	8,869
Musoma Urban	12	23	38	77	0	0	0	0	0	0	50
Total	4,440	21	14,242	66	2,134	10	493	2	278	1	21,587

12.1.28 ACCESS TO INPUTS: Number of Agricultural Households and Quality of Herbicides by District, 2002/03 Agricultural Year

District	Excellent		Good		Total
	Number	%	Number	%	
Tarime	117	57	90	43	207
Serengeti	0	0	0	0	0
Musoma Rural	0	0	0	0	0
Bunda	0	0	0	0	0
Musoma Urban					
Total	117	57	90	43	207

12.1.29 ACCESS TO INPUTS: Number of Agricultural Households and Quality of Improved Seeds by District, 2002/03 Agricultural Year

District	Excellent		Good		Average		Poor		Total
	Number	%	Number	%	Number	%	Number	%	
Tarime	3,999	28	9,856	68	541	4	0	0	14,395
Serengeti	956	21	3,252	71	346	8	0	0	4,554
Musoma Rural	2,129	17	7,612	62	2,465	20	0	0	12,206
Bunda	1,119	10	7,677	68	2,387	21	75	1	11,257
Musoma Urban	48	40	71	60	0	0	0	0	118
Total	8,251	19	28,467	67	5,738	13	75	0	42,530

12.1.30 ACCESS TO INPUTS: Number of Agricultural Households With Plan to use Chemical Fertilizer Next Year by District, 2002/03 Agricultural Year

District	Agricultural Households With Plan to use Chemical Fertilizers Next Year		Agricultural Households With NO Plan to use Next Year Chemical Fertilizers		Total
	Number	%	Number	%	
Tarime	7,830	10	71,340	90	79,170
Serengeti	1,837	7	26,027	93	27,864
Musoma Rural	6,214	12	43,782	88	49,995
Bunda	4,704	15	26,016	85	30,721
Musoma Urban	25	5	429	95	453
Total	20,610	11	167,593	89	188,203

12.1.31 ACCESS TO INPUTS: Number of Agricultural Households With Plan to use Farm Yard Manure Next Year by District, 2002/03 Agricultural Year

District	Agricultural Households With Plan to use Next Year Farm Yard Manure		Agricultural Households With NO Plan to use Next Year Farm Yard Manure		Total
	Number	%	Number	%	
Tarime	51,924	66	27,246	34	79,170
Serengeti	16,552	59	11,382	41	27,934
Musoma Rural	25,927	52	24,068	48	49,995
Bunda	15,669	51	15,051	49	30,721
Musoma Urban	141	31	313	69	453
Total	110,213	59	78,059	41	188,273

12.1.32 ACCESS TO INPUTS: Number of Agricultural Households With Plan to use COMPOST Manure Next Year by District, 2002/03 Agricultural Year

District	Agricultural Households With Plan to use COMPOST ManureNext Year		Agricultural Households With NO Plan to use COMPOST Manure Next Year		Total
	Number	%	Number	%	
Tarime	6,913	9	72,257	91	79,170
Serengeti	6,216	22	21,579	78	27,794
Musoma Rural	9,223	18	40,772	82	49,995
Bunda	3,604	12	27,116	88	30,721
Musoma Urban	26	6	427	94	453
Total	25,982	14	162,151	86	188,133

12.1.33 ACCESS TO INPUTS: Number of Agricultural Households With Plan to use Insecticides/Fungicides Next Year by District, 2002/03 Agricultural Year

District	Agricultural Households With Plan to use Pesticides/Fungicides Next Year		Agricultural Households With NO Plan to use Pesticides/FungicidesNext Year		Total
	Number	%	Number	%	
Tarime	7,641	10	71,528	90	79,170
Serengeti	6,403	23	21,461	77	27,864
Musoma Rural	13,112	26	36,883	74	49,995
Bunda	18,884	61	11,837	39	30,721
Musoma Urban	50	11	404	89	453
Total	46,090	24	142,113	76	188,203

12.1.34 ACCESS TO INPUTS: Number of Agricultural Households With Plan to use Herbicides Next Year by District, 2002/03 Agricultural Year

District	Agricultural Households With Plan to use Herbicides Next Year		Agricultural Households With NO Plan to use Herbicides Next Year		Total
	Number	%	Number	%	
Tarime	1,713	2	77,457	98	79,170
Serengeti	2,118	8	25,815	92	27,933
Musoma Rural	3,654	7	46,341	93	49,995
Bunda	3,556	12	27,165	88	30,721
Musoma Urban	0	0	453	100	453
Total	11,041	6	177,231	94	188,272

Table 12.1.35 ACCESS TO INPUTS: Number of Agricultural Households with Plan to Use Improved Seeds Next Year by District, 2002/03 Agricultural Year

District	Agricultural Households With Plan to use Improved Seeds Next Year		Agricultural Households With NO Plan to use Improved Seeds Next Year		Total
	Number	%	Number	%	
Tarime	34,973	44	44,196	56	79,170
Serengeti	11,920	43	15,944	57	27,864
Musoma Rural	28,167	56	21,828	44	49,995
Bunda	19,372	63	11,348	37	30,721
Musoma Urban	142	31	312	69	453
Total	94,574	50	93,629	50	188,203

AGRICULTURE CREDIT

13.1a AGRICULTURE CREDIT: Number of Agriculture Households receiving Credit by sex of household head and District During the 2002/03 Agriculture Year

District	Male		Female		Total
	Number	%	Number	%	
Tarime	0	0	0	0	0
Serengeti	419	75	140	25	559
Musoma Rural	0	0	117	100	117
Bunda	0	0	0	0	0
Musoma Urban	0	0	0	0	0
Total	419	62	256	38	675

13.1b AGRICULTURE CREDIT: Number of Households Receiving Credit By Main Source of Credit and District; 2002/03 Agriculture Year.

District	Source of Credit			Total
	Family, Friend and Relative	Saving & Credit Society	Trader / Trade Store	
Tarime	0	0	0	0
Serengeti	70	0	489	559
Musoma Rural	0	117	0	117
Bunda	0	0	0	0
Musoma Urban	0	0	0	0
Total	70	117	489	675

13.2a AGRICULTURE CREDIT: Number of Households Reporting the Main reasons for Not Using Credit by District During the 2002/03 Agriculture Yea

District	Not needed	Not available	Did not want to go into debt	Interest rate/cost too high	Did not know how to get credit	Difficult bureaucrac y procedure	Credit granted too late	Other	Don't know about credit	Total
Tarime	3,427	6,117	3,692	4,115	35,153	3,790	405	542	21,929	79,170
Serengeti	1,658	3,130	2,664	267	12,755	271	339	70	6,151	27,306
Musoma Rural	3,048	5,383	9,038	232	20,235	896	346	115	10,586	49,878
Bunda	849	4,144	1,866	461	14,588	463	0	0	8,350	30,721
Musoma Urban	257	7	38	0	91	12	0	0	50	453
Total	9,237	18,781	17,298	5,075	82,822	5,432	1,090	727	47,065	187,528

13.2b AGRICULTURE CREDIT: Number of Credits Received by Main Purpose of Credit and District During the 2002/03 Agriculture Year

District	Agro-chemicals	Tools / Equipment	Livestock	Other	Total Credits
Tarime	489	70	70	0	628
Serengeti	0	0	0	0	0
Musoma Rural	0	0	0	117	117
Bunda	0	0	0	0	0
Musoma Urban	0	0	0	0	0
Total Credits	489	70	70	117	745

TREE FARMING AND AGROFORESTRY

14.1 ON FARM TREE PLANTING: Number of Planted Trees By Species and District During the 2002/03 Agriculture Year, Mara Region

District	Senna Spp	Gravellis	Afzelia Quanzensis	Acacia Spp	Pinus Spp	Eucalyptus Spp	Cyprus Spp	Calophylum Inophyllum	Melicia excelsa	Casurina Equisetfilia	Tectona Grandis	Terminalia Catapa
Tarime	25,843	101,077	.	1,813	17,119	1,637,546	265,077	13,646	.	811	14,879	.
Serengeti	38,255	32,392	2,786	5,736	.	150,968	4,017	13,666	766	.	.	.
Musoma Rural	22,394	246,296	2,755	2,557	4,279	16,267	52,788	52,750	4,318	19,104	.	359
Bunda	14,798	7,333	60	22,243	1,589	2,798	2,532	464	.	465	.	.
Musoma Urban	325	1,825	.	195	45	12	69	451	127	.	.	.
Total	101,615	388,923	5,601	32,544	23,032	1,807,591	324,484	80,978	5,211	20,380	14,879	359
%	2	9	0	1	1	40	7	2	0	0	0	0

cont… ON FARM TREE PLANTING: Number of Planted Trees By Species and District During the 2002/03 Agriculture Year, Mara Region

District	Terminalia Ivorensis	Maesopsis Berchemoides	Leucena Spp	Syszygium Spp	Azadrachta Spp	Jakaranda Spp	Albizia Spp	Kyaya Spp	Sesbania Spp	Calliandra Spp	Moringa Spp	Trichilia Spp	Total
Tarime	.	1,330	16,351	2,706	22,394	1,481	16,597	.	88,946	4,735	1,731	1,364,411	3,598,493
Serengeti	.	1,257	1,676	209	16,819	33,142	759	69	.	.	4,189	4,957	311,664
Musoma Rural	2,196	576	3,870	2,782	44,475	5,419	25,163	4,301	16,008	.	1,357	.	530,013
Bunda	78	.	11,165	154	23,270	157	4,763	942	863	148	137	1,996	95,956
Musoma Urban	.	.	.	778	83	.	.	.	.	.	46	.	3,958
Total	2,274	3,162	33,062	6,629	107,041	40,199	47,282	5,312	105,817	4,883	7,462	1,371,363	4,540,084
%	0	0	1	0	2	1	1	0	2	0	0	30	100

14.2 TREE FARMING: Number of Households with planted trees on their land and Number of Trees by Planting Location and District During the 2002/03 Agriculture Year, Mara Region

	Mostly on Field / Plot Boundaries		Mostly Scattered in Field		Mostly in Plantation / Coppice		Total	
	Number of Households	Number of Trees	Number of Households	Number of Trees	Number of Households	Number of Trees	Number of Households	Number of Trees
Tarime	6,373	842,908	2,928	811,226	3,852	1,944,359	13,153	3,598,493
Serengeti	1,164	32,870	4,205	265,897	346	12,897	5,715	311,664
Musoma Rural	13,603	209,822	7,904	190,766	1,267	126,734	22,773	527,321
Bunda	5,443	37,899	6,244	56,800	158	1,257	11,845	95,956
Musoma Urban	74	2,549	116	1,409	0	.	190	3,958
Total	26,656	1,126,048	21,397	1,326,097	5,623	2,085,247	53,675	4,537,392
		63132578		74348506		116910709		254391794

14.3 ON FARM TREE PLANTING: Number of responses by main use of planted trees and District for the 2002/03 agriculture year, Mara Region

	Main Use							
District	Planks / Timber	Poles	Charcoal	Fuel for Wood	Shade	Medicinal	Other	Total
Tarime	10,215	4,494	0	3,596	930	1,195	135	20,566
Serengeti	2,294	2,800	0	2,553	757	417	70	8,890
Musoma Rural	25,625	1,369	116	3,380	1,887	935	662	33,974
Bunda	7,949	134	74	4,453	2,550	351	232	15,742
Musoma Urban	196	0	0	31	108	12	0	347
Total	46,280	8,797	190	14,012	6,232	2,910	1,099	79,520

CROP EXTENSION

15.1 CROP EXTENSION: Number of Agriculture Households Receiving Extension Messages by District During the 2002/03 Agriculture Year, Mara Region

	Households Receiving Extension Advice		Households Not Receiving Extension Advice		Total Number of Households
	Number	%	Number	%	
Tarime	14,524	18	64,645	82	79,170
Serengeti	6,308	23	21,556	77	27,864
Musoma Rural	23,549	47	26,446	53	49,995
Bunda	18,303	60	12,418	40	30,721
Musoma Urban	115	25	338	75	453
Total	62,800	33	125,403	67	188,203

15.2 CROP EXTENSION: Number of Households By Quality of Extension Services and District During the 2002/03 Agricultural Year, Mara Region

	Very Good		Good		Average		Poor		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%
Tarime	2,785	19	8,928	61	2,812	19	0	0	14,524	100
Serengeti	764	12	3,952	63	1,247	20	276	4	6,239	100
Musoma Rural	2,244	10	13,301	56	7,889	34	116	0	23,549	100
Bunda	818	4	13,916	76	3,335	18	155	1	18,224	100
Musoma Urban	24	21	78	68	13	11	0	0	115	100
Total	6,635	11	40,174	64	15,296	24	547	1	62,652	100

15.3 EXTENSION MESSAGES: Number of Agriculture Households By Source of Crop Extension Messages and District During the 2002/03 Agriculture Year, Mara Region

	Government		NGO / Development Project		Cooperative		Large Scale Farm		Other		Not applicable		Total	
	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%	Number	%
Tarime	12,382	88	1,468	10	0	0	134	1	134	1	0	0	14,119	100
Serengeti	5,960	99	70	1	0	0	0	0	0	0	0	0	6,030	100
Musoma Rural	22,196	95	681	3	108	0	115	0	0	0	331	1	23,432	100
Bunda	17,909	99	157	1	80	0	0	0	0	0	0	0	18,146	100
Musoma Urban	83	81	20	19	0	0	0	0	0	0	0	0	103	100
Total	58,531	95	2,395	4	188	0	249	0	134	0	331	1	61,830	100

15.4 CROP EXTENSION: Number of Agriculture Households Receiving Advice on Plant Spacing by Source of Extension Messages and District During the 2002/03 Agriculture Year, Mara Region

District	Spacing							Total Number of Agriculture Households	% of total number of households
	Government	NGO / Development Project	Cooperative	Large Scale Farm	Other	Not applicable	Total		
Tarime	11,712	1,202	0	134	134	0	13,182	79,170	17
Serengeti	5,129	0	0	0	0	0	5,129	27,864	18
Musoma Rural	20,224	221	108	0	0	331	20,885	49,995	42
Bunda	16,751	0	80	0	0	0	16,831	30,721	55
Musoma Urban	83	7	0	0	0	0	90	453	20
Total	53,899	1,430	188	134	134	331	56,117	188,203	30

15.5 CROP EXTENSION: Number of Agriculture Households Receiving Advice on Use of Agrochemicals by Source of Extension Messages and District During the 2002/03 Agriculture Year, Mara Region

District	Use of Agrochemicals					Total Number of Agriculture Households	% of total number of households
	Government	NGO / Development Project	Large Scale Farm	Not applicable	Total		
Tarime	4,938	405	0	406	5,748	79,170	7
Serengeti	2,016	0	0	0	2,016	27,864	7
Musoma Rural	9,309	768	117	339	10,533	49,995	21
Bunda	10,038	0	0	80	10,118	30,721	33
Musoma Urban	24	0	0	0	24	453	5
Total	26,324	1,173	117	825	28,439	188,203	15

15.6 CROP EXTENSION: Number of Agriculture Households Receiving Advice on Erosion Control by Source of Extension Messages and District During the 2002/03 Agriculture Year, Mara Region

District	Erosion Control					Total Number of Agriculture Households	% of total number of households
	Government	NGO / Development Project	Large Scale Farm	Not applicable	Total		
Tarime	3,451	1,875	133	270	5,730	79,170	7
Serengeti	1,253	0	0	0	1,253	27,864	4
Musoma Rural	10,606	1,287	0	116	12,010	49,995	24
Bunda	4,518	385	0	80	4,982	30,721	16
Musoma Urban	60	18	0	0	78	453	17
Total	19,887	3,565	133	466	24,052	188,203	13

15.7 CROP EXTENSION: Number of Agriculture Households Receiving Advice on Organic Fertilizer Use by Source of Extension Messages and District During the 2002/03 Agriculture Year, Mara Region

District	Organic Fertilizer Use					Total Number of Agriculture Households	% of total number of households
	Government	NGO / Development Project	Large Scale Farm	Not applicable	Total		
Tarime	8,233	1,607	264	136	10,240	79,170	13
Serengeti	3,473	0	0	70	3,543	27,864	13
Musoma Rural	16,175	698	117	116	17,106	49,995	34
Bunda	10,520	304	0	66	10,891	30,721	35
Musoma Urban	59	13	0	0	72	453	16
Total	38,460	2,623	381	388	41,853	188,203	22

15.8 CROP EXTENSION: Number of Agriculture Households Receiving Advice on Inorganic Fertilizer Use by Source of Extension Messages and District During the 2002/03 Agriculture

District	Inorganic Fertilizer Use				Total Number of Agriculture Households	% of total number of households
	Government	NGO / Development Project	Not applicable	Total		
Tarime	3,972	266	135	4,374	79,170	6
Serengeti	419	66	0	485	27,864	2
Musoma Rural	2,233	233	116	2,583	49,995	5
Bunda	2,264	0	309	2,573	30,721	8
Musoma Urban	12	0	0	12	453	3
Total	8,901	566	560	10,026	188,203	5

15.9 CROP EXTENSION: Number of Agriculture Households Receiving Advice on Use of Improved Seeds by Source of Extension Messages and District During the 2002/03 Agriculture Year, Mara Region

District	Use of Improved Seed					Total Number of Agriculture Households	% of total number of households
	Government	NGO / Development Project	Cooperative	Not applicable	Total		
Tarime	8,387	1,069	0	0	9,456	79,170	12
Serengeti	3,961	140	0	70	4,170	27,864	15
Musoma Rural	17,324	388	108	301	18,121	49,995	36
Bunda	12,550	0	0	0	12,550	30,721	41
Musoma Urban	60	7	0	0	67	453	15
Total	42,282	1,603	108	371	44,364	188,203	24

15.10 CROP EXTENSION: Number of Agriculture Households Receiving Advice on Use of Mechanization/LST by Source of Extension Messages and District During the 2002/03 Agriculture Year, Mara Region

District	Mechanisation / LST				Total Number of Agriculture Households	% of total number of households
	Government	NGO / Development Project	Not applicable	Total		
Tarime	405	134	0	539	79,170	1
Serengeti	489	0	0	489	27,864	2
Musoma Rural	718	0	116	835	49,995	2
Bunda	752	0	80	831	30,721	3
Musoma Urban	0	0	0	0	453	0
Total	2,363	134	196	2,694	188,203	1

15.11 CROP EXTENSION: Number of Agriculture Households Receiving Advice on Use of Irrigation Technology by Source of Extension Messages and District During the 2002/03

District	Irrigation Technology				Total Number of Agriculture Households	% of total number of households
	Government	NGO / Development Project	Not applicable	Total		
Tarime	1,596	400	0	1,996	79,170	3
Serengeti	622	0	0	622	27,864	2
Musoma Rural	2,867	575	116	3,558	49,995	7
Bunda	1,004	77	158	1,240	30,721	4
Musoma Urban	0	7	0	7	453	1
Total	6,089	1,059	275	7,423	188,203	4

15.12 CROP EXTENSION: Number of Agriculture Households Receiving Advice on Use of Crop Storage by Source of Extension Messages and District During the 2002/03 Agriculture Year, Mara Region

District	Crop Storage						Total Number of Agriculture Households	% of total number of households
	Government	NGO / Development Project	Large Scale Farm	Other	Not applicable	Total		
Tarime	6,314	535	0	0	132	6,981	79,170	9
Serengeti	3,828	0	0	0	0	3,828	27,864	14
Musoma Rural	12,598	0	349	302	0	13,249	49,995	26
Bunda	7,763	0	0	0	80	7,843	30,721	26
Musoma Urban	12	0	0	0	0	12	453	3
Total	30,515	535	349	302	211	31,912	188,203	17

15.13 CROP EXTENSION: Number of Agriculture Households Receiving Advice on Use of Vermin Control by Source of Extension Messages and District During the 2002/03 Agriculture Year, Mara Region

District	Vermin Control					Total Number of Agriculture Households	% of total number of households
	Government	NGO / Development Project	Large Scale Farm	Not applicable	Total		
Tarime	2,279	129	0	0	2,408	79,170	3
Serengeti	973	0	0	0	973	27,864	3
Musoma Rural	6,840	0	349	0	7,189	49,995	14
Bunda	2,466	77	0	155	2,698	30,721	9
Musoma Urban	24	0	0	0	24	453	5
Total	12,582	206	349	155	13,291	188,203	7

15.14 CROP EXTENSION: Number of Agriculture Households Receiving Advice on Use of Agro-processing by Source of Extension Messages and District During the 2002/03 Agriculture Year, Mara Region

District	Agro-progressing						Total Number of Agriculture Households	% of total number of households
	Government	NGO / Development Project	Large Scale Farm	Other	Not applicable	Total		
Tarime	2,408	399	0	0	0	2,807	79,170	4
Serengeti	2,718	0	0	0	0	2,718	27,864	10
Musoma Rural	6,901	465	467	694	115	8,643	49,995	17
Bunda	4,242	0	0	0	160	4,402	30,721	14
Musoma Urban	12	0	0	0	0	12	453	3
Total	16,281	864	467	694	275	18,581	188,203	10

15.15 CROP EXTENSION: Number of Agriculture Households Receiving Advice on Use of Agro-processing by Source of Extension Messages and District During the 2002/03 Agriculture Year, Mara Region

District	Agro-forestry						Total Number of Agriculture Households	% of total number of households
	Government	NGO / Development Project	Large Scale Farm	Other	Not applicable	Total		
Tarime	2,263	1,735	0	0	0	3,998	79,170	5
Serengeti	900	0	0	0	0	900	27,864	3
Musoma Rural	3,978	7,554	117	116	0	11,766	49,995	24
Bunda	1,594	1,487	0	0	80	3,161	30,721	10
Musoma Urban	60	20	0	0	0	79	453	17
Total	8,794	10,795	117	116	80	19,903	188,203	11

15.16 CROP EXTENSION: Number of Agriculture Households Receiving Advice on Bee keeping by Source of Extension Messages and District During the 2002/03 Agriculture Year, Mara Region

District	Beekeeping					Total Number of Agriculture Households	% of total number of households
	Government	NGO / Development Project	Large Scale Farm	Not applicable	Total		
Tarime	259	532	0	0	791	79,170	1
Serengeti	209	0	0	0	209	27,864	1
Musoma Rural	813	234	117	116	1,279	49,995	3
Bunda	152	0	0	80	232	30,721	1
Musoma Urban	0	0	0	0	0	453	0
Total	1,433	765	117	196	2,512	188,203	1

15.17 CROP EXTENSION: Number of Agriculture Households Receiving Advice on Use of Fish Farming by Source of Extension Messages and District During the 2002/03 Agriculture Year, Mara Region

District	Fish Farming				Total Number of Households	% of total number of households
	Government	NGO / Development Project	Not applicable	Total		
Tarime	395	397	0	792	79,170	1
Serengeti	70	0	0	70	27,864	0
Musoma Rural	1,266	818	0	2,084	49,995	4
Bunda	154	0	80	234	30,721	1
Musoma Urban	0	0	0	0	453	0
Total	1,885	1,214	80	3,179	188,203	2

15.18 CROP EXTENSION: Number of Agriculture Households Receiving and Adopting Extension Messages by Type of Message and District (Part 1) During the 2002/03 Agriculture Year, Mara Region

District	Spacing			Use of Agrochemicals			Erosion Control		
	Received	Adopted	%	Received	Adopted	%	Received	Adopted	%
Tarime	13,046	11,827	91	5,342	1,994	37	5,587	3,067	55
Serengeti	5,129	3,523	69	2,078	1,248	60	1,252	694	55
Musoma Rural	20,911	17,661	84	10,419	6,714	64	12,000	11,701	98
Bunda	16,911	15,754	93	10,043	7,949	79	4,985	2,682	54
Musoma Urban	90	90	100	36	36	100	78	78	100
Total	56,086	48,855	87	27,918	17,941	64	23,901	18,222	76

15.19 CROP EXTENSION: Number of Agriculture Households Receiving and Adopting Extension Messages by Type of Message and District (Part 2) During the 2002/03 Agriculture Year, Mara Region

	Organic Fertilizer Use			Inorganic Fertilizer Use			Use of Improved Seed		
District	Received	Adopted	%	Received	Adopted	%	Received	Adopted	%
Tarime	10,373	7,013	68	3,831	1,725	45	9,866	5,435	55
Serengeti	3,612	1,520	42	554	279	50	4,309	1,728	40
Musoma Rural	16,767	10,278	61	2,266	1,144	50	18,119	12,133	67
Bunda	10,880	5,262	48	2,248	314	14	13,229	10,082	76
Musoma Urban	72	42	59	12	12	100	67	43	64
Total	41,703	24,115	58	8,912	3,474	39	45,589	29,421	65

15.20 CROP EXTENSION: Number of Agriculture Households Receiving and Adopting Extension Messages by Type of Message and District (Part 3) During the 2002/03 Agriculture Year, Mara Region

	Mechanisation / LST			Irrigation Technology			Crop Storage		
District	Received	Adopted	%	Received	Adopted	%	Received	Adopted	%
Tarime	539	134	25	1,725	1,193	69	6,713	5,115	76
Serengeti	349	70	20	552	134	24	3,828	3,549	93
Musoma Rural	535	0	0	2,854	3,035	106	13,132	12,271	93
Bunda	673	295	44	930	629	68	7,763	5,224	67
Musoma Urban	0	0	0	7	19	287	12	24	200
Total	2,096	499	24	6,067	5,010	83	31,448	26,183	83

15.21 CROP EXTENSION: Number of Agriculture Households Receiving and Adopting Extension Messages by Type of Message and District (Part 4) During the 2002/03 Agriculture Year, Mara Region

	Vermin Control			Agro-progressing			Agro-forestry		
District	Received	Adopted	%	Received	Adopted	%	Received	Adopted	%
Tarime	2,148	1,470	68	2,547	2,014	79	3,862	2,922	76
Serengeti	973	764	79	2,649	2,509	95	900	345	38
Musoma Rural	6,256	6,956	111	8,530	9,107	107	11,739	9,499	81
Bunda	2,316	2,306	100	4,163	3,849	92	3,085	1,997	65
Musoma Urban	12	24	205	12	12	100	67	44	65
Total	11,705	11,520	98	17,901	17,491	98	19,653	14,806	75

15.22 CROP EXTENSION: Number of Agriculture Households Receiving and Adopting Extension Messages by Type of Message and District (Part 5) During the 2002/03 Agriculture Year, Mara Region

	Beekeeping			Fish Farming		
District	Received	Adopted	%	Received	Adopted	%
Tarime	3,862	2,922	76	791	391	49
Serengeti	900	345	38	70	0	0
Musoma Rural	11,739	9,499	81	1,169	117	10
Bunda	3,085	1,997	65	74	156	211
Musoma Urban	67	44	65	0	0	0
Total	19,653	14,806	75	2,103	664	32

ANIMAL CONTRIBUTION TO CROP PRODUCTION

17.1 ANIMAL CONTRIBUTION TO CROP PRODUCTION: Number of agriculture households using draft animal to cultivate land by District during 2002/03 agriculture year, Mara Region

	Households Using Draft Animals		Household Not Using Draft Animals		Total households
	Number	%	Number	%	
Tarime	49,457	62	29,713	38	79,170
Serengeti	14,764	53	13,100	47	27,864
Musoma Rural	13,344	27	36,651	73	49,995
Bunda	11,984	39	18,737	61	30,721
Musoma Urban	0	0	453	100	453
Total	89,548	48	98,655	52	188,203

17.2 ANIMAL CONTRIBUTION TO CROP PRODUCTION: Type of Draft By Number Owned, Used and Area Cultivated (Hectares) By District during 2002/03 agriculture year, Mara Region

	Type of Craft								
	Oxen			Bulls			Cows		
District	Number Owned	Number Used	Area Cultivated (Hectares)	Number Owned	Number Used	Area Cultivated (Hectares)	Number Owned	Number Used	Area Cultivated (Hectares)
Tarime	70,313	167,821	41,905	19,627	27,703	2,612	5,013	4,620	465
Serengeti	38,574	68,653	24,600	6,606	8,132	1,976	6,981	5,776	2,152
Musoma Rural	32,619	74,863	20,106	5,710	13,232	1,902	3,104	2,036	474
Bunda	41,644	65,722	21,062	10,177	8,456	3,169	15,600	1,483	363
Musoma Urban	0	0	0	0	0	0	0	0	0
Total	183,149	377,058	107,673	42,120	57,522	9,659	30,698	13,915	3,453

cont...17.2 ANIMAL CONTRIBUTION TO CROP PRODUCTION: Type of Draft By Number Owned, Used and Area Cultivated (Hectares) By District during 2002/03 agriculture year, Mara Region

	Type of Craft					
	Donkeys			Total		
District	Number Owned	Number Used	Area Cultivated (Hectares)	Number Owned	Number Used	Area Cultivated (Hectares)
Tarime	12,133	907	472	107,086	201,051	45,454
Serengeti	690	133	183	52,851	82,694	28,911
Musoma Rural	116	585	24	41,549	90,716	22,506
Bunda	319	3,988	0	67,740	79,648	24,594
Musoma Urban	0	0	0	0	0	0
Total	13,259	5,613	679	269,226	454,109	121,465

17.3 ANIMAL CONTRIBUTION TO CROPS: Number of Crop Growing households using organic fertilizer by District during 2002/03 agriculture year, Mara

	Did you apply organic fertilizer during 2002/03?					
	Using Organic Fertilizer		Not Using Organic Fertilizer		Total	
District	Number	%	Number	%	Number	%
Kondoa	26,400	55	51,694	37	78,094	42
Mpwapwa	4,774	10	22,814	17	27,588	15
Kongwa	10,304	22	38,718	28	49,023	26
Dodoma Rural	6,073	13	24,573	18	30,646	16
Dodoma Urban	81	0	360	0	440	0
Total	47,632	100	138,159	100	185,791	100

17.4 ANIMAL CONTRIBUTION TO CROPS: Area of farm yard manure and Compost Application by District during 2002/03 agriculture year, Mara Region

District	Farm Yard Manure Area Applied		Compost Area Applied		Total Area aplied with Organic Fertilizers	
	Area (Ha)	%	Area (Ha)	%	Area (Ha)	%
Tarime	14,657	49	538	17	15,195	46
Serengeti	4,758	16	27	1	4,784	14
Musoma Rural	6,531	22	182	6	6,713	20
Bunda	3,765	13	2,470	77	6,234	19
Musoma Urban	83	0	0	0	83	0
Total	29,792	100	3,217	100	33,009	100

CATTLE PRODUCTION

18.1 CATTLE PRODUCTION: Total Number Households rearing Cattle by District during 2002/03 agriculture year,Mara Region

Distcrict	Households Rearing Cattle		Households Not Rearing Cattle		Total Agriculture households	Total livestock keeping households
	Number	%	Number	%		
Tarime	31,860	40	47,309	60	79,170	40,352
Serengeti	10,935	39	16,929	61	27,864	12,800
Musoma Rural	11,429	23	38,566	77	49,995	19,468
Bunda	9,094	30	21,627	70	30,721	12,025
Musoma Urban	112	25	342	75	453	179
Total	63,430	34	124,773	66	188,203	84,824

18.2 CATTLE PRODUCTION: Number of Cattle By Type and District as of 1st October, 2003

District	Indigenous			Improved Beef			Improved Dairy			Total Cattle		
	Number of Households	Number of Cattle	%	Number of Households	Number of Cattle	%	Number of Households	Number of Cattle	%	Number of Households	Number of Cattle	%
Tarime	31,593	345,671	98.9	132	264	0.1	1,465	3,588	1.0	31,860	349,523	31.8
Serengeti	10,869	250,983	99.9	0	0	0.0	136	346	0.1	10,935	251,329	22.9
Musoma Rural	11,088	225,012	98.0	0	0	0.0	918	4,706	2.0	11,429	229,719	20.9
Bunda	9,094	267,198	100.0	0	0	0.0	0	0	0.0	9,094	267,198	24.3
Musoma Urban	87	1,143	87.9	0	0	0.0	36	158	12.1	112	1,301	0.1
Total	62,730	1,090,007	99.2	132	264	0.0	2,555	8,797	0.8	63,430	1,099,068	100.0

18.3 CATTLE PRODUCTION: Number of Households Rearing Cattle, Head of Cattle and Average Head per Household by Herd Size as of 1st October, 2003

Herd Size	Cattle Rearing Households		Heads of Cattle		Average Number Per Household
	Number	%	Number	%	
1-5	19,804	31	61,461	6	3
6-10	15,791	25	125,968	11	8
11-15	8,182	13	105,066	10	13
16-20	5,673	9	101,155	9	18
21-30	5,559	9	138,698	13	25
31-40	4,253	7	151,590	14	36
41-50	849	1	38,112	3	45
51-60	1,066	2	58,293	5	55
61-100	1,208	2	91,283	8	76
101-150	487	1	63,828	6	131
151+	557	1	163,616	15	294
Total	63,430	100	1,099,068	100	17

18.4 CATTLE PRODUCTION: Number of Cattle by Category and Type of Cattle; on 1st October 2003

Category of Cattle	Indigenous Cattle		Improved Beef Cattle		Improved Dairy Cattle		Total	
	Number	%	Number	%	Number	%	Number	%
Bulls	171,585	99.6	0	0.0	756	0.4	172,341	15.7
Cows	347,530	99.4	0	0.0	2,137	0.6	349,667	31.8
Steers	165,865	99.7	0	0.0	494	0.3	166,359	15.1
Heifers	190,634	98.4	0	0.0	3,110	1.6	193,744	17.6
Male Calves	107,079	98.7	264	0.2	1,200	1.1	108,543	9.9
Female Calves	107,315	99.0	0	0.0	1,099	1.0	108,414	9.9
Total	1,090,007	99.2	264	0.0	8,797	0.8	1,099,068	100.0

18.5 CATTLE PRODUCTION: Number of Indigenous Cattle By Category and District as on 1st October, 2003

District	Category - Indigenous						
	Bulls	Cows	Steers	Heifers	Male Calves	Female Calves	Total
Tarime	67,493	99,146	51,772	52,182	37,419	37,659	345,671
Serengeti	42,503	76,620	39,571	47,968	21,901	22,420	250,983
Musoma Rural	31,218	68,458	30,626	51,209	22,135	21,366	225,012
Bunda	30,262	102,951	43,882	39,013	25,402	25,688	267,198
Musoma Urban	110	354	13	261	222	183	1,143
Total	171,585	347,530	165,865	190,634	107,079	107,315	1,090,007

18.6 CATTLE PRODUCTION: Number of Improved Beef Cattle By Category and District as on 1st October, 2003

District	Category - Improved Beef Cattle						
	Bulls	Cows	Steers	Heifers	Male Calves	Female Calves	Total
Tarime	0	0	0	0	264	0	264
Serengeti	0	0	0	0	0	0	0
Musoma Rural	0	0	0	0	0	0	0
Bunda	0	0	0	0	0	0	0
Musoma Urban	0	0	0	0	0	0	0
Total	0	0	0	0	264	0	264

18.7 CATTLE PRODUCTION: Number of Improved Dairy Cattle By Category and District as on 1st October, 2003

District	Category - Improved Dairy Cattle						
	Bulls	Cows	Steers	Heifers	Male Calves	Female Calves	Total
Tarime	396	265	260	399	1,194	1,074	3,588
Serengeti	0	279	0	66	0	0	346
Musoma Rural	347	1,521	235	2,604	0	0	4,706
Bunda	0	0	0	0	0	0	0
Musoma Urban	13	72	0	41	7	25	158
Total	756	2,137	494	3,110	1,200	1,099	8,797

18.8 CATTLE PRODUCTION: Number of Cattle By Category and District as on 1st October, 2003

District	Total Cattle						
	Bulls	Cows	Steers	Heifers	Male Calves	Female Calves	Total
Tarime	67,889	99,411	52,032	52,581	38,877	38,733	349,523
Serengeti	42,503	76,899	39,571	48,035	21,901	22,420	251,329
Musoma Rural	31,565	69,979	30,861	53,813	22,135	21,366	229,719
Bunda	30,262	102,951	43,882	39,013	25,402	25,688	267,198
Musoma Urban	123	426	13	302	228	208	1,301
Total	172,341	349,667	166,359	193,744	108,543	108,414	1,099,068

GOATS PRODUCTION

19.1 GOAT PRODUCTION: Total Number of Goats by Type and District as on 1st October, 2003

District	Indigenous			Improved for Meat			Improved Dairy			Total Goat		
	Number of Households	Number of Goats	%	Number of Households	Number of Goats	%	Number of Households	Number of Goats	%	Number of Households	Number of Goats	%
Tarime	31,871	235,607	99.1	0	0	0.0	528	2,103	0.9	31,871	237,710	37.5
Serengeti	9,164	103,574	100.0	0	0	0.0	0	0	0.0	9,164	103,574	16.3
Musoma Rural	20,192	167,535	96.7	455	5,118	3.0	227	569	0.3	20,192	173,221	27.3
Bunda	11,207	118,038	100.0	0	0	0.0	0	0	0.0	11,207	118,038	18.6
Musoma Urban	141	1,501	100.0	0	0	0.0	0	0	0.0	141	1,501	0.2
Total	72,575	626,254	98.8	455	5,118	0.8	756	2,672	0.4	72,575	634,044	100.0

19.2 GOAT PRODUCTION: Number of Households Rearing Goats by Herd Size on 1st October, 2003

Herd Size	Goat Rearing Households		Head of Goats		Average Number Per Household
	Number	%	Number	%	
1-4	27,123	37	73,914	12	3
5-9	22,856	31	146,327	23	6
10-14	11,559	16	134,751	21	12
15-19	3,993	6	65,732	10	16
20-24	2,796	4	59,217	9	21
25-29	1,024	1	26,855	4	26
30-39	1,819	3	60,832	10	33
40+	1,405	2	66,416	10	47
Total	72,575	100	634,044	100	9

19.3 Total Number of Goats by Category and Type of Goat as of 1st October, 2003 and District

Category of Goats	Indigenous Goats		Improved Meat Goats		Improved Dairy Goats		Total	
	Number	%	Number	%	Number	%	Number	%
Billy Goat	235,607	99.1	0	0.0	2,103	0.9	237,710	37.5
Castrated Goat	103,574	100.0	0	0.0	0	0.0	103,574	16.3
She Goat	167,535	96.7	5,118	3.0	569	0.3	173,221	27.3
Male Kid	118,038	100.0	0	0.0	0	0.0	118,038	18.6
She Kid	1,501	100.0	0	0.0	0	0.0	1,501	0.2
Total	626,254	98.8	5,118	0.8	2,672	0.4	634,044	100.0

19.4 Total Number of Indigenous Goat by Category and District as on 1st October, 2003

District	Number of Indigenous Goats					
	Billy Goat	Castrated Goat	She Goat	Male Kid	She Kid	Total
Tarime	45,533	8,927	114,577	31,426	35,144	235,607
Serengeti	18,488	7,118	51,078	13,520	13,370	103,574
Musoma Rural	27,272	7,748	86,372	23,801	22,342	167,535
Bunda	21,600	2,334	63,149	14,176	16,778	118,038
Musoma Urban	376	122	680	123	200	1,501
Total	113,269	26,250	315,856	83,045	87,834	626,254

19.5 GOAT PRODUCTION: Number of Improved Goat for Meat by Category and District as on 1st October, 2003

District	Number of Improved Meat Goats					
	Billy Goat	Castrated Goat	She Goat	Male Kid	She Kid	Total
Tarime	.	.	.	.	.	.
Serengeti	.	.	.	.	.	.
Musoma Rural	691	111	1,929	1,375	1,012	5,118
Bunda	.	.	.	.	.	.
Musoma Urban	.	.	.	.	.	.
Total	691	111	1,929	1,375	1,012	5,118

19.6 Number of Improved Dairy Goat by Category and District on 1st October, 2003

District	Number of Improved Dairy Goats					
	Billy Goat	Castrated Goat	She Goat	Male Kid	She Kid	Total
Tarime	396	.	1,707	.	.	2,103
Serengeti	.	.	.	.	.	.
Musoma Rural	.	.	.	229	340	569
Bunda	.	.	.	.	.	.
Musoma Urban	.	.	.	.	.	.
Total	396	.	1,707	229	340	2,672

19.7 Total Number of Goats by Category and District on 1st October, 2003

District	Total Goat					
	Billy Goat	Castrated Goat	She Goat	Male Kid	She Kid	Total
Tarime	45,929	8,927	116,284	31,426	35,144	237,710
Serengeti	18,488	7,118	51,078	13,520	13,370	103,574
Musoma Rural	27,964	7,858	88,301	25,405	23,694	173,221
Bunda	21,600	2,334	63,149	14,176	16,778	118,038
Musoma Urban	376	122	680	123	200	1,501
Total	114,356	26,361	319,491	84,649	89,186	634,044

SHEEP PRODUCTION

20.1 Total Number of Sheep By Breed and on 1st October 2003

Breed	Number of Indigenous		Number of Improved for Mutton		Total Sheep	
	Number	%	Number	%	Number	%
Ram	43,318	22	0	0	43,318	22
Castrated Sheep	13,781	7	0	0	13,781	7
She Sheep	91,890	47	0	0	91,890	47
Male Lamb	21,020	11	70	19	21,090	11
She Lamb	23,695	12	300	81	23,995	12
Total	193,704	100	370	100	194,073	100

20.2 Number of Households Raising or Managing Sheep by District on 1st October, 2003

District	Households Raising Sheep		Households Not Raising Sheep		Number of Agricultural Households	Total Livestock keeping Households
	Number	%	Number	%		
Tarime	10,514	13	68,656	87	79,170	40,352
Serengeti	4,690	17	23,174	83	27,864	12,800
Musoma Rural	3,137	6	46,858	94	49,995	19,468
Bunda	3,427	11	27,294	89	30,721	12,025
Musoma Urban	12	3	441	97	453	179
Total	21,780	12	166,423	88	188,203	84,824

20.3 Number of Sheep by Type of Sheep and District as 1st October, 2002/03

District	Number of Indigenous		Number of Improved for Mutton		Total Sheep	
	Number	%	Number	%	Number	%
Tarime	75,196	100	0	0	75,196	39
Serengeti	48,237	100	139	0	48,376	25
Musoma Rural	40,132	99	230	1	40,362	21
Bunda	30,078	100	0	0	30,078	15
Musoma Urban	61	100	0	0	61	0
Total	193,704	100	370	0	194,073	100

20.4 Number of Households and Heads of Sheep by Herd Size on 1st October 2003

Herd Size	Number of Household	%	Number of Sheep	%	Average Number Per Household
1-4	8,873	41	21,828	11	2
5-9	6,909	32	45,606	23	7
10-14	3,513	16	39,444	20	11
15-19	616	3	9,770	5	16
20-24	632	3	13,311	7	21
25-29	489	2	12,868	7	26
30-39	178	1	6,091	3	34
40+	570	3	45,156	23	79
Total	21,780	100	194,073	100	9

20.5 Average Number of Sheep by Type of Sheep and District on 1st October 2003, Mara Region

District	Number of Indigenous		Number of Improved for Mutton		Total Sheep	
	Number of Households	Average	Number of Households	Average	Number of Households	Average
Tarime	10,514	7	0	.	10,514	7
Serengeti	4,690	10	70	2	4,690	10
Musoma Rural	3,137	13	115	2	3,137	13
Bunda	3,427	9	0	.	3,427	9
Musoma Urban	12	5	0	.	12	5
Total	21,780	9	185	2	21,780	9

20.6 Total Number of Indigenous Sheep by Sheep Type and District on 1st October 2003

District	Number of Indigenous Sheep					
	Ram	Castrated Sheep	She Sheep	Male Lamb	She Lamb	Total
Tarime	19,724	5,165	33,610	6,964	9,732	75,196
Serengeti	10,124	7,172	21,122	4,433	5,387	48,237
Musoma Rural	7,764	819	20,469	6,110	4,971	40,132
Bunda	5,694	625	16,641	3,514	3,605	30,078
Musoma Urban	12	.	49	.	.	61
Total	43,318	13,781	91,890	21,020	23,695	193,704

20.7 Total Number of Improved Mutton Sheep by Type and District on 1st October 2003

District	Number of Improved for Mutton					
	Ram	Castrated Sheep	She Sheep	Male Lamb	She Lamb	Total
Tarime	.	.	.	.	.	.
Serengeti	.	.	.	70	70	139
Musoma Rural	.	.	.	.	230	230
Bunda	.	.	.	.	.	.
Musoma Urban	.	.	.	.	.	.
Total	.	.	.	70	300	370

20.8 Total Number of Sheep by Sheep Type and District on 1st October 2003

District	Total Sheep					
	Ram	Castrated Sheep	She Sheep	Male Lamb	She Lamb	Total
Tarime	19,724	5,165	33,610	6,964	9,732	75,196
Serengeti	10,124	7,172	21,122	4,503	5,456	48,376
Musoma Rural	7,764	819	20,469	6,110	5,201	40,362
Bunda	5,694	625	16,641	3,514	3,605	30,078
Musoma Urban	12	.	49	.	.	61
Total	43,318	13,781	91,890	21,090	23,995	194,073

PIGS PRODUCTION

21.1 Number of Households and Pigs by Herd Size on 1st October 2003

Herd Size	Pig Rearing Households		Heads of Pigs		Average Number Per Household
	Number	%	Number	%	
1-4	204	62	548	23	3
15-19	124	38	1,861	77	15
Total	328	100	2,409	100	7

21.2 Number of Households and Pigs by District on 1st October 2003

District	Number of Household	Number of Pig	Average Number Per Household
Tarime	258	2,129	8
Serengeti	70	279	4
Musoma Rural	0	0	0
Bunda	0	0	0
Musoma Urban	0	0	0
Total	328	2,409	7

21.3 Number of Pigs by Type and District on 1st October, 2003

District	Boar	Castrated Male	Sow / Gilt	Male Piglet	She Piglet	Total
Tarime	631	0	258	496	744	2,129
Serengeti	140	0	140	0	0	279
Musoma Rural	0	0	0	0	0	0
Bunda	0	0	0	0	0	0
Musoma Urban	0	0	0	0	0	0
Total	770	0	398	496	744	2,409

LIVESTOCK PESTS AND PARASITE CONTROL

22.1 PESTS AND PARASITE: Number of Livestock Rearing households deworming Livestock by District during 2002/03 Agricultural Year

District	Deworming Livestock		Not Deworming Livestock		Total
	Number of Households	%	Number of Households	%	
Tarime	19,808	49	20,544	51	40,352
Serengeti	7,524	59	5,275	41	12,800
Musoma Rural	10,435	54	9,034	46	19,468
Bunda	6,283	52	5,742	48	12,025
Musoma Urban	105	59	74	41	179
Total	44,155	52	40,669	48	84,824

22.2 PESTS AND PARASITE: Number of Livestock Rearing Households that dewormed Livestock by type of Livestock and District during the 2002/03 Agricultural Year

District	Goats		Cattle		Sheep		Pigs	
	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%
Tarime	10,722	42	14,647	48	3,311	37	1,730	31
Serengeti	4,423	17	5,865	19	2,277	25	554	10
Musoma Rural	6,795	26	6,162	20	2,471	27	2,289	41
Bunda	3,800	15	3,748	12	944	10	979	18
Musoma Urban	87	0	62	0	0	0	0	0
Total	25,827	100	30,484	100	9,003	100	5,552	100

22.3 LIVESTOCK PESTS AND PARASITE CONTROL: Number and Percent of agricultural households reporting to have encountered tick problems during 2002/03 Agriculture Year by District.

District	Ticks Problems		No Ticks Problems		Total
	Number of Households	%	Number of Households	%	
Tarime	24,589	70	10,675	30	35,265
Serengeti	8,129	66	4,116	34	12,245
Musoma Rural	12,796	72	4,926	28	17,722
Bunda	7,939	67	3,853	33	11,792
Musoma Urban	136	76	42	24	179
Total	53,589	69	23,613	31	77,202

22.4 LIVESTOCK PESTS AND PARASITE CONTROL: Number of Livestock Rearing Households by Methods of Ticks Control Use and District During the 2002/03 Agricultural Year

District	Method of Tick Control										Total
	None		Spraying		Dipping		Smearing		Other		
	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%	
Tarime	5,562	23	12,920	53	134	1	1,078	4	4,895	20	24,589
Serengeti	1,382	17	4,061	50	209	3	140	2	2,336	29	8,129
Musoma Rural	1,702	13	8,446	66	221	2	116	1	2,311	18	12,796
Bunda	929	12	4,395	55	1,679	21	238	3	699	9	7,939
Musoma Urban	31	23	66	49	0	0	0	0	39	29	136
Total	9,606	18	29,889	56	2,243	4	1,572	3	10,280	19	53,589

22.5 LIVESTOCK PESTS AND PARASITE CONTROL: Number and Percent of agricultural households reporting to have encountered Tsetse Flies problems during 2002/03 Agriculture Year by District

District	Tsetse Flies Problems		No Tsetse Flies Problems		Total
	Number of Households	%	Number of Households	%	
Tarime	6,248	17	30,872	83	37,120
Serengeti	4,535	36	7,989	64	12,524
Musoma Rural	1,254	7	17,893	93	19,147
Bunda	1,831	16	9,894	84	11,725
Musoma Urban	0	0	172	100	172
Total	13,868	17	66,820	83	80,688

22.6 LIVESTOCK PESTS AND PARASITE CONTROL: Number of Livestock Rearing Households by Methods of Tsetse flies Control Use and District During the 2002/03 Agricultural Year

District	Method of Tsetse Flies Control										Total
	None		Spray		Dipping		Trapping		Other		
	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%	
Tarime	3,866	62	1,980	32	268	4	0	0	135	2	6,248
Serengeti	2,607	57	1,318	29	129	3	344	8	137	3	4,535
Musoma Rural	803	64	223	18	0	0	113	9	116	9	1,254
Bunda	469	26	1,284	70	78	4	0	0	0	0	1,831
Musoma Urban	0	0	0	0	0	0	0	0	0	0	0
Total	7,745	56	4,804	35	475	3	456	3	387	3	13,868

OTHER LIVESTOCK

23a OTHER LIVESTOCK: Total Number of Other Livestock by Type on 1st October 2003

	Chicken		Others	
Type	Number	%	Type	Number
Indigenous	1,505,422	99	Ducks	64,254
Layer	14,561	1	Turkeys	12,737
Broiler	1,183	0	Donkeys	3,104
			Rabbits	37,053
Total	1,521,166	100		117,148

23b OTHER LIVESTOCK: Number of Chicken by Category of Chicken and District on 1st October 2003

	Number of Chicken			Total Number of Chicken
District	Indigenous Chicken	Layer	Broiler	
Tarime	585,180	536	268	585,983
Serengeti	246,871	4,607	798	252,277
Musoma Rural	443,135	7,872	0	451,007
Bunda	227,098	1,546	0	228,644
Musoma Urban	3,138	0	117	3,255
Total	1,505,422	14,561	1,183	1,521,166

23c Head Number of Other Livestock by Type of Livestock and District

	Type of Livestock				
District	Ducks	Turkeys	Rabbit	Donkeys	Other
Tarime	8,963	5,782	1,333	1,071	2,522
Serengeti	4,826	6,955	419	272	4,733
Musoma Rural	40,623	0	34,865	819	9,498
Bunda	8,167	0	437	942	875
Musoma Urban	1,675	0	0	0	0
Total	64,254	12,737	37,053	3,104	17,629

23d OTHER LIVESTOCK: Total Number of Households and Chicken Raised by Flock Size as of 1st October 2003

	Chicken Rearing Households		Number of Chicken	Average Chicken per Household
Flock Size	Number	%		
1 - 4	36,629	26	103,477	3
5 - 9	42,208	30	278,665	7
10 - 19	41,850	30	535,628	13
20 - 29	14,714	10	325,261	22
30 - 39	3,088	2	98,709	32
40 - 49	1,511	1	63,439	42
50 - 99	1,646	1	94,714	58
100+	178	0	21,273	120
Total	141,825	100	1,521,166	11

23e LIVESTOCK/POULTRY POPULATION TREND

Type of Livestock/Poultry	1995	1999	2003
Cattle	1,291,576	1,272,538	1,099,068
Improved Cattle	1,890	704	9,061
Goats	620,748	578,900	634,044
Sheep	179,019	194,036	194,073
Pigs	5,139	17,481	2,409
Indigenous Chicken	1,369,805	1,368,340	1,505,422
Layers	20,823	61,559	14,561
Broilers	4,426	18,383	1,183
Total Chickens	1,395,054	1,448,282	1,521,166

FISH FARMING

28.1 FISH FARMING: Number of Agricultural Households involved in Fish Farming and District, 2002/03 Agricultural Year

District	Agricultural Households Doing Fish Farming		Agricultural Households NOT Doing Fish Farming		Total
	Number	%	Number	%	
Tarime	255	0.3	78,914	99.7	79,170
Serengeti	0	0.0	27,864	100.0	27,864
Musoma Rural	0	0.0	49,995	100.0	49,995
Bunda	0	0.0	30,721	100.0	30,721
Musoma Urban	0	0.0	453	100.0	453
Total	255	0.1	187,948	99.9	188,203

28.2 FISH FARMING: Number of Agricultural Households By System of Farming and District during the 2002/03 Agricultural Year

District	Fish Farming System	
	Dug out Pond	Total
Tarime	255	255
Total	255	255

28.3 FISH FARMING: Number of Agricultural Households By Source of Fingerlings and District during the 2002/03 Agricultural Year

District	Source of Fingerling	
	NGOs / Project	
	Number	Total
Tarime	255	255
Total	255	255

28.4 FISH FARMING: Number of Agricultural Households By Location of Selling Fish and District during the 2002/03 Agricultural Year

District	Did not Sell	
	Number	Total
Tarime	255	255
Total	255	255

28.5 FISH FARMING: Total Number of Fish Harvested by Type and District, 2002/03 Agricultural Year

District	Number of Tilapia	Number of Carp	Number of Others
Tarime	44,845	0	0
Total	44,845	0	0

LIVESTOCK EXTENSION

29.1a LIVESTOCK EXTENSION: Number of Agricultural Households Receiving Extension by District During the 2002/03 Agricultural Year

District	Received Livestock Advice		Did Not Receive Livestock Advice		Total	Total Number of households raising livestock	% receiving advice out of total
	Number	%	Number	%			
Tarime	9,373	11.8	69,797	88.2	79,170	40,352	23
Serengeti	2,475	8.9	25,389	91.1	27,864	12,800	19
Musoma Rural	12,675	25.4	37,320	74.6	49,995	19,468	65
Bunda	7,383	24.0	23,338	76.0	30,721	12,025	61
Musoma Urban	73	16.1	381	83.9	453	179	41
Total	31,979	17.0	156,224	83.0	188,203	84,824	38

29.1b LIVESTOCK EXTENSION SERVICE PROVIDERS: Number of Agricultural Households By Source of Extension Services and District during the 2002/03 Agricultural Year

District	Source of extension advice									
	Government		NGO / Development Project		Co-operative		Large Scale Farmer		Other	
	Number	%	Number	%	Number	%	Number	%	Number	%
Tarime	8,762	74.8	1,336	11.4	538	4.6	538	4.6	538	4.6
Serengeti	2,200	66.6	346	10.5	346	10.5	346	10.5	66	2.0
Musoma Rural	11,987	50.1	4,229	17.7	2,596	10.8	3,037	12.7	2,084	8.7
Bunda	7,167	99.0	0	0.0	0	0.0	0	0.0	74	1.0
Musoma Urban	54	100.0	0	0.0	0	0.0	0	0.0	0	0.0
Total	30,171	65.2	5,911	12.8	3,480	7.5	3,921	8.5	2,763	6.0

29.2 LIVESTOCK EXTENSION: Number of Agricultural Households Receiving Extension Advice on Feeds and Proper Feeding By Source and District, 2002/03 Agricultural Year

District	Source of Advice on Feeds and Proper Feeding					Total Number of households raising livestock	% receiving advice out of total
	Government	NGO / Development Project	Large Scale Farmer	Other	Total		
Tarime	1,706	131	131	0	1,969	40,352	4.9
Serengeti	690	66	0	70	826	12,800	6.5
Musoma Rural	2,417	341	0	0	2,758	19,468	14.2
Bunda	512	0	0	0	512	12,025	4.3
Musoma Urban	12	0	0	0	12	179	6.5
Total	5,336	538	131	70	6,076	84,824	7.2
%	87.8	8.9	2.2	1.1	100.0		

29.3 LIVESTOCK EXTENSION: Number of Agricultural Households Receiving Extension Advice on Housing By Source and District, 2002/03 Agricultural Year

District	Source of Advice on Housing				Total Number of households raising livestock	% receiving advice out of total
	Government	NGO / Development Project	Other	Total		
Tarime	2,377	131	0	2,509	40,352	6.2
Serengeti	616	136	70	822	12,800	6.4
Musoma Rural	5,390	574	69	6,033	19,468	31.0
Bunda	3,525	0	0	3,525	12,025	29.3
Musoma Urban	54	0	0	54	179	30.3
Total	11,963	842	139	12,943	84,824	15.3
%	92	7	1	100		

29.4 LIVESTOCK EXTENSION: Number of Agricultural Households Receiving Extension Advice on Proper Milking By Source and District, 2002/03 Agricultural Year

District	Source of Advice on Proper Milking			Total Number of households raising livestock	% receiving advice out of total
	Government	NGO / Development Project	Total		
Tarime	2,106	131	2,237	40,352	5.5
Serengeti	346	206	552	12,800	4.3
Musoma Rural	1,084	0	1,084	19,468	5.6
Bunda	2,389	0	2,389	12,025	19.9
Musoma Urban	13	0	13	179	7.3
Total	5,938	337	6,275	84,824	7.4
%	94.6	5.4	100.0		

29.5 LIVESTOCK EXTENSION: Number of Agricultural Households Receiving Extension Advice on Milk Hygiene By Source and District, 2002/03 Agricultural Year

District	Source of Advice on Milk Hygene					Total Number of households raising livestock	% receiving advice out of total
	Government	NGO / Development Project	Large Scale Farmer	not applicable	Total		
Tarime	2,782	131	131	0	3,044	40,352	7.5
Serengeti	555	136	0	0	691	12,800	5.4
Musoma Rural	1,313	0	0	0	1,313	19,468	6.7
Bunda	2,438	0	0	78	2,515	12,025	20.9
Musoma Urban	37	0	0	0	37	179	20.6
Total	7,125	267	131	78	7,601	84,824	9.0
%	94	4	2	1	100		

29.6 LIVESTOCK EXTENSION: Number of Agricultural Households Receiving Extension Advice on Disease Control By Source and District, 2002/03 Agricultural Year

District	Source of Advice on Disease Control				Total Number of households raising livestock	% receiving advice out of total
	Government	NGO / Development Project	Other	Total		
Tarime	7,539	533	131	8,202	40,352	20
Serengeti	1,860	66	0	1,927	12,800	15
Musoma Rural	9,719	224	0	9,944	19,468	51
Bunda	5,912	0	0	5,912	12,025	49
Musoma Urban	73	0	0	73	179	41
Total	25,103	824	131	26,057	84,824	31
%	96.3	3.2	0.5	100.0		

29.7 LIVESTOCK EXTENSION: Number of Agricultural Households Receiving Extension Advice on Herd /Flock Size and Selection By Source and District, 2002/03 Agricultural Year

District	Source of Advice on Herd/Flock Size					Total Number of households raising livestock	% receiving advice out of total
	Government	NGO / Development Project	Large Scale Farmer	Other	Total		
Tarime	1,982	131	131	131	2,375	40,352	6
Serengeti	551	66	0	0	617	12,800	5
Musoma Rural	2,389	117	0	0	2,506	19,468	13
Bunda	1,038	0	0	0	1,038	12,025	9
Musoma Urban	0	0	0	0	0	179	0
Total	5,959	315	131	131	6,536	84,824	8
%	91.2	4.8	2.0	2.0	100.0		

29.8 LIVESTOCK EXTENSION: Number of Agricultural Households Receiving Extension Advice on Pasture Establishment and Selection By Source and District, 2002/03 Agricultural Year

District	Source of Advice on Pasture Establishment and Selection			Total Number of households raising livestock	% receiving advice out of total
	Government	NGO / Development Project	Total		
Tarime	1,333	131	1,464	40,352	4
Serengeti	410	66	476	12,800	4
Musoma Rural	1,019	224	1,244	19,468	6
Bunda	74	0	74	12,025	1
Musoma Urban	7	0	7	179	4
Total	2,842	422	3,264	84,824	4
%	87.1	12.9	100.0		

29.9 LIVESTOCK EXTENSION: Number of Agricultural Households Receiving Extension Advice on Group Formation and Strengthening By Source and District, 2002/03 Agricultural Year

District	Source of Advice on Group Formation and Strenghthening							Total Number of households raising livestock	% receiving advice out of total
	Government	NGO / Development Project	Co-operative	Large Scale Farmer	Other	not applicable	Total		
Tarime	1,469	266	0	0	0	0	1,736	40,352	4
Serengeti	136	66	140	0	0	0	342	12,800	3
Musoma Rural	4,927	702	0	233	114	0	5,975	19,468	31
Bunda	2,545	74	0	0	0	79	2,698	12,025	22
Musoma Urban	7	0	0	0	0	0	7	179	4
Total	9,084	1,108	140	233	114	79	10,757	84,824	13
%	84.4	10.3	1.3	2.2	1.1	0.7	100.0		

29.10 LIVESTOCK EXTENSION: Number of Agricultural Households Receiving Extension Advice on Calf Rearing By Source and District, 2002/03 Agricultural Year

District	Source of Advice on Calf Rearing					Total Number of households raising livestock	% receiving advice out of total
	Government	NGO / Development Project	Large Scale Farmer	Other	Total		
Tarime	2,113	266	0	0	2,379	40,352	6
Serengeti	830	66	0	66	962	12,800	8
Musoma Rural	1,981	0	116	0	2,097	19,468	11
Bunda	2,870	0	0	0	2,870	12,025	24
Musoma Urban	50	0	0	0	50	179	28
Total	7,843	333	116	66	8,359	84,824	10
%	93.8	4.0	1.4	0.8	100.0		

29.11 LIVESTOCK EXTENSION: Number of Agricultural Households Receiving Extension Advice on Use of Improved Bulls By Source and District, 2002/03 Agricultural Year

District	Source of Advice on Improved Bulls				Total Number of households raising livestock	% receiving advice out of total
	Government	NGO / Development Project	Large Scale Farmer	Total		
Tarime	2,256	131	0	2,387	40,352	6
Serengeti	624	136	0	760	12,800	6
Musoma Rural	1,383	116	117	1,617	19,468	8
Bunda	1,190	0	0	1,190	12,025	10
Musoma Urban	49	0	0	49	179	28
Total	5,503	384	117	6,003	84,824	7
%	91.7	6.4	2.0	100.0		

29.12 LIVESTOCK EXTENSION: Number of Agricultural Households By Quality of Extension Services and District, 2002/03 Agricultural Year

	Quality of Service										
	Very Good		Good		Average		Poor		No Good		
District	Number	%	Number	%	Number	%	Number	%	Number	%	Total
Tarime	3,454	31	6,003	54	1,467	13	132	1	0	0	11,056
Serengeti	278	10	1,785	66	485	18	140	5	0	0	2,688
Musoma Rural	1,882	12	7,412	49	5,513	36	233	2	117	1	15,157
Bunda	729	10	5,825	80	766	10	0	0	0	0	7,320
Musoma Urban	0	0	30	100	0	0	0	0	0	0	30
Total	6,343	17	21,055	58	8,231	23	504	1	117	0	36,251

ACCESS TO INFRASRUCTURE AND OTHER SERVICES

33.01a Mean Distances from Household Dwellings to Infrastructures and Services by Districts

District	Mean Distance to											
	Secondary Schools	Primary Schools	All weather roads	Feeder Roads	Hospitals	Health Clinics	Regional Capital	Primary Markets	Secondary Market	Tertiary Market	Tarmac Roads	District Capital
Tarime	10.7	3.3	2.9	1.3	32.0	9.5	90.7	7.4	16.3	40.2	31.3	43.3
Serengeti	9.5	2.4	5.7	2.9	37.4	5.7	108.7	8.7	12.9	34.5	86.7	36.8
Musoma Rural	10.5	1.9	2.1	0.6	36.9	5.7	43.5	3.4	11.3	36.9	28.5	42.3
Bunda	12.6	1.6	3.6	0.9	27.2	4.8	91.2	4.4	9.6	30.5	36.8	40.9
Musoma Urban	3.7	1.4	0.5	0.7	5.8	3.1	5.8	5.3	27.6	5.3	4.8	5.8
Total	10.8	2.5	3.2	1.3	33.2	7.1	80.7	6.0	13.4	36.8	39.6	41.6

Regional Capital	80.7
District Capital	41.6
Tarmac Roads	39.6
Tertiary Market	36.8
Hospitals	33.2
Secondary Market	13.4
Secondary Schools	10.8
Health Clinics	7.1
Primary Markets	6.0
All weather roads	3.2
Primary Schools	2.5
Feeder Roads	1.3

33.01b: Number of Households By Distance to Secondary School by District for 2002/03 agriculture year

District	Distance to Secondary School										Total number of households	Mean Distance
	Less than 1 km		1-2.9 km		3.0-9.9		10.0-19.9		Above 20 km			
	No of households	%	No of households	%	No of households	%	No of households	%	No of households	%		
Tarime	1,051	1.3	13,746	17.4	46,790	59.1	14,683	18.5	2,900	3.7	79,170	10.7
Serengeti	343	1.2	2,610	9.4	15,650	56.2	7,312	26.2	1,949	7.0	27,864	9.5
Musoma Rural	3,960	7.9	3,899	7.8	18,845	37.7	19,019	38.0	4,273	8.5	49,995	10.5
Bunda	812	2.6	2,616	8.5	11,288	36.7	8,077	26.3	7,928	25.8	30,721	12.6
Musoma Urban	7	1.4	74	16.3	373	82.3	0	0.0	0	0.0	453	3.7
Total	6,172	3.3	22,944	12.2	92,946	49.4	49,090	26.1	17,050	9.1	188,203	10.8

33.01c: Number of Households By Distance to All Weather Road by District for 2002/03 agriculture year

District	Distance to All Weather Road										Total number of households	Mean Distance
	Less than 1 km		1-2.9 km		3.0-9.9		10.0-19.9		Above 20 km			
	No of households	%	No of households	%	No of households	%	No of households	%	No of households	%		
Tarime	30,658	38.7	23,047	29.1	22,122	27.9	924	1.2	2,417	3.1	79,170	2.9
Serengeti	3,390	12.2	10,876	39.0	8,911	32.0	2,993	10.7	1,694	6.1	27,864	5.7
Musoma Rural	26,732	53.5	12,816	25.6	9,635	19.3	347	0.7	464	0.9	49,995	2.1
Bunda	9,052	29.5	8,553	27.8	10,347	33.7	2,541	8.3	227	0.7	30,721	3.6
Musoma Urban	380	83.7	41	9.1	33	7.2	0	0.0	0	0.0	453	0.5
Total	70,213	37.3	55,334	29.4	51,048	27.1	6,806	3.6	4,802	2.6	188,203	3.2

33.01d: Number of Households by Distance to Feeder Road by District for 2002/03 agriculture year

District	Distance to Feeder Road										Total number of households	Mean Distance
	Less than 1 km		1-2.9 km		3.0-9.9		10.0-19.9		Above 20 km			
	No of households	%	No of households	%	No of households	%	No of households	%	No of households	%		
Tarime	39,268	49.6	27,370	34.6	12,531	15.8	0	0.0	0	0.0	79,170	1.3
Serengeti	7,720	27.7	12,295	44.1	7,376	26.5	279	1.0	194	0.7	27,864	2.9
Musoma Rural	38,894	77.8	8,166	16.3	2,935	5.9	0	0.0	0	0.0	49,995	0.6
Bunda	18,456	60.1	9,358	30.5	2,906	9.5	0	0.0	0	0.0	30,721	0.9
Musoma Urban	260	57.3	187	41.3	7	1.4	0	0.0	0	0.0	453	0.7
Total	104,598	55.6	57,377	30.5	25,755	13.7	279	0.1	194	0.1	188,203	1.3

33.01e: Number of Households By Distance to Hospital by District for 2002/03 agriculture year

District	Distance to hospital										Total number of households	Mean Distance
	Less than 1 km		1-2.9 km		3.0-9.9		10.0-19.9		Above 20 km			
	No of households	%	No of households	%	No of households	%	No of households	%	No of households	%		
Tarime	378	0.5	136	0.2	8,513	10.8	21,950	27.7	48,192	60.9	79,170	32.0
Serengeti	0	0.0	133	0.5	3,847	13.8	5,468	19.6	18,416	66.1	27,864	37.4
Musoma Rural	108	0.2	1,082	2.2	3,324	6.6	12,914	25.8	32,567	65.1	49,995	36.9
Bunda	0	0.0	146	0.5	4,608	15.0	5,181	16.9	20,786	67.7	30,721	27.2
Musoma Urban	0	0.0	0	0.0	453	100.0	0	0.0	0	0.0	453	5.8
Total	486	0.3	1,497	0.8	20,746	11.0	45,513	24.2	119,961	63.7	188,203	33.2

33.01f: Number of Households by Distance to Health Clinic by District for 2002/03 agricultural year

District	Health clinic										Total number of households	Mean Distance
	Less than 1 km		1-2.9 km		3.0-9.9		10.0-19.9		Above 20 km			
	No of households	%	No of households	%	No of households	%	No of households	%	No of households	%		
Tarime	3,881	4.9	16,306	20.6	48,566	61.3	7,533	9.5	2,883	3.6	79,170	9.5
Serengeti	623	2.2	5,984	21.5	16,619	59.6	4,430	15.9	209	0.7	27,864	5.7
Musoma Rural	5,269	10.5	19,004	38.0	19,718	39.4	4,963	9.9	1,041	2.1	49,995	5.7
Bunda	2,602	8.5	9,776	31.8	16,116	52.5	1,930	6.3	296	1.0	30,721	4.8
Musoma Urban	13	2.9	89	19.7	351	77.4	0	0.0	0	0.0	453	3.1
Total	12,389	6.6	51,160	27.2	101,369	53.9	18,857	10.0	4,429	2.4	188,203	7.1

33.01g: Number of Households by distance to Primary School for 2002/03 agriculture year

District	Distance to Primary School										Total number of households	Mean Distance
	Less than 1 km		1-2.9 km		3.0-9.9		10.0-19.9		Above 20 km			
	No of households	%	No of households	%	No of households	%	No of households	%	No of households	%		
Tarime	14,235	18.0	44,090	55.7	19,645	24.8	524	0.7	676	0.9	79,170	3.3
Serengeti	2,741	9.8	15,671	56.2	9,244	33.2	139	0.5	70	0.2	27,864	2.4
Musoma Rural	13,439	26.9	28,589	57.2	7,397	14.8	230	0.5	340	0.7	49,995	1.9
Bunda	7,707	25.1	17,697	57.6	5,317	17.3	0	0.0	0	0.0	30,721	1.6
Musoma Urban	170	37.5	213	47.0	71	15.6	0	0.0	0	0.0	453	1.4
Total	38,291	20.3	106,260	56.5	41,673	22.1	893	0.5	1,086	0.6	188,203	2.5

33.01h: Number of Households by Distance to Regional Capital by District for 2002/03 agriculture year

District	Distance to Regional Capital										Total number of households	Mean Distance
	Less than 1 km		1-2.9 km		3.0-9.9		10.0-19.9		Above 20 km			
	No of households	%	No of households	%	No of households	%	No of households	%	No of households	%		
Tarime	246	0.3	0	0.0	131	0.2	4,205	5.3	74,587	94.2	79,170	90.7
Serengeti	70	0.2	0	0.0	129	0.5	134	0.5	27,531	98.8	27,864	108.7
Musoma Rural	348	0.7	221	0.4	467	0.9	8,200	16.4	40,758	81.5	49,995	43.5
Bunda	60	0.2	0	0.0	158	0.5	80	0.3	30,423	99.0	30,721	91.2
Musoma Urban	0	0.0	0	0.0	453	100.0	0	0.0	0	0.0	453	5.8
Total	724	0.4	221	0.1	1,340	0.7	12,620	6.7	173,298	92.1	188,203	80.7

33.01i: Number of Households by Distance to District Capital by District for 2002/03 agriculture year

District	Distance to District Capital										Total number of households	Mean Distance
	Less than 1 km		1-2.9 km		3.0-9.9		10.0-19.9		Above 20 km			
	No of households	%	No of households	%	No of households	%	No of households	%	No of households	%		
Tarime	129	0.2	136	0.2	5,443	6.9	9,203	11.6	64,258	81.2	79,170	43.3
Serengeti	0	0.0	201	0.7	3,709	13.3	5,333	19.1	18,620	66.8	27,864	36.8
Musoma Rural	233	0.5	0	0.0	698	1.4	8,188	16.4	40,876	81.8	49,995	42.3
Bunda	0	0.0	0	0.0	1,925	6.3	4,009	13.0	24,787	80.7	30,721	40.9
Musoma Urban	0	0.0	0	0.0	453	100.0	0	0.0	0	0.0	453	5.8
Total	362	0.2	337	0.2	12,229	6.5	26,734	14.2	148,541	78.9	188,203	41.6

33.01j: Number of Households by Distance to Tarmac Road by District for 2002/03 agricultural year

District	Tarmac Road										Total number of households	Mean Distance
	Less than 1 km		1-2.9 km		3.0-9.9		10.0-19.9		Above 20 km			
	No of households	%	No of households	%	No of households	%	No of households	%	No of households	%		
Tarime	1,777	2.2	3,254	4.1	13,659	17.3	19,463	24.6	41,016	51.8	79,170	31.3
Serengeti	0	0.0	129	0.5	274	1.0	198	0.7	27,263	97.8	27,864	86.7
Musoma Rural	4,195	8.4	3,195	6.4	5,245	10.5	11,611	23.2	25,749	51.5	49,995	28.5
Bunda	1,422	4.6	540	1.8	4,117	13.4	3,121	10.2	21,521	70.1	30,721	36.8
Musoma Urban	7	1.4	33	7.2	414	91.4	0	0.0	0	0.0	453	4.8
Total	7,400	3.9	7,151	3.8	23,710	12.6	34,394	18.3	115,548	61.4	188,203	39.6

33.01k: Number of Households by Distance to Primary Market by District for 2002/03 agricultural year

District	Primary Market										Total number of households	Mean Distance
	Less than 1 km		1-2.9 km		3.0-9.9		10.0-19.9		Above 20 km			
	No of households	%	No of households	%	No of households	%	No of households	%	No of households	%		
Tarime	5,577	7.0	14,593	18.4	38,916	49.2	18,207	23.0	1,877	2.4	79,170	7.4
Serengeti	809	2.9	7,028	25.2	13,753	49.4	3,778	13.6	2,496	9.0	27,864	8.7
Musoma Rural	10,548	21.1	18,580	37.2	19,369	38.7	1,150	2.3	348	0.7	49,995	3.4
Bunda	5,134	16.7	10,685	34.8	12,468	40.6	1,614	5.3	819	2.7	30,721	4.4
Musoma Urban	12	2.7	18	4.0	358	79.0	65	14.3	0	0.0	453	5.3
Total	22,080	11.7	50,904	27.0	84,864	45.1	24,814	13.2	5,541	2.9	188,203	6.0

33.01l: Number of Households by Distance to Tertiary Market by District for 2002/03 agricultural year

District	Tertiary Market										Total number of households	Mean Distance
	Less than 1 km		1-2.9 km		3.0-9.9		10.0-19.9		Above 20 km			
	No of households	%	No of households	%	No of households	%	No of households	%	No of households	%		
Tarime	774	1.0	263	0.3	9,406	11.9	11,238	14.2	57,489	72.6	79,170	40.2
Serengeti	66	0.2	614	2.2	4,182	15.0	7,302	26.2	15,700	56.3	27,864	34.5
Musoma Rural	913	1.8	1,374	2.7	2,547	5.1	10,067	20.1	35,095	70.2	49,995	36.9
Bunda	322	1.0	1,727	5.6	6,135	20.0	5,494	17.9	17,043	55.5	30,721	30.5
Musoma Urban	23	5.1	12	2.7	418	92.2	0	0.0	0	0.0	453	5.3
Total	2,098	1.1	3,990	2.1	22,688	12.1	34,100	18.1	125,328	66.6	188,203	36.8

33.01m: Number of Households by Distance to Secondary Market by District for 2002/03 agricultural year

District	Secondary Market										Total number of households	Mean Distance
	Less than 1 km		1-2.9 km		3.0-9.9		10.0-19.9		Above 20 km			
	No of households	%	No of households	%	No of households	%	No of households	%	No of households	%		
Tarime	1,475	1.9	3,789	4.8	27,314	34.5	28,503	36.0	18,089	22.8	79,170	16.3
Serengeti	400	1.4	1,081	3.9	14,373	51.6	9,224	33.1	2,786	10.0	27,864	12.9
Musoma Rural	1,963	3.9	2,377	4.8	21,546	43.1	17,306	34.6	6,804	13.6	49,995	11.3
Bunda	916	3.0	2,919	9.5	15,467	50.3	6,546	21.3	4,872	15.9	30,721	9.6
Musoma Urban	0	0.0	0	0.0	12	2.5	23	5.1	419	92.4	453	27.6
Total	4,754	2.5	10,166	5.4	78,711	41.8	61,602	32.7	32,970	17.5	188,203	13.4

33.19a TYPE OF SERVICE: Number of Agricultural Households by Satisfaction of Using Veterinary Clinic and District, 2002/03 Agricultural Year

District	Satisfaction of Using Veterinary Clinic												Total number of households
	Very Good		Good		Average		Poor		No good		Not applicable		
	No of Households	%	No of Households	%	No of Households	%	No of Households	%	No of Households	%	No of Households	%	
Tarime	7,321	2	13,139	3	6,441	1	9,759	2	3,659	1	434,698	92	475,017
Serengeti	830	0	5,712	3	4,515	3	5,695	3	15,781	9	134,652	81	167,185
Musoma Rural	2,477	1	536	0	3,521	1	3,680	1	2,042	1	287,716	96	299,971
Bunda	536	0	4,487	2	2,590	1	8,071	4	160	0	168,480	91	184,324
Musoma Urban	24	1	48	2	13	0	12	0	0	0	2,624	96	2,721
Total	11,188	1	23,922	2	17,080	2	27,217	2	21,643	2	1,028,169	91	1,129,218

33.19b TYPE OF SERVICE: Number of Agricultural Households by Satisfaction of Extension Centre and District, 2002/03 Agricultural Year

District	Extension Centre										Total number of households
	Very Good		Good		Average		Poor		No good		
	No of Households	%	No of Households	%	No of Households	%	No of Households	%	No of Households	%	
Tarime	2,906	28	5,402	51	1,613	15	258	2	366	3	10,546
Serengeti	345	4	3,382	37	1,770	20	1,169	13	2,380	26	9,046
Musoma Rural	408	10	536	13	1,952	46	887	21	418	10	4,202
Bunda	75	1	3,174	54	1,338	23	1,239	21	0	0	5,826
Musoma Urban	0	0	0	0	0	0	0	0	0	0	0
Total	3,735	13	12,494	42	6,673	23	3,554	12	3,164	11	29,619

33.19c TYPE OF SERVICE: Number of Agricultural Households by Satisfaction of Using Research Station and District, 2002/03 Agricultural Year

District	Research Station										Total number of households
	Very Good		Good		Average		Poor		No good		
	No of Households	%	No of Households	%	No of Households	%	No of Households	%	No of Households	%	
Tarime	0	0	940	30	132	4	1,878	59	231	7	3,180
Serengeti	70	1	341	7	455	10	812	17	3,020	64	4,696
Musoma Rural	206	17	0	0	199	17	467	39	324	27	1,196
Bunda	80	4	0	0	158	8	1,709	88	0	0	1,947
Musoma Urban	0	0	0	0	0	0	12	100	0	0	12
Total	356	3	1,280	12	943	9	4,877	44	3,575	32	11,031

33.19d TYPE OF SERVICE: Number of Agricultural Households by Satisfaction of Using Plant Protection Lab. and District, 2002/03 Agricultural Year

District	Plant Protection Lab										Total number of households
	Very Good		Good		Average		Poor		No good		
	No of Households	%	No of Households	%	No of Households	%	No of Households	%	No of Households	%	
Tarime	131	5	402	15	132	5	1,607	61	367	14	2,639
Serengeti	0	0	341	8	325	7	807	18	3,018	67	4,491
Musoma Rural	583	43	0	0	116	8	232	17	440	32	1,371
Bunda	0	0	74	4	80	4	1,615	87	80	4	1,848
Musoma Urban	12	100	0	0	0	0	0	0	0	0	12
Total	727	7	817	8	652	6	4,262	41	3,904	38	10,362

33.19e TYPE OF SERVICE: Number of Agricultural Households by Satisfaction of Using Land Registration Office and District, 2002/03 Agricultural Year

District	Land Registration Office										Total number of households
	Very Good		Good		Average		Poor		No good		
	No of Households	%	No of Households	%	No of Households	%	No of Households	%	No of Households	%	
Tarime	266	3	1,608	19	1,350	16	3,743	45	1,434	17	8,401
Serengeti	139	2	691	12	612	10	1,010	17	3,411	58	5,863
Musoma Rural	469	32	0	0	254	18	465	32	255	18	1,442
Bunda	75	3	150	6	625	27	1,408	60	80	3	2,339
Musoma Urban	12	47	0	0	13	53	0	0	0	0	25
Total	960	5	2,449	14	2,854	16	6,625	37	5,180	29	18,069

33.19f TYPE OF SERVICE: Number of Agricultural Households by Satisfaction of Using Livestock development Centre and District, 2002/03 Agricultural Year

District	Livestock Development Centre										Total number of households
	Very Good		Good		Average		Poor		No good		
	No of Households	%	No of Households	%	No of Households	%	No of Households	%	No of Households	%	
Tarime	2,275	30	2,916	38	1,605	21	538	7	363	5	7,697
Serengeti	136	3	340	7	605	13	674	14	2,938	63	4,694
Musoma Rural	117	10	0	0	498	41	230	19	372	31	1,217
Bunda	77	14	158	29	80	14	237	43	0	0	552
Musoma Urban	0	0	0	0	0	0	0	0	0	0	0
Total	2,605	18	3,414	24	2,788	20	1,679	12	3,674	26	14,160

HOUSEHOLD FACILITIES

Table 34.1 Number of Agriculture Households by Type of Toilet and District During the 2002/03 Agriculture Year

District	Type of toilet					
	No Toilet	Flush Toilet	Traditional Pit Latrine	Improved Pit Latrine - hh Owned	Other Type	Total number of households
Tarime	22,708	1,747	53,245	1,335	135	79,170
Serengeti	3,986	903	22,633	342	0	27,864
Musoma Rural	9,247	466	39,752	530	0	49,995
Bunda	3,555	133	25,939	935	158	30,721
Musoma Urban	48	7	346	53	0	453
Total	39,544	3,255	141,915	3,195	293	188,203
%	21.0	1.7	75.4	1.7	0.2	100.0

34.2 Number of hoseholds reporting average number of rooms and type of Roofing Materials by District, 2002/03 Agricultural Year

District	Average Number of rooms per Household	Iron Sheets	Tiles	Concrete	Asbestos	Grass / Leaves	Grass & Mud	Other	Total number of households
Tarime	3	23,633	398	132	132	42,464	12,409	0	79,170
Serengeti	3	3,165	416	70	0	20,358	3,854	0	27,864
Musoma Rural	3	16,759	117	225	0	30,887	1,891	116	49,995
Bunda	3	10,162	235	236	0	19,854	234	0	30,721
Musoma Urban	3	332	0	0	0	121	0	0	453
Total	3	54,052	1,166	663	132	113,685	18,388	116	188,203
%		28.7	0.6	0.4	0.1	60.4	9.8	0.1	100

Table 34.3: Number of Agricultural Households by Type of Owned Assets and District during 2002/03 Agricultural Year

Type of Owned Asset	District										Total	
	Tarime		Serengeti		Musoma Rural		Bunda		Musoma Urban			
	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%
Radio	48,037	61	17,086	61	31,333	63	11,098	36	291	64	107,845	57.3
Landline phone	534	1	204	1	233	0	0	0	7	1	977	0.5
Mobile phone	2,227	3	278	1	611	1	909	3	72	16	4,098	2.2
Iron	24,315	31	7,153	26	12,221	24	6,803	22	188	41	50,680	26.9
Wheelbarrow	7,460	9	1,523	5	924	2	1,114	4	36	8	11,057	5.9
Bicycle	39,703	50	12,886	46	24,762	50	17,342	56	249	55	94,942	50.4
Vehicle	1,061	1	277	1	321	1	0	0	36	8	1,696	0.9
Television / Video	664	1	204	1	401	1	226	1	54	12	1,550	0.8
Total Number of Households	79,170	100	27,864	100	49,995	100	30,721	100	453	100	188,203	100.0

34.4: Number of Agricultural Households by Main Source of Energy Used for Lighting during 2002/03 Agricultural Year

Main Source of Energy for Lighting	District										Total	
	Tarime		Serengeti		Musoma Rural		Bunda		Musoma Urban			
	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%
Mains Electricity	404	1	0	0	352	1	133	0	48	11	936	0.5
Solar	133	0	273	1	0	0	157	1	0	0	563	0.3
Gas (Biogas)	136	0	0	0	116	0	0	0	0	0	252	0.1
Hurricane Lamp	25,386	32	6,062	22	16,212	32	12,524	41	178	39	60,361	32.1
Pressure Lamp	2,121	3	474	2	1,720	3	1,377	4	12	3	5,705	3.0
Wick Lamp	50,180	63	20,377	73	31,402	63	16,528	54	216	48	118,703	63.1
Candles	272	0	0	0	104	0	0	0	0	0	376	0.2
Firewood	538	1	679	2	90	0	0	0	0	0	1,307	0.7
Total	79,170	100	27,864	100	49,995	100	30,721	100	453	100	188,203	100.0

34.5: Number of Agricultural Households by Main Source of Energy Used for Cooking during 2002/03 Agricultural Year

Main Source of Energy for Cooking	District										Total	
	Tarime		Serengeti		Musoma Rural		Bunda		Musoma Urban			
	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%
Mains Electricity	134	0	67	0	234	0	78	0	0	0	512	0.3
Solar	0	0	68	0	0	0	0	0	0	0	68	0.0
Gas (Biogas)	0	0	0	0	0	0	0	0	0	0	0	0.0
Bottled Gas	269	0	70	0	0	0	80	0	0	0	419	0.2
Parraffin / Kerocine	136	0	0	0	0	0	0	0	0	0	136	0.1
Charcoal	1,968	2	209	1	660	1	545	2	79	17	3,460	1.8
Firewood	76,532	97	27,318	98	49,033	98	29,859	97	375	83	183,115	97.3
Crop Residues	130	0	134	0	69	0	0	0	0	0	333	0.2
Livestock Dung	0	0	0	0	0	0	160	1	0	0	160	0.1
Total	79,170	100	27,864	100	49,995	100	30,721	100	453	100	188,203	100.0

34.6: Number of Agricultural Households by Main Source of Drinking Water by Season (wet and dry) and District during 2002/03 Agricultural Year

Source	Season	District					
		Tarime	Serengeti	Musoma Rural	Bunda	Musoma Urban	Total
Piped Water	wet season	3,254	1,304	1,443	945	156	7,102
	dry season	2,159	2,006	2,278	945	156	7,544
Protected Well	wet season	5,353	6,503	3,550	5,091	12	20,509
	Dry season	4,956	5,677	3,684	5,185	12	19,514
Protected / Covered Spring	wet season	3,489	1,938	1,041	1,236	7	7,711
	Dry season	3,758	1,583	1,398	1,474	7	8,220
Uprotected Well	wet season	30,060	12,830	18,717	12,447	84	74,138
	Dry season	26,617	10,539	20,307	10,097	90	67,650
Unprotected Spring	wet season	17,802	3,221	7,606	1,520	19	30,168
	Dry season	17,552	3,272	8,203	1,441	19	30,487
Surface Water (Lake / Dam / River / Stream)	wet season	16,552	1,587	10,874	8,270	146	37,429
	Dry season	23,727	4,444	14,125	11,354	170	53,821
Covered Rainwater Catchment	wet season	937	69	341	80	0	1,427
	Dry season	135	70	0	146	0	351
Uncovered Rainwater Catchment	wet season	1,185	411	2,557	1,054	0	5,208
	Dry season	265	207	0	78	0	550
Water Vendor	wet season	0	0	0	0	0	0
	Dry season	0	66	0	0	0	66
Tanker Truck	wet season	0	0	0	0	0	0
	Dry season	0	0	0	0	0	0
Bottled Water	wet season	0	0	0	0	0	0
	Dry season	0	0	0	0	0	0
Other	wet season	538	0	3,866	78	31	4,512
	dry season	0	0	0	0	0	0
Total Agricultural Households per District		79,170	27,864	49,995	30,721	453	188,203

34.7: Proportion of Agricultural Households by Main Source of Drinking Water by Season (wet and dry) and District during 2002/03 Agricultural Year

Source	Season	District					
		Tarime	Serengeti	Musoma Rural	Bunda	Musoma Urban	Total
Piped Water	wet season	4	5	3	3	34	4
	dry season	3	7	5	3	34	4
Protected Well	wet season	7	23	7	17	3	11
	Dry season	6	20	7	17	3	10
Protected / Covered Spring	wet season	4	7	2	4	1	4
	Dry season	5	6	3	5	1	4
Uprotected Well	wet season	38	46	37	41	18	39
	Dry season	34	38	41	33	20	36
Unprotected Spring	wet season	22	12	15	5	4	16
	Dry season	22	12	16	5	4	16
Surface Water (Lake / Dam / River / Stream)	wet season	21	6	22	27	32	20
	Dry season	30	16	28	37	38	29
Covered Rainwater Catchment	wet season	1	0	1	0	0	1
	Dry season	0	0	0	0	0	0
Uncovered Rainwater Catchment	wet season	1	1	5	3	0	3
	Dry season	0	1	0	0	0	0
Water Vendor	wet season	0	0	0	0	0	0
	Dry season	0	0	0	0	0	0
Tanker Truck	wet season	0	0	0	0	0	0
	Dry season	0	0	0	0	0	0
Bottled Water	wet season	0	0	0	0	0	0
	Dry season	0	0	0	0	0	0
Other	wet season	1	0	8	0	7	2
	dry season	0	0	0	0	0	0

34.8: Number of Households Reporting Time Spent to and from Main Source of Drinking Water by Season (Wet and Dry) by District for 2002/03 agriculture year

Time Spent to and from Main Source of Drinking Water	Season	District				
		Tarime	Serengeti	Musoma Rural	Bunda	Musoma Urban
Less than 10	wet season	3,177	684	3,761	1,191	30
	Dry season	1,465	408	346	316	12
10 - 19 Minutes	wet season	15,861	3,916	8,080	4,528	71
	Dry season	12,270	2,394	4,967	2,959	82
20 - 29 Minutes	wet season	7,215	3,518	5,852	2,726	55
	Dry season	4,771	1,992	4,314	1,864	67
30 - 39 Minutes	wet season	24,775	8,961	13,125	7,400	164
	Dry season	19,912	6,323	11,138	6,087	153
40 - 49 Minutes	wet season	5,461	1,773	7,458	2,916	7
	Dry season	5,963	1,578	7,236	2,687	7
50 - 59 Minutes	wet season	5,516	483	2,389	609	37
	Dry season	4,069	342	1,883	369	37
above one Hour	wet season	17,164	8,530	9,330	11,350	91
	Dry season	30,719	14,827	20,111	16,438	97

34.9: Proportion of Households Reporting Time Spent to and from Main Source of Drinking Water by Season (Wet and Dry) by District for 2002/03 agriculture year

Time Spent to and from Main Source of Drinking Water	Season	District				
		Tarime	Serengeti	Musoma Rural	Bunda	Musoma Urban
Less than 10	wet season	4	2	8	4	7
	Dry season	2	1	1	1	3
10 - 19 Minutes	wet season	20	14	16	15	16
	Dry season	15	9	10	10	18
20 - 29 Minutes	wet season	9	13	12	9	12
	Dry season	6	7	9	6	15
30 - 39 Minutes	wet season	31	32	26	24	36
	Dry season	25	23	22	20	34
40 - 49 Minutes	wet season	7	6	15	9	1
	Dry season	8	6	14	9	1
50 - 59 Minutes	wet season	7	2	5	2	8
	Dry season	5	1	4	1	8
above one Hour	wet season	22	31	19	37	20
	Dry season	39	53	40	54	21

34.10: Number of Agricultural Households by Number of Meals the Household Normally Took per Day by District

Number of Meals per Day	District										Total	
	Tarime		Serengeti		Musoma Rural		Bunda		Musoma Urban			
	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%
One	2,149	3	1,251	4	317	1	78	0	0	0	3,794	2.0
Two	37,161	47	8,781	32	39,515	79	24,235	79	247	54	109,939	58.4
Three	39,727	50	17,487	63	10,164	20	6,253	20	207	46	73,838	39.2
Four	132	0	346	1	0	0	155	1	0	0	633	0.3
Total	79,170	100	27,864	100	49,995	100	30,721	100	453	100	188,203	100.0

34.11: Number of Households by Number of Days the Household Consumed Meat during the Preceding Week by District

Number of Days	District										Total	
	Tarime		Serengeti		Musoma Rural		Bunda		Musoma Urban			
	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%
Not Eaten	18,402	23	6,141	22	19,795	40	13,544	44	187	41	58,069	31
One	30,576	39	10,628	38	15,645	31	6,916	23	43	9	63,808	34
Two	19,211	24	6,971	25	10,065	20	5,337	17	127	28	41,712	22
Three	8,518	11	2,403	9	2,698	5	2,995	10	60	13	16,673	9
Four	1,563	2	963	3	888	2	620	2	30	7	4,065	2
Five	528	1	414	1	456	1	626	2	7	1	2,030	1
Six	132	0	70	0	225	0	398	1	0	0	825	0
Seven	239	0	274	1	223	0	285	1	0	0	1,022	1
Total	79,170	100	27,864	100	49,995	100	30,721	100	453	100	188,203	100

34.12: Number of Households by Number of Days the Household Consumed Fish during the Preceding Week by District

Number of Days	District										Total	
	Tarime		Serengeti		Musoma Rural		Bunda		Musoma Urban			
	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%
Not Eaten	13,481	17	4,919	18	2,625	5	2,382	8	0	0	23,407	12
One	18,020	23	9,250	33	2,586	5	4,117	13	25	5	33,998	18
Two	14,025	18	4,069	15	6,991	14	3,664	12	31	7	28,780	15
Three	7,866	10	3,470	12	5,684	11	3,741	12	79	17	20,841	11
Four	6,965	9	2,011	7	7,375	15	3,606	12	79	18	20,036	11
Five	8,307	10	2,965	11	7,196	14	3,463	11	107	24	22,038	12
Six	3,372	4	623	2	5,950	12	2,267	7	12	3	12,223	6
Seven	7,132	9	558	2	11,588	23	7,480	24	120	27	26,879	14
Total	79,170	100	27,864	100	49,995	100	30,721	100	453	100	188,203	100

34.13: Number of Households Reporting the Status of Food Satisfaction of the Household during the Preceding Year by District

Status of Food Satisfaction	District										Total	
	Tarime		Serengeti		Musoma Rural		Bunda		Musoma Urban			
	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%
Never	29,209	37	13,862	50	26,367	53	8,446	27	228	50	78,113	41.5
Seldom	29,434	37	9,172	33	14,242	28	11,835	39	116	26	64,799	34.4
Sometimes	3,949	5	2,427	9	2,740	5	1,412	5	18	4	10,545	5.6
Often	9,698	12	1,088	4	2,770	6	5,637	18	60	13	19,252	10.2
Always	6,880	9	1,315	5	3,877	8	3,391	11	31	7	15,493	8.2
Total	79,170	100	27,864	100	49,995	100	30,721	100	453	100	188,203	100.0

34.14: Number of Households by Type of Roofing Materials and District during the 2002/03 Agricultural Year

Roofing Materials	District										Total	
	Tarime		Serengeti		Musoma Rural		Bunda		Musoma Urban			
	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%
Iron Sheets	23,633	30	3,165	11	16,759	34	10,162	33	332	73	54,052	28.7
Tiles	398	1	416	1	117	0	235	1	0	0	1,166	0.6
Concrete	132	0	70	0	225	0	236	1	0	0	663	0.4
Asbestos	132	0	0	0	0	0	0	0	0	0	132	0.1
Grass / Leaves	42,464	54	20,358	73	30,887	62	19,854	65	121	27	113,685	60.4
Grass & Mud	12,409	16	3,854	14	1,891	4	234	1	0	0	18,388	9.8
Other	0	0	0	0	116	0	0	0	0	0	116	0.1
Total	79,170	100	27,864	100	49,995	100	30,721	100	453	100	188,203	100.0

34.15: Number of Households by Main Source of Cash Income and District during 2002/03 Agriculture Year

Main Source of Energy for Cooking	District										Total	
	Tarime		Serengeti		Musoma Rural		Bunda		Musoma Urban			
	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%	Number of Households	%
Sales of Food Crops	36,758	46	9,870	35	15,625	31	5,520	18	12	3	67,784	36.0
Sale of Livestock	3,698	5	2,893	10	1,651	3	2,841	9	12	3	11,095	5.9
Sale of Livestock Products	1,051	1	339	1	230	0	159	1	23	5	1,802	1.0
Sales of Cash Crops	2,395	3	2,902	10	3,439	7	9,376	31	18	4	18,131	9.6
Sale of Forest Products	1,203	2	2,076	7	350	1	588	2	0	0	4,217	2.2
Business Income	9,898	13	3,805	14	5,845	12	1,820	6	80	18	21,448	11.4
Wages & Salaries in Cash	4,216	5	1,237	4	2,252	5	880	3	61	13	8,646	4.6
Other Casual Cash Earnings	7,777	10	3,706	13	9,431	19	4,025	13	55	12	24,994	13.3
Cash Remittance	4,109	5	971	3	3,041	6	1,046	3	12	3	9,178	4.9
Fishing	7,404	9	0	0	7,255	15	3,045	10	128	28	17,832	9.5
Other	661	1	66	0	877	2	1,186	4	53	12	2,844	1.5
Not applicable	0	0	0	0	0	0	234	1	0	0	234	0.1
Total	79,170	100	27,864	100	49,995	100	30,721	100	453	100	188,203	100.0

APPENDIX III QUESTIONNAIRES

UNITED REPUBLIC OF TANZANIA

Confidential

Page Number ……..

Agriculture Sample Census 2002/03

ACLF 1: Sub-village leader listing form

Region _____ Code ☐☐	Ward _____ Code ☐☐☐
District _____ Code ☐☐	Village _____Code ☐☐

Name of Village Chairman:……..

Sub-village leader number	Name of sub-village leader	Number of households		Comments
		From office register	After enumeration	
(1)	(2)	(3)	(4)	(5)
☐☐		☐☐☐☐	☐☐☐☐	
☐☐		☐☐☐☐	☐☐☐☐	
☐☐		☐☐☐☐	☐☐☐☐	
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	Total	☐☐☐☐	☐☐☐☐	

Name of enumerator…… Signature ……. Date…….

Name of supervisor…… Signature ……. Date…….

UNITED REPUBLIC OF TANZANIA

Confidential

Interval ☐☐
Starting point ☐☐

Page Number……..

Agriculture Sample Census 2002/03

ACLF: 2 Household listing form - form for listing household heads and their agriculture activities

Region	_____	Code ☐☐	Name of Sub-village Leaader _____
District	_____	Code ☐	Subvillage leader code ☐☐
Ward	_____	Code ☐☐☐	
Village	_____	Code ☐☐	Name of Sub-village _____

Household Number	Household head name	Number of										✓ if the respodent qualifies to be a farmer *	Farmer Serial Numbers
			Cattle										
		✦ Fields	Total Number	Adult male cattle	Adult female cattle	Calves	Goats	Sheep	Pigs	poultry/ducks	Rabbit		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
☐☐☐☐													
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	Totals												

* **NOTE:** (Column 13) Place a "✓" if the household has at least 1 field over 25m^2 and/or keeps at least 1 Cow, 5 Goats/Sheep/Pigs or 50 Chicken/poultry or ducks

✦(Column 3) A field must be at least 25 m^2

Name of enumerator…….. Signature ……. Date……..….

Name of supervisor……. Signature ……. Date……..…….

UNITED REPUBLIC OF TANZANIA

Confidential

National Agriculture Sample Census 2002/03

ACLF: 3 Household listing of 15 selected farmers

Region _____ Code ☐☐

District _____ Code ☐☐

Ward _____ Code ☐☐☐

Village _____ Code ☐☐

S/N	Sub village leader number	Name of sub-village leader	Agriculture hh serial number	Name of selected head of household	Number of						
					Fields	Cattle	Goat	Sheep	Pig	Poultry /ducks	Rabbits
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(12)
01			☐☐☐								
02			☐☐☐								
03			☐☐☐								
04			☐☐☐								
05			☐☐☐								
06			☐☐☐								
07			☐☐☐								
08			☐☐☐								
09			☐☐☐								
10			☐☐☐								
11			☐☐☐								
12			☐☐☐								
13			☐☐☐								
14			☐☐☐								
15			☐☐☐								

Name of Enumerator:_____Signature_____Date_____

Name of Supervisor_____Signature_____Date_____

Ministry of Agriculture and Food Security, Ministry of Water and Livestock Development, Ministry of Cooperatives and Marketing and the National Bureau of Statistics

United Republic of Tanzania

ACQ 1 **CONFIDENTIAL**

Small holder/Small Scale Farmer Questionnaire

Agriculture Sample Census

2002/2003

Enumerator Name ..... Signature .....

	Hour	Minutes
Start time	□□	□□
End time	□□	□□

Date Enumerated □□ / □□ / □□ (d d / m m / y y)

Field level checking by:

District Supervisor:	Name	signature	Date / /	*To be completed by the supervisor **ONLY** after field/farm level checking of the enumeration process. This should be countersigned by the enumerator.*
Regional Supervisor:	Name	signature	Date / /	
National Supervisor:	Name	signature	Date / /	

District checking in Office:

District Supervisor	Name	signature	Date / /	*All questionnaires must be checked at the district office.*

For Use at National Level only:

Data Entered by	Name	signature	Date / /	*See back page for details of query*
Queried	Name	signature	Date / /	

Executed by the Ministry of Agriculture and Food Security, Ministry of Water and Livestock Development,
Ministry of Cooperatives and Marketing
and
National Bureau of Statistics

1.0 IDENTIFICATION DETAILS

1.1 Location

S/N	Location Name	Codes
1.1.1	Region ……	
1.1.2	District ……	
1.1.3	Ward ……	
1.1.4	Village ……	

1.2 Details of the **respondent** and **household head**

S/N		Codes
1.2.1	Name & number of **local leader** ……..	
1.2.2	Name & number of **household head** ……..	
1.2.3	**Sex** of household head (Male = 1, Female = 2)	
1.2.4	Name of **respondent** ……..	
1.2.5	**Relationship of Respondent** to Household Head	

Relationship to household head codes (Q 1.2.5)

Head of Household……1 Son/Daughter ……...3 Grandson/Granddaughter ……5 Other (friend, employee, etc)…8
Spouse ……..….2 Father/Mother ……..4 Other relative……...6

2.0 ACTIVITIES OF THE HOUSEHOLD

2.1 **Type** of Agriculture Household

Agriculture household codes(Q2.1)

Crops only……..1 Livestock only ……..2 Pastoralist……..3 Crops and Livestock ……..4

2.2 **Rank the following livelihood activities/source of income** of the household in order of importance

S/N	Livelihood/source of income activity.	Rank in order of importance 1=most 7=least	How important are each of these activities expressed in percentage.
	(1)	*(2)*	*(3)*
2.2.1	**Annual Crop** farming		%
2.2.2	**Permanent** crop farming		%
2.2.3	**Livestock** keeping/herding		%
2.2.4	**Off Farm Income**		%
2.2.5	**Remittances**		%
2.2.6	**Fishing/hunting** and gathering		%
2.2.7	**Tree/forest** resources (eg honey, firewood, timber,etc)		%
			1 0 0 %

Definition and working page for page 1

General Definitions

Small holder hh/small scale farm:
Should have between 25sq metres and 20 Hectares under production, and/or between 1 and 50 head of Cattle, and/or between 5 and 100 head of Sheep/Goats/Pigs, and/or between 50 and 1000 chickens/turkeys/ducks/rabbits.

Household: A group of people who occupy the whole or part of one or more housing units and makes joint provisions for food and/or other essentials for living.

Household Head: A person who is acknowledged by all other members of the household either by virtue of his age or standing in the household as the head. He/she should be a permanent resident of the house and he/she is the main person responsible for making decissions.

Agricultural Holding: This is an economic unit of agricultural production under single management. It consists of all livestock kept and all land used for agricultural production without regard to title. For the purpose of this survey, the agricultural holdings are restricted to those which meet one of the following conditions:

- Having or operated at least 25 sq meter of arable land
- Own or keep at least one head of cattle or five goats/sheep/pigs or fifty chicken/ducks/turkeys during the agricultural year 2002/03 (October 2002 to September 2003) .

Question Specific Definitions:

Type of Agriculture Holdings Codes (Q2.1):

- Crops only: A holding is referred to be a crops only holding if it has cultivated a piece of land equal or exceeding 25 sq Meter. This also applies to all households owning or have kept livestock whose number does not qualify such household to be an agricultural holding (No cattle, less than 5 goats/sheep/pigs, less than 50 chickens/turkeys/ducks/rabbits)

- Livestock only: A holding is referred to be a Livestock only holding if it has exercised Livestock husbandry only during the agricultural year. The livestock can be herded in search for areas of pasture, but the core household unit always remains in the same place and the herder is rarely away from this place for long periods at a time.

- Livestock pastoralism: This refers to a household which practices livestock production as its major income generating activity and a means of subsistence, but moves from one place to another searching for water and pasture for the livestock. This movement usually involves long distances and in many cases the whole household unit moves with the livestock and they have no permanent place of residence.

For both livestock only and pastoralism , the number of livestock has to be at least 1 head of cattle, 5 goats/sheep/pigs or 50 chickens/turkeys/ ducks/rabbits. This also applies to all households owning or have cultivated a piece of land less than 25 sq meter, which does not qualify such household be an agricultural holding.

- Both crops and livestock: A holding is referred to be a both crops and livestock if it has cultivated a piece of land equal or exceeding 25 sq meter and if such households is owning or have kept livestock whose number qualify such household be an agricultural holding.

Important livelihood activities/source of income (Q 2.2):

- Crop farming: This refers to a household where crop production is its major means of subsistence and income generation.

- Livestock farming/herding/pastoralism: This refers to a household where livestock farming/herding is its major means of subsistence & income generation.

- Off Farm Income This refers to cash generated from activities other than from the households holding. This can be from permanent employment (eg government/other), temporary employment/labouring and includes cash generated from working on other farmers farms.

-**Remittances:** Assistance from family members who are not currently part of the household, or from a relative or family friend. This assistance is usually in the form of cash but it can also be in-kind (eg food, clothes, building material, farm tools, etc). The money is a gift and is not paid back.

-Fishing/hunting and gathering The use of non farmed resources for food eg fishing, hunting wildlife and gathering mushrooms, berries, wild honey roots from uncultivated land.

Procedures for Questions:

Q 2.1 Type of agriculture household/holding

1. Using the options under the question classify the type of agriculture hh/holding

Note: If the hh had 1 acre of crops and raised 40 chickens during 2002/03 it is classified as **'Crops only'** as the number of chickens do not qualify the hh as keeping livestock.

Q 2.2 Important hh livelihood activities /source of income

1. Read the list in column 1 to the respondent and ask him to rank them in order of importance during the reference year.

2. In column 2 Indicate the importance of each activity by placing **'1'** against the most important, **'2'** against the second most important, etc until you reach **'7'** the least important activity/source of income.

Note: You must attempt to fill in all boxes. Most households will carry out these activities to a greater or lesser degree. You will normally have to probe to get remittances.

If the hh did not undertake an activity during the 2002/2003 agriculture year then mark the appropriate box in column 2 with an 'X'.

3. For each activity/source of income assign a percentage. The enumerator should assist the respondent in assigning the percentage based on the information provided by the farmer.

4. After completing column 3 make sure the percentages add up to 100.

Note: It is not essential to be 100% accurate. This question is just to give the relative importance of the different items in general terms

3.0 HOUSEHOLD INFORMATION

3.1 Give details of personal **particulars** of all household members beginning with the head of the household

S/N	Names of household members	Relation-ship to head	Sex M=1 F=2	Age (if age is above 99 years then write 99)	Survival of Parents		Not applicable for children under 5 years of age: Read & Write	Education Status	Education Level reached	Involvemen in farmin	Main activity (for aged 5 & above)	Off-farm Income Yes=1 No=2
					Mother	Father						
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*
3.1.1	……	1										
3.1.2	……											
3.1.3	……											
3.1.4	……											
3.1.5	……											
3.1.6	……											
3.1.7	……											
3.1.8	……											
3.1.9	……											
3.1.10	……											
3.1.11	……											
3.1.12	……											
3.1.13	……											
3.1.14	……											
3.1.15	……											
3.1.16	……											

Relation to head (Col 2)
Head of household ……1
Spouse ……2
Son/daughter ……3
Father/Mother ……4
Grandson/granddaughter .5
Other Relative ……6
Others ……8

Survival of Parents (Col 5 & 6)
Yes ……1
No ……2
Don't know ……3

Read & Write (Col 7)
Swahili ……1
English ……2
Swahili & English ……3
Any other language ……4
Don't Read/ Write ……5

Education Status (Col 8)
Attending School ……1
Completed ……2
Never attended School ……3

Involvement in farming activities (Col 10)
Works full time on farm …1
Works part-time on farm 2
Rarely works on farm ….3
Never works on farm……4

Education Level Reached (Col 9)

Primary Education	Secondary Education
Not of school age ……NA	Form one ……11
Under Standard One …. 00	Form two ……12
Standard One ……01	Form three ……13
Standard Two ……02	Form four ……14
Standard Three ……03	Form five ……15
Standard Four ……04	Form six ……16
Standard Five ……05	Training after Secondary Education ……17
Standard Six ……06	University & other tertiary Education ……18
Standard Seven ……07	Adult Education ……19
Standard Eight ……08	Not applicable ……99
Training after Primary Education ……09	
Pre Form One ……10	

Main activity (Col 11)
Crop Farming ……01
Livestock Keeping/Herding..02
Livestock Pastoralism……03
Fishing ……04
Paid employment:
- Government/parastatal ….05
- Private- NGO/mission/etc .06
Self employed (non farming)
- with employees ……07
- without employees ……08
Unpaid family helper (non agriculture) ……09
Not working & available……10
Not working & unavailable…11
Housemaker/housewife ……12
Student ……13
Unable to work /too old/ Retired/sick/disabled)……14
Other ……98

Definition and working page for page 2

Question Specific Definitions:

Relation to head (Col 2):

- Household Head: A person who is acknowledged by all other members of the household either by virtue of their age or standing as the household head.

Read and Write (Col 7):

- Any other language: Must be a written language.

For someone who can read and write in Swahili and any other language apart from English, the correct code is 1. For one who can read and write in English and any other language apart from Swahili the correct code is 2. Code 4 should only be used for another language but not English or Swahili

Education Level Reached (Col 9):

Indicate the highest level only. For those still attending school fill in the last year reached before the survey period. For example if a hh member is currently in standard 7 this year his highest grade reached is standard 6

Main Activity (Col 11):

- Crop farming: The persons main activity is crop production. This can be annual crops, vegetables, permanent crops or tree farming.

- Livestock farming/herding: The persons main activity is livestock farming/herding. The livestock can be herded in search for areas of pasture, but the core household unit always remains in the same place and the herder is rarely away from this place for long periods at a time. This category also includes fish farming but not fishing.

- Livestock pastoralism: The persons main activity is in moving livestock from one place to another searching for water and pasture for the livestock. This movement usually involves long distances and in many cases the whole household unit moves with the livestock and they may have no permanent place of residence.

-Paid employment - In full time employment earning a cash income

- Government/Parastatal - In full time employment for a government Ministry, Department or Board that is controlled by the Government
- Private/NGO/Mission/etc - employed by Non public/government organisation

-Self employee - works for own business for cash income

- With employees - Works for own business for cash and employs other workers
- Without employees - Works for own business for cash but does not employ other workers

- Not working but available to work - No productive activity but would like to have one.

- Not working & nor available for work - No productive activity and does not want to have one.

- Unable to work too old, too young, retired, disabled, etc

Off-farm Income (Col 12) - Income made from activities NOT on the HH's farming activities. This can be any off farm income generation activity and includes working for cash on other peoples farms.

Indicate whether each member was involved in an off farm income generating activity during 2002/03

Overview to section 3.0

Section 3.0 - Preliminary note

1. Make sure that you define the hh properly to ensure that all the members of the hh are included. Make sure you stress that the hh is not just the hh heads direct family and that it includes other people living and eating together with the family.

2. If you notice that his house is large or you see many people around his house and he has only given you small number of hh members enquire further until you are sure that you have captured all the hh members.

Procedures for questions

Section 3.0 - Household Information

1. For each household member complete columns 1, 2 & 3.

2. After completing columns 1, 2 & 3 for each household member go back to the first household member and complete the remaining columns for that member.

3. Repeat step 2 for the rest of the household members

IMPORTANT NOTE:
Cross check responses in columns 11 and 12 with section 2 especially in relation to:

off-farm income - if a hh member was involved in off farm income then there should be a response in question 2.2.4 and vice versa.

4.0 LAND ACCESS/OWNERSHIP/TENURE

4.1 Details of **area "owned" by the household** in the 2002/03 agricultural year. Give area reported by the respondent in **"acres".**

		Area in Acres
4.1.1	Area **Leased/Certificate of ownership**	
4.1.2	Area owned under **Customary Law**	
4.1.3	Area **Bought** from others	
4.1.4	Area **Rented** from others	
4.1.5	Area **Borrowed** from others	
4.1.6	Area **Share -cropped** from others	
4.1.7	Area under **Other** forms of tenure ……	
	Total area	

4.2 Was all land available to the hh used during 2002/03 (Yes=1, No=2) ☐

4.3 Do you consider that you have sufficient land for the hh (Yes=1, No=2) ☐

4.4 Do any female members of the hh own or have customary right to land (Yes=1, No=2) ☐

5.0 LAND USE

5.1 Area operated by household under **different forms of land use** during 2002/03 agriculture year. Give area reported by the respondent in **"acres"**.

		Area in Acres	Calculation area
5.1.1	Area under **Temporary Mono-crops**		
5.1.2	Area under **Temporary Mixed** crops (eg Maize & beans)		
5.1.3	Area under **Permanent Mono-crops**		
5.1.4	Area under **Permanent Mixed** crops (eg bananas, coffee & trees)		
5.1.5	Area under **Permanent/temporary mix** (eg bananas & maize)		
5.1.6	Area under **Pasture**		
5.1.7	Area under **Fallow**		
5.1.8	Area under **Natural Bush**		
5.1.9	Area under **Planted Trees**		
5.1.10	Area **Rented** to others		
5.1.11	Area **Unusable**		
5.1.12	Area of **Uncultivated Usable** land (excluding fallow)		
	Total area		

6.0 ACCESS AND USE OF RESOURCES

6.1 In the following table indicate the distance to the different fields used by the household

S/N	Field Number	Distance (in kilometres) from field to: Homestead	Nearest road	Nearest Market
6.1.1	1			
6.1.2	2			
6.1.3	3			

Distance codes

less than 100m ……1 between 2 and 3km ….6
between 100 and 300m .2 between 3 and 5km …..7
between 300 and 500m .3 between 5 and 10 km ..8
between 500 and 1km....4 Over 10 km ……....9
between 1 and 2km ……5

6.2 In the following table indicate the distance and use of the following communal resources

S/N	Communal Resource	Distance to resource (km) dry season	wet season	Main hh use
	(1)	*(2)*	*(3)*	*(4)*
6.2.1	Water for **humans**			
6.2.2	Water for **livestock**			
6.2.3	Communal **Grazing**			
6.2.4	Communal **Firewood**			
6.2.5	Wood for **Charcoal**			
6.2.6	**Building** poles			
6.2.7	Forest for **bees (honey)**			
6.2.8	**Hunting(animal products)**			
6.2.9	**Fishing (Fish)**			

Instructions for distance to resource (Col 2 and 3):
If under 1km, write 0
If above 1km round to whole numbers
eg 1.5km= 2km, 1.25km= 1km

Main hh use (Col 4)

Home or farm Consumption/utilisation…..1
Sold to Neighbours……2
Sold to trader on the farm……3
Sold to village market ……4
Sold to local wholesale market……5
Sold to major wholesale market ……6
Not used by household……7
Not available ……8

Definition and working page for page 3

Question Specific Definitions

Section 4.1 - Land Access/Ownership

Lease/Certificate of Ownership Area under lease/certificate of ownership refers to the area for which the household possesses a government issued leasehold title or certificate of ownership. The land will normally be officially surveyed and boundaries marked. This includes leased land bought from others where the lease/certificate of ownership has been transferred.

Customary Law: This refers to the land which the hh does not have an official government title to but its right of use is granted by the traditional leaders. This user-right agreement does not have to be granted directly by the village leaders as right of access may be passed on through heredity.

Bought: This refers to the area of customary land that has been bought from others. This land does not have an official title and therefore is not leasehold.

Rented from others: Land rented from others for Cash or for a fixed amount in crop produce (eg fixed number of bags at harvest).

Borrowed: Use granted by land owner free of charge. Land owner can either be a lease holder or has right of access through customary law.

Share Cropping: where the hh is permitted to use land which is then paid for from a percentage of the harvested crop.

Section 5.0 Land Use

- Temporary crops: are sown and harvested during the same agricultural year

- **Permanent crops:** are sown or planted once and then , they occupy the land for some years and need not to be replanted after each annual harvest. Permanent crops are mainly trees (e.g., apples) but also bushes and shrubs (e.g., berries), palms (e.g., dates), vines (e.g., grapes), herbaceous stems (e.g., bananas) and stemless plants (e.g., pineapples).

- **Mixed Crops:** This is a mixture of two or more crops planted together and mixed in the same plot/field. The two crops can either be randomly planted together or they can be planted in a particular patterm eg intercropping (1 row of maize and 1 row of beans). A field that has been divided into plots for different crops is not mixed. This is further subdivided into:

Permanent Mixed -two or more permanent crops grown together,
Permanent/Temporary Mix - permanent crop and annual crop together,
Temporary Mixed - two or more temporary, annual crops grown together.

- **Pasture Land:** This is an area of owned/allocated land which is set aside for livestock grazing. It can be improved pasture where the farmer has planted grass, applied fertilized or applied other production increasing technologies to improve the grazing. Or it can be rough pasture.

- **Fallow:** This is the area of land that is normally used for crop production, but is not used for crop production during a year or a number of years. This is normally to allow for self generation of fertility/soil structure and is often an integral part of the crop rotation system.

- **Natural Bush:** Land which is considered productive but is not under cultivation or used extensively for livestock production and has naturally growing shrubs and trees.

-**Planted trees:** Land which is used for planting trees for poles or timber

- **Unusable:** Land that is known to be non-productive for agriculture purposes

Uncultivated Usable: This is land that was not used for reasons other than fallow. The reasons could be lack of inputs/money/rainfall/etc

Distance to fields (Q6.1):

-fields A field is a contiguous piece of land holding which the farmer considers as a single entity. The field may be divided into plots for growing different crops. A holding may consist of one or more fields in different localities.

Use of Communal Resources (Q6.2):

-Communal resources - refers to the place on which all individual households can have access to. It is not individually owned or controlled by one hh.

NOTE: The listed resources refers to communal resources and not those individually owned or part shared. The resource has to be freely accessible to the whole village

Overview to section 4

Section 4.0 - Preliminary note

Land Access/ Ownership

Access/Ownership refers to the area utilized by the members of the household. This does not include communal land where the resources are shared between households. It does include official communal land that the hh has sole access to eg a plot for crop farming in the communal area.

Procedures for Questions

Section 4.0 - Land Ownership

1. Ask the respondent if he knows the total area of land the household has sole access to. If he knows make a note in the calculation space

2. Ask the respondent the area of the different land ownership categories the household has sole access to (Q4.1.1 to 4.1.7) and record in the appropriate spaces.

3. Add up the area of the different categories of land and compare it with the total area obtained in step 1 (if the respondent provided the information).

4. If the total area is different find out which one is correct and make amendments where appropriate.

Section 5.0 - Land Use

1. Ask the respondent the area of the different landuse categories the household has sole access to (Q5.1.1 to 5.1.12) and record in the appropriate spaces.

2. Add up the area of the different categories of land and compare it with the total area obtained in section 4.0. The total area should be the same.

3. If the total area is different find out which one is correct and make amendments where appropriate.

Section 6.2 Communal resources

Note: the code "Not available" means that the resource does not exist. The code "Not Used" means that the resource does exist but is not used by the hh.

7.0 ANNUAL CROP AND VEGETABLE PRODUCTION - SHORT RAINY SEASON

7.1.1 Did the hh **plant** any crops during the **Short Rainy** season? (Yes = 1, No=2) ☐ *If the response is **'NO'** give main reason* ☐ *Then go to section 7.2*

Main Reason (Above) *No rains.....1 Rains came too late .....2 Does not plant annual crops .....3 No money 4 Don't get Vuli season ..5 Illness/social problems .....6 Has irrigation & does not follow season (give annual production in Masika) 7*

7.1.2 For each crop planted during 2002/03 **Short Rainy** season provide the following information

				Planting		Inputs						Harvesting & Storage						Marketing	
Crop Name	Crop Code	Land Clea-ring	Soil prep-arat-ion	Planned area (acres)	Actual Planted area (acres)	% impr-oved seed	Irrig-at-ion use	Fer-til-iser use	Her-bic-ide use	Fun-gic-ide use	Pest-tic-ide use	How harv ested	How thres hed	Area Harvested (acres)	main prod-uct code	Quantity harvested (Kgs)	Quantity Stored (kgs)	Quantity sold (kgs)	Mostly sold to
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*	*(13)*	*(14)*	*(15)*	*(16)*	*(17)*	*(18)*	*(19)*	*(20)*
.....																			
.....																			
.....																			
.....																			
.....																			
.....																			
.....																			
.....																			
.....																			
Total Planned/Planted												**Total area harvested**							

7.1.3 Main reason for difference between **Area Planned** and **Area Planted** ☐

7.1.4 Main reason for difference between **Area Planted** and **Area Harvested** ☐

Land Clearing (Col 3)
Mostly bush clearance ...1
Mostly hand slashing 2
Mostly tractor slashing ...3
Mostly burning 4
No land clearing.....5

Soil preparation Method (Col 4)
Mostly tractor ploughing .1
Mostly Oxen ploughing ..2
Mostly Hand cultivation ..3

Improved seed Use (Col 7)
all Improved 1
approx 3/4 improved.....2
approx 1/2 improved.....3
approx 1/4 improved.....4
less than 1/4 improved ..5
No improved seed used.6

Irrigation Use (Col 8)
Used on all crop 1
Used on 3/4 of crop 2
Used on 1/2 of crop.....3
Used on 1/4 of crop 4
Used on less than 1/4....5
Not used 6

Fertiliser codes (Col 9)
Mostly Farm Yard Manure 1
Mostly Compost 2
Mostly Inorganic fertiliser ..3
No fertiliser applied 4

Agrochemical use codes (Col 10,11 &12)
Used on all crop 1
Used on 3/4 of crop 2
Used on 1/2 of crop.....3
Used on 1/4 of crop 4
Used on less than 1/4 5
Not used 6

Threshed/harvested (Col13 & 14)
By hand 1
By draft animal 2
By human powered tool.....3
By engine driven machine...4
Not applicable 9

Main product (Col 16)
Dry Grain.....1
Green cob/green pod.....2
Green leaves & Stem.....3
Straw, dry stems etc 4
Root, tuber, etc 5
Flower eg pyrethrum 6
Fruit/bunch 7
Other.....8
Not harvested yet 9

Mostly sold to (Col 20)
Neighbour.....01
Local market/trade store 02
Secondary Market..03
Tertiary Market 04
Marketing Coop 05
Farmer Association06
Largescale farm 07
Trader at Farm 08
Contract Partner ...09
Did not sell 10
Other 98

Reason for difference between area planned and planted (Q7.1.3)
Drought 1
Floods 2
Access to land preparation tools (Draft animal/tractors).3
Credit 4
Access to seeds/planting material.....5
Access to other inputs 6
Other 8
Not applicable 9

Reason for difference between area planted and harvested (Q7.1.4)
Drought 1
Rain/flood damage 2
Fire damage 3
Pest damage 4
Animal damage 5
Theft 6
Illness/social problems 7
Other 8
Not applicable 9

Definitions and working page for page 4

Working table for the calculation of area occupied by annual crop in a mixture

Crop mixture 1	Crop Name	Total area of mix (acre)	Ground area/plant (ACRE)	Total no. of plants	Total ground area of plants (ACRES)
(a)	*(b)*	*(c)*	*(d)*	*(e)*	*(f)*
Permanent crop 1			0.00		0 .
Permanent crop 2			0.00		0 .
Permanent crop 3			0.00		0 .
Permanent crop 4			0.00		0 .
Total Area of permanent crops in mix					0 .
REMAINING AREA UNDER TEMPORARY CROPS					.
				crop%	crop area
Temporary/permanent crop name 1					.
Temporary/permanent crop name 2					.
Temporary/permanent crop name 3					.
Total area check	.			Crop total check	.

Crop mixture 2	Crop Name	Total area of mix (acre)	Ground area/plant (ACRE)	Total no. of plants	Total ground area of plants (ACRES)
(a)	*(b)*	*(c)*	*(d)*	*(e)*	*(f)*
Permanent crop 1			0.00		0 .
Permanent crop 2			0.00		0 .
Permanent crop 3			0.00		0 .
Permanent crop 4			0.00		0 .
Total Area of permanent crops in mix					0 .
REMAINING AREA UNDER TEMPORARY CROPS					.
				crop%	crop area
Temporary/permanent crop name 1					.
Temporary/permanent crop name 2					.
Temporary/permanent crop name 3					.
Total area check	.			Crop total check	.

Land Clearing: Refers to removing trees/bush/grass prior to ploughing
Soil Preparation: Refers to the seedbed preparation (ploughing, harrowing, etc)
Planned Area: Area in **Acres** the household planned to plant before the season started
Actual Planted Area: The area in **Acres** the household was able to plant.
Area Harvested: The area in **Acres** that produced a harvest. This is the same as the area planted minus the area that was destroyed by major flood/pest/ animal/etc damage.

Temporary/Annual Crop:
Crops which are planted and harvested within a period of 12 months after which time the plants die. Most annual crops are planted and harvested on a seasonal basis.

Cash Crop Codes:

Code	Crop
50	Cotton
51	Tobacco
53	Pyrethrum
62	Jute
19	Seaweed

Crop Codes (Cereals /tubers/roots):

Code	Crop
11	Maize
12	Paddy
13	Sorghum
14	Bulrush Millet
15	Finger Millet
16	Wheat
17	Barley
22	Sweet Potatos
23	Irish potatos
24	Yams
25	Cocoyams
26	Onions
27	Ginger

Vegetable Codes:

Co -de	Crop
86	Cabbage
87	Tomatoes
88	Spinach
89	Carrot
90	Chillies
91	Amaranths
92	Pumpkins
93	Cucumber
94	Egg Plant
95	Water Mellon
96	Cauliflower

Crop Codes Legumes Oil & fruit:

Code	Crop
31	Beans
32	Cowpeas
33	Green gram
35	Chick peas
36	Bambara nuts
37	Field peas
41	Sunflower
42	Simsim
43	Groundnut
47	Soyabeans
48	Caster seed

Instructions for calculating the area of mixed crops in a mixture.

A. If the mixed crop is mixed annual only enter the total area of the field in the REMAINING AREA UNDER TEMPORARY CROPS. and goto step 1 of these instructions.

B. If the mixed crop is mixed permanent and annual try to get the % occupied by the different crops and calculate the area of annual crops outlined in step 1. Otherwise use the number of trees method to calculate the area of annual crops in the mix, Step C

C. Number of trees method to calculate annual crop areas in a peranent-annual crop mix/

(i) list each of the permanent crops in column b and enter the ground area per acre for each permanent crop (from instructions for page 6) in column 'd'.

(ii) obtain the number of permanent trees in the mix from the respondent and enter the number in column 'e'.

(iii) calculate the area occupied by each crop by multiplying column 'd' with column 'e' and sum these to obtain the total area of permanent crops in the mix.

(iv) subtract the total area of permanent crops in the mix from the total area of mix and enter the result in the total area under temporary crops.

(v) proceed to step 1 to calculate the area under each temporary crop.

1. Enter the name of each annual crop in the mix & estimate the percentage of each crop.
2. Using the percentages for each crop calculate the area of each crop from the REMAINING AREA UNDER TEMPORARY CROPS.
3. After completing this exercise for all fields, sum the area of each crop in the mix plus any monocrops and enter totals in section 7.1 col 6.
4. Obtain an estimate of the planned area for each crop and enter it in column 5
5. If the area harvested is different to the area planted estimate the harvest area
6. Once the quantity harvested is obtained calculate the Yield (Metric tonnes/acre) & compare the figure with the norms given in the crop codes box. If it is excessively different check the area and the amount harvested.

7.2 ANNUAL CROP AND VEGETABLE PRODUCTION - LONG RAINY SEASON

7.2.1 Did the hh **plant** any crops during the **LONG RAINY** season? (Yes=1 No=2) ☐ *If the response is **'NO'** give main reason* ☐ *Then go to section 7.3*

Main Reason (Above) *No rains.....1 Rains came too late .....2 Does not plant annual crops .....3 No money 4 Illness/social problems ..5*

7.2.2 For each crop planted during 2002/03 **Long Rainy** season provide the following information

				Planting		Inputs							Harvesting & Storage					Marketing	
Crop Name	Crop Code	Land Clea-ring	Soil prep-arat-ion	Planned area (acres)	Actual Planted area (acres)	% impr-oved seed	Irrig-at-ion use	Fer-til-iser use	Her-bic-ide use	Fun-gic-ide use	Pest-tic-ide use	How harv ested	How thres hed	Area Harvested (acres)	main prod-uct code	Quantity harvested (Kgs)	Quantity Stored (Kgs)	Quantity sold (kgs)	mostly sold to
(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*	*(10)*	*(11)*	*(12)*	*(13)*	*(14)*	*(15)*	*(16)*	*(17)*	*(18)*	*(19)*	*(20)*
.....																			
.....																			
.....																			
.....																			
.....																			
.....																			
.....																			
.....																			
.....																			
Total Planned/Planted												**Total area harvested**							

7.2.3 Main reason for difference between **Area Planned** and **Area Planted** ☐

7.2.4 Main reason for difference between **Area Planted** and **Area Harvested** ☐

Land Clearing (Col 3)
Mostly bush clearance ...1
Mostly hand slashing 2
Mostly tractor slashing ...3
Mostly burning 4
No land clearing 5

Soil preparation Method (Col 4)
Mostly tractor ploughing .1
Mostly Oxen ploughing ..2
Mostly Hand cultivation ..3

Improved seed Use (Col 7)
all Improved 1
approx 3/4 improved.....2
approx 1/2 improved.....3
approx 1/4 improved.....4
less than 1/4 improved ..5
No improved seed used.6

Irrigation Use (Col 8)
Used on all crop 1
Used on 3/4 crop 2
Used on 1/2 crop 3
Used on 1/4 of crop.....4
Used on less than 1/4 ...5
Not used 6

Fertiliser codes (Col 9)
Mostly Farm Yard Manure 1
Mostly Compost 2
Mostly Inorganic fertiliser ..3
No fertiliser applied 4

Agrochemical use codes (Col 10,11 &12)
Used on all crop 1
Used on 3/4 of crop 2
Used on half of crop.....3
Used on 1/4 of crop 4
Used on less than 1/4 5
Not used 6

Threshed/harvested (Col13 & 14)
By hand 1
By draft animal 2
By human powered tool.....3
By engine driven machine...4
Not applicable 9

Main product (Col 16)
Dry Grain.....1
Green cob/green pod.....2
Green leaves & Stem.....3
Straw, dry stems etc 4
Root, tuber, etc 5
Flower eg pyrethrum 6
Fruit/bunch.....7
Others 8
Not harvested yet 9

Mostly sold to (Col 20)
Neighbour.....01
Local market/trade store 02
Secondary Market..03
Tertiary Market 04
Marketing Coop 05
Farmer Association06
Largescale farm 07
Trader at Farm 08
Contract Partner ...09
Did not sell 10
Other 98

Reason for difference between area planned and planted (Q7.2.3)
Drought 1
Floods 2
Access to land preparation tools (Draft animal/tractors).3
Credit 4
Access to seeds/planting material.....5
Access to other inputs 6
Other 8
Not applicable 9

Reason for difference between area planted and harvested (Q7.2.4)
Drought 1
Rain/flood damage 2
Fire damage 3
Pest damage 4
Animal damage 5
Theft 6
Illness/social problems 7
Other 8
Not applicable.....9

Definitions and working page for page 5

Working table for the calculation of area occupied by annual crop in a mixture

Crop mixture 1	Crop Name	Total area of mix (acre)	Ground area/plant (ACRE)	Total no. of plants	Total ground area of plants (ACRES)
(a)	*(b)*	*(c)*	*(d)*	*(e)*	*(f)*
Permanent crop 1			0.00		0.
Permanent crop 2			0.00		0.
Permanent crop 3			0.00		0.
Permanent crop 4			0.00		0.
Total Area of permanent crops in mix					0.
REMAINING AREA UNDER TEMPORARY CROPS					.
				Temp crop%	Temp crop area
Permanent/Temporary crop name 1					.
Permanent/Temporary crop name 2					.
Permanent/Temporary crop name 3					.
Total area check	.		Temoporary crop total check		.

Crop mixture 2	Crop Name	Total area of mix (acre)	Ground area/plant (ACRE)	Total no. of plants	Total ground area of plants (ACRES)
(a)	*(b)*	*(c)*	*(d)*	*(e)*	*(f)*
Permanent crop 1			0.00		0.
Permanent crop 2			0.00		0.
Permanent crop 3			0.00		0.
Permanent crop 4			0.00		0.
Total Area of permanent crops in mix					0.
REMAINING AREA UNDER TEMPORARY CROPS					.
				Temp crop%	Temp crop area
Temporary/permanent crop name 1					.
Temporary/permanent crop name 2					.
Temporary/permanent crop name 3					.
Total area check	.		Temoporary crop total check		.

Land Clearing: Refers to removing trees/bush/grass prior to ploughing
Soil Preparation: Refers to the seedbed preparation (ploughing, harrowing, etc)
Planned Area: Area in **Acres** the household planned to plant before the season started
Actual Planted Area: The area in **Acres** the household was able to plant.
Area Harvested: The area in **Acres** that the household got most of its production from. This is the same as the area planted minus the area that was destroyed by major flood/pest/ animal/etc damage

Temporary/Annual Crop: Crops which are planted and harvested within a period of 12 months after which time the plants die. Most annual crops are planted and harvested on a seasonal basis.

Cash Crop Codes:

Code	Crop
50	Cotton
51	Tobacco
53	Pyrethrum
62	Jute
19	Seaweed

Crop Codes (Cereals /tubers/roots):

Code	Crop
11	Maize
12	Paddy
13	Sorghum
14	Bulrush Millet
15	Finger Millet
16	Wheat
17	Barley
22	Sweet Potatos
23	Irish potatos
24	Yams
25	Cocoyams
26	Onions
27	Ginger

Vegetable Codes:

Code	Crop
27	Ginger
86	Cabbage
87	Tomatoes
88	Spinach
89	Carrot
90	Chillies
91	Amaranths
92	Pumpkins
93	Cucumber
94	Egg Plant
95	Water Mellon
96	Cauliflower
20	Garlic

Crop Codes Legumes Oil & fruit:

Code	Crop
31	Beans
32	Cowpeas
33	Green gram
35	Chick peas
36	Bambara nuts
37	Field peas
41	Sunflower
42	Simsim
43	Groundnut
47	Soyabeans
48	Caster seed

Instructions for calculating the area of mixed crops in a mixture.

A. If the mixed crop is mixed annual only enter the total area of the field in the REMAINING AREA UNDER TEMPORARY CROPS. and goto step 1 of these instructions.

B. If the mixed crop is mixed permanent and annual try to get the % occupied by the different crops and calculate the area of annual crops outlined in step 1. Otherwise use the number of trees method to calculate the area of annual crops in the mix (Step C).

C. Number of trees method to calculate annual crop areas in a peranent-annual crop mix
- (i) list each of the permanent crops in column b and enter the ground area per acre for each permanent crop (from instructions for page 6) in column 'd'.
- (ii) obtain the number of permanent trees in the mix from the respondent and enter the number in column 'e'.
- (iii) calculate the area occupied by each crop by multiplying column 'd' with column 'e' and sum these to obtain the total area of permanent crops in the mix.
- (iv) subtract the total area of permanent crops in the mix from the total area of mix and enter the result in the total area under temporary crops.
- (v) proceed to step 1 to calculate the area under each temporary crop.

1. Enter the name of each annual crop in the mix & estimate the percentage of each crop.
2. Using the percentages for each crop calculate the area of each crop from the REMAINING AREA UNDER TEMPORARY CROPS.
3. After completing this exercise for all fields, sum the area of each crop in the mix plus any monocrops and enter totals in section 7.1 col 6.
4. Obtain an estimate of the planned area for each crop and enter it in column 5
5. If the area harvested is different to the area planted estimate the harvest area
6. Once the quantity harvested is obtained calculate the Yield (Metric tonnes/acre) & compare the figure with the norms given in the crop codes box. If it is excessively different check the area and the amount harvested.

7.3 PERMANENT/PERENNIAL CROPS AND FRUIT TREE PRODUCTION

7.3.1 Does your household have any **permanent/perennial crops or fruit trees** (Yes=1, No=2) [1]

7.3.2 For each of the **permanent crops and fruit trees** owned by the household provide the following informatior

		Size of production unit			Inputs					Harvesting & Storage						Marketing	
		MONOCROP	MIXED CROP														
Perm-anent Crop Name	Perman-ent crop/ fruit tree crop Code	Area of Plants/ trees/Bushes in MONO CROP (acres)	Area covered by Permanent Crop in a MIXED CROP (acre)	Number of permanent Plants/trees in a MIXED CROP	Irrig-at-ion use	Fert-ilis-er use	Herb-ic-ide use	Fun-gic-ide use	Pest-ici-de use	Area Harvested (acres)	Number of mature plants	main prod-uct code	Quantity harvested (kgs)	If no harvest give re-ason	Quantity Stored (Kgs)	Quantity sold (kgs)	mostly sold to
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)
……																	
……																	
……																	
……																	
……																	
……																	
……																	
……																	
……																	

Irrigation Use (Col 6)
Used on all crop ……..1
Used on most crop ……..2
Used on half crop ……..3
Used on small amount of crop..4
Not used on crop ……..5

Fertiliser codes (Col 7)
Mostly Farm Yard Manure……1
Mostly Compost ……..2
Mostly Inorganic fertiliser …….3
No fertiliser applied ……..4

Agrochemical use codes (Col 8, 9 & 10)
Used on all crop ……1
Used on 3/4 of crop ……..2
Used on 1/2..of crop……..3
Used on 1/4 of crop ……..4
less than 1/4 of crop …….5
Not used ……6

Main product (Col 13)
Dry Grain……..1
Green cob/green pod..2
Green leaves & Stem..3
Straw, dry stems etc ...4
Root, tuber, etc ……..5
Flower ……..6
Fruit/bunch……..7
Other ……..8
Not harvested yet …..9

Main Reason for no harvest(Col 15)
Crop not harvested yet ……..1
Drought ……..2
Rain/flood damage ……..3
Fire damage ……..4
Pest damage ……..5
Animal damage ……..6
Theft ……..7
Other ……..8
Not applicable ……..9

Mostly sold to (Col 18)
Neighbour……..01
Local market/trade store…..02
Secondary Market ……..03
Tertiary Market ……..04
Marketing Coop ……..05
Farmer Association ……..06
Largescale farm ……..07
Trader at farm ……..08
Contract Partner ……..09
Did not sell ……..10
Other ……..98

Definitions and working page for page 6

Permanent Crop:
Permanent crops: are sown or planted once and then , they occupy the land for some years and neec not to be replanted after each annual harvest. Permanent crops are mainly trees (e.g., apples) but also bushes and shrubs (e.g., berries), palms (e.g., dates), vines (e.g., grapes), herbaceous stems (e.g., bananas) and stemless plants (e.g., pineapples).

Total number of plants:
This includes both mature harvestable plants and immature non harvestable plants.

Number of mature plants: This is the number of plants which bared harvest.

Instructions for Permanent crop mono stands and mixtures

A. For fields that are **monocrop permanent, ONLY** enter the **area of plants in column 3.**

B. For fields that are **mixed permanent** calculate the area of each crop based on the **% occupied by each crop method** (NOT using the number of trees method) and **ONLY** enter the area in **column 4**

C. For fields that are **mixed permanent/annual** either:
- **ONLY** enter the **area** in **column 4** if the area of the permanent crop was based on the **% occupied by each crop method**

OR

- **ONLY** enter the **number** of trees in **column 5** if the number of permanent crop plants was provided

Permanent crops (oils):

Code	Crop	Ground area/plant
44	Palm Oil	0.00049
45	Coconut	0.00037
46	Cashewnut	0.00062

Permanent (Cash crops)

Code	Crop	Ground area/plant
53	Sisal	0.00012
54	Coffee	0.00049
55	Tea	0.00037
56	Cocoa	0.00049
57	Rubber	0.00099
58	Wattle	0.00099
59	Kapok	0.00124
60	Sugar Cane	0.00012
61	Cardamom	0.00049
63	Tamarin	0.00099
64	Cinamon	0.00124
65	Nutmeg	0.00099
66	Clove	0.00074
18	Black Pepper	0.00037
34	Pigeon pea	0.00025
21	Cassava	0.00019
75	Pineapple	0.00006

Permanent Crops:

Code	Crop	Ground area/plant
70	Passion Fruit	0.00074
71	Banana	0.00037
72	Avocado	0.00099
73	Mango	0.00099
74	Papaw	0.00037
76	Orange	0.00074
77	Grapefruit	0.00074
78	Grapes	0.00012
79	Mandarin	0.00074
80	Guava	0.00074
81	Plums	0.00074
82	Apples	0.00074
83	Pears	0.00074
84	Peaches	0.00074
85	Lime/lemon	0.00074
68	Pomelo	0.00099
69	Jack fruit	0.00074
97	Durian	0.00074
98	Bilimbi	0.00074
99	Rambutan	0.00074
67	Bread fruit	0.00099
38	Malay apple	0.00074
39	Star fruit	0.00074

Working Area/calculation space

7.4 Main use of **Secondary Products**

7.5 Did you use **Secondary Products** from any of your crops during the 2002/03 year. (Yes=1, No=2) ☐

*If the response is **'NO'** go to section 8.0*

7.6 List the **main crops** with **secondary products** and provide the following details:

S/N	Crop name	Crop Code	Secondary product	Prod code	Used for	Unit	Total no of Units	No of units sold	Total value of sold units (Tsh.)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
7.6.1	……		……						
7.6.2	……		……						
7.6.3	……		……						
7.6.4	……		……						
7.6.5	……		……						
7.6.6	……		……						

Main product (Col 4)
Green leaves & Stem..1 Flower …4
Straw, dry stems etc …2 Fruit ……5
Root, tuber, etc ……..3 Other …..8

Mainly used for (Col 5)
Feeding to livestock ..1 Consumed by hh ……4
Building material ……2 Sold ……5
Fuel for cooking ….. 3 Did not use……6

Unit (Col 6)
Loose Bundle/bunch ……1 kg ……5
Compressed bunch/Bail….2 Stems ……6
Tin …… 3 Sack ……7
Bucket ……4 Other ……8

8.0 AGROPROCESSING AND BY-PRODUCTS

8.1 Did the household **process** any of the products harvested on the farm during 2002/03 (Yes=1, No=2) ☐

*If the response is **'NO'** go to section 9.0*

8.2 List the **main crops processed** and provide the following details:

S/N	Crop name	Crop Code	Proc-ess-ed	Main Prod-uct code	Used for	Unit	Quantity of main product	Quantity Sold	Whe-re sold	By-Prod-uct code	Used for	Unit	Quantity of by-product	Quan-tity Sold
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
8.2.1	…….													
8.2.2	…….													
8.2.3	…….													
8.2.4	…….													
8.2.5	…….													
8.2.6	…….													

Processed (Col 3)
On farm by hand…..……1
On farm by machine…….2
By neighbours machine...3
By farmers association …4
By Cooperative union …..5
By trader ……...6
On Large scale farm ……7
By factory ……..……9
Other 8

Main product code (Col 4)
Flour/meal……..1
Grain……2
Oil .. ……3
Juice……4
Fiber……..5
Pulp ……6
Sheet ……..……7
Other ……8

Used for (Col 5 & 11)
Household/human consumption ..1
Fuel for cooking ……..2
Sale ……..……..3
Animal consumption……..4
Did not use ……5
Other ……..……..8

Unit (Col 6 & 12)
Loose bundle/bunch ……1
Compressed bunch/bail….2
Tin ……..……..3
Bucket ……..4
kg ……..……..5
litre ……..6
Other ……..8

Where sold (Col 9)
Neighbour……..…..1
Local market/trade store ……2
Secondary Market …..3
Marketing Coop ……..4
Farmer Association …..5
Largescale farm ……6
Trader at farm ……..7
Did not sell ……9
Other ……..……..8

By-product code (Col 10)
Bran ……...01
Cake ……...02
Husk ……...03
Juice ……...04
Fiber ……...05
Pulp ……...06
Oil ……...07
Shell ……...08
Other ……..……98

Definition and working page for page 7

Temporary/annual crop codes for section 7.4 col 2

Crop Code	Crop Name	Secondary Product Question 7.4	Agroprocessing & bi-products: Main Products (Section 8.0)	Bi-product (Sect 8.0): 1	2
11	Maize	Stems/straw	Flour	Bran	
12	Paddy	Stems/straw	polished rice grain	husk	
13	Sorghum	Stems/straw	flour		
14	Bulrush Millet	Stems/straw	flour		
15	Finger Millet	Stems/straw	flour		
16	Wheat	Stems/straw	flour	Bran	
17	Barley	Stems/straw	flour	Bran	
21	Cassava	Leaves/stems	flour		
22	Sweet Potatoes	Leaves			
23	Irish potatoes				
24	Yams				
25	Cocoyams				
26	Onions				
27	Ginger				
31	Beans	straw/stems			
32	Cowpeas	straw			
33	Green gram	straw			
34	Pigeon peas	stems			
35	Chick peas	straw			
36	Bambara nuts	straw/stems	oil	cake	
41	Sunflower	Stems	oil	Cake	
42	Simsim	straw	oil	Cake	
43	Groundnut	straw	oil	Cake	
47	Soya beans	straw	oil	Cake	
48	Caster seed	straw	oil	Cake	
75	Pineapple		Juice		
50	Cotton	straw	fibre/seed	oil	cake
51	Tobacco				
53	Pyrethrum	straw	insecticide		
62	Jute		fibre		
86	Cabbage				
87	Tomatoes				
88	Spinach				
89	Carrot				
90	Chillies		dried powder		
91	Amaranths				
92	Pumpkins	leaves			
93	Cucumber				
94	Egg Plant				
95	Water Mellon				
96	Cauliflower				
44	Oil Palm	leaves	oil outer	oil inner	cake
45	Coconut	leaves/husk	milk		
46	Cashewnut	Fruit	fruit juice	shell liquid	
52	Sisal	stems	fibre	oil	
54	Coffee	stems	beans	husks	
55	Tea	stems			
56	Cocoa	stems	cocoa	cocoa butter	
57	Rubber	stems			
58	Wattle	stems			
59	Kapok	stems			
60	Sugar Cane		sugar/juice	molasses	ethanol
61	Cardamom				
71	Banana	leaves/stems	juice		
72	Avocado	stems			
73	Mango	stems	Juice		
74	Paw paw		Juice		
76	Orange	stems	Juice		
77	Grape fruit	stems	Juice		
78	Grapes	stems	Juice		
79	Mandarin	stems	Juice		
80	Guava	stems			
81	Plums	stems			
82	Apples	stems			
83	Pears	stems			
84	Pitches	stems			
85	Lime/Lemon	stems	juice		

General Definition for Section 7.4

Secondary Products: Second most important product from a crop. Eg a household may consider the grain from maize as the primary product and the stems/straw as the secondary product.

Note: Secondary products are NOT the same as bi-products. By-products are the result of a processing activity and are dealt with in section 8.0.

Procedures for Questions

Q 7.6 Details of Secondary Products:

1. From the list of crops in Q 7.1.2, 7.2.2 & 7.3.2, ask the respondent if the hh used any secondary products. List the crop names and codes in column 1 and 2 for those crops that the hh used secondary products.
2. For the listed crops give details of the secondary products used.
3. If no units were sold, enter "0" in columns 8 & 9.

Q 8.0 Agroprocessing & bi-products:
1. From the list of crops in Q 7.1.2, 7.2.2 & 7.3.2, ask the respondant if the hh processed any of these crops during the 2002/03 agriculture year. List the crop names and codes in column 1 and 2 for those crops that were processed by the hh.
2. For the listed crops give details of the secondary crops used.
3. If no main product or bi-product was sold enter "0" in columns 8 & 14.
4. If no bi-product was produced enter "0" in columns 10, 11, 12, 13 &14.

Question Specific Definitions

Agroprocessing and bi-products (Q 8.2) (Note: Agroprocessing refers to the processing of crops for hh utilisation and for sale)

Main Product (Col 5):
Main Product after processing. Eg for Paddy it may be the polished grain. For Maize it may be flour.
Bi-Product code (Col 11): is the secondary residue after processing, eg for rice it may be the husk. for maize it may be the bran.

Mainly used for (Col 5 & 11):
- **Consumed by household** can mean eaten or utilised in another way (eg by animals) by the hh.

9.0 CROP STORAGE

9.1 Did the household **store** any crops during the 2002/03 agriculture year? (Yes =1, No=2) ☐

*If the response is **'NO'** go to section 10.0*

9.2 For **each** of the listed crops provide the following details on **storage**

S/N	Crop Name	Stored Y=1 No=2	Current Quantity Stored (kg)	Method of Storage	Normal duration of storage	Main purpose	Estimate Storage loss
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
9.2.1	Maize	☐	☐☐☐☐	☐	☐	☐	☐
9.2.2	Paddy	☐	☐☐☐☐	☐	☐	☐	☐
9.2.3	Sorghum/Millet	☐	☐☐☐☐	☐	☐	☐	☐
9.2.4	Beans, peas, etc	☐	☐☐☐☐	☐	☐	☐	☐
9.2.5	Wheat	☐	☐☐☐☐	☐	☐	☐	☐
9.2.6	Coffee	☐	☐☐☐☐	☐	☐	☐	☐
9.2.7	Cashewnut	☐	☐☐☐☐	☐	☐	☐	☐
9.2.8	Tobacco	☐	☐☐☐☐	☐	☐	☐	☐
9.2.9	Cotton	☐	☐☐☐☐	☐	☐	☐	☐
9.2.10	Groundnuts/bambara	☐	☐☐☐☐	☐	☐	☐	☐

Main method of Storage (Col 4)
In locally made traditional structure..1
In Improved locally made structure .2
In modern store ……..3
In Sacks/open drum……..4
In airtight drum ……..5
Unprotected pile ……6
Other ……8

Duration of Storage (Col 5)
Less than 3 months ……1
Between 3 and 6 months ……2
Over 6 months ……3

Main purpose of storage (Col 6)
Food for the household ……1
To sell for higher price ……2
seed for planting……3
Other ……8

Storage loss (Col 67)
Little or no loss ……1
Up to 1/4 loss ……2
Between 1/4and 1/2 loss ..3
Over 1/2 loss ……4

10.0 MARKETING

10.1 Did the household **sell any crops** from the 2002/03 agriculture year? (Yes=1, No=2) ☐

(If the response is 'YES' or 'NO' go to section 10.2)

10.2 For **each of the following crops** what was the main **marketing problem** faced by the household during 02/03

	Crop	Main problem		Crop	Main problem
	(1)	*(2)*		*(1)*	*(2)*
10.2.1	Maize	☐☐	10.2.9	Vegetables	☐☐
10.2.2	Rice	☐☐	10.2.10	Tree Fruits	☐☐
10.2.3	Sorghum/millet	☐☐	10.2.11	Cashewnut	☐☐
10.2.4	Wheat	☐☐	10.2.12	Cotton	☐☐
10.2.5	Beans, peas etc	☐☐	10.2.13	Tobacco	☐☐
10.2.6	Cassava	☐☐	10.2.14	Groundnuts/bamabara	☐☐
10.2.7	Bananas	☐☐	10.2.15	Trees/timber/poles	☐☐
10.2.8	Coffee	☐☐	10.2.16	Fish	☐☐

10.3 From the list of marketing problems below, for all produce rank the five most important problems

		1	2
10.3.1	Biggest problem	☐☐	
10.3.2	2nd problem		☐☐
10.3.3	3rd problem		☐☐
10.3.4	4th problem		☐☐
10.3.5	5th problem		☐☐

Market problems (Q10.2 & 10.3 (Col 2))

Open market price too low ……01	*Market too far ……05*	*Government Regulatory board problems...09*
No transport ……02	*Farmer association problems ……06*	*Lack of market Information ……10*
Transport cost too high ……03	*Cooperative Problems ……07*	*Other (specify) ……98*
No buyer ……04	*Trade Union problems ……08*	*Not Applicable ……99*

10.4 What was the main **reason for not selling** crops during 2002/03 year …… ☐

Reason for not selling crops (Q10.4)

Price too low ……1	*Farmer association problems ……4*	*Government regulatory board problems ….7*
Production insufficient to sell……2	*Cooperative Problems……5*	*Other (specify) ……8*
Market too far ……3	*Trade Union problems ……6*	*Not Applicable ……9*

Definition and working page for page 8

Question Specific definitions (Section 9.0)
Crop Storage, Section 9

Method of Storage (column 4)

- **Locally made structure:** The structures that have been inherited from their fore fathers

- **Improved locally made structure:** Traditional structures that have been improved using modern technology.

- **Normal duration of storage:** Often there are stored stocks from different seasons and different years. The normal duration refers to the number of months that the most of the crop is stored for.

Marketing problems Q 10.2 and 10.3 col 2:

- **Farmer Association:** A village or community based group of farmers who have formed an organisation to purchase inputs/sell/store their products in order to achieve a better price for their products.

- **Cooperative Union:** Large inter-village /community organisation set up on a district/regional or national basis for providing inputs, marketing and storing farmers products.

- **Government Regulatory board:** Government control body for setting prices and controlling quality of certain agriculture commodities.

Procedures for Questions

Q 9.2 Details of Crop Storage:

1. For the crops listed indicate if the household stored any during 2002/03 in column 2.

2. Check that the crops correspond to the crop lists in Q 7.1.2, 7.2.2 & 7.3.2. If there is a difference inquire on the reason why. It is possible that a crop was missed during the enumeration of these questions and if so make necessary amendments

3. For the listed crops give details of storage.

Q 10.2 Details on Crop Marketing:

1. For each of the crops listed indicate the main problems in marketing during 2002/03 in column 2.

2. Check if the crops correspond to the crop lists list in Q 7.1.2, 7.2.2 & 7.3.2. If there is a difference inquire on the reason why. It is possible that a crop was missed during the enumeration of these questions and if so make necessary amendments

Q 10.3 Ranking of market problems:

Rank in order of importance the 5 most important marketing problems from the codes in the Market Problems code box.

Working Area/calculation space

11.0 ON-FARM INVESTMENT

11.1 Does the household practice **irrigation** (Yes=1, No=2) ☐

If the response is 'NO' go to section 11.3

S/N	Source of Irrigation water	Method of obtaining water	Method of applic -ation	Irrigatable area (acres)	Area of irrig ated land this year (acres)
	(1)	(2)	(3)	(4)	(5)
11.1.1	☐	☐	☐	☐☐☐.☐	☐☐☐.☐

Source of irrigation water (Col 1)
River .....1 Borehole 5
Lake .....2 Canal 6
Dam .....3 Tap Water 7
Well 4

Method of obtaining water (Col 2)
Gravity .....1 motor pump 4
Hand bucket .....2 Other 8
Hand pump 3

Method of application (Col 3)
Flood 1
Sprinkler 2
water hose.....3
Bucket/watering can 4

11.2 Does the household have any **erosion control/water harvesting facilities** on their land (Yes=1, No=2) ☐

*If the response is **'NO'** go to section 12.0*

S/N	Type of erosion control/ water harvesting structure	Number of structures	Year of con- struction		Type of erosion control/ water harvesting structure	Number of structures	Year of con- struction
	(1)	(2)	(3)		(1)	(2)	(3)
11.2.1	Terraces	☐☐	☐☐	11.2.5	Tree belts	☐☐	☐☐
11.2.2	Erosion control bunds	☐☐	☐☐	11.2.6	Water harvesting bunds	☐☐	☐☐
11.2.3	Gabions/Sandbags	☐☐	☐☐	11.2.7	Drainage ditches	☐☐	☐☐
11.2.4	Vetiver Grass	☐☐	☐☐	11.2.8	Dam	☐☐	☐☐

12.0 ACCESS TO FARM INPUTS AND IMPLEMENTS

12.1 Give details of **farm inputs** used during the 2002/03 agriculture year

S/N	Input name	Used Yes=1 No=2	Source	Distance to Source	Source of Fin -ance	Reason for not using	Quality of Input	Plan to use next year Yes =1,No=2
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
12.1.1	Chemical Fertiliser	☐	☐☐	☐	☐	☐	☐	☐
12.1.2	Farm Yard Manure	☐	☐☐	☐	☐	☐	☐	☐
12.1.3	Compost	☐	☐☐	☐	☐	☐	☐	☐
12.1.4	Pesticide/fungicide	☐	☐☐	☐	☐	☐	☐	☐
12.1.5	Herbicide	☐	☐☐	☐	☐	☐	☐	☐
12.1.6	Improved Seeds	☐	☐☐	☐	☐	☐	☐	☐
12.1.7	Other ……	☐	☐☐	☐	☐	☐	☐	☐

Source (Col 3)
Cooperative 01
Local farmers group 02
Local market/Trade Store ...03
Secondary Market 04
Development project 05
Crop buyers 06
Large scale farm 07
Locally produced by hh 08
Neighbour 09
Other (specify) 98
Not applicable 99

Distance to source (Col 4)
Less than 1 Km 1
Between 1 and 3km 2
between 3 and 10 km.. ...3
Between 10 and 20 km ...4
20km and above 5
not applicable 9

Source of finance (Col 5)
Sale of farm products .1
Other income generating activities 2
Remittances 3
Bank Loan/Credit.....4
produced on farm 5
Other 8
Not applicable 9

Reason for not using (Col 6)
Not available 1
Price too high 2
No money to buy 3
Too much labour required..4
Do not know how to use.....5
Input is of no use 6
Locally produced by hh 7
Other 8
Not applicable 9

Quality of input (Col 7)
Excellent 1
Good 2
Average 3
Poor 4
Does not work .5
not applicable...9

Definition and working page for page 9

Overview of Investment activities (Section 11.0)

Investment activities:

Investment activities refer to medium to long term farm development structures and projects. This can be Irrigation structures, erosion and water harvesting structures or other permanent or semi-permanent investment made on the land that the household owns.

Question Specific Definitions (Q 11.1)

Source of irrigation Water (Col 1): The main source of water from which water is obtained for irrigation.

Method of obtaining water (Col 2): The mechanism by which the water is extracted from the source,

Application Method (Col 3): How the water is applied on the field.
- Flood - is the application of water down the slope of the land by means of gravity
- Sprinkler - is the application of pressurised water through pipes. The water passes through a device which sprays the water onto the crop from above.

Irrigatable Area (Col 4): The area the irrigation system is designed to cover in acres.

Area of irrigated land this year (Col 5): Area of land under irrigation during the 2002/03 agric year. This is the physical area and NOT the cumulative area of 2 or more croppings.

Q 11.1 Irrigation

1. If the hh practices irrigation give details on the main source, main method of obtaining and applying water.

2. Cross check column 8, Q 7.1.2, 7.2.2 & 7.3.2 to check if irrigation was used on any crops.

Question Specific Definitions (Q 11.3)

Erosion control/water harvesting structure (Col 1)

Terraces: Are structures constructed on the side of a hill to provide a level ground to plant crops. They are often used to trap water for paddy/lowland rice production.

Erosion Control Bunds: These are banks of earth/stones built perpendicular to the slope to slow down water and prevent erosion. They are different to Terraces in that the soil behind the banks are not level.

Gabions: A gabion is a wire mesh box filled with rocks/stones and used to control or prevent gully erosion

Sandbags Used to prevent or control gully erosion

Tree belts/Wind breaks: A band of trees planted perpendicular to the prevailing wind whose main purpose is to slow down wind speed

Water Harvesting bunds: A bank of earth constructed horizontal to the slope of the land to trap water. They are usually banana shaped.

Dam: A bank of earth/material which traps river water to form a catchment of water behind it.

Q 11.3 erosion control/water harvesting

1. Number of structures refers to the number of working/maintained structures and does not include derelict or irreparable structures.

2. Year of construction refers to the year that the structures were first constructed. It is not the year that the structures were last maintained.

Farm Inputs (Q 12.1.1 to 12.1.7)

Farm yard Manure: An organic fertiliser made on farm composed of animal dung.

Compost: An organic fertiliser made on farm from decomposed plant material

Pesticide: Chemical used to either protect the plant from or kill insects, birds, molluscs, mites, etc attacking the plant

Fungicide: is a chemical that s used to protect the plant from or control a fungal disease.

Herbicide: A chemical used to control weeds.

Q 12.0 Farm Inputs

1. Indicate in column 1 whether each of the inputs are used or not.

2. Complete cols 3, 4, 6, and 7 for inputs that are used and place **'9'** in column 5 (for not applicable).

3. Complete cols 5 & 7 for inputs not used.

NOTE: Cross check column 6, 7, 8 & 9 , Q 7.1.2, 7.2.2 & 7.3.2 to check what inputs were used.

12.2 Give details of **farm implements and assets** used and owned by the household during 2002/03 agriculture year

S/N	Equipment/Asset Name	Number Owned	Number rented	Used in 2002/03 Yes 1,No=2	Source of Equip-ment	Source of Fin-ance	Reason for not using	Plan to use next year Yes=1,No=2
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
12.2.1	Hand Hoe							
12.2.2	Hand Powered Sprayer							
12.2.3	Oxen							
12.2.4	Ox Plough							
12.2.5	Ox Seed Planter							
12.2.6	Ox Cart							
12.2.7	Tractor							
12.2.8	Tractor Plough							
12.2.9	Tractor Harrow							
12.2.10	Shellers/threshers							

Source of equipment (Col 5)
Neighbour..... .....1 Development project 5
Cooperative .....2 Government 6
Local farmers association.....3 Large scale farm 7
market/Trade store .....4 Other (specify) 8

Source of finance (Col 6)
Sale of farm products 1
Other income generating activities .2
Remittances 3
Bank Loan 4
Credit 5
Other 8
Not applicable 9

Reason for not using (Col 7)
Not available 1
Price too high 2
No money to buy/rent.....3
Too much labour required....4
Equipment/Asset of no use ...5
Other 8
Not applicable 9

13.0 USE OF CREDIT FOR AGRICULTURE PURPOSES

13.1 During the year 2002/03 did any of the hh members **borrow money** for **agriculture** (Yes = 1, No = 2) ☐
(if the response is 'NO' go to section 13.3)

13.2 Give details of the **credit** obtained during the agricultural year **2002/03**
(if the credit was provided in kind , for example by the provision of inputs, then estimate the value in 13.2.9)

		Source "a"	Source "b"	Source "c"
	use codes to indicate source	☐	☐	☐
	Provided to Male = 1, Female 2	☐	☐	☐
		tick the boxes below to indicate the use of the credit	tick the boxes below to indicate the use of the credit	tick the boxes below to indicate the use of credit
13.2.1	Labour	☐	☐	☐
13.2.2	Seeds	☐	☐	☐
13.2.3	Fertilisers	☐	☐	☐
13.2.4	Agrochemicals	☐	☐	☐
13.2.5	Tools/equipment	☐	☐	☐
13.2.6	Irrigation structures	☐	☐	☐
13.2.7	Livestock	☐	☐	☐
13.2.8	Other …….	☐	☐	☐
13.2.9	**Value of Credit (Tsh.)**	☐☐☐☐☐☐☐	☐☐☐☐☐☐☐	☐☐☐☐☐☐☐
13.2.10	**Value of repayment (Tsh.)**	☐☐☐☐☐☐☐	☐☐☐☐☐☐☐	☐☐☐☐☐☐☐
13.2.11	**Period of repayment (months)**	☐☐☐	☐☐☐	☐☐☐

Source of credit (Q 13.2-a, b and c)) *Family, friend or relative....1 Commercial Bank.....2 Cooperative .....3 Savings & credit Soc 4*
Trader/trade store .....5 Private individual .....6 Religious Organisation/NGO/Project ...7 Other (Specify).....8

13.3 If the answer to question 13.1 above is 'NO' what is the reason for not using Credit? ☐

Reason for not using credit (Q13.3) *Not needed ...1 Not available ...2 Did not want to go into debt.....3 Interest rate/cost too high.....4*
Did not know how to get credit....5 Difficult bureaucratic procedure ...6 Credit granted too late ...7 Other (specify) ...8 Dont know about credit 9

Definition and working page for page 10

Question Specific Definitions (Q 12.2)

Farm Implements (Col 1):

Hand powered Sprayer: Knapsack or bicycle pump sprayer

Reason for not using (Col 6): Be careful about using "too much labour required" as this code generally refers to hand hoes only. The codes for this should **"NOT"** be read out to the farmer as a prompt.

Note: If remittance is given as the main source of finance check for a response to remittances in **question 2.2.5**

Question Specific Definitions (Q 13.0)

Section 13.0 Credit for Agriculture Purposes

Credit is defined as finance in the form of cash or in-kind contributions (eg direct provision of inputs, machinery, livestock or other material) for the purpose of crop and livestock production whereby the value of the credit must be paid back to the borrower. The value of repayment may either be with interest or interest free.

Credit may be paid back in the form of cash or agriculture produce.

Section 13.0 Credit for Agriculture Purposes

Value of credit: is the amount in cash received from the borrower. If the credit was paid in-kind, estimate the value of this.

Value of repayment: This is the amount to be repaid to the borrower and includes the principal amount (value of credit) plus any interest repayment. If the credit is paid back in agriculture produce, then the cash value of this must be estimated.

Period of repayment: This is the time **in months** the borrower has given for full repayment.

Procedures for questions

Q 12.0 Farm Inputs

1. Indicate in column 2 and 3 whether each of the implements were used or not.

2. Complete cols 4, 5, 6, and 8 for inputs that are used and place **'9'** in column 7 (for not applicable).

3. Complete cols 7 & 8 for inputs not used.

Section 13.2 Source of agriculture credit

If the farmer obtained credit from more than one source then use the columns "a" , "b" and "c" for the different sources of credit. Start with the main source of credit in column "a".

NOTE: Check for use of inputs in column 7, 8 & 9 of questions 7.1.2, 7.2.2 & 7.3.2.

Working Area/calculation space

14.0 TREE FARMING/AGROFORESTRY

14.1 Did your household have any **Planted Trees** on your land during 2002/03 agric year? (Yes =1, No=2) ☐

*If the response is **'NO'** go to section 14.3*

14.2 Give details of the **planted trees** you have **on your land**.

S/N	Tree Code	Number of trees	Where planted	Main Use	Second Use	Number of Plank trees Sold	Number of Pole trees Sold	hh utilised Number of Poles	hh utilised Number of Timber	Total Value (Tsh.)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
14.2.1	☐☐	☐☐☐☐	☐	☐	☐	☐☐☐	☐☐☐	☐☐	☐☐	☐☐☐☐☐☐
14.2.2	☐☐	☐☐☐☐	☐	☐	☐	☐☐☐	☐☐☐	☐☐	☐☐	☐☐☐☐☐☐
14.2.3	☐☐	☐☐☐☐	☐	☐	☐	☐☐☐	☐☐☐	☐☐	☐☐	☐☐☐☐☐☐
14.2.4	☐☐	☐☐☐☐	☐	☐	☐	☐☐☐	☐☐☐	☐☐	☐☐	☐☐☐☐☐☐

Where Planted (Col 3)
Mostly on field/plot boundaries.1
Mostly scattered in fields 2
Mostly in plantation/coppice ...3

Use (Col 4 & 5)
Planks/Timber.....1 *Shade 5*
Poles .....2 *Medicinal.....6*
Charcoal .....3 *Other 8*
Fuel wood 4

14.3 Does your village have a **Community tree planting scheme** (Yes=1, No=2) ☐

*If the response is **'NO'** go to section 15.0*

14.4 Household involvement in **community tree planting scheme**

S/N	Distance to community planted forest (Km)	hh Involvement	Main purpose	Main use during 2002/03
	(1)	(2)	(3)	(4)
	☐☐.☐	☐	☐	☐

HH involvement (Col 2)
Only planting 1
Only protection and thinning.....2
Only cutting 3
Most or all activities.....4

Main Purpose (Col 3)
Erosion control.....1 *Environment rehaiblitation ...4*
Production of poles .....2 *Restoration of wildlife 5*
production of firewood..3 *Other (specify) 8*

Main Use during 02/03(Col 4)
Poles .....1 *Not ready to use 5*
Timber logs .....2 *Not allowed to use ...6*
Charcoal ....3 *Other (specify) 8*
Firewood 4

15.0 CROP EXTENSION SERVICES

15.1 Did your household receive **extension advice** for **crop production** during 2002/03 (Yes=1,No=2) ☐

*If the response is **'NO'** go to section 16.0*

S/N	Extension Provider	Source of extension (Y=1,N=2)	If you pay for extension, what is the cost/yr	Contact farmer /group member (Yes=1,No=2)	No. of visits by extension agency per year	No. of message adopted in the last 3 years	Quality of Service
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
15.1.1	Government extension	☐	☐☐☐☐☐	☐	☐☐	☐☐	☐
15.1.2	NGO/development project	☐	☐☐☐☐☐	☐	☐☐	☐☐	☐
15.1.3	Cooperative	☐	☐☐☐☐☐	☐	☐☐	☐☐	☐
15.1.4	Large Scale farmer	☐	☐☐☐☐☐	☐	☐☐	☐☐	☐
15.1.5	Other.....	☐	☐☐☐☐☐	☐	☐☐	☐☐	☐

Quality of service (Col 7)
Very good .....1 good .....2 Average..... ...3 Poor.....4 No Good 5

Definition and working page for page 11

General Definitions for section 14.0

Tree Farming/Agroforestry

This section refers to trees **planted** for wood (firewood, poles, planks, carving, charcoal, medicinal, etc, but **NOT** fruit trees). It does **not** include naturally growing trees on the farm (unless special care has been given to promote their establishment) or trees growing naturally on the communal areas.

Tree farming is the planting of trees on an area of land for which the main purpose is the production and regeneration of trees for wood on that land.

Agroforestry: is the planting of trees on land for the purpose of complementing other farming activities like crop and animal production. For the purpose of this questionnaire Agroforestry trees are trees planted on boundaries and scattered throughout fields. The main productive unit in this case is Crops and Livestock.

Section 14.2 Details of planted trees

1. Enter the tree codes of the main species grown by the hh

2. If no planks or poles are sold enter a "0" in columns 8, & 9.

3. Total value includes both value of hh utilised trees and sold trees.

4. If no trees were utilised by the hh or sold enter "0" in column 10

Question Specific Definitions

Tree farming (Section 14.0)

Pole trees (Col 6): These are young trees which have a maximum diameter of 6 inches at the bottom and are often used for house construction. They are often the thinning harvest after 3 - 5 years.

Plank trees (Col 7): Trees for sawing into timber planks.

Animal shade: Trees grown for the purpose of providing shade to animals.

Community tree planting scheme (Section 14.3)

Community Forest: A forest planted on the communal land which is planted, replanted or spot planted by the members of the village.

Crop Extension Services (Section 15.1)

Contact Farmer: A farmer who is used by the extension agent as a focal point to demonstrate new interventions. The contact farmer then passes on the message to other farmers

Group member: Member of a group under which the contact farmer leads

Adoption: This is the uptake of an intervention for 2 or more years

Section 15.1 Crop Extension Services

1. For each of the extension providers ask if the hh received extension during 2002/2003 agriculture year and indicate in column 2.

2. For each of the providers complete the rest of the columns

Tree Name Guide Col 1

Code	Local Name	Botanical Name	English Name
01		Senna siamea	Cassod tree
02	Msongoma	Gravellia	Silver oak
03	Mbarika	Afzelia quanzensis	Pod mahogony
04	Mkeshia	Acacia spp	Umbrella thorn
05	Msindano	Pinus spp	Pine
06	Mkaratusi	Eucalyptus spp	Red River Gum
07		Cyprus spp	Cyprus tree
08	Mtondoo	Calophylum inophyllum	
09	Mvule	Melicia excelsa	Iroko
10	Mvinji	Casurina equisetfilia	Whistling oak
11	Msaji	Tectona grandis	Teak
12	Mkungu wa kienyeji	Terminalia catapa	Sea almond
13	Mkungu india	Terminilia ivorensis	Black afara
14	Muhumula	Maesopsis berchemoides	
15			

Code	Local Name	Botanical Name	English Name
16			
17			
18			
19			
20			
21			
22			
23			
24			
25			
26			
27			
28			
29			
30			

15.2 Crop Extension Messages

S/N	Extension Message	Received Advice Yes=1 No=2	Adopted Yes=1 No=2	Source of Crop Extension
	(1)	(2)	(3)	(4)
15.2.1	Spacing			
15.2.2	Use of agrochemicals			
15.2.3	Erosion control			
15.2.4	Organic fertiliser use			
15.2.5	Inorganic fertiliser use			
15.2.6	Use of improved seed			
15.2.7	Mechanisation/LST			
15.2.8	Irrigation Technology			
15.2.9	Crop Storage			
15.2.10	Vermin control			
15.2.11	Agro-processing			
15.2.12	Agro-forestry			
15.2.13	Bee Keeping			
15.2.14	Fish Farming			
15.2.15	Other			

Source of extension (Col 4)

Government .....1 NGO/Dev project ..2 Cooperative ...3 Large scale farmer .....4 Other (Specify) ...8 Not applicable 9

16.0 LIVELIHOOD CONSTRAINTS

From the list of constraints on the right select:

	the 5 most important problems			the 5 least important problems	
16.1	**Order of most importance**	**Constraint**	16.2	**Order of least importanc**	**Constraint**
	(1)	(2)		(1)	(2)
16.1.1	most important		16.2.1	Least important	
16.1.2	2nd most important		16.2.2	2nd least important	
16.1.3	3rd most important		16.2.3	3rd least important	
16.1.4	4th most important		16.2.4	4th least important	
16.1.5	5th most important		16.2.5	5th least important	

List of constraints

1. Access to Land
2. Ownership of Land
3. Poor farm Inputs
4. Soil Fertility
5. Access to improved seed
6. Irrigation facilities
7. Access to chemical Inputs
8. Cost of Inputs
9. Extension Services
10. Access to forest resources
11. Hunting and Gathering
12. Access to potable water
13. Access to credit
14. Harvesting
15. Threshing
16. Storage
17. Processing
18. Market Information
19. Transport costs
20. Distruction by animals
21. Stealing
22. Pests and Diseases
23. Local government taxation
24. Access to off Farm Income

17.0 ANIMAL CONTRIBUTION TO CROP PRODUCTION

17.1 Did you use Draft animals to cultivate your land during 02/03 (Yes=1, No=2) ☐

(If no, go to question 17.2)

S/N	Type of Draft	Number owned	Number used	Area cultivated (acres)
	(1)	(2)	(3)	(4)
17.1.1	Oxen			.
17.1.2	Bulls			.
17.1.3	Cows			
17.1.4	Donkeys			.

17.2 Did you apply organic fertiliser during 02/03 (Yes=1, No=2) ☐

(If no, go to question 18)

S/N	Type of organ Fertiliser	Area applied (acres)
	(1)	(2)
17.2.1	FYM	.
17.2.2	Compost	.

Definitions and working page for page 12

Question Specific Definitions

Crop Extension Advice (Section 15.2)

Mechanisation/LST: LST means Labour Saving Technology

Section 16.0 Livelihood constraints

16.1 List the five most important problems in order of most importance:

1. Read out the list of constraints to the respondent and ask him to select the ones that are a problem. Place a ✓ against the constraints that are a problem.

2. Read the selected constraints and ask the farmer to select 5 which create the largest problems

3. Ask the farmer to list these in order of importance and enter in column 2

16.2 List the five least important problems in order of least importance:

1. Read out the list of constraints to the respondent and ask him to select the ones that are **NOT** a problem. Place an ✗ against the constraints that are **NOT** a problem.

2. Read the selected constraints and ask the farmer to select 5 which create the least problems

3. Ask the farmer to list these in order of least importance and enter in column 2

18.0 CATTLE POPULATION, INTAKE AND OFFTAKE

18.1 Did the household own, raise or manage any **CATTLE** during 2002/03 agriculture year? (Yes =1 No =2) ☐

(If **no** go to section 19.0)

18.2 Cattle Population as of 1st October 2003

S/N	Cattle type	Number of Indigenous	Number of Improved: Beef	Number of Improved: Dairy	Total
	(1)	*(2)*	*(3)*	*(4)*	*(5)*
18.2.1	Bulls				
18.2.2	Cows				
18.2.3	Steers				
18.2.4	Heifers				
18.2.5	Male Calves				
18.2.6	Female Calves				
	Grand Total				

18.3 **Cattle Intake** during 2002/2003

S/N	Number Purchased	Number given /obtained	Number Born	Total Intake of Cattle	Average Value per head
	(6)	*(7)*	*(8)*	*(9)*	*(10)*
18.3.1			X X X		
18.3.2			X X X		
18.3.3			X X X		
18.3.4			X X X		
18.3.5					
18.3.6					
		Total Intake			

18.4 **Cattle Offtake** during 2002/2003

S/N	Cattle type	Number Sold/traded	Number consumed by hh	Number given away/stolen	Number died	Total Cattle Offtake	Average value per head
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
18.4.1	Bulls						
18.4.2	Cows						
18.4.3	Steers						
18.4.4	Heifers						
18.4.5	Male Calves						
18.4.6	Female Calves						
					Total Offtake		

18.5 **Cattle diseases**

S/N	Disease/ parasite	Number Infected	Number Treated	No. Rec-overed	Number Died	Last vaccinated	Main Source
	(1)	*(2)*	(3)	*(4)*	*(5)*	*(6)*	*(7)*
18.5.1	Tick Borne diseases						
18.5.2	CBPP						
18.5.3	Trypanosomiasis					X	X
18.5.4	Lumpy Skin Disease						
18.5.5	Helmenthioitis					X	X
18.5.6	FMD						

18.6 **Milk Production**

S/N	Season	Litres of milk/day	No. of cattle milked/day	Value/litre	Sold to	Sold/day (Litres)
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
18.6.1	Wet Season					
18.6.2	Dry Season					

Sold to Q18.6 Col 5)

Neighbour……..1 Largescale farm ..5
Local Market……..2 Trader at Farm ...6
Secondary Market ...3 Did not sell 7
Processing industry .4 Other ……..8

Last Vaccinated (Col 6)

2003 ……1 2000 ……..4
2002 ……..2 before 2000 5
2001 ……..3 Not Vaccinated...6

Main Source of vaccine (Col 7)

Private Vet Clinic ..1 Other ……..…..8
District Vet Clinic ..2 Not applicable ….9
NGO/Project…….3

Definitions and working page for page 13

General definitions for page 13

Cattle Intake during 2002/03: Cattle purchased, given or born which increases the number of cattle in the herd.

Cattle Offtake during 2002/03:
Cattle removed from the herd, either by selling, hh consumption, given away or stolen.

Question Specific Definitions (Section 18.0)

Cattle type (Q 18.2 & 18.4, Col 1)

Bull: Mature **Uncastrated** male cattle used for breeding

Cow: Mature female cattle that has given birth at least once

Steer: Castrated male cattle over 1 year

Heifer: Female cattle of 1 year up to the first calving

Calves: Young cattle under 1 year of age

Average Value per Head (Q 18.3, (Col 7 & 9) & 18.4 (Col 3, 5 & 7))

In these columns give the average value per head during 2002/03. For given, traded, consumed by the hh & given away/stolen estimate the value.

Cattle vaccination (18.5 col 1)

ECF: East Coast Fever

FMD: Foot and Mouth Disease

CBPP: Contagious Bovine Pleura Pneumonia

Section 18.0 Cattle Population, Intake & Offtake.

NOTE: Section 18.1 is for the current population (as of 1st October 2003);
Section 18.2 and 18.3 is for movement in and out of the herd during the 2002/03 agriculture year.
Section 18.4 is for diseases encountered during the agriculture year.

1. If the household has cows, you would normally expect them to have calves in column 8

2. If calves are reported in column 2, 3, or 4 (18.2.6, 18.2.5) then there must be at least that number repeated in column 8

Note: If the farmer reports sales of cattle the importance of this must be reflected in Q 2.2.3

Section 18.5 If cattle are reported to have died in Column 5 then at least that number should be reported in 18.4 col 4

Working area for page 13

19.0 GOAT POPULATION, INTAKE AND OFFTAKE

19.1 Did the household own, raise or manage any **GOATS** during the 2002/03 agriculture year? (Yes =1 No =2) ☐
(If no go to section 20.0)

19.2 Goat Population as of 1st October 2003

S/N	Goat type	Number of Indigenous	Number of Improved for meat	Number of Improved Dairy	Total
	(1)	(2)	(3)	(4)	(5)
19.2.1	Billy Goat				
19.2.2	Castrated Goat				
19.2.3	She Goat				
19.2.4	Male Kid				
19.2.5	She Kid				
	Grand Total				

19.3 **Goat Intake** during 2002/2003

S/N	Number Purchased	Number given /obtained	Number Born	Total Intake of Goats	Average Value per head
	(6)	(7)	(8)	(9)	(10)
19.3.1			X X X		
19.3.2			X X X		
19.3.3			X X X		
19.3.4					
19.3.5					
			Total Intake		

19.4 **Goat Offtake** during 2002/2003

S/N	Goat type	Number Sold/traded	Number consumed by hh	Number given away/stolen	Number died	Total Goat Offtake	Average value per head
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
19.4.1	Male goat						
19.4.2	Castrated Goat						
19.4.3	She Goat						
19.4.4	Male Kid						
19.4.5	She Kid						
	Total Offtake						

19.5 **Goat diseases**

S/N	Disease/ parasite	Number Infected	Number Treated	No. Rec-overed	Number Died	Last vaccinated	Main Source
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
19.5.1	Foot Rot					X	X
19.5.2	CC PP						
19.5.3	Helminthiosis					X	X
19.5.4	Tetanus						
19.5.5	Mange					X	X

19.6 **Milk Production**

S/N	Season	Litres of milk/day	No. of Goats milked/day	Value/litre	Sold to	Sold/day (Litres)
	(1)	(2)	(3)	(4)	(5)	(6)
19.6.1	Wet Season					
19.6.2	Dry Season					

Sold to Q19.6 Col 5)
Neighbour…….....1 Largescale farm ..5
Local Market……....2 Trader at Farm ...6
Secondary Market ...3 Did not sell 7
Processing industry .4 Other ……..…....8

Last Vaccinated (Col 6)
2003 ……1 2000 ……....4
2002 ……....2 before 2000 ……5
2001 ……....3 Not Vaccinated...6

Main Source of vaccine (Col 7)
Private Vet Clinic ..1 Other ……..…..8
District Vet Clinic ..2 Not applicable ….9
NGO/Project…....3

Definitions and working page for page 14

Goat definitions for page 14

Goat Intake during 2002/03: Goat purchased, given or born which increases the number of goats in the herd.

Goat Offtake during 2002/03:
Goat removed from the herd, either by selling, hh consumption, given away or stolen.

Question Specific Definitions (Section 19.0)

Goat type (Q 19.2 & 19.4, Col 1)

Billy Goat (he-goat): Mature **Uncastrated** male goat used for breeding

Castrated goat: Male goat that has been castrated.

She Goat: Mature female goat over 9 months of age

Kid: Young goat under 9 months of age.

Average Value per Head (Q 19.3, (Col 7 & 9) & 19.4 (Col 3, 5 & 7))

In these columns give the average value per head during 2002/03. For given, traded, consumed by the hh & given away/stolen estimate the value.

Goat vaccination (19.5 col 1)

FMD: Foot and Mouth Disease

CCPP: Contagious Caprine Pleura Pneumonia

LSD: Lumpy Skin Disease

Section 19.0 Goat Population, Intake & Offtake.

NOTE: Section 19.1 is for the current population (as of 1st October 2003);
Section 19.2 and 18.3 is for movement in and out of the herd during the 2002/03 agriculture year.
Section 19.4 is for diseases encountered during the agriculture year.

1. If the household has she goats, you would normally expect them to have kids in column 8

2. If kids are reported in column 2, 3, or 4 (19.2.6, 19.2.5) then there must be at least that number repeated in column 8

Note: If the farmer reports sales of goats the importance of this must be reflected in Q 2.2.3

Section 19.5 If goats are reported to have died in Column 5 then at least that number should be reported in 19.4 col 4

Working area for page 14

20.0 SHEEP POPULATION, INTAKE AND OFFTAKE

20.1 Did the household own, raise or manage any **SHEEP** during the 2002/03 agriculture year? (Yes =1 No =2) ☐

(If no go to section 21.0)

20.2 **Sheep Population** as of 1st October 2003

S/N	Sheep type	Number of Indigenous	Number of Improved for Mutton	Number of Improved Dairy	Total
	(1)	(2)	(3)	(4)	(5)
20.2.1	Ram			X X X	
20.2.2	Castrated Sheep			X X X	
20.2.3	She Sheep			X X X	
20.2.4	Male lamb			X X X	
20.2.5	She lamb			X X X	
	Grand Total				

20.3 **Sheep Intake** during 2002/2003

S/N	Number Purchased	Number given /obtained	Number Born	Total Intake of Sheep	Average Value per head
	(6)	(7)	(8)	(9)	(10)
20.3.1			X X X		
20.3.2			X X X		
20.3.3			X X X		
20.3.4					
20.3.5					

20.4 **Sheep Offtake** during 2002/2003

S/N	Sheep type	Number Sold/traded	Number consumed by hh	Number given away/stolen	Number died	Total Sheep Offtake	Average value per head
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
20.4.1	Ram						
20.4.2	Castrated Sheep						
20.4.3	She Sheep						
20.4.4	Male lamb						
20.4.5	She lamb						
	Total Offtake						

20.5 **Sheep diseases**

S/N	Disease/ parasite	Number Infected	Number Treated	No. Rec-overed	Number Died	Last vaccinated	Main Source
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
20.5.1	Foot Rot					X	X
20.5.2	CC PP						
20.5.3	Helminthiosis					X	X
20.5.4	Trypanosomiasis						
20.5.5	FMD						

Last Vaccinated (Col 6)

2003 ……1 2000 ……....4
2002 ……....2 before 2000 …...5
2001 ……....3 Not Vaccinated...6

Main Source of vaccine (Col 7)

Private Vet Clinic ..1 Other ……..…..8
District Vet Clinic ..2 Not applicable ….9
NGO/Project…....3

Definitions and working page for page 15

Sheep definitions for page 15

Sheep Intake during 2002/03: Sheep purchased, given or born which increases the number of Sheep in the herd.

Sheep Offtake during 2002/03:
Sheep removed from the herd, either by selling, hh consumption, given away or stolen.

Question Specific Definitions (Section 20.0)

Sheep type (Q 20.2 & 20.4, Col 1)

Ram: Mature **Uncastrated** male goat used for breeding

Castrated sheep: Male sheep that has been castrated.

Ewe: Mature female sheep over 9 months of age

Lamb: Young sheep under 9 months of age.

Average Value per Head (Q 20.3, (Col 7 & 9) & 20.4 (Col 3, 5 & 7))

In these columns give the average value per head during 2002/03. For given, traded, consumed by the hh & given away/stolen estimate the value.

Sheep vaccination (20.5 col 1)

FMD: Foot and Mouth Disease

CCPP: Contagious Caprine Pleura Pneumonia

Section 20.0 Sheep Population, Intake & Offtake.

NOTE: Section 20.1 is for the current population (as of 1st October 2003);
Section 20.2 and 20.3 is for movement in and out of the herd during the 2002/03 agriculture year.
Section 20.4 is for diseases encountered during the agriculture year.

1. If the household has ewes, you would normally expect them to have kids in column 8

2. If lambs are reported in column 2, 3, or 4 (20.2.6, 20.2.5) then there must be at least that number repeated in column 8

Note: If the farmer reports sales of Sheep the importance of this must be reflected in Q 2.2.3

Section 20.5 If Sheep are reported to have died in Column 5 then at least that number should be reported in 20.4 col 4

Working area for page 15

21.0 PIG POPULATION AND PRODUCTION

21.1 Did the household own, raise or manage any **PIGS** during the 2002/03 agriculture year (Yes =1 No =2) ☐
(If no go to section 22.0)

21.2 **PIG Population** as of 1 st October 2003

S/N	Pig type	Number
	(1)	*(2)*
21.2.1	Boar	
21.2.2	Castrated male	
21.2.3	Sow/Gilt	
21.2.4	Male piglet	
21.2.5	She piglet	
	Grand Total	

21.3 **Pig increase** during 2002/2003

S/N	Number Purchased	Number given /obtained	Number Born	Total Pig Increase	Average Value per head
	(3)	*(4)*	*(5)*	*(9)*	*(10)*
21.3.1			X X X		
21.3.2			X X X		
21.3.3			X X X		
21.3.4					
21.3.5					

21.4 **Pig decrease** during 2002/2003

S/N	Pig type	Number Sold/traded	Number consumed by hh	Number given away/stolen	Number died	Total Pig Offtake	Average value per head
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*
21.4.1	Boar						
21.4.2	Castrated male						
21.4.3	Sow/Gilt						
21.4.4	Male piglet						
21.4.5	She piglet						
	Total Offtake						

21.5 **Pig diseases/pests/conditions**

S/N	Disease/ parasite	Number Infected	Number Treated	No. Rec -overed	Number Died	Last vacci nated	Main Sou -rce
	(1)	*(2)*	(3)	*(4)*	*(5)*	*(6)*	*(7)*
21.5.1	Anthrax						
21.5.2	ASF						
21.5.3	Anemia					X	X
21.5.4	Helmenthiosis					X	X

22.0 LIVESTOCK PEST & PARASITE CONTROL

22.1 Did you **deworm** your animals during 2002/03 (Yes=1, No-2) ☐
(If the response is 'NO' go to section 22.3)

22.2 Which animals did you **deworm**? (Tick appropriate boxes)
Cattle ☐ Goats ☐ Sheep ☐ Pigs ☐

22.3 Do you normally encounter a **tick** problem (Yes=1,No-2) ☐
(If the response is 'NO' go to section 22.5)

22.4 Which methods of tick control did you use ☐
Control method (Q 22.4) *None..1 Spraying ..2 Dipping..3 Smearing ..4 Other.8*

22.5 Do you normally encounter a **tsetse fly** problem (Y=1,N=2) ☐
*(If the response is **'NO'** go to section 23.0)*

22.6 Which methods of control did you use ☐
Control method (Q22.6) *None .1 Spray .2 Dipping .3 Trapping .4 Other .8*

Last Vaccinated (Col 6)
2003 ..1 2000 ……..4
2002 ..2 before 2000 ….5
2001 ..3 Not Vaccinated.6

Main Source (Col 7)
Private Vet Clinic ..1
District Vet Clinic ..2
NGO/Project……..3
Other ……..……8
Not applicable ……9

Definitions and working page for page 16

Pigs definitions for page 16

Pig Intake during 2002/03: Pigs purchased, given or born which increases the number of Pigs in the production unit.

Pig Offtake during 2002/03:
Pigs removed from the production unit, either by selling, hh consumption, given away or stolen.

Question Specific Definitions (Section 21.0)

Pigs type (Q 21.2 & 21.4, Col 1)

Boar: Mature **Uncastrated** male pig used for breeding

Castrated Pig: Male pig that has been castrated.

Sow: Mature female pig that has given birth to at least one litter of pigs.

Gilt: Female pig of 9 months up to the first farrowing.

Piglet: Young pig under 3 months of age.

Average Value per Head (Q 21.3, (Col 7 & 9) & 21.4 (Col 3, 5 & 7))

In these columns give the average value per head during 2002/03. For given, traded, consumed by the hh & given away/stolen estimate the value.

Pig vaccination (21.5 col 1)

ASF: African Swine Fever

Section 21.0 Pig Population, Intake & Offtake.

NOTE: Section 21.1 is for the current population (as of 1st October 2003);
Section 21.2 and 21.3 is for movement in and out of the herd during the 2002/03 agriculture year.
Section 21.4 is for diseases encountered during the agriculture year.

1. If the household has sows, you would normally expect them to have piglets in column 8

2. If piglets are reported in column 2, 3, or 4 (20.2.6, 20.2.5) then there must be at least that number repeated in column 8

Note: If the farmer reports sales of Pigs the importance of this must be reflected in Q 2.2.3

Section 20.5 If Pigs are reported to have died in Column 5 then at least that number should be reported in 20.4 col 4

Working area for page 16

23.0 **Other Livestock** currently available and details of consumption and sales during the last 12 months

	Animal type	Current Number	Sold during 2002/03		Consumed during 2002/03	
			Number	Average Value/head	Number	Average Value/head
		(1)	(2)	(3)	(4)	(5)
23.1	Indigenous Chicken					
23.2	Layer					
23.3	Broiler					
23.4	Ducks					
23.5	Turkeys					
23.6	Rabbits					
23.7	Donkeys					
23.8	Horses				X X X	X X X X X
23.9	Other ……					

24.0	CHICKEN DISEASES	Number infected	Number Treated	Number Died	Number Recovered
24.1	Newcastle Disease				
24.2	Gumboro				
24.3	Coccidiosis				
24.4	Chorysa				
24.5	Fowl typhoid				

25.0	LIVESTOCK PRODUCTS	Sold during 2002/03		Consumed/utilised during 2002/03	
		Number	Average Value/unit	Number	Average Value/unit
25.1	Eggs		X		
25.2	Hides				
25.3	Skins				

26.0 List in order of importance the **outlets for the sale** of Livestock

S/N	Impo-rtan-ce of outlet	Outlets for Cattle	Out-lets for Goat	Outlets for Sheep	Outl-ets for Pigs	Outlets for Chick-ens
	(1)	(2)	(3)	(4)	(5)	(6)
26.1	1st					
26.2	2nd					
26.3	3rd					
26.4	4th					
26.5	5th					

Outlet code (Col 2, 3, 4 & 5)

Trader at farm……1 *Abattoir/factory……5*
Local Market ……. ……2 *Another farmer ……6*
Secondary market/auction……3 *Other (Specify)……8*
Neighbour ……4

Source of structure (Q27.0 - Col 2)

Owns ……1 *NGO ……6*
Cooperative ……2 *Large scale farm ……7*
Local farmers association …… 3 *Other ……8*
Gov extension/veterinary ……4 *Not applicable ……9*
Development project ……. …..5

27.0 Access to **functional Livestock structures /accessories**

S/N	Type of structure/accessory	Source of Structure	Distance to struct-ure (Km)
	(1)	(2)	(3)
27.1	Cattle Dip		.
27.2	Spray Race		.
27.3	Hand powered sprayer		.
27.4	Cattle crush		.
27.5	Primary Market		.
27.6	Secondary Market		.
27.7	Abattoir		.
27.8	Slaughter Slab		.
27.9	Hide/skin shed		.
27.10	Input supply		.
27.11	Veterinary Clinic		.
27.12	Village holding ground		.
27.13	village watering point/dam		.
27.14	Drencher		.

Definition and working page for page 17

Question Specific Definitions Section 26.0)

Question Specific Definitions Section 27.0)

Access to functional Livestock Structures/accessories (Section 27.0):

NOTE: The structures must be functional. If they are not working/derelict then they should not be included. The distance to the next nearest functional structure should be taken.

Spray Race: A fixed spray structure on an animal race for spraying acaricide

Cattle crush: Corridor structure for restraining cattle.

Abattoir: Large building designed for slaughtering a large amount of animals. It normally has complex structures to assist in the slaughter and storage and a high level of hygiene is maintained.

Slaughter Slab: Concrete slab designed fos slaughtering a small amount of animals

Hides: obtained from Cattle

Skins: Obtained from sheep and goats

Hide/Skin Shed: Shed for curing/tanning animal skins and hides

Village holding Pen: Enclosure for containing large amount of livestock which is owned communally.

Drencher: Device for orally administering medicine to livestock.
If no product was sold in 2002 enter "0" in columns 6, 7& 9.

Procedures for questions

Section 23.0 - Other Livestock:

1. The current number includes both adult and young animals. For example The number of chickens in col 1 would include adults and chicks.

Section 26.0 - Outlets for livestock:

Using the codes enter the outlets for the sale of different livestock in order of importance. If there are, for example, only 2 outlets mark the rest with a "X".

28.0 FISH FARMING

28.1 Was **Fish farming** carried out by this household during 2002/2003? (Yes =1, No=2) ☐ *(If the response is **'NO'** go to section 29.0)*

28.2 Specify details of **fish farming practices**

S/N	Production unit number	Fish farming system	Size of unit/pond (m2)	Source of fingerling	frequency of stocking (No/year)	Number of stocked fish: Tilapia	Number of stocked fish: Carp	Number of stocked fish: Other	Number of fish harvested	weight of fish harvested	weight of fish sold	Mainly sold to
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
28.1.1	1											
28.1.2	2											
28.1.3	3											

Farming System (Col 2)
Natural Pond. ..1 Natural Lake…..3 Other …..8
Dug out pond...2 Water resevoir..4

Source of fingerlings (Col 4)
Own pond ……1 NGO/Project...3 P rivate trader ...5
Government Institution ..2 Neighbour …..4 Other……8

Mainly sold to (Col 12)
Neighbour…….1 Secondary Market.....3 Largescale farm .....5 Did not sell 7
Local Market…...2 Processing industry ....4 Trader at Farm .....6 Other 8

29.0 LIVESTOCK EXTENSION

29.1 Did you receive **livestock extension advice** during 02/03 (Yes=1,No=2) ☐ *(If the response is **'NO'** go to section 30.0)*

S/N	Livestock Extension Message	Received Advice Yes=1,No=2	Adopted Yes=1 No=2	Source of Livestock Extension
	(1)	(2)	(3)	(4)
29.1.1	Feed and Proper feeding			
29.1.2	Housing (Goat, Dairy, Poultry, Pigs)			
29.1.3	Proper Milking			
29.1.4	Milk Hygiene			
29.1.5	Disease control (dipping/spraying)			
29.1.6	Herd/Flock size and selection			
29.1.7	Pasture Establishment			
29.1.8	Group formation and strengthening			
29.1.9	Calf rearing			
29.1.10	Use of improved bulls			
29.1.11	Other livestock extension			

Source of livestock extension (Col 4)
Government …..1 NGO/Dev project ..2 Cooperative …3 Large scale farmer …..4 Other (Specify) ….8

29.2 For the following **Livestock Extension Service Providers** give details

S/N	Extension Provider	If you pay for extension, what is the cost/yr	Contact far-mer/group member (Y=1,N=2)	No. of visits by extension agency/year	No. of mess-ages adopted in the last 3 yrs	Quality of Service
	(1)	(2)	(3)	(4)	(5)	(6)
29.2.1	Government					
29.2.2	NGO/dev project					
29.2.3	Cooperative					
29.2.4	Large Scale farmer					
29.2.5	Other……					

Quality of service (Col 6) *Very good ...1 good ….2 Average…3 Poor…4 No Good ...5*

30.0 GOVERNMENT REGULATORY PROBLEMS

31.1 Did you face problems with government regulations during 2002/03 (Y=1, N=2) ☐

(If the response is no go to section 31.0)

List in order of importance

		Problem code
30.1.1	1st	
30.1.2	2nd	
30.1.3	3rd	

Problem code
Land ownership by government ……..1
Restriction of sale between regions ..2
Import of food items ……3
Other (specify)……..8

Definitions and working page for page 18

General definitions for Section 28.0

Fish farming: Refers to the rearing/production of fish. It is different to fishing in that the fish have to be reared and fed in fish farming. Fishing traps or captures naturally occurring fish in rivers, lakes and the sea and should not be included in this section.

Question Specific Definitions (Section 28.2)

Production unit number (Col 1): A production unit is a pond river/lake which is treated as a separate entity for the production of fish eg it may be by virtue of manageable size, maturity of fish, type of fish etc. Eg a farmer may have 3 fish ponds. (each one is a separate production unit).

Frequency of stocking (Col 5): What is the number of times the farmer puts new fingerlings into the pond each year.

Fingerlings: These are young immature fish used for stocking ponds.

Sold: (Col 10 & 11)

If no fish were sold enter "0" in column 10 and 11)

Livestock Extension Services (Section 29.1)

Adopted (Col 3): This is the uptake of an intervention for 2 or more years

Livestock Extension Service providers (Section 29.2)

Contact Farmer: A farmer who is used by the extension services as a focal point to demonstrate new interventions to. The contact farmer then passes on the message to other farmers

Adopted (Col 5): This is the uptake of an intervention for 2 or more years

Working area for page 18

31.0	LABOUR USE		
31.1	Who is **mainly responsible** for undertaking the following tasks:		
S/N	**Activity**	**Tick if carried out by hh**	**Main responsibility**
	(1)	*(2)*	*(3)*
31.1.1	Land **Clearing**		
31.1.2	Soil **preparation (by hand)**		
31.1.3	Soil **preparation (oxen/trac**		
31.1.4	**Planting**		
31.1.5	**Weeding**		
31.1.6	**Crop Protection**		
31.1.7	**Harvesting**		
31.1.8	Crop **processing**		
31.1.9	Crop **marketing**		
31.1.10	Cattle r**earing/husbandry**		
31.1.11	Cattle **herding**		
31.1.12	Cattle **marketing**		
31.1.13	Goat/sheep **rearing/husband**		
31.1.14	Goat and sheep **herding**		
31.1.15	Goat and sheep **marketing**		
31.1.16	**Milking**		
31.1.17	Pig **rearing/husbandry**		
31.1.18	Poultry **keeping**		
31.1.19	Collecting **Water**		
31.1.20	Collecting **Firewood**		
31.1.21	**Pole** cutting		
31.1.22	**Timber** wood cutting		
31.1.23	**Building/maintaining** house		
31.1.24	Making **Beer**		
31.1.25	**Bee** keeping		
31.1.26	**Fishing**		
31.1.27	**Fish farming**		
31.1.28	**Off-farm income** generation		

Responsibility (Col 3)

HH head alone ....1 Girls 6
Adult Males .....2 Boys & Girls 7
Adult Females.....3 All household members.....8
Adults..... 4 Hired labour 9
boys 5

Satisfied with service (Col 4)

Very good .....1 Average.....3 No good 5
Good .....2 Poor .....4 Not applicable 9

32.0	SUBSISTENCE vs NON-SUBSISTENCE				
32.1	Indicate if any members of the household was involved in the following activities and assess the **percentage used for subsistence/consumption** by the household:				
S/N	Activity	**Tick if hh was involved in activit**	**Estimate % used fo subsistanc**	**Estimate % used for nc subsistence**	**Check Total**
	(1)	*(2)*	*(3)*	*(4)*	*(5)*
32.1.1	**Crop** production				1 0 0
32.1.2	**Livestock** production				1 0 0
32.1.3	**Vegetable** production				1 0 0
32.1.4	Tree cutting for **firewood**				1 0 0
32.1.5	Tree logging for **poles**				1 0 0
32.1.6	Tree logging for **timber**				1 0 0
32.1.7	Tree logging for **charcoal**				1 0 0
32.1.8	**fishing**				1 0 0
32.1.9	**bee** keeping				1 0 0
32.1.10	**employment/off farm**				1 0 0
32.1.11	**employment/off farm**				1 0 0
32.1.12	**Remittances**				1 0 0

33.0	**ACCESS TO INFRASTRUCTURE & OTHER SERVICES**			
S/N	Type of service	**Distance in Km**	S/N	Type of service	**Distance in Km**
	(1)	*(2)*		*(1)*	*(2)*
33.1	**Primary** School	.	32.7	**Feeder** Road	.
33.2	**Secondary** School	.	32.8	**All weather** roa	.
33.3	Health **Clinic**	.	32.9	**Tarmac** road	.
33.4	**Hospital**	.	32.10	**Primary** market	.
33.5	**District** Capital	.	32.11	**Secondary** mark	.
33.6	**Regional** Capital	.	32.12	**Tertiary** market	.

S/N	Type of service	**Distance in Km**	**No of visits/year**	**Satisfied with service**
	(1)	*(2)*	*(3)*	*(4)*
33.13	**Vet** Clinic	.		
33.14	**Extension** Centre	.		
33.15	**Research** Station	.		
33.16	**Plant protection** Lab	.		
33.17	**Land registration** offic	.		
33.18	**Livestock Dev** Centre	.		

Definition and working page for page 19

Question specific definitions (Section 31.1)

Activity (Col 1):

Land Clearing: Refers to removing trees/bush/grass prior to ploughing

Soil Preparation: Refers to the seedbed preparation (ploughing, harrowing, etc).

Cattle Rearing: Tending to cattle at home, eg assisting with births, castration,etc. Different livestock keeping activity to herding.

Cattle Herding: Moving livestock from place to place for grazing and water. If herding is carried out the respondent must also give a response to rearing/husbandry

Question Specific Definitions (Section 32.0.0)

Activity (Col 1):

Subsistence: For the family's survival, rather than for the generation of cash. This includes feeding the hh, provision of water and fuel for cooking. The source of these products are usually from the land resources available to the family. Remember that not all cash earnings are for non subsistence purposes/activities as cash can be used to purchase subsistence items eg food.

Non -subsistence: Cash used for items and activities which are not crucial for the survival of the family. This includes modern medication, non working clothes, refined beer, school fees, etc.

Procedures for (Section 31.1)

Section 31.1 ((Labour use)

1. For each listed activity in column 1, place a tick in column 2 if any member of the household was involved in that activity during the 2002/03 agriculture year.

2. After completing column 2 return to the first activity in row 27.1.1 and complete column 3.

3. Make sure you stress MAINLY responsible.

NOTE: If an activity has been mentioned previously in the questionnaire eg that the hh keeps chickens, make sure a response is obtained in the appropriate place ie poultry keeping.

If off-farm income generation is mentioned, check for responses to off farm income in other parts of the questionnaire

Section 32.0 - Subsistence vs Non-subsistence

1. For each listed activity in column 1, place a tick in column 2 if any member of the household was involved in that activity during the 2002/03 agriculture year.

2. After completing column 2 return to the first activity in row 32.1.1 and complete column 3 & 4. For each activity make an assessment of the percentage used for subsistence survival and the percent converted to cash for non subsistence goods and items.

3. Make sure you stress MAINLY responsible.

NOTE: Cross check the responses with previous sections in the questionnaire. eg if a response is given to remittances check for an entry in question 2.2.5

34.0 HOUSEHOLD FACILITIES

34.1 House Construction

For the **main dwelling**, what are the **main building materials used** in the construction of the following

34.1.1: Roof ☐ 34.1.2 Number of rooms ☐☐

Roof Material
Iron Sheets.....1
Tiles 2
Concrete 3
Asbestos 4
Grass/leaves.....5
Grass & mud.....6
Other (Specify) 8

34.2 Household **assets**

Does your household **own** the following?

	Asset	Y=1 N=2
34.2.1	Radio/cassette, music system)	☐
34.2.2	Telephone (landline)	☐
34.2.3	Telephone (mobile)	☐
34.2.4	Iron	☐
34.2.5	Wheelbarrow	☐
34.2.6	Bicycle	☐
34.2.7	Vehicle	☐
34.2.8	Television	☐

34.3 **Energy use** by the Household

Energy use and access by the household

Main Source of energy for

34.3.1 Lighting ☐☐ **34.3.2** Cooking ☐☐

Lighting energy
Mains electricity.....01
Solar 02
Gas (biogas) 03
Hurricane Lamp 04
Pressure Lamp 05
Wick Lamp 06
Candles 07
Firewood 08
Other (specify) 98

Cooking energy
Mains electricity.....01
Solar 02
Gas (hh biogas) 03
Bottled gas 04
Paraffin/kerocine.....05
Charcoal.....06
Firewood 07
Crop Residues 08
Livestock dung 09
Other (specify) 98

34.4 Access to **drinking water**

	Season	Main sou -rce of drinking water	Distance to source (in km)	Time to and from source (Hour : minute)
	(1)	*(2)*	*(3)*	*(4)*
34.4.1	Wet Season	☐☐	☐☐.☐	☐☐:☐☐
34.4.2	Dry Season	☐☐	☐☐.☐	☐☐:☐☐

Main Source of drinking water
Piped water 01
Protected well 02
Protected/covered spring ... .03
Unprotected Well 04
Unprotected spring 05
Surface water (lake/dam/river/stream)06
Covered rainwater catchment ...07
Uncovered rainwater catchment 08
Water Vendor 09
Tanker truck 10
Bottled water 11
Other (Specify) 98

34.5 Access to **toilet facilities**

34.5.1 What **type of toilet** does your hh use ☐

Type of toilet
No toilet/bush.....1
Flush toilet 2
Pit latrine - traditional ..3
Improved pit latrine - hh owned.....4
Other type (specify) 5

34.6 **Food consumption** patterns

34.6.1	**Number of meals** the hh normally has per day	☐
34.6.2	**Number of days** hh consumed **meat** last w	☐
34.6.3	How often did the hh have **problems in satisfying the food needs** of the hh last year?	☐

Problems satisfying hh food needs (row 34.6.3)
Never 1
Seldom 2
Sometimes 3
Often 4
Always 5

34.7 Source of Household **income**

34.7.1 What is the households **main source of cash income**? ☐☐

Source of Income codes
Sale of food crops 01
Sale of Livestock.....02
Sale of livestock products ...03
Sale of cash crops.....04
Sale of forest products 05
Business income.....06
Wages or salaries in cash 07
Other casual cash earnings ..08
Cash remittances 09
Fishing 10
Other 98
Not applicable 99

Definition and working page for page 20

Household facilities (Section 34):

Number of rooms used for sleeping in the household (Q 34.1)

Include sitting room, dining room, kitchen, etc if used for sleeping. It also includes rooms outside the main dwelling

A room is defined as a space which is separate from the rest of the building by a permanent wall or division. A building/house that is not divided into rooms is considered to have one room.

Household assets (Q 34.2): these assets must be functioning. Do not include if broken.

Access to drinking water (Q 34.4): If there is more than one source, use the one, which the hh uses most frequently.

Main source of hh cash income:

Activity that provides the hh with the most cash during 2002/03 agriculture year.

Average/maximum yields

Use this table to compare the yields calculated in sections 7.1, 7.2, and 7.3. They are STRICTLY to be used as guidelines only and the sole purpose is to assist in getting the correct area and harvest for each crop

	Crop Name	kg/ha		kg/acre	
		Average	Max	Average	Max
11	Maize	1200	6250	486	2530
12	Paddy	700	4000	283	1619
13	Sorghum	750	3500	304	1417
14	Bulrush Millet	350	3000	142	1215
15	Finger Millet	300	2500	121	1012
16	Wheat	1200	4500	486	1822
17	Barley	1400	2300	567	931
21	Cassava	3000	7000	1215	2834
22	Sweet Potato	600	8000	243	3239
23	Irish potatoes	750	8500	304	3441
24	Yams	4000	10000	1619	4049
25	Cocoyams	2500	5000	1012	2024
26	Onions			0	0
27	Ginger			0	0
31	Beans	400	1300	162	526
32	Cowpeas	300	1750	121	709
33	Green gram			0	0
34	Pigeon pea	600	2000	243	810
35	Chick peas	500	1500	202	607
36	Bambara nut	600	4000	243	1619
41	Sunflower	600	1700	243	688
42	Simsim	300	1000	121	405
43	Groundnut	600	4000	243	1619
47	Soyabeans	1300	2500	526	1012
48	Caster seed	300	750	121	304
75	Pineapple	25000	60000	10121	24291
50	Cotton	300	1500	121	607
51	Tobacco	500	2000	202	810
53	Pyrethrum			0	0
62	Jute	800	3500	324	1417
44	Palm Oil	1200	5000	486	2024
45	Coconut	2000	8000	810	3239
46	Cashewnut	9	60/tree	4	24

	Crop Name	kg/ha		kg/acre	
		Average	Max	Average	Max
86	Cabbage			0	0
87	Tomatoes			0	0
88	Spinach			0	0
89	Carrot			0	0
90	Chillies			0	0
91	Amaranths			0	0
92	Pumpkins			0	0
93	Cucumber			0	0
94	Egg Plant			0	0
95	Water Mellon			0	0
96	Cauliflower			0	0
52	Sisal	800	25000	324	10121
54	Coffee	500	100	202	40
55	Tea	2500	10000	1012	4049
56	Cacao	200	1000	81	405
57	Rubber	400	1400	162	567
58	Wattle			0	0
59	Kapok			0	0
60	Sugar Cane	60000	150000	24291	60729
61	Cardamom			0	0
71	Banana	10000	50000	4049	20243
72	Avocado			0	0
73	Mangoes	10000	25000	4049	10121
74	Papaw	50000	70000	20243	28340
76	Orange	20000	40000	8097	16194
77	Grape fruit	30000	50000	12146	20243
78	Grapes	5000	30000	2024	12146
79	Mandarin/tange	20000	40000	8097	16194
80	Guava	7000	35000	2834	14170
81	Plums			0	0
82	Apples			0	0
83	Pears			0	0
84	Pitches			0	0

Back Page Reference material

This page contains reference information that may be required to complete some of the questions in the questionnaire.

Weights and measures

1 hectare	= 10,000 sq metres	(100 x 100 metres)
1 kilometre	= 1000 metres	
1 acre	= 4840 square yards	(110 x 44 yards)

Conversions

1 hectare	= 2.47 acres
1 mile	= 1.61 Kilometres

Kg equivalents

The following standards may be used as a guide to obtain kg if the reported unit is different. Only use these conversions if the respondent is unable to provide weights in kgs.

	Crop Name	Number of Kgs Standard Bag	Standard Tin	Non-standard Name	Non-standard kgs
11	Maize	100	18	Rumbesi	140
12	Paddy	75	15		
13	Sorghum	100	18		
14	Bulrush Millet	100	18		
15	Finger Millet	120	20		
16	Wheat	75	15		
17	Barley	75	15		
21	Cassava	60	12		
22	Sweet Potatoe	80	16		
23	Irish potatoes	80	16		
24	Yams	80	16		
25	Cocoyams	80	16		
26	Onions	80	16		
27	Ginger	75	15		
31	Beans	100	20		
32	Cowpeas	100	20		
33	Green ram	100	20		
34	Pigeon pea	100	20		
35	Chick peas	100	20		
36	Bambara nut	100	20		
41	Sunflower	60	12		
42	Simsim	100	20		
43	Groundnut	50	10		
47	Soyabeans	100	20		
48	Caster seed	100	20		
75	Pineapple	90	18		
50	Cotton	50	10		
51	Tobacco	70	14		
53	Pyrethrum	60	12		
62	Jute	50	10		
44	Palm Oil	100			
45	Coconut	75			
46	Cashewnut	80			

	Crop Name	Number of Kgs Standard Bag	Standard Tin	Non-standard Name	Non-standard kgs
86	Cabbage	50			
87	Tomatoes	90			
88	Spinach	45			
89	Carrot	110			
90	Chillies	85			
91	Amaranths	50			
92	Pumpkins	60			
93	Cucumber	80			
94	Egg Plant	70			
95	Water Mellon	80			
96	Cauliflower	50			
52	Sisal	130			
54	Coffee	55			
55	Tea	60			
56	Cacao	60			
57	Rubber				
58	Wattle	90			
59	Kapok				
60	Sugar Cane	120			
61	Cardamom	100			
71	Banana	120			
72	Avocado	140			
73	Mangoes	130			
74	Papaw	100			
76	Orange	130			
77	Grape fruit	120			
78	Grapes	80			
79	Mandarin/tange	110			
80	Guava	110			
81	Plums	110			
82	Apples	110			
83	Pears	110			
84	Pitches	110			

For official use only:

If a question has a query, an indication will be made by the supervisor/data entry controller on the front page of the questionnaire. This space is to note what and where the problem is, the action required to be taken and the responsible person to take follow up action.

Nature of the problem:

_____

_____

_____

Action Required: National supervisor action ☐ Field supervisor action ☐

Overall Status: Does not affect overall integrity of the questionnaire. ☐ Discard and resample ☐

More data is required before it can be used ☐ Discard as missing data ☐