The status of fruit production, processing and marketing in Malawi

Richard Kachule and Steven Franzel

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Abstract

This study was commissioned by the World Agroforestry Centre (ICRAF) under the Agroforestry and Food Security Programme (AFSP). The purpose of the study was to establish the status of fruit production, processing and marketing in Malawi with respect to the following aspects: the policy environment, trends in demand and supply of fruits and fruit products, marketing infrastructure and institutions and farmer groups involved in the fruit industry. The study involved a review of literature on Malawi's horticulture industry with emphasis on the fruit sub-sector. Consultations with various stakeholders supplemented the literature review.

The study revealed a number of constraints that have hindered development of the fruit industry in Malawi. The constraints can broadly be categorized into policy related, technical and technological issues and institutional arrangements which include market organizations. On policy, the study noted that there is no policy and clear strategies on horticulture and that there is limited government and private sector support on production, marketing and processing of horticultural commodities. On the technical and technological aspects, the study revealed that there is limited expertise on post harvest handling especially amongst the smallholder farmers, low production levels and poor quality products due to poor germplasm and inadequate supply of tree seedlings for increased fruit production which would feed into the processing industry.

In terms of institutional arrangements, the study revealed that there are ineffective and inefficiently managed farmer organizations due to poor leadership and limited management skills on the part of executive members for the farmers organizations and lack of entrepreneurship skills amongst most smallholder farmers. The study also noted that there is lack of organized markets, poor marketing infrastructure including market information system and low prices offered on horticultural commodities due to low quality and inefficient markets.

The study makes a number of recommendations including the need for a clear policy, strategies for developing an enabling regulatory environment for the promotion of fruit production, processing and marketing; the need for improved marketing infrastructure including the establishment of specialized markets (physical infrastructure) with facilities for handling fruits and fruit products. Strengthening farmer organizations/cooperatives, improved advisory services and improved access to credit are also recommended. The study also recommends promoting investment in value-adding technologies through tax reforms and funding of research in low cost value-adding technologies. Lastly but not least, the study recommends strengthening collaboration and coordination through strong public-private-partnerships.

Keywords

fruit production, processing, industry, marketing, Malawi.

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Acronyms

ADDs	Agricultural Development Divisions
ADP	Agricultural Development Programme
AFSP	Agroforestry and Food Security Programme
CREMPA	Central Region Milk Producers Association
DAES	Departments of Agricultural Extension Services
DARS	Department of Agricultural Research Services
EU	European Union
FBO	Farmer Based Organizations
FD	Forestry Department
FEWS	Famine Early Warning System
FIDP	Farm Income Diversification Programme
FUM	Farmers Union of Malawi
GDP	Gross Domestic Product
HFCDP	Horticulture and Food Crops Development Project
HODOM	Horticultural Development Organization of Malawi
ICRAF	World Agroforestry Centre
IDEAA	Initiative for Development of Equity in African Agriculture
IRLADP	Irrigation, Rural Livelihoods and Agricultural Development Programme
LRCD	Land Resource Conservation Department
MIRTDC	Malawi Industrial Research and Technology Development Center
MDFA	Mzuzu Dairy Farmers Association
MEPD	Ministry of Economic Planning and Development
MEPC	Malawi Export Promotion Council
MHDS	Malawi Horticultural Development Strategy
MIPA	Malawi Investment Promotion Agency
MIWD	Ministry of Irrigation and Water Development
MLBP	Malawi Lake Basin Programme
MOU	Memorandum of Understanding
NAFTNA	National Fruit Tree Nursery Association
NASFAM	National Smallholder Farmers Association of Malawi
NGO	Non-Governmental Organizations
NSO	National Statistical Office
PWC	Price Waterhouse Coopers
RSA	Republic of South Africa
SHMPA	Shire Highlands Milk Producers Association
T/A	Traditional Authority

1. Introduction

This report presents findings of a desk study commissioned by the World Agroforestry Centre (ICRAF). The study aimed at establishing the status of fruit production, processing and marketing in Malawi as part of the Agroforestry and Food Security Programme (AFSP) activities.

The report is organized in three sections. Section 1 presents a brief description of the Malawi economy, the agriculture sector, contribution of the horticulture sector to the economy, the policy environment on horticulture, background to the Agroforestry and Food Security Programme, background to the study, methodology and constraints to fruit production. Section 2 presents findings of the study and Section 3 presents conclusion and recommendations.

1.1 General Description of Malawi

Malawi is one of the landlocked countries in Southern Africa. It is bordered to the north and north-east by Tanzania; to the east, south and southwest by Mozambique; and the west and northwest by Zambia. The country is 901 kilometres long and ranges in width from 80 to 161 kilometres. It has a total land area of 118,484 square kilometres and has a population of about 12.5 million people. The population density is 105 persons per square kilometre with densities being highest in the south, followed by centre and north in that order. Urbanization is growing at a fast rate resulting into an increase in urban population from 14% in 1998 to 16% in 2002 (National Statistical Office, 2005).

1.2 Agriculture

Malawi is predominantly an agro-based economy, as such, agriculture is a key component in the national economy in terms of its contribution to food security and external trade. It contributes 37% of the Gross Domestic Product (GDP), employs 87% of the country's labour force, provides 64% of total income for rural people and accounts for over 90% of the foreign exchange earnings. Agriculture supports the manufacturing industry by supplying 65% of the raw materials needed. Tobacco, sugar and tea are the main cash crops while maize, rice, cassava, sorghum and millet are the food crops grown in different parts of the country. Livestock is another integral component of the agriculture sector in Malawi (Damaliphetsa *et.al*, 2007). Even in times of favourable conditions for crop production such as good rainfall pattern, some families still suffer from food shortages. This may among other factors be attributed to small farm sizes, low yields particularly for those cultivating marginal areas, lack or inadequate use of recommended inputs, sale of agricultural produce due to low incomes and/or wasteful cultural ceremonies and low purchasing power for those who do not grow their own food. Damaliphetsa *et.al* (*ibid*) note that in Malawi, food security for most people is directly dependent on own production and that crop production is dependent on the inter-play of several unique characteristics in the sub-sector. Such factors include:

- High dependency on rain-fed production
- Dualism in the agricultural sector¹
- Over dependence on the single crop for food (maize) and cash (tobacco)
- Low level of commercialization
- Low agricultural productivity

Damaliphetsa *et.al* observes that due to the parameters above, it is evident that agricultural policies and their subsequent strategies need to take into account the challenges being faced in the sector. Policy makers and implementers need to devote some effort, time and resources in order to overcome the challenges in the agricultural sector if the se is to make meaningful and sustainable positive impacts on the economy.

1.3 Contribution of the Horticulture Sector to the Economy

Horticulture has several components/sub-sections amongst which are fruits, vegetables, ornamental/cut- flowers, tree nuts, spices and herbs. The horticulture sector in general has the potential to complement the country's traditional cash crops of tobacco, tea and sugar in terms of contribution to national economy. Research has shown that cultivation of horticultural crops is a potential alternative source of income to tobacco which is a major income source for most farmers and an important export earner for the country. In addition to national contribution, horticultural commodities such as fruits and vegetables have the potential to contribute to household nutrition, food security and income.

However, despite the potential that the fruit sub-sector has in contributing to nutrition, income and national economy, the sub-sector and horticulture in general has received little technical and financial support compared to the tobacco, tea and sugar industries.

Because of the little attention given to the horticulture sector, availability of disaggregated data for the various components of horticulture is also a problem. Lack of detailed and specific statistics on horticulture makes it difficult to make informed decisions on specific components of the horticulture sector, such as fruits.

Statistics from the Ministry of Economic Planning and Development (MEPD) indicate that on average, the horticulture sector contributes about 22% to the national Gross Domestic Product (GDP) and about 58% within the agricultural sector (Table 1). Because of unavailability of sufficient information, data on fruits is simply lumped with other horticultural commodities such as vegetables. This makes it difficult to determine the contribution of specific fruit species and hence difficult to come up with specific development strategies that would promote those species that have greater potential to contribute to household welfare and national economy.

¹ The agricultural sector is comprised of estate and smallholder sub-sectors

Table 1: Contribution of Agriculture and Horticulture to GDP (at 1994 factor cost), 2003-2007

in millions Malawi Kwacha (MK) \$US 1.00 = 139 MK (January 2007)

Crop	2003	2004	2005	2006	2007/a	5-year average
<i>Horticulture:</i>						
Pulses	297.5	230.2	214.4	321.1	394.8	291.6
Cassava	783.4	822.6	644.0	822.1	964.8	807.4
Potatoes	1,165.4	1,866.1	1,433.2	2,164.3	2,508.3	1,827.5
Bananas and mangoes	54.3	55.7	57.2	58.8	60.4	57.3
Other fruits and vegetables	202.6	207.9	213.3	234.6	240.7	219.8
Other cash crops/b	1.8	1.1	1.9	1.3	1.9	1.6
Total horticulture	2,505.0	3,183.7	2,564.0	3,602.2	4,171.0	3,205.2
<i>Agriculture:</i>	5,323.0	5,469.2	4,976.2	5,598.2	6,200.1	5,513.3
Small-scale	4,324.6	4,266.2	3,767.4	4,310.1	5,254.5	4,384.5
Large-scale	998.4	1,203.1	1,208.8	1,288.1	945.7	1,128.8
<i>Gross domestic product</i>	13,385.5	14,065.7	14,368.4	15,576.4	16,928.8	14,864.9
% agriculture to GDP	39.8	38.9	34.6	35.9	36.6	37.1
% small-scale agriculture to GDP	32.3	30.3	26.2	27.7	31.0	29.5
% large-scale agriculture to GDP	7.5	8.6	8.4	8.3	5.6	7.6
% horticulture to GDP	18.7	22.6	17.8	23.1	24.6	21.6
% horticulture to agriculture	47.1	58.2	51.5	64.3	67.3	58.1
a. Predicted.						
b. Nuts, paprika, sesame and chillies						

Source: Ministry of Economic Planning and Development (MEPD) (As reported in Price Waterhouse Coopers, 2008).

1.4 Policy on Horticulture

The Malawi government recognizes that expansion of horticultural production for agro-processing is one of the strategies for increasing agricultural productivity. In an effort to enhance performance of the horticulture sector, the government emphasizes developing marketing and agribusiness management skills for the horticulture sector. It is envisaged that such efforts have the potential to contribute to development of horticultural marketing and food processing in Malawi.

A recent study by Price Waterhouse Coopers (PWC) on Horticultural Marketing and Food Processing in Malawi noted that Malawi does not have a horticultural policy, legislative and institutional frameworks in place, and consequently has no horticultural marketing policy. The study observes that in the interim, development of the horticulture industry is guided by the Malawi Horticultural Development Strategy (MHDS) of 1999. The strategy stipulates the vision, strategies and action plans for production of various horticultural produce (vegetables, fruits, mushroom, spices, amenity horticulture and floriculture), and for horticultural services including

research, extension, human resource development, inspection and phytosanitary services, inputs, credit and financing, marketing development, processing and sector organization.

The PWC study further notes that the horticultural development strategy pays little attention to export marketing and is not supported by a legislative framework (Act) or institutional framework. The Horticultural Development Organization of Malawi (HODOM) was established with the mandate to spearhead implementation of the strategy. Unfortunately, HODOM's activities are seriously curtailed to almost closing down due to financial constraints.

Absence of a horticultural policy is therefore one of the factors that hinders development of the fruit sub-sector in terms of production, processing and marketing.

1.5 The Agroforestry Food Security Programme (AFSP)

Agroforestry is recognized as one of the sustainable natural resource management strategies and it is considered as an adaptive strategy in countries such as Malawi that face increasing climate variability, land degradation and low agricultural productivity. Agroforestry is a strategy to (1) mitigate land degradation, (2) reduce dependence on inorganic fertilizers and (3) enhance the effectiveness of fertilizers.

Based on Malawi's background of food insecurity and building on the successes of previous research and development in Malawi and the region, the Agroforestry Food Security Programme was formulated in January 2007 with support from the Irish-Aid funding. The AFSP consists of four components: (1) fertilizer trees system for food security, (2) fruit tree system for improved nutrition, health and income, (3) fodder tree system for improved livestock to provide food security and income, and (4) fuelwood tree system to provide biomass energy for cooking and contribute to the reduction of the rate of deforestation.

The AFSP was designed and envisaged as a multi-year programme for implementation over a period of at least four years. The World Agroforestry Centre and its partners are committed to scale up the use of the four types of agroforestry systems to support 200,000 smallholder farm families in Malawi by the end of four years, as a Phase I project. At an average of six persons per family, the AFPS is expected to benefit at least 1.2 million individuals at the end of the project.

The project is executed by several partners including the Departments of Agricultural Extension Services (DAES), Land Resource Conservation (LRCD), the Land Resources Centre, Agricultural Research Services (DARS), Forestry Department (FD), the National Smallholder Farmers Association of Malawi (NASFAM), the University of Malawi (Bunda and Chancellor Colleges) and Mzuzu University, NGOs and CBOs such as SHMPA, CREMPA, MDFA, and Mapanga CBO. Memorandums of Understanding (MOU) were developed with national partner institutions and universities. Programme resources are shared with partners within the framework of the signed MOUs, (AFSP project document).

1.6 Background to the study

This study on status of fruit marketing in Malawi is the first phase of a series of studies on processing and marketing of fruits in Malawi. The study falls under the “*Fruit tree system for improved nutrition, health and income*” component of the AFSP.

The objective of the first phase was to establish the current status of production, processing and marketing in Malawi. It was envisaged that findings of the first phase would be an input into the second phase which will assess constraints and opportunities of farmer groups and how the project could help them, either individually or collectively. The first phase focused on establishing the following:

1. Trends in demand and supply of fruits and fruit products by various stakeholders including processors retail and chain stores. Some of the aspects to be established on demand will include: volumes demanded, the type of fruits and fruit products demanded at each stage of the marketing chain, and the corresponding quality.
2. Gaps in supply of fruits and fruit products and what ought to be done to meet the demand, i.e., what is on ground in terms of meeting the demand.
3. Marketing infrastructure of fruits and fruit products.
4. Policy issues related to production, trade (imports and exports) and marketing of fruits and fruit products.
5. List of farmer groups involved in fruit production/marketing (including past groups/interventions that have failed). Products, activities (marketing fresh fruit, processing, and if present what kind of processing).
6. Role of imported fruits and fruit products and possibilities of import substitution.
7. Demand for fruits and fruit seedlings.
8. Product characteristics (including quality).

1.7 Methodology

The study principally involved a review of literature on horticulture in Malawi and consultation with some stakeholders. Emphasis of the study was on fruit production, processing and marketing. Stakeholders that were consulted included:

- Ministry of Agriculture
- Heads of government programmes/projects on horticulture
- Donor representatives (those that have funded horticultural projects and potential ones)
- Major processors

- Technology development institutions (e.g. Farm machinery section at Chitedze Research Station and the Department of Agricultural Engineering at Bunda College of Agriculture, and
- The national Statistical Office (NSO)

2. Major Findings

2.1 Constraints to Fruit Production

There are several constraints to fruit production and marketing which can be categorized into a number of categories as follows:

2.1.1 Policy related

- Absence of policy and clear strategies on horticulture;
- Limited government and private sector support on production, marketing and processing of horticultural commodities.

2.1.2 Technical/technological

- Lack/inadequate agronomic and/or technological knowledge on production;
- Low production levels and poor quality products due to poor germplasm;
- Lack or inadequate supply of tree seedlings for increased production;
- Limited expertise on post harvest handling, and marketing of horticultural products.

2.1.3 Marketing

- Lack of organized markets, poor marketing infrastructure and market information system in addition to imperfect markets;
- Poor infrastructure;
- Road condition and road net-work;
 - Processing (Technology)
 - Communication
- Low prices offered on horticultural commodities due to low quality and inefficient markets.

2.1.4 Institutional constraints

- Inadequately trained and specialized staff in research and extension with respect to horticulture marketing and processing;
- Lack of entrepreneurship;
- Ineffective and inefficiently managed farmer organizations due to poor leadership and management skills of executive members;

- Limited and in some cases lack of access to financial credit by entrepreneurs in the horticulture sector and high interest rates whenever the financial credit is available.

Details on these constraints are discussed in the subsequent sections.

3. Fruit Production, Processing and Marketing in Malawi

3.1 Production

The 1998 report on status of horticulture observes that various horticultural crops are grown in almost every part of the country. The report notes that the country has varied climatic conditions from tropical to semi-temperate offering an opportunity for growing horticultural crops suited to particular climatic conditions. Despite the favourable climatic conditions for production of various horticultural commodities, fruit production has not developed compared to other crops such as tea, tobacco and sugar. Factors such as a lack of specialists in the horticultural sector, and limited government and private sector support for horticultural production have limited the development of fruit production.

Reliable production figures from different parts of the country and at national level are difficult to obtain due to the unsystematic way in which production estimates are made. As a result, production data on specific fruits and other horticultural products are often not available. This has resulted in under-estimation of the country's potential in fruit production (Kachule *et.al*, 1998). Except for horticultural crops such as cashew, macadamia, sesame, sunflower, castor, coffee, paprika, chillies, cassava, sweet potatoes, and Irish potatoes, the production data from the Ministry of Agriculture leaves out statistics on fruit production making it impossible to have reliable production estimates at national level. Apart from the Ministry of Agriculture, there is no organization/body that is mandated to collect data on fruits and horticultural crops in general. Ideally, the Horticulture Development Organization of Malawi (HODOM) should have been the right body to collect such data. However, HODOM's operations are constrained by limited resources.

Production of fruits in Malawi is constrained by a number of factors. One major constraint is the absence of a policy on horticulture hence no solid direction on fruit production. Absence of a policy on horticulture contributes to a number of problems in fruit production some of which are:

Lack of organized markets: Unorganized marketing system has a bearing on production levels because of uncertainty created amongst farmers on availability of a ready market for the fruits. Low prices offered on fruits also affects production levels in the sense that farmers get discouraged because of the low prices which in most cases do not cover production costs.

Limited government and private sector support to production: Smallholder farmers are often resource poor which impedes their involvement in commercially oriented production systems. Smallholder farmers' access to support institutions such as extension and financial services is limited thereby affecting fruit production.

Unavailability of better germplasm: This results in production of low yielding and low quality fruits which are not suitable for processing and cannot compete with imported superior fruits. The problem of poor germplasm contributes to inadequate supply of improved tree seedlings for increased fruit production.

Poor production data system: Absence of an organized data management system on production figures for fruits and horticultural products in general is a critical constraint to increased fruit production because there is no basis for decision making on types and quantities of fruits to be grown in the different parts of the country. Data from the Ministry of Agriculture are not detailed enough to provide useful guidance on production levels for the different types of fruits.

Furthermore, there is no proper coordination on production data captured by different stakeholders for consistency as evident from Tables 2a and 2b. Often the production figures on fruits are lumped without specifying the types of fruits, for example last row in Table 2b simply indicates fruits and vegetables, this does not give useful information on the specific types of fruits and vegetable being presented. In the absence of a solid data system, the production figures compiled by the Ministry of Agriculture are used as a proxy of supply on the various types of horticultural products. In the case of fruits, the PWC reports an average supply of 1.5 million tones for fruits and vegetables. Statistics from Tables 2a & 2b and the corresponding Figure 1 show an increasing trend for fruits and vegetables over the past five years. On the other hand, supply of macadamia nuts has shown a declining trend over the years while the supply of cashew nuts shows some marked variations over the years with virtually no supply between 2003/04 and 2004/05 seasons and an increasing trend over the 2005/06 and 2006/07 production seasons. The increasing trend in supply of fruits and vegetables could be attributed to emphasis and focus put on these commodities by various agencies including government, donor agencies and the Non-Governmental Organizations (NGOs) community.

Unorganized/uncoordinated production systems: Because of the absence of a policy on horticulture to guide production, the current production systems are haphazard in the sense that different varieties of fruits are grown in almost every part of the country without due regard to climatic requirements of particular varieties.

Inadequate agronomic and technological knowledge on production also contributes to haphazard nature of production. This eventually contributes to low yields and quality of fruits being produced.

Table 2a: Smallholder Production (MTs)

	1997/98	1998/99	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05	2005/06	2006/07
PULSES	208,895	222,757	263,368	299,930	286,991	313,241	242,364	209,492	344,586	407,531
Beans	60,039	55,870	73,333	106,924	99,828	101,842	76,964	85,759	117,808	128,632
Pigeon peas	79,368	118,199	99,036	105,518	105,105	116,892	93,084	63,883	130,987	159,365
Cow peas				25,953	26,118	28,006	15,048	8,584	19,737	27,721
Field peas				1,649	1,773	1,939	2,087	87	1,600	2,064
Grams	761	1,820	1,611	2,202	2,245	2,488	1,723	661	849	1,042
Soya beans	28,482	39,675	46,915	35,900	29,568	38,745	33,758	40,396	55,248	67,332
Dolichus beans				2,697	2,693	3,177	3,030	1,429	2,327	2,923
Velvet beans				8,981	10,115	9,089	7,650	4,382	6,583	7,142
Ground beans	5,017	7,193	7,578	8,487	7,735	8,985	7,300	4,178	8,480	10,347
Pure stand				7,408	7,675					
Inter-planted				19,221	17,511					
Chick peas				1,619	1,811	2,078	1,720	133	967	963
Guar Beans	1,540	3,653	3,976	3,358		10				-
Cashew	153	142	192	535	744	232			50	283
Macadamia	214	286	667	306	3,732	1,094	3	232	96	35
Sesame	219	359	352	354	383	375	227	106	291	504
Sunflower	1,818	2,441	2,997	3,593	4,107	3,868	3,660	2,672	5,450	5,910
Castor		-								
Coffee	856	434	988	2,764	510	406,077	455	1,181	2,091	1,403
Paprika				5,972	8,836	1,561	837	1,218	2,127	1,808
Chillies	1,824	3,307	2,218	2,340	1,961	1,691	1,678	1,477	1,445	1,109
Cassava	829,821	895,420	2,757,186	3,313,126	1,512,792	1,703,355	2,532,079	2,197,640	2,832,141	3,238,943
S. Potatoes	1,432,383	1,680,303	1,877,032	2,528,790	1,054,829	1,485,391	1,762,034	1,081,463	1,781,595	2,264,969
I. Potatoes	120,338	160,088	160,251	323,217	348,975	398,806	420,590	404,420	527,831	593,842

Source: Ministry of Agriculture; Planning Department, 2008

Table 2b: National Production Levels of Horticultural Crops (thousand MTs)

CROP	2002/03	2003/04	2004/05	2005/06	2006/07	5-year
TREE NUTS	1.7	0.5	1.4	2.2	2.0	1.6
Macadamia	1.1	0.0	0.2	0.1	0.2	0.3
Coffee	0.4	0.5	1.2	2.1	1.8	1.2
Cashew	0.2	Na	na	0.1	na	0.1
FRUITS & VEGETABLES	1416.3	1453.1	1490.9	1611.3	1654.1	1525.1
Bananas and mangoes	377.8	387.7	397.7	408.9	420.3	398.5
Other fruits and vegetables	1038.5	1065.5	1093.2	1202.5	1233.7	1126.7

Source: FEWS/MAFS and MEPS (as reported in Price Waterhouse Coopers, 2008)

Source: Data from Table 2b.

3.2 Processing

Fruit processing in Malawi can be categorized into small scale and medium scale. The small-scale category is more of cottage industries done by either individuals or groups of smallholder farmers and there are many of such processors across the country. The cottage industries process various types of fruits into juices. The range of products includes juices from citrus fruits, mango, guava, baobab and tamarind. Some cottage industries also process fruits such as guava, baobab and tomato into jam. The cottage industries often receive technical, financial and capital support from NGOs, donor agencies and government. The technical support is usually in form of training on how to process the various types of fruits into juices and/or jams and also on how to make and preserve fruit concentrates to ensure continued availability of the juices even when the fresh fruits are out of season (Plate 1).

Plate 1: Sample of Fruit concentrates from Farm Machinery Section at Chitedze.

Some of the institutions that have offered such type of support and assistance on processing techniques include: Bunda College of Agriculture, the Farm Machinery group of Chitedze research station, Chancellor College and the Magomero Institute. The Government in collaboration with agencies such as the Food and Agriculture Organization (FAO) and donor agencies such as GTZ and the African Development Bank (ADB) have also offered either financial and technical support or both to different groups. For example, the Irrigation, Rural Livelihoods and Agricultural Development Programme (IRLADP) an ADB funded project is offering support to various fruit processing groups across the country.

Processing infrastructure: The processing infrastructure is not well developed especially at the smallholder level. The Malawi's Agricultural Development Programme (ADP) observes that there is very little value adding to most agricultural products by the smallholder farmers. This could partly be attributed to resource constraints by most smallholder farmers and limited availability of the processing equipment.

On the local scene, few institutions have developed small-scale fruit processing equipment. Such institutions include the farm machinery section of Chitedze research station, the Malawi Industrial Research and Technology Development Center (MIRTDC) and Bunda College of agriculture. Most of the smallholder farmers that are currently processing fruits use processing machines developed by these local institutions. The processing machines developed by the local institutions are often simple in design, hand operated with limited efficiency and throughput for a competitive industry (Plates 2-4).

Plate 2: Fruit processing equipment at Ngolowindo Cooperative in Salima district developed by Chitedze Farm Machinery Section.

Plate 3: Fruit processing equipment developed by Agricultural Engineering Department of Bunda College.

Plate 4: Processing equipment at Tipindule processing group in Mwanza district.

In addition to processing equipment, support has also been provided by other agencies for processing houses/premises. However, the design of most of the houses is not appropriate for the processing activity in terms of layout and most of them lack other necessary facilities such as cooling equipment and display cabins (Plates 5-6).

Plate 5: Processing house at Ngolowindo Cooperative in Salima district.

Plate 6: Processing house at Masenjele in Nsanje district funded by IRLADP.

As opposed to the cottage industries, the medium scale fruit juice manufactures which include Dairibord, Lilongwe Dairy and SunCrest Creameries produce a range of fruit juices such as orange, guava, peach, granadilla and cocopine from nectar concentrates imported from the Republic of South Africa. Thus these medium-scale fruit juice manufacturers do not process fresh fruits directly, they simply dilute the concentrates into various brands of fruit juices.

Two reasons were given as to why the medium scale fruit juice manufacturers do not process fresh fruits. The first reason being the heavy capital investment required for the processing equipment which is in the range of 150,000,000 Malawi kwacha, an equivalent of about US\$1,071,429. This level of investment is considered too high for the medium scale investors. The second reason for not processing fresh fruits directly is that the processing capacity of such machinery which is estimated at 3,000 kilogrammes of fruits per hour is high compared to the local supply of fruits. The low supply of fruits would make the investors operate below capacity and hence not taking advantage of economies of scale.

3.3 Marketing

As pointed out in Section 2.1, there are several constraints affecting both production and marketing of fruits in Malawi. The domestic as well as export market of fruits in Malawi is considered underdeveloped compared to other countries in the region such as Kenya, South Africa and Zimbabwe.

Absence of policy and clear strategies on horticulture affect the development of domestic and export markets for fruits and fruit products. The absence of a policy on horticulture has contributed to unorganized and inefficient fruit product markets. In addition to the policy constraint, there are also other factors that have contributed to the underdevelopment of fruits and fruit products marketing in Malawi. The following are some of the factors:

Poor infrastructure: The marketing infrastructure is undeveloped at all levels² compared to other countries in the region. The existing storage, processing/grading and transport infrastructure is poor and renders marketing of fruits and fruit products difficult.

Storage infrastructure: At smallholder level there has been no investment in appropriate storage structures either as individuals or groups. What is common in some cases are open shades (Plate 7-8) in market places where people bring their products for sale.

² Smallholder sub-sector, estate/commercial sub sector and national level.

Plate 7: Roadside shelters for selling of horticultural products.

Plate 8: Roadside shelters for selling of horticultural products.

The structures in Plates 7-8 are not appropriate for keeping perishable products such as fruits for longer periods. Fruits are exposed to heat/sun, rain, dust, light and other harsh conditions which deteriorate the quality of the products at market places.

Lack of cooling facilities to increase the shelf life of processed products is one of the major constraints faced by smallholder groups that engage in processing of fruits into juice and jam. On the other hand, the medium scale fruit juice manufactures have moderately good storage infrastructure such as cold rooms whose temperatures can be regulated depending on the type of commodity being stored. Such structures are also commonly found in supermarkets such that fresh fruits and fruit juices stay longer because of the regulated temperatures.

Transport infrastructure: The transport infrastructure is in bad state in most parts of the country. Most of the roads are not bituminous and often impassable during the rainy season. The modes of transport are also not suitable for fresh fruits. Very few refrigerated trucks are available and most of these serve the commercial sector leaving the smallholder farmers to rely on open

trucks to transport fruits. The poor transport infrastructure renders the fruits more prone to physical damage as well as shrinkage due to exposure to harsh conditions.

Packaging: Packaging of horticultural products leaves a lot to be desired especially within the smallholder sub-sector. In most cases, fruits and other horticultural products are sold in heaps without any packaging (Plate 9). This is the case in almost all rural and urban markets.

Plate 9. In almost all rural and urban markets, fruits and other horticultural products are sold in heaps without any packaging.

The poor packaging is not limited to the fresh produce alone, even the processed products are not always properly packaged in terms of the packaging material used. This was evident during a training needs assessment amongst some fruit processing groups whereby some groups could not access appropriate packaging materials.

Another aspect of packaging is labelling; some smallholder groups pack their juices in bottles without labeling or use poorly printed labels. Lack of labels of the products makes it difficult to identify the product in terms of type as well as the origin of the product (Plate 10). Some small-

scale fruit processors have however made efforts to properly label their products as in Plate 11. In the event that the small groups do not have adequate capacity to properly process and package their products, such groups should not be seeking to package and retail products for consumers. Instead, they may be better off supplying raw materials to other more established processors and retailers who have more experience in packaging and labeling.

Plate 10: Unlabeled products for one of the smallholder fruit processing groups.

Plate 11: Well-labeled products from another smallholder group.

Certification: Certification of the processed products is another constraint to marketing of the fruit products (juices and jams) produced by the cottage industries. The Malawi Bureau of Standards (MBS) is the authorized body to certify commodities at the national level and very few if any of the cottage industries' products have been certified by the MBS. Marketing of the uncertified products is therefore limited to the areas where the products are produced. These products cannot find their way into chain stores because they are not certified. Concentrates produced by the cottage industries cannot be used by the medium scale producers who mostly sell their manufactured fruit juices through chain stores. Further to this, the MBS is also not internationally accredited as a certifying body. This limits the scope that Malawian produced fruit products can find their way to international markets.

Limited support: For a very long period of time, fruit production, processing and marketing has received little technical and financial support to enhance its performance. The existing extension agents are not skilled enough in processing and marketing techniques to support the smallholder sector in processing and marketing of fruits and fruit products. Only recently, with the help of the existing Farm Income Diversification Programme (FIDP), staff from the Ministry of Agriculture working on the FIDP programme underwent a specifically tailor-made training on horticultural marketing. The focus of the training was on horticulture products amongst which are fruits.

In addition to limited technical support on marketing issues, there is also limited support from the financial sector in terms of capital investment on processing and marketing infrastructure for fruits and fruit products. This has hampered construction of appropriate marketing infrastructure such as storage and processing hence limiting improvement of fruits and fruit product marketing. High interest rates on capital investment are also a limiting factor for those willing to borrow for investing in processing and marketing of fruits and fruit products.

Weak farmer organizations: The National Association of Smallholder Farmers of Malawi (NASFAM) has a slogan that “*The future belongs to the organized.*” This has proved true for farmer associations belonging to NASFAM whose members have prospered in terms of improved productivity, improved access to markets and hence improved incomes. However, in the fruit production, processing and marketing sector, a number of associations and cooperatives that were formed are either defunct or performing poorly, (e.g. the Bumbunyika cooperative society in Mzimba district. Weak leadership and lack of focused vision are some of the factors contributing to poor performance of some of the farmer organizations.

Lack and/or limited entrepreneurial skills: Lack and/or limited entrepreneurial skills among most of the smallholder farmers is one of the problems facing fruit production, processing and marketing. Limited entrepreneurial skills limits farmers' ability to exploit the potential within the fruit sector for example to secure better markets for their fruits, to bargain for better prices and also to undertake some facilitative functions such as applying for loans to invest in processing and marketing of fruits and fruit products.

Poor market information: Absence of an organized market information system on fruits is also a constraint hindering the development of fruit industry in Malawi. The PWC study identified

several institutions that are supposed to provide market information for the agricultural sector. Amongst such institutions are the Famine Early Warning System (FEWS), the Initiative for Development of Equity in African Agriculture (IDEAA), the Horticulture Development Organization of Malawi (HODOM), Farmers Union of Malawi (FUM), Malawi Export Promotion Council (MEPC), Malawi Investment Promotion Agency (MIPA) and National Statistical Office (NSO). The PWC study notes that out of these many institutions, only FEWS and IDEAA have active market information systems in place that directly benefit smallholder farmers. The study provides a comparative analysis of selected marketing information systems for agriculture as presented in Table 3.

Table 3: Comparative Analysis of Selected Marketing Information Systems for Agriculture

Country	System description	Nature of Information	Information source	Coverage	Dissemination method	Type of user
Indonesia	Database	Marketing (prices)	Various	Horticulture growing areas	- Radio - Daily bulletin	- Hort. farmers - Hort. traders
Malawi	Database (FEWS/MAFS)	- Food security (rainfall, production, food availability) - Marketing (Crop prices)	-MAFS -MTPWH	Nationwide: - All crops	-Quarterly bulletin -Radio -Newspapers	-Decision-makers -Farmers -Traders
	Database (IDEAA)	Marketing: (Prices & trade opportunities)	-Market information centres/points -Farmers -Buyers/traders	Selected centres (3) & points (10): -Grains -Horticultural produce -Fertilizers	-Field staff -Radio -ICT (phone, SMS, fax, email, internet)	-Farmers -Traders -Buyers -Business Support Institutions
	Database (HODOM)	- Production - Marketing	HODOM	Nationwide: -Horticultural produce	Quarterly bulletin	Horticultural farmers
Mali	Database	Marketing (prices)	Market surveys	Selected markets (58): -Crops -Livestock	-Radio -Email	-Farmers -Traders
Uganda	Database	Marketing (prices)	Macro-Information Services	One district: -Maize	Radio (15 minutes once/week)	Maize farmers

Source: Price Waterhouse Coopers 2008.

3.4 Demand and Supply for Fruits

Statistics on local and international demand for fruits produced in Malawi are difficult to obtain because of lack of an organized data management system. There is no institution that collects information on both demand and supply of various fruits and fruit products on a regular basis. Scanty information is available from various institutions which collect data for their own use hence not reflecting the national or a holistic picture. The absence of a policy on horticulture, legislation and coherent strategies is also a key factor contributing to the lack of meaningful data on demand and supply.

The PWC study noted that quantities of fresh fruits and vegetables purchased vary from one buyer to the other. A comparison of demand between the Northern and Central regions showed a relatively higher demand in the Centre than the North for various fruits except for bananas (PWC, 2008), Table 4.

Table 4: Estimated Annual Consumption of Fresh Fruits (kg)

TYPE OF FRUITS	NORTH	CENTRE
Bananas	68,626	33,600
Oranges	372	33,280
Lemon	- **	1,300
Tangerines	-	350
Green apples	-	13,000
Red apples	-	13,000
Pawpaw	-	19,800
Pineapples	-	10,400
Melons	-	12,000

Source: Price Waterhouse Coopers 2008.

**No data available for the empty cells.

The PWC study notes that consumption of fresh fruits in the hotel industry is almost constant during the year except during the months of December to February when business is at its lowest level. In some cases, hotel institutions increase their purchases when they host functions. In schools and colleges, consumption of fruits is relatively constant. Similarly, consumption from retail outlets tends to be constant although it may increase during the tobacco-marketing season, (PWC, 2008). The hotel industry and most chain stores import most of the fruits while institutions like schools and hospitals usually get their supplies from local producers. However, as mentioned, it is difficult to get consolidated data on demand and supply from the various institutions.

3.5 Imports and Exports

As a result of the constraints discussed in the previous sections, Malawi does not export much fruit. Export figures on different fruits are presented in Tables 5 & 6. Table 5 does not give much information in terms of the types of fruits that were exported to the different countries. However, it is quite apparent from the figures in Table 6 that Malawi is a net importer of all fruits except for Strawberries (fresh/frozen), Cashew and Macadamia nuts. Despite the potential that the country has in producing fruits, statistics in Table 5 imply that Malawi loses some forex through importation of the various fruits.

Table 5: Exports of Fruits to Different Countries

	Year					
	2003		2004		2005	
	Qty (mt)[WAC9]	Value(MK)	Qty (mt)	Value(MK)	Qty (mt)	Value(MK)
Mozambique	130	9,800	-	-	-	-
Republic of South Africa (RSA)	203,997	9,141,594	-	-	500	15,241
USA	-	-	16,740	17,434,820	-	-
Bulgaria	-	-	-	-	4,800	57,085
United Kingdom	-	-	-	-	196	2,500

Source: Ministry of Trade and Industry.

Table 6: Net Exports of Fruits, 4-year means (2003 – 2006)

FRUITS	EXPORTS	IMPORTS	NET EXPORTS
	(MK'000)	(MK'000)	(MK'000)
Apples (fresh/dried)	-	30,102	-30,102
Apricots (fresh/dried)	-	73	-173
Avocados (fresh/dried)	-	2	-2
Bananas including plantains (fresh/dried)	14	2	12
Berries (currant, black-, rasp-, mul-, cran-, bil-)(fresh)	-	72	-72
Cherries (provisionally preserved/fresh)	2	43	-41
Citrus fruits (fresh/dried):	100	7,082	-6,982
Oranges	-	4,261	-4,261
Lemons & limes	-	15	-815
Grapefruit	-	63	-563
Other (mandarins, clementine, wilkings, peels)	100	1,443	-1,343
Dates (fresh/dried)	-	899	-899
Grapes (fresh/dried)	-	8,197	-8,197
Guavas/mangoes	255	6	249
Kiwifruit	-	118	-118
Melons (fresh)	-	414	-414
Pawpaws (fresh)	-	1	-1
Peaches (including nectaries, fresh)	-	1,409	-1,409
Pears & quinces (fresh)	-	12,735	-12,735
Pineapples (fresh/dried)	5	29	-24
Plums & sloes (fresh)	-	877	-877
Prunes (dried)	-	234	-234
Strawberries (fresh/frozen)	473	123	350
Other fruits (fresh/frozen/dried)	-	7,523	-7,523
SUB-TOTAL	848	70,040	-69,192
TREE NUTS:	923,732	1,307	922,424
Cashew nuts	4,304	1,307	2,997
Macadamia nuts	919,428	-	919,428

Sources: NSO and MEPC. (As reported in PWC report, 2008).

3.6 Constraints to exports

According to the PWC report, exports of horticultural produce inclusive of fruits are constrained by a number of factors amongst which are:

- Strong regional competition, particularly from South Africa, which the country has difficulties to cope with;
- Poor availability and high airfreight costs due to high landing and service fees and payment of Air Malawi royalty;
- Poor international quality standards due to lack of facilities and personnel by government to implement the standards;
- Lack of government technical capacity and support for food safety systems such as control, testing and inspection;
- Lack of consolidated Food Safety Act; and
- Weak enforcement of food safety laws and regulations due to poor collaboration and coordination with and between food authority agencies.

3.7 Initiatives in Development of Fruit Production, Processing and Marketing

A number of initiatives have already been made and are continued by various stakeholders to promote production, processing, marketing and consumption of fruits and fruit products in Malawi. The following are some of such initiatives:

3.7.1 The Malawi–German Promotion of Horticulture Project

This was a collaborative project between the Malawi Government through the department of horticulture in the Ministry of Agriculture and the German Government through GTZ. The project commenced in 1998 and wound up in 2004. This project was nationwide and promoted the establishment of fruit tree nurseries countrywide. The 2003 report on status of horticulture reported an increase in the number of fruit tree nurseries through initiatives of this project (Kachule and Kamwendo, 2003). The fruit tree nurseries raise different types of improved, high yielding and good quality fruit tree species such as mangoes, citrus (oranges, tangerines, and lemons), peaches, pawpaws and granadillas. Improved varieties introduced through the project include Tommy Atkins, Kent, Keitt, Irwin, Heidi and Neldica, for mangoes and Lisbon, Eureka Lemon, Ellendale and SRA 63, Hamlin, Palmer for oranges. The project contributed to increased availability of locally produced fruits in local markets and chain stores such as Shoprite, Seven Eleven, and Peoples Trading Centre. The project also contributed to the formation of the National Fruit Tree Nursery Association (NAFTNA) which was initiated with the objectives of producing improved quality fruit plants and seedlings conforming to required standards and for easy networking.

Some of the individuals and farmer groups that received technical and/or financial support through this project are; Lambert Estate in Nkhata Bay, Chiotchanyumba Club in Mzuzu, Maravi Farm in Dedza, Garden Corner Farm at Bvumbwe, Green World Nurseries in Lilongwe, Diamphwe Farm in Lilongwe, Zipatso Association in Mwanza, Kambiri Estate Peach Orchard at Bvumbwe, Seed and Nursery Services in Mzuzu city, Green Shop in Mzuzu city, Salem Fruit, Flower and Vegetable Shop in Mzuzu city, Bumbunyika Cooperative Society in Mzimba district, Freedom gardens in Dowa district, and Ngolowindo fruit processors in Salima just to mention a few. Some of these are still in operation while others are out of business for various reasons including lack of managerial and financial capacity to manage the enterprises and also poor markets for the products.

3.7.2 Promotion of Soil Conservation and Rural Production (PROSCARP)

This project was funded by the European Union (EU) and the German Government through the German Technical Cooperation (GTZ). The project had food security and income generation as a priority area. The project promoted soil fertility enhancing technologies such as agroforestry to ensure increased food crop production. It also promoted growing of various fruits through establishment of fruit tree nurseries amongst smallholder farmers. Fruits that were promoted under this project included citrus and mangoes and were meant for both home consumption and sale. Smallholder farmers were also trained in technologies such as grafting and budding techniques and nursery management in general. One of the areas where the project promoted fruit tree seedling nurseries is Mpamba in Nkhata Bay district.

3.7.3 Japan International Cooperation (JICA)

The Japan International Cooperation provided technical support in the promotion of fruit and vegetable production amongst smallholder farmers. Activities involved nursery establishment in certain parts of the country such as Dedza at Lobi where farmers were organized into clubs involved in selling production and selling of fruit-tree seedlings. Citrus fruits, mangoes, peaches and guavas are some of the fruits promoted under this project.

3.7.4 Zipatso Association

The association is in Mwanza district and was formed in 1992 through external influence. Thus mobilization of the group was spearheaded by people from outside the area and these formed the initial secretariat for the association. The association was initially funded by the USAID.

Smallholder farmers did not participate from the onset of the association because it was influenced by external people who solicited funding from USAID and mobilized tangerine farmers in the area to form the association after the approval of the proposal. Major functions of the association were:

- Improving the quantity and quality of the tangerines through demonstrations and extension services;
- Improving the marketing organization by linking the fruit growers to markets that would offer higher prices.

Prior to the formation of the association, the fruit growers experienced marketing problems in the sense that middlemen (vendors) used to come to Mwanza district to buy the tangerines at low prices. The Association started buying fruits from its members but was unable to pay them at the time of sale. The association was selling the fruits in the same markets that the vendors were also operating. Apparently, prices offered by the association were high compared to those of vendors. This was the case because the vendors got their produce at lower prices from growers who were not members of the association. This resulted in the association's fruit losing quality while in the market and many losses encountered to the extent that the association was not in a position to pay back the members that had supplied fruits. Moreover, the association used to advise its members to harvest their fruits for collection by a truck organized by the association. Unfortunately, in most of the cases, the truck used to come a few days after the growers had harvested their fruits which resulted in some loss in quality. This led to a conflict between the association and its members. Poor accounting system resulted in misappropriation of funds by some officials within the secretariat. Farmers had no control or any mandate on the use of funds. Due to these problems, the association almost collapsed but was resuscitated through funding from Concern Universal in 1996. To date the association still exists but with difficulties because of limited financial resources.

3.7.5 Smallholder Macadamia Development Project

Through the African Development Bank (ADB), the Government of Malawi received a loan for the promotion of smallholder macadamia production in Mzuzu and Kasungu Agricultural Development Divisions. The objective of the project was to promote and develop the production of 500 hectares of macadamia intercropped with 2,500 hectares of other food and cash crops. Activities of this project included nursery development, crop development, research and extension support, capacity building and infrastructure development.

3.7.6 Irrigation, Rural Livelihoods and Agricultural Development Programme (IRLADP)

The IRLADP is funded by the World Bank. The aim of the programme is to reduce food insecurity by enhancing the capacity of rural communities to establish and expand their productive assets and income levels in accordance with their interests. Specific objectives of the project are:

- Strengthening input distribution network in the country for long-term sustainability.
- Rehabilitating/construction of community identified rural infrastructure such as roads, culverts, irrigation channels, marketing infrastructure, schools and dispensary buildings.
- Increasing agricultural productivity through provision of farm inputs to the farmers in kind through vouchers for wages earned by them for construction/rehabilitation of public works.

At the time of this study, the IRLADP had given grants to a few Farmer Based Organizations (FBOs) engaged in horticulture and other agricultural enterprises. Table 7 lists groups that have received grants from the IRLAD programme to undertake fruit production, processing and marketing.

Table 7: IRLADP FBO Grant Disbursement to Horticulture Groups (2007)

DISTRICT/TA	NAME OF FBO	TYPE OF PROJECT	PROJECT CATEGORY	IRLADP GRANT (MK)	COMMUNITY CONTRIBUTION (MK)	TOTAL COST (MK)	BENEFICIARIES		
							MEN	WOMEN	TOTAL
Chikwawa district: T/A Makhwira	Masenjere	Fruit Juice Extraction	Production	420,000	42,000	462,000	4	8	12
Blantyre District: T/A Kuntaja	Mlambe Hort. club	Market platform	Construction	1,000,000	100,000	1,100,000	53	49	102
Zomba District: T/A Chikowi	Association of School Leavers	Juice making	production	420,000	42,000	462,000	8	8	16
Dedza District: T/A Kachere	Lobi Madimba Association	Business management & Juice making	Capacity building and Production	2,000,000	200,000	2,200,000	226	1,252	1,478
T/A Kamenyagwaza	Chisomo Hort. Cooperative	Marketing Shop & store room	Construction	420,000	42,000	462,000	15	10	25
Nkhata Bay District: T/A Timbiri	MWAMLC Banana Cooperative	Warehouse & market platform	construction	420,000	42,000	462,000	22	18	40
Rumphi District :T/A Chikulamayembe	Mlongoti Hort. Cooperative	Market shed/platform	Construction	420,000	42,000	462,000	35	65	100
Kachulu/Mwalweni	Phoka banana Association	Market shed/platform	Construction	420,000	42,000	462,000	413	262	675

Source: Irrigation Rural Livelihoods and Agricultural Development (IRLAD) Project (unpublished records).

3.7.7 Horticulture and Food Crops Development Project (HFCDP)

This project is under the Ministry of Irrigation and Water Development (MIWD). The objective of the project is to contribute to national and household food security by increasing land under irrigation, agricultural productivity and farm income of smallholder farmers whose principal enterprise will be horticultural production and marketing. The project is being implemented in nine districts of Mzimba, Rumphi, Dowa, Kasungu, Mchinji, Dedza, Lilongwe, Nkhosakota and Salima covering four Agricultural Development Divisions (ADDs) namely Mzuzu, Lilongwe, Kasungu and Salima. The HFCDP provides an opportunity for providing specialized markets for horticultural produce, improving smallholder access to service infrastructure, irrigation water, advisory and credit services, empowering cooperatives and enhancing sustainability of its activities. One of the interventions of the project is to improve the marketing infrastructure through construction of satellite markets with appropriate facilities including cooling houses.

3.7.8 Farm Income Diversification Programme (FIDP)

The Farm Income Diversification Programme is funded by the European Union (EU) and aims at enhancing rural incomes through agricultural diversification. There are several interventions under this programme. One of the major interventions is the promotion of horticulture which includes production of various horticultural products for the domestic market with a vision to exploit the export market through production of better varieties of horticultural crops that have export potential. The programme is also promoting marketing of horticultural crops and one of the interventions has been capacity building in marketing skills amongst its field staff who will in turn train smallholder farmers. The programme is being implemented in eleven districts of Chitipa, Karonga, Rumphi, Mzimba, Dowa, Lilongwe, Nkhosakota, Salima, Balaka, Chiradzulu and Thyolo

3.7.9 World Agroforestry Centre (ICRAF)

The World Agroforestry Centre, also called ICRAF, is one of the institutions of the Consultative Group on International Agricultural Research (CGIAR). Through the Agroforestry and Food Security Programme (AFSP), ICRAF is promoting fruit production and marketing. The programme is funded by Irish Aid and includes production of both indigenous and exotic fruits to enhance people's income and food security. Some of the interventions under this project are to promote establishment of orchards and capacity building in marketing skills amongst smallholder farmers through training.

3.7.10 Non Governmental Organizations (NGO)

A number of NGOs are implementing livelihoods programmes in different communities across the country. One of the interventions of such NGOs is promotion of fruit production aimed at improving household nutritional status and income. Some of the NGOs include Plan Malawi operating in some parts of Lilongwe, Kasungu and Mzimba districts; World Vision Malawi also operating a number of districts such as Kasungu, Ntchisi, Nsanje, Lilongwe, Mzimba; and Concern Universal operating in Dedza and Ntcheu districts.

Activities on fruits by the organization include fruit tree seedling production and multiplication for fruits like citrus, mangoes, peaches and guavas. They have also promoted processing of such fruits into juices and jams. Poor coordination of activities by the NGOs has in some cases led to duplication of efforts or concentration of efforts within a particular area.

4. Conclusion

The study revealed that fruit production, processing and marketing of fruits in Malawi is still underdeveloped despite some interventions that have taken place in the sector. Although the fruits and fruit products have the potential to contribute to household food security, nutrition and income and also economic growth, absence of policy and regulatory framework in the fruit sector and horticulture in general impedes the development of fruit production, processing and marketing.

The absence of policy and regulatory frameworks seems to be the root cause of other weaknesses and constraints in the fruit industry. Other serious weaknesses are significant infrastructure bottlenecks, and inadequate marketing information and capacity (knowledge, skills and resources) among market participants. The country is failing to cope with competition from imported fruits and fruit products because of a number of reasons including low quality production, high transportation costs, weak coordination among stakeholders, and poor marketing skills, among others. Fruit production is hampered by poor technology (cultivars, cultivation and irrigation techniques) and high post-harvest losses because of limited investment in value-adding technologies, and inadequate knowledge in value-adding processing techniques.

4.1 Recommendations/Suggestions

The recommendations made below are based on the findings of the review and most of the recommendations are drawn from the recent PWC study conducted on behalf of the Horticulture and Food Crops Development Project.

1. There is need to create an enabling policy and regulatory environment for the promotion, production, processing and marketing of fruits and fruit products through a clear policy on horticulture and its sub-sectors;
2. There is need to improve the marketing infrastructure and access to the infrastructure through establishment of specialized markets (physical infrastructure) with necessary facilities for handling fruits and fruit products. Such intervention should include construction of market collection centres near production areas and urban depots to serve major consumption areas and export markets; and scaling up construction of collection centres and urban depots to cover the entire country;

3. The road infrastructure also needs to be improved, thus road networks between production and consumption areas should be improved through repairing and maintaining existing rural roads and constructing new ones;
4. Improve smallholder direct access to formal markets (trading systems) by helping them to sell in bulk to wholesalers, thus streamlining marketing channels to increase returns and reduce involvement of middlemen;
5. Provide adequate market information by developing a user-friendly marketing information system and packaging collected information into extension messages on economic returns, where to sell and quality control;
6. Improve and strengthen stakeholder capacity by intensifying promotion of cooperatives and advisory services; improving credit access; strengthening programmes of training institutions; and providing adequate funding to public institutions;
7. Promote investment in value-adding technologies by (a) introducing tax reforms involving provision of income tax incentives to local manufacturers of low cost value-adding equipment, and reduction of duties and taxes on imported raw materials and equipment/components; (b) preparing cash flow budgets and conducting investment appraisals to assess feasibility of the investments; (c) encouraging low income farmers to invest in feasible locally manufactured low cost value-adding technologies as a cooperative rather than as individuals; (d) promoting public-private-partnerships; (e) improving credit access to manufacturers and processors; (f) training market participants in various value-adding techniques; and (g) funding research and development in low cost value-adding technologies.
8. Promote fruit exports by improving capacity of exporters to comply with international quality standards; improving value-addition of exportable commodities through packaging; improving generation capacity and exchange of information and monitoring consumption in external markets.

9. Increase productivity of the fruit sub-sector by improving integration of producers with buyers through provision of market information, promotion of producer-buyer partnerships and effective farmer-contract agreements; improving access to irrigation water by rehabilitating irrigation schemes and dams and constructing new ones; improving access to affordable certified seed; improving skills in good governance and group dynamics through training; and reducing post-harvest losses through proper storage and use of value-adding technologies.
10. Need to update the database on fruit tree nursery producers to establish the capacity and potential of supply of various fruit tree seedlings.

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