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ANNUAL CROP AND FOOD SUPPLY ASSESSMENT MISSION

For Sudan

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SPECIAL REPORT

ANNUAL CROP AND FOOD SUPPLY ASSESSMENT MISSION, SUDAN

January 2015

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ABBREVIATIONS AND ACRONYMS

ABS	Agricultural Bank of Sudan
CBOS	Central Bank of Sudan
CBS	Central Bureau of Statistics
CPI	Consumer Price Inflation
EIU	Economist Intelligence Unit
ERCU	Emergency and Rehabilitation Coordination Unit (FAO-Sudan)
FAO	Food and Agriculture Organization of the United Nations
FCB	Farmers Commercial Bank
FEWS NET	Famine Early Warning Systems Network
FSMS	Food Security Monitoring System
FSTS	Food Security Technical Secretariat
GDP	Gross Domestic Product
ha	hectare
HAC	Humanitarian Aid Commission
IP	Implementing partner
MoAI	Ministry of Agriculture and Irrigation
MoLFR	Ministry of Livestock, Fisheries and Rangelands
NDVI	Normalized difference vegetation index
NGO	Non-governmental organization
RFE	Rainfall estimate
SDG	Sudanese pound
SRC	Strategic Reserve Corporation
t	tonne
UN	United Nations
USAID	United States Agency for International Development
USD	United States dollar
VITO	Flemish Institute for Technological Research
WFP	World Food Programme

MISSION HIGHLIGHTS

- Performance of the 2014 summer cropping season (April/January) was very favourable in terms of rainfall amount and distribution.

- Area planted and yields increased considerably in most cropping areas; In addition, about 80 percent of area planted was harvested compared to 53 percent the previous year and 63 percent in the 5-year average during the 2008/09-2012/13.

- Most agricultural inputs were readily available, though often expensive, including credit whose disbursement by the Agricultural Bank of Sudan has increased significantly in 2014.

- Accordingly, national cereal production in 2014/15 is estimated at a record level of 7.84 million tonnes, including 6.3 million tonnes of sorghum, 1.1 million tonnes of millet and a winter wheat forecast of 473 000 tonnes for harvest in early 2015, about 280 percent above previous year's poor harvest and 184 percent above the 2008/09-2012/13 5-year average.

- The rain-fed sector, both semi-mechanized and traditional, registered major gains in cereal production, while yields from the irrigation sector were slightly below the five year average.

- Area and production of cash crops increased during the current cropping season compared to previous season.

- Despite the improved availability of labour during the current season, there was still shortage and costs were higher than last year.

- Favourable rains improved pasture and water availability across the country, with positive effects on livestock body conditions.

- As the 2014/15 sorghum and millet production is well above country's utilization needs in marketing year January-December 2015, a substantial building-up of stocks a potential for exports is attained. Import requirements for wheat and rice are forecast at normal levels.

- Prices of sorghum and millet hit record high levels in July/August 2014 in most markets, but have since declined by about 20 to 35 percent as newly harvested crops started to be available for household consumption.

1. OVERVIEW

Between 15 November and 4 December 2014, assisted by the Food and Agriculture Organization of the United Nations (FAO), the Ministry of Agriculture and Irrigation (Moa) carried out its annual Assessment Mission to determine crop production and food supply throughout the 18 states of the Republic of the Sudan. The mission consisted of six core teams comprising members from the Ministry of Agriculture and Irrigation (MoAI), the Food Security Technical Secretariat (FSTS) of the MoAI, the Ministry of Animal Resources and Fisheries (MoARF), the Humanitarian Aid Commission (HAC), the Strategic Reserve Corporation (SRC), FAO, FEWSNET, WFP and USAID. Prior to departure, team members and representatives from WFP attended a preliminary training workshop in Khartoum to standardize the methodology to be used in the field and to prepare teams for the visits.

Team visits were designed to collect data and information from state ministries, irrigation schemes, and enterprises, and to audit such data and information through observational transects, field observations, farmer interviews and independent key informant interviews. The combined quantitative and qualitative information from both primary and secondary sources allowed teams to assess the 2014/15 season's cereal (sorghum and millet) and other field crop production, and to forecast wheat production from areas being prepared for planting. Returning from the field, teams prepared summaries of data and information acquired during the visits for discussion and explanation in detailed debriefings before inclusion in the final mission report. Data were compiled by state, crop and sub-sector (irrigated, rain fed-mechanized and rain fed-traditional) to give overall area and production estimates. Using these data, a national cereal balance sheet is drawn up comparing total cereal requirement for the coming marketing year (January-December) with domestic cereal availability.

The balance sheet gives an indication of whether the country is in surplus or deficit with regard to cereals, and hence of its import requirements.

The six mission teams received full cooperation of the relevant state authorities. Discussions on factors affecting crop and livestock conditions were held with representatives from the relevant line agencies, local government offices, selected credit institutions, United Nations (UN) agencies and non-governmental organizations (NGOs). Field visits were supported by local subject matter specialists from state ministries and irrigation schemes, who also provided the latest information on all aspects of production within their domains, including the provision of follow-up data where required. The six teams carried out their tasks to the extent possible, the main constraint being civil insecurity, which limited field observation and farmer interviews in parts of Darfur, South Kordofan and Blue Nile States. Where possible, teams cross-checked the official data estimates received by conducting extensive field inspections, rapid case studies with sample farmers, and interviews with herders and traders.

At national and sub-national level, the latest available information and data were collected concerning rainfall amount and distribution, vegetation cover, crop-protection campaigns, cereal reserve stocks, prices of main crops and livestock. Periodic food-security reports were perused and main socio-economic indicators were provided by the Central Bank of Sudan, the Agricultural Bank of Sudan, the Central Bureau of Statistics and the Strategic Reserve Corporation. Rainfall estimates (RFE by TAMSAT) and Normalized Difference Vegetation Index (NDVI) data, including absolute values and anomalies, were kindly provided by the Flemish Institute for Technological Research (VITO) for all 18 states.

The overall performance of the 2014/15 summer cropping season has been very good, with significant improvement in production compared with the poor performance of 2013/14. Most areas received normal or above-normal quantities of rain, with generally good spatial and temporal distribution, and often rains extended until end of October/early November. The rains started on time in most cropping areas, allowing timely planting in the rain fed sector and a substantial increase in the harvested area. No prolonged dry spells have been recorded and very limited re-planting was required. However, heavy rains in July/August caused localized water-logging and flooding in low-lying areas of Blue Nile, Sennar and Gezira states, hampering the normal deployment of agricultural practices, such as weeding.

The incidence of crop pests and diseases was very low, with satisfactory aerial and ground control of the migratory pests such as locusts, grasshoppers and Quelea quelea. Weeds, however, were plentiful in many areas as a result of the good rains, causing a decline in yields especially in areas characterized by prevailing mono-cropping of sorghum. Major agricultural inputs, such as machinery, seeds and fertilizers, were generally available to farmers, although they were often considered to be quite expensive. Disbursements of loans in kind and cash by the Agricultural Bank of Sudan almost doubled in 2014 if compared to previous year.

Sorghum and millet production this year are estimated at record levels of 6.28 and 1.1 million tonnes, respectively. These figures are about three times higher than last year's poor production and two times more than the 5-year average of 2009/10-2013/14 as mostly favourable rains boosted planted area and yields. In addition, the percentage of area harvested has been very high, almost at 80 percent of planted area, compared to 53 percent harvested last year and 63 percent harvested during the 5-year average. Wheat production, to be harvested by March 2015, is forecast at about 473 000 tonnes, over 20 percent more than the 5-year average. This year's cereal production gains come mainly from the rain fed sector, both semi-mechanized and traditional. Despite registering a slightly larger area this year, yields in the irrigated sector are estimated to be 5 percent lower than the 5-year average. This was mainly because of the excessive moisture conditions created in many irrigation fields due to heavy rains which coincided with the normal irrigation practices. As a result, the planted crops suffered from waterlogging and it was also difficult to enter into farms for normal cultural practices such as weeding and inter-row cultivation in some schemes like Gezira and the improved variety of Tabet was also attacked by pest (African bollworm) in this scheme.

Regarding cash crops, production of sesame has also recovered from last year's low level, essentially due to a significant increase in planted area due to high prices at the beginning of 2014 and timely rains in July. Similarly, the area planted with groundnut has doubled if compared to previous year, although it remains well below the 5-year average.

Favourable rains have improved pasture and water availability for livestock across the country. It has contributed to the decrease of livestock movement in search of grazing resources, often reducing conflicts between herders and farmers which normally arise from when cultivated land expands at expenses of grazing resources. Generally, good to very good livestock body conditions are reported.

Using population projections for mid-2015 by the Central Bureau of Statistics to estimate food use during marketing year January-December 2015, the cereal balance sheet provided in this report shows that the 2014/15 sorghum and millet production is well above the country's utilization needs and it allows a substantial building-up of closing stocks, leaving a significant surplus for export as well as what can be retained as strategic reserve in the country. The structural deficit between production and consumption for wheat and rice is expected to be covered by normal levels of commercial imports.

Prices of locally produced sorghum and millet in most Sudanese markets have been characterized by a steady upward trend during the last 24 months, essentially due to high costs of production and transportation, depreciation of local currency and the well-below average cereal production obtained in 2013/14. Sorghum and millet prices started to decline between September and November in most markets as a result of improved supplies and reduction in local demand as most farmers had started relying on their own production to cover household consumption. In November 2014, prices of sorghum and millet were about 20-35 percent below the peak registered in August 2014, but still well above the level of one year before. The low market prices have enabled the vulnerable groups including the urban poor and IDPS to access food, but only for those who have additional income and afford to buy.

2. SOCIO-ECONOMIC CONTEXT

2.1 General

According to the estimates of the Ministry of Finance, the country's GDP in 2014 is forecast at about 476 billion SDG, to which the primary sector contributed to about 31 percent. In real terms, the GDP grew by 3.6 percent in 2014 compared to 2.1 percent in 2013, as the local economy is gradually absorbing the shock of the loss of about 75 percent of oil production in 2011 following the separation of South Sudan. However, the low levels of transit fees paid by South Sudan due to the effects of the ongoing conflict in Greater Upper Nile states on oil production, together with low oil international prices, are expected to hamper Sudan's GDP growth rates in 2015.

In 2013, the trade balance recorded a deficit of about 2.8 billion USD, well below the deficit of 6.1 billion SDG in 2012. The improvement of the trade balance in 2013 was essentially due to the resumption of oil exports, after almost one year of interruption in oil flows from South Sudan, as well as an increase in exports of most agricultural commodities such as sesame, gum Arabic, cotton, groundnuts, sorghum and livestock. During the first semester of 2014, the value of aggregate exported commodities has increased compared to the first semester of 2013: the growth was essentially due to the increase in exports of petroleum, gold and livestock. Conversely, all main agricultural exports have showed a significant decline following the poor harvest gathered at the end of 2013 due to unfavourable weather conditions. In particular, exports of sesame declined by about 45 percent, exports of groundnuts by about 85 percent and exports of gum Arabic by about 25 percent. The increase in livestock and meat exports in 2014 has also been determined by the low forage production in 2013 and its high prices, as well as by the need of farmers and agro-pastoralists to sell part of their herds in order to buy food.

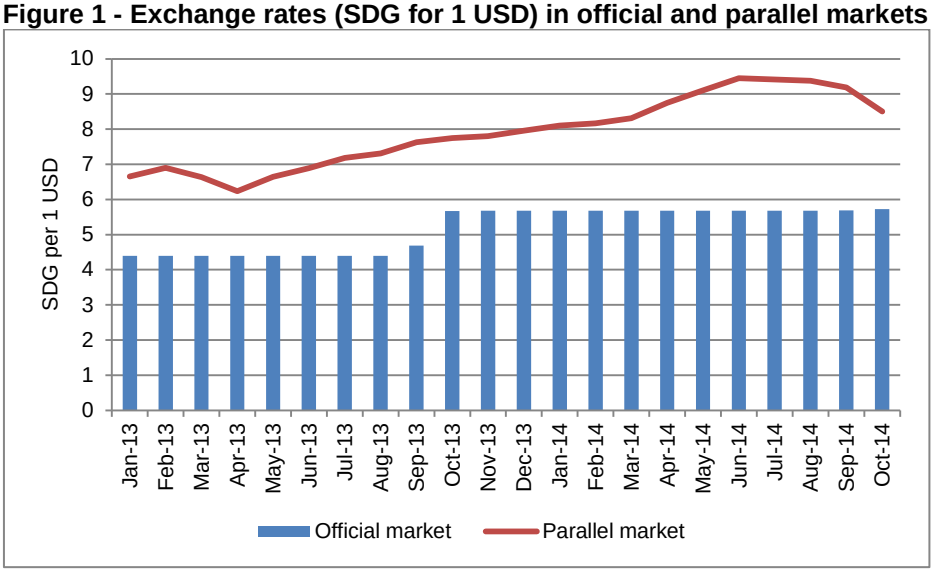
During the first semester of 2014, about one million tons of wheat was imported, similar to the same period in 2013, but they were about 20 percent cheaper due to lower international prices. Similarly, imports of fertilizers were stable in quantity (at about 54.000 tons), but their value decreased by about 40 percent. In 2014, the current-account deficit is estimated at about 7.5 percent of GDP and it is expected to narrow to 6.6 percent of GDP in 2015 as oil and gold production are gradually increasing and imports are growing less than in the past.

According to the Central Bureau of Statistics, the year-on-year inflation rate averaged at 39.8 percent during the first ten months of 2014, reaching a record level of about 47 percent in July. Since August, inflation have dropped significantly as the country is absorbing the impact on prices of the austerity measures implemented at the end of 2013, including a 30 percent devaluation of the local currency and the gradual removal of fuel subsidies.

In October, the year-on-year inflation rate was estimated at 28.2 percent. The recent reduction of food prices, in particular meat, bread, grains and vegetables, as well as the good prospects for the 2014 harvest, have likely strengthened the declining trend in inflation rate.

The recent drop of inflation also coincided with a slight appreciation of the Sudanese pound against the US dollar in the parallel market. Following the foreign-currency inflow deriving from some oil transit fees received from South Sudan and significant livestock exports to Saudi Arabia, in October 2014 one USD was exchanged at 8.5 SDG in the parallel market, about 10 percent below the top level of about 9.5 SDG registered in June 2014.

Figure 1 - Exchange rates (SDG for 1 USD) in official and parallel markets



Source: Central Bank of Sudan

2.2 Population

The last Population and Housing Census was carried out in 2008 and, since then, the Central Bureau of Statistics (CBS) extrapolates the country's population size using specific growth rates at state level. By mid-2015, overall population in Sudan is officially estimated at 38.435 million people, with about 50 percent concentrated in the four states of Khartoum, Gezira, South Darfur and North Kordofan.

2.3 Agriculture

Sudan's economy is highly dependent on agriculture, as it accounts for nearly 60-70 percent of the gross domestic product, besides its employment of the labour force. Sudan has great agricultural potential and the country is blessed with a wealth of arable land.

Its crop portfolio is diverse, including cereals (such as sorghum, millet, wheat, rice and maize), oil-seeds mainly sesame, ground nuts and sunflower, as well as other crops like cotton and horticultural production. Moreover, the land in Sudan is suitable for animal husbandry, with an estimated total livestock population of 105 million heads of cattle, sheep, goats, camels and others.

The country has long relied on the agricultural sector as the foundation of its GDP. In the years between 1999 and 2010, agriculture accounted for less than 50 percent of the country's total GDP. This proportion has been trending down over the past decade. Nevertheless, the sector continues to be the large contributor to the GDP. The shrinking share of Sudan's GDP resulted from the growing petroleum and service sectors, while the productivity of the agricultural sector began to decline due to natural and other factors.

Sudan's irrigated agriculture is dependent on abundant supplies of water from the main Nile and its two major branches. The future growth of the country's agriculture, however, continues to depend to a large extent on mechanized rain-fed farming in a broad belt running from the north eastern portion of the country to the south-southwest.

Crop production in Sudan is practiced under three patterns; irrigated agriculture, semi-mechanized rain-fed agriculture and the traditional rain-fed agriculture.

2.3.1 Irrigated Agriculture

Irrigated area in Sudan is estimated at some 4 million feddans (about 1.68 million hectares); of which federal schemes total 3 million feddans (1.26 million hectares)- Gezira, Rahad, Souki and New Halfa. This sector uses most of the imported agricultural inputs. Irrigation is mainly from the River Nile and its tributaries either through flow irrigation by means of gravity, pumps or by flood irrigation from Gash and Toker seasonal rivers. Main crops of irrigated sector include sugar, cotton, sorghum, ground nuts, wheat, vegetables, fruits and green fodders. The irrigated sector also benefits from the quantities and distribution of rains especially during the establishment of crops.

The bulk of the cotton crop is grown on the Gezira Scheme, situated on a fertile wedge-shaped clay plain lying between the White and Blue Niles south of Khartoum. The scheme is one of the largest irrigation projects for agriculture in the world. It covers an area of 2.5 million acres (1 million hectares).

2.3.2 Semi-Mechanized Rain-Fed Agriculture

The semi-mechanized rain-fed farming is mostly practiced in the clay plains of eastern and central Sudan, where farmers use agricultural machinery for land preparation and partially for harvesting of crops. The broad belt of mechanized farms in the east stretching from the Atbara River west to the Blue Nile is the granary of the country with sorghum, sesame, sunflower and millet grown as the main crops. Sorghum is the main crop in this sector which covers an area of about 80 percent of the cultivated land, followed by sesame 16 percent, cotton, millet, sunflower and guar in small areas. Mechanized rain-fed agriculture constitutes about 45 percent of sorghum production and 53 percent of sesame in Sudan. In the semi mechanized sector, the normal time of planting ranges from early July to mid-August. Cropping is highly vulnerable in that if the level and distribution of rains during this specific period is below average, this subsector will be affected by low productivity.

2.3.3 Traditional Rain-Fed Agriculture

Majority of farmers in Sudan are engaged in farming in the traditional rain-fed sector which is mainly found in Western Sudan and partially in central and limited parts in Eastern Sudan. The area of this sector is estimated at more than 9 million hectares. The importance of this sector is attributed to its contribution in the national agricultural production by 90 percent of millet, about 35 percent of sorghum and 100 percent of gum Arabic besides other crops. Animal husbandry constitutes an important portion in this sector. The optimum time of planting in this subsector is early June to late July. Cropping is highly vulnerable in that if the level and distribution of rains during this specific period is below average, this subsector will be hardly hit by crop failure. Normally most of the crops should be planted before the end of July.

2.3.4 Livestock

The total livestock population of Sudan is estimated at 105.3 million, mainly cattle, sheep, goats and camels. Many Sudanese households keep some livestock, particularly in rural areas. Sheep, goats, cattle, donkeys and poultry are the most commonly raised animals. The commercial exploitation of livestock only truly began in the 1970s, and livestock is now an important agricultural export. In terms of production, Sudan has produced 1 466 tons of meat, 4 359 tons of milk and 89 tons of fish in 2013.

Table 1 - Estimate of animal population in 2012-2013

Type	Number (000)	
	2012	2013
Camels	4 751	4 773
Goats	30 837	30 984
Sheep	39 483	39 568
Cattle	29 840	30 010
Total	104 911	105 335

Source: Ministry of Animal Wealth, Pasture and Fisheries

3. AGRICULTURAL PRODUCTION IN 2014/15

3.1 Main factors affecting cereal production in 2014/15

3.1.1 Agricultural finance and credit

The provision of short-term agricultural credit through the Agricultural Bank of Sudan (ABS) is a regular operational procedure in both the irrigated and the rainfed sectors, particularly in the entrepreneurial semi-mechanized sector. Loan uptake for cereal production is generally accessed by entrepreneurs with strong business connections with the ABS and other banks, while farmers in the traditional sector are rarely able to raise the necessary collateral. Farmers with poor repayment histories, those without collateral and last year's defaulters are excluded, except in Darfur, where micro-credit is available through livelihoods support programs. In all other states, short –term seasonal loans to eligible farmers are made through the non-interest *selem* system. Under *selem*, bank charges are levied but no interest is paid. The farmers agree to pay back their loans in kind, at a value jointly fixed at planting time by the Ministry of Finance, the SRC, the ABS and the Farmers' Union.

Table 2 - Finance to agriculture by the Agricultural Bank of Sudan (ABS) in 2013 and 2014 (million SDG)

Crops	2013	2014	change (%)
Sorghum	423.3	721.2	70.4
Wheat	184.2	258.6	40.4
Sesame	2.8	43	1435.7
Groundnuts	6.6	5.1	-22.7
Sunflower	10.3	11.6	12.6
Beans	3.5	2.1	-40.0
Vegetables	59	26.2	-55.6
Cotton	3.9	162.6	4069.2
Fodder crops	17.8	6.6	-62.9
TOTAL	711.5	1237.9	74.0

Source: Agricultural Bank of Sudan

The availability of credit significantly improved in 2014, although many farmers still complain that their access to credit is limited by not having sufficient collateral as well as by the length and complexity of bureaucratic procedures. The Agricultural Bank of Sudan (ABS), which is the country's main agricultural lender, provided a total of 1.2 billion SDG in 2014 for crop production, about 74 percent more than the volume of 712 million SDG in 2013. Two thirds of the total loans have been granted in cash to the semi-mechanized traditional sector, mainly to farmers growing rain-fed sorghum in eastern Kassala and Gadaref states. Additional 515 million SDG were granted by the ABS as finance of agricultural machinery and equipment, compared to 630 million SDG disbursed last year.

3.1.2 Rainfall

The performance of the 2014 summer rains was much better than the previous years and above average over the vast majority of the cropping areas in Sudan, despite the initial anticipation of the normal and below normal rains. In general, both the amount and distribution of the rainfall were good with minimal or no significant dry spells as well as timely start and cessation.

The average annual rainfall in Sudan ranges from almost nil in the far north to more than 1 000 mm in the southern parts of South Darfur, South Kordofan and eastern parts of Blue Nile. Although there were intermittent showers in some places during the months of April, May and June 2014, the effective rains started in July over the vast cropping areas which enabled farmers to the timely planting of summer crops particularly sorghum, sesame and millet. The early start of the rains at planting has helped the good establishment of crops in the irrigation schemes as well. In many of these areas, like Sennar and Kassela, the rainfall extended up to the end of October and even early November. However, there have been some areas where rain were late by about 2-3 weeks like in West and North Darfur, but continued up to end of October without significant mid-season breaks. The

continuation of the rain compensated for the late start, enabling good growth and performance of summer crops. All states benefited from the absence of prolonged dry spells that hinders the normal growth of crops. There are few pocket areas affected by shortage of mid-season rains and majority of them were replanted.

On the other hand there have been areas faced with heavy rains during the months of July and August causing waterlogging and flooding of planted crops. This problem was more serious in Blue Nile, Gezira, Sennar and the central and eastern states where farmers in some low-lying areas were unable to carryout weeding and cultural practices on time. Some irrigation schemes in Gezira and Sennar states have suffered from the excess water coming from the unexpected heavy rains which affected planted crops resulting in stunting and yellowing of crops, while crops in some areas were completely damaged. The heavy rains created difficulty in weeding and has also favoured striga infestation on sorghum crop in many areas.

Figures 2 and 3 show monthly NDVI and precipitation anomalies, respectively. The NDVI anomaly indicates the relative difference to long term average and clearly shows the above average situations in terms of vegetation cover over the vast majority of the cropping areas in the 2014 rainy season. Similarly, the precipitation anomaly shows the above average rainfall situation and the good temporal distribution across the growing periods (June to October). Graphs at state level (see annexes) were prepared to show the significant differences of the summer 2014 rainfall over that of last year and the 1999-2013 mean annual rainfall. It can be noted that the NDVI is almost at high record level in most important producing states such as Sennar, Gedaref, Kassala, Gezira, Blue Nile, but also in South Kordofan and Central Darfur.

Figure 2 - NDVI anomaly- relative difference to long term average

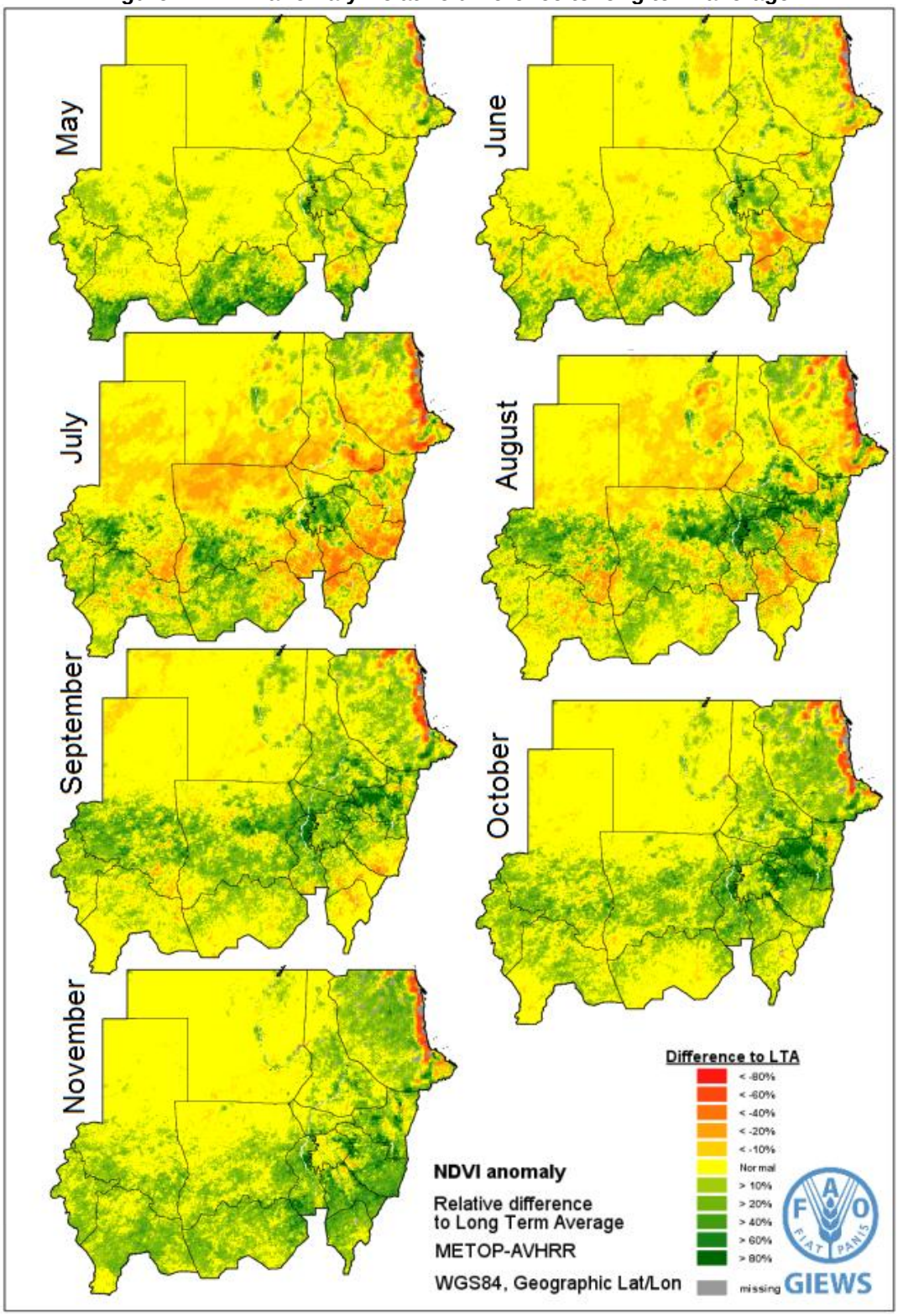
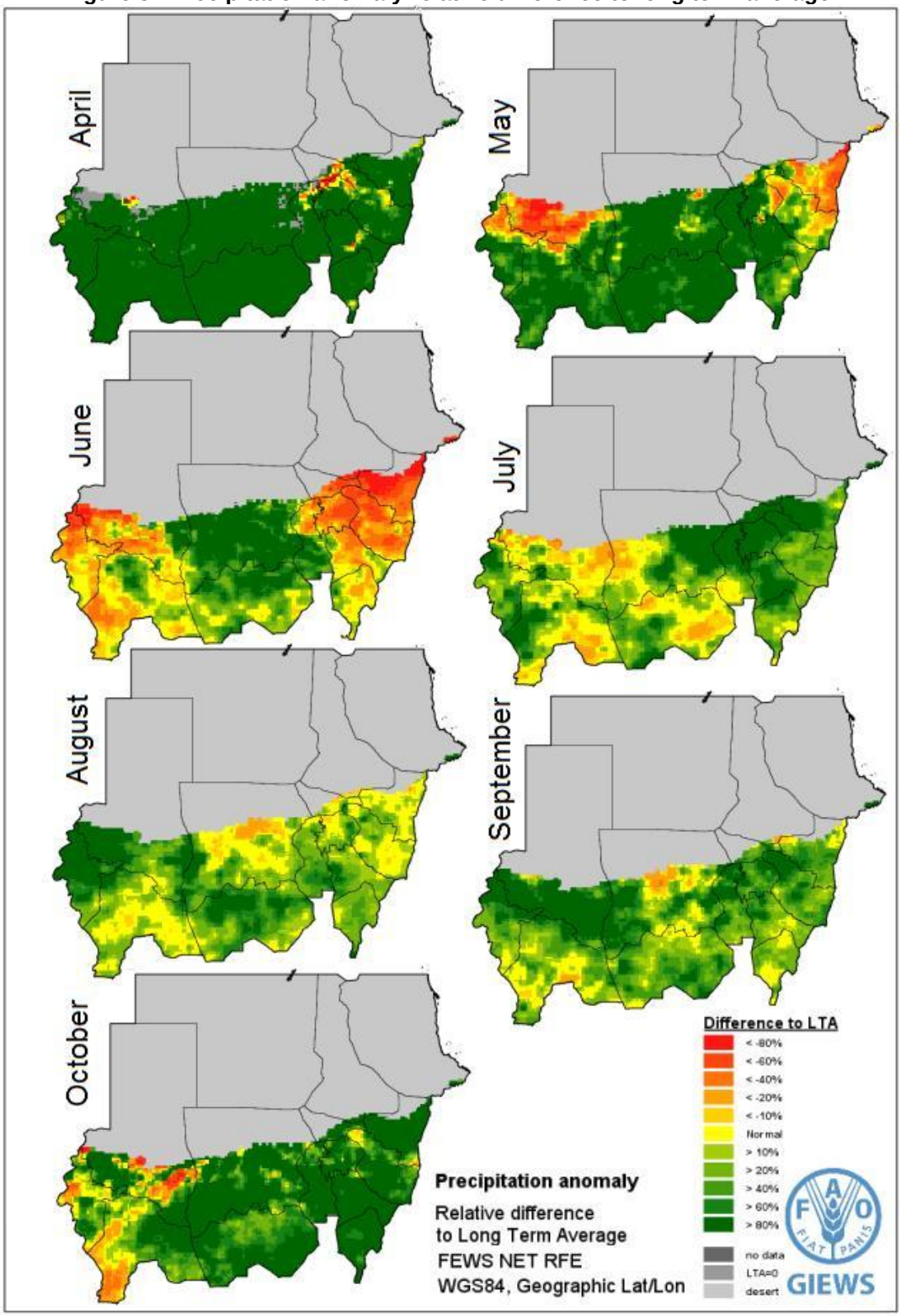


Figure 3 - Precipitation anomaly-relative difference to long term average



3.1.3 Agricultural inputs

Agricultural machinery, seeds, fertilizers and most of the herbicides are the major inputs used by farmers. Majority of the seeds are local own seeds of last year's production and seeds purchased from the markets. Improved seeds are mostly used in irrigation schemes and to some extent in semi mechanized rainfed farming areas. During the 2014/15 season, all the above stated inputs were to a large extent available to farmers. However, most of the farmers have mentioned that the prices were a bit expensive, which have limited their wider use.

The total amount of seeds distributed to smallholder farmers in different states were about 2 431 tonnes of cereals, mainly sorghum, millet and limited quantities of sesame and beans (Table 3a. Also 136 tonnes of cotton seed was distributed to small farmers in Kordafan, South Darfur and Toker in Red Sea State. In few cases however, farmers have claimed that the quality of the seeds were not good. FAO distributed high quality improved seeds with its Implementing Partners (IPs) including 1,047.2 tonnes of field crops' seeds, 13.35 tonnes of vegetables' seeds as well as 39 679 pieces of assorted hand tools (table 3b).

Table 3a - Seed distribution by MoAI to smallholders by state in Sudan 2014

State	Quantity (tonnes)	
	Cereals, sesame and bean seeds	Cotton seeds
North Darfur	193	
South Darfur	167	6
Central Darfur	155	
East Darfur	150	
West Darfur	145	
North Kordofan	200	35
South Kordofan	190	50
West Kordofan	193	5
White Nile	175	
Blue Nile	185	
Sennar	145	
Gezira	105	
Gedaref	148	
Kassala	135	
Red Sea	125	40
Khartoum	20	
Total	2 431	136

Source: MoAI

Table 3b: Seeds Distributed by FAO and its IPs to Vulnerable households by state in Sudan 2014

State	Quantities in tonnes		Quantities in pieces
	Field crops' seeds	Vegetables crops' seeds	Hand tools
North Darfur	135	2.32	5,830
South Darfur	162.8	1.72	5,890
West Darfur	179.6	1.86	3,295
Central Darfur	132.4	2.5	4,622
South Kordofan	182.6	2.5	9,462
North Kordofan	18	0.37	3,560
Blue Nile	62	0.26	6,020
Kassala	75.8	0.67	1,000
Red Sea	99	1.15	0
Total	1,047.2	13.35	39,679

Credit in general was available and the amount was twice as much as that of last year. Further utilization of available loans was limited by bad debts of the previous year, and utilization depended on the repayment of the previous debts. Regarding machinery, it was reported that more tractors, harvesters and sesame binders were deployed this year more than that of the previous years. It was also reported that more labour was required this year to harvest the abundant crop production and the costs were found to be more expensive compared to last year. The unit cost of labour in the semi mechanized sector reached its peak during the harvesting of sesame around October/November and gradually declined after completion of sesame's harvest and the beginning of harvesting sorghum. The high cost of labour at the time of harvest and the declining of grain prices may discourage farmers and result in selling the standing crops for animal feed, rather than harvesting them for grain. Furthermore, there is a possibility of extending the period of harvest until farmers see the price trends to take the necessary decision which may lead to more harvest-time and post-harvest losses. This is also true in cases of low yields that some farmers may prefer to sell their standing crops for animal feed, which could be more cost-effective than harvesting and selling the grains.

3.1.4 Pests, diseases and weeds

The 2014/15 cropping season has been relatively free of pests and diseases, with no significant effects over the vast majority of the cropping areas of the country. However, there were reports of migratory pests during the season including desert locust and Quelea Quelea birds, both of which were controlled by aerial spraying and ground measures. In the vast majority of the cropping areas damages due to pests and other natural factors were minimal. The occurrences of common pests in some areas have caused only mild damage to crops. These include stalk borers, African and American bollworms, and grasshoppers on the main crops, particularly sorghum. One of the major pests that deserve mentioning is the Sorghum Midge (*Contarinia sorghicola*) which caused localized damage on some lately planted sorghum crops.

The African bollworm in Gezira scheme has seriously affected some of the areas planted with sorghum Tabat variety. American bollworm has also affected sorghum in Sennar state (Suki Scheme). In some areas, grasshoppers and local birds have caused mild damage to crops like sorghum but control measures were taken on time. Table 4 shows the pests and disease situation and control measures taken during the 2014 cropping season.

Table 4 - Pests and disease situation during the 2014 summer cropping season (till end of October 2014)

Pests	Area infested (ha)	Area treated (ha)	Area inspected/ surveyed (ha)	Pesticides (liters/kg)	Remarks
Birds	39 720	39 720	-	39 600 liters	
Desert locust	9 059	6 682	104 600	4 106 liters (ULV)	Controlled at time of summer breeding in River Nile, Red Sea, Kassala, N. Kordofan & Northern States
Tree locust	15 528	15 528	47 592	EC: 1 266 lit. ULV: 7 790 lit Powder: 1 370 kg	12 900 ha controlled by plane and 2 528 ha land
Grasshopper	31 812	29 930	90 622	• EC: 2 197 lit • ULV: 15 462 lit • Powder: 2 450 kg • Poison baits: 99 kg	
Sorghum bug	40	40	1 250	• Fairkam powder 1%: 80kg	Major control is carried out during the hibernation (Jan–May)
Night crickets	1 404	1 404	4 392	• ULV: 561 lit. • Powder: 1 332 kg	
Fruit fly	-	418.3	-	• Hunting devices: 4 050 units • Pesticide: 1 750 milliliters	

Source: MoAI

Regarding weeds, heavy rains favoured higher infestation levels which required more efforts and labour for weeding compared to last year. Weeding is practiced manually by hand in the traditional smallholder farming sector, while herbicides and inter-row cultivations (tractor mounted) are used to some extent in the semi-mechanized and irrigated sectors.

The striga (*Striga hermontica*) parasitic weed made some noticeable damage to crops in Blue Nile state and to some extent in Sennar and Gedarif states causing a relative decline in yield. This is due to the prevailing mono cropping of sorghum in these areas and the difficulty of weeding during the peak heavy rainfall periods of the season where fields are frequently inundated. Most of the existing varieties of sorghum are highly susceptible to striga.

The desert locust situation has been monitored in the Northern, Red Sea, Kessala and Darfur. Table 4 shows the areas controlled by the central Crop Protection Administration in collaboration with the state Ministries of Agriculture. However, as indicated in the Desert Locust Situation update (Nov.2014), a potentially dangerous situation was developing in northern Sudan where hopper bands and groups of adults started forming in October. The situation is similar to that in 2012 when swarms invaded northern Egypt and the Nile Valley in Sudan in spring 2013. Although aerial and ground control operations were underway during Mission's field visits, the latest reports indicate that the situation continues to deteriorate. Most of the hopper bands have fledged and an increasing number of adult groups were forming north of Khartoum in the Baiyuda Desert and in eastern Sudan along the Atbara River and on the western side of the Red Sea Hills from Kassala to Haiya. Small immature swarms are also expected to appear in the winter breeding areas on the central coast of Red Sea state, including the Tokar Delta, and in subcostal areas in northeast Sudan, including Wadi Oko/Diib, with a high risk for late summer crops as well as for the upcoming winter crops.

All efforts are required to carry out ground surveys in all areas on a regular basis and undertake control operations as necessary to reduce the level of winter breeding and subsequent threat to crops and migration to other countries in the Region.

3.1.5 Area planted and harvested in 2014/15

The area planted with sorghum during the current season amounts to 10 545 million hectares, exceeding the area of the previous season by 27 percent and the five years average (2008/09 – 2012/13) by 17 percent. The millet area during the season is estimated at 4 127 million hectares, with an increase of 49 and 43 percent compared to the previous season and the five years average respectively. The area covered by both crops during the current season surpasses the area of last season and the five years average by 33 and 23 percent respectively. The major increase in area comes from increased planting in the rain-fed sector. The increase is attributed to the good, timely and well distributed rainfall over the vast majority of the main producing centres. Moreover, the high prices of crops after the poor production of last year and improvement in the availability of agricultural inputs including finance have encouraged farmers to expand their cropping lands.

The area harvested in the current season from sorghum and millet constitute about 78 percent of the planted area, while the percentage of the harvested area compared to the planted area of last year and the five years average was 53 and 66 percent respectively. Such a high percentage of the harvested areas in the 2014/15 season as well as the high yields per unit area are the main factors for the increase in production.

Since wheat is a winter crop still being planted, the forecast of area planted to wheat is nearly 237 thousand hectares, exceeding the area of the previous season by 90 percent but less than the five years average by 3 percent. The expansion of wheat cultivation as compared to the previous season is due to the encouraging Government policy to increase local production of wheat aiming at this coming year to attain self-sufficiency. Accordingly, a floor price of 400 SDG/100 kg sack was declared by the Government as well as the Agricultural Bank of Sudan has also made available more agricultural credit for wheat growers which contributed to its expansion.

Table 5 - Harvested cereal area (000 ha)[1] by state/centre of production and sector

	Sorghum					Millet					Wheat				
	5-yr av. 2008/09-2012/13	2013/14	2014/15	2014/15 as % 2013/14	2014/15 as % 5-yr average	5-yr av. 2008/09-2012/13	2013/14	2014/15	2014/15 as % 2013/14	2014/15 as % 5-yr average	5-yr av. 2008/09-2012/13	2013/14	2014/15	2014/15 as % 2013/14	2014/15 as % 5-yr average
Irrigated Sector															
Northern	5	2	3	150	51						54	27	40		
River Nile	18	11	22	212	124						22	11	16	152	73
Khartoum											5		3		63
Gezira Scheme	198	177	197	111	99						118	44	126	286	107
Suki	13	15	15	100	112						1				
Sennar	30	27	27	100	92						1	1			
White Nile	43	45	52	116	122						12	15	17	114	148
Blue Nile												44			
Rahad	38	29	34	121	91						1				
New Halfa	31	34	33	98	105						6	14	17	120	302
Gash	26	24	42	172	161										
Kassala	0														
Tokar	5	5	20	436	381	6	3	8	304	138					
North Kordofan	2	1	1	67	48										
Total Irrigated Sector	410	369	446	121	109	6	3	8	304	138	221	113	220	196	100
Semi-mechanized rain-fed Sector															
Sennar	598	259	1185	458	198	95	19	87	458	91					
White Nile	337	162	329	203	98	32	7	44	621	137					
Blue Nile	261	195	330	169	126	22	21	19	88	83					
Gedaref	1491	1171	2732	233	183	68	58	113	193	166					
Kassala	268	423	491	116	184		19								
Kordofan North	8	8	4	56	53		7								
West Kordofan		4	4	111											
South Kordofan	287	180	418	232	146	29	3	6	174	20					
Total semi-mech. rain-fed Sector	3249	2402	5494	229	169	220	109	268	246	121					
Traditional rain-fed Sector															
River Nile	27	10	101	1048	377										
Khartoum		63	83	132											
Gezira	254	262	420	160	166	3	8	3	43	106					
Sennar	149	116				20	4								
White Nile	161	110	153	139	95	27	5	32	646	120					
Blue Nile	55	27				16	3								
Kassala	100	87	80	91	80	1	1	1	100	163					
Red Sea	10	31	4	14	43	5	6	8	133	171					
North Kordofan	405	87	244	279	60	546	315	497	158	91					
West Kordofan		187	290	155			202	525	260						
South Kordofan	312	155	420	270	135	224	33	59	179	26					
North Darfur	80	71	124	174	155	22	271	544	200	2439					
West Darfur	118	71	179	251	152	170	155	209	134	123	5	3	3	100	64
South Darfur	374	153	357	233	95	345	200	433	217	126	5	2	2	100	33
Central Darfur	148	69	162	234	109	111	79	170	215	153					
Eastern Darfur	126	85	70			151	114	127	111	84					
Total traditional rain-fed Sector	2319	1586	2687	169	116	1641	1389	2609	188	159	10	5	5	100	47
Total Sudan	**5978**	**4356**	**8626**	**198**	**144**	**1867**	**1501**	**2884**	**192**	**154**	**230**	**117**	**225**	**192**	**98**

[1] One feddan is equivalent to 0.42 hectare

Table 6 - Cereal yields (t/ha) by state/centre of production and sector.

	Sorghum					Millet					Wheat				
	5-yr av. 2008/09-2012/13	2013/14	2014/15	2014/15 as % 2013/14	2014/15 as % 5-yr average	5-yr av. 2008/09-2012/13	2013/14	2014/15	2014/15 as % 2013/14	2014/15 as % 5-yr average	5-yr av. 2008/09-2012/13	2013/14	2014/15	2014/15 as % 2013/14	2014/15 as % 5-yr average
Irrigated Sector															
Northern	2.4	1.8	2.8	155.6	116.7										
River Nile	2.0	2.2	2.6	118.2	130.0						1.8	1.8	1.9	105.6	105.6
Khartoum											1.7		1.8		109.1
Gezira Scheme	2.1	1.8	1.9	105.6	90.5						1.5	1.7	2.1	123.5	140.0
Suki	2.3	2.0	1.7	85.0	73.9						1.4				
Sennar	1.9	1.8	1.7	94.4	89.5						1.4	1.6			
White Nile	1.9	2.4	2.2	91.7	115.8						1.6	1.9	2.1	110.5	131.3
Blue Nile															
Rahad	2.1	2.4	2.0	83.3	95.2										
New Halfa	2.2	2.4	2.1	87.5	95.5						1.4	1.7	2.1	123.5	150.0
Gash	2.3	1.8	2.4	133.3	104.3										
Kassala	1.4														
Tokar	1.0	1.5	1.5	100.0	150.0	0.7	0.8	0.9	112.5	128.6					
North Kordofan	1.3	0.8	1.2	150.0	92.3										
Total Irrigated Sector	2.1	2.0	2.0	100.0	95.2	0.7	0.8	0.9	112.5	128.6	1.7	1.7	2.1	123.5	123.5
Semi-mechanized rain-fed Sector															
Sennar	0.4	0.3	0.7	233.3	175.0	0.3	0.2	0.5	250.0	166.7					
White Nile	0.4	0.3	0.6	200.0	150.0	0.4	0.1	0.4	400.0	100.0					
Blue Nile	0.5	0.6	0.5	83.3	100.0	0.4	0.4	0.4	100.0	100.0					
Gedaref	0.5	0.4	0.7	175.0	140.0	0.4	0.3	0.4	133.3	100.0					
Kassala	0.4	0.3	0.8	266.7	200.0										
Kordofan North	0.4	0.3	0.7	233.3	175.0										
West Kordofan		0.3	0.7	233.3											
South Kordofan	0.4	0.4	0.6	150.0	150.0	0.4	0.3	0.3	100.0	75.0					
Total semi-mech. rain-fed Sector	0.4	0.4	0.7	175.0	175.0	0.4	0.3	0.4	133.3	100.0					
Traditional rain-fed Sector															
River Nile	0.5	1.1	1.1	100.0	220.0										
Khartoum		0.5	0.6	120.0											
Gezira	0.4	0.3	0.6	200.0	150.0	0.3		0.3		100.0					
Sennar	0.5	0.3													
White Nile	0.5	0.3	0.4	133.3	80.0	0.4	0.3		0.0	0.0					
Blue Nile	0.6	0.7													
Kassala	0.4	0.5	0.9	180.0	225.0	0.2		0.8		400.0					
Red Sea	0.5	0.5	0.2	40.0	40.0	0.4	0.5	0.4	80.0	100.0					
North Kordofan	0.2	0.1	0.3	300.0	150.0	0.1	0.1	0.2	200.0	200.0					
West Kordofan		0.4	0.3	75.0			0.2	0.3	150.0						
South Kordofan	0.6	0.5	0.6	120.0	100.0	0.2	0.4	0.5	125.0	250.0					
North Darfur	0.3	0.2	0.5	250.0	166.7	0.7	0.1	0.3	300.0	42.9					
West Darfur	0.9	0.4	0.9	225.0	100.0	0.7	0.4	0.8	200.0	114.3	1.2	1.2	1.2	100.0	100.0
South Darfur	0.6	0.2	0.6	300.0	100.0	0.3	0.2	0.1	50.0	33.3	1.2	1.4	1.4	100.0	116.7
Central Darfur	0.2	0.7	1.3	185.7	650.0	0.7	0.8	0.4	50.0	57.1					
Eastern Darfur	0.2	0.2	0.6	300.0	300.0	0.2	0.2	0.2	100.0	100.0					
Total traditional rain-fed Sector	0.4	0.4	0.6	150.0	150.0	0.3	0.2	0.3	150.0	100.0	1.2	1.3	1.3	100.0	108.3
Total Sudan	**0.5**	**0.5**	**0.7**	**140.0**	**140.0**	**0.3**	**0.2**	**0.3**	**150.0**	**100.0**	**1.7**	**1.7**	**2.1**	**123.5**	**123.5**

Table 7 - Cereal production (000 tonnes) by state and sector

	Sorghum					Millet					Wheat				
	5-yr av. 2008/09-2012/13	2013/14	2014/15	2014/15 as % 2013/14	2014/15 as % 5-yr average	5-yr av. 2008/09-2012/13	2013/14	2014/15	2014/15 as % 2013/14	2014/15 as % 5-yr average	5-yr av. 2008/09-2012/13	2013/14	2014/15	2014/15 as % 2013/14	2014/15 as % 5-yr average
Irrigated Sector															
Northern	12	3	7	233	59										
River Nile	36	23	58	253	160						116	41	86	210	74
Khartoum											38	19	30	158	79
chemeGezira S	414	316	375	119	91						167	74	270	365	162
Suki	31	29	25	86	82										
Sennar	55	48	46	96	83										
White Nile	83	107	112	105	135						18	28	37	132	206
Blue Nile															
Rahad	80	68	70	103	87										
New Halfa	69	80	70	88	102						8	24	37	154	463
Gash	60	44	100	227	167										
Kassala															
Tokar	5	7	30	429	556	4	2	7	350	184					
North Kordofan	2	1	1	100	45										
Total Irrigated Sector	850	726	894	123	105	4	2	7	350	184	376	188	467	248	124
Semi-mechanized rain-fed Sector															
Sennar	246	65	794	1222	323	33	4	41	1025	124					
White Nile	143	44	196	445	137	11	1	19	1900	167					
Blue Nile	119	125	157	126	131	9	9	8	89	85					
Gedaref	694	502	1952	389	281	25	19	48	253	190					
Kassala	114	136	369	271	324										
North Kordofan	3	2	3	150	88										
West Kordofan		1	3	300											
South Kordofan	118	77	249	323	211	1	1	2	200	200					
Total semi-mech. rain-fed Sector	1438	952	3723	391	259	80	34	118	347	148					
Traditional rain-fed Sector															
River Nile	13	11	109	986	828										
Khartoum		34	48	140											
Gezira	90	88	234	266	261	1		1		111					
Sennar	68	30				9	1								
White Nile	77	35	65	186	85	11	1	12	1200	109					
Blue Nile															
Kassala	41	40	68	170	165	0		1		500					
Red Sea	5	14	1	7	21	2	3	3	100	150					
North Kordofan	84	13	78	600	93	71	34	101	297	142					
West Kordofan		71	93	131			38	150	395						
South Kordofan	182	74	270	365	149	56	14	28	200	50					
North Darfur	24	12	59	492	243	16	39	155	397	969					
West Darfur	101	30	163	543	162	113	61	170	279	151	5	4	4	100	80
South Darfur	212	33	229	694	108	90	43	139	324	155	6	2	2	100	33
Central Darfur	35	50	208	417	595	80	63	146	231	182					
Eastern Darfur	27	18	39	217	145	32	25	54	218	170					
Total traditional rain-fed Sector	993	571	1664	291	168	487	323	960	297	197	12	6	6	100	52
Total Sudan	**3281**	**2249**	**6281**	**279**	**191**	**571**	**359**	**1085**	**302**	**190**	**388**	**194**	**473**	**243**	**122**

Table 8 - Sudan. Cereal production by sector (000 tonnes)

Sector	Sorghum			Millet			Wheat**		
	5-yr average*	2013/14	2014/15	5-yr average*	2013/14	2014/15	5-yr average*	2013/14	2014/15
Irrigated	850	726	894	4	2	7	376	188	467
Rain-fed semi-mechanized	1438	952	3723	80	34	118			
Rainf-ed traditional	993	571	1664	543	323	960	12	6	6
Total	**3281**	**2249**	**6281**	**571**	**359**	**1085**	**388**	**194**	**473**

* average 2008/09 - 2012/13 ** 2014/15 figures for wheat are forecasts

Table 9 - Sorghum production parameters by sector

Sector	5-yr average 2008/09-2012/13			2013/14			2014/15		
	Area 000 ha	Yield t/ha	Prod 000 t	Area 000 ha	Yield t/ha	Prod 000 t	Area 000 ha	Yield t/ha	Prod 000 t
Irrigated	410	2.1	850	369	2	726	446	2	894
Rainfed semi-mechanized	3249	0.4	1438	2402	0.4	952	5494	0.7	3723
Rainfed traditional	2319	0.4	993	1586	0.4	571	2687	0.6	1664
Total	**5978**	**0.5**	**3281**	**4356**	**0.5**	**2249**	**8626**	**0.7**	**6281**

Table10 - Millet production parameters by sector

Sector	5-yr average 2008/09-2012/13			2013/14			2014/15		
	Area 000 ha	Yield t/ha	Prod 000 t	Area 000 ha	Yield t/ha	Prod 000 t	Area 000 ha	Yield t/ha	Prod 000 t
Irrigated	6	0.7	4	3	0.8	2	8	0.9	7
Rainfed semi-mechanized	220	0.4	80	109	0.3	34	268	0.4	118
Rainfed traditional	1641	0.3	543	1389	0.2	323	2609	0.3	960
Total	**1867**	**0.3**	**571**	**1501**	**0.2**	**359**	**2884**	**0.3**	**1085**

Table11 - Wheat production parameters by sector

Sector	5-yr average 2008/09-2012/13			2013/14			2014/15		
	Area 000 ha	Yield t/ha	Prod 000 t	Area 000 ha	Yield t/ha	Prod 000 t	Area 000 ha	Yield t/ha	Prod 000 t
Irrigated	221	1.7	376	113	1.7	188	220	2.1	467
Rainfed semi-mechanized									
Rainfed traditional	10	1.2	12	5	1.3	6	5	1.3	6
Total	**230**	**1.7**	**388**	**118**	**1.7**	**194**	**225**	**2.1**	**473**

3.1.6 Crop yields

The aggregate cereal yield (sorghum, millet and wheat) of the current year has gone upwards to 0.7 tons per hectare from 0.6 t/ha of last year and the five years average. As a result of this and the increased harvestable area, the country has obtained a record high production during the current year. Annexes provide details of state level productivity of the main cereal crops.

The overall yield of sorghum in the current year was higher than both the previous year and the five years average by 40 percent. Sorghum yield in the irrigation sector was almost the same as last year and only slightly lower (by 5 percent) compared to the five years average. Despite the favourable growing conditions for the rainfed sector, crops under the irrigated sector in some areas have suffered from excessive moisture. Although there was variation from state to state, the sorghum yield in the rainfed mechanized sector is higher by 75 percent compared to last year and the five years average. All states under this sector have registered higher yields except Blue Nile State which was lower by about 17 percent compared to last year because of the waterlogged conditions which prevailed during the season and striga weed infestation. The sorghum yield in the traditional rainfed sector has also registered increment by about 40 percent as compared to last year and the five years average (Table 12). However, the yield of irrigated sorghum has declined in Sulki, Sennar and Gezera schmes by 25, 10 and 9 percent due to factors related to excessive moisture, striga and African bollworm infestations. As a result, the overall productivity of irrigated sorghum is lower than last year by 5 percent.

Millet is largely produced in the traditional sector and some under the semi-mechanized rainfed sectors. The overall yield of millet during the current season has increased by about 50 percent compared to last year and the five years average. The productivity of millet in the semi mechanized sector is higher by 33 percent compared to last year and almost the same as the five years average, while the yield in the traditional rainfed sector is higher by 50 percent compared to last year (Table 12). The yield increase is attributed to the favourable rainfall conditions that prevailed during the growing season both in terms of amount and distribution.

Winter wheat is mainly grown under irrigation, with only few areas producing in the traditional rainfed sector, particularly in West and South Darfur. Higher yield of wheat is anticipated, about 23 percent increase during the current season compared to both last year and the five years average (Table 12). This is due the price incentives provided by the government to promote wheat production, which encouraged farmers to use modern inputs and better cultural practices to increase wheat productivity.

Table 12 - Cereal yields (t/ha) by state/centre of production and sector

	Sorghum					Millet					Wheat				
	5-yr av. 200910-2013/14	2013/14	2014/15	2014/15 as % 2013/14	2014/15 as % 5-yr average	5-yr av. 200910-2013/14	2013/14	2014/15	2014/15 as % 2013/14	2014/15 as % 5-yr average	5-yr av. 200910-2013/14	2013/14	2014/15	2014/15 as % 2013/14	2014/15 as % 5-yr average
Irrigated Sector															
Northern	2.4	1.8	2.8	155.6	116.7										
River Nile	2.0	2.2	2.6	118.2	130.0						1.8	1.8	1.9	105.6	105.6
Khartoum											1.7		1.8		109.1
Gezira Scheme	2.1	1.8	1.9	105.6	90.5						1.5	1.7	2.1	123.5	140.0
Suki	2.3	2.0	1.7	85.0	73.9						1.4				
Sennar	1.9	1.8	1.7	94.4	89.5						1.4	1.6			
White Nile	1.9	2.4	2.2	91.7	115.8						1.6	1.9	2.1	110.5	131.3
Blue Nile															
Rahad	2.1	2.4	2.0	83.3	95.2										
New Halfa	2.2	2.4	2.1	87.5	95.5						1.4	1.7	2.1	123.5	150.0
Gash	2.3	1.8	2.4	133.3	104.3										
Kassala	1.4														
Tokar	1.0	1.5	1.5	100.0	150.0	0.7	0.8	0.9	112.5	128.6					
North Kordofan	1.3	0.8	1.2	150.0	92.3										
Total Irrigated Sector	2.1	2.0	2.0	100.0	95.2	0.7	0.8	0.9	112.5	128.6	1.7	1.7	2.1	123.5	123.5
Rainfed sector Mechanized															
Sennar	0.4	0.3	0.7	233.3	175.0	0.3	0.2	0.5	250.0	166.7					
White Nile	0.4	0.3	0.6	200.0	150.0	0.4	0.1	0.4	400.0	100.0					
Blue Nile	0.5	0.6	0.5	83.3	100.0	0.4	0.4	0.4	100.0	100.0					
Gedaref	0.5	0.4	0.7	175.0	140.0	0.4	0.3	0.4	133.3	100.0					
Kassala	0.4	0.3	0.8	266.7	200.0										
Kordofan North	0.4	0.3	0.7	233.3	175.0										
West Kordofan		0.3	0.7	233.3											
South Kordofan	0.4	0.4	0.6	150.0	150.0	0.4	0.3	0.3	100.0	75.0					
Total Mechan. Rainfed	0.4	0.4	0.7	175.0	175.0	0.4	0.3	0.4	133.3	100.0					
Rainfed sector Traditional															
River Nile	0.5	1.1	1.1	100.0	220.0										
Khartoum		0.5	0.6	120.0											
Gezira	0.4	0.3	0.6	200.0	150.0	0.3		0.3		100.0					
Sennar	0.5	0.3													
White Nile	0.5	0.3	0.4	133.3	80.0	0.4	0.3		0.0	0.0					
Blue Nile	0.6	0.7													
Kassala	0.4	0.5	0.9	180.0	225.0	0.2		0.8		400.0					
Red Sea	0.5	0.5	0.2	40.0	40.0	0.4	0.5	0.4	80.0	100.0					
North Kordofan	0.2	0.1	0.3	300.0	150.0	0.1	0.1	0.2	200.0	200.0					
West Kordofan		0.4	0.3	75.0			0.2	0.3	150.0						
South Kordofan	0.6	0.5	0.6	120.0	100.0	0.2	0.4	0.5	125.0	250.0					
North Darfur	0.3	0.2	0.5	250.0	166.7	0.7	0.1	0.3	300.0	42.9					
West Darfur	0.9	0.4	0.9	225.0	100.0	0.7	0.4	0.8	200.0	114.3	1.2	1.2	1.2	100.0	100.0
South Darfur	0.6	0.2	0.6	300.0	100.0	0.3	0.2	0.1	50.0	33.3	1.2	1.4	1.4	100.0	116.7
Central Darfur	0.2	0.7	1.3	185.7	650.0	0.7	0.8	0.4	50.0	57.1					
Eastern Darfur	0.2	0.2	0.6	300.0	300.0	0.2	0.2	0.2	100.0	100.0					
Total Traditional Rainfed	0.4	0.4	0.6	150.0	150.0	0.3	0.2	0.3	150.0	100.0	1.2	1.3	1.3	100.0	108.3
Total Sudan	**0.5**	**0.5**	**0.7**	**140.0**	**140.0**	**0.3**	**0.2**	**0.3**	**150.0**	**100.0**	**1.7**	**1.7**	**2.1**	**123.5**	**123.5**

3.2 Sudan Cereal Production forecast

Total cereal production in 2014/15 (sorghum, millet and wheat) is estimated at 7.8 million tons, not including the marginal production of maize and rice (Table 13). The production of current season is about three times higher than the poor production of last season and 85 percent more than the five years average. The rainfed sector is the main contributor to this increase in production due to the abundant and well distributed rains received. In addition to the favourable rains, the high increase in production is also due to the improved availability of machinery and inputs, minimal pests and diseases, improved security situations (protection to farmers), credit availability and better preparedness for the season.

Table 13 - Cereal production by sector (000 tonnes)

Sector	Sorghum			Millet			Wheat**		
	5-yr average*	2013/14	2014/15	5-yr average*	2013/14	2014/15	5-yr average*	2013/14	2014/15
Irrigated	850	726	894	4	2	7	376	188	467
Rainfed semi-mechanized	1438	952	3723	80	34	118			
Rainfed traditional	993	571	1664	543	323	960	12	6	6
Total	**3281**	**2249**	**6281**	**571**	**359**	**1085**	**388**	**194**	**473**

* average 2008/09 - 2012/13 ** 2014/15 figures for wheat are forecasts

3.3 Other crops

3.3.1 Sesame

Sesame has recovered from its last year's low level of production both in terms of yield and production. The sesame area has increased by 231 and 81 percent compared to last year and the five year average, respectively. The total production also followed the same trend showing 252 and 110 percent increase over the previous season and the five years average, respectively. Such a high increase in area coverage of sesame is because of the high market prices of sesame due to the low production during the previous season. The high price of last season's sesame has encouraged planting of sesame resulting in significantly higher production during the season which is also the result of higher yield per unit area during the current season. The timey rains of July have also encouraged the expansion of planting and more area coverage of sesame (Table 14).

Table 14 - Sesame production 2013/14 compared with 2012/13 and 5-year average

Sector	Area (000 ha)			Production (000 t)			Yield (t/ha)		
	5-yr average*	2013/14	2014/5	5-yr average*	2013/14	2014/15	5-yr average*	2013/14	2014/15
Rainfed semi-mechanized	874	425	1344	185	96	403	0.21	0.23	0.3
Rainfed traditional	1114	378	1315	158	109	318	0.14	0.29	0.23
Total	**1988**	**803**	**2659**	**343**	**205**	**721**	**0.17**	**0.26**	**0.27**

* average 2008/09 - 2012/13

3.3.2 Groundnut

The area planted to groundnut has almost doubled compared to that of last year but lower than the five years average. However, the 2014/15 production is estimated to be higher by 130 and 51 percent compared to last year and the five years average, respectively (Table 15). The yield per unit area has been slightly lower than last year but significantly higher than that the five years average.

Table 15 - Groundnut production 2013/14 compared with 2012/13 and 5-year average

Sector	Area (000 ha)			Production (000 t)			Yield (t/ha)		
	5-yr average*	2013/14	2014/15	5-yr average*	2013/14	2014/15	5-yr average*	2013/14	2014/15
Irrigated	178	116	120	312	274	286	1.75	2.37	2.39
Rainfed traditional	2579	1138	2064	1054	689	1585	0.41	0.61	0.62
Total	**2757**	**1254**	**2184**	**1366**	**963**	**1871**	**0.5**	**0.77**	**0.72**

* average 2008/09 - 2012/13

3.3.3 Sunflower

The area planted and the total production of sunflower has been similar to that of last year but significantly lower than the five years average. The yields are however higher than the five years average (Table 16). Although significant areas are cultivated using irrigation, majority of sunflower is cultivated under the rainfed sector.

Table 16 - Sunflower production 2013/14 compared with 2012/13 and 5-year average

Sector	Area (000 ha)			Production (000 t)			Yield (t/ha)		
	5-yr average*	2013/14	2014/15	5-yr average*	2013/14	2014/15	5-yr average*	2013/14	2014/15
Irrigated	32	16	16	38	27	18	1.18	1.69	1.1
Rainfed traditional	150	48	47	79	29	33	0.53	0.61	0.7
Total	**182**	**64**	**64**	**118**	**56**	**51**	**0.64**	**0.88**	**0.8**

* average 2008/09 - 2012/13

3.3.4 Sugar

The country's sugar is produced in the Sudanese Sugar Company, which encompasses four factories namely, Guneid, New Halfa, Sennar and Asalaia together with Kenana Sugar factory. Recently, White Nile Sugar Company which is under the supervision of Kenana Sugar Factory has entered into sugar production. Its expected production in the current season is around 100 000 tons. This brings the forecast of sugar production to 756 000 tons. Table 17 indicates sugar production in Kenana and Sudanese Sugar Company.

Table 17 - Sugar production from 2012/13 to 2014/15

Company	Year	Harvestable area (ha)	Sugar production (000 tons)	Sugar yield tons/ha
Kenana	2012/13	33.9	370	10.9
	2013/14	33.6	355	10.6
	2014/15	34	365	10.7
Sudanese Sugar Company	2012/13	37	340	9.2
	2013/14	36.2	325	9
	2014/15	35.2	291	8.3

3.3.5 Cotton

The harvested area of cotton decreased in the current year compared to last year and the five years average, while the production and yields were increased. The decrease in area is attributed to the economical turnover from one year to another. Besides that the 2005 Gezira Act gives the right to farmers to select the crops they prefer to grow within their rotation. The yield of cotton during the current season increased by 13 percent compared to last year. Similarly, the production level increased by about 8.5 and 25 percent respectively compared to last year and the five years average. Majority of the production (about 90 percent) comes from the irrigated sector with only 10 percent from rainfed cultivation (Table 18).

Table 18 - Cotton production 2013/14 compared with 2012/13 and 5-year average

Sector	Area (000 ha)			Production (000 t)			Yield (t/ha)		
	5-yr average*	2013/14	2014/15	5-yr average*	2013/14	2014/15	5-yr average*	2013/14	2014/15
Irrigated	99.5	61.3	56.3	126.6	148	158.2	1.3	2.4	2.8
Rainfed	53.1	10.5	12.6	14.2	14	17.6	0.3	1.3	1.4
Total	**152.6**	**71.8**	**68.9**	**140.8**	**162**	**175.8**	**0.5**	**2.3**	**2.6**

* average 2008/09 - 2012/13

3.4 Livestock

The favourable rain has enabled the growth of adequate pastures in the country. As a result of the plentiful pastures, the livestock body conditions were good. However, in East Darfur the pasture situation in general has been deteriorating due to overgrazing caused by insecurity (limited movement of animals) resulting in depletion of palatable species in these limited grazing space. Water scarcity in South and East Darfur was reported despite the availability of pastures. Though this seems related to long term development issue (not specific to the current season only), the amount of harvested water may not be enough to allow optimum utilization of available pastures.

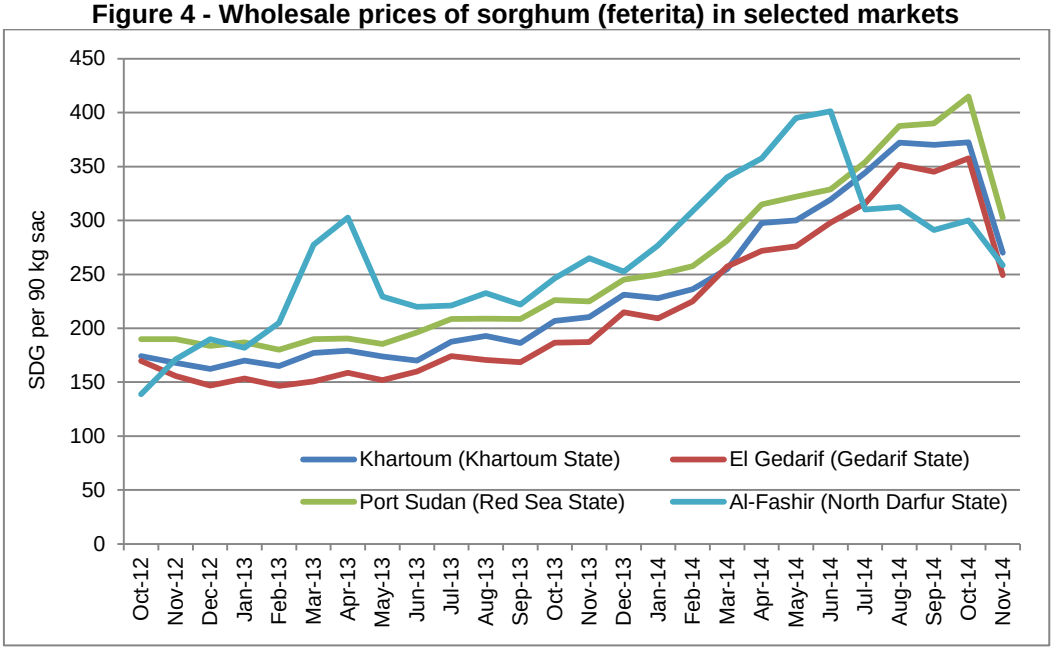
The local availability of pastures has contributed to the decrease of livestock movement in search of grazing to other areas. But still livestock in many areas follow their regular movement during the season. Similarly the availability of more pastures has decreased the tension between herders and farmers which normally results from expansion of agriculture to grazing lands.

4. CEREAL DEMAND/SUPPLY SITUATION

4.1 Cereal and livestock markets

Prices of locally produced sorghum and millet normally decline in October/November following the start of the main harvest (which is usually completed in February), and remain generally stable through to March, before rising and peaking in August/September. As illustrated in Figure 4, nominal wholesale prices of sorghum reached record high levels in most markets in October 2014, at the peak of the lean season, ranging from 360 to 415 SDG per 90 kg sac. Sorghum prices have been characterized by a 24-month steady increasing trend, essentially due to high costs of production and transportation, depreciation of local currency and well-below average production in 2013/14. In particular, prices have almost doubled in most markets between October 2013 and October 2014 as a consequence of the poor harvest gathered at the end of 2013. In November 2014, sorghum prices have declined by 20-35 percent in most markets as newly harvested crops become available for local consumption. In Darfur, the decline in sorghum prices started earlier in July/August 2014 in most markets, coinciding with subsidized grain sales by the Strategic Reserve Corporation, the resumption of direct food aid distribution and WFP's decision to exclude cereals from the food voucher system (non-cereal voucher system) which reduced the local demand for sorghum. For example, in Al Fashir market (North Darfur), average sorghum price declined by about 23 percent between June and July 2014.

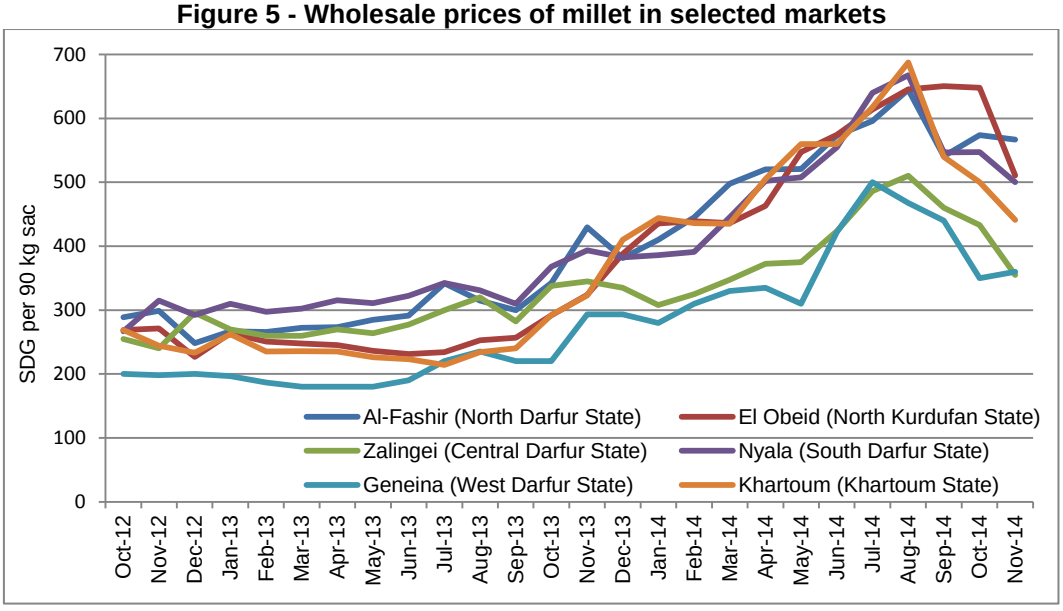
Figure 4 - Wholesale prices of sorghum (feterita) in selected markets



Source: Food and Agriculture Realtime Messaging and Reporting System (FARMERS)

Wholesale millet prices followed a similar trend during last two years. In main millet producing and consuming areas of Darfur and Kordofan, record prices between 645 and 670 SDG per 90 kg sac were recorded in August 2014. Subsequently, with the start of harvesting operations of early maturing millet varieties in September, prices started to decline in most markets. Between August and November 2014, millet wholesale prices have declined by 20-30 percent as a result of improved supplies and reduction in local demand as most farmers are relying on their own production for household consumption.

Figure 5 - Wholesale prices of millet in selected markets



Source: Food and Agriculture Realtime Messaging and Reporting System (FARMERS)

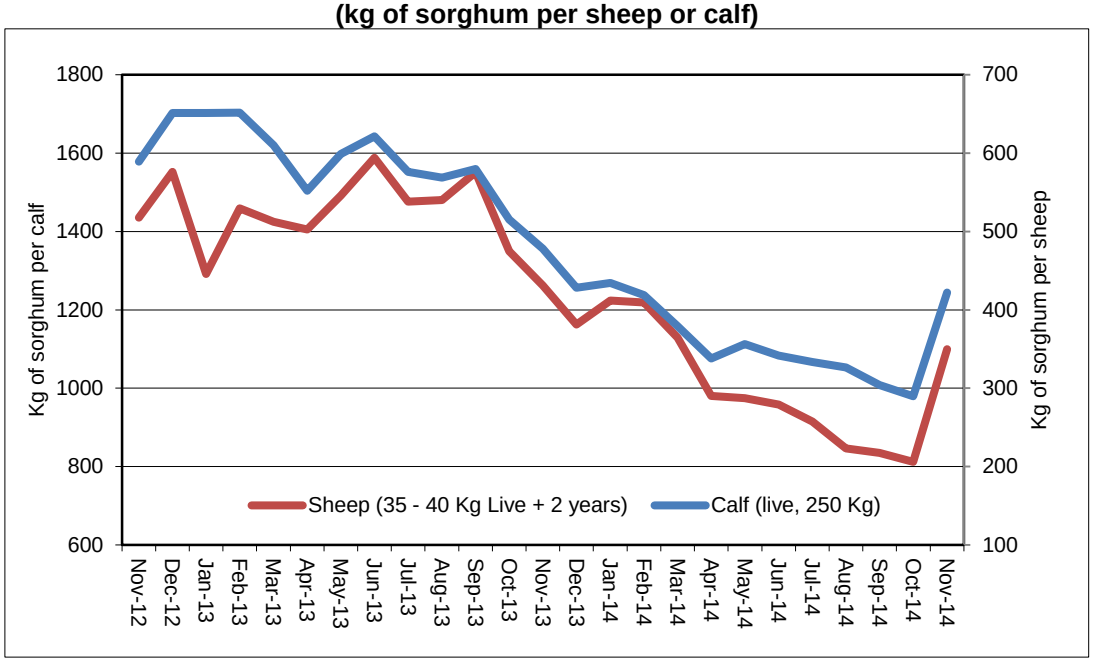
Prices of locally-produced wheat, mainly consumed in urban areas, continue to show a rising trend as stocks from last year's crop are depleted and the next harvest is expected to start by next March, mainly in irrigated areas of Gezira and Northern states. In November 2014, wheat grain was traded at about 390-415 SDG per 90 kg sac in most markets, about 40 percent above the level of 12 months earlier.

Generally, cereal markets in Sudan are spatially well integrated: as Figures 4 and 5 show, minimal price differentials for sorghum and millet exist among most markets. One exception is represented by some western markets in Central and West Darfur, such as Geneina and Zalingei, where prices of millet have been always lower than in the rest of the country during the last 12 months and show significant integration and similar prices with Abéché market in Chad.

In El Gadarif market, in main sesame producing areas, wholesale prices of sesame dropped significantly following this year harvest, from a high 780 SDG per kantar in August 2014 to 530 SDG per kantar in November 2014, which is 36 percent below the price level of 12 months earlier. The recent dramatic decline in local prices is likely to affect farmers' decisions about planting sesame during the 2015/16 cropping season which is expected to starts next April.

Livestock prices followed normal seasonal patterns during the last two years, increasing from May-June onwards as animal body conditions improve with the start of the rainy season, peaking in August-September and then gradually declining as sales increase during the dry season when access to pasture and water generally deteriorate. In October 2014, calves and sheep were traded in the Elsalam wholesale livestock market in Omdurman (Khartoum state) at 3 300 and 2 260 SDG per head, respectively. October prices of calves and sheep were 33 and 17 percent higher than 24 months earlier, respectively, mainly as a result of high rates of inflation and transport costs coupled with a sustained export demand, mostly from Saudi Arabia. As cereal prices increased over the last two years at more sustained rates than livestock prices, terms of trade for pastoralists sharply deteriorated. In October 2014, a calf or a sheep was equivalent to about 800 or 300 kg of sorghum, 38 and 45 percent less than 24 months earlier, respectively. Following the significant decline of cereal prices in November 2014, terms of trade for pastoralists improved by about 40 percent, although they were still about 15 and 25 percent less favorable than 12 and 24 months earlier, respectively.

Figure 6 - Terms of trade in Omdurman market (Khartoum state)
(kg of sorghum per sheep or calf)



Source: Food and Agriculture Realtime Messaging and Reporting System (FARMERS)

4.2 Cereal supply/demand balance (January-December 2015)

The national cereal supply/demand balance for marketing year January-December 2015 is summarized in Table 19, considering separately sorghum, miller, maize, wheat and rice. The balance is based on the Mission's production estimates (including the forecast for the wheat crop, to be harvested by early 2015) and the latest information on consumption, trade flows and stocks availability. In drawing up the national cereal balance, the following assumptions have been made:

- Total cereal production is estimated at 7.9 million tonnes, including a forecast of 473 000 tonnes of wheat;

- Opening stocks of cereals for marketing year 2014/15 are estimated at 478 000 tonnes. They include an estimated 200 000 tonnes of wheat, held by the main importing companies and flour mills, plus 241 000 tonnes of sorghum and wheat stocks held by the Strategic Reserve and about 37 000 tonnes of sorghum in WFP warehouses. Private and community underground stores are known to exist in the central and eastern clay plains, but the amounts stored are expected to be minimal, given last year's very poor harvest;
- Feed use is forecast at 685 000 tonnes. In the absence of any survey data, based on discussions with farmers and extension officers, it is estimated that about 10 percent of sorghum and 5 percent millet produced is going to be used as feed for livestock and poultry;
- Seeds requirements for the next season are estimated at about 125 000 tonnes on the basis of the recommended seed rate in Sudan and a forecast planted area of about 15 million ha of cereals in 2015/16. The following seed rates have been used: 7.5 kg/ha for sorghum, 4 kg/ha for millet, 20 kg/ha for maize, 120 kg/ha for wheat and 75 kg/ha for rice;
- Post harvest losses and other uses are estimated at 1.19 million tonnes, with rates ranging from 15 percent for sorghum, millet and wheat to 20 percent for maize;
- Food use is estimated at 5.84 million tonnes, using the CBS projected 2015 mid-year population of 38.4 million persons and a per capita average consumption at 152 kg of cereals. Per-capita consumption comprises 75 kg of sorghum, 58 kg of wheat, 16 kg of millet, 2 kg of rice and 1 kg of maize;
- Closing stocks of wheat are expected to be normal at around 300 000 tonnes. The figures for the closing stocks of sorghum and millet reflect the surplus production of those two crops this year.

Table 19 - National cereal supply/demand balance, January-December 2015 (000 tonnes)

	Sorghum	Millet	Maize	Wheat	Rice	Total
Availability	**6520**	**1085**	**48**	**766**	**32**	**8451**
Opening stocks	185	0	0	293	0	478
Production	6281	1085	48	473	32	7919
Food aid in the pipeline (WFP)	54					54
Total utilization	**6520**	**1085**	**48**	**2629**	**82**	**10364**
Food	2883	615	38	2229	77	5842
Feed	628	54	2	0	0	685
Seed	79.1	16.5	0.3	28.4	0.6	125
Post-harvest losses	942	163	7	71	5	1188
Closing stocks	1980	237	0	300	0	2524
Estimated import requirements	**0**	**0**	**0**	**1863**	**50**	**1913**
Anticipated commercial imports				**1863**	**50**	**1913**
Estimated gap	0	0	0	0	0	0

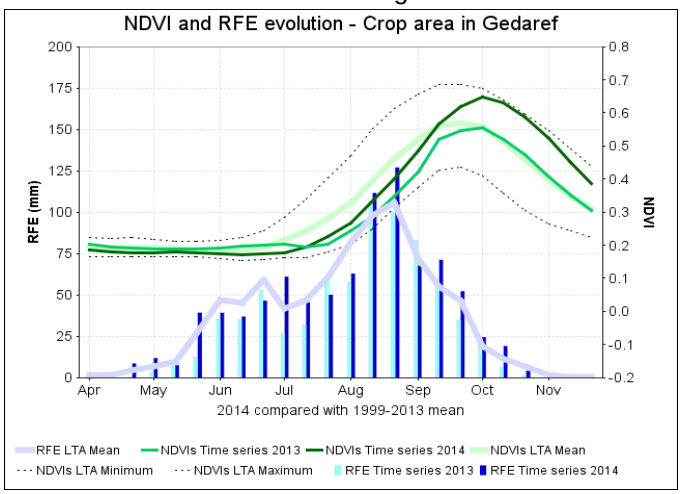
Table 19 shows a substantial building-up of closing stocks for sorghum and millet, leaving a significant surplus for export as well as to be in part retained as strategic reserve in the country. The structural deficits between production and consumption for wheat and rice are expected to be covered by normal levels of commercial imports.

ANNEXES: Agricultural Situation by Region and States

Annex-1: Eastern Region (Gedarif, Kassala and Red Sea States)

1.1 Gedarif State

Gedarif State comprises semi-mechanized rainfed schemes and about 40 percent of the Rahad irrigation scheme. The area covered by summer cereal crops is estimated at 3.197million hectares, out of which 2.879 hectares were harvested during the current season, which is nearly 26 percent of the whole of Sudan's harvested area during this season. The harvested area of cereals in Gedarif during the 2014/15 season is higher by 129 and 80 percent compared to that of last season and the five years average respectively. The average yield of aggregate cereals in Gedarif has shown significant improvement during the current season with 0.7 tonnes/ hectare from 0.5 tonnes/ hectare for the previous season and the five years average. The main crops grown in Gedarif are sorghum, sesame, millet, sunflower and limited areas of ground nuts and guar. The success or failure of sorghum and sesame highly determines the local availability of these two crops in the whole country. The high production of crops in Gedarif during the cropping season is mainly because of the good rainfall. Despite the negative forecast of rains at the beginning of the season, the amount and distribution of rains over the vast majority of the cropping areas in Gedarif was above average. The indicative FPAR and NDVI figures clearly show the much improved rainfall condition and confirm the fact on the ground. The rain which started on time has enabled farmers to plant their crops and finished on time, with no significant dry spells.

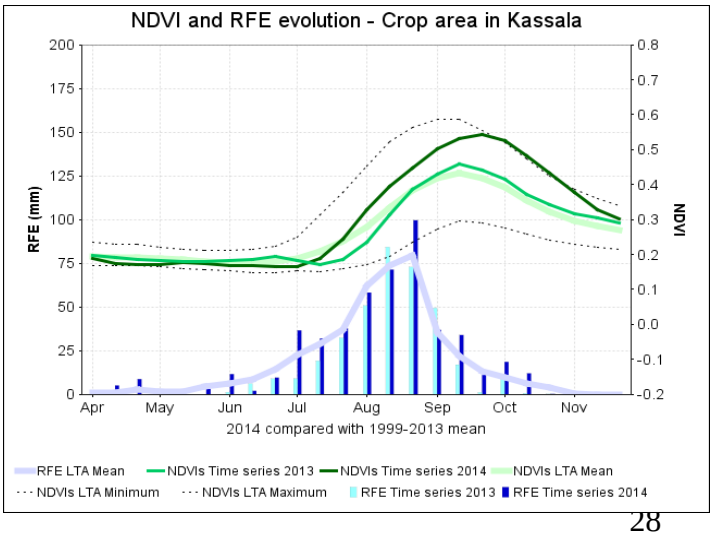


This has favoured large area coverage of both sesame and sorghum among other crops and provided a significantly higher production during the season.
In general, the 2014 growing season in the state has been characterized by very good rainfall (amount and distribution), with the rainfall extending up to the end of October, better availability of inputs including tractors, shortage and high cost of labour and better access to credit. However, the prices of most of the inputs were reported to be high.

1.2. Kassala State:

The situation in Kassala has been more or less similar with favorable rains both in terms of amount and distribution. The main cropping areas in the state include: New Halfa irrigation Scheme, Gash scheme (flood irrigation) and the traditional rainfed and semi-mechanized farms.

- In New Hafa the rain started in June and the distribution was good. This was followed by heavy rains in July and August and finished in October. Inputs were available but at a high cost. The sorghum area was same as last year but higher than the five years average. The proposed area of wheat is higher than last year. Minimal pests and diseases were reported. There was mild striga infestation. All the planted sorghum seeds were improved varieties of Wad Ahmed and Tabet.
- Gash Scheme: The effective rains started around mid-July and continued



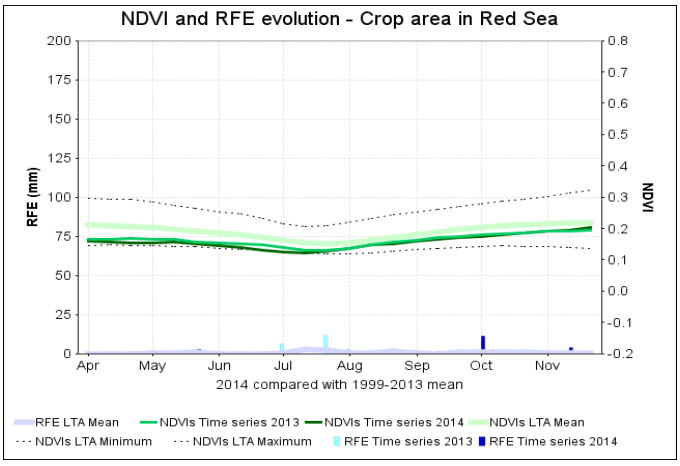
up to early October. It was above average. The flood situation was above normal causing damage on main terraces. Pests and diseases were within the normal range with mild effects of grasshopper and sorghum midge on the late planted crops. Weed infestation slightly higher than last year.

- Rainfed sector: rain started in early July and finished during the third week of November.
- Inputs were available but with high cost.
- Livestock situation was similar to Gadarif with normal migration to Butana plains. Grazing and water was available and the body condition of animals was good.

There is an increasing trend of using more inputs (fertilizers, herbicides) which are available but expensive. There is also expansion of credit, with increased availability and access to credit. Machineries were also available including sesame binders. The high production has caused shortage of labour and high cost as well as problem of storage facilities. In general the rainfed sector performed better than the irrigation sector during the current season.

1.3. Red Sea State

The main cropping areas include, Toker flooded area and the traditional rainfed sector. There are two seasons for Red Sea (summer and winter) and the assessment is too early for these areas to generate concrete area and production figures. Spraying for desert locust control was carried out, and there was no damage on crops with up to 4 000 hectares sprayed so far. The flood in Tokker started around 18 July and ended on 17th October. There were 31 flashes compared to the average of 20 and about 14 last season. Crop areas affected by water-logging include: 50 percent sorghum, 35 percent cotton and 100 percent vegetables. Seeds of sorghum, and cotton were distributed for replanting. Desert locust started in November and the ground control went on well with no significant effect.



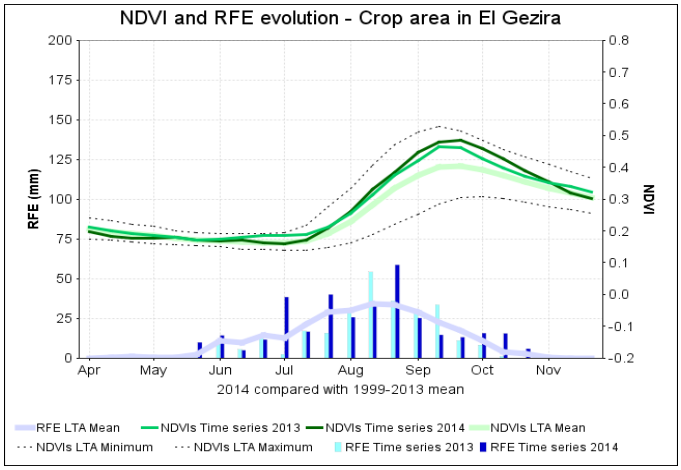
There is however, a great concern for Kassala, River Nile states and Eritrea. The aggregate cereal production of Red Sea during the current season is estimated to be 58 and 172 percent higher than that of last year and the five year average respectively. The aggregate cereal productivity (yield per unit area) has increase to one ton/hectare compared to 0.6 ton/hectare of last year and the five year average (Annex 7).

Annex-2: Central East Region (Gezira, Sennar and Blue Nile States)

2.1 Gezira State

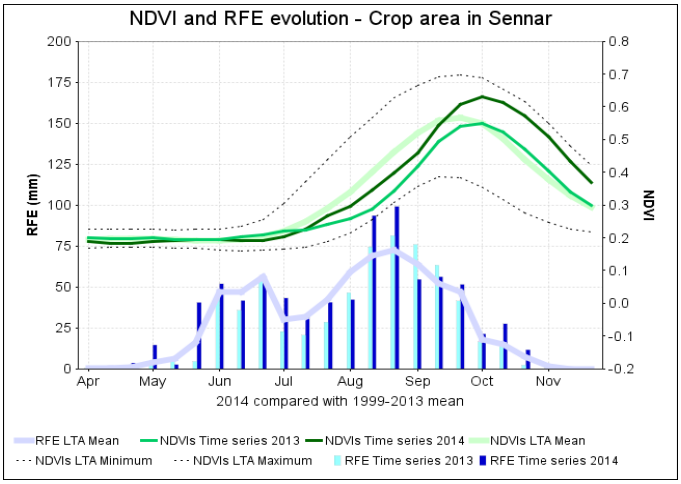
Sorghum is the dominant crop in Gezira state. There are two types of agricultural systems in the state, namely Smallholder (terrace cropping) and valleys with bigger landholding sizes of up to 200 feddans (84 hectares) per holder. The 2014 summer rainfall was better than that of last year and the normal years both in terms of quantity and distribution. The rain started early in the season (June/ July) and finished at the beginning of October. Five out of seven localities received better rainfall while two localities received lower rainfall compared to the previous season. Very few or no dry spells were reported from all the localities. Locally available seeds of early maturing varieties were used, particularly Gishaish variety in terrace areas and Arfagadamak and Wad Ahmed in valley areas. High production was realised this year (234 tons) compared to that of last year (88 tons) and the five years average. This is due to the increased harvestable area which resulted from the good amount and distribution of rainfall and the better yield (per unit area). Few areas were infested with grasshoppers, birds, sorghum midge and stalk borer occurred with no significant damage on crops. Harvesting is mostly by hand and combine harvesters (only on large farms). There is also a practice of cutting by hand and threshing by machine.

Labour availability is better than that of last year but relatively expensive. Regarding livestock, there were no epidemic diseases and the body conditions were good due to improved availability of forage resulting from the good rains of the season. Prices of sorghum crop has shown declining trend due to the increased production and market supply. In Gezira irrigation scheme, the excessive rains have caused floods in some areas and caused damage to crops. The sorghum seeds planted in the irrigation fields were improved varieties of Wad Ahmed, Tabet and hybrid seeds. Wheat is a winter crop and 500 000 feddans (210 000 ha) targeted. Planting was going on by the time the assessment was carried out, but the planted areas are expected to be in the range of 300-350 000 feddans (126 – 147 000 ha). Other main crops include groundnuts, pigeon peas, cotton, fodder, vegetables, rice and sugar. There was minimal pest damage despite the occurrence of African bollworm grasshoppers, sorghum bug, and diseases such as powdery mildew which were controlled with and without spraying.



2.2 Sennar State

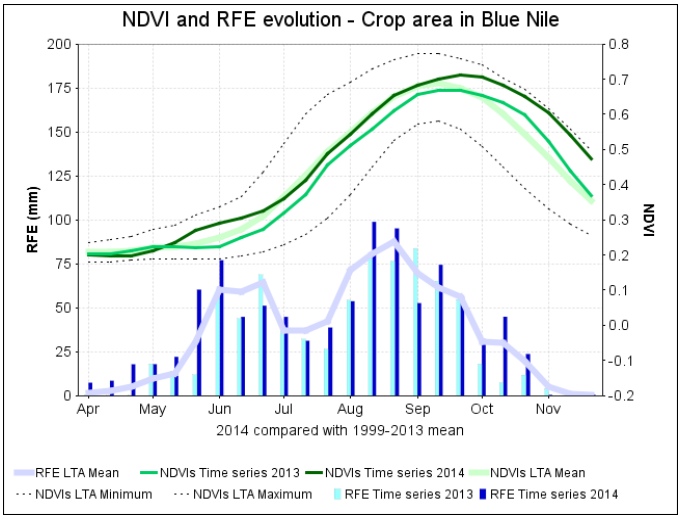
There are two types of farms in Sennar state: the semi-mechanized rainfed and irrigated farms (Suki and Sennar irrigation schemes). In the rainfed sector, the summer rain started as early as May in some areas and continued up to end of October and early November. There were no significant dry spells and the distribution was good. There was flooding in some areas and sorghum crops were flooded in few areas. The total rainfall during the season was as high as 594 mm and in one locality up to 780 mm. The current year is considered as one of the best seasons with high percentage of the harvestable area (80 percent of the planted area). This indicates a high recovery of production in the state which suffered continuous low production over the past years. The yield and harvested area has tripled compared to that of last year. In addition to sorghum and sesame, other crops such as millet, water millions and guar were also grown during the season. Mild effects of grasshoppers and birds were reported while striga has caused adverse effect on yield in many areas. Agricultural Bank has provided about SDG 40.8 million loans to 1 678 beneficiaries which cover 1 231 000 feddans (510 020 ha). There was a second round abnormal flood which hindered the operation of irrigation farms and the normal cultural practices. The early floods were from excessive rains and the second flood was from the overflow of Blue Nile River, mainly in Suki scheme. Sorghum, cotton, ground nuts and sunflower were the main crops in the irrigation schemes. The situation of pests, diseases and weeds were same as Gezira state.



2.3 Blue Nile State

The rains started early and stopped in October with over 900 mm (highest) and 631 mm (lowest) recorded during the current season. Apart from the benefits of the above normal rains, the excessive rains of July and August caused considerable damage on planted sorghum crop and some fields of sesame. Therefore Blue Nile state has suffered from the excessive rains compared to any other state during the season. The eastern part of the state was better than the northern where crops were even washed away.

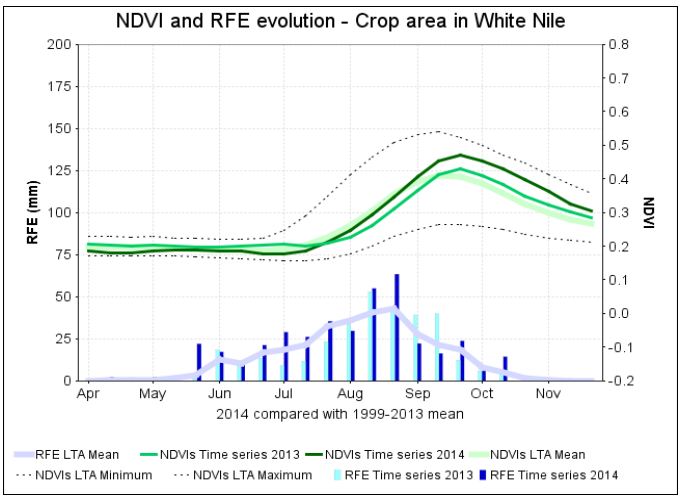
This has encouraged high infestation of striga and notorious weeds affecting crop production. Other pests include African bollworm and grasshoppers with minimal to mild damage. Overall, sorghum production in Blue Nile is less than the expected production due to the excessive rains and its effects. As a result, the total harvestable area of sorghum has decreased to 329 700 hectares from the planted 462 000 hectares. The estimated yield has also decreased to about 476kg/ hectare resulting in a total sorghum production of about 157 000 tonnes. Sesame, millet, cotton and sunflower were less affected due to the excess water. Furthermore, some farmers in the southern part of the state were unable to plant their crops due to insecurity situations. Regarding livestock the body conditions have been improved due to the abundant pastures resulting from abundant rains elsewhere in the state. However, vaccine problem and overgrazing of some areas were reported due to the livestock movement from other states, which is a normal practice, but not pertinent the current year only. A total of SDG 41.24 million loans were provided to 1 164 beneficiaries during the current season for the cultivation of sorghum, millet and sesame.



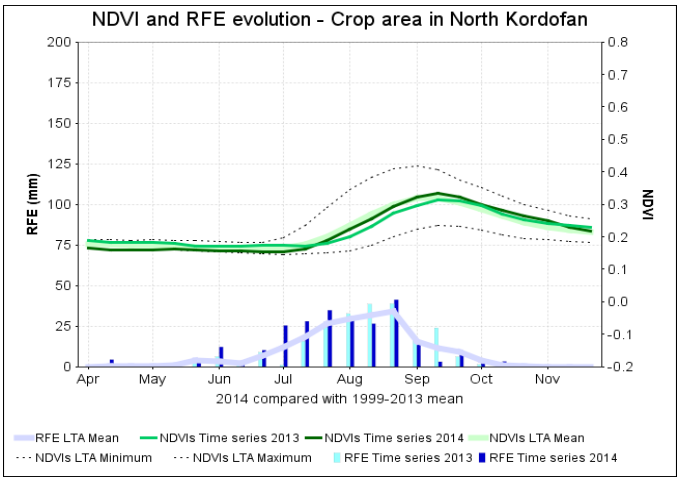
Annex-3: Central West Region (White Nile, North Kordofan, South Kordofan and West Kordofan States)

3.1 White Nile

Rainfall is better than last year and several years of the past. It started in early May and finished late October. The amount is above average and there were no dry spells. However, there were some floods. Pasture and water conditions were relatively good resulting in good body condition of animals. No epidemic disease of animals was reported. Market prices of crops are declining compared to last September and October, but higher than same time of last year. Area cultivated with sorghum decreased by 17 percent in White Nile because of the high prices of sesame (last year) which motivated them to plant more. The harvestable area of sorghum increased by 18 percent, and production increased by 162 percent. This was because of the good rains, utilization of improved seeds and better cultural practices. Similarly, the productive (harvestable) area and the total production of all the remaining crops: millet, ground nuts and sesame have increased. Hence the 2014/15 year is considered as the one of the best seasons in term of production in White Nile State. The livestock body conditions were also good due to abundant pastures. There was no animal movement from place to place in search of feed and water. There was no livestock disease outbreak. The terms of trade were in favour of the pastoralists due to higher animal prices compared to sorghum. There were no serious pests and diseases. However, the heavy rains have favoured more weed growth which needed more efforts for cleaning the fields. In the majority of the cultivated areas, no fertilizers and herbicides were used. Such technological inputs are used by large scale famers. Herbicides (2,4-D) are used for sorghum. Seeds of last season from own stocks or improved seeds are used by farmers. Credits are available but cannot be enough for all. In general semi-mechanized agriculture is dominant in White Nile and irrigation farming is very limited in the state.

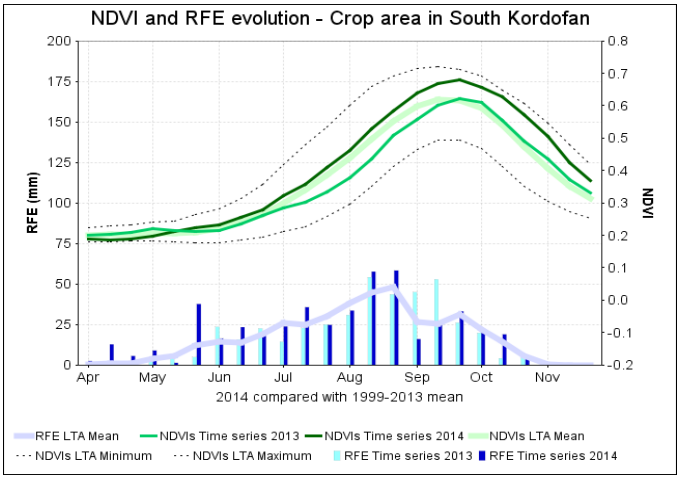


3.2 North Kordofan



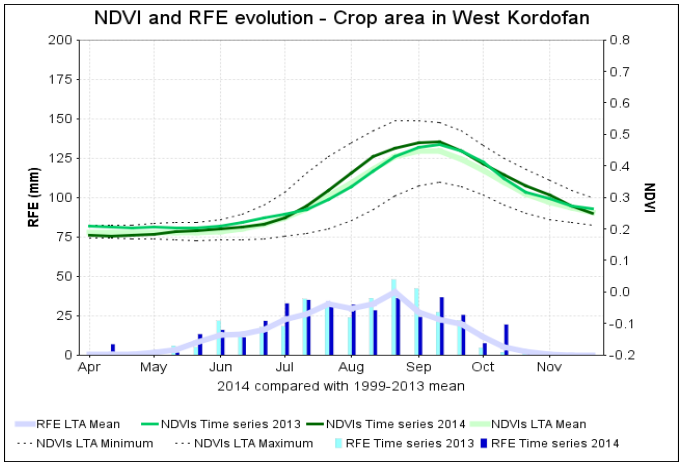
Sorghum ranks the 4th crop in terms of area coverage. Millet, ground nuts and sesame are the major crops in the order of area coverage. The 2014 rain started in early April and stopped in late October with good amount (above average) and distribution. Pasture and water were abundant and the body conditions of animals were good. The normal movement of animals to South Kordofan is delayed this year because of the better availability of water during the current season. There were no significant dry spells and floods coming from other states are limited. The area cultivated to sorghum has decreased while that of all crops has gone up. Ground nuts, sesame, hibiscus and gum Arabic are the main cash crops. Hibiscus, watermelons and lupine are usually mixed cropped with sorghum, while millet is grown in mixture together with sorghum in some cases. Production of all crops has shown significant increment. The season has been very good for animals. However, the expansion of mechanized agriculture is marginalizing livestock by decreasing grazing lands. There is also migration of herds from North Kordofan to South Kordafan in search of grazing and water. No serious disease outbreaks were reported.

3.3 South Kordofan



Early showers came in April and the effective rains started in June. The amount was high (exceeds 1 100 mm) in few localities and the distribution was good. However, some areas were flooded resulting in late planting of sorghum. The production of all crops in South Kordofan increased significantly as compared to last year because of the good rains and the improved security situation. The main crop is sorghum followed by sesame, ground nuts and millet. The harvestable area was about 75-80 percent of the total cultivated land. Falling prices of crops are the main concern to farmers. There was shortage of labour because of the large area coverage of crops during the season. Labour costs are also high. No fertilizers were used for crops under the rainfed system. The livestock body conditions are good and no serious diseases were reported. Despite the availability of good pastures the water points are limited leading to animal migration to neighbouring South Sudan.

3.4 West Kordofan



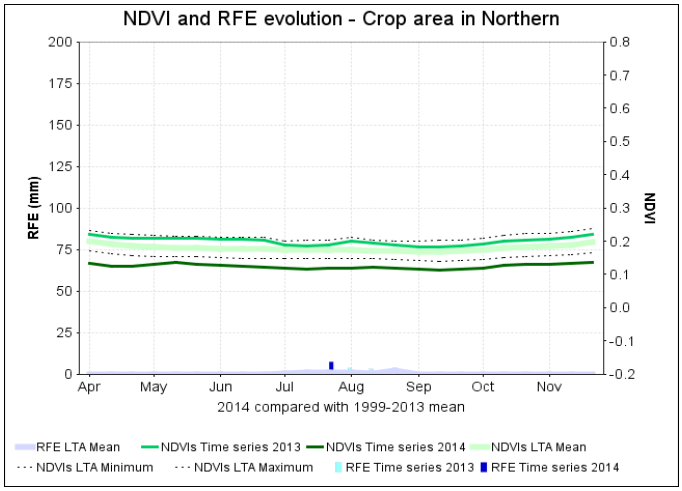
The rain started early and finished late, with no dry spells. The quantity is more than that of last year. The main crops include millet, groundnuts, sorghum and sesame. The area planted to sorghum, millet and groundnuts increased while that of sesame has decreased because of the heavy rains. The production of all crops has increased due to the increased harvestable area and higher yields per unit area.

The pastures and body condition of livestock are above average due to better rainfall. Prices have shown the same downward trend. The low prices of crops and inadequate storage facilities are the main challenges that farmers face during the post-harvest period. The Agricultural Bank did well in lending money for tractors, for animals and crop production during the season.

Annex-4: Northern Region (Northern, River Nile and Khartoum States)

4.1 Northern State

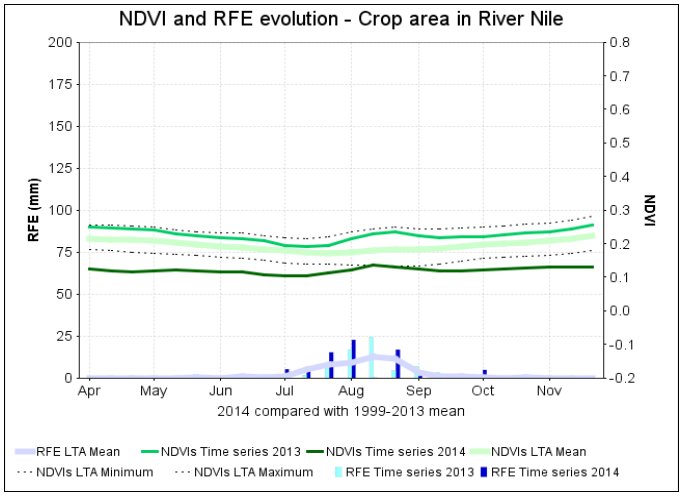
It is located in the area bordering Egypt in the Sahara desert. Farming is mainly irrigated from the Nile River or using wells. The area usually receives no rain; hence crop production is dependent on irrigation. Sorghum and maize are the two dominant summer crops. Both crops were affected by floods and the damaged stands of crops were harvested as fodder for animals. The land was then dedicated for vegetable production. There is a growing trend of moving away from wheat to vegetable growing due the attractive market prices for horticultural crops. There is also fodder production for controlled grazing within their farms. There is a high population of sheep managed through controlled grazing and other animals include cattle, goats, camels and equine. There were no reports of serious animal diseases during the season. There are disease control check points for export animals.



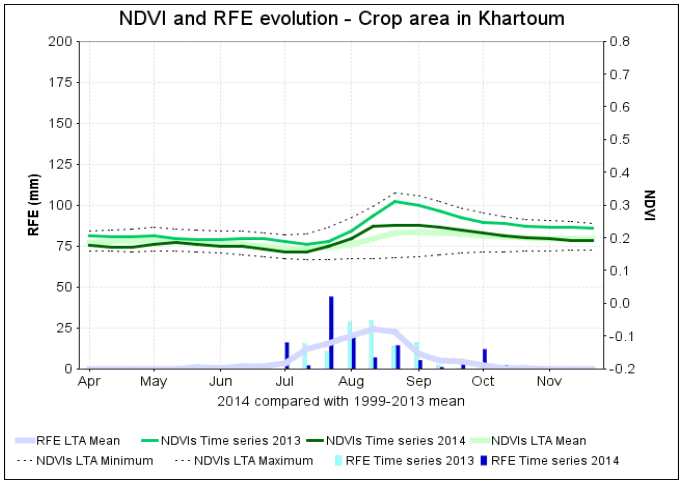
The state is one of the main routes for exporting animals to Egypt and Libya particularly camels and cattle. The state of irrigated fodder is in good condition especially planted with alfalfa, cowpea and sorghum. Current prices of main crops (sorghum, wheat and maize) are higher than last year. The cost of beans was reported to be even much higher than the other crops since it is now a lean season. Most importantly, the summer (rainy season) is not so important since most of the land is flooded during summer. It has been recommended to conduct a winter season assessment in February 2015 in the Northern State.

4.2 River Nile State

The rainfall was better than that of last year particularly in the lower Atbara area. It started in August and finished in early October, with no significant dry spells. Irrigation farming is the dominant sector and rainfed agriculture is not significant in the state. Tractors, improved seeds and herbicides were available but expensive. Credits are available but the repayment rates were very low. Therefore, only those who paid last year's loans will get new loans. Very limited pest occurrence like grasshoppers reported, but controlled effectively. Livestock body condition was good and vaccines were available. The main types of animals are sheep, cattle, camels, and goats. Market conditions are good for farmers as most of the products are sold in Khartoum markets including vegetables, onions, tomatoes, mango, and watermelon. Date palm prices are low affecting the producers.



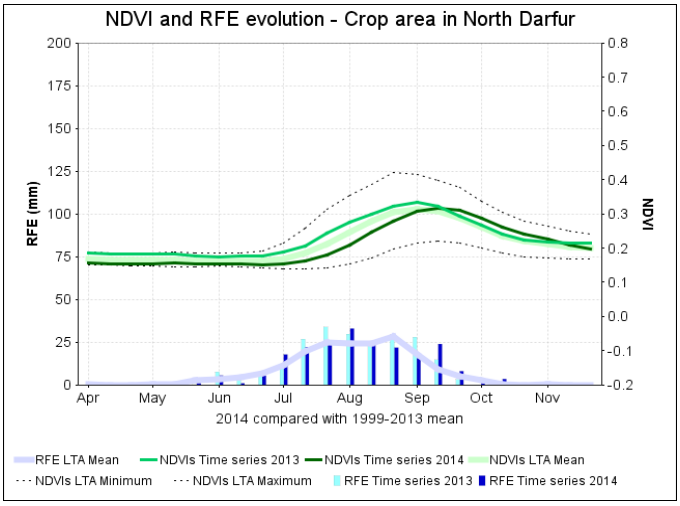
4.3 Khartoum State



Heavy rainfall was received this year. The production of vegetables and fodder has been favoured. The rainfed production in the east and western parts is better than last year. Sorghum is produced in the low lying areas while vegetables are supplemented with irrigation. There were no significant areas flooded from the Nile River, but the heavy rains of August have caused flooding in some areas. The areas planted and harvested are higher than last year. Crop yields have increased up to three times over that of last year. In case of sorghum, farmers obtained about 714.3 kg/hectare this year against 238 kg/hectare of last year. There are two types of feeding systems in the state: open grazing and closed gazing, mostly used by large scale farmers. There was adequate water and feed for animals, resulting in good body conditions.

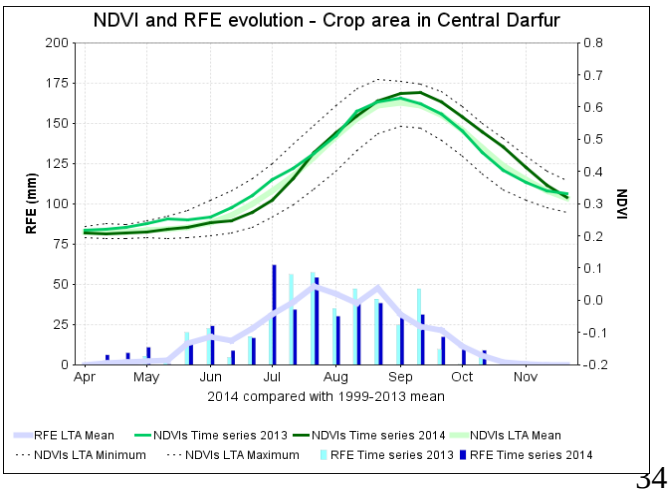
Annex-5: North, Central and West Darfur States

5.1 North Darfur



Rainfall started late by about 2-3 weeks compared to last year. The effective rains occurred at the end of July/early August and continued up to end of October. The amount was higher compared to last year. The distribution was good with no dry spells and waterlogging. More area was planted this year. The most important crops include millet, sorghum, groundnuts and sesame and watermelons as well. Yields are estimated to be higher and the harvestable area during this season is estimated at 74 percent of the planted area. There were no reports of major pests and diseases in general, except minor occurrence of birds. The traditional rainfed system is the dominant practice where most of the cultivation is done manually and some ploughing by donkeys. No epidemic diseases were reported and the pasture conditions are better than that of last year. Cereal prices generally continued to decline while livestock prices seem more stable.

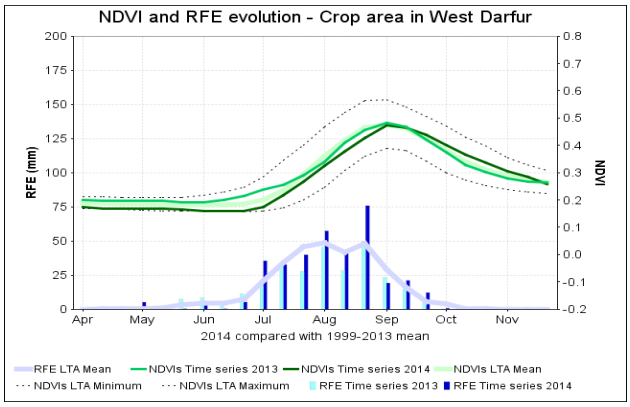
5.2 Central Darfur



The harvestable area of cereals was about 90 percent of the planted area during the season. The total cereal production increased to 354.2 tonnes from the low level of 148.3 tonnes during the previous season (by more than double). Similarly the yield per hectare was 1.1 tonnes/ha compared to the 800 kg and 400 kg/ha for last year and the average of five years, respectively. The better performance of rainfall is shown in the NDVI and RFE evolution chart of Central Darfur below.

5.3 West Darfur

The rain started late, but continued up to the end of October. Planting was late because of the late start of rains. The amount was higher than last year and the year before last year. The distribution was also good with no mid-season dry spells reported. Rather, floods have affected some crops in two localities. Overall, about 80 percent the total 487 200 hectares was harvestable. Huge cereal production increase is expected (about 337 000 tonnes compared to the 95 000 tonnes of last year). In terms of yield an average cereal yield of 900 kg/hectare is expected compared to that of 400 and 700 for last year and the five years average, respectively.

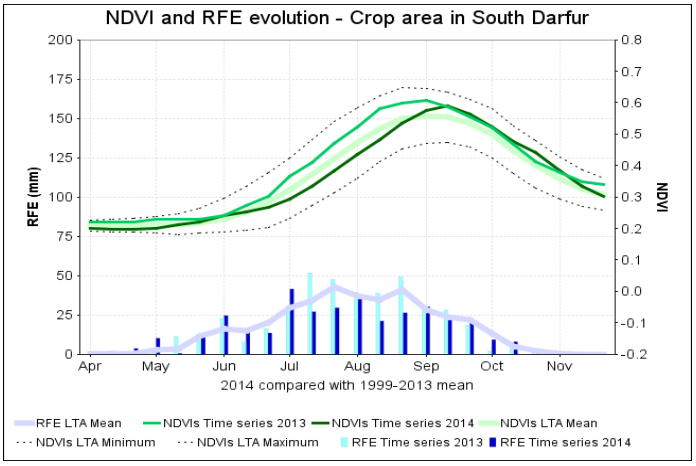


The pasture and livestock body conditions have improved very well due to absence of migration because of abundant pastures. The impact of pests on production was minimal with spraying carried out using airplanes. Beetles on millet, Quelea Quelea, grasshoppers and tree locust were among the main pests of the season that deserve mentioning. Prices of crops and livestock are declining by about 20-25 and 17 percent, respectively.

Annex-6: South and East Darfur States

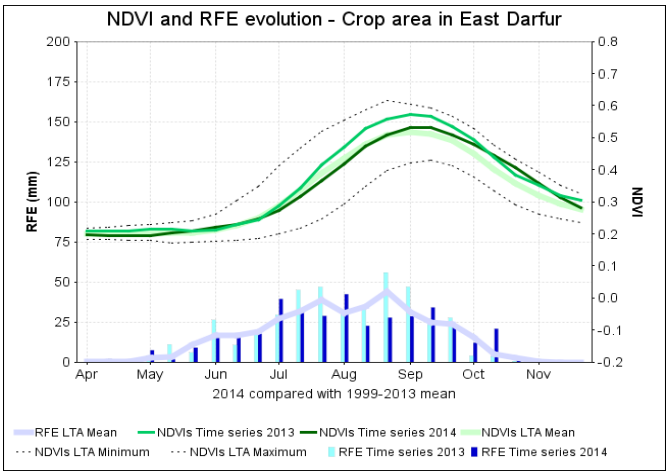
6.1 South Darfur

Long dry spell prevailed in all over the state throughout July and effective rains started in early August. The distribution was by far better than last year, although the cumulative rainfall was smaller compared to the previous year. The rain ceased by mid-October. No major pests and diseases reported except some incidences of birds which were controlled. The effect of others like striga, and sorghum midge was not significant. The livestock situations are similar to East Darfur with plentiful pastures but scarcity of water in some areas. The agricultural Bank of Sudan provided 3 million SDG in this state for crop production. Banking procedures for smallholders remain the main challenge.



6.2 East Darfur

Amount of rainfall is lower than last year, but the distribution was very good. It started in July and ceased in late October, with no significant dry spells, except the low quantity during the first two weeks of July. Traditional rainfed agriculture is practiced in the state and no major technological inputs are used. Local varieties of sorghum and millet were planted. There was shortage of labour as farmers depend on the labour coming from the south.



Planted area is lower than that of last year. But the yields are better than last year because of good distribution of the rainfall and better protection given to farmers in less secure areas. The overall production is expected to be doubled.

Pest control measure especially desert locus has been effective with spraying going on. Other pests such as sorghum midge and stalk borers caused very mild damage and were controlled. The performance of livestock has been satisfactory with good body conditions resulting from plentiful pastures. Shortage of water for some areas was reported affecting the optimal use of available pastures. Veterinary services are available and no serious livestock diseases were reported. Average prices of sorghum, millet, groundnuts show a declining trend compared to that of the last three months and a year ago. Livestock market prices were relatively higher despite the good pastures. Agricultural credit in the state is very meagre, with only 2 percent of the farmers receiving credit amounting 21 000 SDG during the cropping season.

Annex 7. Sudan - Aggregate cereal production by State

State	Season 2014/15				Season 2013/14				(2008/09 - 2012/13)			
	Plan.	Harv.	Prod.	Yield	Plan.	Harv.	Prod.	Yield	Plan.	Harv.	Prod.	Yield
Blue Nile	485.1	348.2	165.0	0.5	460.3	246.1	153.0	0.6	492.9	354.5	169.8	0.5
Central Darfur	369.2	332.2	354.2	1.1	153.7	148.3	113.0	0.8	399.5	259.6	115.0	0.4
Eastern Darfur	346.5	197.0	93.4	0.5	307.4	199.5	43.0	0.2	461.8	277.1	59.0	0.2
Gedaref	3197.0	2879.1	2070.0	0.7	2168.9	1257.5	589.0	0.5	2532.3	1598.0	801.5	0.5
Gezira	923.6	746.3	880.0	1.2	751.4	484.3	478.0	1.0	777.5	572.6	685.0	1.2
Kassala	726.6	664.4	645.0	1.0	916.9	584.2	324.0	0.6	755.4	431.5	292.4	0.7
Khartoum	99.1	86.5	53.5	0.6	66.4	63.0	34.0	0.5	5.5	5.4	8.8	
North Darfur	903.0	668.2	214.0	0.3	623.7	342.7	51.0	0.1	171.2	102.5	40.3	0.4
North Kordofan	293.6	294.6	295.6	1.0	293.6	294.6	295.6	1.0	293.6	294.6	295.6	1.0
Northern	45.4	42.8	93.4	2.2	31.2	28.9	44.0	1.5	62.5	59.3	128.2	2.2
Red Sea	65.9	40.3	41.0	1.0	101.2	44.5	26.0	0.6	30.6	25.5	15.9	0.6
River Nile	184.8	139.4	197.2	1.4	63.0	30.6	53.2	1.7	75.5	66.7	87.9	1.3
Sennar	1548.1	1313.3	906.0	0.7	1350.7	440.2	179.0	0.4	1434.4	907.8	446.0	0.5
South Darfur	509.5	510.5	511.5	1.0	509.5	510.5	511.5	1.0	509.5	510.5	511.5	1.0
South Kordofan	1275.1	903.0	549.0	0.6	576.2	371.7	166.0	0.4	1096.6	825.3	356.5	0.4
West Darfur	487.2	390.6	337.0	0.9	238.1	229.7	95.0	0.4	478.4	292.4	218.7	0.7
West Kordofan	984.9	819.0	246.0	0.3	656.5	392.7	110.0	0.3	0.0	0.0	0.0	
White Nile	804.7	627.5	441.0	0.7	896.7	344.4	216.0	0.6	800.2	610.8	343.9	0.6
Total Sudan	13249.3	11003.1	8092.8	0.7	10165.4	6013.4	3481.2	0.6	10377.4	7194.0	4575.8	0.6