



Climate smart agriculture: Top ten decisions to make with weather info

Climate change and variability that is causing changes in growing seasons affects agriculture productivity and production. Climate Smart Agriculture increases farmers resilience to climate change. It calls upon farmers to make decisions on farm operations that are informed by weather information. In Tanzania, the Tanzania Meteorological Authority (TMA) is charged with providing weather information. TMA gives seasonal, ten-days and daily weather forecasts. The agency also issues severe weather alert. Weather information from TMA can be combined with indigenous knowledge of weather forecast.

FOR AGRICULTURAL SEASONAL FORECASTS, IT IS IMPORTANT TO UNDERSTAND THE FOLLOWING:



PREDICTED START OF THE RAINY SEASON
It could start late on time or early.



PREDICTED AMOUNT OF RAIN FALL
Could be normal, above normal and/or below normal



PREDICTED SEASONAL LENGTH
Could be normal, longer or shorter

SOURCE OF INFORMATION:



Listen to the radio



Watch TV



Read newspapers



Follow social media



Ask your extension agent



You can also subscribe to TMA to get weather information through your mobile phone. www.meteo.go.tz

The key stages of using Agromet information and advisories in CSA

The three key areas of the agricultural production phases where agrometeorological information and advisories is required is mainly before rainfall on set, during the rains and after the rains.

Before the rain season



Farmers make decisions and preparations for the upcoming agricultural season before the start of the season.

During the rainy season



Within the season, the ten-day and daily bulletins are produced to inform operational decisions like time for weeding, applying fertilizer, mulching, rainwater harvesting and disaster and risk reduction actions.

After the rain season



At the end of the rainy seasons, crops and pasture are usually at maturity stage and ready for harvesting, storage, and transportation to the markets. There might be challenges associated with post-harvest handling and management to ensure food safety and quality.

10 major crop farming decisions to make based on weather information!

1 When and how to prepare land for planting



For rainfed agriculture, the timings are dependent on when the rainy season will start according to the seasonal forecast, the crops being grown and topography. Ideally land should be prepared at least **2 weeks before planting**.



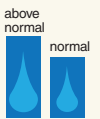
However, some soils are difficult to work on in dry season and need rains to loosen the soils and some are difficult to work during heavy rains, so they need to be prepared early.

3 Which crops and varieties to grow

YOU NEED TO SELECT THE RIGHT CROPS AND VARIETIES TO GROW BASED ON THE SEASONAL FORECAST.



If rains are predicted as normal to below normal – select drought tolerant varieties of the crops recommended for your area or change to drought tolerant crops. e.g, replacing maize with sorghum and millet.



If rains are predicted as normal to above normal – grow usual varieties recommended for the agro-ecological zone. Select high-yielding varieties of the crops recommended for area or change to long duration high value crops. e.g, replacing sorghum and millet with maize.

Note: it is also important to take into account spatial and temporal distribution in decision-making. Good temporal distribution is when the rainfall is well-spread through out the season.

5 When and how to apply fertilizer



If the rains are predicted as normal to below normal, apply organic fertilizers 2-3 weeks before planting.

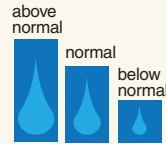
Mineral fertilizers should be applied at right crop stage (when required, usually in 2 splits when the soil has sufficient moisture



If rains are normal to above normal apply organic fertilizers 1-2 weeks before planting in bunds or spread followed by shallow tillage.

Apply mineral fertilizers in 3-4 splits to avoid loss from excessive soil moisture.

2 How to conserve water and soil



Based on seasonal forecast on the amount and duration of rains expected, consider introducing appropriate soil and water conservation measures:

When the rain forecast is above normal

above normal



**the focus should be on controlling erosion, protecting agricultural produce from flooding and water harvesting.*

When the rain forecast is below normal

below normal



**the focus should be on applying appropriate soil moisture and water conservation techniques.*



Note: Also, if your land is sloping, consider adding contours to prevent soil erosion

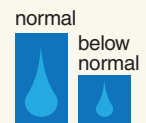
4 Which fertilizers to use and how



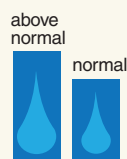
This can be organic such as manure or inorganic or both. Select the right fertilizer mix based on the soils and the crops and seasonal forecast.



Use of legumes is important as they can provide Nitrogen.



If rains are predicted as normal to below normal – use less organic and more inorganic fertilizers (1/2 to 3/4) of rate because significant amounts of unused nutrients could remain in the soil, potentially affecting fertilizer needs for the upcoming growing season.



However, above normal rains can also lead to more leaching and loss of nutrients due to erosion resulting into eutrophication of water bodies.

10 major crop farming decisions to make based on weather information!

6 When and how to plant

When to plant?



Wait for rain to start. Plant when the soil is moist enough (at least 20mm of rainfall in four consecutive days or two days of heavy rain) or follow the advice from meteorology.

Observe proper planting practices



For example, correct spacing and number of seeds per hole. If rain will be normal to below normal increase spacing, if above normal, use normal or reduce spacing.



monocropping



inter-cropping



crop rotation

Other factors to consider: are you planting mono-cropping, intercropping or crop rotation? Which crops are you pairing? Best recommendation is to intercrop compatible crops or rotate cereals and legumes.

8 Which pests and how to manage them



Some pests and diseases are linked to when the weather is dry and others when there's too much rain especially, the daily and ten days forecast. Understand the dynamics of major pests and disease of your important crops that are linked to weather forecast.

***Identify what pesticides may be needed, where to obtain them and how to use**

10 When and how to market?



Whenever possible, it is advised not to sell immediately after harvest when the prices are low. Harvest appropriately and sell when the prices are higher.

7 When and how often to control weeds



Weeding can be done manually or by herbicides. When using herbicides, use correctly – use the correct herbicide and wear the correct protective clothing. Herbicides are pre- and post-weed emergence. Use the correct herbicide. Follow correct disposal of containers.



***If the rains are heavy, weed more often and if rains are less, weed less often.**

9 When to harvest and how to store the crops



It is important to know the weather condition at harvest time by following the daily and ten days forecast.



Different crops have different requirements; for cereals, it is important to harvest crop when completely dry.



Grains and legumes – harvest during dry season, do not dry on naked soils, spread a mat and store in a dry cool place.






















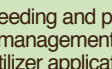





































Tubers - such as cassava can be dried and processed to increase shelf-life.

Therefore, if rains are predicted, consider harvesting early and drying. Store harvest in dry places.



Example of normal crop calendar for some crops in Southern Highlands

	 MAIZE	 SUNFLOWER	 TOMATO	 PEPPER	 COMMON BEAN	 WEATHER
JANUARY	Planting 	Land preparation and planting 	Transplanting seedlings 		Tillage 	Rainy season
FEBRUARY		Planting 	Weeding and pest management, fertilizer application 	Weed and pest management, fertilizer application 	Planting 	
MARCH	Weeding and pest management, fertilizer application (top dressing) 	Weeding 	Weeding and pest management, fertilizer application (top dressing) 		Weeding (all) 	
APRIL		Weeding 			Weeding (all) 	Rain season ends
MAY	Field inspection 	—	Harvesting + selling 	Harvesting + selling 	Harvesting, threshing, storage 	
JUNE	Harvesting + storage 	Harvesting + threshing 				Dry season
JULY	Harvesting + storage 	Harvesting + threshing 				
AUGUST	Threshing + selling 	Storage + selling 	Time for tomato cultivation in lowlands 	—	—	
SEPTEMBER	Threshing + selling 	Storage + selling 	Time for tomato cultivation in lowlands 	—	—	
OCTOBER	—	—	—	Planting nursery seedbed 	—	Rain starts
NOVEMBER	Land preparation 	Land preparation 	Land preparation + planting nursery seedbed 	Land preparation + transplanting 	Land preparation 	
DECEMBER	Land preparation 	Land preparation 	Land preparation + planting nursery seedbed 	Land preparation + transplanting 	Land preparation 	

Authors: Catherine Njuguna, Frederic Bajjukya and Fidelis Myaka (IITA)

Contributors: Diomedes Kalisa and Mponda Malozo (FAO, Tanzania); Mathew Ndaki (TMA) and Bahati Maregeri (IITA).

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For more information: Catherine Njuguna, IITA – Eastern Africa hub Coca-Cola Road, Mikocheni B Light Industrial Area
P.O. Box 34441. Dar-es- Salaam, Tanzania. Tel: +255 22 2700092. E-mail: IITA-Tanzania@cgiar.org