

# **Crop Monitor** EARLY WARNING

#### **Overview:**

In West Africa, planting of main season cereals is ongoing in the south and conditions are generally favourable. In East Africa, heavy rain in May caused severe flooding and displacement over parts Kenya, Somalia, Ethiopia, and Djibouti. While the flood damage was extensive, the abundant rainfall is expected to have long term benefits for main season production. In the **Middle East**, winter cereal harvest started in June and production prospects are below average due to due ongoing conflict in Irag and Syria and dry conditions in Iran. In North Africa, winter wheat harvest is ongoing and production prospects are favourable. In Southern Africa, the 2018 main season maize harvest is complete and production prospects are poor across the central and south due to permanent damage from early season dryness and high temperatures in late December through January. In Central and South Asia, harvesting of winter cereals started at the beginning of June and production prospects are below average due to dry conditions during the winter and spring period. In northern Southeast Asia, wet season rice planting has started and conditions are favourable except in Myanmar and Philippines due to tropical storm impacts. In Central America and the Caribbean, the primera season is underway and conditions are generally favourable.





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The Crop Monitor is a part of GEOGLAM, a GEO global initiative.



Crop condition map synthesizing information for all Crop Monitor for Early Warning crops as of June 28<sup>th</sup>. Crop conditions over the main growing areas are based on a combination of inputs including remotely sensed data, ground observations, field reports, national, and regional experts. **Regions that are in other than favourable conditions are labeled on the map with a symbol representing the crop(s) affected.** 

**EAST AFRICA:** In the north of the subregion, crops are at varying stages of development while in the central and south, harvest of the 2018 main season cereal crops started in June. Abundant late spring rainfall notably over Somalia, Ethiopia, and Kenya triggered severe riverine flooding in May and while conditions are improving, concern remains.

**WEST AFRICA:** In southern West Africa, main season cereals are underway and conditions are generally favourable in the south while there is some concern over dry condition in the central Sahelian zone.

**MIDDLE EAST & NORTH AFRICA:** In the Middle East, winter cereal harvest started in June and production prospects are below average due to due ongoing conflict in Iraq and Syria and dry conditions with above average temperatures in parts of Iran. Across North Africa, the 2018 winter wheat harvest which started in May is ongoing and preliminary production outlooks are above average due to good spring rainfall in most parts. However, concern remains in central Tunisia where carryover effects from early season dryness are expected to affect overall production.

**SOUTHERN AFRICA:** Harvest is complete for 2018 main season maize harvest and poor production resulted across parts of parts of Zambia, Malawi, Mozambique, Zimbabwe, Angola, Botswana, Namibia, Madagascar, and Lesotho due to permanent damage sustained from early season dryness and high temperatures from late December through to January. In addition, minor impacts resulting from Fall armyworm infestations has lowered yield potential in affected areas.

**CENTRAL & SOUTH ASIA:** Harvesting of winter cereals started at the beginning of June and there is concern over Uzbekistan, Tajikistan, Turkmenistan and Afghanistan due to lack of precipitations during winter and spring period.

**SOUTHEAST ASIA:** In the northern side of Southeast Asia, sowing of wet season rice has started in all countries and growing condition is good due to enough precipitation. Some damage incurred over western Myanmar and Philippines due to typhoon impacts causing heavy rainfall.

**CENTRAL AMERICA & CARIBBEAN:** Across Central America, *primera* season continues under favourable conditions with good rainfall received. However, there is concern in Cuba and due to tropical storm impacts and Haiti where permanent wilting was sustained due to dry conditions.



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#### East Africa & Yemen



Crop condition map synthesizing conditions as of June 28<sup>th</sup>. Crop conditions over the main growing areas are based on a combination of inputs including remotely sensed data, ground observations, field reports, national, and regional experts. **Conditions that are other than favourable are labeled on the map with their driver.** 

The June – September season started well in most parts of the region. Above average rainfall has been received across the north of the subregion over parts of Sudan, Ethiopia and South Sudan and crops are at various stages of development. The main cropping season in Kenya, Uganda and Tanzania has been favourable however, the flooding that occurred in May had great impacts for most cropping areas especially the riverine regions in Somalia, and north eastern Kenya. Conflict still remains a major hurdle for cultivation and market access in South Sudan and Yemen, despite South Sudan having good rains throughout the season. In **Ethiopia**, the *kiremt* season, which is regarded as the major cropping season, commenced well in June with most areas benefiting from the above average rainfall across most of the *kiremt* growing areas. Harvesting of secondary season *belg* crops is underway. In southern Tigray, eastern Amhara and eastern Oromia regions, dry conditions in March forced farmers to re-plant. In these areas the *belg* harvest was delayed, with negative effects on planting of major *meher* crops, which normally commence in June, and resulting in a shortened crop development period. By contrast, in northeastern SNNPR, *belg* rains had a good performance so far, with a positive impact on crop conditions. In southern bi-modal rainfall areas of **South Sudan**, first season crops, to be harvested from July, was completed in April and adequate precipitations benefited crop establishment and development. In central and northern unimodal rainfall areas, plantings

operations started in mid-May, about two weeks later than normal, due to a delayed onset of seasonal rains. Across the country, agricultural activities continue to be affected by the protracted and widespread insecurity, which is constraining access to fields and continues to cause large-scale displacement of people and damage to households' productive assets. In addition, fall armyworm outbreaks are likely to further constrain yields. In Sudan, planting of 2018 crops, for harvest from October, has just started and conditions favourable except in southwest and east Darfur where there is slight concern due to dry conditions in June. Planted area and yields are likely to be affected by severe fuel shortages and by low availability and very high prices of agricultural inputs, due to sustained inflation and dwindling foreign currency reserves constraining imports. In most pastoral and agro-pastoral areas, where drought conditions prevailed between mid-2016 and November 2017, abundant rains in March and April offset accumulated moisture deficits benefited crops and prompted a substantial regeneration of rangeland resources. In northern and eastern Kenya, southeastern Ethiopia, central and northern Somalia, which experienced the most severe rainfall deficits during the past three subsequent rainy seasons, heavy rains within the March - May season resulted in marked improvements of vegetation conditions, which are currently above-average in most



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areas. By contrast, in northern pastoral areas of Ethiopia (Afar and Northern Somali region) sugum/belg rains started in April, with about a one month delay, and current vegetation conditions are poor due to prolonged dry spell and below average rainfall across the regions. In Yemen, concern remains for all crops planted in March due to ongoing and worsening conflict impacting agricultural practices and market access which might hinder access to farm inputs and labour. In central and southern parts of the region including Burundi, Rwanda, eastern Kenya, southern Somalia, the United Republic of Tanzania and Uganda, harvesting of the 2018 main season cereal crops is underway. The rainy season has been characterized by exceptionally high precipitation amounts across the subregion, with cumulative rainfall estimated at up to twice the long-term average. Abundant rains had a positive impact on crop establishment/development and vegetation conditions are currently good across most cropping areas. Flooding within the March to May was evident to negatively impact the crop conditions in most parts of eastern Kenya, Burundi, southeastern Ethiopia and riverine vegetation in Somalia's Juba and Shabelle zones. In the most affected north east irrigated cropping zone of Kenya, farms are largely submerged, bringing farming activities to a standstill. Approximately 4000 acres of farm land in harvesting stage have been affected by floods. Conditions have improved in June due to reduced rainfall amounts in areas where the crop is mature enough and ready for harvest. This has also reduced the risk of flooding and water logging for the already germinated crops. However, concern remains across eastern Kenya, Burundi and Karamoja Region in Uganda where flooding incidences were largely reported. Northern Ethiopia regions of Afar reported large rainfall deficits and delayed onset of up to one month. Subsequently, on 20-21 May, a tropical cyclone hit Djibouti, eastern Ethiopia and northwestern Somalia, displacing a significant number of people. In Somalia, conditions are improving from severe flooding across high-potential riverine irrigated cropping areas of Juba, Gedo, Hiran and Lower Shabelle and crop losses are expected to result in a substantial qu crop production shortfall. However, the ample areas available for recession agriculture and the increased irrigation water availability due to high river levels will likely result in an above-average qu off-season harvest in September in these areas, thus partially offsetting the anticipated cereal production decline. In Burundi and Rwanda, excessive moisture and flood damage will result in a below-average pulse and rice output. However, this decline is likely to be offset by an increased production of more moisture tolerant crops including cereals, sweet potatoes, bananas and cassava, and the aggregate crop production is expected at average levels.

#### West Africa



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The 2018-2019 agro pastoral cropping season is gradually starting in the extreme western part of the region and has been completely established over all the Sahelian zone. Across the central Sahel, planting is complete for main season cereals and there is some concern due to dry conditions in localized areas. In southern West Africa, main season cereals are now in in vegetative stage across Sierra Leone, Liberia, Cote d'Ivoire, Ghana, Togo, Benin, Nigeria, Cameroon and the Central African Republic and conditions are generally favourable with good rains received. In **Nigeria**, while conditions are improving, concern remains in the northeast due to ongoing conflict affecting agricultural activities. Pest and disease impact has been low at the start of the season across West Africa however, reports from the field indicated some localized outbreaks of armyworm in Burkina Faso.



#### Middle East & North Africa

Crop condition map synthesizing information as of June 28<sup>th</sup>. Crop conditions over the main growing areas are based on a combination of inputs including remotely sensed data, ground observations, field reports, national, and regional experts. **Conditions that are other than favourable are labeled on the map with their driver.** 

In the Middle East, winter cereal harvest started in June and production prospects are below average due to due ongoing conflict in Iraq and Syria and dry conditions with above average temperatures in parts of Iran. Cereal harvest is complete in **Syria** and **Iraq** and a strong decrease in cereal production is expected as weather conditions amplified the impact of continuing conflict. In the centresouth of **Iran** (Esfahan, Fars) production is also expected to be below average due to probable lack of irrigation water and above average temperatures in February-March while conditions and prospects are good for western and north western Iran.

Across North Africa, the 2018 winter wheat harvest which started in May is ongoing and preliminary production outlooks are above average due to good spring rainfall in most parts. However, concern remains in central Tunisia where carryover effects from early season dryness are expected to affect overall production. In **Morocco**, harvest is nearing completion and production outlooks are above average due to good spring rainfall. National wheat yield forecast is 15% above the 5 year average and the barley forecast is 34% above 5 year average. In **Algeria**, harvest will finish in July and yield expectations across the country remain above average due to positive rainfall and temperature conditions in spring. The national yield forecasts are now above the 5 year average. In **Tunisia**, winter wheat harvest is complete and national yield forecast is slightly below the 5 year average due to drought conditions that have affected the central areas of the country for several months. However, the main cereal producing areas in the North have generally performed well. In **Libya**, with limited production of winter wheat, crop conditions are favourable with adequate rains received. In **Egypt**, winter wheat harvest, grown primarily under irrigation, finished in June and conditions are favourable. Main season maize and rice planting is underway and conditions are favourable.

#### Southern Africa



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In Southern Africa, the 2018 main season maize harvest is nearing completion and while generally above-normal rainfall was received from February onwards over previously dry central and southern regions, permanent damage was sustained from early season dryness and high temperatures starting in late December through to late January. In several areas, the dry spell had a greater negative impact on the early planted crop than on the late planted crop. In addition, minor impacts resulting from fall armyworm infestations may have lowered yield potential in affected areas. This poor production across many areas follows an above average maize harvest in 2017 that will help buffer negative impacts on food availability and price. In Lesotho, while total season rainfall was average to above average, the January dry spell caused significant moisture deficits at key growing stages and unexpected snow and frost further damaged maize crops and final production is estimated to be below average. In Malawi, while the January dry spell was significant, many crops in the north were able to recover following February rains. However, the majority of crops in the central and south suffered significant moisture stress and permanent wilting, leading to below average production in these areas, while infestations of fall armyworm were also reported. In Botswana, total seasonal rainfall has been well below average since the start of the season, notably over the eastern and northern areas and despite improved rains in February, poor production results are expected due to decreased planted area and reduced yields. Late planted crops are expected to have fared better and near average yields are forecast for these crops. In Angola, dryness in January and early February had an adverse effect on crops,





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notably over the central and southern areas. Rainfall recovered in late February to March and total season rainfall was generally normal to above normal in the north and below average and erratic rainfall in the south. In the Democratic Republic of Congo, rainfall has been sporadic and below average in the last month however, conditions are favourable for sorghum and maize crops. In Zambia, while conditions are favourable in the north, the early season dry spell from late December through January caused extreme moisture stress and wilting to main season crops in some areas. fall armyworm infestation was also reported during the season. Official national production estimates of 2.4 million metric tons represent 82% of the 5-year average. Analysis indicates that the largest year-on-year reductions are concentrated in the central, southern and eastern areas. In Zimbabwe, though cumulative rainfall is now above average for the season, early-planted crops in the most affected south suffered extreme moisture stress during the prolonged dry spell and sustained permanent damage despite rainfall improvements in February. Matabeleland South and Masvingo were most affected by the drought. The rains that did come in February benefited some crops in Mashonaland and Manicaland. Outbreaks of fall armyworm were also reported in the southern areas. In Namibia, rains in February and March improved early season dryness across Namibia. However, poor conditions resulted in the North and Kunene due to permanent wilting, notably over the most affected Kunene where crops were unable to recover from drought. Irrigated areas in the centre improved and production was favourable. In Madagascar, below-average rainfall and relatively high temperatures wilted crops beyond recovery in the south and south west, resulting in belowaverage harvests. However, in the east, central and northern areas, production is expected to be favourable with good rains received. In **Mozambigue**, below average rainfall and high temperatures since the start of the season has led to poor production in the south, however conditions have improved in the previously dry center and north, where production prospects are favourable. In Swaziland, the maize production outlook is favourable, with good rains received. In South Africa, beneficial rains continued in March and April over most of the eastern maize production region, where yellow maize is produced, improving yields compared to earlier expectations. Over the western parts of the maize producing regions, where white maize is predominantly grown, conditions are also favourable due to above-normal rainfall since mid-January. Overall, production is forecast to be at an above-average level, but down from the 2017 record high. Winter wheat planting started in May in South Africa, Zimbabwe and Zambia and conditions are favourable over most of the production areas except in northern South Africa over the low production Limpopo region where there is concern for irrigated winter wheat due to lowered irrigation supplies from below average spring rainfall.

#### Central & South Asia



Crop condition map synthesizing information as of June 28<sup>th</sup>. Crop conditions over the main growing areas are based on a combination of inputs including remotely sensed data, ground observations, field reports, national, and regional experts. **Crops that are in other than favourable conditions are labeled on the map with their driver.** 

In the Central Asia, harvesting of winter cereals started at the beginning of June. In **Tajikistan**, **Turkmenistan** and **Uzbekistan** lack of precipitations during winter and spring period has negatively affected yields of winter crops. As a result, total harvests are forecast at below the five-year average levels. In **Kyrgyzstan**, excessive precipitations just before the start of the start of the harvest (at the end of May) had negative impact on winter cereals and total cereal output is officially forecast below last year's high level, but still above the five-year average. In **Kazakhstan**, harvesting of winter wheat is ongoing under favourable weather conditions, however the forecast for aggregate wheat production is set below the last year due to decline in area planted as farmers switch to more profitable crops. Planting of spring cereals was completed in June under generally favourable conditions. Timely rains at the end of May increased below-average soil moisture and benefited crops. In **Afghanistan**, the major rainfed areas of the north and northwest



experienced below average spring precipitation and high temperatures. Initial reports indicate that 60-70 percent of the rainfed wheat crop have been damaged due to dryness. In the south and central, while these are areas make up a very small portion of the spring wheat growing areas, they benefitted from reasonably good precipitation from Mar-May, resulting in favourable conditions. Irrigated areas in the north and northwest experienced particularly poor crop conditions for winter wheat due to low levels of available irrigation water and erratic end of season rainfall. Although irrigated conditions in general were worse than last year, many areas appear to have had adequate first season cropping conditions. Still,

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the combined spring and winter wheat production for 2018 is expected to be below last year and below the five-year average, due primarily to lack of irrigation water, pests, and erratic spring rainfall distribution. In **Pakistan**, winter wheat harvest is complete and conditions are favourable with good rainfall amounts received throughout the season. However, in the southern parts of Sindh province pockets of below-average rains in May resulted in below average production (notably over the most affected Tharparker district). In **Mongolia**, spring wheat planted in April is favourable with good rains at the start of the season.

#### Southeast Asia



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In the northern side of Southeast Asia, sowing of wet season rice has started in all countries and growing condition is good due to enough precipitation. Some damage incurred over western Myanmar and Philippines due to typhoon impacts causing heavy rainfall. In Indonesia, wet season rice harvest is almost finished and average yield is expected. In Viet Nam, winter-spring rice (dryseason rice) is favourable as harvest begins in the north and is ongoing in the south. Yields are slightly above last year's with an increase in production estimated. Sowing of summer-autumn rice (wet-season rice) is continuing in the south under favourable conditions, albeit behind last year's progress due to late harvest of dry-season rice. In Thailand, wet-season rice sowing is ongoing under favourable conditions. An increase in total sown area is expected due to farmer's high motivation by satisfied paddy price. In Laos, dry season rice harvest is complete and wet season rice now is being seeded earlier than last year due to early season rainfall. In Cambodia, sowing of wet season rice is complete and crops are in tillering to early young panicle forming stage and growing has been faster this year with early season rainfall. In Myanmar, dry season rice harvest is nearing completion and yields are slightly higher than the previous year. Wet season rice planting started in May and heavy rain from typhoon impacts affected minor impacts across the dry lands areas and Rakhine. In the Philippines, wet-season rice sowing is ongoing under mostly favourable conditions with the exception of the major rice producing regions in Luzon,



which recently received heavy rains from typhoon Maliksi affecting sowing. In **Indonesia**, harvest of wet-season rice is wrapping up with favourable yields that are in line with the average. Sowing of dry-season rice in the main paddy producing provinces continues to be delayed due to low precipitation, forcing some farmers to switch to alternative crops. In **Bangladesh**, sowing of the *aman* rice crop started in June and conditions are favourable with good rains at the start of the season. In **Nepal**, maize crops planted in February are now in vegetative stage and conditions are favourable with good rains received. In **Sri Lanka**, *yala* season sowing, making up 35% of national production, is complete and there is some concern over limited water supplies for irrigation however, conditions are generally favourable.

#### Central America & Caribbean



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Across Central America, *primera* season continues under favourable conditions with good rainfall received. In **Guatemala**, there is concern in the south due to focalized losses from volcano Fuego eruption and the risk of lahars which could affect main production areas in the lower area of the basin in the department of Escuintla. In the central region of Guatemala, despite some irregular rainfall distribution, conditions are favourable, due to the timely rainfall at key moments of crop development. Subtropical storm Alberto made landfall in **Cuba** at the start of June bringing strong winds and torrential rainfall (4 inches of water in 24 hours), causing rivers to flood and resultant damage to agricultural fields and infrastructure. Over 51,000 people have been evacuated from affected areas. In **Haiti**, there is concern over irregular rainfall distribution and poor quantity, notably over the southern and eastern regions where permanent wilting has occurred and conditions will not improve and considerable losses have already incurred.



Information on crop conditions in the main production and export countries can be found in the <u>AMIS Market Monitor</u>, published July 5<sup>th</sup> 2018.

**Pie Chart Description:** Each slice represents a country's share of total regional production. The proportion within each national slice is colored according to the crop conditions within a specific growing area; grey indicates that the respective area is out of season. Sections within each slide are weighted by the sub-national production statistics (5-year average) of the respective country. The section within each national slice also accounts for multiple cropping seasons (i.e. spring and winter wheat) and are a result of combining totals from multiple seasons to represent the total yearly national production. When conditions are other than favourable icons are added that provide information on the key climatic drivers affecting conditions.

# Appendix

#### **Crop Conditions:**

**Exceptional:** Conditions are much better than average\* at time of reporting. This label is only used during the grain-filling through harvest stages.

**Favourable:** Conditions range from slightly lower to slightly better than average\* at reporting time.

**Watch:** Conditions are not far from average\* but there is a potential risk to final production. The crop can still recover to average or near 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 production is likely.

**Failure:** Crop conditions are extremely poor. Crop yields are likely to be 25% or more below average.

**Out of Season:** Crops are not currently planted or in development during this time. **No Data:** No reliable source of data is available at this time.

"Average" refers to the average conditions over the past 5 years.

#### **Drivers:**

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.

Dry: Drier than average.

Hot: Hotter than average.

**Cool**: Cooler than average or risk of frost damage.

**Extreme Events:** This is a catch-all for all other climate risks (i.e. hurricane, typhoon, frost, hail, winterkill, wind damage, etc.)

Delayed-Onset: Late start of the season.

Pest & Disease: Destructive insects, birds, animals, or plant disease.

**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, working, or harvesting of the fields by the farmers.









xtreme Delayec Event Onset



economic Disease



i Sources and Disclaimers:

The Crop Monitor assessment is conducted by GEOGLAM with inputs from the following partners FEWS NET, JRC, WFP, ARC, Asia RiCE, MESA, ICPAC, FAO GIEWS, Applied Geosolutions and UMD. The findings and conclusions in this joint multi-agency report are consensual statements from the GEOGLAM experts, and do not necessarily reflect those of the individual agencies represented by these experts. More detailed information on the GEOGLAM crop assessments is available at <u>www.cropmonitor.org</u>

#### Crop Season Nomenclature:

In countries that contain multiple cropping seasons for the same crop, the following charts identifies the national season name associated with each crop season within the Crop Monitor for Early Warning.

MENA				
Country	Crop	Season 1 Name	Season 2 Name	Season 3 Name
Egypt	Rice	Summer-planted	Nili season (Nile Flood)	

East Africa				
Country	Crop	Season 1 Name	Season 2 Name	Season 3 Name
Burundi	Maize	Season B	Season A	
Ethiopia	Maize	Meher Season (long rains)	Belg Season (short rains)	
Kenya	Maize	Long Rains	Short Rains	
Somalia	Maize	Gu Season	Deyr Season	
Somalia	Sorghum	Gu Season	Deyr Season	
Uganda	Maize	First Season	Second Season	
United Republic of Tanzania	Maize	Long Rains	Short Rains	
United Republic of Tanzania	Sorghum	Long Rains	Short Rains	

West Africa				
Country	Crop	Season 1 Name	Season 2 Name	Season 3 Name
Benin	Maize	Main season	Second season	
Cameroon	Maize	Main season	Second season	
Cote d'Ivoire	Maize	Main season	Second season	
Ghana	Maize	Main season	Second season	
Mauritania	Rice	Main season	Off-season	
Nigeria	Maize	Main season	Short-season	
Nigeria	Rice	Main season	Off-season	
Тодо	Maize	Main season	Second season	

Southern Africa				
Country	Crop	Season 1 Name	Season 2 Name	Season 3 Name
Democratic Republic of the Congo	Maize	Main season	Second season	
Mozambique	Maize	Main season	Second season	

Southeast Asia				
Country	Crop	Season 1 Name	Season 2 Name	Season 3 Name
Bangladesh	Rice	Boro	Aman	
Cambodia	Rice	Wet season	Dry season	
Indonesia	Rice	Main season	Second season	
Lao People's Democratic Republic	Rice	Wet season	Dry season	
Myanmar	Rice	Wet season	Dry season	
Philippines	Rice	Wet season	Dry season	
Sri Lanka	Rice	Maha	Yala	
Thailand	Rice	Wet season	Dry season	
Viet Nam	Rice	Wet season (Autumn)	Dry season (Winter/Spring)	

Central & South Asia				
Country	Crop	Season 1 Name	Season 2 Name	Season 3 Name
Afghanistan	Wheat	Winter-planted	Spring-planted	
Kazakhstan	Wheat	Winter-planted	Spring-planted	
Kyrgyzstan	Wheat	Winter-planted	Spring-planted	
Tajikistan	Wheat	Winter-planted	Spring-planted	

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Central America & Carribean				
Country	Crop	Season 1 Name	Season 2 Name	Season 3 Name
Cuba	Rice	Main season	Second season	
El Salvador	Beans	Primera	Postrera	
El Salvador	Maize	Primera	Segunda	
Guatemala	Beans	Primera	Postrera	Apante
Guatemala	Maize	Primera	Segunda	
Haiti	Maize	Main season	Second season	
Honduras	Beans	Primera	Postrera	
Honduras	Maize	Primera	Segunda	
Nicaragua	Beans	Primera	Postrera	Apante

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Cover Photo by: Christina Justice

#### **Early Warning partners**



\*EC contribution is provided by the Joint Research Centre of the European Commission