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Standard Operating Procedure (SOP) for Land Preparation and Planting



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1. Introduction

Land preparation is one of the critical steps to ensure planting of maize trials. Ensuring the preparation of trial fields help in controlling weeds, recycles plant nutrients, and provides a soft soil mass which is suitable for direct seeding. It covers a wide range of activities from first ploughing to the final marking of field for planting. Land preparation in the savannas is not as rigorous as in the forest zone of the country. In the Guinea savannas, where vegetation cover is fairly dense, land clearing should be carried out well ahead of the rains. Suitable ridges should be made as soon as the rains start. Although the crop benefits from deep cultivation, yields are not reduced when zero tillage is adopted. For high grain yield, maize should be sown in well-prepared ridges 75 cm apart. Because the soil in northern Nigeria is loose, animal-drawn implements can be used for preparing ridges, or these can be made by hand, hoe, or tractor mounted tillage equipment.

2. Purpose

The purpose of this SOP is to outline the roles, responsibilities, and procedures to be followed in the process of land preparation. This SOP also intends to guide research supervisors and technicians the steps to follow in land preparation for maize trials.

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3. *Scope*

The SOP contains the land preparation procedure required for maize breeding activities.

4. *Definition of terms*

Hydraulics hose: A hydraulic hose conveys hydraulic fluid to or between hydraulic components. Components include valves, tools, and actuators. Hydraulic hose is usually flexible and reinforced. Hose is often made up of several layers of reinforcement.



PTO speed: PTO speed is stated as a **percentage of engine speed**. An example being the required pump speed of 1000 RPM and having an engine operating speed of 1500 RPM. The percentage of PTO to engine speed would be calculated to approximately two-thirds, or approximately 67 percent (e.g. $1000/1500 = 66.67$, or 67%).

5. *Roles and Responsibilities*

Staffs involved in implementing breeding activities in the maize improvement program at IITA must use the land preparation SOP. No alteration should be made to the procedures unless approved exceptionally by the program leaders. The list of individuals responsible for each section of the land preparation SOP in the breeding 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

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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 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.

Farm Manager (FM) Ensures timely preparation of land for the scheduled planting for the season. Schedules repairs, maintenance, and replacement of equipment and machinery. Direct and coordinate, through subordinate supervisory personnel, activities of workers engaged in agricultural crop production. Directs and coordinates worker activities such as land preparation activities and provision of irrigation pipes and laying of pipes on the experimental sites.



6. Procedure

6.1 Land preparation

Step 1: Land clearing, making sure you remove non bio gradable materials from the field.

Step 2: Irrigate the field to prepare for ploughing in case of no rains.

Step 3: Chisel plough: - This will help to attain a greater tilling depth



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Step 4: Disc plough: - to cut and turn the soil as primary tillage

Step 5: Disc harrow: - to break the clods into a fine tilt as secondary tillage

6.2 Planting

- Layout the experiment, so that each of the replicate is on a uniform soil area, keeping replicates as compact and as close together as possible.
- Mark the rows for each plot by making shallow trenches 5m long and 75cm apart. If you use a different plot size, please note this on the field book, so that we can accurately calculate the yield.
- Cultivate soil 20-30cm deep.
- Seed packets are numbered consecutively by plot number. Sow seeds at a spacing of 2-3cm within rows. On heavy wet soil, susceptible to crusting, a shallower sowing is the best. On sandy soil, which does not crust, seed may be sown deeper.
- Plant according to the instructions
- Put labels on each trial using plastic pegs
- Collect all empty seed packets and keep them safe for reference if any need arises (germination problems)

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- Record planting date(s)
- Sketch a field map for reference
- After 21 days of planting and seedlings have emerged, thin the plants to 1 or 2 seedlings according to the intra-plot spacing (25 or 50 cm).

7. *Appendix*

7.1 Contacts for support

For Issues relating to land preparation contact acting farm manager, Mr. Francis Adunoye (F.ADUNOYE@CGIAR.ORG) or RFU Supervisor Mr. John Abeng J.ABENG@CGIAR.ORG

8. *References*
