

# MANUAL FOR MAIZE FARMING



Feed the Future  
Innovation Lab for Food  
Security Policy

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## Crop establishment management tips

Maize grows well on a range of soils, but does best on deep, well drained, fertile soils that are slightly acid to neutral, pH 5.5 to 7.0.

It is good to start maize farming preparations in Nigeria in February so you can start cultivating maize in March. The maize season approximately starts around the 15th March and ends around the 15th of May.

Follow the principles of Conservation Agriculture: minimise soil disturbance; preserve crop residues on the soil surface; and rotate with legumes (e.g. peanut, soybean).

Pay attention to plant population: for dry conditions when the weather is hot, 40,000-60,000 plants/ha is recommended; and for wet conditions when the soil is not too moist, 60,000-80,000 plants/ha is recommended.

## Climate and climate change

The trend to more frequent failures of early wet season maize crops is consistent with predicted hotter and drier conditions between February and May. In recognition of this trend, Montgomery (pers. comm.) has proposed that the seasons be renamed as follows:

- pre-monsoon: hot, dry with increasing humidity, low rainfall
- monsoon: mild, high humidity, high rainfall

- post-monsoon: cool, dry with decreasing humidity, low rainfall.



**Maize cobs affected by water stress and pollen blasting**

## Field selection

To maximise the retention of soil water, maize should be sown using no-till or minimum-tillage equipment into the residues of the previous crop, and ideally after a legume crop, such as peanut or soybean, to take advantage of rhizobium-fixed nitrogen. Fields with large grass weed populations are not suited to maize. Maize is a member of the grass family and therefore in-crop chemical weed control options for grasses are limited.

## Land preparation and planting

Residues of the previous crop should be chopped and left in the field to reduce soil surface temperature and soil water evaporation. Residues of legume crops such as peanut or soybean do not require chopping before planting the next crop.

Pre-sowing herbicides are applied immediately after chopping. Planting is done approximately seven days after herbicide application. Post-sowing pre-emergence herbicide can be applied, if required.



Land Clearing

### Row spacing and plant population

Many factors, including soil moisture, climatic conditions, soil fertility, hybrid and end use, determine the best plant population for a maize crop. If the growing season conditions are expected to be dry, then the plant population should be lower than if wet conditions are expected.

### Crop establishment

Apart from moisture stress and poor crop establishment, poor nutrition and weed competition are usually the major factors that significantly reduce yields. The following recommendations should help to improve crop establishment and yields. Uniform establishment and accurate depth placement of seed is

essential. The seed should be placed at a depth of about 3–5 cm.

### Weed management tips

- Pre-emergence weed control is essential as post-emergence herbicides alone have been shown to provide inferior weed control in maize.
- Avoid fields that are infested with grass weeds, especially *Boart Salay* (*Sorghum* hybrid) or Treng (*S. propinquum*).
- Use a post-sowing, pre-emergence herbicide as a priority.
- Control weeds before sowing, especially those that reproduce vegetatively.
- Prevent weeds from setting seed during the crop cycle and post-harvest.

### Harvest timing

The timing of harvest is a compromise between maximum dry matter yield, moisture content and potential feed quality. Ideally, harvest should occur 10–14 days prior to physiological maturity. Harvesting should be done on a dry or no rainfall day. At time of harvesting, a black spot is seen at the bottom (side attached to the cob) of seed.

This black spot suggests it is ready for harvest.



Maize ready for harvesting

### Harvesting

Traditionally, when maize cobs have dried down and it is time for harvest, the practice is to handpick, husk and sell on-the-cob without drying. The increasing shortage of rural labour is making hand harvesting and husking less feasible and more expensive for most small-scale farmers.

### Harvesting tips

Harvesting must be done in a way to prevent damage to the seed coat and to assure maximum cleaning of grain, since damaged seed and foreign material contribute to the development of aflatoxin.

When corn reaches maturity, harvest immediately and dry. Ears in contact with the ground for sometime usually exhibit higher than normal aflatoxin levels and should not be picked up.