



# 2022 Agricultural Calendar for the Five Agro-Ecological Zones of Cameroon

March 2022



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## **Glossary**

**Agricultural Calendar:** Decision-making tool for agricultural activities. It presents the types of agricultural crops (maize, cocoa, beans, etc.), the agricultural activities (field preparation, Planting, maintenance, etc.) in a given agro-ecological zone ( Sudano-Sahelian, Guinean High Savannah, Highlands bimodal rain forest and monomodal rain forest).

**Climate:** All meteorological elements and phenomena (temperature, atmospheric pressure, precipitation, wind, etc.), as well as their dynamics in time and space (expressed by the seasons) that characterize a given place or a specific geographical area over a long period (at least 30 years according to the WMO).

**La Niña** is a cold marine current, an unusual climatic phenomenon that usually occurs every 2 to 7 years in the equatorial Pacific and especially along the coast of Latin America. It is characterized by the upwelling of oceanic waters from the depth to the surface. These waters are usually highly nutrient-rich. It affects the global circulation of the atmosphere, and its consequences are global: modification of wind patterns, rainfall, the appearance of extreme weather events such as floods, extreme droughts, etc.).

**El Niño** is a warm ocean current (opposite **La Niña**), characterized by an increase in ocean surface temperature. It is a large-scale oceanic phenomenon that takes place in the equatorial Pacific, with a periodicity of 2 to 5 years. It affects the large-scale global circulation of the atmosphere and the wind regime. El Niño is the warm phase of the coupled ocean/atmosphere phenomenon known as ENSO (El Niño Southern Oscillation).

**Climate Variability:** Variations of meteorological parameters (temperature, rainfall, etc.) around an average on seasonal and interannual time scales in a given region.

**Climate Change :** also known as climate disruption, it corresponds to a lasting change (from a decade to a million years) in the statistical parameters ( average parameters, variability, etc.) of the earth's global climate or its various regional climates. These changes may be due to processes intrinsic to the earth, to external influences or more recently to human activities.

**Agro-Ecological Zone:** A geographical unit defined in terms of climate, geomorphology and soils, and/or vegetation cover and having a specific range of potentials and constraints for land use. Cameroon has five ( Sudano-Sahelian; Guinean High Savannah; Bimodal Rainforest; Highlands; Monomodal Rainforest).

## **Summary**

Climate forecasts for the year 2022 indicate a general decrease in rainfall amounts in the Centre, East and South regions (bimodal rain forest zone). Meanwhile, in the monomodal rain forest zone, a contrasting situation can be observed, with a decrease in rainfall in the Littoral region and an increase in the South-West region (monomodal rain forest zone). In the Highlands zone, forecasts indicate an increase in rainfall amounts in the West and North West regions.

**With regard to the dates of the start of the rainy season, forecasts indicate a probability of the rainy season starting between the end of May and the beginning of June 2022 in the Sudano-Sahelian zone. In the monomodal rain forest zone, the rainy season is likely to start during the second dekad of March 2022. The short rainy season is likely to start in the second dekad of March 2022 in the bimodal rain forest zone. In the Guinean high savannah zone, it could start in the second dekad of April 2022.**

**On the basis of the above, the study proposes that the Planting start at the beginning of June 2022 in the Sudano-Sahelian zone, from the third dekad of March in the bimodal and monomodal rain forest zones, and from the third dekad of March 2022 in the Highlands zone.**

# I. INTRODUCTION

## I.1. Context and justification of activities

The 2007 IPCC report confirms the evidence of climate change and its adverse impacts on socio-economic development and ecosystems. This report particularly reveals the very vulnerable character of Africa to climate change and underlines the numerous risks and impacts that this continent is already undergoing (in the countries of the Horn of Africa, it is observed that extreme droughts lead to agricultural losses causing a lack of access to food for many populations). In 2011, 12.4 million people were suffering from famine in Djibouti, Ethiopia, Kenya and Somalia (FAO, 2011). Thus, identifying solutions to the negative impacts on development sectors due to climate disruption is becoming a priority for all developing countries in general and African countries in particular.

In Cameroon, climate change is manifested, among other things, by a disruption of the start and end dates of the rainy seasons, a decrease in the amount of rainfall, poor distribution of the number of rainy days, the multiplication of extreme weather events (floods, extreme droughts, violent winds, sandstorms and haze, etc.), which are increasingly recurrent and catastrophic. The outcome of this is the disruption of agricultural and fishing activities, the increase in plant diseases, the loss of biodiversity, the multiplication of conflicts over the management of natural resources, food insecurity, the migration of populations and the degradation of ecosystems.

The increasing abruptness of these hazards is surprising to communities and decision-makers, who often find themselves at a loss. The absence of forecasts and baseline information on these hazards increases the country's vulnerability to climate change (PNACC, 2015, National Communications, 2005 and 2014, PAN-LCD, 2006, NBSAP, 2012).

Cameroon, aware of the stakes of this phenomenon for its socio-economic development, has engaged in various processes related to climate change, notably ratification of the United Nations Framework Convention on Climate Change, adherence to the Kyoto Protocol, and very recently, the signing and ratification of the Paris Agreement. In order to better monitor the commitments undertaken within the framework of the above-mentioned Conventions and Protocols, the Head of State created the operationalisation of the **National Observatory on Climate Change (NOCC) and entrusted it with the main mission of "monitoring and evaluating the socio-economic and environmental impacts of climate change, and propose solutions for the prevention, mitigation and/or adaptation to the harmful effects and risks associated with these**

**changes".** Thus, as part of its missions, the Observatory produces each year reference climate calendars for the adaptation of agricultural activities to climate disturbances.

## **2. Objectives**

The objective of this activity is to develop an agricultural calendar for the year 2022, adjusted to the current climate dynamics.

More specifically, this involves:

- To collect data and information on the current climate situation, its short and medium term trends;
- Analyse the data and information collected;
- Propose a chronogram of agricultural activities that take into account the expected climatic characteristics for the current agricultural season;
- Propose a summary calendar.

## **3. Expected Results**

Five agricultural calendars for the 05 AEZs are produced.

## **4. Methodology**

The elaboration of the agricultural calendars for the 05 ZAEs required:

### **a) Data**

- Climate data collected in the platforms of major international centers (Accuweather, Windy, IRI, NOAA, ACMAD, MétéoFrance, ACMAD, NCEP, etc.);
- Field data on farmers' experiences, relayed by agricultural extension workers;
- Data and information from the activity reports of MINADER, IRAD, CIFOR and the ACEFA project.

### **b) Treatment and analysis**

The data was processed using Excel, SPSS, Stata, ArcGIS, QGIS. Their analysis was based on the use of averages, percentages, deviations, supported by descriptive analyses.

### **c) Organisation of consultations**

Several working sessions were held between MINADER and NOCC experts, notably:

- A workshop to review the draft calendar
- A workshop to validate the calendar

## **II- SUMMARY OF CLIMATE FORECASTS FOR THE PERIOD FROM MARCH - MAY 2022**

In view of the global climatic context, the research work carried out by NOCC on the spatial and temporal dynamics of rainfall in the five agro-ecological zones of Cameroon in relation to La Niña episodes (from March - May from 1950 to 2015 and the one underway since August 2020) and the results of the work of the international climate forecast centers (NOAA, METEO France, NCEP, ACMAD, etc.), the period from March to May 2022 will be marked by:

### **A. At the general level:**

- a gradual onset of the monsoon from the south of the country to the southern part of the Adamawa region;
- the gradual withdrawal of the Harmattan towards the northern part of the country;
- the migration of the Inter-tropical Front (ITF) towards the southern part of the Adamawa.

### **B. At the level of the five Agroecological Zones of Cameroon:**

#### **For the starting dates of the rainy seasons:**

- a probable start of the rainy season between the end of May and the beginning of June 2022 in the Sudano-Sahelian zone;
- a probable start of the rainy season, from the second dekad of April 2022 in the Guinean High Savannah zone (Adamawa region);
- a probable start of the short rainy season, from the second dekad of March 2022 in the bimodal rain forest zone ( Centre, East and South regions);
- a probable start of the rainy season from the third dekad of March 2022 in the Highlands zone (West and North-West regions);
- a probable start of the rainy season from the second dekad of March 2022 in the monomodal rain forest zone (Littoral and South West regions).

#### **For rainfall amounts:**

- an extension of the dry season in the Sudano-Sahelian zone ( Far North and North regions);
- an increase in rainfall amounts in various localities in the Adamawa, North-West and West regions;

- rainfall amounts below the average in the various localities of the Centre, East and South regions.

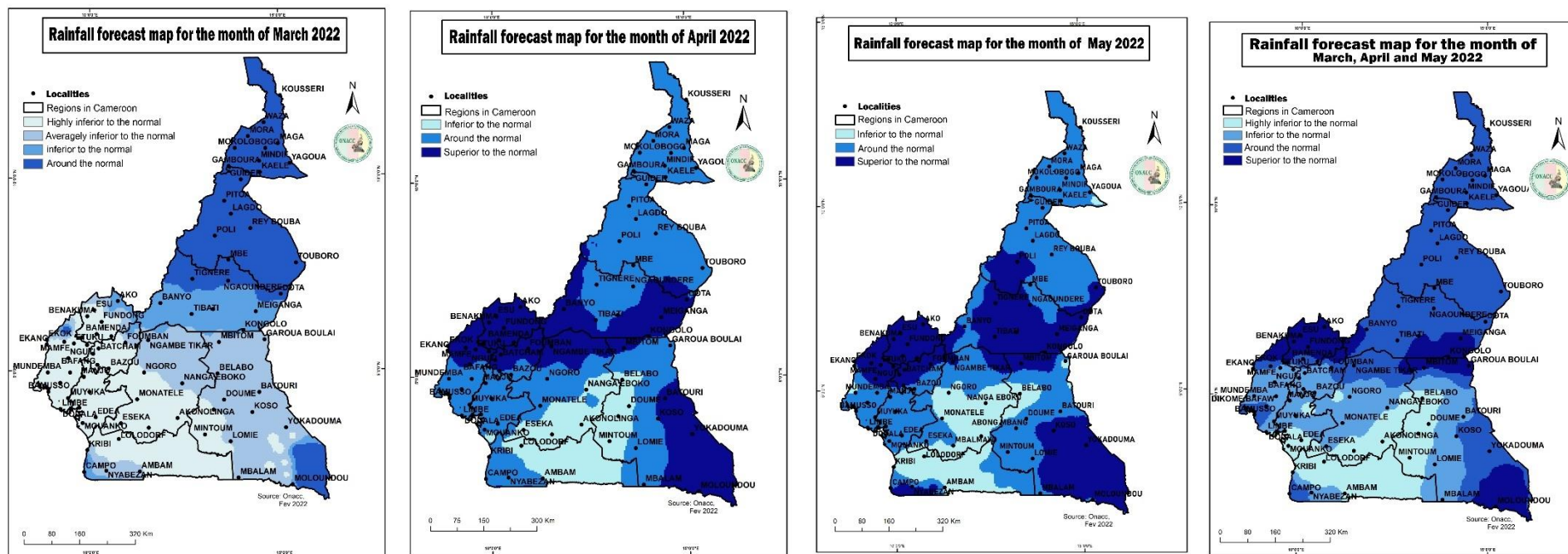


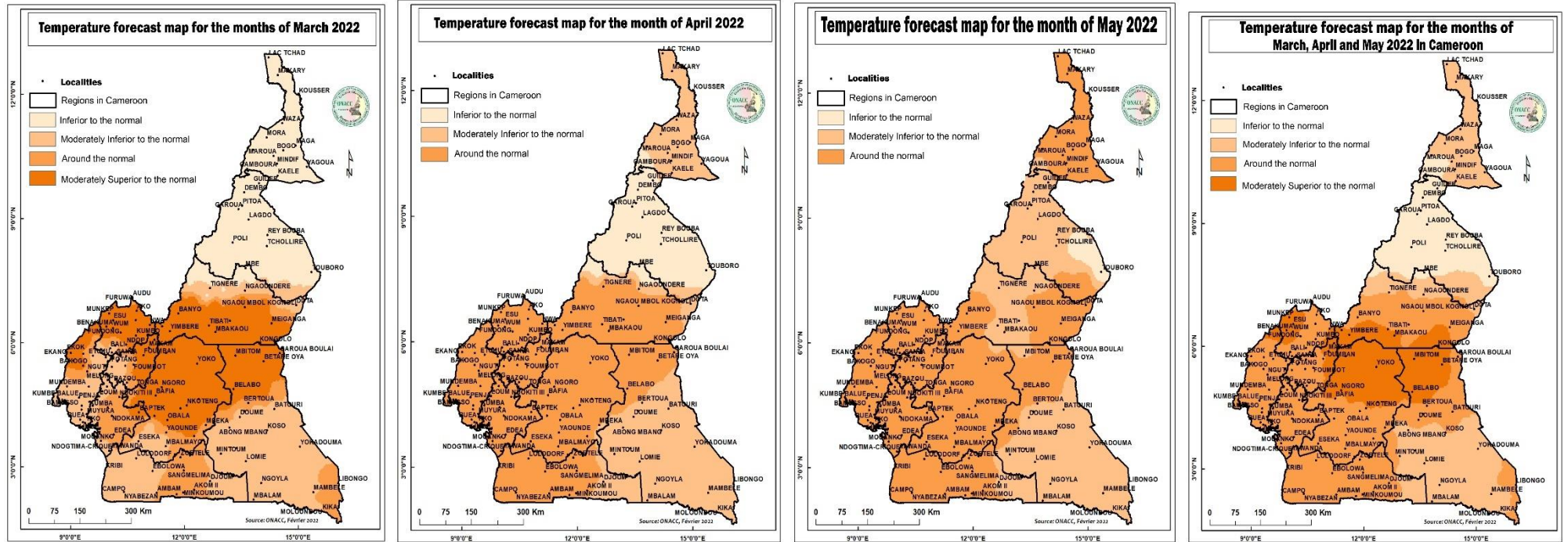
Figure 1 : Rainfall forecast map for the months of March, April and May 2022 in Cameroon.

- For the number of rainy days:**

- an increase in the number of rainy days in the Adamawa, Centre, East, West, North West, South West and Littoral regions;
- a decrease in the number of rainy days in the South region.

- For temperatures**

- significant risks of heatwave (successive days with maximum temperatures above 30°C) in the Far North, North, Adamawa, West, North-West, Centre and South regions;
- an increase in the number of days with warm nights in the Centre, South, East and Littoral regions;
- an increase in the number of days with cold nights in the Far North, North and Adamawa regions, due to a strong decrease in minimum temperatures caused by the influence of the Harmattan.



*Figure 2: Temperature forecast map for the months of March, April and May 2022 in Cameroon*

### III. AGRICULTURAL CALENDAR FOR THE FIVE AGRO-ECOLOGICAL ZONES

#### III.1. THE MAIN AGRICULTURAL ACTIVITIES TO BE CARRIED OUT IN THE FIVE AGRO-ECOLOGICAL ZONES OF CAMEROON

This agricultural calendar proposes a chronogram of agricultural activities, to facilitate farmers to better plan their agricultural activities in order to adjust to climate disturbances, and to optimise their crop yields.

##### *Course of the activities*

As a reminder, the different agricultural operations taken into account in this calendar include the following :

- A. Preparing the soil:** it usually starts before the date when the crop is expected to be finally planted (Planting).
- B. Clearing and cleaning:** This is the clearing and cleaning of a site. It is the natural or human destruction of a wooded area, forest or "wasteland", generally to cultivate the soil or transform it into pasture.
- C. Ploughing:** this refers to any action related to the cultivation of agricultural land, usually using tools such as a spade or a hoe, but also implementing animal traction (tilling of soil using sticks/hoes attached to animals).
- D. Planting:** this activity consists of planting seeds after ploughing and or ridging. There are two types of Planting they include :
  - Planting in a nursery.
  - Direct Planting,
- E. Maintenance:** this activity includes fertiliser application, weeding, hoeing, pruning.
- F. Phytosanitary treatment:** consists of applying phytosanitary products to prevent/fight against various attacks.
- G. Harvesting:** it is an assemblage of agricultural activities which permits the collection of useful parts of the crops.

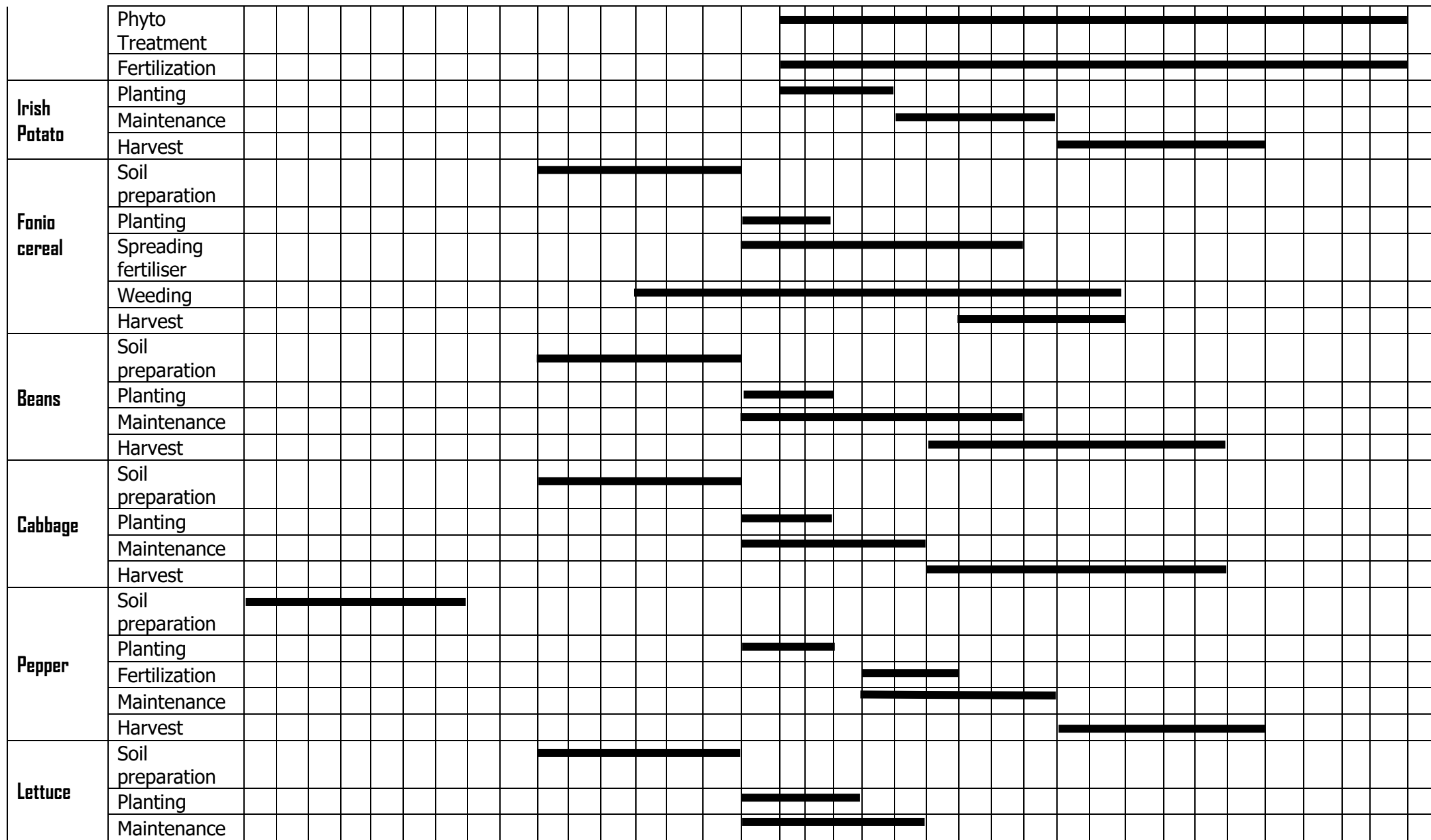


Crops	Cultivating operations	Dry Season															Rainy Season									Dry Season											
		January			February			March			April			May			June			July			August			Sept			Oct			Nov			Dec		
		D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3
Sorghum Dry Season (DS)	Setting up the nurseries																																				
	Preparation																																				
	Transplantation																																				
	Maintenance																																				
	Start and Replacement																																				
	Maintenance																																				
	Fertilisation																																				
	Harvest																																				
Sorghum Rainy season (RS)	Preparation																																				
	Planting																																				
	Maintenance																																				
	Onset of RS																																				
	Weeding																																				
	Fertilization																																				
	Harvest																																				
	Cotton	Preparation																																			
Planting																																					
Maintenance																																					
Retirement																																					
Maintenance (Weeding)																																					
Phyto treatment																																					
Harvest																																					



























Crops	Cultural operations	Dry Season												Rainy Season												Dry Season													
		January			February			March			April			May			June			July			August			Sept			Oct			Nov			Dec				
		D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3		
Cabbage	Preparing the soil																																						
	Planting																																						
	Maintenance																																						
	Harvesting																																						
Pepper	Preparing the soil																																						
	Planting																																						
	Fertilization																																						
	Maintenance																																						
	Harvesting																																						
Lettuce	Preparing the soil																																						
	Planting																																						
	Maintenance																																						
	Harvesting																																						
Watermelon	Preparing the soil																																						
	Planting																																						
	Maintenance																																						
	Harvesting																																						

*D1...n = Dekad (10 consecutive days); C = Crop year*































<b>Cocoa</b> (Adult plantation)	Entretien	_____												_____												_____											
	Preparing the soil													_____												_____											
	Control of brown rot	_____												_____												_____											
	Capsid control	_____												_____												_____											
	Pruning	_____												_____												_____											
	Harvesting	_____												_____												_____											
<b>Coffee tree</b> <i>Arabica/Robusta</i> a adult	Maintenance	_____																																			
	Capsid control	_____												_____												_____											
	Control of anthracnose													_____												_____											
	Control of berry borer													_____												_____											
	Control of twig borer	_____												_____												_____											
	Harvest																									_____											

	Cultural operations	DRY SEASON									RAINY SEASON															DRY SEASON											
		January			February			March			April			May			June			July			August			Sept			Oct			Nov			Dec		
		D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3			
<b>Coffee tree</b> <i>arabica/robusta</i> regeneration	Preparation of the germinator + nurseries	_____																																			
	Transplanting in the nurseries							_____																													
	Maintenance	_____																																			
	Phytosanitary control																									_____											
<b>Cabbage</b>	Preparing the soil							_____																													
	Planting							_____																													







### III.2.5. MONOMODAL RAIN FOREST ZONE (Littoral and South-West regions)

Table 5 : Chronogram of agricultural activities in the Monomodal Rain Forest Zone.

Crops	Cultural operations	DRY SEASON									RAINY SEASON																		DRY SEASON								
		January			February			March			April			May			June			July			August			Sept			Oct			Nov			Dec		
		01	02	03	01	02	03	01	02	03	01	02	03	01	02	03	01	02	03	01	02	03	01	02	03	01	02	03	01	02	03	01	02	03			
Rainfed rice (1st Campaign)	Preparation	████████████████████																																			
	Planting																																				
	Maintenance																																				
	Phyto treatment																																				
	Fertilization																																				
	Harvesting																																				
	Husking, winnowing and drying																																				
Rainfed rice (2nd Campaign)	Preparation																																				
	Planting																																				
	Maintenance																																				
	Phyto treatment																																				
	Fertilization																																				
	Harvesting																																				
	Husking, winnowing and drying																																				

Crops	Cultural	DRY SEASON	RAINY SEASON	DRY SEASON
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	operations	January			February			March			April			May			June			July			August			Sept			Oct			Nov			Dec		
		D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3	D1	D2	D3
<b>Wheat</b> (1st Campaign)	Preparation	████████████████████																																			
	Planting							████████████████████																													
	Maintenance										████████████████████																										
	Harvesting																████████████████████																				
<b>Wheat</b> (2nd Campaign)	Preparation																			████████████████████																	
	Planting																						████████████████████														
	Maintenance																									████████████████████											
	Harvesting																															████████████████████					
<b>Sweet Potato</b> (1st Campaign)	Preparation	████████████████████																																			
	Planting							████████████████████																													
	Maintenance										████████████████████																										
	Harvesting																████████████████████																				
<b>Sweet Potato</b> (2nd Campaign)	Preparation																			████████████████████																	
	Planting																						████████████████████														
	Maintenance																									████████████████████											
	Harvesting																															████████████████████					
<b>Okra</b> (1st Campaign)	Preparing the soil	████████████████████																																			
	Setting up the crop							████████████████████																													
	Maintenance										████████████████████																										
	Replacement of missing plants													████████████████████																							
	Phyto treatment										████████████████████																										
	Fertilisation							████████████████████																													
	Harvesting																			████████████████████																	











	operations	January			February			March			April			May			June			July			August			Sept			Oct			Nov			Dec		
		01	02	03	01	02	03	01	02	03	01	02	03	01	02	03	01	02	03	01	02	03	01	02	03	01	02	03	01	02	03	01	02	03	01	02	03
		01	02	03	01	02	03	01	02	03	01	02	03	01	02	03	01	02	03	01	02	03	01	02	03	01	02	03	01	02	03	01	02	03	01	02	03
Cabbage	Preparing the soil				█	█	█	█	█	█	█	█	█																								
	Planting							█	█	█	█	█	█																								
	Maintenance										█	█	█	█	█	█	█	█	█	█	█	█															
	Harvesting																			█	█	█	█	█	█												
Pepper	Preparing the soil	█	█	█	█	█	█																														
	Planting							█	█	█	█	█	█																								
	Maintenance										█	█	█	█	█	█	█	█	█	█	█	█	█	█	█												
	Fertilization										█	█	█	█	█	█	█	█	█	█	█	█	█	█	█							█	█	█	█	█	█
	Harvesting																									█	█	█	█	█	█						
Lettuce	Preparing the soil				█	█	█	█	█	█	█	█	█																								
	Planting										█	█	█	█	█	█																					
	Maintenance										█	█	█	█	█	█	█	█	█	█	█	█	█	█	█												
	Harvesting																						█	█	█	█	█	█									
Watermelon	Preparing the soil				█	█	█	█	█	█	█	█	█																								
	Planting										█	█	█	█	█	█	█	█	█	█	█	█															
	Maintenance										█	█	█	█	█	█																					
	Harvesting																						█	█	█	█	█	█									
Cucumber	Preparing the soil					█	█	█	█	█																											
	Planting										█	█	█	█	█	█																					
	Maintenance													█	█	█	█	█	█																		
	Harvesting																█	█	█	█	█	█	█	█	█												

CROPS	Cultural	DRY SEASON	RAINY SEASON	DRY SEASON
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