Food and Agriculture Organization
of the United Nations

ISSN 2707-2479

SPECIAL REPORT

2022 FAO CROP AND FOOD SUPPLY ASSESSMENT MISSION (CFSAM) TO THE REPUBLIC OF THE SUDAN

20 March 2023

SPECIAL REPORT

2022 FAO CROP AND FOOD SUPPLY ASSESSMENT MISSION (CFSAM) TO THE REPUBLIC OF THE SUDAN

20 March 2023

Food and Agriculture Organization of the United Nations
Rome, 2023

Required citation:
FAO. 2023. *Special report – 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan*. CFSAMs Special Reports, 20 March 2023. Rome. https://doi.org/10.4060/cc5009en

The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of the Food and Agriculture Organization of the United Nations (FAO) concerning the legal or development status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. Dashed lines on maps represent approximate border lines for which there may not yet be full agreement. The mention of specific companies or products of manufacturers, whether or not these have been patented, does not imply that these have been endorsed or recommended by FAO in preference to others of a similar nature that are not mentioned.

ISSN 2707-2479 [Print]
ISSN 2707-2487 [Online]

ISBN 978-92-5-137747-5
© FAO, 2023

Some rights reserved. This work is made available under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO; https://creativecommons.org/licenses/by-nc-sa/3.0/igo/legalcode).

Under the terms of this licence, this work may be copied, redistributed and adapted for non-commercial purposes, provided that the work is appropriately cited. In any use of this work, there should be no suggestion that FAO endorses any specific organization, products or services. The use of the FAO logo is not permitted. If the work is adapted, then it must be licensed under the same or equivalent Creative Commons license. If a translation of this work is created, it must include the following disclaimer along with the required citation: "This translation was not created by the Food and Agriculture Organization of the United Nations (FAO). FAO is not responsible for the content or accuracy of this translation. The original [Language] edition shall be the authoritative edition.

Disputes arising under the licence that cannot be settled amicably will be resolved by mediation and arbitration as described in Article 8 of the licence except as otherwise provided herein. The applicable mediation rules will be the mediation rules of the World Intellectual Property Organization http://www.wipo.int/amc/en/mediation/rules and any arbitration will be in accordance with the Arbitration Rules of the United Nations Commission on International Trade Law (UNCITRAL).

Third-party materials. Users wishing to reuse material from this work that is attributed to a third party, such as tables, figures or images, are responsible for determining whether permission is needed for that reuse and for obtaining permission from the copyright holder. The risk of claims resulting from infringement of any third-party-owned component in the work rests solely with the user.

Sales, rights and licensing. FAO information products are available on the FAO website (www.fao.org/publications) and can be purchased through publications-sales@fao.org. Requests for commercial use should be submitted via: www.fao.org/contact-us/licencerequest. Queries regarding rights and licensing should be submitted to: copyright@fao.org.

Cover photograph: © FAO/L. Innocente

CONTENTS

ABBREVIATIONS AND ACRONYMS vii

HIGHLIGHTS 1

OVERVIEW 3

SOCIOECONOMIC CONTEXT 5

General 5
Population 8
Agriculture 8
Irrigated agriculture 9
Semi-mechanized rainfed agriculture 9
Traditional rainfed agriculture 9
Livestock 10

MAIN FACTORS AFFECTING CEREAL PRODUCTION IN 2022/23 11

Rainfall 11
Irrigation 13
Agricultural finance and credit 14
Agricultural inputs 15
Seeds 15
Agricultural machinery 15
Fertilizers and herbicides 15
Labour 17
Fuel 17
Crop pests and diseases 18

AGRICULTURAL PRODUCTION IN 2022/23 19

Area planted and harvested in 2022/23 19
Crop yields 22
Cereal production 22
Other crops 26
Sesame 26
Groundnuts 27
Sunflowers 28
Sugar 29
Cotton 30
Livestock 31

CEREAL SUPPLY/DEMAND SITUATION 33

Crop and livestock markets 33
Cereal supply/demand balance (January–December 2023) 36

RECOMMENDATIONS 39
ANNEXES 41
Annex 1. Cumulative seasonal rainfall comparison in selected states 42
Annex 2. Cumulative rainfall by state 43
Annex 3. FAO CFSAM to the Republic of the Sudan, 2022 – Data needed from official sources, NGOs and farmers, and state level report format 44
NOTES 53

Figures, tables and maps

Figures

1. The Sudan – Inflation rate and official exchange rate 7
2. The Sudan – May–October cumulative rainfall in selected states 11
3. The Sudan – Wholesale prices of sorghum in selected markets 33
4. The Sudan – Wholesale prices of millet in selected markets 34
5. The Sudan – Wholesale prices of wheat grain in selected markets 35
6. The Sudan – Terms of trade in El Obeid market 35

Tables

1. The Sudan – Imports of selected food products, 2021 and 2022 6
2. The Sudan – Exports of selected crop products, 2021 and 2022 6
3. The Sudan – Area financed for the summer cropping season, amount disbursed by sector and distribution of loans, 2022 14
4 The Sudan – Finance to agriculture by the ABS and number of beneficiaries for summer crops 15
5. The Sudan – Seeds distributed by MoAF to smallholder farmers in traditional rainfed sector by state 16
6. The Sudan – Seeds distributed by FAO to smallholder farmers in traditional rainfed sector by state 17
7. The Sudan (Gedaref State) – Costs of agricultural inputs during the 2022 and 2021 agricultural seasons 18
8. The Sudan – Cereal area planted by state, scheme and sector 20
9. The Sudan – Cereal area harvested by state, scheme and sector 21
10. The Sudan – Cereal yields by state, scheme and sector 23
11. The Sudan – Cereal production by state, scheme and sector 24
12. The Sudan – Cereal production by sector 25
13. The Sudan – Sorghum production by sector 25
14. The Sudan – Millet production by sector 25
15. The Sudan – Wheat production by sector 25
16. The Sudan – Sesame production 2022/23 compared to 2021/22 and five-year average 26
17. The Sudan – Groundnut production 2022/23 compared to 2021/22 and five-year average 27
18. The Sudan – Sunflower production 2022/23 compared to 2021/22 and five-year average 28
19. The Sudan – Sugar production 2017/18 to 2022/23 29
20. The Sudan – Cotton production 2022/23 compared to 2021/22 and five-year average 30
21. The Sudan – National cereal supply/demand balance, January–December 2023 37

Maps

1. The Sudan – (Gedaref State) – Rainfall anomalies, 1st, 2nd, 3rd dekad of September 2022 12
2. The Sudan – Vegetation Health Index (VHI) 13

Annexes

Figures

A1a. The Sudan – Cumulative seasonal rainfall comparison in selected states, 2022 and 2021 42
A1b. The Sudan – Cumulative seasonal rainfall comparison in selected states, 2022 and Long-term Average 42
A2. The Sudan – Cumulative rainfall by state 43

© FAO/C. Esteves Reyes

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
DAP	di-ammonium phosphate
FAO	Food and Agriculture Organization of the United Nations
FEWS NET	Famine Early Warning System Network
FSTS	Food Security Technical Secretariat
GDP	gross domestic product
GIEWS	Global Information and Early Warning System on Food and Agriculture
HIPC-DI	Heavily Indebted Poor Countries Debt Initiative
IDP	internally displaced people
IMF	International Monetary Fund
IPC	Integrated Food Security Phase Classification
LTA	Long-term average
mm	millimetres
MoAF	Ministry of Agriculture and Forestry
MOARF	Ministry of Animal Resources and Fishery
MoFEP	Ministry of Finance and Economic Planning
NGOs	Non-governmental organizations
PET	Pictorial Evaluation Tool
SDG	Sudanese pound
SRCo	Strategic Reserve Corporation
SMA	Sudan Meteorological Authority
UN	United Nations
UNHCR	United Nations High Commissioner for Refugees
USAID	United States Agency for International Development
USD	United States dollar
VHI	Vegetation Health Index
WFP	World Food Programme

© FAO/C. Estevez Reyes

HIGHLIGHTS

- The 2022 national cereal production (including wheat crops to be harvested in March 2023) is estimated at about 7.4 million tonnes, 45 percent above the output obtained in the previous year and 13 percent above the average of the previous five years.
- Sorghum production is estimated at about 5.2 million tonnes, about 50 percent higher than the level of the previous year and about 20 percent above the average of the past five years. Millet output is estimated at 1.7 million tonnes, 86 percent higher than the output obtained in 2021 and 12 percent above the average of the previous five years.
- The significant increase in total cereal production is due to favourable weather conditions which boosted yields, sufficient availability of inputs (despite their high prices) and limited damages by pests and diseases.
- Production of wheat, for harvesting in March 2023, is forecast at about 476 000 tonnes, about 30 percent below the previous year's average output, reflecting reduced plantings in favour of legumes and spices.
- Input availability improved compared to the previous year, although input costs have increased due to inflation, leading to soaring costs of production.
- Animal health was generally good, with no major disease outbreaks. The number of animals vaccinated is reported to have increased compared to the previous year. Animal body condition was good to very good, as confirmed by the Pictorial Evaluation Tool (PET) assessment carried out in selected states.
- Pasture conditions were good to very good and generally better than in the previous year, as the good performance of the rainy season supported the complete regeneration of rangeland resources.

- Production of sesame, sunflowers and cotton declined compared to the previous year and is set at a below-average level, due to reduced planted area and yields, especially for cotton. By contrast, production of groundnuts has slightly increased due to good yields, despite the reduction in the area cultivated.
- The depreciation of the Sudanese pound continued in 2022 following the adoption of a free float exchange rate regime, with the aim of reducing the spread between the official and parallel exchange rates.
- Despite a substantial decline since August 2021, reflecting a slowdown in money supply growth, inflation was estimated at nearly 90 percent at end of 2022, as the government continues to monetize the fiscal deficit.
- Prices of locally produced sorghum and millet declined significantly in most markets between October and December 2022 with the commercialization of newly harvested 2022 crops. However, prices remained between two and three times their year-earlier levels, mainly due to the continuous depreciation of the national currency and the high costs of production due to soaring prices of agricultural inputs.

©FAO/Esteve Reyes

OVERVIEW

© FAO/L. Innocente

Between 11 and 31 December 2022, following a request by the Ministry of Agriculture and Forestry (MoAF), the Food Security Technical Secretariat (FSTS), assisted by the Food and Agriculture Organization of the United Nations (FAO), the Ministry of Animal Resources and Fishery (MoARF), the Strategic Reserve Corporation (SRCo), the World Food Programme (WFP), the Famine Early Warning System Network (FEWS NET) and the United States Agency for International Development (USAID), carried out its annual Crop and Food Supply Assessment Mission (CFSAM) to determine the 2022 crop production and the food supply situation throughout the 18 states of the country.

The mission consisted of five core teams comprising members from the MoAF, MoARF, FSTS, SRCo, FAO, WFP, FEWS NET and USAID, which visited the states of the country as follows:
Team 1: Gedaref, Kassala and Red Sea states;
Team 2: 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 and
Team 5: Greater Darfur Region (North, South, West, East and Central Darfur states).

Field visits were designed to collect data and information from 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 2022 production of cereals (sorghum and millet), and other field crops, to forecast the wheat production to be harvested by March 2023 and to gather information about livestock and pasture conditions. 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 subsector, irrigated, rainfed mechanized and rainfed traditional, in order to provide the overall area, yield 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 five core teams received full cooperation by state authorities. Discussions on factors affecting crop and livestock conditions were held with representatives from local government offices, United Nations (UN) agencies and Non governmental organizations (NGOs). Field visits were supported by local technical 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 crosschecked the official estimates with information gathered through extensive field inspections, rapid case studies with sample farmers, interviews with herders and traders as well as evidence on livestock and pasture conditions assessed using the Pictorial Evaluation Tool (PET) methodology.[i]

At national and subnational levels, the teams collected the latest available information and data

on rainfall amounts and distribution, vegetation coverage, crop protection campaigns, livestock body condition and health, 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 SRCo provided the main socioeconomic indicators. Rainfall data was obtained from the Sudan Meteorological Authority (SMA) and from other sources in the field. Satellite data and imagery were used to review the performance of the rainy season and the evolution of vegetation conditions during the year.

The overall performance of the 2022/23 summer season was above last year's level and the previous five-year average, reflecting an increase in cereal area planted and harvested as well as high yields.

Precipitations in 2022 were characterized by above-average amounts and by an overall even temporal distribution, with very localized flooding in August and short dry spells in September and October. The overall favourable middle and late season rains benefited replanted crops in the flood-affected areas.

In 2022, most agricultural inputs, including fertilizers, herbicides, agricultural machinery and labour, were available, although at high prices. Some of these were not available in a timely manner, thus delaying planting and other agricultural operations in some areas. Most farmers utilized seeds retained from the harvest of the previous year due to high market prices.

No major pest and disease outbreaks were reported. Control operations of endemic pests and diseases were constrained by funding shortfalls at the Federal Plant Protection Directorate and state departments.

The national cereal production in 2022/23, (sorghum, millet and wheat, is estimated at about 7.4 million tonnes, 45 percent above the output obtained in the previous year and 13 percent above the average of the previous five years. The sorghum output is estimated at about 5.2 million tonnes, almost 50 percent higher than the level of the previous year and about 20 percent more than the past five-year average. Millet production is estimated at 1.7 million tonnes, 86 percent higher than the output obtained in 2021 and 12 percent above the average of the previous five years. Production of wheat, to be harvested in March 2023, is forecast at about 476 000 tonnes, about 30 percent below the previous year's average output, as farmers preferred to plant legumes and spices, being locally produced wheat not competitive with imported wheat due to its high production costs.

Livestock health was generally good, with no major disease outbreaks and an overall increase in vaccination rates was reported across the country compared to the previous year. Pasture condition was assessed as good, as above-average seasonal rains allowed a complete regeneration of rangeland resources and recharged water points. As a result, water availability was reported as adequate and sufficient to last until the start of the next rainy season in all states. Due to the good availability of pasture and water, and the absence of significant disease outbreaks, the body condition of animals was reported from good to very good across the country, as confirmed by the PET assessment carried out in selected states.

Prices of locally produced sorghum and millet declined significantly in most markets between October and December 2022 with the commercialization of newly harvested 2022 crops. However, prices remained between two and three times their year-earlier levels, mainly due to the continuous depreciation of the national currency and high costs of production due to soaring prices of agricultural inputs.

Using the population projection for mid-2023 by the CBS to estimate the food use in 2023 and taking into account the closing cereal stocks expected by the ABS for the SRCo (1.9 million tonnes), the cereal import requirements for the 2023 marketing year (January/December) are forecast at 3.6 million tonnes, almost entirely wheat. By contrast, for sorghum and millet, surpluses of 484 000 and 679 000 tonnes, respectively, are forecast. The estimated cereal deficit is expected to be mainly covered by commercial imports.

SOCIOECONOMIC CONTEXT

General

The country has been facing a deepening political and economic crisis over the last decade. Following the secession of South Sudan in 2011, the country lost a major source of fiscal revenue and export earnings, leading to a deterioration of macroeconomic conditions. Since then, increasing trade and current account deficits, severe shortages of foreign exchange reserves, rampant inflation and unsustainable debt levels have resulted in severe fiscal constraints. The scarcity of resources, compounded by weak revenue collection and heavy fuel subsidies, undermined public service delivery and access to government social protection, resulting in widespread socioeconomic vulnerability.

The erosion of household income and high unemployment levels triggered widespread protests which led to the ousting of the long-standing president and installed an interim military civilian government. Amid persistent political instability, the military took full control of the government in a "coup d'état" in October 2021, which strained the country's international relations with major commercial partners and donors, and has affected economic activity, deterring domestic and foreign investment. After the military coup, several international donors interrupted their funding to the country, limiting key social protection programmes as well as infrastructure and institutional projects, including the long overdue maintenance of the main irrigation systems and the implementation of a new agricultural census. In 2021, the country was eligible for the Heavily Indebted Poor Countries Debt Initiative (HIPC-DI) of the International Monetary Fund (IMF),[ii] allowing to clear about USD 50 billion in external debt. The debt clearance, however, has been placed on hold due to the stalled political transition process.

© FAO/Esteve Reyes

According to the IMF,[iii] between 2018 and 2020, the economy experienced a contraction of about 6 percent and recorded a modest growth of 0.5 in 2021. In 2022, estimates indicated a slight decline of 0.3 percent of the gross domestic product (GDP). The country's economy, which is heavily reliant on agriculture and exports of hydrocarbons and gold, continued to face structural economic challenges, including a low value-added and undiversified domestic production, and was severely undermined by the stalemate of the process of political transition and by the international shocks to markets associated to the COVID-19 pandemic and the war in Ukraine.

During the first three quarters of 2022, the trade deficit widened to USD 3.5 billion, about 45 percent higher compared to the same period in 2021. The larger deficit is due to an increase in the import bill of food, particularly wheat grain, sugar and rice (Table 1), and raw materials, mainly petroleum products. The import bill in the first nine months of 2022 amounted to USD 7.2 billion, about 25 percent higher year-on-year.

Between January and September 2022, the country imported about 1.7 million tonnes of wheat grain,

Table 1: The Sudan - Imports of selected food products, 2021 and 2022

Crop/product	2021[1/]		2021[2/]		2022[2/]	
	Weight (tonnes)	Value ('000 USD)	Weight (tonnes)	Value ('000 USD)	Weight (tonnes)	Value ('000 USD)
Wheat	1 470 546	445 523	1 097 465	316 340	1 680 681	639 628
Wheat flour	293 981	96 433	235 268	69 075	127 226	58 010
Sugar	1445 684	486 213	1132 407	344 806	997 229	460 193
Rice	147 617	76 315	113 558	58 200	122 191	79 292
Animal and vegetable oils	198 093	180 606	137 129	131 107	107 923	127 903

Source: Authors' own elaboration based on the data provided by the Central Bank of Sudan (CBoS) to the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan, 2022.
[1/] 1 January–31 December.
[2/] 1 January–30 September.

Table 2: The Sudan - Exports of selected crop products, 2021 and 2022

Crop/product	2021[1/]		2021[2/]		2022[2/]	
	Weight (tonnes)	Value ('000 USD)	Weight (tonnes)	Value ('000 USD)	Weight (tonnes)	Value ('000 USD)
Cotton (in bales)	118 380	164 927	87 558	110 484	159 235	351 894
Gum arabic	88 058	110 569	73 578	92 259	98 044	129 186
Sesame	449 199	508 569	298 934	338 922	358 587	406 078
Groundnuts	440 237	423 988	405 715	391 016	407 461	341 763
Sorghum	93 367	35 230	75 322	29 575	42 935	12 200
Hibiscus flowers	8 487	9 074	6 692	7 184	4 675	4 691
Watermelon seeds	66 514	42 784	58 277	37 482	141 334	88 225
Chickpeas	48 911	21 326	48 261	21 038	22 680	9 301

Source: Authors' own elaboration based on the data provided by the Central Bank of Sudan (CBoS) to the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan, 2022.
[1/] 1 January–31 December.
[2/] 1 January–30 September.

well above the 1.1 million tonnes imported during the same period in 2021, while wheat flour imports declined from 235 000 to 127 000 tonnes. The increase in imported volumes of wheat grain reflects the lower prices of imported wheat compared to those of locally produced grain, which led to an increase of domestic activities of flour milling. Imports of rice, vegetables and fruits in 2022 were also higher than in 2021. By contrast, imported volumes of sugar, tea, meat, lentils, animal and vegetable oils were between 10 and 60 percent lower on a yearly basis.

In order to boost domestic fuel supplies, imports of gasoline and benzene in the first nine months of 2022 increased to about 775 000 and 285 000 tonnes compared to 40 000 and 110 000 tonnes, respectively in 2021. The cost of imports for petroleum products had a nearly nine-fold increase during the above-mentioned period, due to a sharp increase of oil prices on the international market.

The total volume of exports and earnings also increased, although to a lesser extent than imports, mostly driven by larger shipments of cotton, gum arabic, sesame, watermelon and live goats. The overall export earnings in the first nine months of the year were USD 3.7 billion, about 13 percent higher year-on-year.

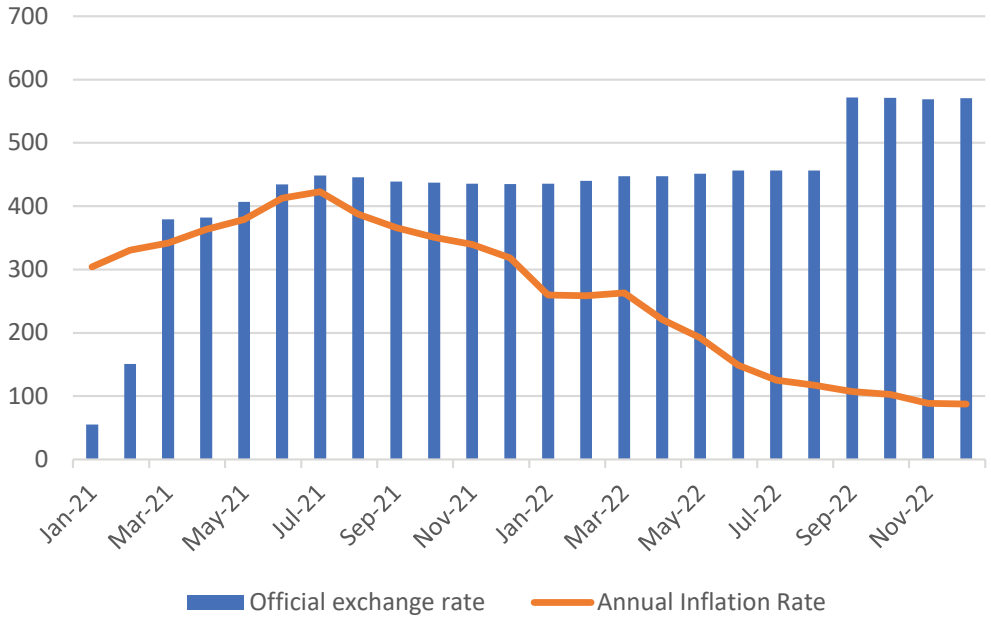
The exported volumes of major crops between January and September 2022 were about 20 percent higher than the same period of 2021. Total revenues from exports of groundnuts, sesame, gum arabic, watermelon and cotton, which generate about 90 percent of the crop export earnings, were estimated at USD 1.32 billion between January and September 2022, about 36 percent above their levels in the same period in 2021 The uptick in exports is mainly due to the increase in domestic production of most of these crops in 2022 coupled with a steady demand in international markets. By contrast, exports of sorghum were only 43 000 tonnes between January and September 2022, nearly 45 percent lower year-on-year, mostly due to the reduced output harvested in 2021 (Table 2).

In March 2022, the CBS[iv] implemented a free float exchange rate and phased out the managed float regime introduced in early 2021, with the aim of stabilizing the national currency and reducing the spread between the official and parallel exchange rates. As a result, the Sudanese pound depreciated further in 2022, reached a peak of about SDG 570/USD 1 in December 2022, significantly higher than SDG 434/USD 1 one year earlier (Figure 1). Dwindling foreign exchange reserves and increasing trade deficits maintained downward pressure on the value of the national currency, leading to an increase of import costs and underpinning inflation.

The annual inflation rate rose steadily in 2020 and during the first half of 2021, reaching a record high of 423 percent in July 2021, underpinned by currency depreciation, the withdrawal of fuel subsidies and the monetization of the fiscal deficit leading to an increase in money supply. Since August 2021, the inflation rate started to decline, reflecting a slowdown in money supply growth and, in December 2022, it was estimated at about 90 percent. However, despite the recent declines, the inflation rare in late 2022 was still at very high levels, supported by high costs of imports, increased fuel and transportation costs, and market disruptions caused by widespread floods and conflicts, severely eroding the disposable income of vulnerable households.

Protracted insecurity and heightened intercommunal violence have caused large internal population displacement. During the first three quarters of 2022, security incidents remained at alarmingly high levels, with about half of them occurring in the Greater Darfur Region. According to United Nations

Figure 1: The Sudan - Inflation rate (percent) and official exchange rate (SDG/USD)



Source: Authors' own elaboration based on the data provided by the Central Bureau of Statistics (CBS) for inflation rate and Central Bank of Sudan (CBoS) for exchange rate to the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan, 2022.

High Commissioner for Refugees (UNHCR),[v] about 3.7 million people were estimated to be internally displaced as of late 2022, with almost 90 percent of the internally displaced people (IDP) located in Greater Darfur Region.

The share of population in need of humanitarian assistance in the country has been steadily increasing over the past decade. According to the latest Integrated Food Security Phase Classification (IPC),[vi] about 7.7 million people were estimated to be acutely severely food insecure (IPC Phase 3 [Crisis] and above) between October 2022 and February 2023. This figure includes about 6.2 million people in IPC Phase 3 (Crisis) and 1.6 million in IPC Phase 4 (Emergency) levels of acute food insecurity and it is about 30 percent higher on a yearly basis.

Population

The last official population and housing census was conducted in 2008. Since then, the CBS estimates the country's population size using specific growth rates at state level. The total population in mid-2023 is officially projected at 47.5 million. The most populated states are Khartoum (19 percent of the total population) and Al Jazirah (12 percent), while the Greater Darfur area, including the states of North, West, Central, South and Western Darfur, accounts for 22 percent of the national population. In addition, according to the UNHCR,[vii] as of November 2022, about 1.12 million people sought shelter as refugees and asylum seekers in the country, mainly from South Sudan, Eritrea, the Syrian Arab Republic and Ethiopia.

Agriculture

The economy of the country is highly dependent on the agriculture sector, as nearly 65 percent of its population is engaged in agriculture, which is the main supplier of raw material to industries. The agriculture sector, including forestry, livestock and fishery, accounted for 16 percent of the GDP in 2021 (World Bank), a substantial decline from the 20 percent recorded for 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 country is suitable for animal husbandry, with an estimated total livestock population in 2022, slightly above 111 million heads of cattle, sheep, goats, camels and others, mainly relying on natural grazing areas for feed and from hafirs,[1] rivers, seasonal streams and bore wells for water.

Crop production is practised 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 accounts on average for about 95 percent of the planted area, records wide annual fluctuations as a result of erratic rainfall amounts and distribution, which can result in late sowing, prolonged dry spells, flooding from intense downpours and/or river overflows, the necessity to resow and, not uncommonly, complete crop failure. The situation

[1] Artificial water catchments.

in the irrigated sector, which on average accounts for the remaining 5 percent of the planted area, however, is much more predictable. Nevertheless, considered globally, yields are generally low in all sectors for several reasons in addition to rainfall. These include, *inter alia*, inadequate maintenance of irrigation canals, inefficient irrigation pumps, shortages of efficient, well-maintained farm machinery, shortages of credit and working capital, the use of low yielding crop varieties and low plant density with scarce availability of improved seeds, fertilizers and chemicals, 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 Al 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 does not allow to make the most efficient use of the constant water supply 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 in the Gash and Tokar deltas. The main crops grown in 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 up to 40 percent of the water requirements of crops in the Suki and in Rahad irrigation schemes. Rain is important to reduce production costs of privately-owned irrigated smallholdings along the banks of the Nile River and its tributaries that rely on diesel-powered pumps.

Semi-mechanized rainfed agriculture

In semi-mechanized rainfed agriculture, mechanization is limited to land preparation, sowing and, only partially, to harvesting (sometimes also by using combined harvesters), while other agricultural operations are carried out manually. Semi-mechanized rainfed agriculture is practised 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 for 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 usually erratic nature of rainfall and, therefore, the possibility that yields could be very low, the system may be considered opportunistic, and operations are carried out as economically as possible. Standard crop varieties are sown using disc seeders with up to 30 discs with no application of fertilizer. If rains are favourable, yields of up to 1 tonne/hectare can be obtained, otherwise yields are much lower. In this case, crops are usually not harvested and sold off as standing crops 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 remain prevalently manual. The traditional rainfed sector, although present in almost all states, prevails in western parts of the country, in the Greater Darfur Region and in most of the Greater Kordofan Region, where the main cereal crops grown are millet and sorghum. Use of inputs is 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 2022, the livestock population was estimated at about 111.2 million heads, comprising about 41.2 million sheep, 32.6 million goats, 32.4 million cattle and 4.9 million camels. Pastoralists efficiently use natural resources, moving herds around the country in response to weather conditions and availability of forage and water. 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.

MAIN FACTORS AFFECTING CEREAL PRODUCTION IN 2022/23

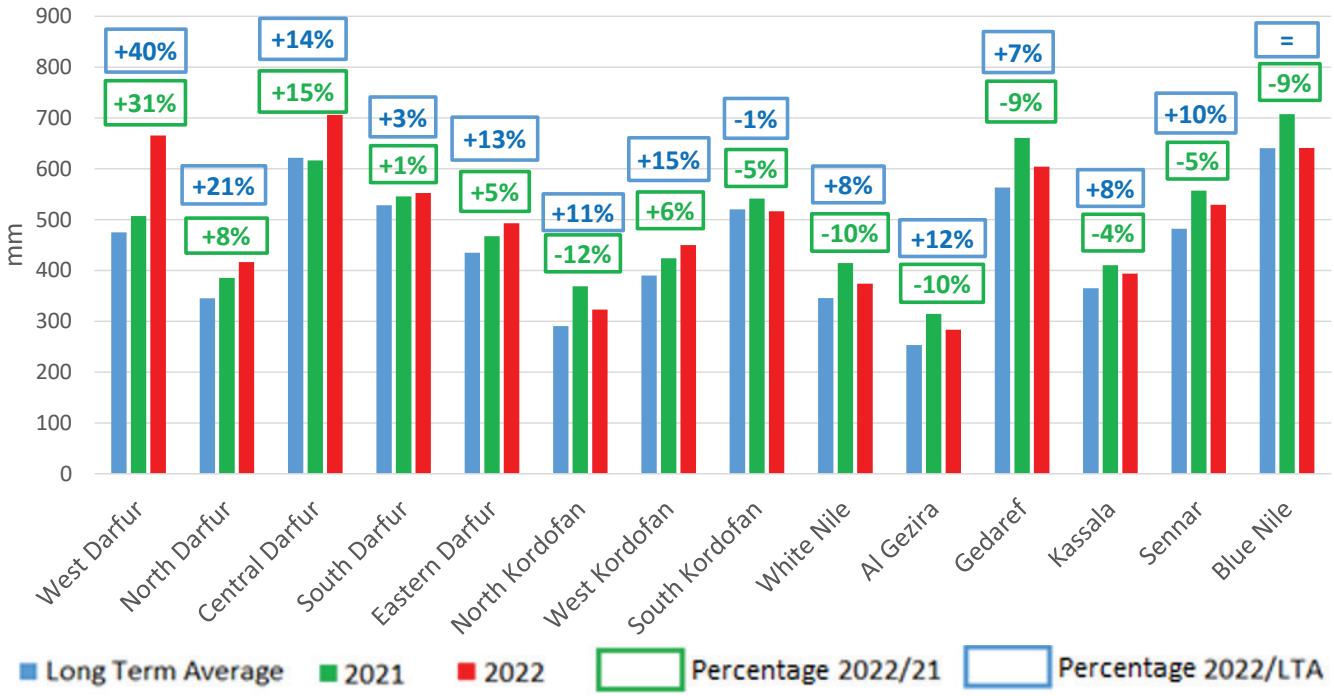
Rainfall

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[viii], the rainy season in 2022 was characterized by cumulative rainfall amounts slightly lower than in the previous year in some eastern areas, but similar to, or higher than, the long-term average in most states (Figure 2). Rainfall data from remote sensing was 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.

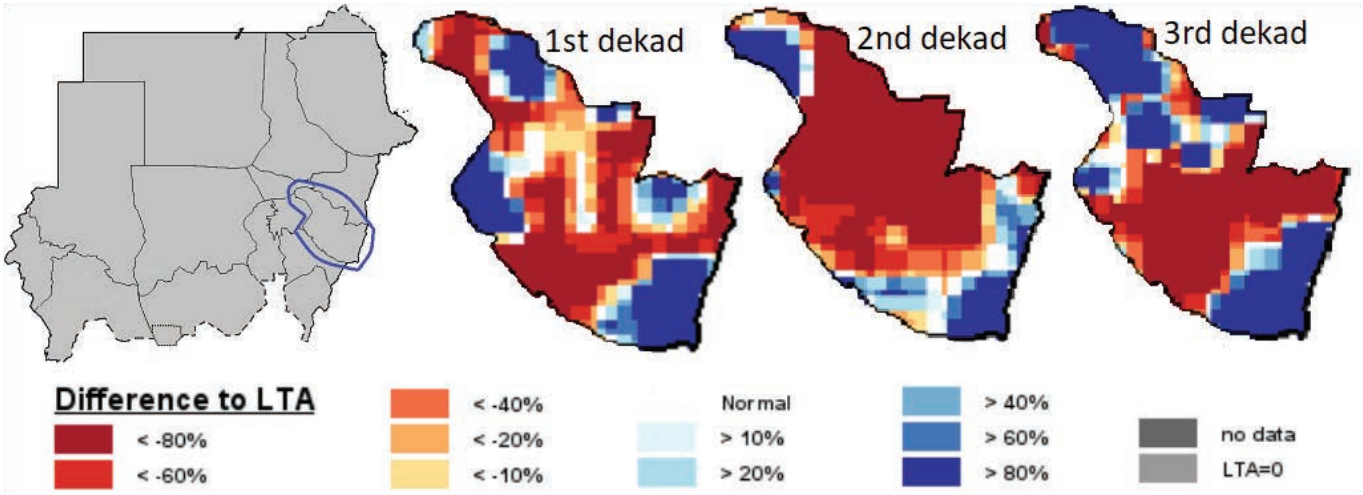
The rainy season was also characterized by a good temporal distribution of precipitations, with no prolonged dry spells reported during the main vegetative stages of crops in most states, including

Figure 2: The Sudan - May–October cumulative rainfall in selected states (mm and percent)



Source: Authors' own elaboration based on the data provided by the World Food Programme (WFP), DataViz data to the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan, 2022.

Map 1: The Sudan – (Gedaref State) – Rainfall anomalies, 1st, 2nd, 3rd dekad of September 2022



Notes: Based on FEWS NET RFE. WGS84, geographic Lat/Lon.

Disclaimer: *The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or 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. Adapted from United Nations World map, 2020.*

Source: FAO. 2023. *Earth Observation*. Global Information and Early Warning System on Food and Agriculture (GIEWS). Rome. Cited December 2022. http://www.fao.org/giews/earthobservation/index.jsp?lang=en.

Sennar, White Nile, Blue Nile, the Greater Kordofan Region and the Greater Darfur Region. In all these states, the overall good performance of the rainy season resulted in an above-average production of coarse grains in 2022, well above the output obtained in 2021.

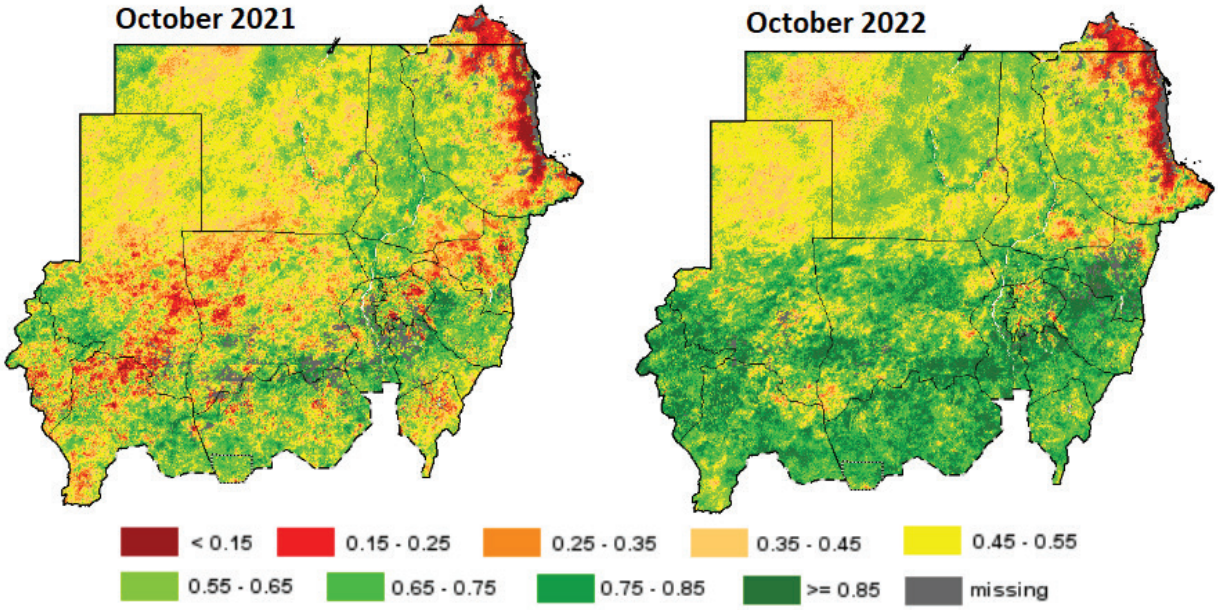
However, rains were erratic in some areas, affecting both harvested area and yields, leading to a below-average cereal production. In Gedaref State, a key sorghum producing area, cumulative rains in 2022 were 9 percent lower than in 2021, but still 7 percent above average. However, the temporal and spatial distribution of rains was poor, especially during the second half of the season. In August, torrential rains triggered flash floods that resulted in localized crop losses. Subsequently, prolonged dry spells in September, especially in central areas of the state (Map 1), affected crops during the critical grain-filling stage and resulted in declines in harvested area and yields.

Similarly, in neighbouring Al Jazirah State, where cumulative rains in 2022 were 10 percent lower than in 2021, but 12 percent above average, heavy downpours triggering floods in August were followed by prolonged dry spells in September, constraining yields in both the irrigated and rainfed sectors.

In early August, river overflows and flash floods caused by heavy downpours affecting standing crops and damaging irrigation systems and agricultural infrastructure were reported also in other states, mainly in South and Central Darfur, White Nile and Kassala states, with less serious episodes affecting also West and East Darfur, River Nile, South Kordofan and Sennar states. However, while the impact of the flooding was severe in the specific location and for the farmers affected, the flooded areas were minimal compared to the aggregate planted area, due to the localized nature of the floods. In addition, several farmers replanted crops lost to floods and the favourable performance of rains in the second half of August and September benefited replanted crops. As a result, the impact of flooding on aggregate cereal production was minimal.

Due to of the overall good performance of the 2022 rainy season, in October, (Map 2) before the start of harvesting operations, vegetation condition was generally good and better than in the same period of the previous year.

Map 2: The Sudan - Vegetation Health Index (VHI)



Notes: Based on FEWS NET RFE. WGS84, geographic Lat/Lon.

Disclaimer: *The designations employed and the presentation of material in this information product do not imply the expression of any opinion whatsoever on the part of FAO concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or 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. Adapted from United Nations World map, 2020.*

Source: FAO. 2023. *Earth Observation*. Global Information and Early Warning System on Food and Agriculture (GIEWS). Rome. Cited December 2022. http://www.fao.org/giews/earthobservation/index.jsp?lang=en.

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), particularly if the canals are not adequately de-silted and cleaned from weeds. In 2022, the challenges affecting the irrigation systems, despite the good 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 Al Jazirah Scheme, located in the homonymous state and by far the largest in the country, the rain started in June and continued up to October. The good performance of seasonal rains in June and July helped the irrigation schedule as most areas received an amount of water equivalent to about three to four irrigations, providing between 30 and 50 percent of the irrigation requirements. Unfortunately, heavy rains and flash floods in August 2022 damaged several canals and affected about 120 000 feddans, with the already poor status of irrigation infrastructures due to insufficient maintenance heightening the impact of floods. Another challenge for crop growing activities, indicated by scheme officials during the field visits, is the inadequate coordination by different authorities and a slow decision-making process in the management of the irrigation schedules, often resulting in untimely irrigations. Sorghum production in 2022 is estimated at about 60 percent down from 2021 and 75 percent below the average of the previous five years.

In Rahad Scheme, located in Gedaref State, rains began only in July, resulting in a substantial delay of planting, normally carried out in May–June. The only 4 functional pumps out of 11, with two mainly utilized for providing drinking water to the community, were insufficient for

an adequate irrigation before the onset of seasonal rains. Favourable rains in July and in the first part of August were instrumental in providing the equivalent of water for two irrigations. Subsequently, torrential rains in August resulted in waterlogging, which affected about 34 500 feddans, representing almost one-third of the planted area in the Scheme. Rainfall irregularities, coupled with the insufficient number of functioning pumps and with constraints to irrigation water flows, due to inadequate cleaning and maintenance of canals, resulted in a significantly reduced crop production in the Scheme in 2022, with sorghum output estimated at 65 percent below the average output obtained in 2021.

In New Halfa Scheme, located in Kassala State, seasonal rains were characterized by a timely onset in mid-June, adequate precipitation amounts and a favourable temporal distribution. Precipitation contributed to one to two irrigations performed during the season. However, heavy rains and flash floods in August resulted in waterlogging, with the areas affected estimated at 15 000 feddans, representing 12 percent of the area cultivated. In addition, critical issues related to the maintenance of irrigation infrastructures were reported, with the canals affected by a severe infestation of Water Hyacinth at the time of the assessment. As a result, sorghum production is estimated at 37 percent down from the previous year and at about half the average of the previous five years.

Agricultural finance and credit

The provision of short-term agricultural credit, mainly through the ABS and a number of commercial banks, is a regular procedure in both the irrigated and rainfed sectors. Loans to eligible farmers are provided through the interest-free Salam, with ABS charges levied in-kind at a value fixed at planting time jointly by Ministry of Finance and Economic Planning (MoFEP), the SRCo, the ABS and farmers' associations. However, the provision of credit from the ABS is mainly dedicated to the entrepreneurial semi-mechanized rainfed sector. In 2022, about 80 percent of the credit was provided to the semi-mechanized rainfed sector, about 14 percent to the irrigated sector and the remaining 6 percent to the traditional rainfed sector and other sectors (Table 3).

The total agricultural finance provided by the ABS to the agricultural sector in 2022 for the summer cropping season was SDG 67 160 million, 20 percent in-kind, 80 percent in cash and 9 percent more than in 2021. However, the area financed, approximately 3.1 million feddans, was 9 percent down from 2021 and the number of beneficiaries, about 22 000 people, was about 35 percent less than last year. The decreases in both area financed, and number of beneficiaries are mainly due to high inflation, which resulted, respectively, in increased operational costs for the ABS and in high cost of inputs and agricultural operations for farmers. No data was available about the financing to the winter cropping season at the time of the mission.

Table 3: The Sudan - Area financed for the summer cropping season, amount disbursed by sector and distribution of loans, 2022

Sector	Area financed (feddans)	Amount (million SDG)	Share of total amount financed (percent)
Mechanized rainfed	2 886 781	53 996.99	80
Traditional rainfed	155 114	3 144.50	5
Irrigated	87 115	9 359.10	14
Horticulture	3 478	513.53	1
Machineries	1 919	146.19	0
Total	**3 134 407**	**67 160.31**	**100**

Note: Totals and percentages computed from unrounded data.

Source: Authors' own elaboration based on the data provided by the Agricultural Bank of Sudan (ABS) to the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan, 2022.

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

Region/State	2020		2021		2022	
	Finance (million SDG)	Beneficiaries	Finance (million SDG)	Beneficiaries	Finance (million SDG)	Beneficiaries
Eastern regions	7 189.50	11 010	28 232.00	10 118	36 484.14	10 409
Sennar and Blue Nile	3 902.00	3 308	17 445.90	4 055	7 670.33	2 563
White Nile	851.60	1 748	8 119.60	1 351	9 067.73	1 148
North Kordofan	122.20	8 572	1 585.70	4 552	2 387.31	2 614
South Kordofan	415.00	1 734	3 488.60	2 648	3 722.18	2 180
Al Jazirah	1 900.80	27 748	2 228.20	8 119	6 669.60	-
Darfur	81.20	4 409	205.90	2 319	172.65	2 436
Northern	18.70	53	40.20	501	-	-
River Nile	120.80	126	252.60	105	986.37	688
Total	**14 601.80**	**58 708**	**61 598.70**	**33 768**	**67 160.30**	**22 038**

Note: Totals and percentages computed from unrounded data.

Source: Authors' own elaboration based on the data provided by the Agricultural Bank of Sudan (ABS) to the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan, 2022.

Agricultural inputs

Generally, the availability of most agricultural inputs, including seeds, fertilizers, herbicides, fuel and labour in 2022 was adequate, but their cost was substantially higher than in 2021, underpinned by the sustained inflation. Availability of fertilizers and machinery was not always timely, resulting in some farmers delaying planting and other agricultural operations, especially in the traditional rainfed sector.

Seeds

In 2022, the Federal MoAF delivered 803 tonnes of sorghum seeds to the state ministries of agriculture in the 18 states and they were distributed mainly to smallholder farmers in western traditional rainfed agriculture areas (Table 5). The amount of distributed seeds is similar to the very low quantities delivered in 2021, half of those distributed in 2020. Distribution operations were mainly constrained by high purchasing and operational costs due to high inflation. The majority of the farmers interviewed during the field visits, especially in the traditional and semi-mechanized sector, reported to have utilized seeds retained from the harvest of the previous year due to the limited seed distributions by state authorities and the high prices prevailing on the market.

Farmers' access to seeds has improved through seed distributions carried out by FAO, which provided about 5 400 tonnes of seeds (Table 6), 56 percent higher compared to the amount distributed in 2021. Out of the total amount distributed, 3 764 tonnes were seeds of staple cereals (3 637 tonnes of sorghum and 127 tonnes of millet) and the remaining were seeds of cash crops, mainly groundnuts (1 392 tonnes). Smaller quantities of seeds of pigeon peas, cowpeas and chickpeas were distributed.

Agricultural machinery

Agricultural machinery was not available in adequate numbers, forcing some farmers that usually rent them to delay agricultural operations. The operational cost was very high due to the high costs of maintenance, spare parts and fuel. Spare parts were often reported to be of low quality, thus increasing the frequency of mechanical failures and hence operating costs.

Fertilizers and herbicides

Fertilizers, herbicides and pesticides were generally available, but at very high market prices constraining access for farmers. For example, the price of urea and di-ammonium phosphate (DAP) fertilizers in 2022 was between two and three

Table 5: The Sudan - Seeds distributed by MoAF to smallholder farmers in traditional rainfed sector by state (tonnes)

State	Sorghum			Millet	Total
	Wad-Ahmed	Arfa-Gadamek	Wad-Ahmed		
North Darfur	40.00	20	60.00	3	63.00
South Darfur	40.00	20	60.00	0	60.00
Central Darfur	60.00	0	60.00	3	63.00
East Darfur	40.00	20	60.00	3	63.00
West Darfur	40.00	20	60.00	3	63.00
North Kordofan	15.00	50	65.00	3	68.00
South Lordofan	45.00	20	65.00	0	65.00
West Kordofan	30.00	35	65.00	3	68.00
White Nile	5.00	20	25.00	3	28.00
Blue Nile	0.00	45	45.00	0	45.00
Sinnar	5.00	20	25.00	0	25.00
Al Jazirah	5.00	20	25.00	0	25.00
Gedaref	0.00	25	25.00	0	25.00
Kassala	20.00	20	40.00	0	40.00
Red Sea	20.00	5	25.00	0	25.00
Khartoum	0.00	10	10.00	0	10.00
Nile River	0.00	0	0.00	0	0.00
Northern	25.00	0	25.00	0	25.00
Abyei	20.00	10	30.00	0	30.00
Tokar Delta Project	10.00	2	12.00	0	12.00
Ministry reserves	24.36	23	47.36	0	47.36
Total	**444.36**	**385**	**829.36**	**21**	**850.36**

Note: Totals computed from unrounded data.

Sources: Authors' own elaboration based on the data provided by the Agricultural Production General Directorate of the Ministry of Agriculture and Forests (MoAF) to the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan, 2022.

Table 6: The Sudan - Seeds distributed by FAO to smallholder farmers in traditional rainfed sector by state (tonnes)

State	Sorghum	Millet	Groundnuts	Sesame	Cowpeas	Pigeon peas	Chickpeas	Total
North Darfur	270.00	27.0	200.0	0.00	9.61	10.0	9.31	525.92
South Darfur	288.00	0.0	250.0	0.00	3.19	0.0	0.00	541.19
Central Darfur	240.00	0.0	135.0	0.00	4.40	10.5	9.43	399.33
East Darfur	288.00	14.1	318.5	0.00	3.18	0.0	0.00	623.78
West Darfur	270.00	14.1	248.5	0.00	7.09	10.5	8.27	558.46
North Kordofan	217.00	19.8	35.0	0.00	7.66	0.0	0.00	279.46
South Kordofan	247.00	0.0	0.0	4.84	4.19	0.0	0.00	256.03
West Kordofan	240.00	0.0	205.0	0.00	4.27	0.0	0.00	449.27
White Nile	280.00	0.0	0.0	4.18	2.98	9.0	8.40	304.56
Blue Nile	330.00	0.0	0.0	4.01	2.93	9.0	8.38	354.32
Sinnar	243.42	0.0	0.0	7.30	4.08	9.0	10.14	273.94
Gedaref	220.00	0.0	0.0	4.18	5.69	0.0	0.00	229.87
Kassala	254.00	0.0	0.0	0.00	9.97	10.5	0.00	274.47
Red Sea	250.00	52.0	0.0	0.00	9.08	10.8	9.55	331.43
Total	**3 637.42**	**127.0**	**1 392.0**	**24.51**	**78.32**	**79.3**	**63.48**	**5 402.03**

Note: Totals computed from unrounded data.

Sources: Authors' own elaboration based on the data provided by the Agricultural Production General Directorate of the Ministry of Agriculture and Forests (MoAF) to the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan, 2022.

times the very high level of one year earlier, while prices of herbicides and pesticides were on average 160 percent higher compared to 2021. Some farmers in Gedaref State reported a reduced effectiveness of herbicides compared to the previous years, likely due to the low quality of available chemicals, poor storage both at store and household level, utilization of expired products or wrong timing and/or rates of application. In addition, in some cases, fertilizers distributed by federal authorities to the states were delayed, affecting agricultural operations and/or increasing the share of inputs purchased on the market at very high prices.

Labour

Labour was generally available in all states, provided by local workers or by labourers from other states of the country or from neighbouring South Sudan and Ethiopia. However, labour shortages were reported in some areas, for example in River Nile and Northern states, due to workers' migration to mining areas.

The cost of labour for the main manual agricultural operations (weeding and harvesting) in 2022 was on average 70 percent higher than in 2021. The cost of other operations, including cleaning of minor canals, application of herbicides and irrigation, has increased even more, up to two and three times more than the previous years.

Fuel

Market availability of fuel for agricultural operations was adequate. However, access was severely constrained by high prices. Fuel prices, after having skyrocketed after the removal of subsidies in June 2021, continued the same trend in 2022, and a fuel barrel was reported to cost on average SDG 150 000 and up to SDG 180 000 in some areas, including Sennar State, compared to SDG 80 000 during the previous cropping season.

Table 7 provides the costs of the main items/operations in 2022 in Gedaref State, along with the percentage changes between the last two agricultural seasons.

Table 7: The Sudan (Gedaref State) - Costs of agricultural inputs during the 2022 and 2021 agricultural seasons

Item	Price in SDG		Percent change
	2021	2022	
Tractors			
Massey (second hand)	6 000 000	8 000 000	33.33
New Holland (new)	11 000 000	14 000 000	27.30
Agricultural machinery			
Sprayers (new)	2 800 000	3 200 000	14.30
Agriculture fuel (barrels)	69 300	156 420	125.70
Commercial fuel (litre)	4 000	7 000	75.00
Wide discs	18 000	43 000	138.90
Fertilizers (50 kg/bag)			
Urea	18 000	40 000	122.20
DAP	23 000	47 000	104.40
Herbicides (main type)			
2-4D price/litre	3 500	9 000	157.10
Glyphosate/litre	7 500	7 500	0.00
Seeds (main type)			
Sorghum (tonne)	300 000	700 000	133.30
Millet (tonne)	330 000	1 750 000	430.30
Sesame (tonne)	500 000	2 400 000	380.00
Sunflower (tonne)	3 400 000	9 250 000	172.10
Cotton	500 000	1 100 000	120.00
Empty sacks			
300	240 000	330 000	37.50
Labour			
Average daily work	3 000	3 500	16.70

Note: Totals and percentages computed from unrounded data.

Sources: Authors' own elaboration based on the data provided by the Agricultural Production General Directorate of the Ministry of Agriculture and Forests (MoAF) to the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan, 2022.

Crop pests and diseases

In the 2022 cropping season, no major outbreaks of pests and diseases were reported, with a mild impact on crops. Control activities conducted by the Federal Plant Protection Directorate and the state departments contributed to further reduce their impact, although the operations were constrained by funding shortfalls. Attacks by birds (mainly *Quelea Quelea*), particularly on sorghum crops, were reported in almost all states. However, they were localized and, although the impact on the affected farms was severe, crop losses at aggregate level were minimal. Similarly, the other pests and diseases reported, including locusts, rats, white ants, sorghum bug, watermelon bug, sesame gall midge, sorghum midge (*al masih*), roots cut (*um someita*) on groundnuts, stem borer, thrips, and *jassid* on cotton, caused only localized and limited losses. The most significant crop damages were reported in Al Jazirah State, where about 120 000 feddans planted with sorghum were attacked by locusts and not replanted, and in Sennar State, where over 355 000 feddans were affected by sesame gall midge and replanted mainly with sorghum.

AGRICULTURAL PRODUCTION IN 2022/23

Area planted and harvested in 2022/23

The area planted with sorghum in 2022/23 is estimated at about 9.7 million hectares, about 3 percent lower than the previous year and the average of the previous five years. A significant reduction is reported in the semi-mechanized sector where it declined by about 15 percent from the previous year and the average of the previous five years, mainly due to the reduction in the number of beneficiaries of agricultural financing and the high costs of production. This decline was mostly offset by an increase in the traditional sector, where the planted area was 15 and 13 percent, respectively, higher than in the previous year and the five-year average, mainly due to the timely onset of the rainy season and its favourable performance that encouraged smallholder farmers to expand plantings.

The area planted with millet was estimated at about 4.8 million hectares, 63 percent up from the previous season and 8 percent higher than the average of the previous five years. The increase is mainly due to expanded plantings in the traditional rainfed sector, which on average in the last five years accounted for 90 percent of the total planted area with millet, where farmers were encouraged to sow more land by the favourable weather conditions.

The 2022/23 wheat crops were sown between early November and mid-December 2022, and the planted area is estimated at 192 800 hectares, 28 and 30 percent, respectively, down from the previous season and the average of the previous five years. The reduction is mainly due to difficulties in selling the wheat produced during the previous year, when the ABS was not able to pay the subsidized price agreed with farmers due to financial constraints. With the low prices prevailing on the markets in 2022 due to the high amounts of imported wheat, farmers were not incentivized to sell their harvests on the markets, and several held on to

© FAO/Esteve Reyes

their stocks waiting for an increase in market prices. This factor, coupled with a further increase in production costs and reduced financing capacity of the ABS, contributed to the drastic reduction in the area planted with wheat in 2022, with farmers switching to legumes and spices, which guarantee a higher economic return.

The total area harvested of sorghum and millet was above the level a year earlier and similar to the average of the previous five years. The area harvested of sorghum was estimated at 7.2 million hectares, 5 percent up from the previous year, but 2 percent below the average of the previous five years, while the area harvested with millet was estimated at 3.6 million hectares, 27 and 8 percent, respective, up from the previous year and the five-year average.

The ratio of area harvested to the area planted is 74 percent for both sorghum and millet, similar to the average of the previous five years for both crops.

Based on the latest data provided by the Wheat Production Unit of MoAF, the harvested area with wheat is forecast at 188 590 hectares, about 30 percent down from the previous year and the five-year average, with a ratio on the planted area of about 97 percent, similar to the average of the previous five years.

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

State/Scheme/ Sector	Sorghum					Millet					Wheat				
	5-yr average 2017/18–2021/22	2021/22	2022/23	2022/23 as % 2021/22	2022/23 as % 5-yr average	5-yr average 2017/18–2021/22	2021/22	2022/23	2022/23 as % 2021/22	2022/23 as % 5-yr average	5-yr average 2017/18–2021/22	2021/22	2022/23	2022/23 as % 2021/22	2022/23 as % 5-yr average
Irrigated															
Northern	2.76	2.48	5.04	203.23	182.61	-	-	-	-	-	49.60	52.12	38.40	73.68	77.42
River Nile	31.42	62.16	34.40	55.34	109.48	-	-	-	-	-	19.20	18.93	14.70	77.70	76.58
Khartoum	1.49	2.10	1.41	67.20	94.71	-	-	-	-	-	0.40	0.00	0.21	-	52.50
Aj Jazirah	127.26	113.82	105.84	92.99	83.17	-	-	-	-	-	145.30	145.74	92.40	63.40	63.59
Suki	12.35	11.34	12.60	111.11	102.02	-	-	-	-	-	-	-	-	-	-
Sennar	26.63	27.72	26.88	96.97	100.94	-	-	-	-	-	0.60	-	-	-	-
White Nile	43.85	41.58	58.93	141.72	134.38	-	-	-	-	-	29.50	26.49	23.98	90.52	81.29
Rahad	27.72	23.10	25.62	110.91	92.42	-	-	-	-	-	0.80	0.42	0.00	-	-
New Halfa	23.86	21.00	20.58	98.00	86.25	-	-	-	-	-	28.10	24.38	23.10	94.75	82.21
Gash	39.65	9.24	25.62	277.27	64.62	-	-	-	-	-	-	-	-	-	-
Kassala	3.61	0.00	0.00	0.00	0.00	-		-	-	-	-	-	-	-	-
Tokar	7.58	3.02	8.78	290.66	115.80	4.97	0.50	1.30	260.00	26.16	-	-	-	-	-
North Kordofan	6.47	5.04	9.24	183.33	142.81	-	-	-	-	-	-	-	-	-	-
Total	**354.65**	**322.60**	**334.93**	**103.82**	**94.44**	**4.97**	**0.50**	**1.30**	**260.00**	**26.16**	**273.50**	**269.08**	**192.80**	**71.92**	**70.49**
Semi-Mechanized															
Sennar	773.56	861.42	504.00	58.51	65.15	66.86	42.00	73.00	173.81	109.18	-	-	-	-	-
White Nile	446.80	597.24	581.49	97.36	130.15	29.65	39.00	0.00			-	-	-	-	-
Blue Nile	573.55	563.22	537.18	95.38	93.66	53.00	23.00	20.00	86.96	37.73	-	-	-	-	-
Gedaref	2 185.68	2 286.06	1 890.00	82.67	86.47	159.18	190.00	273.00	143.68	171.50	-	-	-	-	-
Kassala	559.44	504.00	643.02	127.58	114.94	-	-	-	-	-	-	-	-	-	-
North Kordofan	15.12	10.50	21.84	208.00	144.44	-	-	-	-	-	-	-	-	-	-
West Kordofan	436.20	210.00	186.48	88.80	42.75	-	-	-	-	-	-	-	-	-	-
South Kordofan	612.95	633.78	420.00	66.27	68.52	10.74	27.00	0.00	0.00	-	-	-	-	-	-
Total	**5 603.29**	**5 666.22**	**4 784.01**	**84.43**	**85.38**	**319.44**	**321.00**	**366.00**	**114.02**	**114.58**	**-**	**-**	**-**	**-**	**-**
Traditional Rainfed															
River Nile	69.38	56.28	103.32	183.58	148.92	-	-	-	-	-	-	-	-	-	-
Khartoum	55.86	54.60	1.01	1.85	1.81	-	-	-	-	-	-	-	-	-	-
Aj Jazirah	451.84	500.22	485.94	97.15	107.55	26.00	32.00	18.48	56.25	69.23	-	-	-	-	-
Sennar	218.23	215.04	336.84	156.64	154.35	56.00	11.00	65.52	600.00	117.86	-	-	-	-	-
White Nile	217.48	97.44	173.67	178.23	79.86	73.00	157.00	100.80	64.33	138.36	-	-	-	-	-
Blue Nile	99.46	107.52	250.74	233.20	252.10	34.00	13.00	10.50	84.62	32.35	-	-	-	-	-
Kassala	111.97	84.00	189.00	225.00	168.80	7.00	8.00	21.00	262.50	300.00	-	-	-	-	-
Red Sea	16.46	4.20	67.201	600.00	408.26	8.00	1.00	0.00	0.00	0.00	-	-	-	-	-
North Kordofan	451.25	375.48	357.00	95.08	79.11	47.00	257.50	693.00	242.211	327.02	-	-	-	-	-
West Kordofan	296.69	256.62	124.32	48.45	41.90	721.00	373.00	525.00	112.60	58.25	-	-	-	-	-
South Kordofan	213.95	282.24	168.00	59.52	78.52	512.00	20.60	63.00	214.08	8.61	-	-	-	-	-
North Darfur	219.58	174.72	287.28	164.42	130.83	243.00	342.00	833.70	195.03	274.49	-	-	-	-	-
West Darfur	214.37	173.46	210.42	121.31	98.16	745.00	117.00	284.76	170.43	26.77	1.10	0.00	-	-	-
South Darfur	637.06	896.28	666.96	74.41	104.69	864.00	744.00	712.74	72.82	62.71	1.30	-	-	-	-
Central Darfur	181.27	204.96	514.50	251.02	283.83	411.00	158.00	441.00	215.06	82.68	-	0.20	-	-	-
East Darfur	605.47	507.78	672.00	132.34	110.99	393.00	390.00	672.00	122.31	121.37	-	-	-	-	-
Total	**4 060.32**	**3 990.84**	**4 608.20**	**115.47**	**113.49**	**4 140.00**	**2 624.10**	**4 441.50**	**134.51**	**85.26**	**2.40**	**0.20**	**0.00**	**-**	**-**
Grand total	**10 018.26**	**9 979.66**	**9 727.14**	**97.47**	**97.09**	**4 464.41**	**2 945.60**	**4 808.62**	**163.00**	**108.00**	**275.90**	**268.28**	**192.80**	**71.86**	**69.88**

Note: Totals and percentages computed from unrounded data.
Source: Authors' own elaboration based on the data collected during the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan, 2022.

Table 9: The Sudan - Cereal area harvested by state, scheme and sector ('000 hectares)

State/Scheme/ Sector	Sorghum					Millet					Wheat				
	5-yr average 2017/18–2021/22	2021/22	2022/23	2022/23 as % 2021/22	2022/23 as % 5-yr average	5-yr average 2017/18–2021/22	2021/22	2022/23	2022/23 as % 2021/22	2022/23 as % 5-yr average	5-yr average 2017/18–2021/22	2021/22	2022/23	2022/23 as % 2021/22	2022/23 as % 5-yr average
Irrigated															
Northern	1.9	2.5	1.2	49.2	63.3	-	-	-	-	-	49.6	52.1	37.6	72.1	75.7
River Nile	26.4	44.1	34.4	78.0	130.4	-	-	-	-	-	19.2	18.9	14.4	76.0	74.8
Khartoum	1.4	1.7	1.4	85.0	101.4	-	-	-	-	-	0.4	0.0	0.2	-	48.9
Aj Jazirah	115.8	91.1	33.9	37.1	29.2	-	-	-	-	-	145.3	145.7	90.4	62.0	62.2
Suki	9.2	2.9	10.1	342.9	110.1	-	-	-	-	-	-	-	-	-	-
Sennar	23.5	24.8	22.7	91.5	96.3	-	-	-	-	-	0.6	-	-	-	-
White Nile	38.1	37.8	50.1	132.4	131.6	-	-	-	-	-	29.5	26.5	23.5	88.5	79.6
Rahad	24.4	21.8	18.3	83.7	75.0	-	-	-	-	-	0.8	0.4	0.0	0.0	0.0
New Halfa	21.8	19.7	18.9	95.7	86.9	-	-	-	-	-	28.1	24.4	22.6	92.7	80.3
Gash	37.2	8.8	24.8	281.0	66.6	-	-	-	-	-	-	-		-	-
Kassala	3.3	0.0	0.0	0.0	0.0	-	-	-	-	-	-	-		-	-
Tokar	6.3	2.5	8.4	331.7	132.7	3.9	0.4	1.2	285.7	30.4	-	-		-	-
North Kordofan	5.4	4.0	9.2	229.2	170.3	-	-	-	-	-	-	-		-	-
Total	**314.5**	**261.9**	**233.3**	**89.1**	**74.2**	**3.9**	**0.4**	**1.2**	**285.7**	**30.4**	**273.6**	**268.1**	**188.6**	**70.4**	**68.9**
Semi-Mechanized															
Sennar	568.2	483.0	441.0	91.3	77.6	55.6	42.0	49.0	116.7	88.2	-	-	-	-	-
White Nile	346.0	412.0	407.0	98.8	117.6	22.5	21.0	0.0	0.0	0.0	-	-	-	-	-
Blue Nile	423.6	472.9	424.2	89.7	100.1	36.4	18.0	16.0	88.9	43.9	-	-	-	-	-
Gedaref	1 543.4	1 837.9	1 323.0	72.0	85.7	133.3	154.0	245.7	159.5	184.3	-	-	-	-	-
Kassala	313.0	126.0	588.0	466.7	187.9	-	-	-	-	-	-	-	-	-	-
North Kordofan	11.3	7.1	19.2	269.4	169.9	-	-	-	-	-	-	-	-	-	-
West Kordofan	327.8	168.0	167.8	99.9	51.2	-	-	-	-	-	-	-	-	-	-
South Kordofan	457.1	488.0	235.2	48.2	51.4	8.1	47.0	0.0	0.0	0.0	-	-	-	-	-
Total	**3 990.6**	**3 995.0**	**3 605.5**	**90.2**	**90.4**	**255.9**	**282.0**	**310.7**	**110.2**	**121.4**	**-**	**-**	**-**	**-**	**-**
Traditional Rainfed															
River Nile	46.8	52.9	103.3	195.2	220.8	-	-	-	0.0	0.0	-	-	-	-	-
Khartoum	31.1	33.6	1.0	3.0	3.2	-	-	-	-	-	-	-	-	-	-
Aj Jazirah	304.8	273.4	206.2	75.4	67.7	21.7	29.8	13.4	45.1	61.9	-	-	-	-	-
Sennar	178.4	126.8	212.1	167.2	118.9	44.6	8.8	35.7	404.8	80.1	-	-	-	-	-
White Nile	148.5	58.4	121.6	208.3	81.9	47.3	67.6	70.6	104.3	149.2	-	-	-	-	-
Blue Nile	75.3	85.7	188.2	219.6	249.7	25.2	10.1	8.0	79.2	31.7	-	-	-	-	-
Kassala	82.8	58.8	168.0	285.7	203.0	5.7	6.3	21.0	333.3	367.6	-	-	-	-	-
Red Sea	10.0	2.1	53.8	2 560.0	537.8	5.3	0.0	0.0	0.0	0.0	-	-	-	-	-
North Kordofan	316.8	135.2	321.3	237.6	101.4	446.3	257.5	554.4	215.3	124.2	-	-	-	-	-
West Kordofan	247.8	227.2	111.7	49.2	45.1	390.8	373.0	420.0	112.6	107.5	-	-	-	-	-
South Kordofan	171.5	208.3	133.8	64.2	78.0	34.6	20.6	44.1	214.3	127.4	-	-	-	-	-
North Darfur	149.1	51.7	172.2	333.3	115.5	567.9	341.9	667.0	195.1	117.4	-	-	-	-	-
West Darfur	182.5	102.5	157.9	154.1	86.5	343.9	116.8	199.4	170.8	58.0	1.1	0.0	-	-	-
South Darfur	522.1	677.5	527.1	77.8	101.0	605.8	744.2	541.8	72.8	89.4	1.3	-	-	-	-
Central Darfur	160.4	150.4	422.1	280.7	263.2	190.9	157.9	202.0	127.9	105.8	-	0.0	-	-	-
East Darfur	457.1	416.2	504.0	121.1	110.3	304.8	390.2	477.1	122.3	156.6	-	-	-	-	-
Total	**3 085.0**	**2 660.7**	**3 404.3**	**127.9**	**110.3**	**3 034.8**	**2 524.6**	**3 254.5**	**129**	**107**	**2.4**	**0.0**	**0.0**	**-**	**-**
Grand total	**7 390.1**	**6 917.6**	**7 243.0**	**104.7**	**98.0**	**3 294.7**	**2 807.0**	**3 566.4**	**127**	**108**	**276.0**	**268.1**	**188.6**	**70.4**	**68.3**

Note: Totals and percentages computed from unrounded data.
Source: Authors' own elaboration based on the data collected during the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan, 2022.

Crop yields

The average sorghum yield in 2022 is estimated at 0.72 tonnes/hectare, 42 percent higher than the yield obtained in 2021 and 23 percent higher than the average level, due to above-average rainfall amounts, favourable temporal and spatial distribution of rains over most cropping areas and reduced floods compared to 2021. However, in Gedaref State, the main sorghum producing area, yields were lower by 14 and 13 percent, respectively, compared to the previous year and the five-year average, as a consequence of adverse weather conditions.

The substantial amounts of seeds distributed by FAO in 2022, especially sorghum in the traditional rainfed sector, coupled with the provision of adequate technical support, covered an estimated planted area of about 520 000 hectares. The yield of 2 tonnes/hectare contributed to the estimated increase in the average sorghum yield.

The good performance of the 2022 rainy season also boosted millet yields, with the average yield estimated at 0.47 tonnes/hectare, 45 and 3 percent, respectively, higher than the yield obtained in 2021 and the five-year average.

Yields of wheat crops, mainly grown under irrigation, is forecast at average 2.53 tonnes/hectare.

Cereal production

The national production of sorghum and millet in 2022 is estimated at 6.92 million tonnes, 56 percent up from 2021 and 18 percent higher than the average of the previous five years. The increase in total production is mainly due to a substantial increase in yields, but it was also supported by a more limited but still significant expansion in planted and harvested areas.

Sorghum production is estimated at about 5.2 million tonnes, 49 and 21 percent, respectively, up from the previous year and the five-year average. In the traditional sector, a 90 and 43 percent, respectively, increase compared to 2021 and the five-year average is recorded. The most substantial production increase is recorded in Central Darfur, where sorghum output is estimated at 542 000 tonnes, about four and three times, respectively, the production in the previous season and the five-year average. In the semi-mechanized sector, a 33 and 18 percent increase compared to 2021 and the previous five-year average is recorded. The increase was mainly driven by the outputs obtained in Sennar, Blue Nile, White Nile and Kassala states, with production increases ranging between 54 and 97 percent compared to the average of the previous five years. The favourable outcome of the cropping season in these states has more than offset a substantial production shortfall recorded in Gedaref State, the main producing area, accounting on average for about one-fifth of the aggregate sorghum output. Here, sorghum production in 2022 is estimated at 567 000 tonnes, about 38 and 26 percent, respectively, down from 2021 and the five-year average as adverse weather conditions severely affected yields.

The national millet production is estimated at 1.7 million tonnes, 86 percent up from the low output obtained in 2021 and 12 percent higher than the five-year average. The outcome of the 2022 cropping season was very favourable especially in the Greater Kordofan Region, were millet output is estimated at about 400 000 tonnes, more than four times the low production obtained in 2021 and almost twice the average of the previous five years.

Wheat production is forecast at about 476 270 tonnes, about 30 percent down from last year and the five-year average, mainly as a result of reduced plantings.

Table 10: The Sudan – Cereal yields by state, scheme and sector (tonnes/hectare)

State/Scheme/ Sector	Sorghum					Millet					Wheat				
	5-yr average 2017/18–2021/22	2021/22	2022/23	2022/23 as % 2021/22	2022/23 as % 5-yr average	5-yr average 2017/18–2021/22	2021/22	2022/23	2022/23 as % 2021/22	2022/23 as % 5-yr average	5-yr average 2017/18–2021/22	2021/22	2022/23	2022/23 as % 2021/22	2022/23 as % 5-yr average
Irrigated															
Northern	1.56	1.19	0.82	69	53	-	-	-	-	-	3.16	3.11	3.11	100	98
River Nile	2.23	2.38	2.78	117	124	-	-	-	-	-	2.63	2.38	2.38	100	91
Khartoum	1.14	0.60	0.70	118	62	-	-	-	-	-	1.90	-	2.45	-	129
Aj Jazirah	2.37	1.94	2.14	110	90	-	-	-	-	-	2.37	2.38	2.38	100	100
Suki	2.03	0.34	1.59	467	78	-	-	-	-	-	-	-	-	-	-
Sennar	1.31	1.17	2.16	185	165	-	-	-	-	-	2.03	-	-	-	0
White Nile	1.79	1.16	1.61	138	90	-	-	-	-	-	2.22	2.38	2.38	100	107
Rahad	2.36	2.47	1.07	43	45	-	-	-	-	-	2.04	2.38	-	-	-
New Halfa	2.12	1.93	1.27	66	60	-	-	-	-	-	2.33	2.38	2.38	100	102
Gash	1.66	1.50	1.93	129	116	-	-	-	-	-	-	-	-	-	-
Kassala	1.71	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tokar	1.44	0.71	1.50	209	104	1.01	0.36	0.82	230	81	-	-	-	-	-
North Kordofan	0.90	0.60	1.50	253	167	-	-	-	-	-	-	-	-	-	-
Total	**2.04**	**1.79**	**1.86**	**104**	**91**	**1.01**	**0.36**	**0.82**	**230**	**81**	**2.51**	**2.52**	**2.53**	**100**	**101**
Semi-Mechanized															
Sennar	0.49	0.22	0.97	452	199	0.48	0.38	0.71	188	148	-	-	-	-	-
White Nile	0.53	0.45	0.75	167	143	0.43	0.36	-	-	-	-	-	-	-	-
Blue Nile	0.49	0.64	0.97	151	197	0.35	0.37	0.69	185	198	-	-	-	-	-
Gedaref	0.49	0.50	0.43	86	87	0.40	0.34	0.36	106	91	-	-	-	-	-
Kassala	0.50	0.36	0.50	140	100	-	-	-	-	-	-	-	-	-	-
North Kordofan	0.43	0.14	0.62	445	144	-	-	-	-	-	-	-	-	-	-
West Kordofan	0.49	0.24	0.69	289	141	-	-	-	-	-	-	-	-	-	-
South Kordofan	0.39	0.27	0.64	234	164	0.25	0.30	-	-	-	-	-	-	-	-
Total	**0.48**	**0.43**	**0.63**	**147**	**131**	**0.41**	**0.35**	**0.44**	**125**	**107**	**-**	**-**	**-**	**-**	**-**
Traditional Rainfed															
River Nile	0.94	0.72	0.70	98	75	-	-	-	-	-	-	-	-	-	-
Khartoum	0.63	0.42	0.40	95	63	-	-	-	-	-	-	-	-	-	-
Aj Jazirah	0.62	1.07	0.74	69	119	0.47	0.32	0.55	171	117	-	-	-	-	-
Sennar	0.47	0.21	0.41	193	88	0.38	0.39	0.84	218	224	-	-	-	-	-
White Nile	0.40	0.39	0.86	222	212	0.40	0.36	0.48	133	119	-	-	-	-	-
Blue Nile	0.56	0.43	0.86	199	154	0.41	0.43	0.75	176	185	-	-	-	-	-
Kassala	0.42	0.46	0.45	99	109	0.28	0.16	0.43	270	152	-	-	-	-	-
Red Sea	0.52	0.12	0.60	500	115	0.23	-	-	-	-	-	-	-	-	-
North Kordofan	0.28	0.19	0.73	388	258	0.17	0.17	0.36	207	215	-	-	-	-	-
West Kordofan	0.35	0.21	0.86	415	242	0.33	0.12	0.44	353	133	-	-	-	-	-
South Kordofan	0.47	0.31	0.86	279	183	0.28	0.24	0.44	183	155	-	-	-	-	-
North Darfur	0.35	0.12	0.24	210	70	0.30	0.07	0.18	254	59	-	-	-	-	-
West Darfur	1.05	0.86	1.18	137	112	0.93	0.83	1.01	121	108	1.53	-	-	-	-
South Darfur	0.73	0.50	0.57	116	78	0.50	0.41	0.52	127	105	1.29	-	-	-	-
Central Darfur	1.09	0.86	1.28	150	118	0.93	0.60	0.95	160	102	-	-	-	-	-
East Darfur	0.52	0.43	0.64	150	124	0.47	0.39	0.54	137	114	-	-	-	-	-
Total	**0.57**	**0.50**	**0.74**	**148**	**129**	**0.46**	**0.32**	**0.47**	**147**	**103**	**1.40**	**-**	**-**	**-**	**-**
Grand total	**0.59**	**0.51**	**0.72**	**142**	**123**	**0.454**	**0.324**	**0.470**	**145**	**103**	**2.50**	**2.52**	**2.53**	**100**	**101**

Note: Totals and percentages computed from unrounded data.
Source: Authors' own elaboration based on the data collected during the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan, 2022.

Table 11: The Sudan – Cereal production by state, scheme and sector ('000 tonnes)

State/ Scheme/Sector	Sorghum					Millet					Wheat				
	5-yr average 2017/18–2021/22	2021/22	2022/23	2022/23 as % 2021/22	2022/23 as % 5-yr average	5-yr average 2017/18–2021/22	2021/22	2022/23	2022/23 as % 2021/22	2022/23 as % 5-yr average	5-yr average 2017/18–2021/22	2021/22	2022/23	2022/23 as % 2021/22	2022/23 as % 5-yr average
Irrigated															
Northern	3.00	2.95	1.00	33.9	33.3	-	-	-	-	-	156.92	162.04	116.82	72.1	74.4
River Nile	58.94	105.00	95.60	91.0	162.2	-	-	-	-	-	50.56	45.06	34.23	76.0	67.7
Khartoum	1.60	1.00	1.00	100.0	62.5	-	-	-	-	-	0.80	-	0.49	-	61.3
Aj Jazirah	274.40	177.18	72.50	40.9	26.4	-	-	-	-	-	344.55	347.00	215.12	62.0	62.4
Suki	18.56	1.00	16.00	1 600.0	86.2	-	-	-	-	-	-	-	-	-	-
Sennar	30.78	29.00	49.00	169.0	159.2	-	-	-	-	-	1.22	-	-	-	0.0
White Nile	67.98	44.00	80.50	183.0	118.4	-	-	-	-	-	65.60	63.08	55.83	88.5	85.1
Rahad	57.54	54.00	19.60	36.3	34.1	-	-	-	-	-	1.54	1.00		0.0	0.0
New Halfa	46.08	38.10	24.00	63.0	52.1	-	-	-	-	-	65.54	58.05	53.78	92.6	82.1
Gash	61.90	13.20	47.80	362.1	77.2	-	-	-	-	-	-	-	-	-	-
Kassala	5.60	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Tokar	9.06	1.80	12.50	694.4	138.0	4.00	0.15	1.00	666.7	25.0	-	-	-	-	-
North Kordofan	4.88	2.40	13.90	579.2	284.8	-	-	-	-	-	-	-	-	-	-
Total	**640.32**	**469.63**	**433.40**	**92.3**	**67.7**	**4.00**	**0.15**	**1.00**	**666.7**	**25.0**	**686.73**	**676.23**	**476.27**	**70.4**	**69.4**
Semi-Mechanized															
Sennar	278.61	104.00	429.50	413.0	154.2	26.91	16.00	35.00	187.5	111.1	-	-	-	-	-
White Nile	181.71	185.00	305.30	165.0	168.0	9.66	7.50	0.00		-	-	-	-	-	-
Blue Nile	209.40	304.00	413.10	135.9	197.3	12.66	6.70	11.00	164.2	84.6	-	-	-	-	-
Gedaref	762.35	914.00	567.00	62.0	74.4	53.11	53.00	89.50	168.9	168.9	-	-	-	-	-
Kassala	157.07	45.00	294.00	653.3	187.2	-	-	-	-	-	-	-	-	-	-
North Kordofan	4.90	1.00	12.00	1 200.0	244.7	-	-	-	-	-	-	-	-	-	-
West Kordofan	160.00	40.00	115.50	288.8	72.2	-	-	-	-	-	-	-	-	-	-
South Kordofan	179.67	134.00	151.20	112.8	84.2	2.00	6.00	-	-		-	-	-	-	-
Total	**1 933.72**	**1 727.00**	**2 287.60**	**132.5**	**118.3**	**104.33**	**89.20**	**135.50**	**151.9**	**129.9**	**-**	**-**	**-**	**-**	**-**
Traditional Rainfed															
River Nile	44.07	38.00	72.60	191.1	164.7	-	-	-	-	-	-	-	-	-	-
Khartoum	19.73	14.00	0.40	2.9	2.0	-	-	-	-	-	-	-	-	-	-
Aj Jazirah	189.45	293.00	152.00	51.9	80.2	10.20	9.60	7.40	77.1	72.6	-	-	-	-	-
Sennar	83.54	27.00	87.00	322.2	104.1	16.75	3.40	30.00	882.4	179.1	-	-	-	-	-
White Nile	59.95	22.50	104.20	463.1	173.8	18.86	24.20	33.60	138.8	178.2	-	-	-	-	-
Blue Nile	42.06	37.00	162.00	437.8	385.1	10.26	4.30	6.00	139.5	58.5	-	-	-	-	-
Kassala	34.38	27.00	76.00	281.5	221.1	1.61	1.00	9.00	900.0	559.0	-	-	-	-	-
Red Sea	5.16	0.25	32.00	1 280.0	619.9	1.24	-	-	-	-	-	-	-	-	-
North Kordofan	89.48	25.40	234.10	921.7	261.6	73.94	44.40	197.2	445.8	267.7	-	-	-	-	-
West Kordofan	87.84	47.00	95.80	203.8	109.1	128.00	46.00	183.00	397.8	143.0	-	-	-	-	-
South Kordofan	80.32	64.00	114.70	179.2	142.8	9.75	4.90	19.20	391.8	197.0	-	-	-	-	-
North Darfur	51.70	6.00	42.00	700.0	81.2	172.96	24.00	119.00	495.8	68.8	-	-	-	-	-
West Darfur	191.74	88.00	186.00	211.4	97.0	321.33	97.30	201.70	207.3	62.8	1.68	-	-	-	-
South Darfur	381.77	336.00	302.00	89.9	79.1	301.23	305.00	283.00	92.8	93.9	1.68	-	-	-	-
Central Darfur	174.95	129.00	542.00	420.2	309.8	178.18	94.00	192.32	204.6	107.9	-	0.15	-	-	-
East Darfur	236.24	178.40	324.00	181.6	137.1	144.06	153.30	256.00	167.0	177.7	-	-	-	-	-
Total	**1 772.39**	**1 332.55**	**2 526.80**	**189.6**	**142.6**	**1 388.37**	**811.40**	**1 538.14**	**190.0**	**111.0**	**3.36**	**0.15**	**0.00**	**0.0**	**0.0**
Grand total	**4 346.43**	**3 529.18**	**5 247.80**	**148.7**	**120.7**	**1 496.70**	**900.75**	**1 674.64**	**186.0**	**112.0**	**690.09**	**676.38**	**476.27**	**70.4**	**69.0**

Note: Totals and percentages computed from unrounded data.
Source: Authors' own elaboration based on the data collected during the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan, 2022.

Table 12: The Sudan – Cereal production by sector ('000 tonnes)

Sector	Sorghum			Millet			Wheat		
	Five-year average[1/]	2021/22	2022/23 (forecast)	Five-year average[1/]	2021/22	2022/23 (forecast)	Five-year average[1/]	2021/22	2022/23 (forecast)
Irrigated	640.32	469.63	433.40	4.00	0.15	1.00	686.73	676.23	476.27
Semi-mechanized rainfed	1 933.72	1 727.00	2 287.60	104.33	89.20	135.50	0.00	0.00	0.00
Traditional rainfed	1 772.39	1 332.55	2 526.80	1 388.37	811.40	1 538.14	3.36	0.00	0.00
Total	**4 346.43**	**3 529.18**	**5 247.80**	**1 496.70**	**900.75**	**1 674.64**	**690.09**	**676.23**	**476.27**

Note: Totals computed from unrounded data.
[1/] 2017/18-2021/22 average.
Source: Authors' own elaboration based on the data collected during the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Sudan, 2022.

Table 13: The Sudan – Sorghum production by sector

Sector	Five-year average[1/]			2021/22			2022/23 (forecast)		
	Area[2/]	Production[2/]	Yields[2/]	Area[2/]	Production[2/]	Yields[2/]	Area[2/]	Production[2/]	Yields[2/]
Irrigated	314.54	640.32	2.04	261.87	469.63	1.80	233.27	433.40	1.85
Semi-mechanized rainfed	3 990.55	1 933.72	0.48	3 995.04	1 727.00	0.43	3 605.49	2 287.60	0.63
Traditional rainfed	3 085.04	1 772.39	0.57	2 660.70	1 332.55	0.50	3 404.27	2 526.80	0.74
Total	**7 390.13**	**4 346.00**	**0.59**	**6 917.61**	**3 529.18**	**0.51**	**7 243.03**	**5 247.80**	**0.72**

Note: Totals computed from unrounded data.
[1/] 2017/18-2021/22 average.
[2/] Area in '000 hectares, production in '000 tonnes and yields in tonnes/hectare.
Source: Authors' own elaboration based on the data collected during the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Sudan, 2022.

Table 14: The Sudan – Millet 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	3.95	4.00	1.01	0.42	0.15	0.36	1.22	1.00	0.82
Semi-mechanized rainfed	255.90	104.33	0.41	282.00	89.20	0.32	310.70	135.50	0.44
Traditional rainfed	3 034.80	1 388.37	0.46	2 524.62	811.40	0.32	3 254.43	1 538.14	0.47
Total	**3 294.66**	**1 496.70**	**0.45**	**2 807.04**	**900.75**	**0.32**	**3 566.35**	**1 674.64**	**0.47**

Note: Totals computed from unrounded data.
[1/] 2017/18-2021/22 average.
[2/] Area in '000 hectares, production in '000 tonnes and yields in tonnes/hectare.
Source: Authors' own elaboration based on the data collected during the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Sudan, 2022.

Table 15: 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	273.56	686.73	2.51	268.08	676.38	2.52	188.59	476.27	2.5
Semi-mechanized rainfed	-	0.00	-	0.00	0.00	-	0.00	0.00	0.0
Traditional rainfed	2.40	3.36	1.40	0.00	0.00	0.00	0.00	0.00	0.0
Total	**276.00**	**690.10**	**2.50**	**256.40**	**676.38**	**2.28**	**188.59**	**476.27**	**2.5**

Note: Totals computed from unrounded data.
[1/] 2017/18-2021/22 average.
[2/] Area in '000 hectares, production in '000 tonnes and yields in tonnes/hectare.
Source: Authors' own elaboration based on the data collected during the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Sudan, 2022.

Other crops

Sesame

Production of sesame in 2022/23 is estimated at about 0.74 million tonnes, about 12 and 25 percent, respectively, lower than in 2021/22 and the five-year average. The low output is mainly due to a reduced planted area, estimated at about 8 and 21 percent, respectively, lower than in 2021/22 and the five-year average. The reduction in plantings is mainly due to low market prices in 2021 and expectations that they would not increase in 2022, which induced farmers to switch to other crops, mainly sorghum. Losses due to attacks of sesame gold midge contributed to the low output. The average yield of 0.28 tonnes/hectare is similar to last year and the five-year average.

Table 16: The Sudan – Sesame production 2022/23 compared to 2021/22 and five-year average

State/Scheme/ Sector	Five-year average[1/]				2021/22				2022/23 (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	620	527	195	0.37	477.00	467.00	198.0	0.42	242.0	173.0	61.7	0.36
White Nile	211	161	46	0.29	102.00	63.00	23.0	0.36	196.0	98.0	26.1	0.27
Blue Nile	200	134	41	0.31	215.00	151.00	40.0	0.27	102.0	54.0	17.0	0.31
Gedaref	442	370	112	0.30	385.00	367.00	120.0	0.33	290.2	254.1	95.6	0.38
Kassala	133	85	19	0.22	105.00	89.00	19.0	0.21	126.0	117.6	40.0	0.34
North Kordofan	310	236	60	0.25	288.00	202.00	32.0	0.16	300.0	180.0	38.6	0.21
South Kordofan	1 916	1 513	473	0.31	1 571.81	1 338.29	432.0	0.32	1 256.2	876.7	279.0	0.32
Total	**1 685**	**1 315**	**410**	**312.00**	**2 768.00**	**1 997.00**	**597.0**	**299.00**	**1 473.0**	**1 075.0**	**295.0**	**275.00**
Traditional Rainfed												
Aj Jazirah	70	61	21	0.34	68.00	64.00	14.0	0.22	85.3	49.1	10.5	0.21
Sennar	26	24	10	0.42	119.00	108.00	46.0	0.43	42.0	32.0	15.0	0.47
White Nile	179	135	30	0.22	89.00	42.00	7.0	0.18	58.0	41.0	8.7	0.21
Blue Nile	89	74	23	0.31	121.00	85.00	23.0	0.27	102.0	48.0	25.0	0.52
Kassala	17	14	3	0.21	42.00	37.00	9.0	0.25	21.0	16.8	6.0	0.36
North Kordofan	1 209	758	142	0.19	719.00	384.00	41.0	0.11	741.0	645.0	116.7	0.18
South Kordofan	197	143	40	0.28	150.00	94.00	20.0	0.21	162.0	97.0	31.2	0.32
West Kordofan	346	304	69	0.23	316.00	276.00	54.0	0.20	248.0	129.0	14.8	0.11
North Darfur	186	85	12	0.14	180.00	16.00	1.0	0.06	219.2	162.1	17.0	0.10
South Darfur	293	258	94	0.36	402.00	330.00	124.0	0.38	303.0	218.0	104.0	0.48
West Darfur	73	67	27	0.40	37.00	30.00	12.0	0.40	66.8	44.1	36.9	0.84
East Darfur	72	57	16	0.28	142.00	110.00	43.0	0.39	336.0	231.8	61.0	0.26
Central Darfur	88	72	26	0.36	113.00	104.00	19.0	0.18	102.9	72.2	15.0	0.21
Total	**2 845**	**2 052**	**513**	**0.25**	**2 499.04**	**1 678.28**	**413.5**	**0.25**	**2 487.2**	**1 786.1**	**461.8**	**0.26**
Grand total	**4 761**	**3 565**	**986**	**0.28**	**4 070.85**	**3 016.57**	**845.5**	**0.28**	**3 743.4**	**2 662.8**	**740.8**	**0.28**

Note: Totals computed from unrounded data.
[1/] 2017/18-2021/22 average.
[2/] Area in '000 hectares, production in '000 tonnes and yields in tonnes/hectare.
Source: Authors' own elaboration based on the data collected during the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan, 2022.

Groundnuts

The national production of groundnuts in 2022/23 is estimated at about 2.6 million tonnes, 12 percent up from the output obtained in previous year and 9 percent above the average of the previous five years. A reduction in both planted and harvested area in the irrigated and traditional sectors compared to the last season due to lower market prices in 2022 has been more than offset by a 43 percent increase in average yield due to favourable rains.

Table 17: The Sudan – Groundnut production 2022/23 compared to 2021/22 and five-year average

State/Scheme/ Sector	Five-year average[1/]				2021/22				2022/23 (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	0.3	0.3	0.4	1.33	-	-	-	-	-	-	-	-
Aj Jazirah	65.6	60.4	137.2	2.27	57.96	52.0	117.0	2.25	44.10	13.40	14.4	1.07
Rahad	14.8	13.4	31.2	2.33	15.12	13.9	28.9	2.08	10.30	8.10	13.1	1.62
New Halfa	21.3	20.9	75.2	3.60	17.22	16.4	58.5	3.57	14.70	13.02	42.0	3.23
Total	**102.0**	**95.0**	**244.0**	**2.57**	**90.30**	**82.3**	**204.4**	**2.48**	**69.10**	**34.50**	**69.5**	**2.01**
Rainfed												
White Nile	29.7	22.0	8.6	0.39	28.01	20.6	11.5	0.56	34.80	31.30	25.2	0.81
Blue Nile	1.1	0.9	0.4	0.44	-	-	-	-	0.00	0.00	0.0	-
Sennar	0.1	0.1	0.0	0.00	-	-	-	-	13.00	12.20	5.0	0.41
Gedaref	34.3	29.3	19.8	0.68	70.00	70.0	47.0	0.67	36.96	34.86	23.0	0.66
North Kordofan	107.4	86.5	37.2	0.43	223.00	105.0	20.3	0.19	95.00	90.00	71.0	0.79
South Kordofan	52.7	42.8	28.8	0.67	42.00	30.0	17.0	0.57	71.00	57.00	42.8	0.75
West Kordofan	996.3	863.8	630.6	0.73	1 135.00	1 076.0	587.0	0.55	853.00	767.00	658.0	0.86
North Darfur	327.3	246.5	95.6	0.39	342.00	325.0	234.0	0.72	425.90	404.50	291.0	0.72
South Darfur	728.2	652.6	465.6	0.71	828.00	768.0	397.0	0.52	712.00	570.00	420.0	0.74
West Darfur	137.5	125.9	136.2	1.08	77.00	53.0	57.0	1.08	172.60	146.90	207.7	1.41
Central Darfur	121.5	113.4	84.8	0.75	162.00	121.0	73.0	0.60	294.00	252.80	325.0	1.29
East Darfur	931.8	796.7	680.4	0.85	1 512.00	1 285.0	707.0	0.55	840.00	672.00	504.0	0.75
Total	**3 467.9**	**2 980.5**	**2 188.0**	**0.73**	**4 419.01**	**3 853.6**	**2 150.8**	**0.56**	**3 548.26**	**3 038.56**	**2 572.7**	**0.85**
Grand total	**3 569.9**	**3 075.5**	**2 432.0**	**0.79**	**4 509.30**	**3 935.9**	**2 355.2**	**0.60**	**3 617.40**	**3 073.10**	**2 642.2**	**0.86**

Note: Totals computed from unrounded data.
[1/] 2017/18-2021/22 average.
[2/] Area in '000 hectares, production in '000 tonnes and yields in tonnes/hectare.
Source: Authors' own elaboration based on the data collected during the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan, 2022.

Sunflowers

Sunflowers are grown under both irrigated and rainfed regimes in the semi-mechanized sector. The production in 2022/23 is estimated at about 77 500 tonnes, 43 percent below the bumper output obtained in 2021/22 and 31 percent below the average of the previous five years.

The reduced production is a result of a decline in both area (planted and harvested) and yields. The year-on-year fluctuations in area and productivity are caused by lack of clear marketing strategies by the farmers hindering crop sales and making planting decisions uncertain, and by the high costs of hybrid seeds.

Table 18: The Sudan – Sunflower production 2022/23 compared to 2021/22 and five-year average

State/Scheme/ Sector	Five-year average[1/]				2021/22				2022/23 (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	1.00	-	-	-	-	-	-	-	-
Aj Jazirah	-	-	-	-	-	-	-	-	-	-	-	-
White Nile	-	-	-	-	-	-	-	-	-	-	-	-
Khartoum	0.20	0.10	0.00	0.00	-	-	-	-	-	-	-	-
Sennar	0.30	0.30	0.20	0.67	-	-	-	-	-	-	-	-
Suki	0.80	0.80	0.80	1.00	-	-	-	-	-	-	-	-
Rahad	3.40	2.90	4.20	1.45	2.0	2.0	2.4	1.20	0.42	0.38	0.43	1.13
New Halfa	1.20	1.20	1.90	1.58	1.0	1.0	1.2	1.20	0.07	0.07	0.10	1.43
Total	**5.94**	**5.34**	**7.14**	**1.34**	**3.0**	**3.0**	**3.6**	**1.20**	**0.49**	**0.45**	**0.53**	**1.18**
Percent	**8**	**8**	**7**	**88**	**16**	**15**	**15**	**98**	**-**	**-**	**-**	**-**
Rainfed												
White Nile	0.30	0.30	0.10	0.33	-	-	-	-	-	-	-	-
Blue Nile	122.50	102.10	65.20	0.64	80.0	72.0	86.0	1.19	84	66.00	45.00	0.68
Sennar	13.50	9.80	8.10	0.83	16.0	9.0	5.5	0.61	24	12.00	8.70	0.73
Gedaref	56.40	49.90	30.90	0.62	65.0	64.0	40.0	0.63	52.5	46.20	22.00	0.48
South Kordofan	0.80	0.80	0.30	0.38	3.8	3.8	1.6	0.42	2.1	2.10	1.30	0.62
Total	**193.50**	**162.90**	**104.60**	**0.64**	**164.8**	**148.8**	**133.1**	**0.89**	**162.6**	**126.30**	**77.00**	**0.61**
Grand total	**199.44**	**168.24**	**111.74**	**0.66**	**167.8**	**151.8**	**136.7**	**0.90**	**163.09**	**126.75**	**77.53**	**0.61**

Note: Totals computed from unrounded data.
[1/] 2017/18-2021/22 average.
[2/] Area in '000 hectares, production in '000 tonnes and yields in tonnes/hectare.
Source: Authors' own elaboration based on the data collected during the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan, 2022.

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. Unfortunately, for the 2022/23 season only data from the White Nile Sugar company are available. Data indicate a reduction from the previous year of area harvested, production of sugarcane and production of sugar, with the sugar production estimated at 10 000 tonnes, 37 down from the already low output of the previous year. The partial data available do not allow estimating the aggregate 2022/23 sugar production.

Table 19: The Sudan – Sugar production 2017/18 to 2022/23

Company	Year	Area harvested[1/]	Sugarcane production[1/]	Sugar production[1/]	Sugar yields[1/]
Sudanese Sugar Company					
	2017/18	34.30	2 569	251	7.32
	2018/19	35.20	2 484	248	7.05
	2019/20	33.70	2 251	217	6.43
	2020/21	26.60	1 512	142	5.33
	2021/22	26.60	1 512	142	5.33
	2022/23	-	-	53	-
Kenana Sugar Company					
	2017/18	34.50	3 500	350	10.14
	2018/19	34.40	3 500	328	9.53
	2019/20	34.40	3 198	315	9.15
	2020/21	33.60	3 000	300	8.93
	2021/22	33.60	3 000	300	8.93
	2022/23			280	
White Nile Sugar Company					
	2017/18	13.40	413	43	3.17
	2018/19	3.20	100	10	3.12
	2019/20	-	-	-	-
	2020/21	5.60	240	19	3.39
	2021/22	4.40	207	16	3.39
	2022/23	2.95	158	10	3.39
Total	**2017/18**	**82.20**	**6 482**	**644**	**7.83**
	2018/19	**72.80**	**6 084**	**586**	**8.04**
	2019/20	**68.10**	**5 449**	**532**	**7.81**
	2020/21	**65.80**	**4 752**	**461**	**7.01**
	2021/22	**4.40[2/]**	**207[2/]**	**349**	**-**
	2022/23	**2.95**	**158**	**10**	**-**

Note: Totals computed from unrounded data.
[1/] Area in '000 hectares, production in '000 tonnes and yields in tonnes/hectare.
[2/] Data provided only by White Nile Sugar Company.
Sources: Authors' own elaboration based on the data provided by the White Nile sugar producing companies, to the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan, 2022.

Cotton

National production of cotton in the season 2022/23 is estimated at 307 000 tonnes, less than one-third of the bumper output obtained in the previous year and 25 percent down from the average of the previous five years. A well above-average area planted, estimated at more than 70 percent higher than the average of the previous five years, has been more than offset by the very low yields. The average yield declined to 58 and 70 percent, respectively, below the levels of the previous season and the average of the previous five years. The yield decrease is mainly due to waterlogging, pest infestations and insufficient crop rotations implemented by farmers, which, coupled with low application rates of fertilizers due to their high costs, resulted in a significant reduction in soil fertility.

Table 20: The Sudan – Cotton production 2022/23 compared to 2021/22 and five-year average

State/Scheme/ Sector	Five-year average[1/]				2021/21				2022/23 (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	3.77	53	47	125.00	2.66	40.00	10.00	12.30	1.23
Suki	10	9	22	2.44	7.4	0.3	0.18	0.60	0.00	0.00	0.00	-
Sennar	19	18	41	2.28	11	9	12.00	1.33	9.70	8.40	9.00	1.07
White Nile	4	4	4	1.00	-	-	-	-	3.30	3.30	3.50	1.06
Rahad	23	20	51	2.55	24	21	49.00	2.33	16.13	10.85	14.57	1.34
New Halfa	15	13	44	3.38	18	16	53.20	3.33	16.38	14.28	47.60	3.33
Tokar	1	1	1	1.00	-	-	-	-	-	-	-	-
Abu Habil	1	1	1	1.00	-	-	-	-	1.47	1.47	1.26	0.86
Total	**116**	**105**	**311**	**2.96**	**113.4**	**93.3**	**239.38**	**2.57**	**86.98**	**48.30**	**88.23**	**1.83**
Rainfed												
Sennar	6	3	5	1.67	26	18	12.00	0.67	20.00	17.00	20.00	1.18
White Nile	0	0	0	-	-	-	-	-	-	-	-	-
Blue Nile	21	17	35	2.06	173	165	387.00	2.35	210.00	170.00	81.00	0.48
Gedaref	46	40	58	1.45	212	211	239.00	1.13	189.00	165.90	111.40	0.67
South Kordofan	-	-	-	-	3.1	2.9	4.10	1.41	8.40	8.40	7.00	0.83
Total	**73**	**60**	**98**	**1.63**	**414.1**	**396.9**	**642.10**	**1.62**	**427.40**	**361.30**	**219.40**	**0.61**
Grand total	**189**	**165**	**409**	**2.48**	**527.5**	**490.2**	**881.48**	**1.80**	**514.38**	**409.60**	**307.63**	**0.75**

Note: Totals computed from unrounded data.
[1/] 2017/18–2021/22 average.
[2/] Area in '000 hectares, production in '000 tonnes and yields in tonnes/hectare.
Source: Authors' own elaboration based on the data collected during the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan, 2022.

Livestock

The overall average Livestock body condition (LBC) was assessed in 2022 as good to very good. Field observations were confirmed by the PET, a methodology that provides quantitative data on livestock body condition. The average PET score for all animals is reported as 2.77 out of 5, which is a very good score considering that animals in body condition 4 and 5 are very uncommon and are usually reported only among animals at fattening stage before slaughtering. The LBC reported for the main species is 2.7 for camels, 2.77 for cattle, 2.78 for goats and 2.77 for sheep. PET data were collected in East Darfur, Central Darfur, South Darfur, West Darfur, Al Jazirah, Gedaref, Kassala and Sennar states.

Pasture availability was also reported to be very good and expected to last throughout the dry season in almost all states. In Gedaref State, the rangeland area is reported to have reduced to only 1 million feddans compared to the almost 4 million reported in previous years. The reduction is due to the expansion of cultivated areas following the authorization by local authorities to farm in the outskirts of villages and along the seasonal streams (*wadies*), to the expansion of traditional mining and to an inappropriate use of pesticides affecting pastureland. In Kassala State, a feed gap of 20–30 percent is reported, significantly lower than the 60–70 percent gap of last year, as adequate precipitation fostered a complete regeneration of the rangeland resources and drove an increase in pasture availability for the estimated 9 million livestock heads in the state and for the herds migrating from neighbouring states. Data on rangeland was collected only in Gedaref and Kassala states through a PET assessment and average yields were estimated at 1.24 tonnes/hectare of dry matter. This value is in line with yields estimated by the Directorate of Pasture and Rangeland of the Ministry of Animal Resources and the one expected based on the agroecological characteristics of the rangeland in these states.

Water availability is reported to be very good across the country, except in South Darfur and West Darfur states, where water shortages for the livestock population are expected to start in February and in March 2023, respectively. In South Darfur State, the main factor constraining water availability is the collapse of the Um Dafug dam, which had also a negative impact on the fishery sector, while the expected water shortage in West Darfur State is mainly due to the insufficient number of water harvesting infrastructures and of watering points.

No major outbreaks of pest and diseases were reported, apart from localized outbreaks of brucellosis and trypanosomiasis in Blue Nile State and of Lumpy Skin Disease in Gedaref State. Interviewed herders and state officials reported that the number of vaccinations increased in 2022. However, no official data on vaccination campaigns were provided by MoARF. Finally, in 2022, no major conflict episodes between herders and farmers' communities were reported.

©FAO/Estevez Reyes

CEREAL SUPPLY/DEMAND SITUATION

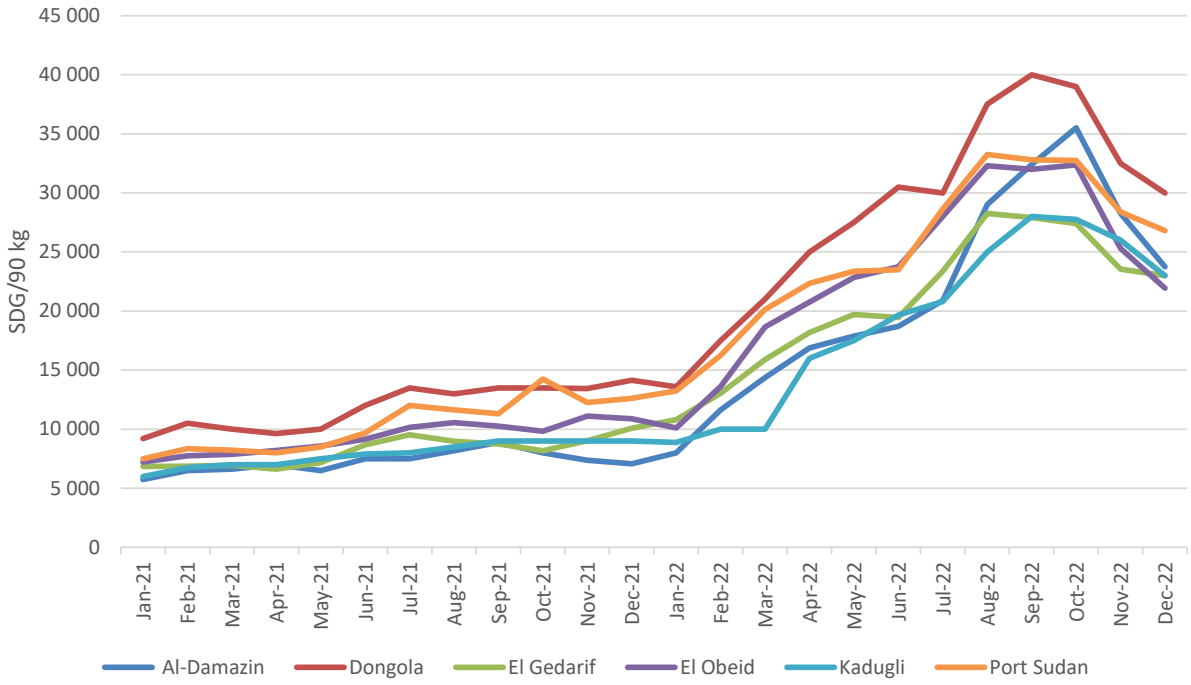
Crop and livestock markets

Between January and August 2022, prices of locally produced sorghum and millet tripled in most markets, mainly due to a tight market supply situation following the below-average cereal output in 2021, the devaluation of the national currency and the ripple effects by the war in Ukraine, resulting in spikes of fuel and fertilizer prices on the international market. Subsequently, prices levelled off between September and October 2022 and declined by 20–45 percent between October and December with the commercialization of the newly harvested 2022 crops. However, as of end-2022, prices of coarse grains remained between two and three times their already elevated year-earlier values.

In the capital, Khartoum, prices of imported wheat followed a sustained increasing trend between

July 2021 and March 2022, surging by almost 50 percent and reaching record highs, driven by the continuous depreciation of the national currency. Subsequently, prices remained mostly stable at record

Figure 3: The Sudan – Wholesale prices of sorghum in selected markets



Source: Authors' own elaboration based on the data from the Food and Agriculture Realtime Messaging and Reporting System (FARMERS). *Download Centre - Price Updates*. Cited December 2022. https://farmers.sd/UpdateDownload.aspx.

levels due the increase in imports in 2022 compared to the previous year. Prices declined by about 25 percent between August and December 2022 as prices dropped on the international market. As of end-2022, prices of imported wheat in Khartoum were around the same elevated values of one year earlier.

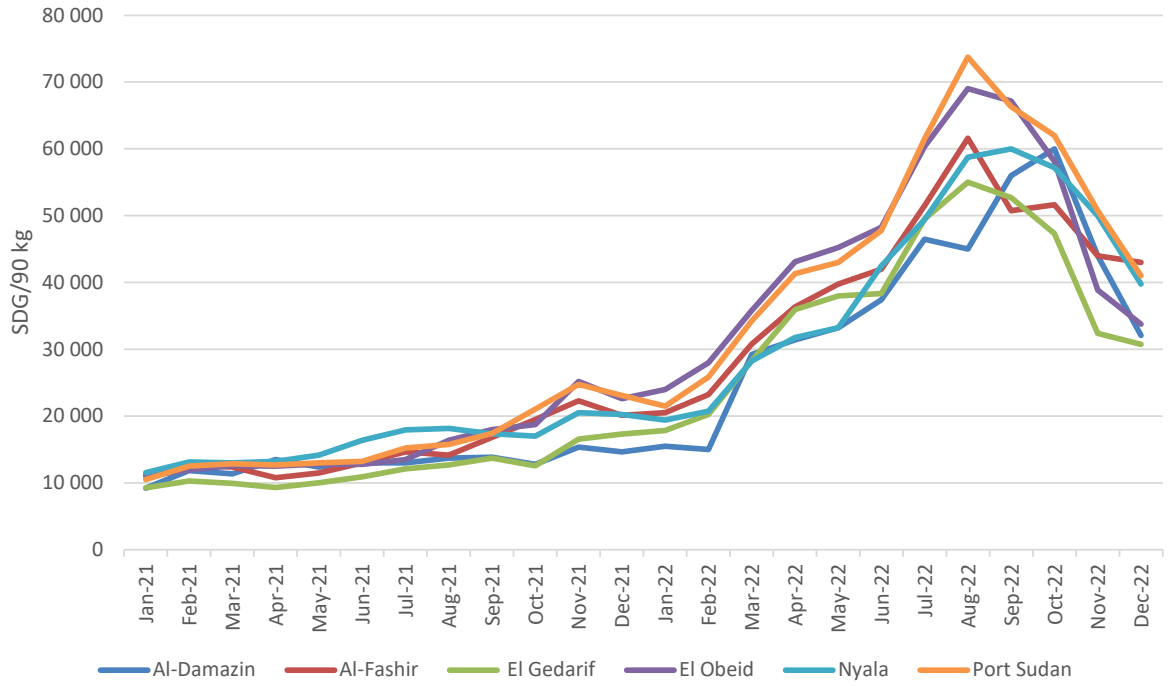
In Dongola, the reference market for locally grown wheat, located in Northern State, prices surged unseasonably by more than 40 percent between March and April 2022, underpinned by low supplies following a reduced harvest in March 2022. Subsequently, prices declined by 40 percent between April December, as prices of imported wheat declined and demand for locally produced wheat eased. As of end-2022, prices of locally produced wheat in Kadugli were 5 percent above the high levels of a year earlier.

As of end-2022, wholesale prices of sesame in El Gedaref market, the main sesame producing area, were 50 percent higher than one year earlier. The increase reflects a below-average domestic output coupled with increased exports[2] and high production and transportation costs.

Prices of livestock generally increased in the first half of 2022, pressured by strong demand for exports, particularly of goats, high transportation costs and currency devaluation. Between August and December 2022, prices of calves, goats and sheep were stable or slightly declined, reflecting declining local demand and the increased sales as pastoral and agropastoral households aimed to generate income for food purchases, amid continued food inflation. In December 2022, prices of calves, sheep and goats in El Obeid market in North Kordofan State, a major livestock-trading hub, were about 20, 60 and 100 percent, respectively, higher on a yearly basis.

Terms of trade for pastoralists, calculated as kilogrammes of sorghum obtained by selling an animal, generally declined in 2022, reflecting the steeper increase of sorghum prices compared to livestock prices. The terms of trade improved in the last two months of 2022, reflecting the seasonal decline of sorghum prices, but remained less favourable than at the beginning of the year. In December 2022, terms of trade for goat, sheep and calves were 18, 27 and 52 percent, respectively, lower than in January 2022.

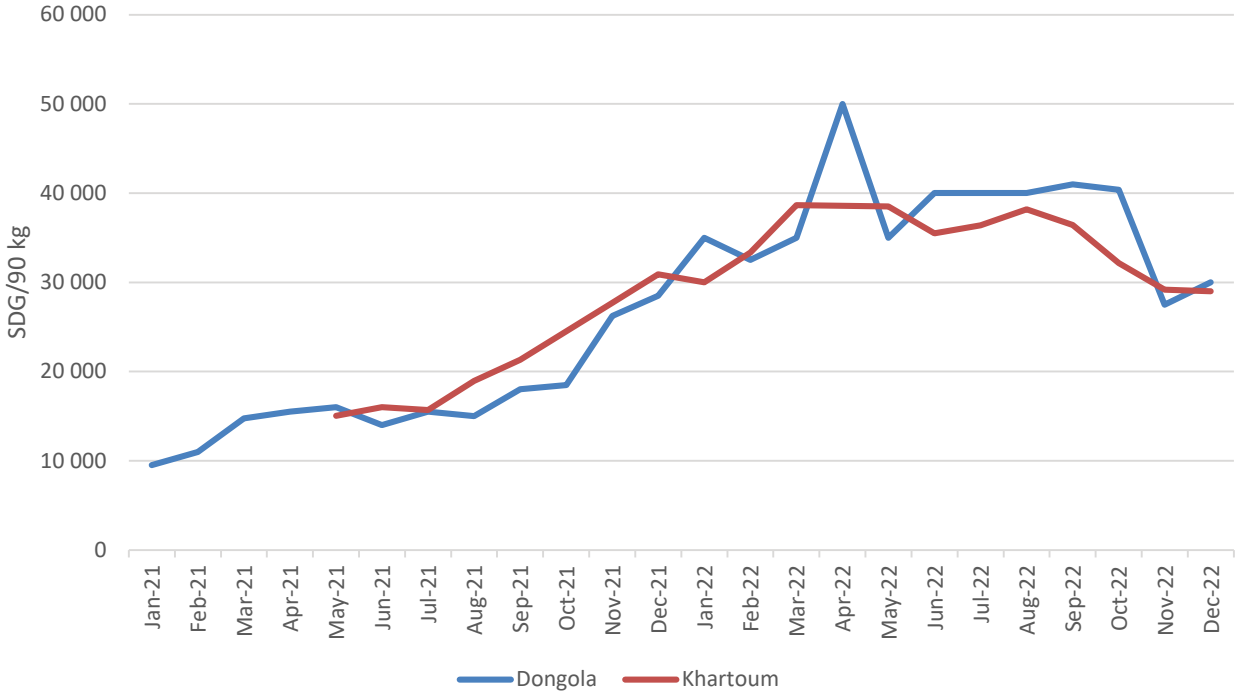
Figure 4: The Sudan – Wholesale prices of millet in selected markets



Source: Authors' own elaboration based on the data from the Food and Agriculture Realtime Messaging and Reporting System (FARMERS). *Download Centre - Price Updates*. Cited December 2022. https://farmers.sd/UpdateDownload.aspx.

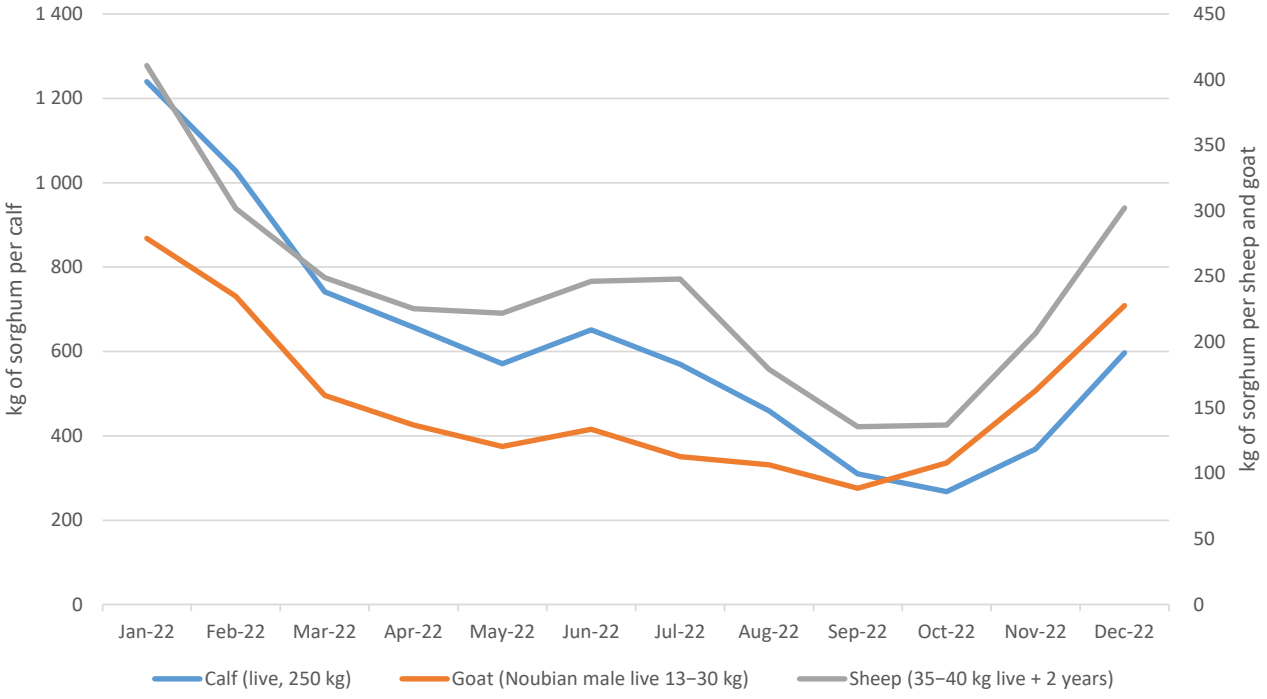
[2] Sesame exports during the first nine months of 2022 were about 20 percent higher than in the same period of the previous year.

Figure 5: The Sudan – Wholesale prices of wheat grain in selected markets



Source: Authors' own elaboration based on the data from the Food and Agriculture Realtime Messaging and Reporting System (FARMERS). *Download Centre - Price Updates*. Cited December 2022. https://farmers.sd/UpdateDownload.aspx.

Figure 6: The Sudan – Terms of trade (livestock) in El Obeid market



Source: Authors' own elaboration based on the data from the Food and Agriculture Realtime Messaging and Reporting System (FARMERS). *Download Centre - Price Updates*. Cited December 2022. https://farmers.sd/UpdateDownload.aspx.

Cereal supply/demand balance (January–December 2023)

The national cereal supply/demand balance for the 2023 marketing year (January/December) is summarized in Table 19, 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 for harvest in March 2023, and the latest information on consumption, feed use, trade and stocks availability and plans. The following assumptions were used:

- Total cereal production is estimated at 7.4 million tonnes, including a forecast of 476 270 tonnes of wheat for harvesting in March 2023.
- Based on the information provided by the ABS regarding the planned reserve stocks by the SRCo, cereal stocks for 2023 are forecast to build up at 1.9 million tonnes, comprised 1.2 million tonnes of wheat (including 400 000 tonnes of wheat expected to be domestically procured), 600 000 tonnes of sorghum and 100 000 tonnes of millet.
- Total food use is estimated at 7.23 million tonnes, using the estimated population figure of 47.6 million in mid-2023. Per capita average consumption is set at 152 kg of cereals per year, including 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 296 000 tonnes. Based on discussions with farmers and extension officers, it is estimated that about 5 percent of the sorghum production and 2 percent of the millet production are going to be used as feed for livestock and poultry.
- Seed requirements for 2023 planting are estimated at about 122 000 tonnes on the basis of the average planted areas during the last three years and the recommended seed rate in the country. The following seed rates have been used: 7.5 kg/hectare for sorghum; 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 353 000 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 2023 marketing year (January/December) are forecast at about 3.6 million tonnes, mainly wheat plus a negligible amount of maize and rice. A substantial amount of import requirements is expected to build up stocks of the SRCo, which are forecast at 1.2 million tonnes of wheat. SRCo stocks of sorghum and millet are also expected to build up by 600 000 and 100 000 tonnes, respectively.

A surplus of about 484 000 tonnes of sorghum and 679 000 tonnes of millet is expected to increase private stocks both at households' and traders' levels.

The estimated cereal deficit is expected to be mainly covered by commercial imports. It is worth noting that the weakening national currency and the disruptions to international trade caused by the conflict in Ukraine may have a major detrimental impact on the country's ability to import wheat. Therefore, a close monitoring of changes in the value of the national currency and on the developments on the international market is required to guarantee an adequate supply of wheat in the country.

Table 21: The Sudan - National cereal supply/demand balance, January–December 2023 ('000 tonnes)

	Sorghum	Millet	Maize	Wheat	Rice	Total
Availability	**5 247.80**	**1 674.53**	**42.00**	**476.27**	**21.88**	**7 462.48**
Production	5 247.80	1 674.53	42.00	476.27	21.88	7 462.48
Food use	3 567.53	761.07	47.57	2 758.89	95.13	7 230.18
Feed use	262.39	33.49	-	-	-	295.88
Seed requirements	71.00	17.00	1.00	32.00	1.00	122.00
Post-harvest losses and other uses	262.39	83.73	1.68	4.76	0.44	353.00
SRCo stocks build-up	600.00	100.00	-	1 200.00	-	1 900.00
Private stocks build-up	484.50	679.24	-	-	-	1 163.73
Estimated import requirements			**8.25**	**3 519.38**	**74.69**	**3 602.32**

Note: Totals and percentages computed from unrounded data.

Source: Authors' own elaboration based on the data collected during the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan, 2022.

© FAO/C. Estevez Reyes

RECOMMENDATIONS

The aim of the following recommendations is to strengthen domestic production, to improve food security and to enhance market functioning:

- Closely monitor the food security situation, as high inflation rates are significantly increasing the costs of production of agricultural products, resulting in high food prices constraining food access for large segments of the population.
- Review national policy and technical support to wheat production in order to increase productivity so that prices of locally produced wheat can be competitive with prices of imported wheat.
- Provide technical support to the value chain of millet through extension services and with awareness campaigns aiming to gradually increase millet consumption across the country, considering its high nutritive value and production potential.
- Explore and create awareness regarding innovative utilization of sorghum and millet, for example sorghum bread.
- Promote activities to increase profitability across the whole value chain (e.g., processing, better packaging, etc.) of main exportable agricultural commodities: livestock, cotton, gum arabic, sesame and groundnuts, but also of traditional staples such as sorghum and millet.
- Support MoAF and state authorities, both financially and technically, to conduct surveys aiming at collection and validation of data on areas planted and harvested, yields, production and crop losses.
- Support the implementation of a comprehensive agriculture and livestock census to provide updated data and information.

- Evaluate the possibility for ABS to increase finance for smallholder farmers.
- Improve the effectiveness of the National Plant Protection Department in the identification and treatment of pests and conduct capacity-building programmes for state ministries.
- Increase quality checks of chemical inputs available in the country.
- Improve rehabilitation and maintenance of irrigation infrastructure: levelling, de-silting, cleaning and drainage, in the national schemes. In particular, it is recommended to replace irrigation pumps in the Rahad Irrigation Scheme with the aim to restore local irrigation capacity, therefore, increasing the area under cultivation and crop productivity.
- Increase the amount of certified seeds to be distributed in a timely manner. In the longer period, the current system of seed distribution should be replaced by a national programme aiming to expand the domestic production of improved seeds.

- Strengthen the technical capacity of agricultural extension services to farmers, including innovative and environment-friendly methodologies.

- Improve post-harvest management and enhance storage facilities at both household and community level in order to reduce post-harvest losses.

- Adjust Salam prices during the season according to variations in production costs.

- Strengthen monitoring of livestock body condition and pasture availability with the support of quantitative tools already available in the country; AFBS, PLEWS and PET.

- Expand the application of water harvesting technology. It is recommended to repair and maintain the existing infrastructures and to build additional ones in order to increase water availability throughout the country and reduce overcrowding of animals.

- Implement measures to limit the expansion of cropping areas at the expense of pastures and forests.

- Increase the establishment of fire lines in grazing areas to reduce risks of pasture losses due to wildfires.

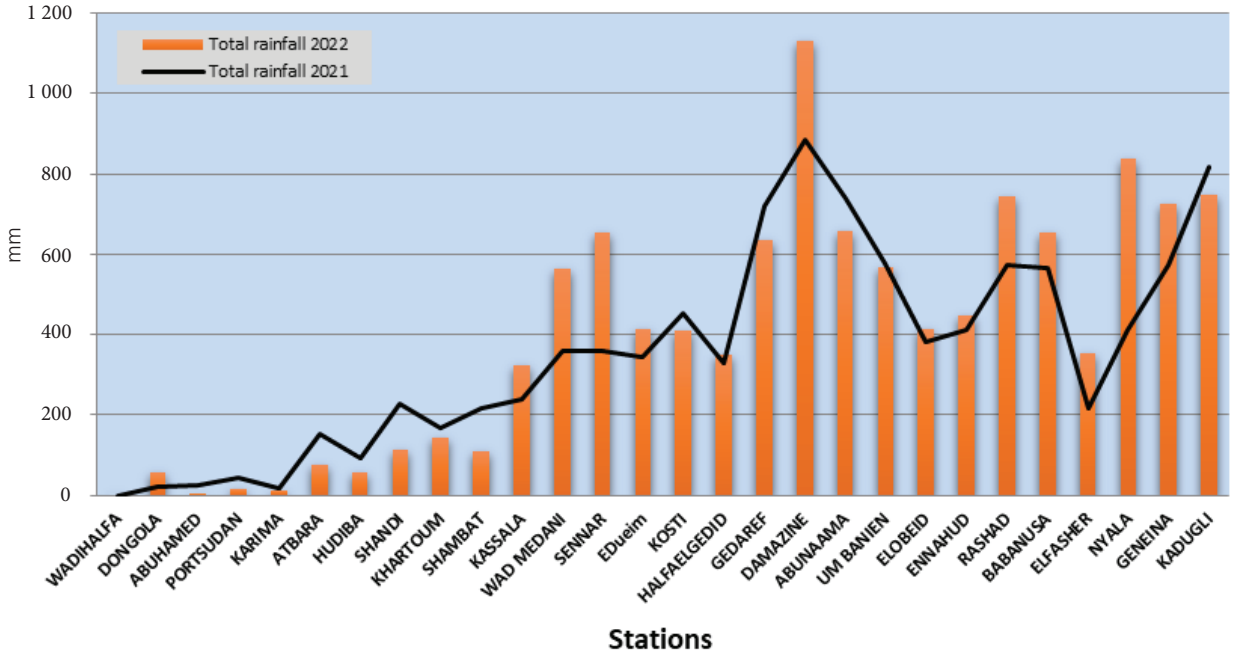
- Improve the capacity of the Central Veterinary Research Laboratory, located in Soba Town, Khartoum State, to produce vaccines with the aim to fully cover the national requirement and reinforce decentralized veterinary services to ensure that vaccination campaigns are conducted in an effective and efficient manner.

ANNEXES

© FAO/L. Innocente

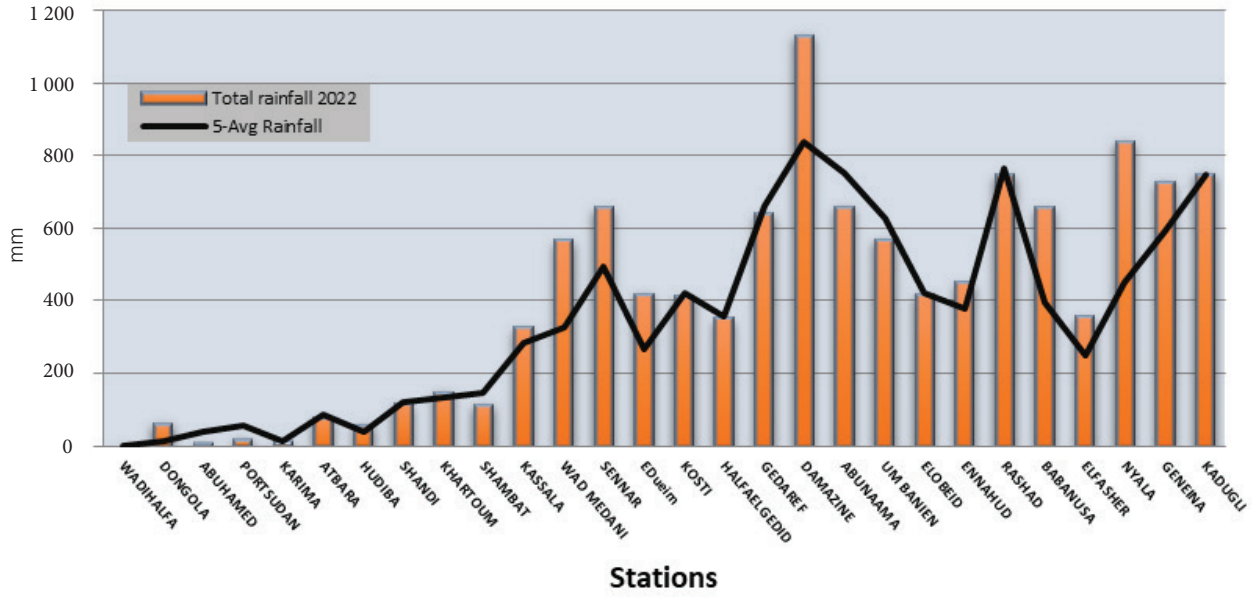
ANNEX 1

Figure A1a: The Sudan - Cumulative seasonal rainfall comparison in selected states, 2022 and 2021 (ground weather station data)



Source: Authors' own elaboration based on the data provided by the Sudan Meteorological Authority (SMA) to the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan, 2022.

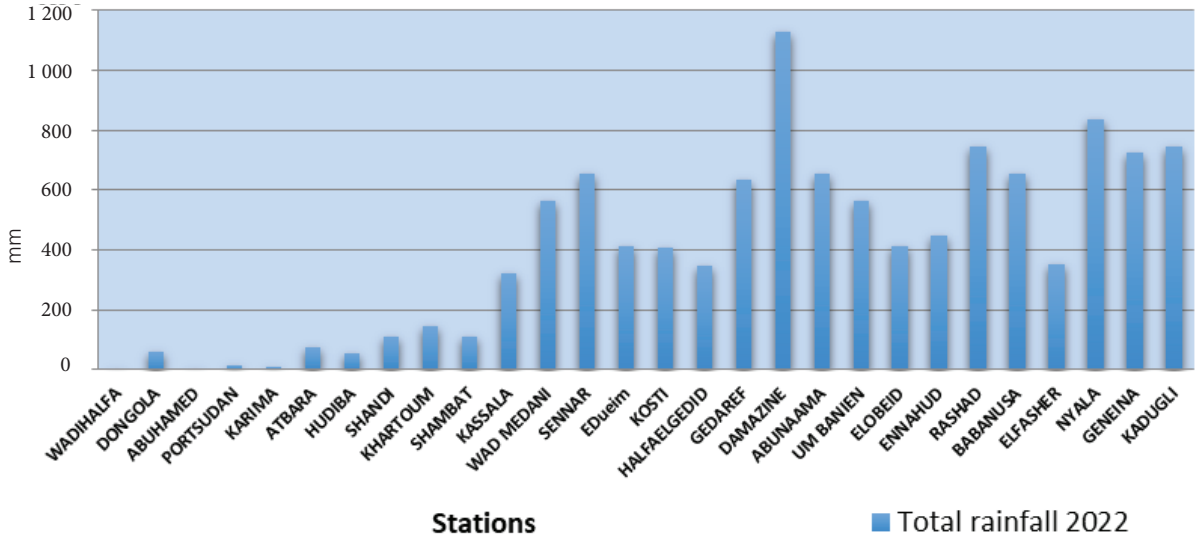
Figure A1b: The Sudan - Cumulative seasonal rainfall comparison in selected states, 2022 and long-term average (ground weather station data)



Source: Authors' own elaboration based on the data provided by the Sudan Meteorological Authority (SMA) to the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan, 2022.

ANNEX 2

Figure A2: The Sudan - Cumulative rainfall 2022 by state (main stations)



Source: Authors' own elaboration based on the data provided by the Sudan Meteorological Authority (SMA) to the 2022 FAO Crop and Food Supply Assessment Mission (CFSAM) to the Republic of the Sudan, 2022.

ANNEX 3

CFSAM to the Republic of the Sudan 2022
Data needed from official sources, NGOs and farmers

CHECKLIST for CFSAM (December 2022)

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 2021/22, 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)**

Water logging/damage 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. What are the main crops grown

Agricultural activities by crop	Sorghum		Millet		Sunflowers		Cotton		Sesame		Groundnuts		Other (specify)	
	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021	2022	2021
% 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														

5. Area and crop status

Crop		Sorghum	Millet	Sunflowers	Cotton	Sesame	Groundnuts
Irrigated area planted	2022						
	2021						
Irrigated area harvested (feddans)	2022						
	2021						
Irrigated average yield (kg/feddan)	2022						
	2021						
Mechanized area planted	2022						
	2021						
Mechanized area harvested (feddans)	2022						
	2021						

Mechanized average yield (kg/feddan)	2022						
	2021						
Traditional area planted	2022						
	2021						
Traditional area harvested (feddans)	2022						
	2021						
Traditional average yield	2022						
	2021						
Crop status compared to last year **Mechanized** average yield (kg/feddan)	Better						
	Same						
	Worse						

6. Winter season 2022/23 plan and forecast

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)**	
	2022	**2021**			**2022**	**2021**	**2022**	**2021**	**2022**	**2021**

7.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:*				

7.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:*				

ANNEX 3 *cont'd*

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 ☐

	Numbers of animals	Comparison with previous year	Body Condition (1-5)	Body Condition previous year	Main Diseases	Diseases previous year	Vaccination (yes/no - % - source)	Vaccination previous year (more, less, similar)	Drugs (availability, source, price)	Drugs previous year (more, less, similar)
Cattle										
Sheep										
Goats										
Poultry										
Camels										
Reason for expansion/ contraction of number of animals:										
.....										
.....										

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	Accessibility	Movement (distances, frequency, timing vs normal)	Remarks
Pasture					
Water					

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

Crop	**Price (SDG/sack)**						
	Now	**3 months ago**	**6 months ago**	**Last year**	**Trend**	**Supply**	**Sales**
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:
……
……
……
12.2 On livestock production:
……
……
……
12.3 On horticultural production:
……
……
……

ANNEX 3 *cont'd*

13.1 The impact of the Ethiopian conflict on the position of agricultural workers in the border states
General remarks:

……
……
……

13.2 The impact of tribal conflicts on the agricultural season and food security:

……
……
……

General remarks:

……
……
……

FAO CFSAM to the Sudan, 2022
State level Report Format

The report is based on the information collected through the FAO CFSAM checklist. Information collected from different actors interviewed shall be summarized in the different report's section. Each section of this report provides a description of the minimal information that should be summarized, provided. Where possible information should be compared to last year.

State NAME	
DATE OF ASSESSMENT STARTED AND COMPLETED	

TEAM MEMBERS

NAME	AGENCY	POSITION

LIST OF LOCALITIES VISITED

Locality NAME	Contribution to Summer CROPS – planted area (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 sandstorms, floods, flash floods, dry spells, etc.
All information, when possible, should be compared to previous season.

Rainfall: .....
Starting compared with previous year and LTA and when started:.....
When ended (Date and month):.....
Rainfall quantities: compared to last year and LTA (copy over sheet- by month and station compared to last year):.....
Dry spells (When, where, period, impact):.....
Water logging (When, where, period, impact):.....
.....
.....
.....

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:
.....
.....
.....

1.3. AGRICULTURAL INPUTS

Comment on the availability, accessibility and cost of the main agricultural input utilized in the production system of the state, with comparison with previous year:.....
.....
.....
.....
.....

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 access constraints, shortages of pasture and drinking water and its extent. Give an overall assessment of the current livestock body condition, numbers and health situation. Highlight any abnormality (disease outbreaks, out migration, influx of livestock from neighbouring areas, animal mortality, change in body condition and herd size, etc.) and identify the affected localities. Conflicts, theft, fire hazards:
.....
.....
.....
.....

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. 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):.....
.....

5. Comments and Recommendation

Please provide recommendations in order of intervention and to strengthen production to improve food security and enhance market functioning at state level:
.....
.....
.....
.....

6. Feedback and recommendations on the Appropriate Time of Assessment

.....Timing:.....
..... Observations and comments.....
.....
.....
.....

NOTES

i. **Robinson WI**. 2011. PET- Livestock Sudan: A Pictorial Evaluation Tool for Livestock Assessment in Sudan. AA International Ltd, Aberystwyth. FAO. https://www.aainternational.co.uk/m2mcms/uploads/file/pet-ls-n-sudan-revised-ed-nov-2015-with-photoplates-comp.pdf.

ii. **IMF**. 2021. *IMF reports and publications by country - Sudan*. District of Columbia (DC). Cited December 2022. https://www.imf.org/en/Countries/SDN.

iii. **IMF**. 2022. *World Economic Outlook Database*. International Monetary Fund (IMF). District of Columbia (DC). Cited 11 October 2022. https://www.imf.org/en/Publications/WEO/weo-database/2022/October.

iv. **CBS**. 2022. *Statistical Database*. Central Bureau of Statistics. Central Bank of Sudan. Khartoum. Cited December 2022. https://cbos.gov.sd/en/content/statistical-database.

v. **UNHCR**. 2022. *Sudan: Population Dashboard - Overview of Refugees and IDPs in Sudan*. 30 November 2022. https://reliefweb.int/report/sudan/sudan-population-dashboard-overview-refugees-and-idps-sudan-30-november-2022.

vi. **IPC**. 2022. *Sudan - food insecurity levels continue to increase driven by the worsening macroeconomic situation, poor harvest and conflict*. IPC Acute food insecurity analysis. Integrated Food Security Phase Classification (IPC). 21 June 2022. https://www.ipcinfo.org/fileadmin/user_upload/ipcinfo/docs/IPC_Sudan_AcuteFoodInsecurity_2022Apr2023Feb_report.pdf.

vii. **UNHCR**. 2022. *Sudan: Population Dashboard - Overview of Refugees and IDPs in Sudan*. 30 November 2022. https://reliefweb.int/report/sudan/sudan-population-dashboard-overview-refugees-and-idps-sudan-30-november-2022.

viii. **WFP**. 2022. *Dataviz - Seasonal Explorer*. Vulnerability Analysis and Mapping (VAM). Rome. Cited December 2022. https://dataviz.vam.wfp.org/seasonal_explorer/rainfall_vegetation/visualizations.

This report was prepared by Alessandro Costantino, Luca Innocente and Carlos Estevez Reyes (FAO), under the responsibility of the FAO Secretariat with information from official and other sources. The design/layout of this report was prepared by Daniela Valeri Petrasova. Given that conditions can change rapidly, please contact the following for further information, if required:

Mr Mario Zappacosta
Senior Economist
Global Information and Early Warning System on Food and Agriculture (GIEWS)
Markets and Trade Division
GIEWS1@fao.org

Food and Agriculture Organization of the United Nations (FAO)
Rome, Italy

Please note that this Special Report is also available on the Internet as part of the FAO World Wide Web www.fao.org at the following URL address: http://www.fao.org/giews/reports/special-reports/en/.

The Global Information and Early Warning System on Food and Agriculture (GIEWS) has set up a mailing list to disseminate its reports. To subscribe, submit the Registration Form on the following link:

http://newsletters.fao.org/k/Fao/markets_and_trade_english_giews_world

© FAO/C. Estevez Reyes

ISBN 978-92-5-137747-5 ISSN 2707-2479

9 789251 377475

CC5009EN/1/03.23