The 2019 long rains season has been characterized by late onset of rains, which were poorly distributed and erratic from February to Mid-March. Early planted crops were affected by water stress and germination was poor. Planting was delayed in some parts of the country but it peaked up in April with the onset of the rains and planting was complete by end of April. The month of June had good rains in most parts of the country which improved crop performance. Harvesting of maize is almost complete in Bomet but production was poor due to erratic rains, FAW and MLND. Harvesting has also commenced in lower and upper Nyanza regions. Notable increase in the prices of maize, beans and wheat was observed in selected markets.

Map showing regional crop conditions information in Kenya as at 20th June 2019 for maize, wheat, beans, green grams and cowpeas. The crop Monitor map is based on a combination of several variables including remotely sensed data, ground observations, field reports, national, and regional experts. Crops with conditions that are other than favorable are labeled on the map with their driver.

OUTLOOK (Kenya Meteorological Department (KMD)/State Department of Crops Development (SDCD))
The expected enhanced rainfall in Western Highlands and parts of the Rift Valley is expected to result in further improvement in crop performance in June. Crops in the Central highlands are also expected to benefit from expected rainfall. The generally dry weather condition expected elsewhere in the country implies that the crops in these areas production might be adversely affected.
Assessment by Region

The Central Region, all counties in the region are under watch for maize and beans as there was delayed onset of rains as the season commenced in the fourth week of April. In Kiambu, Murang’a and Kirinyaga Counties, the beans condition has improved in the medium to high potential areas. Wheat is in favorable condition in Nyandarua and Nyeri Counties and is in booting stage. The highland areas of Mt Kenya and the Aberdares have been receiving good rains and maize yields are likely to be fair. Crop is in vegetative phase. However, the low-lying areas of the region have been receiving depressed and erratic rains adversely affecting crop performance.

Outlook: Below average yields expected; however, the early maturing bean varieties are likely to perform better.

![Figure 1: Beans and Maize in upper Kirinyaga](image)

The Coast Region, with exception of Tana Delta and irrigation schemes, all counties are under watch due to prevailing dry conditions caused by lack of rains during the month. Most of the crops were water stressed and have premature tasseling. In Tana delta, irrigation schemes and the hill mass the conditions were favorable.

Outlook: Normal yields are expected in Tana River and Lamu counties if the favourable conditions continue. But below average production is expected where the conditions are fair and watch in Kilifi and Taita Taveta.

The Lower Eastern Region, all counties are under watch due to prevailing dry conditions during the month. Most of the crop is in flowering stage to grain filling but all crops were experiencing moisture stress due to dry conditions.

Outlook: Production is likely to be below normal due to the moisture stress that was being experienced during the month. Total crop failure is likely to be experienced in some parts of Machakos, Makueni and Kitui Counties for maize but below average yields to total crop failure for pulses.

The Upper Eastern Region, the region is under watch due the delayed onset of rains which resulted in poor germination of the early planted crops necessitating replanting. The rains have been depressed and erratic in the low-lying marginal areas, while the highlands zones of the region received favorable rains. In Meru wheat is in booting stage and expected to perform well.

Outlook: Below average yields expected; however, the early maturing bean varieties are likely to perform better.

In North Rift, all counties are under watch due to late onset of rains and FAW, but the crops are doing well because of adequate rains since onset of season. Weeding and pest control activities are being undertaken. Crop stages vary from vegetative to reproductive phase. Approximately 50% of the maize crop is in vegetative phase. In Elgeyo Marakwet, and Uasin Gishu counties conditions are under watch due to the effects of erratic and late rains and Fall Army Worm (FAW). In Nandi, maize is in vegetative phase and weeding is ongoing in all sub-counties except Aldai which planted early and crop is currently at reproductive phase. In Laikipia the condition is under watch due to FAW and poor rainfall but the month received good rains and crop condition is good.

Outlook: Normal yields are expected in the region but total production will decline mainly due to decrease in area under the crop. FAW incidences has declined due to enhanced rains.

The South Rift region, crops are under watch due to late onset of the rains. In Narok, the beans crop stage is between flowering and pod maturity while wheat stage ranges from late vegetative to maturity. The maize crop stage is between late vegetative and harvesting stage. There are also incidences of FAW in the region and MLND in Narok and Bomet counties.
In **Nakuru**, planting is complete and maize is in early vegetative phase. In **Kericho**, maize is between vegetative and milky stage in the Tea zone and beans between vegetative and flowering. In **Bomet**, the maize crop is in various stages from cob development to harvesting. Harvesting stands at 50% but is complete in Chepalungu Sub-county. Beans are between vegetative and flowering stages.

![Crop Failure in Bomet Central due to drought, MNLD and FAW](image)

**Outlook:** The season is unpredictable because of delayed and erratic rains and this is likely to result in reduced yields. In **Narok**, yields are likely to be normal in Transmara west. Narok west sub-county suffered about 80% maize crop failure due to drought, FAW and MLND.

In **Lower Nyanza** region, conditions are under watch but the trend has improved due to the on-going reliable rains. The region experienced dry spells between February and early March which seriously affected crop planted in early February resulting in crop failure. Crops planted as from mid-March are in good condition. Maize crop stages ranges from ripening to harvesting but for beans harvesting is almost complete. **Outlook:** Below average yields expected for early planted crop but crop planted as from mid-march is likely to give normal yields.

In **Upper Nyanza** region, maize crop is under watch due to the erratic rains experienced early in the season but the crop condition has improved due to the on-going rains which are adequate. Crop stages for maize vary from cob development to harvesting for the early planted crop. In **Kisii County** approximately 35,000 Ha were planted out of a target of 36,000 Ha and 20,000 Ha of beans were planted as an intercrop with maize. Bean harvesting is complete but yields were low. FAW infestation has declined. Cases of MLND were noted in Borabu Subcounty of **Nyamira**. **Outlook:** Average yields expected for crop planted in late February/early March to below average yields for early planted crop due to prolonged dry spells, erratic rains and FAW attack.

The **Western region**, is under watch due to the erratic rains at start of the season, FAW, dry conditions and late onset of rains. The region received adequate rains in the Month of June. The maize crop is at varying stages from vegetative to maturity. Crop condition has greatly improved due to the good rains in the Month. In **Bungoma**, approximately 60% of the crop is in reproductive phase and 40% in vegetative phase. Harvesting has commenced in Vihiga, Busia and upper zones of **Kakamega**. Beans are at various stages from vegetative phase to harvesting. **Outlook:** Average to below average yields are expected due to late rains and the erratic nature early in the season.
Assessment by crop

Maize Conditions
Maize production is under watch in the entire country due to delayed onset of the rains; dry conditions, erratic and poorly distributed rains which started in April and continued in the months of May and June. There was a general improvement in crop condition due to the enhanced rains and reduction in FAW. Crop stage ranges from vegetative stage to maturity. Harvesting is almost complete in Bomet but yields are poor due to poor rains, MLND and FAW.

Beans Conditions
Late onset of MAM rains delayed beans establishment by a period of one month as compared to LTA. In areas where the crop was established such as Nyanza, Central Rift, North Rift, Western, South Rift and upper Eastern crop stage ranges from early vegetative to harvesting. In the Central region the crop is doing well except lower region of Nyeri-Kieni where rainfall is performing dismally and yields are likely to be depressed. In Lower Eastern and the Coastal region poor germination was observed and due to poor temporal distribution of rainfall and yields are expected to range from average to crop failure.
Green Grams and Cowpeas
Conditions are stable for Green grams in lower Eastern and Coastal Regions. In most counties the crop stage is at early vegetative to podding. Crop is under watch and yields will depend on rainfall availability during the reproductive phase.

Wheat Conditions
Wheat is under watch in most of the growing areas. In Narok County the crop is in booting stage to maturity. In the other areas the stage varies from planting to vegetative. In Nyandarua and Nyeri Counties, germination was affected by delayed rains. Planting was still on-going in Uasin Gishu, Nakuru and Elgeyo Marakwet counties. There has been a general increase in area planted due to drop in area under maize.
The Vegetation map represents a 16-day anomaly image for 2019-June-10 to June-25. The brown areas represent areas where the vegetation conditions are worse than “normal” (long term average for the 2000 to 2018). The green color represents areas where conditions are better than “normal”. The white color represent values where normal conditions are being experienced. Gray areas are areas where no data was collected due to cloud cover.

The Graph provides a comparison between current vegetation conditions (red) when compared to the average conditions (purple) defined by the historical average. The dotted line displays the standard deviation showing how values tend to spread out from the mean and can be used to gauge the severity of the current conditions.

HIGHLIGHTS
Improvements noted in the crop growing areas. Looking at the graph, conditions in June (Red) are now close to the normal which is represented by the long-term mean (purple). Despite the recovery and notable greenness in the vegetation in all the crop growing areas, the late onset and variation in frequency and intensity of rainfall affected the crops and provided conducive environment for pest and diseases.
Climate outlook

**July 2019 forecast**

According to the Kenya Meteorological Department (KMD), in June, several parts in Western, Rift Valley and Central Kenya received a considerable amount of rainfall. In July, several parts of the country will continue to experience generally dry conditions. However, the Rift Valley Region, Western Kenya, North West Regions and parts of Central Rift Valley are likely to receive near-average rainfall with a tendency to above average rainfall (enhanced rainfall). The Coastal Strip is likely to receive near-normal rainfall with a tendency to below normal (depressed rainfall). The North-Eastern, Eastern, Southern-Eastern regions are expected to experience generally sunny and dry conditions for most of the month. The enhanced rainfall in the North Rift, Western and Central is expected to impact crop performance positively.

**Seasonal Forecast (KMD) for June July August September (JJAS) 2019 Outlook**

The expected enhanced rainfall in Western Kenya and parts of the Rift Valley is expected to lead to good crop performance and agricultural production. The cloudy and drizzly conditions in central highlands are also favorable for good crop performance. However, the dry conditions are expected to negatively influence production in most parts of the South Eastern lowlands as a result of the poor performance of MAM 2019 seasonal rainfall and the expected generally sunny and dry weather conditions June-July-August 2019.
Market information
The section provides the wholesale monthly average prices of maize, beans and wheat in major markets across the country.

Dry maize was selling at an average price of Ksh. 3400 across the selected markets, green maize at Ksh. 2740, Canadian beans were selling at Ksh. 9300, Rosecoco beans at Ksh. 9700 and the Mwitemania variety was selling at an average price of Ksh. 9130.

Dry Maize prices registered a slight increase in the June Average price of Ksh. 3400 across the selected markets compared to the average price in May. The highest prices were observed in Mombasa at Ksh. 4200 and the lowest prices recorded in Nakuru at Ksh. 2700.
Green Maize experienced a slight decrease in June prices at an average of Ksh 2700 compared to 3050 in May. The highest prices were observed in Mombasa at Ksh. 3400 and the lowest prices recorded in Eldoret at Ksh. 2100.

Canadian Beans variety was selling at an average price of Ksh. 8500 up from Ksh. 7900 in May, with the highest prices observed in Kisumu at Ksh. 9300 and the lowest prices recorded in Nakuru at Ksh. 7000. A notable increase in prices was observed.
**Rosecoco Beans** variety was selling at an average price of Ksh. 8200 down from Ksh. 8600 in May, with the highest prices observed in Eldoret at Ksh. 9700 and the lowest prices recorded in Nairobi at Ksh. 6290. A notable decrease in prices was observed across the selected markets.

**Mwitemania Beans** variety was selling at an average price of Ksh7570 up from Ksh. 7300 in May, with the highest prices observed in Eldoret at Ksh. 9100 and the lowest prices recorded in Nakuru at Ksh. 5800. A notable increase in prices was observed across the selected markets.
Wheat was selling at an average price of Ksh. 4500 up from Ksh. 3900 in May with the highest prices observed in Malindi at Ksh. 6300 and the lowest prices recorded in Eldoret at Ksh. 3000. Increase in prices noted across the selected markets.
Terms and Definitions

**Crop Condition Classes**

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exceptional</td>
<td>Conditions are much better than average* at time of reporting. This label is used only during the grain-filling through harvest stages.</td>
</tr>
<tr>
<td>Favourable</td>
<td>Conditions range from slightly below to slightly above average at reporting time.</td>
</tr>
<tr>
<td>Watch</td>
<td>Conditions are not far from average but there is a potential risk to final yields. There is still time and possibility for the crop to recover to average conditions if the ground situation improves. This label is only used during the planting-early vegetative and the vegetative-reproductive stages.</td>
</tr>
<tr>
<td>Poor</td>
<td>Crop conditions are well below average. Crop yields are likely to be 10-25% below average. This is used when crops are stunted and are not likely to recover, and impact on yields is likely.</td>
</tr>
<tr>
<td>Failure</td>
<td>Crop conditions are extremely poor. Crop yields are likely to be 25% or more below average.</td>
</tr>
</tbody>
</table>

**Driver Definitions**

These represent the key climatic drivers that are having an impact on crop condition status. They result in production impacts and can act as either positive or negative drivers of crop conditions.

- **Wet**: Higher than average wetness that results in destruction ie due to water logging and leaching of nutrients
- **Extreme Events**: This is a catch-all for all other climate risks (i.e. frost, hailstorms, mudslides etc.)
- **Late rains**: Late start of the season. **Flood**: Area is flooded
- **Early Rains Cessation**: Rains end earlier than expected in the season
- **Pests**: Destructive insects, birds or animals.
- **Diseases**: Destructive plant diseases.
- **Dry**: Drier than average
- **Socio-economic**: Social or economic factors that impact crop conditions (i.e. policy changes, agricultural subsidies, government intervention, etc.)
- **Conflict**: Armed conflict or civil unrest that is preventing the planting or harvesting of the fields by the farmers.
- **Wildlife Damage**: Crop destruction by wildlife
Partnerships

Acronyms

The normalized difference vegetation index (NDVI) is a measurement of plant health based on how a plant reflects light (usually sunlight) at specific frequencies.

RCMRD  Regional Centre for Mapping of Resources for Development
SERVIR  Joint development initiative of NASA and USAID
UCSB   University of California Santa Barbara
UMD    University of Maryland
USAID  United States Agency for International Development
FAW    Fall Army Worm
SDCD   State Department for Crops Development
MOALFI Ministry of Agriculture, Livestock, Fisheries and Irrigation
MLND   Maize Lethal Necrosis Disease
GHACOF Greater Horn of Africa Climate Outlook Forum
ICPAC  IGAD Climate Prediction and Application Centre