

 	Crop: maize Function: Site Selection & Field Layout	SOP #	IITA-MZ-SOP09
		Revision #	IITA-MZ-SOP09-01
		Implementation Date	15/07/2022
Page #	1 of 4	Last Reviewed/Update Date	30/06/2022
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Standard Operating Procedure (SOP) for Site Selection & Field Layout

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1. Introduction

Various factors need to be considered during site selection. Selecting the right site is one of the important activities in trial evaluation.

2. Purpose

The purposes are to fully understand the important factors affecting the trials in a particular site. Knowledge of both biotic and abiotic factors are very crucial. Nursery site selection is important and need to be in a safe and central place of the field.

3. Scope

This SOP covers a systematic procedure and technique in planning a farm layout. The factors which must be considered are discussed, and the steps to transition from the present practices to the new plan are also discussed.

4. Definition of terms

GPS Coordinates: GPS coordinates are a unique identifier of a precise geographic location on the earth, usually expressed in alphanumeric characters. Coordinates, in this context, are points of intersection in a grid system. GPS (global positioning system) coordinates are usually expressed as the combination of latitude and longitude.

 	Crop: maize Function: Site Selection & Field Layout	SOP #	IITA-MZ-SOP09
		Revision #	IITA-MZ-SOP09-01
		Implementation Date	15/07/2022
Page #	2 of 4	Last Reviewed/Update Date	30/06/2022
SOP Owner	Breeder (Wende Mengesha)	Approval Date	15/07/2022

Grass family: a large nearly cosmopolitan family that comprises maize, wheat, rice and related.

5. *Roles and Responsibilities*

All staff involved in implementing breeding activities in the maize improvement program at IITA must use the breeding site selection and field layout SOP. No alteration should be made to the procedures unless approved exceptionally by the program leaders. The individuals responsible for each section of the site selection and field layout SOP in the breeding data cycle is listed below.

Crop Lead (CL) Responsible for the overall management of the trials and for delegating team responsibilities. The CL is the lead breeder and coordinator of Maize Improvement Program at IITA.

Breeder (B): Coordinate the field layout of experiments, planting and checks on the implementation of defined protocols on the different experimental sites. Ensures all trials are established in the on-station and out-stations respectively. This includes trial management and data collection.

Trial Manager (TM): Oversees trial preparations and management protocols, land acquisitions, oversees planting in the outstations. Also supervises planning of inputs and other planting logistics for the various stations.

Research Supervisor (RS): Coordinates the activities of the Research Technician to ensure that assigned tasks are carried out correctly. The RS involves in planting, field management and post-trial management practices as well as coordinates fertilizer

 	Crop: maize Function: Site Selection & Field Layout	SOP #	IITA-MZ-SOP09
		Revision #	IITA-MZ-SOP09-01
		Implementation Date	15/07/2022
Page #	3 of 4	Last Reviewed/Update Date	30/06/2022
SOP Owner	Breeder (Wende Mengesha)	Approval Date	15/07/2022

application in on station and outstation experimental fields. S/he involves in the Nursery and seed increase protocols as delegated by the CL and B respectively.

Research Technician (RT): The Research Technician performs field tasks as defined in the trial protocols such as field data collection or field management practices. RT's responsibility is to perform assigned tasks including the use of digital tools defined in the protocol for capturing, storing, transmitting, and ensuring quality of data within defined time periods.

Research Administrative Manager (RM): Responsible for experiment creation in EBS to generate the randomization plan for the specified experimental design by the CL for the trials to be established. Generates Seed labels and Field-Tags for the trials. Carries out required analyses using the relevant statistical methods. Generates trial field layout for data capture using the digital tools. Receives transmitted data captured from the field and ensures that the data quality is uncompromised.

6. Procedure

6.1 Site selection (Rainfed trails)

- Select land with uniform soil (where possible, avoid sandy or gravelly soils)
- Select land which is fully exposed to sunlight, away from any buildings, trees, etc.
- Select land without any obstacles such as pits, stumps, rubble for demolished structures
- Preferably select land which was not previously under maize production
- Select land with a reliable clean water source in the case of irrigated trials

 	Crop: maize Function: Site Selection & Field Layout	SOP #	IITA-MZ-SOP09
		Revision #	IITA-MZ-SOP09-01
		Implementation Date	15/07/2022
Page #	4 of 4	Last Reviewed/Update Date	30/06/2022
SOP Owner	Breeder (Wende Mengesha)	Approval Date	15/07/2022

- Take the field dimensions, this will assist during trial design
- Take GPS coordinates for the sites
- Take the soil samples for analysis

6.2 Sketching the field Layout

- Design the trial based on the number of materials to be tested
- Sketch the trial design on a piece of paper, considering the field dimensions
- Include the space for border rows

6.3 Implementing the field layout

- Identify the soil or nutrient gradient-no land is flat
- Align the reps such that the run perpendicular to the slope (if the slope is North-South, reps should run East-West)
- Make rows according to specifications on the trial protocol
- Materials include ropes, Measuring tapes, pegs and hoes

7. *Appendix*

7.1 Contacts for support

For Technical problems with regards to understanding your layout, contact: Drs. Abebe Menkir (A.menkir@cgiar.org), Baffour Badu-Apraku, (B.Badu-Apraku@cgiar.org), Silvestro Meseka (S.Meseka@cgiar.org) and Wende Mengesha (W.Mengesha@cgiar.org).

 	Crop: maize Function: Site Selection & Field Layout	SOP #	IITA-MZ-SOP09
		Revision #	IITA-MZ-SOP09-01
		Implementation Date	15/07/2022
Page #	5 of 4	Last Reviewed/Update Date	30/06/2022
SOP Owner	Breeder (Wende Mengesha)	Approval Date	15/07/2022

Experimental design and data analysis: Ibnou Dieng, i.dieng@cgiar.org and Bunmi Bossey b.bossey@cgiar.org.

8. *References*
