



# FEED THE FUTURE

The U.S. Government's Global Hunger & Food Security Initiative

FeSeRWAM.ORG & THE AIP: HOW TO ACCESS AND  
SELECT AGRICULTURAL INPUT PACKAGES

## USER TRAINING MODULE



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# ACKNOWLEDGEMENTS

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For this exercise to be successful, EnGRAIS and PAIRED teams adopted a participatory and inclusive approach, involving stakeholders from almost all ECOWAS countries, as well as Chad and Mauritania. Participants involved were representatives of National Agricultural Research Systems, private fertilizer and seed sector associations, civil society organizations, and various public/private sector service providers. Participants took part in one or more activities, including workshops, meetings, calls, surveys, or had the opportunity to collect national data for the platform. We appreciate all your efforts.

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## REGIONAL ECONOMIC COMMUNITIES



**Economic  
Community of West  
African States**



**West African  
Economic and  
Monetary Union**



**Permanet Interstate  
Committee for Drought  
Control in the Sahel**

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# ACRONYMS

- AEZ ..... agro-ecological zone
- AIP ..... agricultural input packages
- FeSeRWAM. .... Fertilizer and Seed Recommendations for West Africa Map
- GAP ..... good agricultural practices
- IPM ..... integrated pest management
- ISFM ..... integrated soil fertility management
- NGO ..... non-governmental organization



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Figure 1. FeSeRWAM homepage at www.feserwam.org

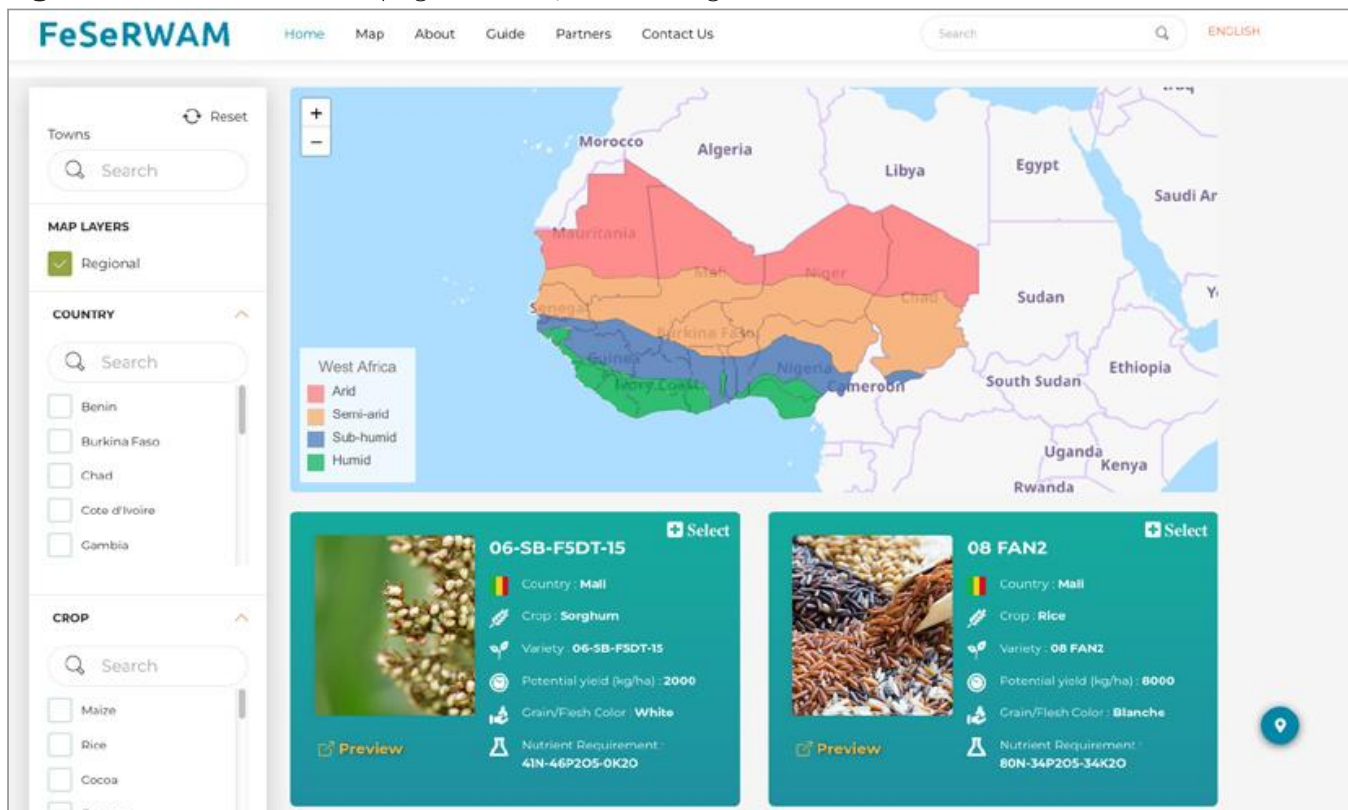
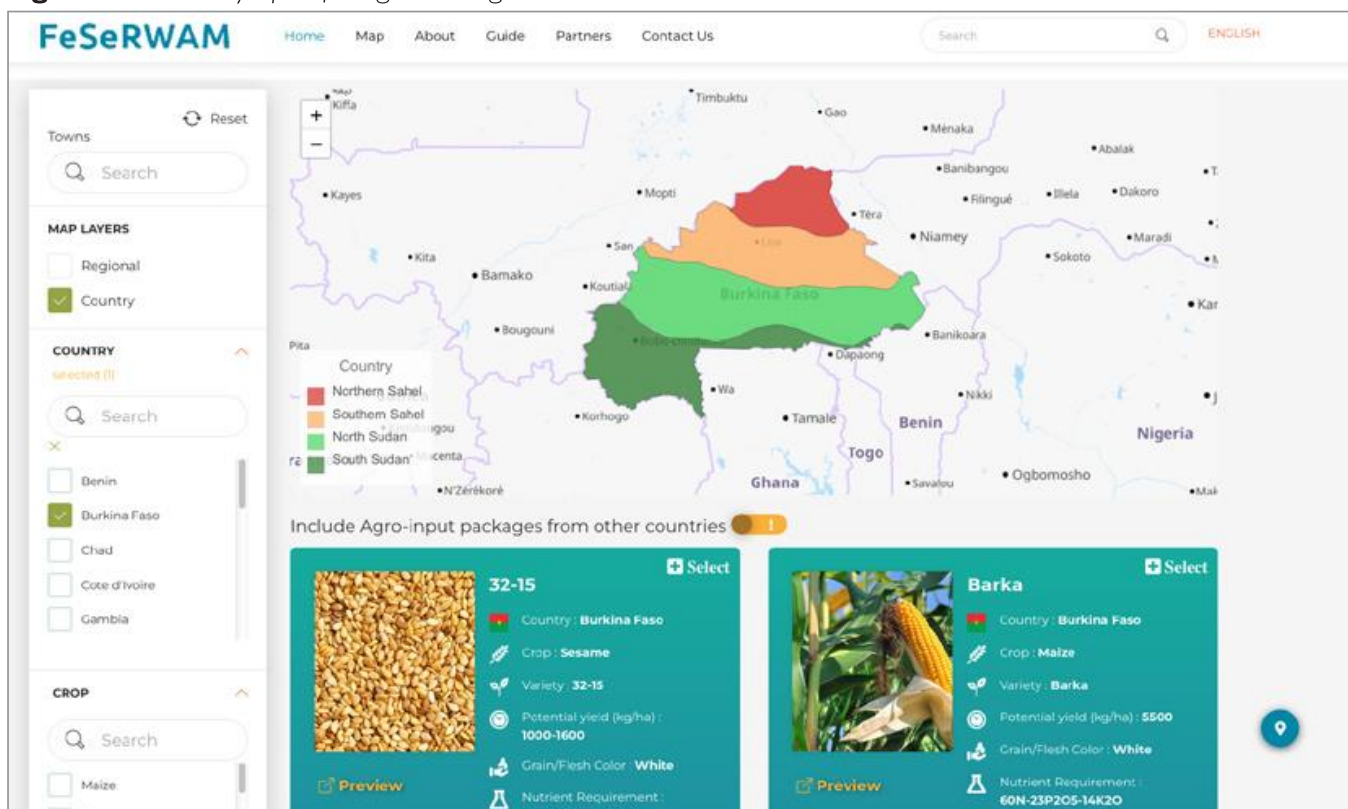


Figure 2. Country-specific agro-ecological zones



# USE OF AGRICULTURAL INPUT PACKAGES FOR SUSTAINABLE PRODUCTIVITY IMPROVEMENT

## INTRODUCTION FOR USERS

This module is designed for training in the use of AIPs developed for the promotion of the combined use of 1) improved seed variety, 2) appropriate fertilizer formulas and 3) good agricultural practices according to the Agroecological Zones (AEZ) in West Africa and Chad.

### OBJECTIVES AND PREREQUISITES

#### Présentation et objectifs du module

This module serves to build the capacity of participants on the best ways to select and use Agricultural Input Packages (AIP).

More specifically, it is about making available to the participants:

- Basic information to better understand the problems of agricultural yields and productivity.
- Tools and methods to select the best AIPs according to the AEZ.
- Tools and methods for applying AIPs to improve agricultural yields and productivity.

#### Target audience

This module is intended for producers and other users. It is specifically aimed at:

- Agricultural producers.
- Agricultural input dealers.
- Agricultural advisory agents (state support services, NGOs, agro-enterprises, associations, etc.).



## Training objectives

Upon completion of this module, participants will be able to:

- Understand the specificities of the major AEZs at the national and regional levels.
- Understand and describe the basic principles for selecting suitable varieties and major fertilizers, and their impact on yield.
- Understand the importance of AIP.
- Describe the method of application of the AIP for:
  - » Knowledge of the **production area**.
  - » Choice of **crop** and **variety**.
  - » The **type** and **category** of **quality seeds**.
- Understand the environmental and health safeguards related to the use of agricultural inputs.
- Understand how the FeSeRWAM platform works.

## PEDAGOGICAL APPROACH

- A participative approach that puts the learner at the center and alternates theoretical contributions and concrete applications will be used.
- The training will be punctuated by a series of presentations and interactive discussions as well as practical exercises.
- Group discussions and self-correcting application exercises will help test knowledge.

## PREREQUISITES

- Participation in this module does not require significant scientific knowledge, but basic knowledge of agriculture and a good understanding of agricultural yield and productivity issues are necessary to understand the concepts discussed.



# SESSION I. KNOWLEDGE OF PRODUCTION ZONES

- Definition of an agro-ecological zone (AEZ):
- List the AEZ in your country:
- Name the AEZ in which you operate:
- List the challenges of these zones (incidence of pests and diseases, drought, flooding, etc.):



## AGRO-ECOLOGICAL ZONES

*Land resources mapping units, defined in terms of climate, landform, soils and land cover, and having a specific range of potentials and constraints for land use. (FAO, 1995)*

- List characteristics of these zones (rainfall, soil, temperature, relative humidity, etc.):
- Describe the cropping system there:
- Name which crops are well adapted to or do well in these agro-ecologies:
- Name the varieties/hybrids that perform well in these zones:
- Which maturity group do you prefer for your choice of varieties?
- Identify the resource endowments of your agro-ecologies (market access, irrigation facilities, water bodies, road infrastructure, etc.):

**Figure 3.** Example of an AIP for rice in Senegal: Sahel 177

FeSeRWAM
AGRO-INPUT RECOMMENDATIONS FOR
Click to download

RICE

WEST AFRICA AGRO ECOLOGICAL ZONES

SEMI-ARID

COUNTRY AGRO ECOLOGICAL ZONES

RIVER VALLEY

RAINFALL VOLUME RANGE - 300 - 600MM

CROP DETAILS

Variety Name:	Sahel 177
Local Name	
Seed Type	Lignée pure
Quantity of seed (kg/hectare)	40 kg repiquage; 80 kg semis direct; 120 kg à la volée - kg/ha
Spacing	Semis à la volée ou Repiquage 20x20 ou 25x25
Grain/Flesh Color	Blanc
Optimum planting/sowing Period	Centre saison: 1 Fév -15 Mars; Pluviale: 1 - 25 Juillet
Production System	Irrigation
Cycle Sowing to maturity (number of days)	Centre saison: 122 JAS; Pluviale: 122 JAS
Potential yield (kg/ha)	10000 -
Pest Resistance	
Disease Resistance	
Other Stresses	Résistant à la verse
Nutritional Quality	
Other Qualities	

Fertilizer Nutrient Requirement

130-150N-46P2O5-0K2O

Organic Fertilizer

2000 - 5000 kg/ha matière organique

Good Agricultural Practices & Management

Soil and Water Conservation	Labour, hersage, compactage et nivellement
Method of fertilizer application	En localisé (au our du semis direct), à la volée, UDP Engrais minérale Engrais de fond : 15-15-15; 150 à 200Kg/ha Engrais de couverture : Urée 46% Urée perlurée : 150 Kg/ha en 2 apports : Apports: 50 % au tallage (27e jrs après semis) et 50 % à la montaison (41e jours après semis) Phosphatage de fonds :400 kg/ha tous les 3 ans Engrais minérale Engrais de fond : 15-15-15; 150 à 200Kg/ha Engrais de couverture : Urée 46% Urée perlurée : 150 Kg/ha en 2 apports : Apports: 50 % au tallage (27e jrs après semis) et 50 % à la montaison (41e jours après semis) Phosphatage de fonds :400 kg/ha tous les 3 ans
Soil Amendment	Ajouter de la fumure organique si possible
Water Management	Bassin, alternance d'humidification et d'assèchement , drainage. Rythme des irrigations: - Irrigation de la parcelle 24 heures avant semis; - Semis sous une lame d'eau d'environ 5 cm maintien de la lame pendant une semaine , du 1er au 7ième JAS; - Drainage et - assec - pendant 2 ou 3 jours (8ième au 10ième JAS - Irrigation avec maintien de la lame d'eau à 5cm Jusqu'à la fin de la 3ième semaine, du 10ième au 19ième JAS; - Drainage complet pour appliquer herbicides, maintien de l'assec pendant 2 jours, du 15ième au 21ième JAS; - Irrigation et maintien de la lame au strict minimum pendant 4 à 5jours pour l'application de l'engrais - Relèvement de la lame d'eau à environ 5 cm, jusqu'à l'initiation paniculare (P) - Rabaissment de la lame d'eau au strict minimum pendant 4à 5 jours pour appliquer l'urée; - Relèvement de la lame d'eau à 10 cm jusqu'au stade pâteux (15 jours après floraison) - Drainage complet de la parcelle au stade pâteux pour que le sol soit sec à la maturité
Pest Management	Détecter la maladie et appliquer le traitement adéquat
Weed Control	Bonnes pratiques agricoles (desherbage mécanique) et herbicide si nécessaire: sarco-binages: -binage mécanique : 15 à 20 jours après semis avec houe sine, -sarclage manuel 3-5 jrs après binage, -deuxième sarco-binage 30 -35 jours après semis -troisième sarco-binage 45 jours après semis ou à la demande surtout si enherbement. Désherbage chimique -Herbicide adéquat contre les graminées, les cypéracées et les adventives à feuilles larges; -Herbicide adéquat contre les adventives à feuilles larges et les graminées; -Herbicide adéquat contre les cypéracées, les graminées et les adventives à feuilles larges. -Contrôle riz rouge : option mécanique par travail du sol après levée du riz rouge un effet croisé 15 jours après -offset, laisser pousser et traitement avec herbicide total
Cropping System	Monoculture continue

These recommendations are made possible by the generous support of the American people through Feed the Future, the U.S. Government's Global Hunger and Food Security Initiative. The contents are the responsibility of IFDC and CORAF, and do not necessarily reflect the views of Feed the Future or the United States Government. The data presented was current at the time of publication. Rely on consultation with local authorities when using this information.

## SESSION 2. KNOWLEDGE OF AIP

### **Definition of an AIP** (amended, validated, and suggestions)

- What are AIP? (statement and rationale)
- Relevance to seeds/varieties, fertilizers, and GAP.

### **Benefits of using AIP** (amended, validated, and suggestions)

- Demonstrate added value.
- Increased yield thanks to application of AIP.
- Improved cost/benefit ratio.
- Protection of the environment.
- Access to AIP (brochure and FeSeRWAM platform + use).

### **Access to AIP (brochure et plateforme FeSeRWAM)** (amended, validated, and suggestions)

- Download the AIP (PDF and digital).
- Contact the agricultural advisory service.

**Figure 4.** The download button is located in the upper right corner of the AIP view



### **Challenges**

- Internet access (purchasing power and network stability).
- Ability to use the platform (ICT knowledge and illiteracy).

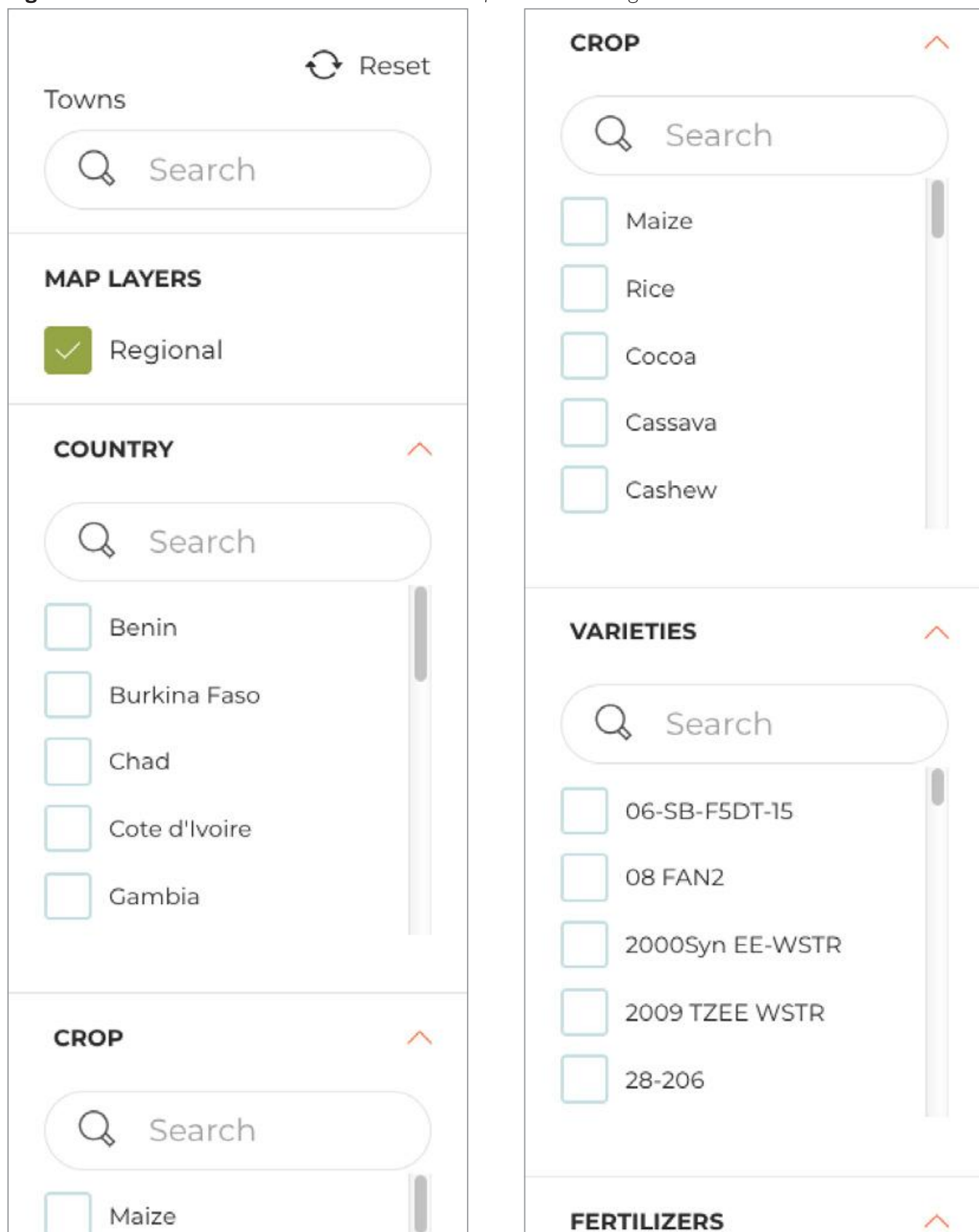
### **Suggestions**

- Community radio and TV broadcasts by associating the agro-dealer (communication and marketing strategy).

### **Training time**

- 30–45 min.

**Figure 5.** Search controls available in the sidebar of FeSeRWAM.org



### FERTILIZERS

Search

- 15-15-15
- DAP
- Dolomie
- Dolomie
- Gypse (plâtre agricole)

Pest Resistance

Disease Resistance

Potential yield (kg/ha) **APPLY**

0 — 500

0 — 500

Quantity of seed **APPLY**

0 — 50

Days to Maturity **APPLY**

30 — 1200

Rainfall Volume range **APPLY**

0 — 10000

↑ Less

## SESSION 3. APPLICATION OF AIP

### Variety selection

- Yield potential.
- Soil type and fertility of farmland.
- Crop calendar/planting date/time to maturity.
- Pest prevalence in location.
- Disease prevalence in a location:
  - » Length and distribution of rainfall.
  - » Attributes of the variety.

### Soil preparation

- Soil analysis (where service available).
- Size of plot/field.
- Herbicide spray.
- Plough.
- Harrow (ridging).
- Labor for all farm operations.

### Setting up the crops

- Consult weather forecasting for rainfall data.
- Adequate moisture before planting.
- Training sessions.

### Calculating the seed rate

- Recommended spacing/plant population.
- Seed rate.
- Practical methods.
- Impact on performance.

### Definitions and generalities

- Soil fertility (types of fertility, fertility factor, and fertility study method).
- Plant nutrition and the role of nutrients.
- Physico-chemical properties and soil organic matter.
- Fertilization.
- Amendments.

### Mineral and organic fertilization

- Reminder of the definition of fertilization.
- Theoretical laws of mineral fertilization.
- Plant needs.
- Definition of fertilizers and presentation of formulation specifications of the main fertilizers.
- Definition of fertilizer doses (4R: right source, right dose, right place, right time).
- Types of fertilizers (simple mineral, compound mineral, organic, organo-mineral and microbial bio fertilizers).
- List of approved fertilizers and recommended rates.

### Amendments

- Mineral amendments.
- Organic amendments.

## Protecting human health and the environment

- Storage of products.
- Use (precautions of use).
- Reasonable use of amendments and fertilizers.
- Risks related to the misuse of soil improvers and fertilizers.
- Management of empty packaging.

## CROP MANAGEMENT SYSTEMS

### Water management

- Rainfed.
- Water conservation.
- Irrigation:
  - » Duration scheduling (frequency of irrigation).

### Pest management

- Identification of pest type.
- Observation and management.
- Integrated pest management (IPM).

### Weed management

- Identification of weed type.
- Cultural practice.
- Herbicide management.
- Integrated weed management.
- Types :
  - » Define the type of practice recommended by the AIP.
  - » Soil preparation (tillage).
  - » Weeding.
  - » Mulching.
  - » Herbicide treatment.

- Frequencies:
  - » Weeding (depending on crop and environment).
  - » Chemical weeding (depending on crop and environment).
- Crop rotation, crop associations:
  - » Cereals, legumes.
  - » Improving plants.
- Agriculture/livestock integration:
  - » Compost.
  - » Use of animal wastes as manure on farmland.
  - » Direct placement of animals on farmland.
- Agroforestry:
  - » Fruit trees integrated with crops.
  - » Regional training for AIP dissemination.
- Conditions for success:
  - » Respect the calendar by adapting to climate change (frequency).
  - » Respect the dose.
  - » Use of appropriate equipment.
- Tools used:
  - » Small agricultural equipment (machete, daba).
  - » Tractors (gyro-cutters).

## SESSION 4. PRACTICAL EXERCISE TO SELECT AN AIP (CHOOSE THE METHOD)

### Conclusion - closing

- Evaluation of the training.
- Collection of participant feedback.

### Practical aspects

There are 2 types of exercises:

- In-situ (room):
  - » Choice of location.
  - » Identify soil types.
  - » Explain the different AEZ.
  - » Choice of seed.
  - » Cultivation calendar.
  - » Knowledge of weeds (weeds harmful to crop yield).
- Ex-situ (in the field):
  - » Recognition of weeds (weeds harmful to crop yield).
  - » Recognition of off-types (in the case of seed multiplication).
  - » Recognition of diseased plants.
  - » Recognition of insects.
  - » Identify soil types.

### Teaching materials

- AIP.
- Figurines.
- “Padex” paper.
- Different colored pencils.
- Scotch tape.
- Video projector.



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