

An Agricultural Extension Initiative  
of Dangote Fertiliser Limited

# GOOD AGRONOMIC PRACTICES FOR MAIZE



  
**DANGOTE  
FERTILISER**

Power to Farmers



**M**aize is a major cereal with the highest yield potential and one of the most important staple food crops in Nigeria based on number of farmers that engaged in its cultivation and its economic value. It is produced in all agro-ecological zones of Nigeria. Maize is the second most important cereal crop produced in Nigeria after rice. The total estimated land area cultivated to maize production in Nigeria was about 5,960,920 hectare. An estimated production in 2019 was 12,700,000 metric tons (FAO, 2019). In Nigeria, an average yield of 2.2 tons per hectare was recorded for the crop in 2019. There is a huge potential to improve the yield of this crop from existing levels to a higher level with best crop management practices.

### CLIMATIC AND SOIL REQUIREMENT

Maize thrives well in deep, well drained, sandy to silt loam soils. Flat or ridged fertile and well drained soils are suitable for maize crop. Shady and water logging area should be avoided for maize cultivation. Well distributed rainfall between 500 – 750 mm is required for proper growth, maize is sensitive to moisture stress at vegetative and reproductive stages.

### LAND PREPARATION

Start field preparation 2 to 3 weeks before the start of rainy season. First clear bushes and stumps, plough the soil uniformly to a depth of 15 – 20 cm. Deep ploughing helps to control weeds, kill harmful insects and also makes it easier to incorporate manure and improve water penetration. Alternatively, non-selective herbicide, Glyphosate or Paraquat Dichloride 276g @ 3-4 litre per hectare can also be used to save cost and time on excessive ploughing for making weed free seedbed.

### SELECTION OF VARIETY

Varieties that are tolerant to drought, low soil nitrogen, resistant to *Striga* weed, stem borers, army worms and streak virus should be selected. Some varieties are nutritionally enriched with Vitamin-A and Quality Protein Maize (QPM). Some of the recommended improved maize varieties are: Sammaz-15, Sammaz-27, Sammaz-51, Sammaz-52, Sammaz-39, Sammaz-42, and Ife Maize hyb-08, Ife Maize hyb-07, Ife Maize hyb-6, and Ife Maize hyb-5

### SEED RATE AND PLANTING

Use certified seeds from reputable suppliers or seed company. Use newly purchased seed every season instead of recycling old grains. Improved certified maize seed gives better yield. Using the right seed ensures good germination and good yield. 20 kg of maize seed per hectare will be enough to maintain desired plant population. Variety can be selected based on the climatic condition and crop duration. Hybrid maize has more yield potential but needs higher dose of fertiliser and more care during crop management.



Place one seed per hole at 25 cm x 75 cm spacing or two seeds at 50 cm x 75 cm spacing. Good spacing ensures better crop growth, makes it easier to control weeds and reduces the spread of pests and diseases. At 10 days after planting, check missing plants along the rows and replant missing plants if any.

### WEED MANAGEMENT

Pre-emergence herbicide (Atrazine 80% WP) 2.5 to 3 kg per hectare should be applied within 48 hours of planting to ensure early weed control. Do hand weeding of the field at 3 and 6 weeks after emergence. Shake off soil from the weed roots so that the weeds do not grow again. Keep field weed free at early stage of the growth. Application of Selective herbicide Nicosulfuron 75% WDG @ 100 g per hectare, can also help in annual grass and broad leaf weeds control at early growth stage of crop.



## FERTILISER APPLICATION

Fertiliser should be applied based on soil test recommendations. Before planting, collect the soil samples as per sample collection instructions and get soil test analysis report. Soil test report can be gotten from Dangote Soil testing laboratory or nearest Agricultural Universities.

The general fertiliser recommendation for the Sahel, Sudan, and northern Guinea Savannas is 120 kg Nitrogen (260 kg Dangote Urea), 60 kg phosphorus, 60 Kg Potash/hectare for open pollinated varieties and 150:60:60 Kg/hectare NPK nutrients for hybrids maize. Maize has high demand for nitrogen, and this is limiting in maize production, thus, maize should be fertilised adequately to achieve their potential yield.

Always apply full quantity of phosphorus and potash and one-third of Urea fertiliser as basal application, the remaining nitrogen fertiliser should be applied in two split doses as top dressing to avoid nutrient loss; second dose using Dangote Urea at 4-5<sup>th</sup> week after planting (WAP) and third dose 6-8<sup>th</sup> WAP or before tasselling stage. Before fertiliser application, ensure that soil is moist and its not windy. Topdressing should be done at evening or early morning when soil temperature is low so that fertiliser can be efficiently utilized.



## PEST AND DISEASE MANAGEMENT

**Aphids:** Aphids are tiny insects found under the leaves and shoots. It secretes honeydew that causes fungal infestation and white moulds can be seen. Low to moderate populations are usually not harmful for crops. But severe infestation can cause leaves and shoots to curl, wilt and also lead to stunted growth. Always promote the population growth of beneficial insects such as predatory ladybirds, lacewings, soldier beetles and wasps which are important agents to control aphids. Ants are symbiotic insects and protect aphids from predators, therefore ants should be controlled.



Always consider integrated approach with preventive measures. Excessive use of chemical pesticides can cause resistance to aphids.

Apply Thiomathoxam 25% WG @ 200g/hectare or 1.5 litre Dimethoate 20% + Lambda-Cyhalothrin 0.5% EC in 200 litres of water per hectare. If infestation persist, repeat the spray at 15 days interval.. However, these chemicals have negative impacts on predators, parasitoids and pollinators.

**Termite:** Termites can attack plant at all stages. To confirm the presence of termites, pull out the infested plant and examine the roots and lower stem for live insects or the tunnels for presence of insects. Plant stem or roots are completely hollowed out and filled with soil waste. Deep ploughed soil can expose the termite for predators: Ants, birds and chicken.



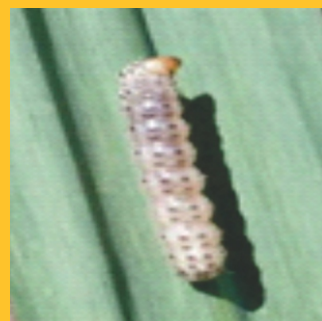
Practice integrated approach with preventive measures. Spray 2 litre of Chlorpyriphos 20%EC or Chlorpyriphos 50%+ Cypermethrin 5% EC @ 750 ml in 200 litres of water per hectare.

## Dangote Fertiliser Limited

**Army worm:** Larvae cause damage by feeding on all plant parts. In severe cases they feed on growing and reproductive parts of the plants. Frass can be found on leaves. Caterpillar has a Y like pattern on its fore-head and 4 dots on its back. Predators like rodents, birds, ground beetles and soldier bugs can be introduced. Also, mass catch with light or 10 pheromone traps/hectare can reduce the armyworm population. Recommended pesticide includes Profenophos 40%+Cypermethrin 4%EC @ 1.5 litre per hectare or Spray Thiamethoxam 25% WG @ 200 g/hectare.



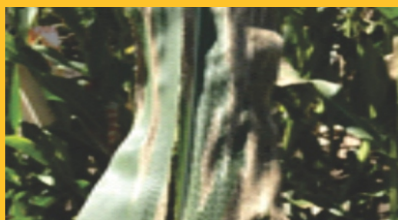
**Spotted Stem borer:** These are light brown moths with white forewings and hind wings. Young caterpillars spotted stem borer feeds on tender tissues of plants. They bore tunnels into the leaf whorls, leaving irregular scars and holes. This kind of feeding leads to dead heart where caterpillar and their frass can be observed inside. Predatory wasps like *Trichogramma chilonis*, or *Cotesia* sps. lay eggs into the larvae of spotted stem borer and kill the larvae. Always consider integrated approach with preventive measures. For chemical control, apply Lambda Cyhalothrin 2.5EC @ 1.5 litre per hectare for the control of spotted stem borer at initial incidence.



**FUNGAL LEAF DISEASES:** Leaf diseases such as rust, northern blight, southern blight and downy-mildew can be controlled by preventive spray with any of the fungicides either Mancozeb 80% WP @ 3 - 4 g/litre water (50 gm per Knapsack spray) or Cuprous Oxide 60%+ Metalaxyl M 6% @ 150 g/hectare two times in 21 days interval.



Southern Leaf blight



Northern Leaf blight



Common rust of Maize

**HARVEST MANAGEMENT:** Maize crop is mature when black layer formed in the cob at this stage moisture level is about 35% and needs to be reduced to 15% moisture to avoid kernel breaking during threshing. Delayed harvesting will lead to withering and falling of the cobs which will attract birds, insects, and diseases. Threshed grain can be stored safely for longer duration at 10-12% moisture in cool and dry place.

**YIELD:** With improved agricultural practices, it is possible to harvest approximately 4-6 tons per hectare of threshed grains.