Food and Agriculture Organization
of the United Nations

SPECIAL REPORT

2021 FAO CROP AND FOOD SUPPLY ASSESSMENT MISSION (CFSAM) TO THE SUDAN

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ABBREVIATIONS AND ACRONYMS

ABS	Agricultural Bank of Sudan
CBS	Central Bureau of Statistics
CBoS	Central Bank of Sudan
CFSAM	Crop and Food Supply Assessment Mission
PET	Pictorial Evaluation Tool
FAO	Food and Agriculture Organization of the United Nations
FMD	Foot and mouth disease
FSTS	Food Security Technical Secretariat
GDP	Gross domestic product
GIEWS	Global Information and Early Warning System on Food and Agriculture
IMF	International Monetary Fund
LTA	Long-term average
mm	millimetres
MoA&F	Ministry of Agriculture and Forestry
MoFEP	Ministry of Finance and Economic Planning
NGOs	Non-governmental organizations
PPR	peste des petits ruminants
SDG	Sudanese pound
SRCo	Strategic Reserve Corporation
SMA	Sudan Meteorological Authority
UN	United Nations
USAID	United States Agency for International Development
USD	United States dollar
VHI	Vegetation Health Index
WFP	World Food Programme

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HIGHLIGHTS

- The 2021 national cereal production of cereals (including wheat crops to be harvested in March 2022) is estimated at about 5 million tonnes, 35 percent below the output obtained in the previous year and 30 percent below the average of the previous five years.
- Sorghum production is forecast at about 3.5 million tonnes, 32 percent lower than the level of the previous year and 28 percent less than that of the past five-year average. The national millet production is estimated at 0.9 million tonnes, 53 percent down from 2020 and 44 percent below the average of the past five years.
- The significant decline in total cereal production is due to unfavoutable weather conditions, outbreaks of pests and diseases, shortages of inputs and challenges related to irrigation systems.
- The 2021 rainy season was characterized by an irregular distribution of rains. After an early onset in May and prolonged dry spells in July, torrential rains triggered floods in late July. Crops were affected by dry spells also during the final months of the season.
- Widespread replanting took place in August, but replanted sorghum crops were often attacked by sorghum midge, especially in key producing Gedaref State as well as in Kassala State, further constraining yields.
- Production of wheat, for harvesting in March 2022, is forecast at about 600 000 tonnes, 13 percent below both last year's output and the past five-year average, reflecting reduced plantings due to shortages of improved seeds and fertilizers as well as increasing electricity rates affecting pump irrigation.
- Constraints on input availability and access were more severe than in the previous year as inflation increased throughout 2021, leading to soaring costs of production.
- The negative effects of weeds, pests and diseases on crop production were significantly higher than in the previous years due to high costs and reduced availability of herbicides as well as the less effective pest and disease control measures by federal and state institutions due to budget constraints.
- Despite shortages of animal vaccines due to their high costs, livestock health was generally good and no major disease outbreaks were reported.
- Pasture conditions were assessed to be worse than the good conditions reported in the previous year, as the erratic seasonal rains constrained the regeneration of rangeland resources. Overgrazing was reported in some areas and a faster-than-normal depletion of pasture is expected during the dry season, with a negative impact on livestock condition and productivity.

- Production of sunflowers, groundnuts and cotton was higher than last year and the previous five-year average, as expanded plantings more than offset reduced yields. By contrast, production of sesame and sugar was lower than in 2021 and the average of the previous five years due to very low yields.
- The Sudanese pound, after a sharp devaluation in February 2021 following the unification of the official and parallel exchange rates, has been generally stable since August 2021.
- After sharp increases amid the difficult macroeoconomic situation, inflation started to decline since August 2021, reflecting a more stable exchange rate. However, the annual inflation rate remained at very high levels and in December 2021 it was estimated to be above 300 percent.
- Prices of locally produced sorghum and millet continued to rise in 2021 because of high production and transportation costs. Additional upward pressure was exerted by disruptions to marketing and trading activities due to heightened social unrest and floods in late July.

OVERVIEW

Between 19 December 2021 and 14 January 2022, following a request by the Ministry of Agriculture and Forestry (MoA&F), the Food Security Technical Secretariat (FSTS), assisted by the Food and Agriculture Organization of the United Nations (FAO), the World Food Programme (WFP) and the United States Agency for International Development (USAID), carried out its annual Crop and Food Supply and Assessment Mission (CFSAM) to determine the crop production and the food supply situation throughout the 18 states of the country.

The Mission consisted of six core teams comprising members from the MoA&F, FSTS, FAO, WFP and USAID, which, supported by the state authorities, the states of the country as follows: Team 1 - Gedaref, Kassala and Red Sea states; Team 2 - covered Al Jazirah, Sennar and Blue Nile states; Team 3 - White Nile State and the Greater Kordofan Region (North, South and West Kordofan states); Team 4 - Khartoum, River Nile and Northern states; Team 5 - North, West and Central Darfur states and Team 6 - South and East Darfur states.

The teams' visits were designed to collect data and information from the state ministries and irrigation schemes and to audit it through transects, field observations and interviews with farmers and independent key informants. The combined quantitative and qualitative information from both primary and secondary sources allowed the teams to assess the 2021 cereal (sorghum and millet) and other field crop production and to forecast the wheat production to be harvested by March 2022. Upon returning from the field, all teams prepared summaries of the information gathered for internal discussion and its final inclusion in the mission report. Data were compiled by state, crop and sub-sector (irrigated, rainfed mechanized and rainfed traditional) to provide the overall area and production estimates. Using these data, a national cereal balance sheet was drawn up comparing the total cereal requirement for the coming marketing year (January/December) with the domestic cereal availability.

The six mission teams received full cooperation by the state authorities. Discussions on the factors affecting crop and livestock conditions were held with representatives from the local government offices, United Nations (UN) agencies and non-governmental organizations (NGOs). Field visits were supported by local 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 teams cross-checked the official estimates by conducting extensive field inspections, rapid case studies with sample farmers and interviews with herders and traders.

At national and subnational levels, the teams collected the latest available information and data on rainfall amounts and distribution, vegetation coverage, crop protection campaigns, cereal reserve

stocks and prices of the main crops and livestock. Periodic food security reports were perused and the Central Bank of Sudan (CBoS), the Agricultural Bank of Sudan (ABS), the Central Bureau of Statistics (CBS) and the Strategic Reserve Corporation (SRCo) provided the main socioeconomic indicators. Rainfall data was obtained from the Sudan Meteorological Authority (SMA) and from other sources in the field. Satellite imagery was used to review the evolution of vegetation coverage over the course of the year.

The overall performance of the 2021/22 summer cropping season was below last year's level and below the previous five-year average, reflecting a reduction in cereal area planted and harvested as well as lower yields.

Although cumulative seasonal rainfall in 2021 was above average in most states, rains were irregularly distributed. After an early onset in May and prolonged dry spells in July, torrential rains triggered floods in late July, leading to high losses and to the need for repeated sowing. Replanted sorghum crops were often attacked by sorghum midge, especially in Gedaref State, the main producing area, and in Kassala State, further constraining yields. Dry spells continued to affect crops, albeit to a lesser extent, until the end of the rainy season.

In 2021, the availability of most agricultural inputs, including seeds, fertilizers, herbicides and labour was generally inadequate and their costs were substantially higher than in the previous year due to high inflation, which continued to follow its sustanined increasing trend until August 2021.

The control of pests and diseases was performed less effectively than in the previous season due to funding shortfalls affecting both the Federal Plant Protection Directorate and the state departments.

The national cereal production in 2021/22 (sorghum, millet and wheat) is estimated at about 5 million tonnes, 35 percent below the output obtained in the previous year and 30 percent below the average of the previous five years. Sorghum production is forecast at about 3.5 million tonnes, 32 percent lower than the level of the previous year and 28 percent less than the past five-year average. The national millet production is estimated at 0.9 million tonnes, 53 percent down from 2020 and 44 percent less than the average of the past five years. Production of wheat, to be harvested in March 2022, is forecast at about 600 000 tonnes, 13 percent down from both last year and the five-year average, reflecting reduced plantings due to shortages of improved seeds and fertilizers as well as increasing electricity rates that affected pump irrigation.

Despite a widespread shortage of animal vaccines due to their high costs, livestock health was generally good, with no major disease outbreaks reported. Pasture conditions were assessed worse than the good conditions reported in the previous year, as the erratic seasonal rains constrained the regeneration of rangeland resources and the recharge of water points. Localized overgrazing was reported and pastoralists were often forced to move to crop growing areas, leading to conflicts between herders and farmers. A faster-than-normal depletion of pasture is expected during the dry season, with a negative impact on livestock body condition and productivity.

The prices of locally produced sorghum and millet rose steadily in 2021 due to high production and transportation costs. Additional upward pressure was exerted by disruptions to marketing and trading activities due to heightened social unrest and floods in late July. In December 2021, prices of sorghum and millet in key-producing areas were 50 and 70 percent, respectively, higher than their elevated year-earlier levels.

Using the population projection for mid-2022 by the CBS to estimate the food use in 2022, the cereal import requirements for the 2022 marketing year (January/December) are forecast at about 2.5 million tonnes, mainly wheat and a limited amount of sorghum. The estimated cereal deficit is expected to be mainly covered by commercial imports, and partly from humanitarian assistance and other forms of donations. However, if the country aims to increase wheat stocks for additional three months of food consumption, about 650 000 tonnes will have to be purchased on the international market.

SOCIO-ECONOMIC CONTEXT

General

The country has been facing macroeconomic challenges since the secession of South Sudan in 2011 that took three-quarters of the oil output, leaving it with half of fiscal revenues and one-third of export earnings. After the secession, the country has been also suffering from shortage of foreign exchange reserves, mainly due to the low foreign investment and limited access to international financing, as well as from fiscal deficits as a result of weak revenue collection and heavy subsidies on fuel.

The economy contracted during the 2018–2020 period, when the local currency devaluated sharply, contributing to high inflation. Increasing prices of fuel and wheat triggered widespread protests, which led to the overthrow of the ex-president in April 2019. The political instability heightened in 2021 as the military coup broke out in October and dissolved the interim military-civilian government. The newly formed military-led Sovereign Council reinstated the ex-prime minister in November 2021, who later resigned amid political deadlock. As of February 2022, widespread pro-democracy protests have been ongoing, particularly in urban areas.

In 2021, the security situation has been deteriorating in Darfur states due to increasing intercommunal violence, also in bordering areas with Ethiopia as refugees and the local population were clashing over already limited resources. In addition, a blockade of Port Sudan from mid-September to end-October disrupted the supply chain and increased the shortage of essential goods. Overall, the persistent political instability, worsening security situation and high inflation hampered investments and limited private consumption in 2021.

After the military coup, several international donors paused their funding to the country, which resulted in freezing the basic income programmes that were aiming to restore livelihoods of the most vulnerable households. This is likely to hinder the economic reforms that the country has been pursuing under the Heavily Indebted Poor Countries Debt Initiative (HIPC-DI) initiative of the International Monetary Fund (IMF) since mid-2020. Under this initiative, the country's debt reduced from USD 56 billion in end-2020 to USD 28 billion in June 2021 and a part of its arrears, amounting to USD 2.5 billion, were cleared. If the country successfully implements planned reforms by June 2024, its public external debit could drop to USD 6 billion.

The CBS estimated the country's gross domestic product (GDP) in 2021 at about SDG 16 700 billion (at current prices). According to the IMF, after three years of recession, the economy is estimated to have recovered in 2021, with the real GDP annual growth rate at 0.9 percent, supported by reduced trade and fiscal deficits.

At the end of the third-quarter of 2021, the trade balance recorded a deficit of about USD 2.5 billion, about 40 percent lower than the same period in 2020. The year-on-year lower level of deficits reflects

Table 1: The Sudan - Exports of crop products, 2020 and 2021

Crop/product	2020[1/]		2020[2/]		2021[2/]	
	Weight (tonnes)	Value ('000 USD)	Weight (tonnes)	Value ('000 USD)	Weight (tonnes)	Value ('000 USD)
Cotton (in bales)	124 746	167 987	94 613	129 845	87 558	110 485
Gum arabic	82 274	104 308	64 195	75 738	73 578	92 259
Sesame	688 895	788 716	527 385	606 978	298 934	338 922
Sugar	2 809	1 325	2 379	1 126	0	0
Groundnuts	450 642	363 691	327 545	248 251	405 715	391 016
Sorghum	40 740	11 913	35 940	10 473	75 323	29 575
Hibiscus flowers	17 425	19 751	10 819	11 664	6 691	7 184
Watermelon seeds	105 913	66 414	90 611	56 837	58 277	37 482

Source: Central Bank of Sudan (CBoS), 2021.
[1/] 1 January–31 December.
[2/] 1 January–30 September.

reduced imports of gasoline, benzene and wheat, as well as higher earnings from gold exports supported by strong foreign demand. The country imported about 40 000 tonnes of gasoline during the January–September 2021 period, which represents a significant drop compared to nearly 950 000 tonnes during the same period in 2020. Similarly, imports of benzene in the first nine months of 2021 were more than 50 percent lower in volume terms than in 2020. In order to increase domestic fuel supplies, no exports of crude oil and benzene were reported in the January–September 2021 period, as opposed to the same period in 2020 when USD 55 million worth of exports of the two products were recorded.

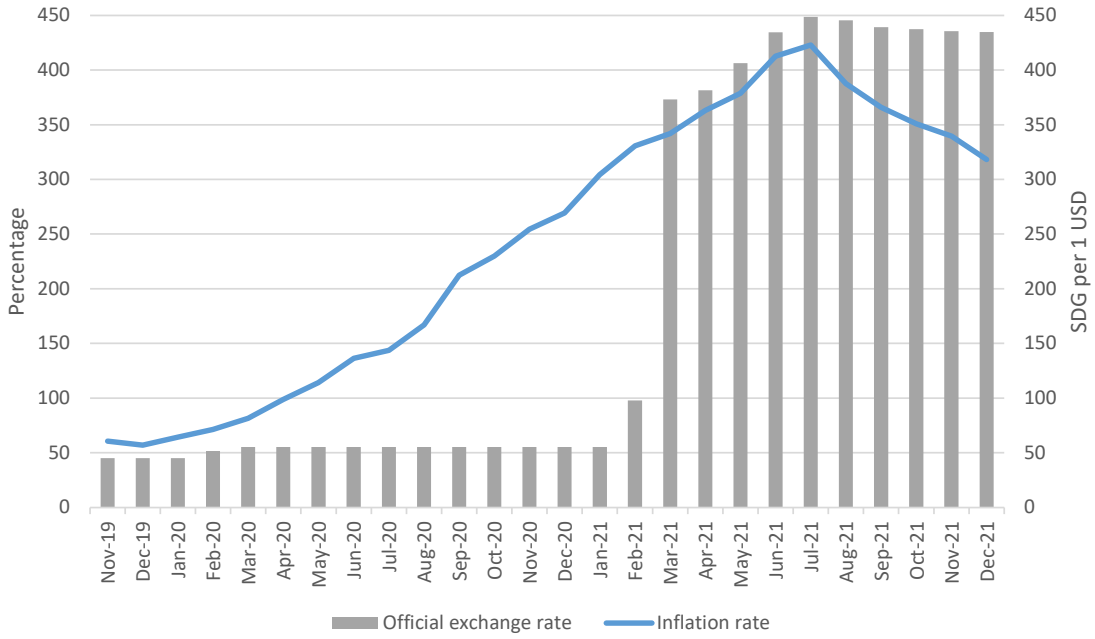
With regard to agricultural commodities, exports of major crops were 13 percent lower in volume terms in January–September 2021 than the same period in 2020. Total revenues from exports of groundnuts, sesame and cotton, which generate the highest export earnings, were estimated at USD 840 million between January and September 2021, about 15 percent below their levels in the same period in 2020. The decline in exports is mainly driven by a poor production of sesame in 2021, which was affected by dry spells and sesame gall midge. By contrast, exports of groundnuts in the January–September period were more than 50 percent higher year on year, supported by high international demand. No exports of sugar were reported as a result of the reduced 2021 output and increasing domestic demand.

While imported quantities of wheat grain during the first three quarters of 2021 reduced by 40 percent year on year, imports of wheat flour increased by more than tenfold. The uptick of wheat flour imports was prompted by the high prices of energy that elevated costs of flour milling. Imports of other food items, such as dairy products, fruits and rice, were generally higher than in 2020. By contrast, imports of animal and vegetable oils were more than 25 percent lower year on year in volume terms.

In February 2021, the Sudanese pound was devaluated from SDG 55 to SDG 375 (for USD 1) as the government unified the official and parallel exchange rates by adopting a managed float regime in response to an acute shortage of foreign exchange reserves and a large premium in the parallel markets. After reaching a peak of SDG 449 in July, the Sudanese pound strengthened slightly to SDG 434 in December 2021 (Figure 1). After the implementation of the new monetary regime, the gap between official and parallel exchange rates reduced.

Inflation rose throughout 2020 and the first half of 2021 due to the continuous currency devaluation

Figure 1: The Sudan - Inflation rate (percent) and official exchange rate (Sudanese pound/United States dollar)



Sources: Central Bureau of Statistics (CBS) for inflation rate and Central Bank of Sudan (CBoS) for exchange rate, 2021.

and the withdrawal of fuel subsidies. The subsidies on fuel, which accounted for 7.5 percent of the GDP in 2018–2020, were reduced to 0.3 percent of the GDP in 2021. This contributed to reduce the fiscal deficit in 2021, but also resulted in soaring energy prices. According to the CBS, prices in transport, housing, communication and education sectors rose sharply in 2021, while the increase of food prices was less pronounced. The annual inflation rate declined from August 2021 and was estimated at 318 percent in December 2021, the lowest in ten months, on account of the stable exchange rate.

Population

The last population and housing census was carried out in 2008 and, since then, the CBS extrapolates the country's population size using specific growth rates at state level. The total population in mid-2022 is officially projected at 46.1 million. The most populated states are Khartoum (19 percent of the total population), Al Jazirah (12 percent) and South Darfur (8 percent). As of November 2021, the United Nations High Commissioner for Refugees (UNHCR) estimated the number of refugees and asylum seekers residing in the country at 1.1 million people, with 70 percent from South Sudan. This includes about 70 000 Ethiopian refugees and asylum seekers who fled the Tigray Region after military confrontations began in November 2020. The number of internally displaced people increased sharply from 1.9 million in mid-2020 to 3 million in mid-2021, with more than 80 percent in Darfur states, due to increasing violence in the respective regions.

Agriculture

The economy of the Sudan is highly dependent on the agricultural sector, as nearly 65 percent of its population is engaged in agriculture, which is the main supplier of raw material to industries. The agricultural sector, including forestry, livestock and fishery, accounted for 20 percent of the GDP in 2020.

About 175 million feddans, equivalent to 73.5 million hectares, are suitable for agriculture and the average area sown is approximately 26 million hectares. The country's crop portfolio

is quite diversified, including cereals (sorghum, millet, wheat, rice and maize), oilseeds (sesame, groundnuts and sunflowers), commercial crops (cotton and sugarcane), fodder crops (alfalfa, fodder sorghum and Rhodes grass), pulses (broad beans and pigeon peas) and horticultural crops (okra, onions, tomatoes, citrus, mango, etc.).

Moreover, land in the Sudan is suitable for animal husbandry, with an estimated total livestock population in 2021 of about 111 million heads of cattle, sheep, goats, camels and others, mainly depending on natural grazing areas for feed and from hafirs,[1] rivers, seasonal streams and bore wells for water.

Crop production in the Sudan is practiced under three main patterns:

1. Irrigated agriculture, which includes:
   - Large national irrigation schemes (Al Jazirah, Suki, New Halfa and Rahad) using river flows from the Nile River and its tributaries.
   - Large spate irrigation schemes (Gash and Tokar) using seasonal floods.
   - Small-scale irrigation along the banks of the Nile River and its tributaries.
2. Semi-mechanized rainfed agriculture.
3. Traditional rainfed agriculture.

Crop production in the rainfed sectors, which account on average about 95 percent of the planted area, exhibits very wide annual fluctuations as a result of erratic rainfall amounts and distribution, which can result in late sowing, long dry spells, flooding from intense downpours, the necessity to re-sow and, not uncommonly, complete crop failure. The situation in the irrigated sector, which on average accounts on the remaining 5 percent of the planted area, however, is much more predictable. Nevertheless, viewed globally, yields are generally low in all sectors for various reasons in addition to rainfall. These include, inter alia, a shortage of efficient, well-maintained farm machinery, a shortage of credit and working capital, the use of low yielding crop varieties and low plant density with scarce availability of improved seeds, inadequate maintenance of irrigation canals, inefficient irrigation pumps and poor agricultural practices such as inadequate weed and pest control.

Irrigated agriculture

The area under irrigation is estimated at about 1.6 million hectares (3.7 million feddans). Large-scale mechanized federal schemes account for about 1.26 million hectares (3 million feddans), including the Aj Jazirah Scheme which, at approximately 1 million hectares (2.38 million feddans), is one of the largest irrigation schemes in the world. The irrigated sector is the main user of imported agricultural inputs as yields and hence production is more reliable. However, yields in the federal irrigated schemes remain low compared to world standards, largely due to the poor maintenance of canals, the low capacity of drainage systems and the shortage of efficient modern pumps.

The adoption of traditional agricultural practices that do not allow to make the most efficient use of the constant water resource and exploit the full potential of more intensive farming. Irrigation water is mainly obtained from the Nile River and its tributaries by gravity or pumps and from spate flows from seasonal rivers at Gash and Tokar deltas. The main crops of the irrigated sector include sugarcane, cotton, sorghum, groundnuts, wheat, legumes, spices, vegetables, fruits and green fodders. The irrigated sector also takes advantage of rain, especially during the establishment of the summer crops. For example, rain is estimated to provide about 40 percent of the water requirements of crops in the Suki Irrigation Scheme. Rain is important to reduce production costs of privately-owned irrigated smallholdings along the banks of the Nile River and its tributaries that depend on diesel-powered pumps.

Semi-mechanized rainfed agriculture

In the semi-mechanized rainfed agriculture, mechanization is limited to land preparation,

[1] Artificial water catchments.

seeding and, only partially, to harvesting, while other field operations are carried out manually. Semi-mechanized rainfed agriculture is practiced in a broad belt of 6.7 million hectares which runs mainly through Kassala, Gedaref, Blue Nile, Sennar, White Nile and South Kordofan states and receives annually more than 500 mm of rainfall on average. This belt is considered as the granary of the country, with sorghum accounting for about 80 percent of the total cultivated land and usually producing about 45 percent of the country's requirements.

Sesame, sunflowers, millet and cotton are also grown. Farms in the semi-mechanized sector are frequently very large with an average surface of 420 hectares and up to more than 50 000 hectares. Given the usual erratic nature of rainfall and, therefore, the possibility that yields could be very low, the system may be considered as opportunistic and operations are carried out as economically as possible. Standard crop varieties are sown using disc seeders with up to 30 discs and no fertilizer is applied. If rains are favourable, yields of up to 1 tonne/hectare can be obtained, otherwise crops are usually not harvested and sold to pastoralists for grazing.

Traditional rainfed agriculture

The traditional rainfed sector covers about 9 million hectares and occupies the largest number of farmers. The sector is characterized by small family units, farming from 2 to 50 hectares for both income and own consumption. On larger units, mechanization is used only for land preparation, but the rest of the agricultural operations are carried out manually. The traditional rainfed sector prevails mainly in western parts of the country, in the Greater Darfur Region and in most of the Greater Kordofan Region, where the main cereal crops are millet and sorghum. Input levels are low and yields are especially vulnerable to unfavourable rainfall. Other important crops in this sector include groundnuts, sesame, hibiscus (karkade), watermelon and gum arabic.

Livestock

Livestock is raised in almost all parts of the country and animals are owned primarily by nomadic tribes. In 2021, the livestock population was estimated at about 110.6. million heads, comprising about 32.1 million cattle, 41.1 million sheep, 32.4 million goats and 4.9 million camels. Pastoralists efficiently use natural resources, moving herds around the country in response to weather conditions and availability of forage. The major problem faced by pastoralists is the loss of rangeland due to the expansion of mechanized farming. The traditional practice of farmers allowing herds to graze crop residues, with animals simultaneously fertilizing land, is declining as farmers prefer to sell their residues for cash. Clashes between pastoralists and farmers are common, even in years of good rainfall, prompting the government to set up committees in each state to resolve disputes.

Using the Pictorial Evaluation Tool (PET), the overall livestock body condition was assessed in 2021 as good to very good (PET score 4 and 5 out of 5) at the time of the field visits, with no noticeable change if compared with the same time last year. Pasture condition was assessed in most states as fair to good (PET score 3 and 4), lower than in the previous year, due to erratic seasonal rains constraining the regeneration of rangeland resources and the recharge of water points. Localized overgrazing was reported and in some areas pastoralists moved to crop growing areas, leading to conflicts between herders and farmers. A faster-than-normal depletion of pasture is expected during the dry season, with a negative impact on livestock condition and productivity. Although no major outbreaks of contagious animal diseases were reported, peste des petits ruminants (PPR) affected sheep and goats in some areas of Blue Nile and Kassala states and in Greater Darfur Region. In addition, sheep pox was reported in Blue Nile and Kassala states and in the latter, animals were also affectesd by foot and mouth disease (FMD), botulism, lumpy skin disease and blood parasites. The number of animals vaccinated in 2021 is estimated to have declined by 12–23 percent from 2020, due to vaccine shortages caused by their high cost.

The livestock body condition, disease outbreaks, pasture and water availability in select states are reported as follows:

Al Jazirah State: Livestock body condition was assessed as good (PET score 4). No outbreaks of contagious diseases were reported. However, cases of FMD, botulism, lumpy skin disease and blood parasites were reported. Rangeland conditions and pasture availability were above average and similar to the previous year. By contrast, the number of water points was inadequate, leading to high water prices.

Blue Nile State: Livestock body condition was assessed as good (PET score 4) and slightly better if compared with the previous year. Some contagious diseases were reported, including PPR and sheep pox in goats and sheep. Due to the high animal population in the state (estimated at 18 million) high pressure on rangeland resources leading to overgrazing was reported as well as water shortages, as several hafirs are not functional and need rehabilitation.

Gedaref State: Livestock body condition was generally very good (PET score 5) due to adequate availability of pasture, agricultural residues and drinking water. No serious outbreaks of contagious diseases were reported. Cases of tick-borne diseases and internal and external parasites were reported. In Butana Region, one of the largest wet-season grazing areas in the country, located in the north of the state and encompassing also parts of neighbouring Khartoum, Kassala, Nile and Al Jazirah states, the expansion of mining and farming at the expense of rangelands and dry spells creating a conducing environment for pests which attacked pastures, led to overgrazing and pasture shortages. As a result, pastoralists moved to southern crop growing areas and conflicts between herders and farmers are reported.

Kassala State: Livestock body condition was generally good (PET score 4), with only some cases of PPR, sheep pox and heartwater diseases reported. Due to a poor performance of the rainy season, pasture condition was poor (PET score 1) and drinking water was insufficient, especially in northern areas. As a result, pasture was depleted at faster-than-normal rates and supported livestock for just one month after the end of the rainy season in September. According to official sources, the animal feed gap for 2022 is estimated at 1 947 000 tonnes.

Greater Kordofan Region: Livestock body condition was assessed as very good (PET score 5) due to adequate availability of pasture and water. In addition, as a result of a poor performance of the cropping season in several areas of the region, several herds were allowed into farms before the post-harvest time (when they usually are allowed to graze crop residues), as farmers sold failed crops as animal feed, thus increasing feed availability. No outbreaks of contagious diseases were reported.

Greater Darfur Region: Livestock body condition was reported to be very good for all types of livestock (PET score 5). Contagious diseases, mainly PPR and Haemorrhagic Septicaemia, were reported in a few areas. Pasture condition and water availability were adequate. Due to a volatile security situation in West Darfur State, several herds moved to Central Darfur, leading to the damage to crops in some areas along their routes.

White Nile State: Livestock body condition was assessed as very good (PET score 5) due to adequate pasture and water availability. However, access to pastures was hampered by the expansion of cropping areas, resulting in the shrinking of rangelands and in the disruption of transhumance routes, especially in Alsalam, Al Jabaleen and Edweim localities. No outbreaks of contagious diseases were reported.

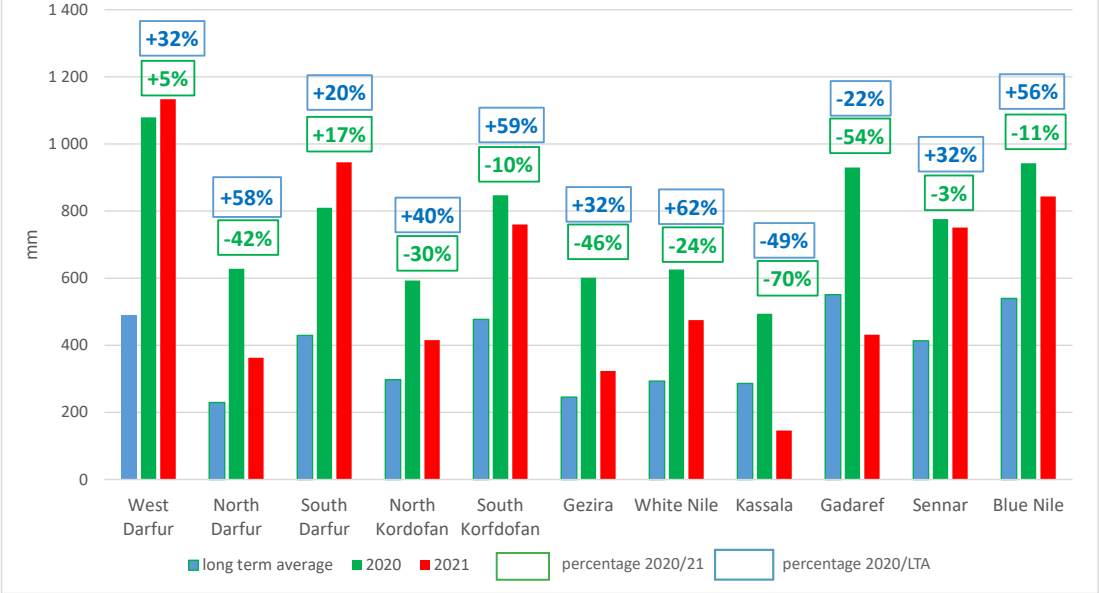
Main factors affecting cereal production in 2021/22

Rainfall

With rainfed agriculture accounting for about 95 percent of the total cultivated area in the country, rainfall is the most important driver of national food crop production. Precipitation is crucial also in the irrigated sector as it supplements irrigation water and supports crop establishment and development.

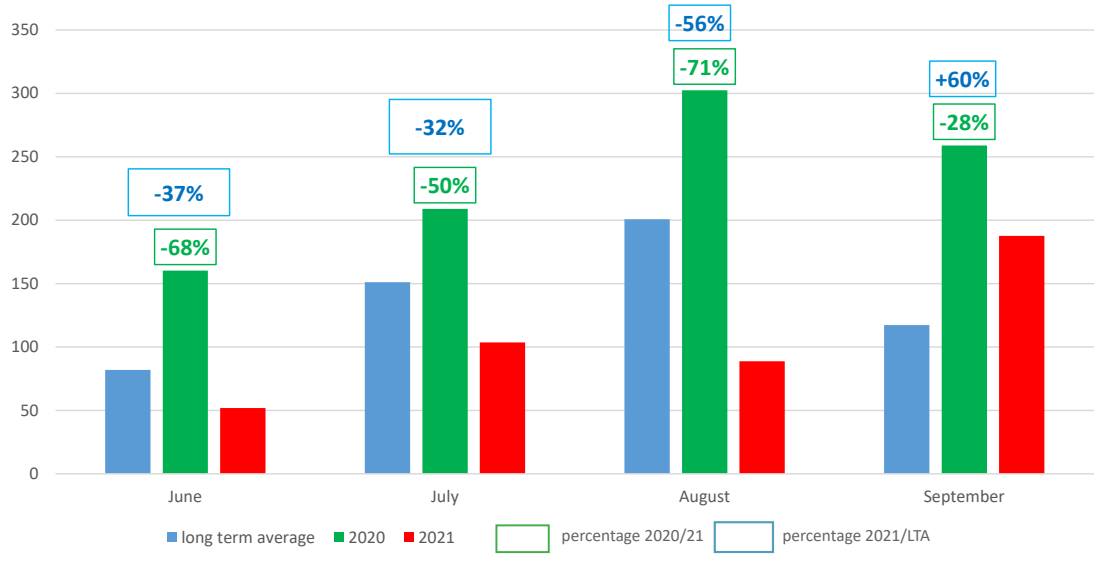
According to remote sensing data, the rainy season in 2021 was characterized by cumulative rainfall amounts lower than in the previous year and in some states below the long term-average (LTA), as shown in Figure 2. Rainfall data from remote sensing were confirmed by information provided by the ground stations of the SMA (annexes 1 and 2) as well as by information obtained during the field visits.

Figure 2: The Sudan - Cumulative rainfall comparison in selected states (mm and percent)



Source: FAO/GIEWS, 2021.

Figure 3: The Sudan (Gedaref State) - Monthly cumulative rainfall amounts (mm and percent)



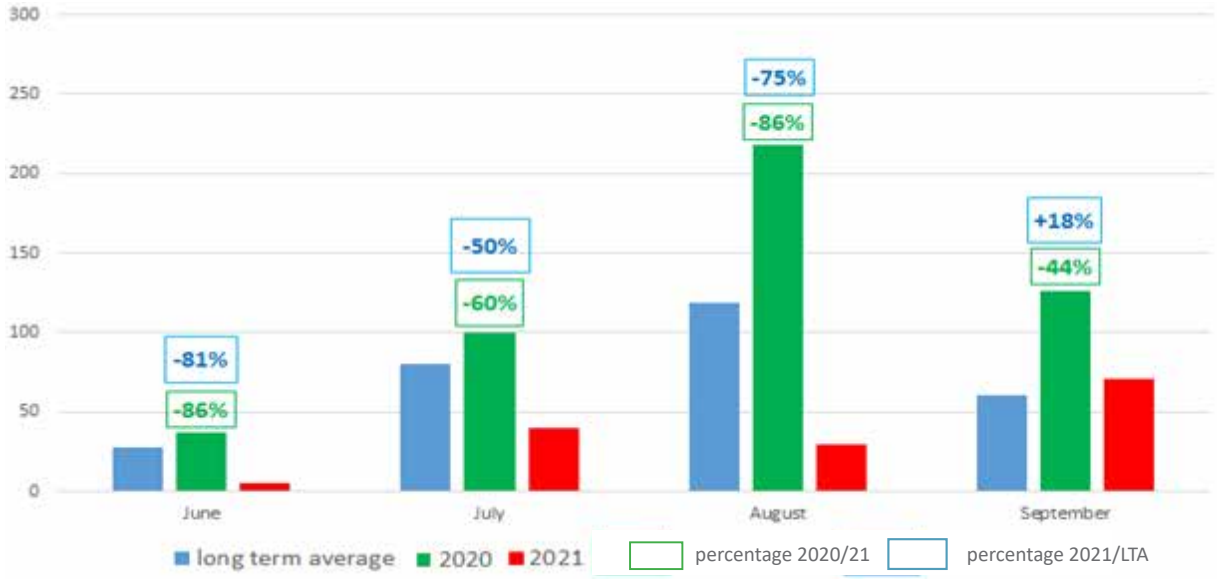
Source: FAO/GIEWS, 2021.

In addition to the lower rainfall amounts, the rainy season was characterized by a significantly erratic temporal distribution. For example, in Gedaref State, one of the main cereal producing areas of the country, accounting on average for one-fifth of the national sorghum output, cumulative rains were both below the amounts of last year and the LTA, and had a particularly unfavourable distribution (Figure 3 with insufficient amounts received in June, July and August, and almost half of the total seasonal rains received in September, too late for a significant recovery of water-stressed crops.

In neighbouring Kassala State, the performance of the rainy season was particularly poor, with severe dryness prevailing during most of the rainy season, followed by above-average rains in September, of which the cumulative monthly amount was, however, well below that received in the previous year.

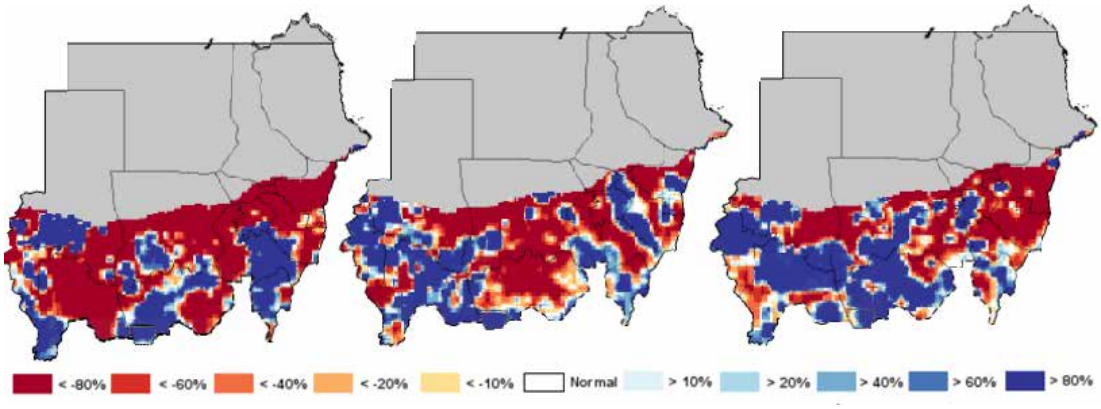
Overall, following an early onset of the rains in most parts of the country during May and average to above-average rains in June, crops were affected in July in several areas during the critical vegetative and flowering growth stages by erratic rains (Figure 5), with prolonged dry spells (two to three weeks).

Figure 4: The Sudan (Kasala) - Monthly cumulative rainfall amounts (mm and percent)



Source: FAO/GIEWS, 2021.

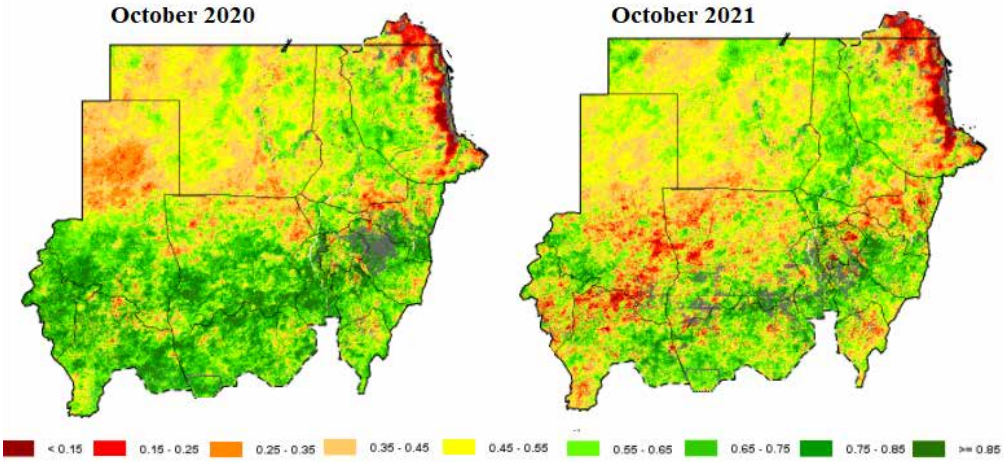
Figure 5: The Sudan - Rainfall anomalies (difference between 2021 and LTA), first, second and third dekad of July



Notes: Based on FEWS NET RFE. WGS84, geographic Lat/Lon.
Source: FAO/GIEWS Earth Observation - *www.fao.org/giews/earthobservation*.

Disclaimer: *The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal status of any country, territory, area or of its authorities, or concerning the delimitation of its frontiers and boundaries. Dashed lines represent approximate border lines for which there may not yet be full agreement. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. Final status of the Abyei area is not yet determined.*

Figure 6: The Sudan: Vegetation Health Index (VHI)



Notes: The Index calculation is based on METOP-AVHRR data. WGS84, Geographip Lat/Lon.
Source: FAO/GIEWS Earth Observation - *www.fao.org/giews/earthobservation*.

Disclaimer: *The boundaries and names shown and the designations used on this map do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal status of any country, territory, area or of its authorities, or concerning the delimitation of its frontiers and boundaries. Dashed lines represent approximate border lines for which there may not yet be full agreement. Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined. Final status of the Abyei area is not yet determined.*

In late July, river overflows and flash floods caused by heavy downpours affected standing crops and damaged irrigation systems and agricultural infrastructure in Gedaref, White Nile, South Darfur, West Darfur, North Kordofan, River Nile, South Kordofan and Al Jezirah states. The long dry spells in July and floods in late July necessitated replanting. However, rainfall in August was again erratic, affecting germination of replanted crops. In addition, replanted sorghum crops were substantially damaged by sorghum midge, as the insect population increases during the season and the pest was treated less effectively than in 2020. Improved rains were received in September and the rainy season unusually continued until October, but it was too late to allow for the maturation of the replanted crops. As a result, in October, (Figure 6) before the start of harvesting operations, vegetation condition was below average in several areas despite the improved rains received in September and worse than in the same period of the previous year.

Irrigation

Normally, rainfall assists in the establishment of crops, reducing the burden on the irrigation system in July and August, while in September and October the required amount of water is supplied by a number (two to three) of scheduled irrigations. However, irrigation water is seldom sufficient for all the main crops (sorghum, groundnuts and cotton), in particular if the canals were not adequately de-silted and cleaned from weeds. This year, the challenges affecting the irrigation systems, coupled with a poor performance of seasonal rains, had a negative impact on the irrigated sector, with a poor crop performance recorded in most of the irrigated schemes.

In Aj Jazirah Scheme, located in the homonymous state and by far the largest in the country, dry spells in August and rats affecting mainly sorghum crops necessitated replanting. Replanted crops were subsequently damaged by waterlogging, as heavy showers coincided with irrigation schedules. As indicated by scheme officials during the field visits as one of the major challenges for crop growing activities, irrigation may be untimely, as happened during this season, due to inadequate coordination by different authorities and a slow decision-making process in the management of the irrigation schedules.

In Rahad Scheme, located in Gedaref State, adequate water supply from both rainfall (which normally contributes to about 80 percent of the water requirements) and the Rahad River had a favourable impact on crops. However, the flow of irrigation water was constrained by the inadequate cleaning and maintenance of canals, due to high costs. In addition, torrential rains in mid-July resulted in waterlogging, which affected about 14 percent of the total planted areas and destroyed about 19 tonnes of sunflower seeds, 35 tonnes of sorghum seeds and 25 tonnes of urea.

In Gash Scheme, located in Kassala State, a change of authorities responsible for the management of irrigation has been introduced in 2021. Challenges in the planning of irrigation have been reported and only 5 900 hectares have been irrigated this year, 65 percent less than in the previous year. This, coupled with a particularly poor performance of seasonal rains in the state, resulted in an almost total crop failure.

Agricultural finance and credit

The provision of short-term agricultural credit[2] mainly through the ABS and a number of commercial banks,[3] is a regular procedure in both the irrigated and the rainfed sectors. Loans to eligible farmers are provided through the interest-free Salam, with the ABS charges levied in-kind at a value fixed at planting time jointly by Ministry of Finance and Economic Planning (MoFEP), the Strategic Reserve Corporation, the ABS and farmers' associations. However, the provision of credit from the ABS is particularly dedicated to the entrepreneurial semi-mechanized rainfed sector. In 2021, about 86 percent of credit was provided to the semi-mechanized rainfed sector, about 5 percent to the irrigated sector and the remaining 9 percent to the traditional rainfed sector and other sectors (Table 3).

The total sum of agricultural finance provided by the ABS to the agricultural sector in 2021 for the summer cropping season was SDG 62 489 million, 6 percent in-kind and 94 percent in cash. This amount was more than four times the one provided in 2020. However, the area financed, approximately 3.4 million hectares, was only about 21 percent more than last year, while the beneficiaries were 34 032, about half of those in 2020, due to the high inflation, which resulted in increased costs of inputs and agricultural operations (Table 4).

Regarding the winter cropping season, the total finance provided up to mid-January 2022 was about SDG 25.22 million, of which 88 percent was granted to the irrigated sector (Table 5).

Agricultural inputs

Generally, the availability of most agricultural inputs including seeds, fertilizers, herbicides and labour in 2021 was inadequate and lower than in the previous year, and their cost was substantially higher than in 2020, underpinned by the sustained inflation. By contrast, the availability of fuel and agricultural machinery was adequate, with fuel availability reported to have increased compared to the previous year, albeit at very high prices.

Table 3: The Sudan - Area financed for the summer cropping season, amount disbursed by sector and distribution of loans, 2021

Sector	Area financed (hectares)	Amount (million SDG)	Share of total amount financed (percent)
Mechanized rainfed	3 236 800	53 927.96	86.3
Traditional rainfed	95 461	1 354.09	2.2
Irrigated	56 092	2 903.94	4.6
Horticulture	6 261	420.39	0.7
Machineries	12 630	3 882.97	6.2
Total	**3 407 243**	**62 489.35**	**100.0**

Source: Agricultural Bank of Sudan (ABS), 2021.

[2] During the 2021/22 season, the finance provided by the ABS accounted for about 90 percent of the total credit disbursed to farmers.

[3] Twenty-seven banks during the 2021/22 season.

Table 4: The Sudan - Finance to agriculture by the ABS and number of beneficiaries for the summer crops

Region	2019		2020		2021	
	Finance (million SDG)	Beneficiaries	Finance (million SDG)	Beneficiaries	Finance (million SDG)	Beneficiaries
Eastern regions	2 419	8 975	7 189.5	11 010	28 232.0	10 118
Sennar and Blue Nile	1 888	3 486	3902.0	3 308	17 445.9	4 055
White Nile	325	964	851.6	1 748	8 119.6	1 351
North Kordofan	181	9 146	122.2	8 572	1 585.7	4 552
South Kordofan	234	1 574	415.0	1 734	3 488.6	2 648
Al Jazirah	1 146	18 692	1900.8	27 748	2 228.2	8119
Darfur	118	996	81.2	4 409	205.9	2 319
Northern	-	-	18.7	53	40.2	501
River Nile	27	96	120.8	126	252.6	105
Khartoum	6	16	6.5	5	789.7	239
Main Branch	126	9	316.2	7 785	100.4	25
Total	**6 470**	**43 954**	**14 924**	**66 498**	**62 489**	**34 032**

Source: Agricultural Bank of Sudan (ABS), 2021.

Table 5: The Sudan - Finance for winter season until mid-January 2022

Sector	Area financed (hectares)	Amount (million SDG)	Share of total amount financed (percent)
Irrigated	152 729.6	22.18	88.0
Horticulture	23 025.2	2.48	9.8
Machineries	3 865.3	0.56	2.2
Total	**179 620.1**	**25.22**	**100.0**

Source: Agricultural Bank of Sudan (ABS), 2021.

Seeds

The total quantity of seeds (totally constituted by sorghum seeds) delivered in 2021 by the Federal MoA&F to the to the state ministries of agriculture in the 18 states amounted to 828.6 tonnes, only about half of the target and of the quantity distributed in 2020, due to high inflation increasing costs, thus leading to seed shortages.

FAO and NGOs provided crops and vegetable seeds to support the agricultural sector by increasing farm productivity and small farmers' income by mitigating the impact of weather extremes. Market prices of seeds where very high. For example, prices of sorghum and millet seeds were almost four times and three times, respectively, their year-earlier levels (Table 6).

Table 6: The Sudan - Seeds distributed by MoA&F to smallholder farmers by state

State	Sorghum (tonnes)		Total (tonnes)	Cost ('000 SDG)
	Wad Ahmed	Arfa Gadamek		
North Darfur	15	35	50	17 500
South Darfur	30	35	65	22 750
Central Darfur	20	30	50	17 500
East Darfur	20	30	50	17 500
West Darfur	20	30	50	17 500
North Kordofan	20	40	60	21 000
South Kordofan	40	25	65	22 750
West Kordofan	20	30	50	17 500
White Nile	20	25	45	15 750
Blue Nile	40	35	75	26 250
Sennar	25	20	45	15 750
Aj Jazirah	10	30	40	14 000
Gedaref	28	22	50	17 500
Kassala	10	15	25	8 750
Red Sea	5	20	25	8 750
Khartoum	0	20	20	7 000
River Nile	0	15	15	5 250
Northern	0	15	15	5 250
Abeiye	0	10	10	3 500
Tokar	0	10	10	3 500
Reserve	5.57	8	13.57	4 750
Total	**328.57**	**500**	**828.57**	**290 000**

Source: Ministry of Agriculture and Forests (MoA&F)/Agricultural Production General Directorate, 2021.

Agricultural machinery

The availability of agricultural machinery was generally adequate. However, the cost of maintenance and spare parts was high, with spare parts often reported to have low quality. The rental rate of agricultural machinery is reported to have increased by seven times in 2021 compared to 2020, with a negative impact on farmers who do not own it.

Fertilizes and herbicides

Shortages of fertilizers and herbicides were reported, mainly in irrigated schemes. In addition, their prices where very high throughout the country. For example, the price of urea fertilizer and of 2,4-D herbicide in 2021 where nine and five times their year-earlier levels, respectively.

Labour

In most states, labour was generally available but at a very high cost. Labour shortages were reported in some areas, including the key producing Gedaref State and in neighbouring Kassala State, as the conflict in northern Ethiopia disrupted the movements of Ethiopian seasonal labourers. Labour shortages were also reported in South Kordofan State and in neighbouring areas due to inter-communal clashes. Moreover, the expansion in area cultivated with cotton resulted in competition for securing labour, thus inflating its cost.

Fuel

Fuel availability for agricultural operations was adequate. However, prices skyrocketed after the removal of fuel subsidies in June 2021 and the cost of a fuel barrel increased from SDG 1 200 during the previous season to SDG 80 000 during the 2021 cropping season.

Table 7: The Sudan - Costs of agricultural inputs, 2021 and 2021 agricultural seasons

Item	Price in SDG		Percent change
	2020	2021	
Massey tractors (second hand)	4 000 000	6 000 000	50
New Holland tractors (new)	5 000 000	11 000 000	120
Sprayers	1 400 000	2 800 000	100
Fuel barrels	1 200	80 000	6 567
Commercial fuels	16 000	80 000	400
Spare parts	800	4 000	400
Desks	1 800 000	3 300 000	83
Urea fertilizers (sacks)	3 500	32 000	814
2,4-D herbicides (litres)	1 700	8 000	371
Selective broadleaf herbicides (litres)	1 000	9 500	850
Selective narrowleaf herbicides (litres)	2 500	11 700	368
Sorghum seeds (tonnes)	80 000	300 000	275
Millet seeds (tonnes)	110 000	330 000	200
Sesame seeds (tonnes)	280 000	500 000	79
Sunflower seeds (tonnes)	1 760 000	3 400 000	93
Cotton seeds (tonnes)	160 000	500 000	213
Groundnuts seeds (tonnes)	110 000	350 000	218
Empty sacks (300 sacks)	60 000	240 000	300
Labour (man/day)	550	2 750	400
Water fees (SDG/feddan)	2 500	8 700	284

Sources: State reports and CFSAM, 2021.

Crop pests and diseases

The control of pests and diseases was performed less effectively than in the previous season due to funding shortfalls affecting both the Federal Plant Protection Directorate and the state departments. While control operations of sorghum bug were carried out successfully, with more than 90 percent of the affected area treated, sorghum midge inflicted serious damage on replanted sorghum, mainly in Gedaref and Kassala states, where it affected about 0.67 million hectares. Crop pests, including birds attacking cereal crops at harvest time and sesame gall midge affecting sesame during flowering stage, were reported in White Nile and Sennar states. Losses of sorghum to birds were also reported in eastern localities of South Kordofan State. In Aj Jazirah State, 50 000 hectares cultivated with sorghum were lost to crickets. In New Halfa Irrigated Scheme, water hyacinth affected irrigation canals and insects including thrips attacked cotton crops.

COVID-19 pandemic

According to official sources, the COVID-19 pandemic did not have a significant impact on the 2021 summer cropping season, as movement within and between states was allowed and markets remained open. However, in December 2021, with the emergence of the Omicron variant, some food and agricultural input markets were partially closed in Gedaref State.

Area planted and harvested in 2021/22

The area planted with sorghum in 2021/22 is estimated at about 10 million hectares, about 7 percent lower than the previous year and 2 percent lower than the average of the previous five years. The overall decrease in plantings was more pronounced in the irrigated sector, where it fell to more than 50 percent and 12 percent, respectively, below last year and the five-year average as farmers were induced to change cropping patterns toward cotton[4] and watermelon seeds due to more favourable farmgate prices. The area sown with sorghum decreased also in the traditional rainfed sector by 11 and 4 percent, respectively, compared to the previous year and the average of the previous five years, mainly due to poor rains since the beginning of the rainy season, while in the semi-mechanized rainfed sector the area planted was similar to last year and the average of the previous five years.

The area planted with millet was estimated at a near-average level of 4.39 million hectares, about 17 percent less compared to 2020. In the traditional rainfed sector, accounting for the bulk of millet production[5] and mainly located in western states, the area planted was more than 21 percent lower compared to the previous year mainly due to early season dryness and heightened insecurity in some areas of Greater Darfur Region.

The total area harvested of sorghum and millet was below both their levels a year earlier and the average of the previous year. The area harvested of sorghum was estimated at 6.9 million hectares, 24 and 12 percent, respectively, down from the previous year and the average of the previous year, while the area harvested with millet was estimated at 4.4 million hectares, 25 and 16 percent, respectively, down from the previous year and the five-year average. In addition, the ratio of area harvested to area planted declined year on year, falling from 81 to 69 percent for sorghum and from 79 to 64 percent for millet. The decline was due to severe crop damage caused by dryness, waterlogging, pests, diseases and irrigation challenges. In the most affected areas, farmers were forced to replant multiple times, to shift to shorter cycle crops or, in some cases, to sell residues of failed crops to pastoralists.

Sowing of the 2021/22 wheat crop began in November 2021 with the total planted area is expected at 256 000 hectares, 28 percent lower year on year and 10 percent below the average of the previous five years. The sharp decline is due to shortages of improved seeds and fertilizers, and increasing electricity rates affecting pump irrigation.

[4] The area planted with cotton in the irrigated sector increased by more than 40 percent between 2020 and 2021.

[5] More than 90 percent on average in the last five years.

Table 8: The Sudan - Cereal area harvested by state, scheme and sector ('000 hectares)

State/Scheme/ Sector	Sorghum					Millet					Wheat				
	5-yr average 2016/17-2020/21	2020/21	2021/22	2021/22 as % 2020/21	2021/22 as % 5-yr average	5-yr average 2016/17-2020/21	2020/21	2021/22	2021/22 as % 2020/21	2021/22 as % 5-yr average	5-yr average 2016/17-2020/21	2020/21	2021/22	2021/22 as % 2020/21	2021/22 as % 5-yr average
Irrigated															
Northern	2	4.0	2.5	62.5	125.0	-	-	-	-	-	45	55	50.0	90.9	111.1
River Nile	19	64.0	44.0	68.8	231.6	-	-	-	-	-	19	17	16.8	98.8	88.4
Khartoum	1	2.0	1.0	50.0	100.0	-	-	-	-	-	1	-	0.0	-	0.0
Aj Jazirah	128	132.0	91.0	68.9	71.1	-	-	-	-	-	152	304	138.6	45.6	91.2
Suki	11	10.5	3.0	28.6	27.3	-	-	-	-	-	-	-	-	-	-
Sennar	24	25.0	25.0	100.0	104.2	-	-	-	-	-	1	-	-	-	-
White Nile	39	39.0	38.0	97.4	97.4	-	-	-	-	-	27	25	27.3	109.2	101.1
Rahad	27	31.9	22.0	69.0	81.5	-	-	-	-	-	1	1	0.4	40.0	40.0
New Halfa	25	24.0	20.0	83.3	80.0	-	-	-	-	-	27	31	24.8	80.0	91.9
Gash	41	108.0	9.0	8.3	21.9	-	-	-	-	-	-	-	-	-	-
Kassala	4	0.0	0.0	-	-	-	-	-	-	-	-	-	-	-	-
Tokar	8	8.4	3.0	35.7	37.5	10.8	5	0.42	8.4	3.9	-	-	-	-	-
North Kordofan	5	8.0	4.0	50.0	80.0	-	-	-	-	-	-	-	-	-	-
Total	**333**	**546.8**	**262.0**	**47.9**	**78.7**	**10.8**	**5**	**0.42**	**8.4**	**3.9**	**272**	**433**	**257.9**	**59.6**	**94.8**
Semi-Mechanized															
Sennar	620	783	483.0	61.7	77.9	70	71	42	59.2	60.0	-	-	-	-	-
White Nile	388	384	412.0	107.3	106.2	29	58	21	36.2	72.4	-	-	-	-	-
Blue Nile	438	473	473.0	100.0	108.0	41	17	18	-	43.9	-	-	-	-	-
Gedaref	1 697	1 517	1 838.0	121.2	108.3	120	270	154	57.04	128.3	-	-	-	-	-
Kassala	409	573	126.0	22.0	30.8	-	-	-	-	-	-	-	-	-	-
North Kordofan	14	17	7.1	41.8	50.7	-	-	-	-	-	-	-	-	-	-
West Kordofan	314	168	168.0	100.0	53.5	-	-	-	-	-	-	-	-	-	-
South Kordofan	443	4 15	488.0	117.6	110.2	6	6	47	783.3	783.3	-	-	-	-	-
Total	**4 324**	**4 162**	**3 995.0**	**96.0**	**92.4**	**266**	**422**	**283**	**67.1**	**106.4**					
Traditional Rainfed															
River Nile	41	30	53	176.7	129.3	-	-	-	-	-	-	-	-	-	-
Khartoum	35	79	34	43.0	97.1	-	-	-	-	-	-	-	-	-	-
Aj Jazirah	326	392	273	69.6	83.7	16	27	30.0	111.1	187.5	-	-	-	-	-
Sennar	195	150	127	84.7	65.1	43	75	8.8	11.7	20.5	-	-	-	-	-
White Nile	170	186	58	31.2	34.1	39	17	68.0	400.0	174.4	-	-	-	-	-
Blue Nile	75	116	86	74.1	114.7	23	48	10.0	20.8	43.5	-	-	-	-	-
Kassala	98	74	59	79.7	60.2	6	6	6.0	100.0	100.0	-	-	-	-	-
Red Sea	10	7	2	28.6	20.0	8	3	0.0	0.0	0.0	-	-	-	-	-
North Kordofan	367	504	135	26.8	36.8	37	42	257.5	613.1	695.9	-	-	-	-	-
West Kordofan	219	519	227	43.7	103.7	517	570	373.0	65.4	72.1	-	-	-	-	-
South Kordofan	155	132	208	157.6	134.2	412	34	20.6	60.6	5.0	-	-	-	-	-
North Darfur	154	161	52	32.3	33.8	200	276	342.0	123.9	171.0	-	-	-	-	-
West Darfur	213	495	102	20.6	47.9	549	563	117.0	20.8	21.3	2	1	0.0	-	-
South Darfur	509	710	677	95.4	133	577	794	744.0	93.7	128.9	1	1	-	-	-
Central Darfur	159	181	150	82.9	94.3	385	561	158.0	28.2	41.0	-	-	0.2	-	-
East Darfur	508	588	416	70.7	81.9	260	294	390.0	132.7	150.0	-	-	-	-	-
Total	**3 234**	**4 324**	**2 660**	**61.5**	**82.3**	**3 072**	**3 310**	**2 524**	**76.3**	**82.2**	**3**	**2**	**0.2**	**10.0**	**6.7**
Grand total	**7 891**	**9 111**	**6 917**	**75.9**	**87.7**	**3 343**	**3 737**	**2 807**	**75.11**	**83.97**	**275**	**435**	**258.1**	**59.3**	**93.9**

Note: Totals computed from unrounded data.
Source: CFSAM, 2021.

Crop yields

The average sorghum yield in 2021 is estimated at 0.51 tonnes/hectare, 15 percent lower than the yield obtained in 2020 and 19 percent lower than the average level. In the semi-mechanized rainfed sector, accounting for the bulk of the sorghum output, the average yield of 0.43 tonnes/hectare declined by 14 and 22 percent, respectively, below the levels of the previous year and the average of the previous five years, due to the impact of dry weather, floods, pests and input shortages. In particular, labour shortages affected yields also in the semi-mechanized rainfed sector, where the control of weeds is performed manually.

In Gedaref State, the main producing area, yields achieved were lower by 20 and 17 percent, respectively, compared to the previous year and the five-year average, as a consequence of adverse weather conditions and of significant losses due to sorghum midge. In the semi-mechanized rainfed sector of neighbouring Kassala State, yields were lower by 43 and 31 percent, respectively, compared to the previous year and the five-year average, due to severe dryness.

The average millet yield is estimated at 0.32 tonnes/hectare, 26 and 33 percent, respectively, lower than the yield obtained in 2021 and the five-year average. The decrease was mainly due to prolonged dry spells that punctuated the rainy season, resulting in widespread germination failures and crop wilting.

Yields of wheat crops, mainly grown under irrigation, fluctuate on average from 2 to 2.4 tonnes/hectare.

The national production of sorghum and millet in 2020/21 is estimated at 4.43 million tonnes, 37 percent down from 2021 and 32 percent lower than the average of the previous five years.

The decline in total production is mainly due to a decrease of both the planted and harvested areas and yields.

Sorghum production is estimated at about 3.5 million tonnes, 32 and 28 percent, respectively, down from the previous year and the five-year average.

Major crop production shortfalls are recorded in:

- The semi-mechanized and traditional rainfed sectors of Kassala State, where the ouput was 81 percent down from 2020 and 72 percent lower than the average of the previous five years, due to severe rainfall deficits.
- The irrigated and semi-mechanized sectors of Sennar State, where production was 63 percent down from 2020 and 67 percent below the five-year average, due to unfavourable weather.
- All three sectors of Greater Kordofan Region, where the output was 57 percent down from 2020 and 51 percent lower than the average of the previous five years, due to rainfall deficits and insecurity.

The national millet production is estimated at 0.9 million tonnes, 53 percent down from 2020 and 44 percent higher than the five-year average. The 2021 cropping season almost failed in the traditional rainfed sector in Northern Darfur State, where production was estimated at about 75 percent below the average output obtained last year, due to insufficient rains and insecurity.

Wheat production is forecast at about 600 000 tonnes, 13 percent down from both last year and the the five-year average.[6]

[6] Compared to the early estimates provided in the 2021 CFSAM report, wheat production in 2020 has been revised downward from 900 000 to 695 000 tonnes, taking into account the results of crop cutting surveys.

Table 9: The Sudan - Cereal yields by state, scheme and sector (tonnes/hectare)

State/Scheme/ Sector	Sorghum					Millet					Wheat				
	5-yr average 2016/17-2020/21	2020/21	2021/22	2021/22 as % 2020/21	2021/22 as % 5-yr average	5-yr average 2016/17-2020/21	2020/21	2021/22	2021/22 as % 2020/21	2021/22 as % 5-yr average	5-yr average 2016/17-2020/21	2020/21	2021/22	2021/22 as % 2020/21	2021/22 as % 5-yr average
Irrigated															
Northern	1.70	1.67	1.19	71.3	70.0	-	-	-	-	-	3.17	3.33	2.86	85.9	90.2
River Nile	2.14	2.14	2.38	111.2	111.2	-	-	-	-	-	2.69	2.86	2.62	91.6	97.4
Khartoum	1.19	1.2	1.10	91.7	92.4	-	-	-	-	-	1.79	-	-	-	0.0
Aj Jazirah	2.32	2.26	1.94	85.8	83.6	-	-	-	-	-	2.42	2.14	2.14	100.0	88.4
Suki	2.25	1.79	0.34	19	15.1	-	-	-	-	-	-	-	-	-	-
Sennar	1.41	0.86	1.17	136	83	-	-	-	-	-	1.84	-	-	-	-
White Nile	1.95	1.93	1.16	60.1	59.5	-	-	-	-	-	2.23	2.14	1.92	89.7	86.1
Rahad	2.25	2.14	2.47	115.4	109.8	-	-	-	-	-	1.85	2.14	1.92	89.7	103.8
New Halfa	2.21	2.14	1.93	90.2	86.9	-	-	-	-	-	2.29	2.14	2.62	122.4	114.4
Gash	1.71	1.50	1.50	100	87.7	-	-	-	-	-	-	-	-	-	-
Kassala	1.72	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tokar	1.55	1.49	0.71	47.7	45.8	1.06	0.71	0.36	50.7	34.0	-	-	-	-	-
North Kordofan	0.88	1.71	0.60	35.1	68.2	-	-	-	-	-	-	-	-	-	-
Total	**2.06**	**1.89**	**1.80**	**95.2**	**87.4**	**1.06**	**0.71**	**0.36**	**50.7**	**34.0**	**2.53**	**2.43**	**2.28**	**93.8**	**90.1**
Semi-Mechanized															
Sennar	0.59	0.43	0.22	51.2	37.3	0.50	0.42	0.380	90.5	76.0	-	-	-	-	-
White Nile	0.55	0.64	0.45	70.3	81.8	0.41	0.43	0.357	83.0	87.1	-	-	-	-	-
Blue Nile	0.53	0.48	0.64	133.3	120.8	0.33	0.24	0.360	150.0	109.1	-	-	-	-	-
Gedaref	0.58	0.60	0.48	80.0	82.8	0.41	0.45	0.350	77.8	85.4	-	-	-	-	-
Kassala	0.52	0.64	0.36	56.3	69.2	-	-	-	-	-	-	-	-	-	-
North Kordofan	0.50	0.47	0.14	29.8	28.0	-	-	-	-	-	-	-	-	-	-
West Kordofan	0.50	0.43	0.24	55.8	48.0	0.25	0.17	0.130	76.5	52.0	-	-	-	-	-
South Kordofan	0.44	0.30	0.28	93.3	63.6	0.25	0.17	0.126	74.1	50.4	-	-	-	-	-
Total	**0.55**	**0.50**	**0.43**	**86.0**	**78.2**	**0.42**	**0.43**	**0.32**	**74.4**	**76.2**					
Traditional Rainfed															
River Nile	1.00	0.87	0.72	82.8	72.0	-	-	-	-	-	-	-	-	-	-
Khartoum	0.54	0. 71	0.42	59.2	77.8	-	-	-	-	-	-	-	-	-	-
Aj Jazirah	0.54	0.64	1.07	167.2	198.1	0.52	0.640	0.322	50.3	61.9	-	-	-	-	-
Sennar	0.54	0.52	0.21	40.4	38.9	0.38	0.520	0.39	75.0	102.6	-	-	-	-	-
White Nile	0.40	0.71	0.39	54.9	97.5	0.39	0.420	0.427	101.7	109.5	-	-	-	-	-
Blue Nile	0.61	-	0.43	-	70.5	0.41	0.430	0.43	100.0	104.9	-	-	-	-	-
Kassala	0.46	0.19	0.46	242.1	100	0.23	0.310	0.16	51.6	69.6	-	-	-	-	-
Red Sea	0.57	0.45	0.12	26.7	21.1	0.37	0.240	0.00	0.0	0.0	-	-	-	-	-
North Kordofan	0.29	0.214	0.188	87.9	64.8	0.28	0.214	0.172	80.4	61.4	-	-	-	-	-
West Kordofan	0.40	0.44	0.207	47.0	51.8	0.19	0.440	0.123	28.0	64.7	-	-	-	-	-
South Kordofan	0.54	0.35	0.307	87.7	56.9	0.37	0.250	0.238	95.2	64.3	-	-	-	-	-
North Darfur	0.40	0.18	0.12	66.7	30.0	0.91	0.140	0.07	50.0	7.7	-	-	-	-	-
West Darfur	1.04	0.71	0.86	121	82.7	0.55	0.760	0.83	109.2	150.9	1.22	1.4	-	-	-
South Darfur	0.79	0.59	0.496	84.1	62.8	0.39	0.510	0.41	80.4	105.1	1.52	1.4	-	-	-
Central Darfur	1.10	0.91	0.86	94.5	78.2	0.92	0.790	0.60	75.9	65.2	-	-	-	-	-
East Darfur	0.46	0.66	0.43	65.2	93.5	0.45	0.480	0.39	81.3	86.7	-	-	-	-	-
Total	**0.58**	**0.55**	**0.50**	**90.9**	**86.2**	**0.49**	**0.43**	**0.32**	**74.4**	**65.3**	**1.36**	**1.4**	**1.31**	**93.6**	**96.3**
Grand total	**0.63**	**0.60**	**0.51**	**85.0**	**81.0**	**0.48**	**0.43**	**0.32**	**74.4**	**66.7**	**2.51**	**2.42**	**2.28**	**94.2**	**90.8**

Note: Totals computed from unrounded data.
Source: CFSAM, 2021.

Table 10: The Sudan – Cereal production by state, scheme and sector ('000 tonnes)

State/Scheme/ Sector	Sorghum					Millet					Wheat				
	5-yr average 2016/17-2020/21	2020/21	2021/22	2021/22 as % 2020/21	2021/22 as % 5-yr average	5-yr average 2016/17-2020/21	2020/21	2021/22	2021/22 as % 2020/21	2021/22 as % 5-yr average	5-yr average 2016/17-2020/21	2020/21	2021/22	2021/22 as % 2020/21	2021/22 as % 5-yr average
Irrigated															
Northern	3	7	3.0	42.9	100.0	-	-	-	-	-	143	182	142.80	78.5	99.9
River Nile	40	138	105.0	76.1	262.5	-	-	-	-	-	51	48	44.00	91.7	86.3
Khartoum	1	2	1.0	50.0	100.0	-	-	-	-	-	1	-	-	-	0.0
Aj Jazirah	297	299	177.0	59.2	59.6	-	-	-	-	-	367	340	297.00	87.4	80.9
Suki	25	19	1.0	5.3	4.0	-	-	-	-	-	-	-	-	-	-
Sennar	34	22	29.0	131.8	85.3	-	-	-	-	-	2	-	-	-	0.0
White Nile	75	76	44.0	57.9	58.7	-	-	-	-	-	60	54	52.00	96.3	104.0
Rahad	61	68	54.0	79.4	88.5	-	-	-	-	-	1	3	0.81	27.0	81.0
New Halfa	55	51	38.0	74.5	69.1	-	-	-	-	-	62	66	64.90	98.3	104.7
Gash	71	161	13.0	8.1	18.3	-	-	-	-	-	-	-	-	-	-
Kassala	7	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tokar	12	13	1.8	13.8	15.0	5	5	0.15	3.0	3.0	-	-	-	-	-
North Kordofan	5	9	2.0	22.2	40.0	-	-	-	-	-	-	-	-	-	-
Total	**686**	**865**	**468.8**	**54.3**	**68.5**	**5**	**5**	**0.15**	**3.0**	**3.0**	**687**	**693**	**601.50**	**86.8**	**87.6**
Semi-Mechanized															
Sennar	364	336	104	31.0	28.6	35	30	16.0	53.3	45.7	-	-	-	-	-
White Nile	214	207	185	89.4	86.4	12	25	7.5	-	-	-	-	-	-	-
Blue Nile	232	225	304	135.1	131.0	14	4	6.7	167.5	47.9	-	-	-	-	-
Gedaref	981	766	914	119.3	93.2	49	122	53.0	43.4	108.2	-	-	-	-	-
Kassala	213	368	45	12.2	21.2	-	-	-	-	-	-	-	-	-	-
North Kordofan	7	8	1	12.5	14.3	-	-	-	-	-	-	-	-	-	-
West Kordofan	157	160	40	25.0	25.5	-	-	-	-	-	-	-	-	-	-
South Kordofan	196	125	134	107.2	68.4	1	1	6.0	-	-	-	-	-	-	-
Total	**2 363**	**2195**	**1 727**	**78.7**	**73.1**	**111**	**182**	**89**	**48.9**	**80.2**					
Traditional Rainfed															
River Nile	41	26	38.00	146.2	92.7	-	-	-	-	-	-	-	-	-	-
Khartoum	19	56	14.00	25.0	73.7	-	-	-	-	-	-	-	-	-	-
Aj Jazirah	176	252	293.00	116.3	166.5	8	11	9.6	87.3	120.00	-	-	-	-	-
Sennar	106	79	27.00	34.2	25.5	16	19	3.4	17.9	21.30	-	-	-	-	-
White Nile	68	104	22.50	21.6	33.1	15	58	24.2	-	-	-	-	-	-	-
Blue Nile	46	97	37.00	38.1	80.4	9	17	4.3	25.3	47.80	-	-	-	-	-
Kassala	45	14	27.00	192.9	60.0	1	3	1	33.3	100.00	-	-	-	-	-
Red Sea	6	3	0.25	8.3	4.2	3	1	0	0	0.0	-	-	-	-	-
North Kordofan	108	192	25.40	13.2	23.5	11	132	44.4	33.6	403.6	-	-	-	-	-
West Kordofan	87	194	47.00	24.2	54.0	97	244	46	18.9	47.4	-	-	-	-	-
South Kordofan	85	47	64.00	136.2	75.3	151	13	4.9	37.7	3.2	-	-	-	-	-
North Darfur	61	30	6.00	20.0	9.8	181	96	24	25.0	13.3	-	-	-	-	-
West Darfur	223	169	88.00	52.1	39.5	3 01	412	97.3	23.6	32.3	2	1	-	-	-
South Darfur	402	302	336.00	111.3	83.6	2 24	389	305	78.4	136.2	2	1	-	-	-
Central Darfur	175	139	129.00	92.8	73.7	3 55	160	94	58.8	26.5	-	-	0.2	-	-
East Darfur	232	389	178.40	45.9	76.9	118	176	153.3	87.1	129.9	-	-	-	-	-
Total	**1 880**	**2 093**	**1 332.55**	**63.7**	**70.9**	**1 491**	**1 731**	**811**	**46.9**	**54.4**	**4**	**2**	**0.2**	**10.0**	**5.0**
Grand total	**4 929**	**5 153**	**3 528.40**	**68.5**	**71.6**	**1 607**	**1 918**	**901**	**47.0**	**56.1**	**691**	**695**	**601.7**	**86.6**	**87.1**

Note: Totals computed from unrounded data.
Source: CFSAM, 2021.

Table 11: The Sudan – Cereal production by sector ('000 tonnes)

Sector	Sorghum			Millet			Wheat		
	Five-year average[1/]	2020/21	2021/22 (forecast)	Five-year average[1/]	2020/21	2021/22 (forecast)	Five-year average[1/]	2020/21	2021/22 (forecast)
Irrigated	686	865	468.80	5	5	0.15	687	693	601.5
Semi-mechanized rainfed	2 363	2 195	1 727.00	111	182	89.00	-	-	0.0
Traditional rainfed	1 880	2 093	1 332.55	1 491	1 731	811.00	4	2	0.2
Total	**4 929**	**5 153**	**3 528.40**	**1 607**	**1 918**	**901.00**	**691**	**695**	**601.7**

Note: Totals computed from unrounded data.
[1/] 2016/17-2020/21 average.
Source: CFSAM, 2021.

Table 12: The Sudan – Sorghum production by sector

Sector	Five-year average[1/]			2020/21			2021/22 (forecast)		
	Area[2/]	Production[2/]	Yields[2/]	Area[2/]	Production[2/]	Yields[2/]	Area[2/]	Production[2/]	Yields[2/]
Irrigated	333	686	2.06	546.8	865	1.89	262	468.80	1.80
Semi-mechanized rainfed	4 324	2 363	0.55	4 162.0	2195	0.50	3 995	1 727.00	0.43
Traditional rainfed	3 234	1 880	0.58	4 324.0	2 093	0.55	2 660	1 332.55	0.50
Total	**7 838**	**4 929**	**0.63**	**9 033.0**	**5 153**	**0.60**	**6 917**	**3 528.40**	**0.51**

Note: Totals computed from unrounded data.
[1/] 2016/17-2020/21 average.
[2/] Area in '000 hectares, production in '000 tonnes and yields in tonnes/hectare.
Source: CFSAM, 2021.

Table 13: The Sudan – Millet production by sector

Sector	Five-year average[1/]			2020/21			2021/21 (forecast)		
	Area[2/]	Production[2/]	Yields[2/]	Area[2/]	Production[2/]	Yields[2/]	Area[2/]	Production[2/]	Yields[2/]
Irrigated	10.8	5	1.06	5	5	0.71	0.42	0.15	0.36
Semi-mechanized rainfed	266.0	111	0.42	405	182	0.43	283.00	89	0.32
Traditional rainfed	3 072.0	1 491	0.49	3 310	1 731	0.43	2 524.00	811	0.32
Total	**3 343.0**	**1 607**	**0.48**	**3 446**	**1 918**	**0.43**	**2 807.00**	**901.32**	**0.32**

Note: Totals computed from unrounded data.
[1/] 2016/17-2020/21 average.
[2/] Area in '000 hectares, production in '000 tonnes and yields in tonnes/hectare.
Source: CFSAM, 2021.

Table 14: The Sudan – Wheat production by sector

Sector	Five-year average[1/]			2020/21			2021/21 (forecast)		
	Area[2/]	Production[2/]	Yields[2/]	Area[2/]	Production[2/]	Yields[2/]	Area[2/]	Production[2/]	Yields[2/]
Irrigated	272	687	2.53	271	693	2.43	256.0	584.3	2.28
Semi-mechanized rainfed	-	-	-	-	-	-	0.0	0.0	0.00
Traditional rainfed	3	4	1.36	2	2	1.40	0.2	0.3	1.31
Total	**275**	**691**	**2.51**	**273**	**695**	**2.42**	**256.4**	**584.6**	**2.28**

Note: Totals computed from unrounded data.
[1/] 2016/17-2020/21 average.
[2/] Area in '000 hectares, production in '000 tonnes and yields in tonnes/hectare.
Source: CFSAM, 2021.

Other crops

Sesame

Production of sesame in 2021/22 is estimated at about 0.85 million tonnes, about 20 percent and 9 percent, respectively, lower than in 2020/21 and the five-year average. Despite an harvested area 75 percent larger than last year and more than twice the five-year average due to high profit expectations reflecting high market prices, production declined as yields more than halved due to erratic rains and sesame gall midge affecting crops.

Table 15: The Sudan - Sesame production 2021/22 compared to 2020/21 and five-year average

State/Scheme/ Sector	Five-year average[1/]				2020/21				2021/22 (forecast)			
	Area[2/] planted	Area[2/] harvested	Production[2/]	Yields[2/]	Area[2/] planted	Area[2/] harvested	Production[2/]	Yields[2/]	Area[2/] planted	Area[2/] harvested	Production[2/]	Yields[2/]
Mechanized Rainfed												
Sennar	588	489	173	354	378	302	65	215	1 135	1 111	198.0	178
White Nile	216	169	48	282	175	152	32	210	242	150	22.6	151
Blue Nile	157	104	33	316	133	67	25	374	513	359	40.0	112
Gedaref	416	340	103	304	0	0	0	0	917	873	120.0	138
Kassala	129	77	19	241	147	0	1	0	250	213	19.0	90
North Kordofan	278	214	58	271	357	304	79	260	685	480	32.0	67
South Kordofan	1 784	1 394	434	311	1 190	825	202	245	3 742	3 186	432.0	136
Total	**1 685**	**1 315**	**410**	**312**	**2 768**	**1 997**	**597**	**299**	**1 473**	**1 075**	**295.0**	**275**
Traditional Rainfed												
Aj Jazirah	58	49	19	378	87	66	18	271	163	152	14.0	90
Sennar	3	2	1	286	13	11	3	265	284	256	46.0	178
White Nile	182	144	33	229	265	226	48	213	211	99	7.3	74
Blue Nile	90	77	25	330	72	65	31	479	289	202	22.6	112
Kassala	8	7	2	232	-	-	-	-	100	87	9.0	100
North Kordofan	1 264	820	155	189	1 716	1 287	297	231	1 711	915	41.0	45
South Kordofan	195	140	40	285	189	135	44	325	357	224	20.0	90
West Kordofan	306	270	61	227	685	583	146	251	753	656	54.0	35
North Darfur	162	88	14	154	442	175	25	143	428	39	1.0	21
South Darfur	241	216	75	346	553	522	168	322	958	785	124.0	158
West Darfur	87	77	32	408	68	62	25	405	89	71	12.0	176
East Darfur	48	39	8	200	84	67	13	193	338	263	43.0	165
Central Darfur	79	65	27	418	106	74	32	430	269	248	19.0	77
Total	**2 723**	**1 995**	**490**	**246**	**4 281**	**3 274**	**850**	**260**	**5 950**	**3 997**	**413.0**	**103**
Grand total	**4 507**	**3 388**	**925**	**273**	**5 471**	**4 099**	**1 052**	**257**	**9 692**	**7 183**	**845.0**	**118**

Note: Totals computed from unrounded data.
[1/] 2016/17-2020/21 average.
[2/] Area in '000 hectares, production in '000 tonnes and yields in tonnes/hectare.
Source: CFSAM, 2021.

Groundnuts

National production of groundnuts in 2021/22 is estimated at about 2.4 million tonnes, slightly above the output obtained last year and the average of the previous five years. In the irrigated sector, which accounts for the bulk of groundnuts production, more than half of harvested crops was not threshed immediately after the harvest, as farmers waited for prices to reach remunerative levels.

Table 16: The Sudan - Groundnut production 2021/22 compared to 2020/21 and five-year average

State/Scheme/ Sector	Five-year average[1/]				2020/21				2021/22 (forecast)			
	Area[2/] planted	Area[2/] harvested	Production[2/]	Yields[2/]	Area[2/] planted	Area[2/] harvested	Production[2/]	Yields[2/]	Area[2/] planted	Area[2/] harvested	Production[2/]	Yields[2/]
Irrigated												
Northern	0.126	0.126	0.18	1 428.6	0.63	0.63	0.9	1 428.6	-	-	-	-
Aj Jazirah	70.00	65.00	141.00	2 177.0	55.00	50.00	118.0	2 381.0	57.96	52.0	117'0	2 247
Rahad	15.00	13.00	31.00	2 351.0	14.00	13.00	32.0	2 381.0	15.12	13.9	28.9	2 085
New Halfa	22.00	21.00	74.00	3 458.0	21.00	21.00	0.0	0.0	17.22	16.4	58.5	3 571
Total	**107.00**	**100.00**	**246.00**	**2 473.0**	**91.00**	**84.00**	**151.9**	**1 792.0**	**90.00**	**82.0**	**204.0**	**2 483**
Rainfed												
White Nile	32.00	25.00	12.00	483.0	21.00	17.00	8.0	476.0	28.01	20.6	11.5	559
Blue Nile	1.00	1.00	0.00	433.0	0.00	0.00	0.0	0.0	-	-	-	-
Sennar	0.00	0.00	0.00	0.0	0.00	0.00	0.0	0.0	-	-	-	-
Gedaref	28.00	24.00	16.00	670.0	43.00	36.00	23.0	637.0	70.00	70.0	47.0	674
North Kordofan	95.00	76.00	31.00	412.0	140.00	112.00	51.0	455.0	223.00	105.0	20.3	193
South Kordofan	57.00	42.00	28.00	662.0	56.00	49.00	33.0	667.0	42.00	30.0	17.0	562
West Kordofan	908.00	762.00	542.00	712.0	1 129.00	959.00	731.0	762.0	1 135.00	1 076.0	587.0	545
North Darfur	298.00	215.00	84.00	389.0	377.00	282.00	105.0	372.0	342.00	325.0	234.0	719
South Darfur	711.00	627.00	476.00	759.0	840.00	771.00	431.0	559.0	828.00	768.0	397.0	517
West Darfur	173.00	158.00	176.00	1 115.0	113.00	101.00	104.0	1 027.0	77.00	53.0	57.0	1 071
Central Darfur	120.00	114.00	89.00	782.0	120.00	108.00	77.0	713.0	162.00	121.0	73.0	607
East Darfur	813.00	697.00	616.00	883.0	1 134.00	964.00	608.0	631.0	1 512.00	1 285.0	707.0	550
Total	**3 237.00**	**2 742.00**	**2 070.00**	**752.0**	**3 929.00**	**3 363.00**	**2 171.0**	**645.0**	**4 420.00**	**3 854.0**	**2 150.0**	**558**
Grand total	**3 344**	**2 842**	**2 316**	**817**	**4 020**	**3 447**	**2 321**	**673**	**4 510.00**	**3 936.0**	**2 355.0**	**598**

Note: Totals computed from unrounded data.
[1/] 2016/17-2020/21 average.
[2/] Area in '000 hectares, production in '000 tonnes and yields in tonnes/hectare.
Source: CFSAM, 2021.

Sunflowers

Sunflowers are grown under both irrigated and rainfed conditions in the semi-mechanized sector. The production in 2021/22 is estimated at 136 000 tonnes, about three times the low output obtained in 2020/21 and more than 30 percent above the average of the previous five years. The year-on-year fluctuations in area and productivity are caused by shortages of hybrid seeds and their high costs. In addition, the lack of clear marketing strategies hinders crop sales, making farmers' planting decisions uncertain.

Table 17: The Sudan - Sunflower production 2021/22 compared to 2020/21 and five-year average

State/Scheme/ Sector	Five-year average[1/]				2020/21				2021/22 (forecast)			
	Area[2/] planted	Area[2/] harvested	Production[2/]	Yields[2/]	Area[2/] planted	Area[2/] harvested	Production[2/]	Yields[2/]	Area[2/] planted	Area[2/] harvested	Production[2/]	Yields[2/]
Irrigated												
River Nile	0.04	0.04	0.04	1 190	0.20	0.17	0.20	1 190	-	-	-	-
Aj Jazirah	0.00	0.00	0.00	0	5.04	4.20	5.00	1 190	-	-	-	-
White Nile	0.00	0.00	0.00	0	0.84	0.84	0.96	1 143	-	-	-	-
Khartoum	0.00	0.00	0.00	0	-	-	-	-	-	-	-	-
Sennar	0.25	0.25	0.20	794	-	-	-	-	-	-	-	-
Suki	0.76	0.76	0.80	1 058	-	-	-	-	-	-	-	-
Rahad	3.36	2.77	4.07	1 470	4.20	3.78	5.00	1 323	2	2	2.4	1 429
New Halfa	1.03	1.03	1.64	1 587	0.00	0.00	1.00	0	1	1	1.2	1 429
Total	**7.08**	**6.22**	**8.29**	**1 333**	**10.28**	**8.99**	**12.16**	**1 353**	**3**	**3**	**3.6**	**1 429**
Rainfed												
White Nile	0.25	0.25	0.14	571	1.26	1.26	0.72	571	-	-	-	-
Blue Nile	123.23	101.89	55.26	542	48.72	36.54	31.00	848	80	72	86	1 197
Sennar	12.35	9.66	8.00	828	0.84	0.84	0.96	1 143	16	9	5.5	595
Gedaref	52.58	45.28	31.80	702	0.00	0.00	0.00	0	65	64	40	617
South Kordofan	-	-	-	-	-	-	-	-	3.8	3.8	1.6	423
Total	**188.66**	**157.25**	**95.21**	**605**	**50.82**	**38.64**	**32.68**	**846**	**161**	**145**	**133**	**913**
Grand total	**195.76**	**163.50**	**103.48**	**633**	**61.10**	**47.63**	**44.84**	**941**	**164**	**148**	**136**	**922**

Note: Totals computed from unrounded data.
[1/] 2016/17-2020/21 average.
[2/] Area in '000 hectares, production in '000 tonnes and yields in tonnes/hectare.
Source: CFSAM, 2021.

Sugar

Sugar is produced by the Kenana Sugar Company, the White Nile Sugar Company and the Sudanese Sugar Company, located in the cities of Guneid, New Halfa, Sennar and Asalaya. According to preliminary estimates, the national production of sugar in 2021/22 is estimated at 349 000 tonnes, 24 and 38 percent, respectively, down from the output obtained in 2020/21 and average of the previous five years.

Table 18: The Sudan - Sugar production 2016/17 to 2021/22

Company	Year	Area harvested[1/]	Sugarcane production[1/]	Sugar production[1/]	Sugar yields[1/]
Sudanese Sugar Company					
	2016/17	33.5	2 439	233	6.96
	2017/18	34.3	2 569	251	7.32
	2018/19	35.2	2 484	248	7.05
	2019/20	33.7	2 251	217	6.43
	2020/21	26.6	1 512	142	5.33
	2021/22	-	-	53	-
Kenana Sugar Company					
	2016/17	35.4	3 009	301	8.50
	2017/18	34.5	3 500	350	10.14
	2018/19	34.4	3 500	328	9.53
	2019/20	34.4	3 198	315	9.15
	2020/21	33.6	3000	300	8.93
	2021/22			280	
White Nile Sugar Company					
	2016/17	13.3	412.0	42	3.19
	2017/18	13.4	413.0	43	3.17
	2018/19	3.2	100.0	10	3.12
	2019/20	n.a	n.a	n.a	n.a
	2020/21	5.6	240.0	19	3.39
	2021/22	4.4	207.5	16	3.39
Total	**2016/17**	**82.2**	**5 860**	**576**	**7.01**
	2017/18	**82.2**	**6 482**	**644**	**7.83**
	2018/19	**72.8**	**6 084**	**586**	**8.04**
	2019/20	**68.1**	**5 449**	**532**	**7.81**
	2020/21	**65.8**	**4 752**	**461**	**7.01**
	2020/21	**-**	**-**	**349**	**-**

Note: Totals computed from unrounded data.
[1/] Area in '000 hectares, production in '000 tonnes and yields in tonnes/hectare.
Sources: Sudanese, Kenana and White Nile sugar producing companies, 2021.

Cotton

National production of cotton in the season 2020/21 is estimated at 882 000 tonnes, more than twice both the output obtained in the previous year and the average of the previous five years. The high output is due to an expansion in both in planted are and in harvested area, which, at almost 0.5 million hectares, the highest since 1970 and almost three times the average of the previous five years. The expansion in harvested area followed an increase in contract-farming sugar cultivation and by increased plantings as farmers were encouraged by high farmgate prices of cotton.

Table 19: The Sudan - Cotton production 2021/22 compared to 2020/21 and five-year average

State/Scheme/ Sector	Five-year average[1/]				2020/21				2021/22 (forecast)			
	Area[2/] planted	Area[2/] harvested	Production[2/]	Yields[2/]	Area[2/] planted	Area[2/] harvested	Production[2/]	Yields[2/]	Area[2/] planted	Area[2/] harvested	Production[2/]	Yields[2/]
Irrigated												
Aj Jazirah	43	39	147	3 777	25	22	62	2 839	53.0	47.0	125.00	2 681
Suki	10	9	22	2 474	10	9	15	1 701	7.4	0.3	0.18	659
Sennar	19	18	41	2 275	11	10	18	1 863	11.0	9.0	12.00	1 299
White Nile	4	4	4	1 049	3	3	2	595	-	-	-	-
Rahad	23	20	51	2 596	18	17	45	2 679	24.0	21.0	49.00	2 381
New Halfa	15	13	44	3 274	13	13	44	3 379	18.0	16.0	53.20	3 333
Tokar	1	1	1	1 100	-	-	-	-	-	-	-	-
Abu Habil	1	1	1	913	-	-	-	-	-	-	-	-
Total	**116**	**104**	**311**	**2 974**	**80**	**74**	**186**	**2 531**	**112.4**	**92.7**	**239.40**	**2 583**
Rainfed												
Sennar	6	3	5	1 404	14	12	18	1 476	26.0	18.0	12.0	649
White Nile	0	0	0	0	-	-	-	-	-	-	-	-
Blue Nile	21	17	35	2 072	60	45	105	2 336	173.0	165.0	387.0	2 351
Gedaref	46	40	58	1 461	67	63	63	993	212.0	211.0	239.0	1 133
South Kordofan	-	-	-	-	-	-	-	-	3.1	2.9	4.1	1 395
Total	**73**	**60**	**98**	**1 632**	**141**	**120**	**186**	**1 543**	**411.0**	**394**	**642**	**1 629**
Grand total	**189**	**165**	**409**	**2 483**	**221**	**194**	**372**	**1 916**	**524.0**	**487**	**882**	**1 811**

Note: Totals computed from unrounded data.
[1/] 2016/17-2020/21 average.
[2/] Area in '000 hectares, production in '000 tonnes and yields in tonnes/hectare.
Source: CFSAM, 2021.

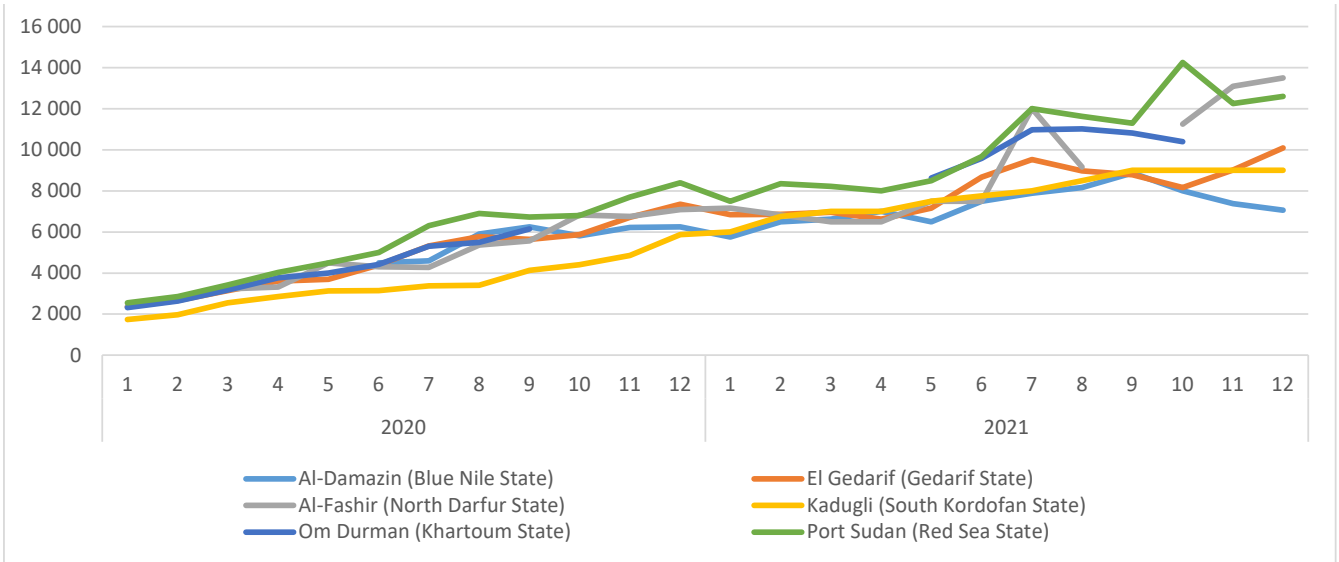
CEREAL SUPPLY/DEMAND SITUATION

Crop and livestock markets

In general, prices of locally produced sorghum and millet show seasonal declines in October/November with the start of the main harvest and remain generally stable through March, before rising in August/September. However, prices of sorghum "feterita" and millet have been steadily increasing in nominal terms since 2018 following macroeconomic difficulties, irrespective of any seasonal pattern. In 2021, the extent of increases in cereal prices was less pronounced compared to a year earlier due to improved market supplies from the above-average cereal harvests gathered in 2020. The high level of prices in 2021 mainly reflects high production and transportation costs as well as disruptions to marketing and trading activities due to heightened social unrest and unfavourable weather events such as floods in late July.

Following steady increases throughout 2021, prices of sorghum were, on average, 50 percent higher year on year in December, ranging from SDG 9 000 to SDG 13 500/90 kg sack (Figure 7). In the sorghum

Figure 7: The Sudan - Wholesale prices of sorghum "feterita" in selected markets states

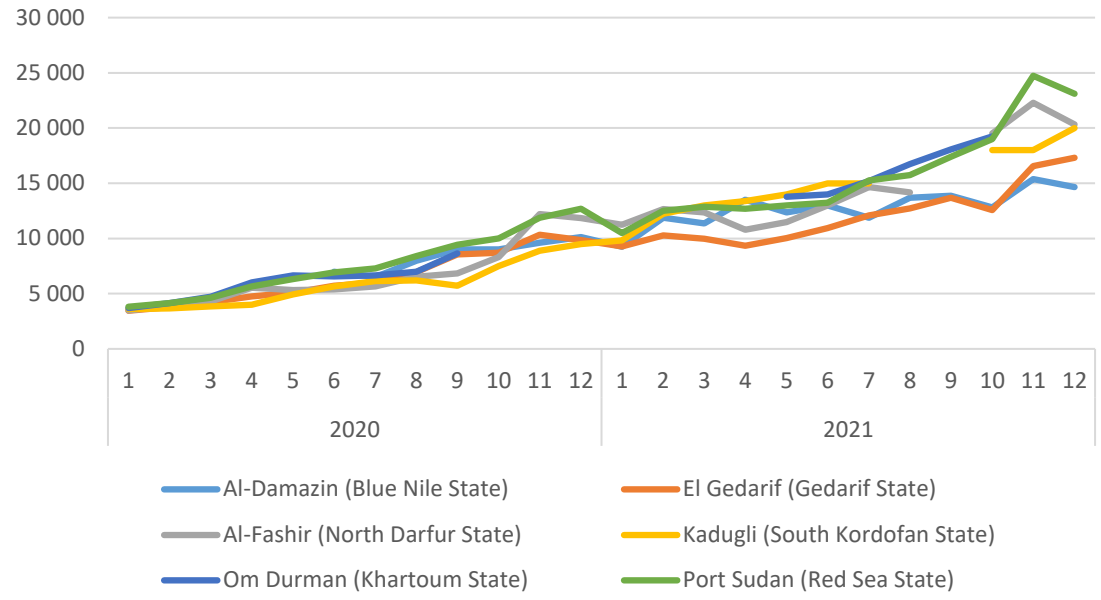


Source: Food and Agriculture Real Time Messaging and Reporting System, 2021.

key producing state of Gedarif, despite the ongoing harvest, prices increased between November and December, underpinned by rising costs of agricultural inputs and market disruptions. Similarly, prices of millet, mainly grown and consumed in Darfur states, followed a sustained rising trend during 2021 (Figure 8). In December 2021, prices were about SDG 20 300/90 kg sack in North Darfur State, the main millet producing area, corresponding to an annual increase of 70 percent. The year-on-year lower production, due to a contraction in plantings combined with unfavourable weather conditions, exerted upward pressure on millet prices.

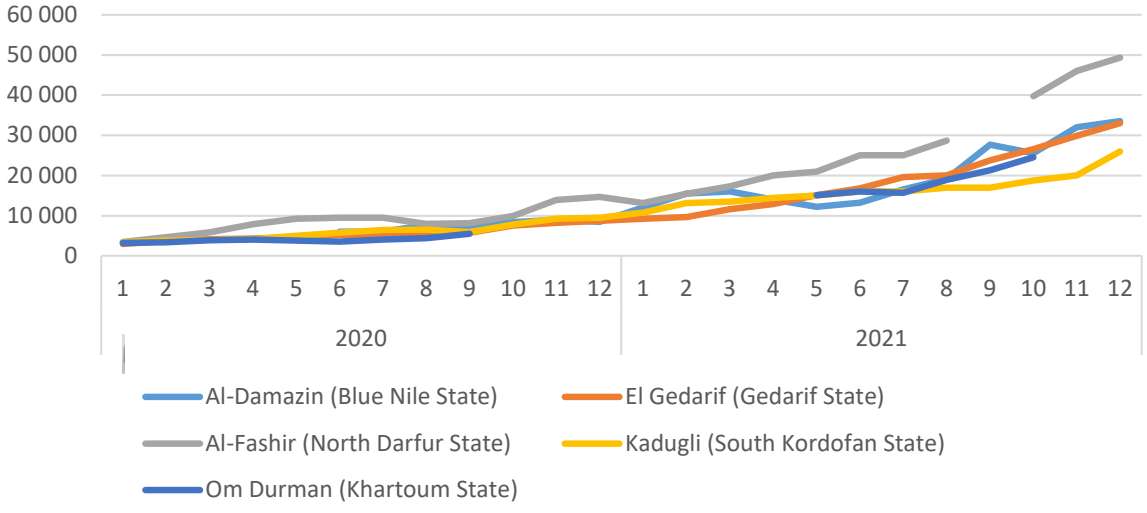
Prices of wheat grain, mainly imported and consumed in urban areas, increased more than threefold in 2021, driven by lower year-on-year imports between January and September 2021 and the sharp depreciation of the national currency (Figure 9). Blockades in Port Sudan in September–October contributed to disruptions in trade flows and exacerbated the upsurge of prices.

Figure 8: The Sudan - Wholesale prices of millet in selected markets



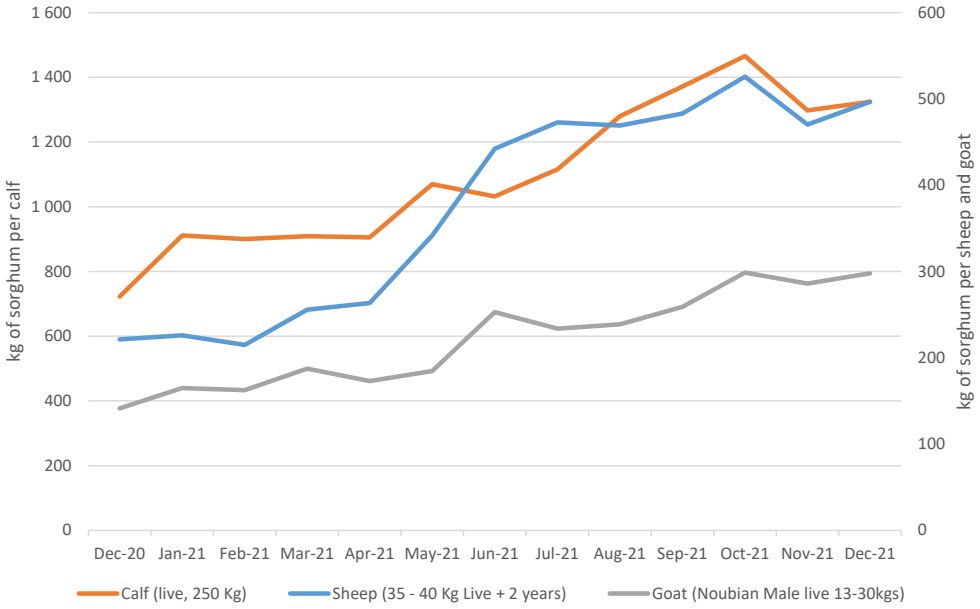
Source: Food and Agriculture Real Time Messaging and Reporting System, 2021.

Figure 9: The Sudan - Wholesale prices of wheat grain in selected markets



Source: Food and Agriculture Real Time Messaging and Reporting System, 2021.

Figure 10: The Sudan (North Kordofan State) – Terms of trade in El Obeid market



Source: Food and Agriculture Real Time Messaging and Reporting System, 2021.

In El Gedarif market, located in the main sesame producing area, wholesale prices of sesame increased from SDG 18 020/kantar (equivalent to 143 kg) in December 2020 to SDG 22 250/kantar in December 2021. The increase reflects a lower year-on-year production due to below-average yields, as a result of a late start of rains and prolonged dry spells. This led to a decline in sesame exports, which were more than 40 percent lower year on year during the first nine months of 2021.

Prices of livestock also followed an increasing trend during 2021 and were well above their values of a year earlier. In December 2021, prices of calves, goats and sheep in El Obeid market in North Kordofan State were threefold year on year. Terms of trade for pastoralists, calculated as kilogrammes of sorghum obtained by selling an animal, generally increased in 2021 (Figure 10), reflecting the steeper increase of livestock prices compared to sorghum prices. This is in line with tight domestic availabilities of livestock following an increase in exports during the first nine months of 2021.

Cereal supply/demand balance (January–December 2022)

The national cereal supply/demand balance for the 2022 marketing year (January/December) is summarized in Table 20, with a breakdown by sorghum, millet, maize, wheat and rice. The balance is based on the mission's production estimates (including the forecast for the winter wheat crop to be harvested in March 2022) and the latest information on consumption, feed use, trade and stocks availability. The following assumptions were used:

- Total cereal production is estimated at 5.01 million tonnes, including a forecast of 601 700 tonnes of wheat for harvesting in March 2022.
- Due to difficulty to obtain accurate information on stocks of cereals, in particular for the amount held by private traders and households, the balance assumed a zero stock variation between the beginning and the end of the marketing year.

- Total food use is estimated at 7 million tonnes, using the estimated population figure of 46.1 million in 2022. Per capita average consumption is set at 152 kg of cereals per year, which includes 75 kg of sorghum, 58 kg of wheat, 16 kg of millet, 2 kg of rice and 1 kg of maize.
- Feed use is forecast at 194 000 tonnes. Based on discussions with farmers and extension officers, it is estimated that about 5 percent of sorghum and 2 percent of millet are going to be used as feed for livestock and poultry.
- Seed requirements for 2022 planting are estimated at about 122 000 tonnes on the basis of the average planted areas during the latest three years and the recommended seed rate in the country. The following seed rates have been used: 7.5 kg/hectare for sorghu; 4 kg/hectare for millet; 20 kg/hectare for maize; 120 kg/hectare for wheat; and 75 kg/hectare for rice.
- Post-harvest losses and other uses are estimated at 254 000 tonnes, with rates ranging from 5 percent for sorghum and millet, to 4 percent for maize, 2 percent for rice and 1 percent for wheat.

Import requirements for the 2022 marketing year (January/December) are forecast at about 2.5 million tonnes, mainly wheat and a limited amount of sorghum. The estimated cereal deficit is expected to be mainly covered by commercial imports, and partly from humanitarian assistance and other forms of donations. However, if the country aims to increase its wheat stocks for an additional three months of food consumption, about 650 000 tonnes will have to be purchased on the international market. It is worth noting that the weakening national currency and the increasing international wheat prices above their already high levels as a result of the conflict in Ukraine may have a major detrimental impact on the country's ability to import. Therefore, a close monitoring of changes in the value of the national currency and on international prices is required to guarantee an adequate food availability in the country.

Table 20: The Sudan - National cereal supply/demand balance, January–December 2022 ('000 tonnes)

	Sorghum	Millet	Maize	Wheat	Rice	Total
Availability	**3 528**	**901**	**37**	**602**	**28**	**5 096**
Production	3 528	901	37	602	28	5 096
Food assistance	0	0	0	0	0	0
Total utilization	**3 881**	**901**	**49**	**2 652**	**95**	**7 578**
Food use	3 458	821	46	2 591	92	7 008
Feed use	176	18	0	0	0	194
Seed requirements	71	17	1	32	1	122
Post-harvest losses and other uses	176	45	2	29	2	254
Estimated import requirements	**353**	**0**	**12**	**2 050**	**67**	**2 482**

Source: CFSAM, 2021.

RECOMMENDATIONS

The following recommendations are made with the aim to strengthen domestic production, improve food security and enhance market functioning:

- Closely monitor the food security situation, as high inflation rates are expected to result in high costs of production of agricultural products and high food prices, especially in the areas where poor rains resulted in significant crop production shortfalls.
- Closely monitor the impact of the COVID-19 pandemic on the agricultural sector.
- Improve rehabilitation and maintenance of irrigation infrastructure in the national schemes and, maintain and increase capacities of the drainage systems in the irrigated sector.
- Encourage mechanization of agricultural operations through simplified credit lines for farmers.
- Expand water harvesting technology to take advantage of heavy rains in crop production and livestock rearing.
- Limit the expansion of the cropping areas at the expense of pastures and forests, replacing extensive farming with intensive agricultural practices.
- Enhance the capabilities of the early warning system of the MoA&F and improve its coordination with state authorities to prevent weather related setbacks to agriculture.
- Improve the productivity of the agricultural sector through investment and the adoption of advanced technologies.
- Replace the current system of seed distribution with a national programme to expand the production of improved seeds, increasing the availability of certified seeds, with a timely delivery to farmers.

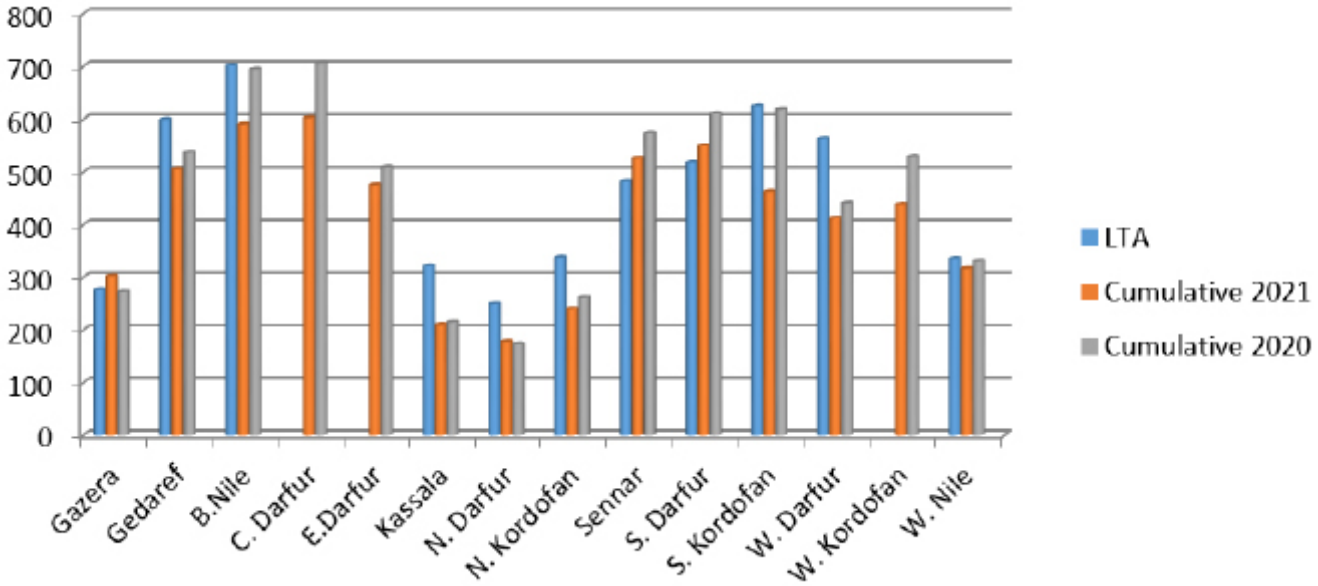
- Introduce pre- and post-harvest preventive measures to reduce losses of the main food crops.
- Establish a Strategic Reserve Authority.
- Adjust Salam prices during the season according to variations in production costs.
- Promote activities to add value to the country's exportable agricultural commodities (livestock, cotton, gum arabic, sesame and groundnuts) instead of exporting them as raw materials.
- Carry out a new agriculture and livestock census to provide updated data and information on the agricultural sector.
- Improve the capacity of the Central Veterinary Research Laboratory in Soba to bring the production of vaccines to the full national requirement and reinforce decentralized veterinary services to ensure that vaccination campaigns are conducted in the most effective and efficient way.

- Improve the effectiveness of the National Plant Protection Department in the identification and treatment of pests and conduct capacity building programmes to state ministries on these issues.
- Conduct follow-up activities after this assessment, including the organization of annual surveys for validating figures of harvested area, yields and production (crop cutting surveys).
- Enhance the resilience of the agricultural sector against adverse weather events, natural disasters and other shocks.

ANNEXES

ANNEX 1

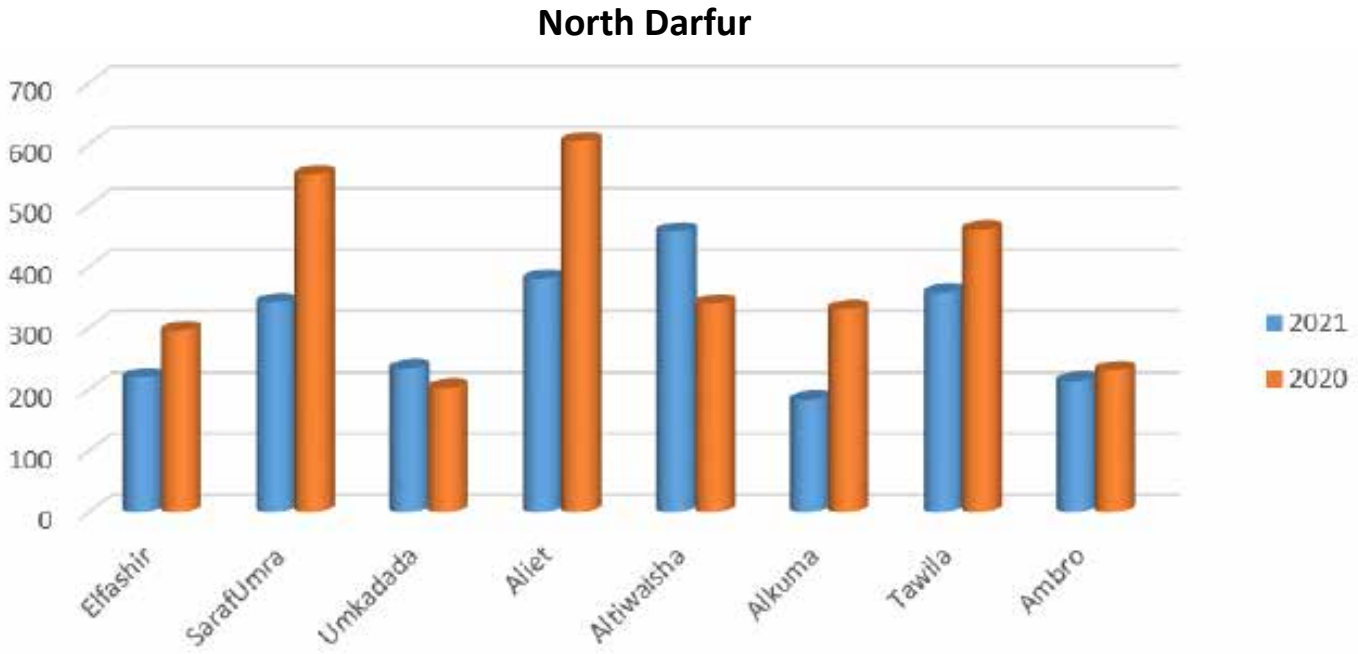
Figure A1: The Sudan - Cumulative seasonal rainfall comparison in selected states (ground weather station data)



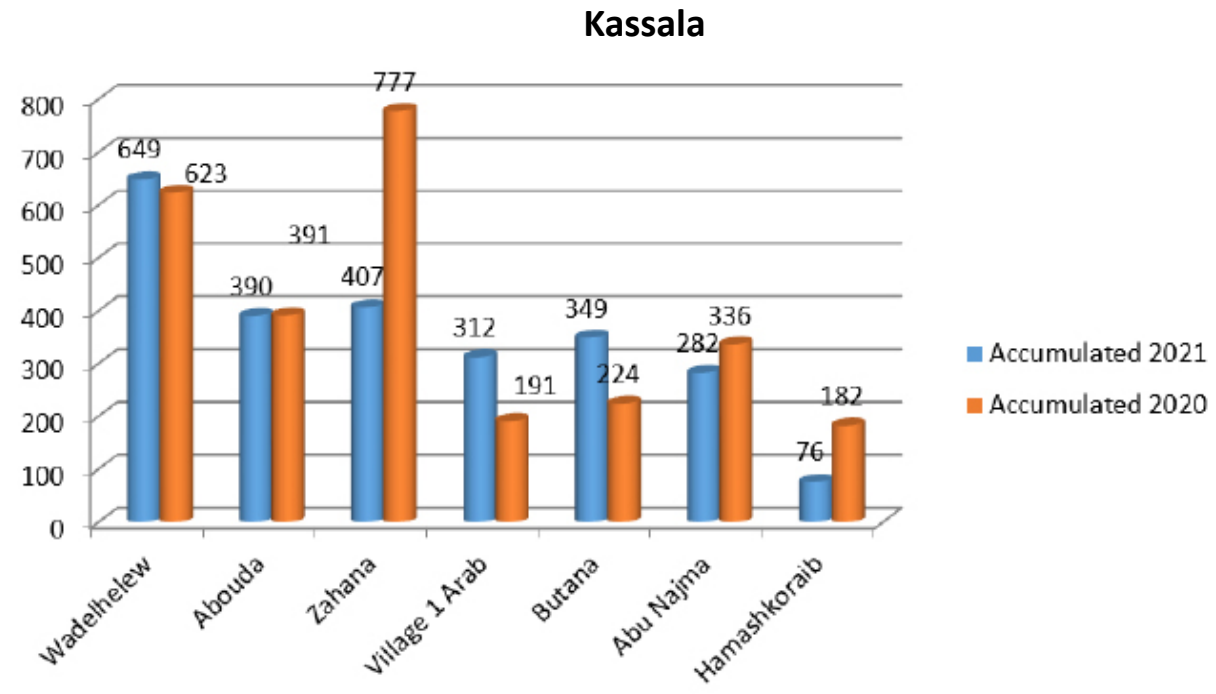
Source: The Sudan Meteorological Authority (SMA), 2021.

ANNEX 2

Figure A2a: The Sudan - Cumulative rainfall by state (main stations), 2021 compared with 2020

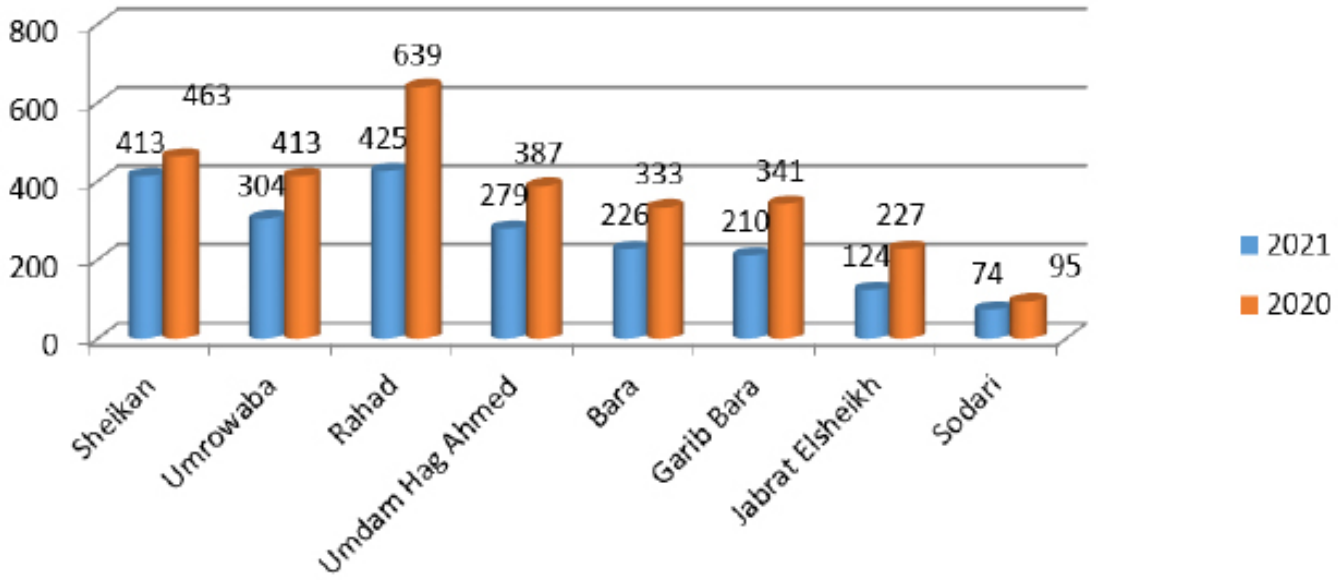


Source: The Sudan Meteorological Authority (SMA), 2021.



Source: The Sudan Meteorological Authority (SMA), 2021.

North Kordofan



Source: The Sudan Meteorological Authority (SMA), 2021.

ANNEX 3

CFSAM to the Sudan 2021
Data needed from official sources, NGOs and farmers

CHECKLIST for CFSAM (December 2021)

1. Location

Region/district	Informant
Village/locality	Position/post/occupation
Organization	Area-hectares Number of households Soils: Sandy, loamy, clay, rocky, mixed

2. Type of crop production

Rainfed ☐	Irrigated ☐	Supplementary irrigation ☐

3. Growing conditions

3.1. Rains (if rainfall data available copy over sheet- by dekad (10-day total) attach report

Start		**Dry spells**		**Rainfall amount compared to normal**	**Rainfall amount compared to previous year**
Early ☐ Normal ☐ Late ☐ Flood/water logging	Date	Month	Number of weeks	Below average ☐ Average ☐ Above average ☐	Better ☐ Same ☐ Lower ☐

3.2 Areas affected by flooding for the season 2020/21, according to crops

Crop	**Cultivated area (hectares)**	**Total area affected by the floods**	**Area that returned to the production cycle**	**Area that was completely out of the production cycle**	**Areas that have been replanted with the same crop**	**Areas that were replanted with other crops**

Causes of drowning (Percent of total affected area):

Cause	**Flood**	**Flash**	**Flood**	**Irrigation operations coincided with rainfall**	**Other (specify)**

Drowning timing (day/month):
.....
The impact of flooding on the horticultural sector
.....
.....

The impact of flooding on livestock
.....
.....

3.3 Irrigation

Type	**Compared to previous year**		**General observations regarding irrigation status (If lower or better why)**
Pump ☐ Gravity ☐ Other ☐ (specify)	Amount ☐ Regularity ☐ Timing ☐ Cost ☐	Lower ☐ Same ☐ Better ☐ Lower ☐ Same ☐ Better ☐ Lower ☐ Same ☐ Better ☐ Lower ☐ Same ☐ Better ☐	

4.A. Agricultural inputs availability

	Sufficient	**Insufficient**	**Percent of increase or decrease from last year**	**Remarks** (Explain reasons, main source and effect if insufficient)
Tractors available Agric. Machinery availability (combines +)				
Fuel availability Gasoline Fuel cost				
Spare parts availability				
Agricultural tools availability				
Manure availability: *Main source:* *Main Types:*				
Chemicals availability: *Main source:* *Main Types:*				
Herbicides availability: *Main source:* *Main Types:* Pesticides availability: *Main source:* *Main Types:*				
Seeds availability: *Main source:* *Main Types:* *Quality:* *Timeliness:*				
Empty sacks availability:				
Labour availability:				
Credit/grants availability: *Main source:*				

4.B. Agricultural input costs

	Current costs	**Cost 12 months earlier**	**Trend: increasing, stable or declining**	**Remarks** (reasons for price trend)
Tractors available Agric. Machinery: *Main Types:*				
Fuel: Gasoline Fuel cost				
Spare parts availability				
Agricultural tools availability				
Manure availability: *Main Types:*				
Chemicals: Fertilizers: *Main Types:*				
Herbicides: *Main Types:* Pesticides: *Main Types:*				
Seeds: *Main Types:*				
Empty sacks availability:				
Labour:				
Credit/grants: *Cost-interest:*				

5. What are the main crops grown

Agricultural activities by crop	**Sorghum**		**Millet**		**Sunflowers**		**Cotton**		**Sesame**		**Groundnuts**	
	2021	**2020**	**2021**	**2020**	**2021**	**2020**	**2021**	**2020**	**2021**	**2020**	**2021**	**2020**
% of own seeds												
% market seeds												
% improved seeds												
Digging/Ploughing dates												
Sowing date Sowing rates												
Cultivation (hand, animal/tractor)												
Replanting times Replanting dates reason												
Number of weeding												
Spraying: Pesticides Herbicides												

6. Area and crop status

Crop		Sorghum	Millet	Sunflowers	Cotton	Sesame	Groundnuts
Irrigated area planted	2021						
	2020						
Irrigated area harvested (feddans)	2021						
	2020						
Irrigated average yield (kg/feddan)	2021						
	2020						
Mechanized area planted	2021						
	2020						
Mechanized area harvested (feddans)	2021						
	2020						
Mechanized average yield (kg/feddan)	2021						
	2020						
Traditional area planted	2021						
	2020						
Traditional area harvested (feddans)	2021						
	2020						
Traditional average yield	2021						
	2020						
Crop status compared to last year **Mechanized** average yield (kg/feddan)	Better						
	Same						
	Worse						

7. Area and crop status

Crop	Targeted area (feddans)	Area prepared (feddans)	Area sown so far	Area expected to be sown untill end of the season	Area expected to be harvested	Expected yields (kg/feddan)

8. Crop pests and diseases

	None	Crop affected	Control		Level of damage		
			Yes how?	No	Mild	Average	Serious
Desert Locusts							
Quelea Quelea Migratory							
Armyworms							
Local birds							
Grasshoppers							
Tree Locusts							
Rats							
Powder mildew							
Stalk borers							
Sorghum bugs							
Sorghum midge							
Smut							
Sesame gall midge							
Other							

9. Household livestock (Condition: 1 = very poor; 5 = very good. Information from owners or key informants)
Mostly transhumant ☐ / Mostly sedentary ☐

	PET Body Condition (1-5) now	PET Body Condition previous year	Current diseases	Diseases previous year
Cattle				
Sheep				
Goats				
Poultry				
Camels				
Remarks				

10. Pasture and water for livestock (Condition: 1 = very poor; 5 = very good. Information from owners or key informants)

	Condition (1-5)	Condition previous year	Remarks-Movement (distances, frequency, timing vs normal)
Pasture			
Water			

10.1 Crop Prices (Information from farmers, traders, district/community-level key informants)
Market location:

Crop	**Price (SDG/sack)**		
	Now	Last year	Trend
Sorghum - *Feterita*			
Sorghum - white			
Millet			
Wheat			
Groundnuts			
Sesame (Kantar)			

10.2 Livestock Prices (Information from market observations, traders, district/community-level key informants in areas where livestock plays a major part in the local economy)
Market location:

Type	**Price (SDG/head) – Average weight**				
	Now	3 months ago	6 months ago	Last year	Trend
Calf					
Bulls					
Milking Cows					
Sheep					
Goats					
Camels					

11. Public and commercial stocks of cereals (Information from storekeepers or district officers of the relevant national agency, traders and grain mills)
Area/location:

	Current	**One year ago**	**Storage type**	**Percent of storage losses expected**
Government stocks				
Commercial stocks				
Current rate of off-take per month:			Current rate of replenishment:	

12. Impact of COVID-19 pandemic

12.1 On crop production:

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……
……

12.2 On livestock production:

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……
……

12.3 On horticultural production:

……
……
……

General remarks:

……
……

CFSAM for 18 states 2021/22

State level Report Format

State NAME	
DATE OF ASSESSMENT STARTED AND COMPLETED	

TEAM MEMBERS

NAME	AGENCY	POSITION

LIST OF LOCALITIES VISITED

NAME	SHARE OF *SUMMER CROPS* (percent)

1. CROP REPORT:

In assessing summer crops, consideration should be given to both food and cash crops, including roots and tubers, coffee, chat and vegetables, where appropriate.

1.1 WEATHER CONDITIONS:

Give details of weather conditions including the onset, quantity, distribution and duration. Explain if there were any adverse weather conditions such as frosts, hailstorms, floods, dry spells, etc**.**

.....
.....
.....
.....
.....
.....

1.2. PLANTED AREA AND TIMELINESS OF PLANTING

How does the area planted for summer crops compare with normal (refer the checklist)? Was planting generally undertaken on time? If there were major declines in planted area or significant delays in planting, indicate the localities which were most affected. Indicate the extent as well as the main reasons of the decline and the delay. Explain at what **phonological stages** are the crops.

-Please use the attached tables for comparison.....
--Justification for the decrease or increase.....
---Table shows the area planted, area harvested, production and the average yield for all crops.....
Crop stages:

.....
.....
.....
.....
.....
.....

2. LIVESTOCK CONDITIONS

Comment on the current availability and access of pasture and drinking water for livestock. How does it compare to the normal for this time of the year? Mention the areas most affected by any shortages of pasture and drinking water and its extent. Give an overall assessment of the current livestock quality, numbers and health situation. Highlight any abnormality (diseases outbreaks, out migration, influx of livestock from neighbouring areas, animal mortality, change in quality and herd size, etc.) and identify the affected localities.

..Number.....
.....Vaccination.....
.....Diseases.....
..... Movement.....
..... Pasture.....
..... Water points.....
.....Challenges.....

3. MARKET CONDITION

How do current prices of staple foods compare to the usual prices at this time of the year? Are supplies unusually high or low? In which localities? Are there any factors that might restrict people's physical access to food, livestock or labour markets? Out of the normal grain, livestock, labour or other markets that people go to are any of them inaccessible by some members of the community? Explain. Provide an assessment of market conditions focusing on any major irregularities in price, supply and demand of *food, livestock, waged labour and petty commodity markets.* Identify affected localities.

..... Access to market and food:.....
.....Prices (crops and livestock)—Now, three month, last year.....
..... supply and demand.....
.....
.....
.....
.....

4. Impact of COVID-19 pandemic on:

4.1 Crop production, main during the preparation for the summer and winter season, and at the harvest time of summer crops:
..... When:.....
..... Where:.....
.....
..... Regulations & Restrictions.....
..... Direct and indirect impact.....
.....

4.2 Livestock production, namely movement, health, access to pasture and water points, and services provided:
.....Same.....
.....
.....
.....
.....
.....

4.3 Horticulture:
..... Same.....
.....
.....
.....
.....
.....

5. ADDITIONAL NOTES

In the space provided below make any additional comments, which you feel are relevant but have not been included in the report above, e.g., pests and diseases, labour availability and costs.
..... Credit and finance:--Amount, Area financed, Number of beneficiaries.....
..... Pests and diseases.....
..... Others (COVID-19 pandemic - Tribal conflict):.....
.....

6. Comments and Recommendation on the Appropriate Time of Assessment

.....Timing:.....

..... Observations and comments.....

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This report was prepared by Azhari Farah, Alessandro Costantino and Jung-eun Sohn (FAO) under the responsibility of the FAO Secretariat with information from official and other sources. Since conditions may change rapidly, please contact the undersigned for further information, if required:

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