



Agricultural Calendar

for the

2023 Cropping Season

in the

Guinean High Savannah Agro-Ecological Zone



www.onacc.cm



onaccCmr



onaccCmr



www.minader.cm



© ONACC 2023, All Rights Reserved.

"A publication supported by the European Union and the German Federal Government through the Accompanying Mutations in the Cameroon Cotton Basin - Rural Development Support Programme (ABC-PADER) implemented by the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ) GmbH.

TABLE OF CONTENTS

TABLE OF CONTENTS	3
GLOSSARY	4
SUMMARY	5
1. INTRODUCTION	6
1.1. Context and justification	6
2. SUMMARY OF CLIMATE FORECASTS FOR THE PERIOD APRIL TO JUNE 2023	8
3. MAIN AGRICULTURAL OPERATIONS TO BE CARRIED OUT IN THE ZONES OF INTEREST	11
4. CHRONOGRAMME DES ACTIVITES DANS LA ZONE DES HAUTES SAVANES GUINEENES (REGION DE L'ADAMAQUA).....	12
APPENDIX: PRODUCTION TEAM	23

GLOSSARY

Agricultural Calendar: A decision-making and advisory tool for planning, managing and monitoring agricultural activities. It presents the types of agricultural speculations (maize, cocoa, beans, etc.), the agricultural operations (preparation of fields, sowing, maintenance, etc.) in a given agro-ecological zone (Sudano-Sahelian, Guinea High Savannah, Forest with bimodal rainfall, High Plateaux and monomodal rainfall forest zone).

Climate: All the meteorological elements and phenomena (temperature, atmospheric pressure, precipitation, wind, etc.), as well as their dynamics in time and space (expressed by the seasons) that characterizes 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 generally occurs every 2 to 7 years in the equatorial Pacific and particularly along the coasts 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, and the appearance of extreme weather situations such as floods, extreme droughts, etc.).

El Niño is a warm marine current (the opposite of La Niña), characterised by an increase in the temperature of the ocean surface. 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 in meteorological parameters (temperature, rainfall, etc.) around a mean on seasonal and inter-annual 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 agro-ecological zones, namely the Sudano-Sahelian, Guinean High Savannah, Bimodal Rain forest, High Plateau and Monomodal Rain forest zones.

SUMMARY

The climate forecasts for April, May and June 2023 indicate an overall **increase** in rainfall amounts compared to historical averages from 1950-2015 in the Guinea High Savannah Zone (Adamawa Region).

As for the start dates of the rainy seasons, the forecasts indicate:

- A probable start of the rainy season from the **second dekad of April (11th) 2023** in Vina (**Ngaoundere, Mangoli, Mangom, Nganha**), Djerem (**Pangar, Betare Gongon, Dang Haoussa**), Faro and Deo (**Tignere, Dodeo, Mayo Baleo**) and Mbere (**Dota**) Divisions ;
- A probable start of the rainy season from the **third dekad of April (21st) 2023** in Mayo-Banyo (**Mayo Darle, Banyo, Djoumbare**), Djerem (**Tibati**), Faro and Deo (**Tignere, Galim-Tignere**) and Mbere (**Ndongue**) Divisions;
- A probable start of the rainy season from the **second dekad of May (11th) 2023** in certain localities of Faro and Deo (**Kontcha**) and Vina (**Mbe**) Divisions.

Based on the above, the National Observatory on Climate Change (NOCC) proposes that **planting should begin from the:**

- **Second dekad (11th) of April 2023** in certain localities of Vina (**Mangoli, Mangom, Ngaounder...**), Faro and Deo (**Tignere, Mayo Baleo, Dodeo,...**), Djerem (**Dir, Dang Haoussa, Pangar, Betara Ngongo**) and Mbere (**Dota**) Divisions;
- **First dekad (1st) of May 2023** in certain localities of Faro and Deo (**Galim**), Mayo Banyo (**Mayo Darle, Djoumbare, Banyo**) and Mbere (**Ndongue**) Divisions;
- **Second dekad (11th) of May 2023** in **Kontcha**, (Faro and Deo Division) ;
- **Third dekad (21st) of May 2023** in **Mbe** (Vina Division).

1. INTRODUCTION

1.1. Context and justification

The 6th Intergovernmental Panel on Climate Change (IPCC) report of 2022 confirms the evidence of climate change and its adverse impacts on ecosystems, socio-economic and development sectors. This report particularly reveals the high vulnerability of Africa to climate change and underlines the numerous risks and impacts that the continent is already experiencing. 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 the populations. In 2011, 12.4 Million people were suffering from famine in Djibouti, Ethiopia, Kenya and Somalia (FAO, 2011). Thus, the search for solutions to the negative impacts on development sectors due to climate disturbances is becoming a priority for African countries.

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, a poor distribution of the number of rainy days, and the increasingly recurrent and catastrophic increase in extreme weather situations (floods, droughts, violent winds, sandstorms and haze, etc.). All these effects of climate change have as their corollary the disruption of agricultural and livestock activities, the resurgence of crop pathologies, the loss of biodiversity, conflicts in the management of natural resources, food insecurity, population migration and the degradation of ecosystems.

The lack 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, conscious of the stakes of this global phenomenon for its socio-economic development, has committed itself to climate change mitigation and adaptation processes, notably the ratification of the United Nations Framework Convention on Climate Change, the adherence to the Kyoto Protocol and, very recently, the signature and ratification of the Paris Agreement. In order to better monitor the commitments it has made under the above-mentioned Conventions and Protocols, the Head of State created and operationalized the National Observatory on Climate Change (NOCC), and entrusted it with the main mission of **"monitoring and assessing the socio-economic and environmental impacts of climate change, and proposing measures for prevention, mitigation**

and/or adaptation to the adverse effects and risks associated with these changes". Thus, the Observatory, in collaboration with the Ministry of Agriculture and Rural Development (MINADER), produces an agricultural calendar each year. This calendar is a decision-making and advisory tool for agricultural activities and adaptation to the effects of climate change. For the season from April to October 2023, an agricultural calendar specific to the Guinea High Savannah zone has been produced.

This zone covers the Adamawa Region which is characterized by permeable, red or brown ferralitic and hydromorphic soils. The main agricultural crops grown in this area are **cereals** (maize, Milletlet and sorghum), **tubers** (yams, potatoes, cassava and cocoyams) and **perennial crops** (cocoa and coffee).

1.2. Methodology

The realization of the agricultural calendar for this agro-ecological zone (AEZ) required:

a) Data collection

- Climatic data collected in the platforms of major international centres (Accuweather, Windy, IRI, NOAA, ACMAD, Météofrance, ACMAD, NCEP, etc.);
- Field data on producers' experiences;
- Information from the activity reports of the technical structures of MINADER, IRAD, IITA and CIFOR.

b) Data processing and analysis

Data processing was done using statistical software (Excel, SPSS, Stata, ArGIS, QGIS) and exploitation of the results of the Climate Forecast Model of NOCC (CFMNOCC). Data analysis involved the use of averages, percentages and variances, supported by descriptive analyses.

As part of the exploitation and analysis of the information, several working sessions were organized by a joint technical team, made up of experts from MINADER and NOCC,

After the technical work by the joint team, the agricultural calendar was validated during a workshop attended by sectoral administrations (MINADER, MINEPIA), partners (WFP, GIZ-PADER) and civil society.

2. SUMMARY OF CLIMATE FORECASTS FOR THE PERIOD APRIL TO JUNE 2023

In view of the global climatic context, the research work carried out by DNACC on the spatial and temporal dynamics of rainfall in the five agro-ecological zones of Cameroon in relation to the El Niño (April to June from 1950 to 2015) and La Niña (ongoing since August 2020) episodes, and the results of the work of the international climate forecasting centres (NOAA, METEO France, NCEP, AGMAD, etc.), the period between April, May and June 2023 will be marked by: a) a decrease in rainfall in the five agro-ecological zones of Cameroon; b) an increase in the number of people living in the five agro-ecological zones of Cameroon; c) a decrease in the number of people living in the five agro-ecological zones of Cameroon.), the period between April, May and June 2023 will be marked by:

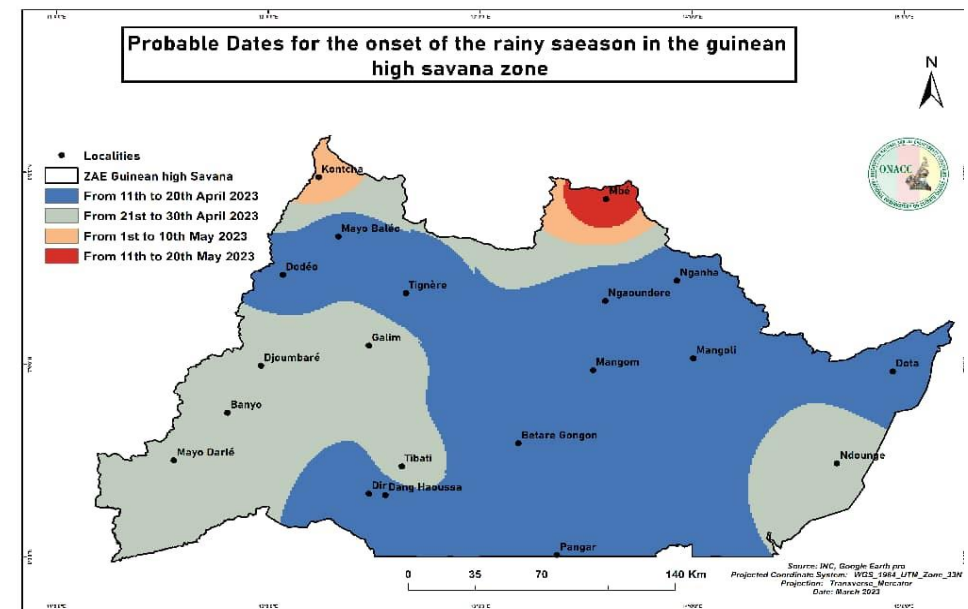
A. At the National level:

- The progressive installation of the monsoon from the south of the country to the north of the Adamawa;
- The migration of the Inter-Tropical Front (ITF) towards the northern part of the country.

B. In the Guinea High Savannah Zone:

- *For the start dates of the rainy seasons:*

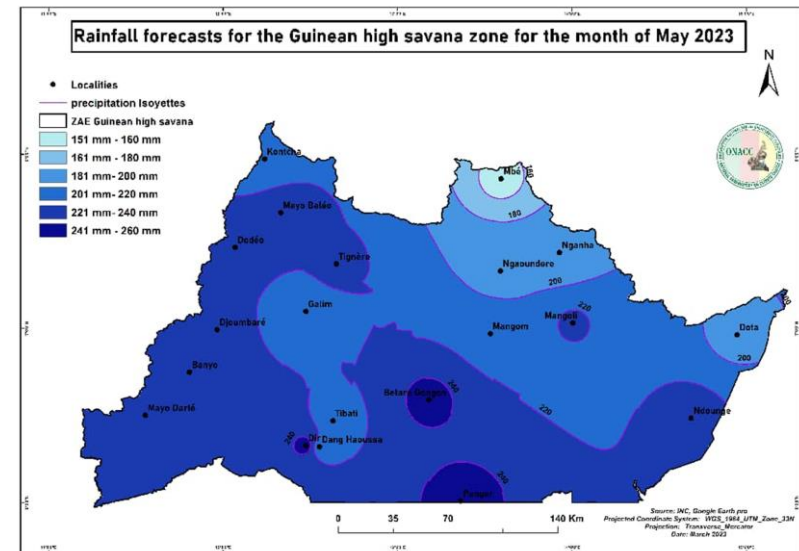
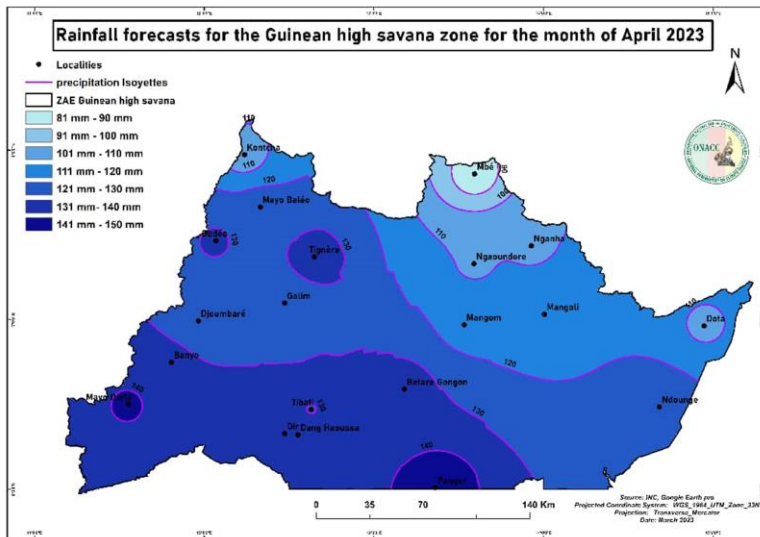
- A probable start of the rainy season from the **second dekad of April 2023** in Ngaoundere, Tignere, Dota, Mangoli, Mangom, Betare Gongon, Pangar, Dang Haoussa, Dir, Nganha, Dodeo, Mayo Baleo;
- A probable start of the rainy season from the **third dekad of April 2023** in Tibati, Mayo Darle, Banyo, Djoumbare, Galim and Ndoungue;
- A probable start of the rainy season from the **first dekad of May 2023** in Kontcha;
- A probable start of the rainy season from the **second dekad of May 2023** in Mbe.



Map 1: forecasts on the start of the rainy season in the Guinea High Savannah zone

For rainfall amounts:

- A very high probability of recording **above average rainfall amounts** at Pangar, Dir, Dang Haoussa, Tibati, Mangoli, Banyo and Mayo Darle in the **southern part of the Region;**
- A high probability of recording **around average rainfall amounts** at Kontcha, Tibati, Galim and Mangom in the **central part of the Region;**
- A high probability of recording **below-average rainfall amounts** at Ngaoundere, Nganha Dota and Mbe in the **northern part of the Region.**



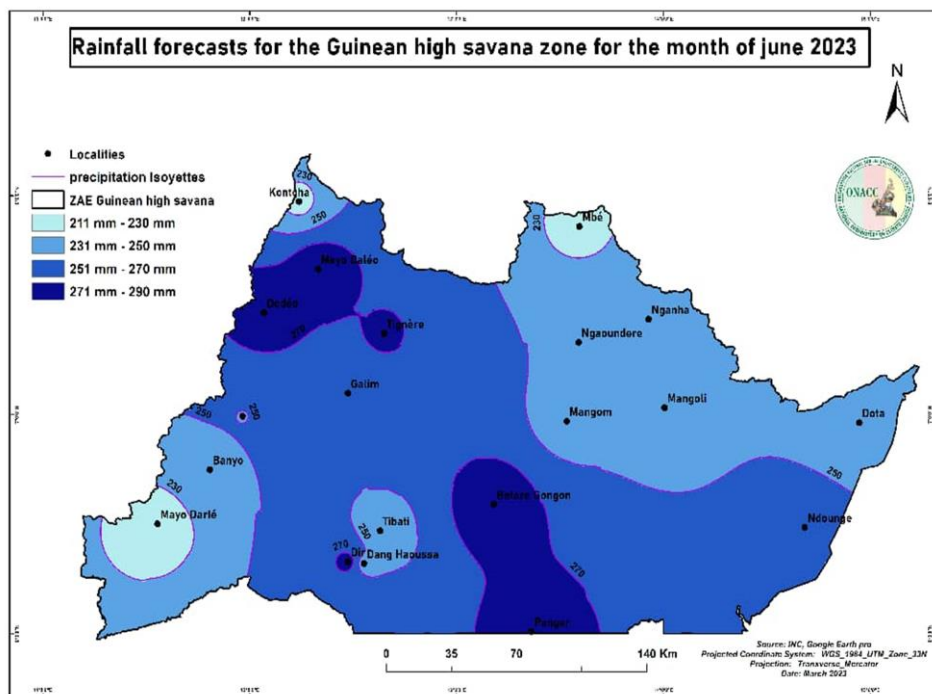


Figure 2: Precipitation Forecasts in the Guinea High Savannah Zone for the month of June 2023

- **For Planting dates**
 In view of the expected rainfall in the Guinea high savanna zone, the following dates are recommended for planting:
 - from the **second dekad of April (from 13th of April 2023)** in **Ngaoundere, Tignere, Dota, Mangoli, Mangom, Betare Gongon, Pangar, Dang Haoussa, Dir, Nghanha, Dodeo, Mayo Baléo;**
 - from the **first dekad of May (from 1st of May 2023)** in **Mayo Darle, Banyo, Djoumbare, Galim and Ndoungue;**
 - from the **second dekad of May (from 21st of May 2023)** in **Koutcha and Mbe.**

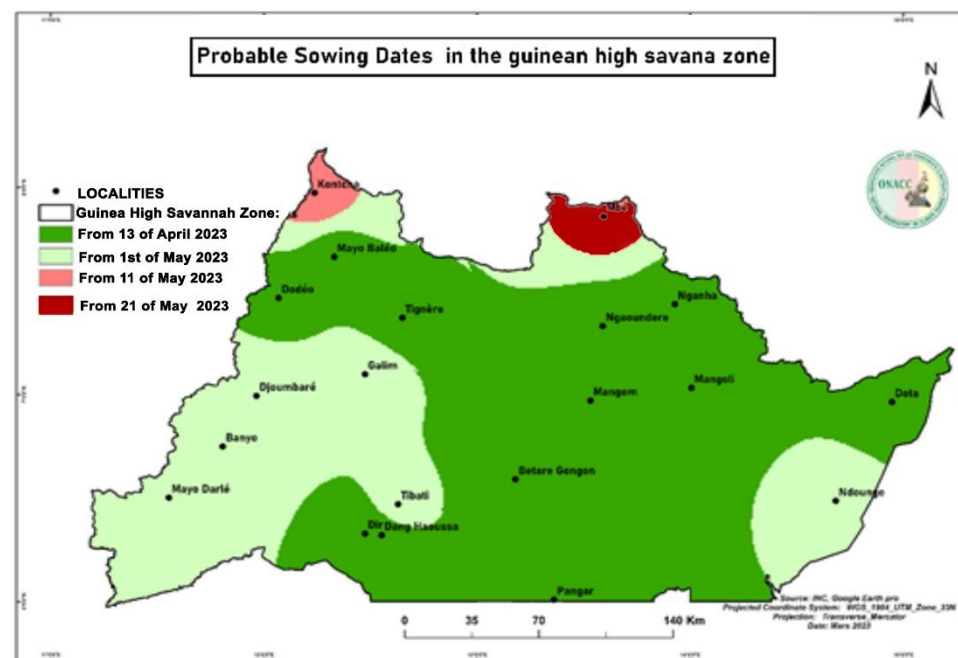


Figure 3: Probable planting dates in the Guinea High Savannah Zone

3. MAIN AGRICULTURAL OPERATIONS TO BE CARRIED OUT IN THE ZONES OF INTEREST

This agricultural calendar proposes a timetable to facilitate better planning, management and monitoring of agricultural operations by farmers in order to adjust to climatic disturbances and optimize crop yields.

Course of activities

The main agricultural operations taken into account in this calendar are:

- a) **Field preparation:** this generally begins before the date on which the crop is expected to be planted (sowing or planting). This preparation takes into account clearing/cleaning, felling and ploughing operations.
Clearing and cleaning: this consists of clearing and cleaning a site. It is the natural or human destruction of a wooded area, forest or "wasteland", when the aim is to put an end to the wooded state, generally to put the soil under cultivation or to transform it into pasture.
Ploughing: refers to any action related to the development of agricultural land, usually using manual agricultural tools (spade, hoe, plough, etc.) or mechanized tools (power tillers, tractors, etc.).
- b) **Nursery:** this consists of growing young plants for replanting or grafting.
- c) **Planting:** this consists of sowing seeds after ploughing and or ridging. There are two types of planting: direct planting and planting in a nursery.
- d) **Maintenance:** this activity includes the application of fertilizers, weeding, hoeing and pruning.
- e) **Phyto-sanitary treatment:** this consists of the application of phyto-sanitary products to prevent/fight against various plant attacks or diseases.
- f) **Harvesting:** all the agricultural work allowing the collection of the useful parts of cultivated plants (fruits, seeds, stems and fibres, leaves, roots, bulbs, etc.).

Crops	Farming operations	Dry season									Rainy season															Dry season																					
		January			February			March			April			May			June			July			August			September			October			November			December												
		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	D1	D2	D3							
	Maintenance (weeding, ridging, leaf removal)																																														
	Phyto treatment																																														
	Fertilization																																														
	Harvesting																																														
Cassava	Field preparation																																														
	Planting																																														
	Maintenance (weeding, ridging, leaf removal)																																														
	Phyto treatment																																														
	Fertilization																																														
	Harvesting																																														
Groundnuts,	Field preparation																																														
	Planting																																														
	Maintenance (weeding)																																														
	Phyto treatment																																														
	Fertilization																																														
	Harvesting																																														
	Field preparation																																														
	Planting																																														
	Maintenance (weeding)																																														
	Phyto treatment																																														
	Fertilization																																														
Harvesting																																															

Crops	Farming operations	Dry season									Rainy season															Dry season											
		January			February			March			April			May			June			July			August			September			October			November			December.		
		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
Yams,	Field preparation	█																																			
	Planting																																				
	Maintenance (weeding, staking)																																				
	Phyto treatment (seed treatments)																																				
	Fertilization																																				
	Harvesting																																				
Sweet potatoes	Field preparation																																				
	Planting																																				
	Maintenance (weeding)																																				
	Phyto treatment																																				
	Fertilization																																				
	Harvesting																																				
Irish Potatoes	Field preparation																																				
	Planting																																				
	Maintenance (weeding)																																				
	Phyto treatment																																				
	Fertilization																																				
	Harvesting																																				
Tomatoes, Pepper, Watermelon,	Field preparation																																				
	Planting																																				
	Maintenance (weeding)																																				

Crops	Farming operations	Dry season									Rainy season															Dry season											
		January			February			March			April			May			June			July			August			September			October			November			December.		
		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, Green pepper	Phyto treatment																																				
	Fertilization																																				
	Harvesting																																				
Bananas plantains, Pawpaw	Field preparation																																				
	Planting																																				
	Maintenance (weeding, staking, Eye observation)																																				
	Phyto treatment																																				
	Fertilization																																				
	Harvesting																																				
Cocoa, coffee (young plantations)	Field preparation																																				
	Planting																																				
	Maintenance (weeding)																																				
	Phyto treatment																																				
	Fertilization																																				
Young oil palm plantation	Field preparation																																				
	Transplanting																																				
	Maintenance (weeding)																																				
	Fertilization																																				

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

NB: All these climate forecasts will be updated every 10 days in the dekad forecast bulletins for better planning of agricultural activities.

Table 2: Chronogram of agricultural activities in Tibati, Galim-Tignere, Mayo Darle, Banyo, Ndongue, Djoumbare

Crops	Farming operations	Dry season									Rainy season															Dry season											
		Janvier			Fevrier			Mars			Avril			Mai			Juin			Juillet			Août			Septembre			Octobre			Novembre			Decembre.		
		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 Maize Millet/Sorghum	Field preparation																																				
	Planting																																				
	Maintenance (weeding)																																				
	Phyto treatment																																				
	Fertilization																																				
	Harvesting																																				
Wheat	Field preparation																																				
	Planting																																				
	Maintenance (weeding)																																				
	Phyto treatment																																				
	Fertilization																																				
	Harvesting																																				
Cocoyams	Field preparation																																				
	Planting																																				
	Maintenance (weeding, ridging, leaf removal)																																				
	Phyto treatment																																				
	Fertilization																																				
	Harvesting																																				
Cassava	Field preparation																																				
	Planting																																				

Crops	Farming operations	Dry season									Rainy season															Dry season											
		Janvier			Fevrier			Mars			Avril			Mai			Juin			Juillet			Août			Septembre			Octobre			Novembre			Decembre.		
		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
	Maintenance (weeding, ridging, leaf removal)																																				
	Phyto treatment																																				
	Fertilization																																				
	Harvesting																																				
Groundnuts,	Field preparation																																				
	Planting																																				
	Maintenance (weeding)																																				
	Phyto treatment																																				
	Fertilization																																				
	Harvesting																																				
Soybeans, Beans	Field preparation																																				
	Planting																																				
	Maintenance (weeding)																																				
	Phyto treatment																																				
	Harvesting																																				
Yams,	Field preparation																																				
	Planting																																				
	Maintenance (weeding, staking)																																				
	Phyto treatment (seed treatments)																																				
	Fertilization																																				
	Harvesting																																				

Crops	Farming operations	Dry season									Rainy season															Dry season											
		Janvier			Fevrier			Mars			Avril			Mai			Juin			Juillet			Août			Septembre			Octobre			Novembre			Decembre.		
		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
Sweet potatoes	Field preparation																																				
	Planting																																				
	Maintenance (weeding)																																				
	Phyto treatment																																				
	Fertilization																																				
	Harvesting																																				
Irish Potatoes	Field preparation																																				
	Planting																																				
	Maintenance (weeding)																																				
	Phyto treatment																																				
	Fertilization																																				
	Harvesting																																				
Tomatoes, Pepper, Watermelon, Cabbage, Green pepper	Field preparation																																				
	Planting																																				
	Maintenance (weeding)																																				
	Phyto treatment																																				
	Fertilization																																				
	Harvesting																																				
Bananas plantains, Pawpaw	Field preparation																																				
	Planting																																				
	Maintenance (weeding, staking, Eye observation)																																				

Crops	Farming operations	Dry season									Rainy season															Dry season											
		Janvier			Fevrier			Mars			Avril			Mai			Juin			Juillet			Août			Septembre			Octobre			Novembre			Decembre.		
		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
	Phyto treatment																																				
	Fertilization																																				
	Harvesting																																				
Cocoa, coffee (young plantations)	Field preparation																																				
	Planting																																				
	Maintenance (weeding)																																				
	Fertilization																																				
	Harvesting																																				
Young oil palm plantation	Field preparation																																				
	Planting																																				
	Maintenance (weeding)																																				
	Fertilization																																				
	Harvesting																																				

Table 3: Chronogram of agricultural activities in **Kontcha** and **Mbe**

Crops	Farming operations	Dry season									Rainy season															Dry season													
		Janvier			Fevrier			Mars			Avril			Mai			Juin			Juillet			Août			Septembre			Octobre			Novembre			Decembre.				
		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		
Rainfed rice Maize Millet/Sorghum	Field preparation																																						
	Planting																																						
	Maintenance (weeding)																																						
	Phyto treatment																																						
	Fertilization																																						
	Harvesting																																						
Wheat	Field preparation																																						
	Planting																																						
	Maintenance (weeding)																																						
	Phyto treatment																																						
	Fertilization																																						
	Harvesting																																						
Cocoyams	Field preparation																																						
	Planting																																						
	Maintenance (weeding, ridging, leaf removal)																																						
	Phyto treatment																																						
	Fertilization																																						
	Harvesting																																						
Cassava	Field preparation																																						
	Planting																																						

Crops	Farming operations	Dry season									Rainy season															Dry season																								
		Janvier			Fevrier			Mars			Avril			Mai			Juin			Juillet			Août			Septembre			Octobre			Novembre			Decembre.															
		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	D1	D2	D3										
	Maintenance (weeding, ridging, leaf removal)																																																	
	Phyto treatment																																																	
	Fertilization																																																	
	Harvesting																																																	
Groundnuts,	Field preparation																																																	
	Planting																																																	
	Maintenance (weeding)																																																	
	Phyto treatment																																																	
	Fertilization																																																	
	Harvesting																																																	
Soybeans,	Field preparation																																																	
	Planting																																																	
	Maintenance (weeding)																																																	
	Phyto treatment																																																	
	Harvesting																																																	
Yams,	Field preparation																																																	
	Planting																																																	
	Maintenance (weeding, staking)																																																	
	Phyto treatment (seed treatments)																																																	
	Fertilization																																																	
	Harvesting																																																	

Crops	Farming operations	Dry season									Rainy season															Dry season											
		Janvier			Fevrier			Mars			Avril			Mai			Juin			Juillet			Août			Septembre			Octobre			Novembre			Decembre.		
		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
Tomatoes, Pepper, Watermelon , Cabbage, Green pepper	Field preparation																																				
	Planting																																				
	Maintenance (weeding)																																				
	Phyto treatment																																				
	Fertilization																																				
	Harvesting																																				
Coton	Field preparation																																				
	Planting																																				
	Maintenance (weeding)																																				
	Weeding																																				
	Phyto treatment																																				
	Fertilization																																				
	Harvesting																																				

D1...n=Dekad (10 successive days); C=Agricultural season

NB: All these climate forecasts will be updated every 10 days in the dekadal forecast bulletins for better planning of agricultural activities

APPENDIX: PRODUCTION TEAM

Supervision

His Excellency Mr. Gabriel MBAIROBE, Minister of Agriculture and Rural Development (MINADER)

Prof. Dr. Eng. AMOUGOU Joseph Armathe, Director General of the National Observatory on Climate Change (NOCC) and Lecturer in the Geography department of the University of Yaounde I, Cameroon.

Eng. FORGHAB Patrick Mbomba, Deputy Director General of the National Observatory on Climate Change (NOCC).

Production

NOCC Team

Prof. Dr. Eng. AMOUGOU Joseph Armathe, Director General of the National Observatory on Climate Change (NOCC) and Lecturer in the Geography department of the University of Yaounde I, Cameroon.

Eng. FORGHAB Patrick Mbomba, Deputy Director General of the National Observatory on Climate Change (NOCC).

Dr. BATHA Romain Armand Soleil, Head of the Department for the Production and Dissemination of Climatological Warning and Alert Services;

ZOUH TEM Isabella, Head of the Department for Geomatics;

MEYONG Rene Ramses, Research Assistant N°1 in the Department for the Production and Dissemination of Climatological Warning and Alert Services;

NDJELA MBEIH Gaston Evarice, Research Assistant N°1 in the Department for the Production and Dissemination of Climatological Warning and Alert Services;

BIKONO Pascal Freddy, Assistant Research Officer N°2 in the MNV and Carbon Monitoring Department (MNV-IGES);

MESSI AMOUGOU Max, Research Assistant N°1 in the Department of Geomatics;

ANABA OLOMO Muriel Frederique, Research Assistant N°2 in the Department of Geomatics Research Assistant N°2 in the Department of Geomatics;

NDOPING Irene Manenkeu NSEM-ARREY, Technical staff / Department of Observed Integration and the Assessment of Costs of Impacts of Climate Change;

MONTE DJOMO Neily, Technical staff, Department for the Production and Dissemination of Climatological Warning and Alert Services;

SOUGA BOYOMO Thomas Magloire, Technical staff, Department for the Production and Dissemination of Climatological Warning and Alert Services;

OBENEBANGHA BATE MBI, Specialist in Biogeography and Climatology.

MINADER Team

Eng. MBAIRANODJI Andre, Director of Agricultural Surveys and Statistics (DESA);

Eng. MESSI Simon, Director of Professional Agricultural Organisations and Farm Support (DOPA);

Eng. TELEP YEDE Daniel, Deputy Director for Agricultural Extension (SDVA/DOPA) ;

Eng. FOUNADOUDOU, Head of the Information and Early Warning Unit (CIAR/DESA) ;

Eng. KIMOUN TEMFEMO Fatima, Research Assistant (CIAR/DESA) ;

Eng. KEUBOU DJYO Epse PIAPANG Sandrine, Research Engineer (SDVA/DOPA) ;

Eng. ABANGAWOH Epse BEDJEME HILLDA, Technical staff (CIAR/DESA);

Eng. TALOM Thoma Felicien, Technical staff (SDVA/DOPA) ;

Eng. BELPORO DOKO Franck, Technical staff (CIAR/DESA).