Overview
- 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 May had good rains in most parts of the Country which improved crop performance.
- There was notable reduction of Fall army Worm infestations that were observed in Narok, Laikipia, West Pokot, Trans Nzoia and Elgeyo Marakwet, Kisii and Nyamira Counties
- Notable increase in the prices of maize, beans and wheat was observed in selected markets.

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Map showing regional crop conditions information in Kenya as at 20<sup>th</sup> May 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.

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Assessment by Region

In Central Region, all counties 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. The highland areas of Mt Kenya and the Aberdares have been receiving good rains and maize yields are likely to be fair. 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.

In Coast Region, all counties are under favorable conditions as rains were on-going in Tana River, Lamu but fair and watch in Kilifi and Taita Taveta respectively for all crops due to prevailing dry conditions caused by delayed onset, poor performance and distribution of the rains during the month. Most of the crops were in vegetative stage.

Paddy rice in Taveta Sub county

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

In Lower Eastern Region, all counties are under watch due to prevailing dry conditions caused by the poor rainfall distribution during the month. There were only a few wet days. Most of the crop is in vegetative stage but all crops were experiencing moisture stress due to the inadequate rains especially in zone II, III& IV in Makueni County.

Outlook: Production is likely to be below normal due to the moisture stress that was being experienced during the month. Total crop failure can be experienced in some parts of Machakos for maize but below normal yields 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 favourable rains.

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

In North Rift, all counties are under watch except Trans Nzoia which is favourable. In Trans Nzoia county planting has been completed. Weeding and pest control activities are being undertaken. Crop stages vary from emergence to reproductive phase. Approximately 50% of the crop is in early 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, planting is complete and weeding is ongoing in all sub-counties except Aldai which planted early and crop is currently at knee high stage. In Laikipia the condition is under watch due to FAW and poor rainfall distribution planting is complete and weeding is ongoing.

Maize conditions in Elgeyo Marakwet

Outlook: Low production is expected in Uasin Gishu and Baringo counties due to decrease in area under the crop, poor rainfall performance and FAW infestation. In West Pokot MLND and FAW are still a threat to early established maize currently at ear formation in irrigated areas.

The South Rift region, is 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 booting stage. The maize crop stage is between late vegetative and milky stage. There are also cases of MLND and FAW. In Nakuru, planting is complete and maize is in early vegetative phase. In Kericho, planting is complete for maize and beans but in the Tea zone where early planting was done, about 30% of the maize is in reproductive phase. In Bomet, the maize crop is in various stages from late vegetative phase to harvesting which is on-going in Chepalungu Sub-county. Beans are between podding and harvesting stages.

FAW infested maize crop

**Outlook:** The season is unpredictable because of delayed rains and this is likely to result in reduced yields. In Narok, the situation is expected to worsen affecting yields.

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 seriously affecting crop planted in early February resulting in crop failure. Crops planted as from mid-March are in good condition. The crops are in various stages from early vegetative to dough stage.

**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, the crops are under watch due to the erratic rains experienced early in the season but the crop condition is improving due to the on-going rains which are adequate. Crop stages for maize vary from late vegetative phase to early dough stage 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 have been planted and intercropped with maize. Bean stages vary from flowering to maturity. FAW infestation has declined. **Outlook:** Average yields expected for crop planted in late February/early Match to below average yields for early planted crop due to prolonged dry spells and erratic rains.

The Western region, is under watch due to the erratic rains at start of the season, dry conditions and late onset of rains. The rains that came in the third week of April continued in the Month of June and the planted crop is at varying stages from emergence to cob formation. Planting is complete. Crop condition has greatly improved due to the good rains in the Month. In Bungoma, approximately 10% of the crop is in reproductive phase, 80% in vegetative phase and 10% in early vegetative phase. Beans are at various stages from 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 month of May. There was a reduction of rains from February to April. Planting is complete and there was a general improvement in crop condition. FAW infestations in Narok, Laikipia, West Pokot, Trans Nzoia and Elgeyo Marakwet, Kisii and Nyamira counties have reduced due to the rains.

![Maize Long Rains](image1)

**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 has been planted 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 yields are expected to range from average to crop failure.

![Beans Long Rains](image2)
**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 while in the other areas the stage varies from planting to early vegetative. In Nyandarua and Nyeri Counties, germination was affected by delayed rains. In Uasin Gishu and Elgeyo Marakwet counties the major activity was land preparation.
Vegetation Conditions

Slight improvements were noted in the vegetation condition especially in Western and southern parts of the country. Looking at the graph, conditions in May (Red) are still considerably below normal when compared to the long-term mean (purple). A recovery is however expected especially due the heavy rains received towards the end of May.

The Vegetation map represents a 16-day anomaly image for 2019-May-09 to May-24. 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.
Climate outlook

**June 2019 forecast**
According to the Kenya Meteorological Department (KMD), the expected enhanced rainfall in Western Highlands will lead to further improvement in crop performance in the areas. Crops in the Central highlands are likely to benefit from the occasional cool and cloudy conditions with light drizzles as well as the expected occasional afternoon showers. The generally dry weather condition expected elsewhere in the country implies that the crops in these areas production might be adversely affected. Problems related to water scarcity and lack of pasture for livestock is expected to arise especially in the Arid and Semi-Arid Lands (ASALs), due to the expected sunny and dry weather conditions expected in June 2019.

**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.

Kisumu recorded the highest dry maize prices at Ksh. 4000 and the lowest prices were observed in Nakuru where the maize was selling at Ksh. 2900. Mombasa recorded the highest prices in Green maize at Ksh. 3900 with Nakuru recording the lowest green maize prices at Ksh. 2300. Kisumu recorded the highest prices in Canadian beans at Ksh. 9600, while Eldoret recorded the highest prices in Rosecoco variety at Ksh. 9900 and the Mwitemania variety at Ksh. 9000. An increase in all prices when compared to April was observed.

Dry maize was selling at an average price of Ksh. 3400 up from Ksh. 2900 in April, with the highest prices observed in Kisumu at Ksh. 4000 and lowest prices recorded in Nakuru at Ksh. 2900. Maize prices increased in all markets.
Green Maize was selling at an average price of Ksh. 3000 remaining stable when compared with April, with the highest prices observed in Mombasa at Ksh. 3900 and the lowest prices recorded in Nakuru at Ksh. 2300.

Canadian Beans variety was selling at an average price of Ksh. 7950 up from Ksh. 7100 in April, with the highest prices observed in Kisumu at Ksh. 9600 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. 8600 up from Ksh. 7600 in April, with the highest prices observed in Eldoret at Ksh. 9900 and the lowest prices recorded in Nairobi at Ksh. 7458. A notable increase in prices was observed across the selected markets.

Mwitemania Beans variety was selling at an average price of Ksh. 7300 up from Ksh. 6690 in April, with the highest prices observed in Eldoret at Ksh. 9000 and the lowest prices recorded in Nakuru at Ksh. 5588. A notable increase in prices was observed across the selected markets.
Wheat was selling at an average price of Ksh. 4400 up from Ksh. 3900 in April 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

- **Exceptional**: Conditions are much better than average* at time of reporting. This label is used only during the grain-filling through harvest stages.
- **Favourable**: Conditions range from slightly below to slightly above average at reporting time.
- **Watch**: 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.
- **Poor**: 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.
- **Failure**: Crop conditions are extremely poor. Crop yields are likely to be 25% or more below average.

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