



South Sudan Crop Watch Updates to 3rd Dekad of July 2017

Disclaimer: The authors would like to acknowledge the technical difficulties in conducting this analysis within a highly complex context. This report provides a first step in understanding the status of food crops in South Sudan. The information and views set out in this working paper are those of the authors and do not necessarily reflect the official opinion of FAO.

Highlights

- Despite the favourable rainfall prediction of normal to above normal, the rainfall over most of the cropping areas started late with inadequate amounts in many places up to the end of May 2017. This caused late planting of crops and may result in harvesting delays.
- Despite the delayed planting and the dry spells experienced during the planting season, crops in most areas have recovered and performed well with the improved amount and distribution of rainfall in June and July.
- Counties most affected by prolonged dry spells include areas within Wau, Jur River, Kapoeta South and Kapoeta East and Gogrial West among others. Many farmers in these areas were forced to replant their fields.
- The Fall Armyworm (FAW) infestation was reported in the former Eastern Equatoria, Central Equatoria, Western Equatoria, Northern Bahr el Gazal, Upper Nile and Jonglei, with maize being the most affected crop. The extent of damage on crops varies from area to area, with average to serious damage in Magwi, Juba, Pochalla and Budi counties.
- The majority of the population (around 75 percent) in the former Central Equatoria have left their living areas due to insecurity, particularly from Yei, Lainya, Morobo, Kajo Keji and some parts of Juba, resulting in a significant decrease in the amount of cultivated area during the current season.

1. Introduction

This report provides a general outlook on the rainfall and crop condition in South Sudan during the period of March – July 2017. The report is based on planting assessments carried out in the field; crop monitoring reports from more than 30 counties; remote-sensing products, including Normalized Difference Vegetation Index (NDVI), satellite-based rainfall estimates and data from local rain gauges as well as the Vegetation Health Index (VHI) and the FAO Agricultural Stress Index (ASI)¹. The analysis examines rainfall and crop performance in bi-modal and uni-modal areas of South

¹ The FAO ASI aims at detecting cropping areas with a high likelihood of water stress (drought). Based on the VHI, it assesses the severity (intensity, duration and spatial extent) of dry periods and calculates the percentage of arable land affected by drought at pixels level. For ASI on South Sudan, please visit <http://www.fao.org/giews/earthobservation/country/index.jsp?lang=en&code=SSD#>

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Sudan during the months of March to July 2017. However, the performance of crops may change rapidly over the coming weeks and months depending on the rainfall situation across the country. The lack of long-term series of rainfall data as well as problems faced accessing information in most of the conflict-affected areas are some of the constraints faced in the production of this report.

2. Rainfall and crop performance in bimodal areas (Greater Equatoria)

Although the March to May forecast for most parts of Magwi, Kajo-Keji, Yei, Lainya, Yambio, Nzara, Ezo and Tambura indicates the likelihood of above normal to normal rainfall in comparison with the long-term average, some of these areas including Kajo Keji, Terekeka and Magwi received slightly below normal rainfall during the indicated period. Most of these areas have also faced dry spells of 2-3 weeks, up to the second Dekad of April. The depressed rainfall observed in Mvolo and parts of Mundri caused water stress, resulting in poor pasture and poor prospects of crop productivity.

The highest amount of rainfall (above average) was recorded during the third Dekad of April and was

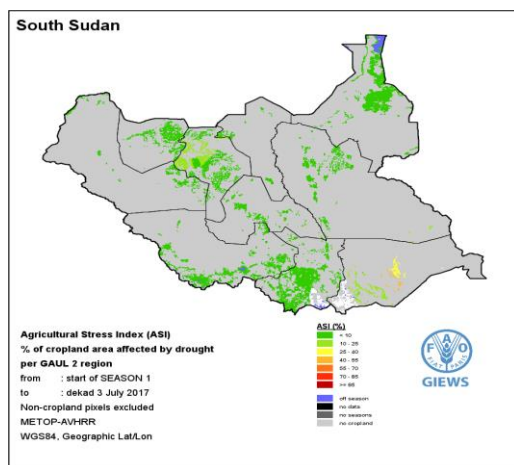


Figure 1. Agricultural stress index (ASI) - Dekad 3 July 2017

followed by below average rainfall up to the end of May. The June to July rainfall was normal to above normal in most parts of the Equatoria Region, with improved distribution that created favorable growing conditions for crops, with the exception of the Greater Kapoeta Region which has experienced moisture deficiency owing to prolonged dry spells (Figure 1).

Most of the rural population in former Central Equatoria is displaced (around 75 percent) due to insecurity, particularly in Yei, Lainya, Morobo, Kajo Keji and some parts of Juba County. Consequently, information from most of these areas is scarce. For instance, in Yei cultivation is carried out within the vicinity of Yei Town since far away fields are not

accessible due to insecurity. The rains that started in April were average with no dry spells, and the performance was better than that of the previous year. Planting in Yei was carried out in late April and May. Land preparation for the second season is ongoing within and around the town. In the former Juba County (Lobonok area) rains started in April with dry spells in June lasting up to three weeks. However, the impact on the performance of crops was minimal. The cultivated area in former Juba County decreased this year compared to the previous year due to insecurity and increased cost of tractor hire. The second season land preparation (which should be carried out in July/August) may not occur in areas such as Rokon, Bungu, Ganji, Lirya and Lokiliri where access is affected by insecurity. FAW infestation was reported in Yei in May with mild effect; however it was serious in Tombur and Lobonok Payams of the Juba County.

Rainfall in most of Eastern Equatoria started in March, however, was followed by a 2 – 3 week long dry spell up to late April. Hence, the effective rain in most of the cropping areas appeared towards the end of April and the amount was average to below average in most areas, with no prolonged dry

spells, except in the Greater Kapoeta Region. Planting started in late April and sorghum was at vegetative stage in July while groundnuts were pegging (pod formation). The FAW infestation was noticed in May in Torit, Magwi and Budi with devastating effects in some areas of Magwi and Budi. Maize planted earlier in the season escaped the effects the pest attack compared to that planted late in the season. Cultivated area in more secure parts of Eastern Equatoria has increased by about 20 percent. This increment is attributed to average and above average rains encouraging farmers to cultivate additional lands.

The situation in Greater Kapoeta was different as rains started late in May, followed by a prolonged dry spell of about three weeks in June, resulting in the cultivation of less land, which correspondingly affected the performance of growing crops. The cultivated areas are small due to farmers' inability to expand because of limited energy exacerbated by persistent food insecurity in the area. They also use rudimentary farm tools such as maloda. In some locations in Kapoeta South and Kapoeta East, especially in Narus, crops failed due to below normal rainfall during most of the growing period (as indicated in the satellite based NDVI, [Annex 1] and Figure 1 [map]), and farmers have had to replant their fields.



Figure 2. Recovered sorghum crop (after dry spell) in Kapoeta South

The NDVI anomaly for the period of March to May 2017 indicates that a deteriorated vegetative condition was experienced predominately in the south-eastern part of South Sudan (Figure 1 [map]). The crops recovered and by July were performing well, following the improved rainfall condition (Figure 2). The presence of FAW was also reported in the low land areas of Budi with mild to serious damage on crops, particularly maize.

The former Western Equatoria, experienced average rainfall, and the first season crop of maize has performed well. In Nzara and Yambio, planting for the first season was completed by March, while in Tambura, it continued into early April. Harvesting of the first season maize is underway, and will be followed by land preparation for the second season crops.

3. Rainfall and crop performance in uni-modal areas (Greater Bahr el-Gazal Region)

Warrap State experienced late rainfall, not starting well until late May/early June, with the amount considered normal to below normal. While rainfall distribution is normal over most of the state, Twic County experienced short dry spells, subsequently delaying the planting of sorghum.

Although, in most locations around Twic (Kuac South, Gogrial and Ajakuac), rains started late (towards the end of May into early June [Turalei and Aneit]), the performance of crops was generally good this year (as of July). There were no reports of major shocks such as drought, floods or hailstorm up to the end July. However, the short dry spells in certain locations (Kuac South and Gogrial Centre) had minor effects on crops. In other areas such as Nyiel Abiel (Turalei) and Wunpeth

(Aneit-Abyei), the dry spells reportedly affected emerging crops leading to decreased plant population density.

Planting and replanting practices were also disrupted by the shortage of rains in some areas. The rains started to improve in May creating a favourable condition for crops. In general, the performance of the season in the former Warrap is good this year with the absence of damaging floods and prolonged dry spells up to July. However, due to the inter-tribal fighting that took place between communities in Agok (Geogrial West) and Apuk (in Gogrial East) farmers of these areas were not able to plant their crops. Abyei Administrative Area also experienced dry spells at the beginning of the season, which later improved with the continuation of the rain.

The planted area in Gogrial West, Twic and Abyei has increased by about 25 percent this year, especially for sorghum fields. In Twic County, households that cultivated maize have increased. The main reasons for area expansion include hunger and high price shocks that have been experienced over the past several months. Since the planting season was delayed because of rainfall, crops were at vegetative phase of growth in the first Dekad of July, especially sorghum, sesame and maize. Groundnuts were at flowering stage, while in other areas planting was ongoing as of July. In areas such as Kuac South, Nyiel Abiel and Majak Ahiir replanting was carried out in late May and early June; while in Agok and Gogrial Centre replanting took place in June. Rainfall and NDVI figures for selected areas of Greater Bahr el-Gazal region are indicated in Annex 2.

In the former Western Bahr el-Gazal rains started across the state in late May, as opposed to the normal starting time of April. The first rains were recorded in mid-May, followed by a two week long dry spell in June. The areas worst affected by this dry spell were the Iron Stone Plateau agro-pastoral areas, covering the southern parts of Jur River County, and Greater Bahr el-Ghazal sorghum and cattle zone, covering the northern parts of Jur River. As a result, planting in many areas was delayed. Udici and Kangi *payams* of Jur faced a prolonged dry spell in June for a period of three weeks (Figure 3). The crops planted on high grounds in this County (eg. Udici) showed moisture stress in June but

recovered at the beginning of July with the improvement of rains. On the other hand, in areas such as Marial Bai, which are located in low lying areas, the effect of the dry spells on crops was less compared to that of Udici. In general, the rainfall amount in most places was considered as average when compared to the previous year.

As groundnuts are harvested before the arrival of pastoralists, the area planted to groundnuts has increased compared last year because farmers want to avoid their crops being destroyed by the returning livestock. Ground nuts also contribute as cash crop and are more tolerant to pests compared to the other crops produced in the area.

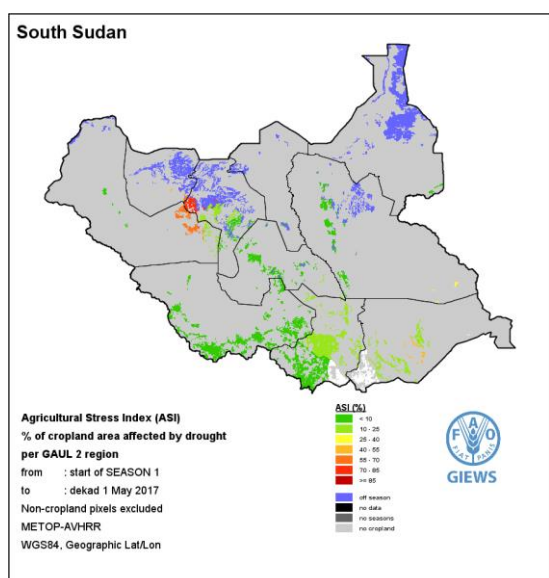


Figure 3. Crop water stress around Gogrial, Wau and Jur River, and parts of Kapoeta (Dekad 1, May 2017)

Sesame production in Western Bahr el-Ghazal may decrease as a result of prolonged dry spells in some areas where germination and early vegetative growth was affected.

Most farmers are reluctant to plant the traditional long cycle sorghum varieties since these crops are subjected to destruction by livestock, which usually return before late sorghum is harvested.

Farmers have instead started to substitute the long-term sorghum with improved short-term varieties such as *Sesso* and *Gadam Hamam*, which can be harvested at the same time as groundnuts and therefore escape destruction by early returning livestock. The ongoing insecurity in the area has also pushed farmers to plant short-term improved sorghum varieties. In general, the overall performance of crops in Western Bahr el-Ghazal was good up to the end of July, in spite of the late onset of rains and minor infestation by FAW.

In the former Lakes State, rainfall started in April, continued up to May and then discontinued for about 3 weeks in June. This dry spell affected the cultivation and delayed the planting of crops. Early crops such as maize were especially affected, as they are usually planted in small areas around homesteads. Groundnut crop was not much affected, while sorghum was stressed due to the shortage of moisture. In Wulu County, Makundi *Payam* was mostly affected and Wulu Gedim *Boma* slightly affected by the dry spells. Part of Rumbek East in Malou was also affected by about three weeks of dry spells in June.

In Yirol West, Manakar *Boma* has been badly affected and farmers were cultivating as the rains resumed in July. Some farmers expressed that the dry spells may reduce groundnut yields given that the crop becomes one of the important cash crops for Lakes state especially in Yirol, Rumbek and Wulu. The amount of rainfall in Lakes was generally below average and commenced late, compared to last year when it started in March and became effective in April. As a result, the planting started immediately after the effective rains in the first week of April and the farmers who have missed the first opportunity have been planting up until July.

Early sorghum (*Nyandok*) is in vegetative stage in Wulu, Yirol and Rumbek Centre. Crop germination in high grounds seemed to be affected by dry spells and few farmers have done replanting due to the lack of seeds such as groundnuts. Access to farm land in most areas of the former Lakes State is generally normal. However, there are areas affected by inter-clan fighting, especially among youth from cattle camps and these are causing disruptions to cultivation activities, particularly in Cueibet and Rumbek East.

Labour is available but very expensive, costing between SSP 1 500 and SSP 2 000 for both hand digging and weeding of an area equivalent to one *feddan* (0.42 ha). The cost of hiring ox-plough is similar, at about SSP 2 000 for one *feddan*.

4. Rainfall and crop performance in uni-modal areas (Greater Upper Nile Region)

Favourable rainfall and vegetation cover was recorded for most parts of the former Upper Nile State (see Annex 3). There was normal to above normal rainfall except the delay and low amount of rainfall at the beginning of the season. The below normal rainfall continued up to the end of April and into the first week of May in most places of Upper Nile including Renk, Melut and Maban. The rains then gradually improved and this has resulted in normal to above normal vegetation cover as shown in the NDVI figures (Annex-3).

In Renk, the rains started around mid-June and were followed by dry spells of up to 10 days before the rains became fully established in July, and the amount of rainfall throughout July was above

normal. Planting of sorghum has been ongoing with an increase in area being cultivated. Renk received a total of 40 tractors from the Government which were distributed to prominent farmers and also to the newly created counties. The government has started providing fuel for the farmers who have received tractors. As a border town, inputs that include spare parts, improved seeds and fuel are likely to come in from Sudan.

Similarly, in the former Jonglei State, in addition to the slow start of the season, there was also below normal rainfall from the 3rd Dekad of May up to the 3rd Dekad of June in most areas, resulting in lower NDVI compared to the long term average. The effect of these short dry spells on crop growth was mild to average because of the improved rainfall condition during the subsequent Dekads. However, affected farmers in areas such as former Duk, Bor South and Twic counties tried to replant their fields.

In the former Unity State, land preparation started early in March and April in anticipation of the early rains which came in the beginning of May allowing planting to start. The May rains were average to above average and the distribution was good across the region. However, in June there was a prolonged period of dry conditions (with few intermittent showers in between) for three to four weeks in Northern and Eastern parts of Mayom County, and for three weeks in Koch, Guit and Rubkona. This prolonged dry spell affected the crops and replanting had to be carried out in these areas when the rains resumed in July. For the former counties of Guit, Koch and Rubkona crops planted in lower grounds recovered after the rains resumed in July and maize in some of these locations are tasseling. However, the maize planted on higher ground areas was stressed and planting was ongoing in July in most of these areas to compensate for the stressed crops which may not recover. Due to uncertainty of security, the area planted in all the four counties of Mayom, Guit, Koch and Rubkona decreased significantly compared to the situation before the outbreak of the war. Farmers plant small plots of land around homes with the size of 0.5 to 1 *feddan* per household.

5. Fall Armyworm infestation

During the 2017 cropping season, the first FAW infestation was reported in Magwi County of Eastern Equatoria (Figure 5), in areas adjacent to northern Uganda where it was observed feeding late planted maize crops. Agricultural extension staff were unable to determine whether it was African Armyworm or FAW and access to Magwi County was not possible to FAO staff due to insecurity-driven access restrictions in the region. The pest was then identified to be FAW and reported to have spread in Central and Western Equatoria, Northern Bahr el-Ghazal, Jonglei, Western Bahr el-Ghazal and Upper Nile. The FAW was attacking maize crops in Eastern and Western Equatoria (Nzara and Tambura) and feeding on young sorghum plants in Northern Bahr el-Ghazal. It was also detected in the vicinity of Juba, with only mild effect on some farms. Recently, field reports from World Vision International indicated that FAW is also spreading to Malakal, Manyo and Renk Counties in Upper Nile. The damage caused on maize crop in Budi (Eastern Equatoria) and Pochalla (Jonglei) was reported as serious. As reported by Africa Life Aid, an NGO operating in Magwi, the damage on maize crops in highly affected fields is estimated to be as high as 90 percent. Therefore, farmers in such highly affected areas (such as Budi, Pochalla and Magwi) require seed support for the second season. Areas where the FAW was reported to attack crops are shown in the map (see Figure 5).

In Magwi and Budi, the late planted crops (in April) were more affected by FAW, compared to the early planted maize, which escaped the damage. In general the maize growing areas of the country are more affected by the pest compared to sorghum growing regions.



Figure 4. Fall Armyworm infestation in Eastern Equatoria

The first joint FAO and Government of the Republic of South Sudan field visit to the affected areas in Magwi County took place during the 3rd Dekad of June and assessed several maize fields that were affected (Figure 4). The preliminary assessment suggested serious crop damage in about 25 percent of the fields that were affected. Early planted maize fields were largely free from the pest attack.

There is a concern that the ongoing insecurity, poor road infrastructure, lack of pest control expertise, absence of chemicals, sprayers and personal protection equipment will undermine implementation of effective and timely control interventions in the future.

While the first season crops are growing well in most parts of the country, it is advisable that farmers and local communities in bimodal areas implement mechanical and other traditional methods of control, for example, handpicking of larvae, crop hygiene, destroying severely affected plants, regular monitoring and reporting. Where infestations have reached economic thresholds, farmers are also advised to spray mixture of water and sugar to attract ants and wasps that feed on young caterpillars. For the 2018 cropping season, preventive actions will be promoted and these include early planting, destruction and burying of infected crop residue and early deep ploughing to expose young pupae to the surface and heat of the sun. As the last control option, FAO and the Department of Crop Protection in the Ministry of Agriculture and Food Security (MAFS) will work closely to identify suitable pesticides that can be used in South Sudan. As a result there is a need to train extension staff and farmers on scouting, safe and effective use of pesticides including pesticide mixing, use of personal protective gear, calibration, spraying techniques and safe disposal of pesticides.

FAO, MAFS and other partners will also endeavour to improve the knowledge and skills of extension workers in the biology, identification, ecology, phenology, feeding behavior and possible prevention and control interventions of the pest. FAO is currently preparing a Technical Cooperation Programme (TCP) proposal on FAW control to support MAFS, State Ministries of Agriculture (MoAs) and their field staff which, when implemented, could benefit the county as a whole. FAO and MAFS will continue monitoring the situation closely and provide advice and guidance. In order to improve

capacity, provision of a series of trainings is highly recommended to concerned field workers including Crop Assessment Taskforces, County Agriculture Offices and partners.

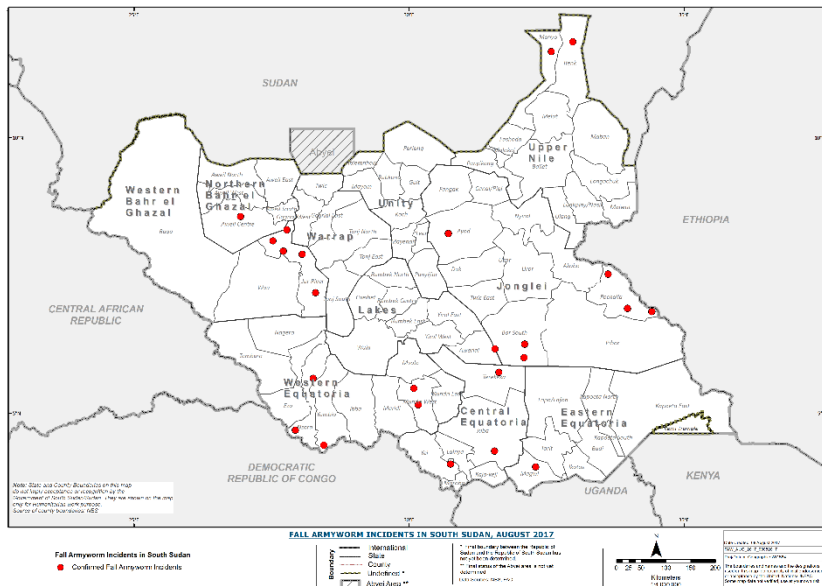


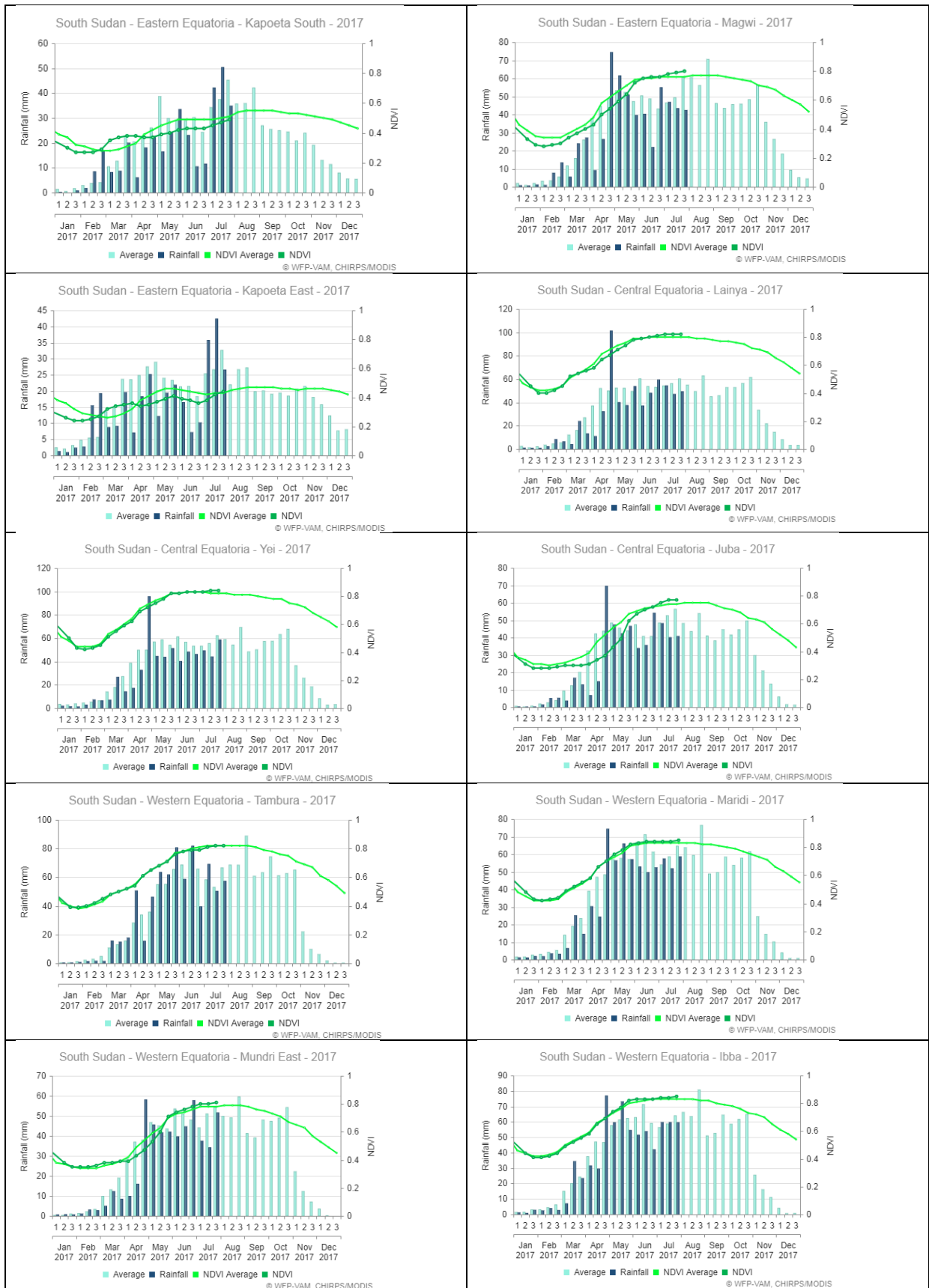
Figure 5. Areas affected by the Fall Armyworm in South Sudan - August 2017

5. Food security implications

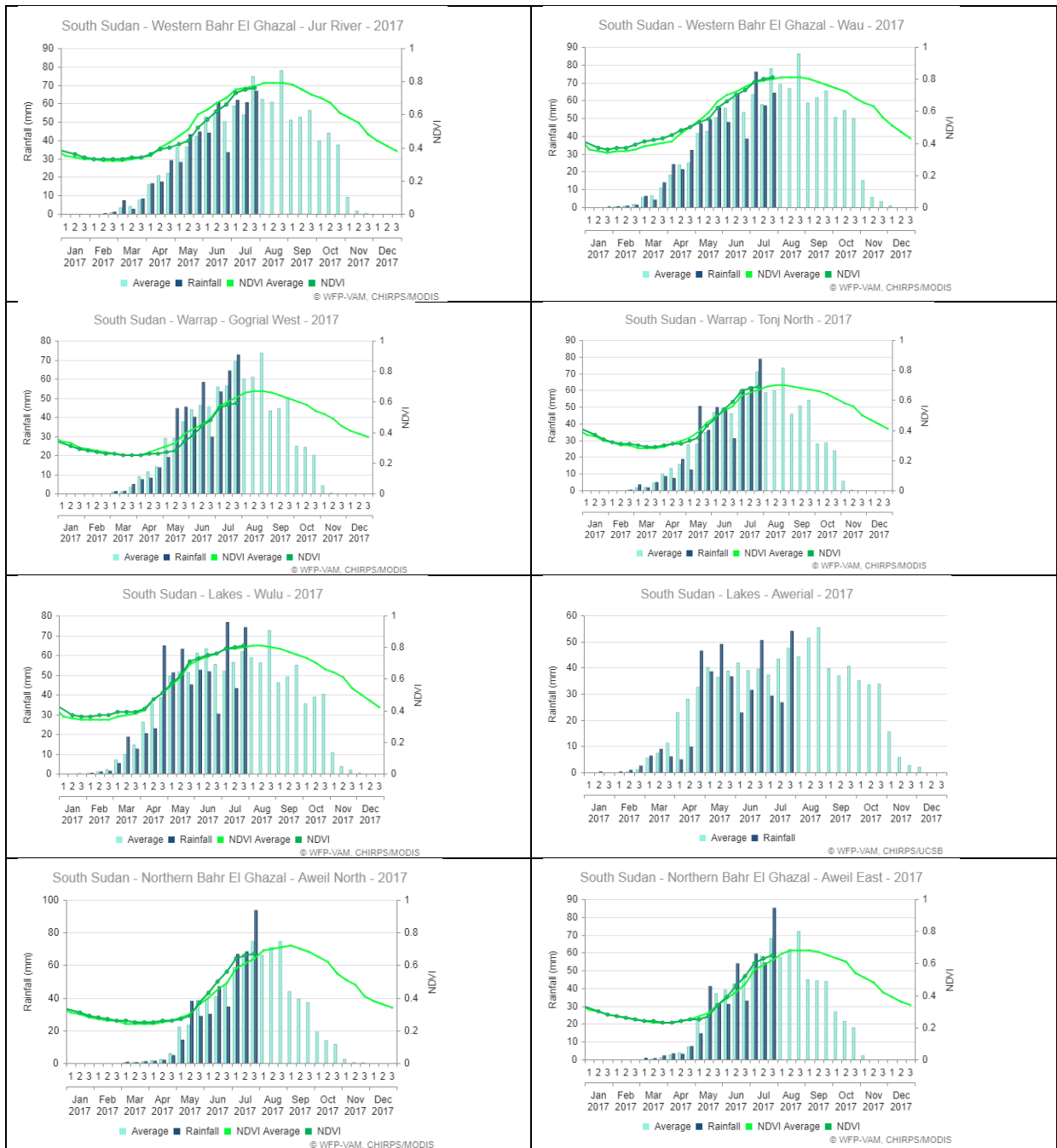
The late onset of rain resulted in late planting, prolonging the hunger period. In addition to the dry spells and other yield decreasing factors, the presence of FAW has created additional challenges to crop production across the country.

For areas seriously affected by FAW, such as Budi, Pochalla and Magwi, there is an urgent need for seeds and tools to farmers who have lost their crops to ensure that they can cultivate for the second season.

Annex-1 – Rainfall and NDVI figures in selected areas of Greater Equatoria Region (up to July 2017)



Annex-2. Rainfall and NDVI figures in selected areas of Greater Bahr el-Ghazal (up to July 2017)



Annex-3 – Rainfall and NDVI figures in selected areas of Greater Upper Nile Region (up to July 2017)

