MAIZE

Designed by:

Crop Manager Team

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Varieties

Common varieties include:longe 1, longe 2H, longe 4, longe 5H, longe 2H, white star, western queen, Kawanda composite A.

Soil requirement.

Maize requires a well-prepared field. Soils should be deep, fertile and well drained. For a new field plough twice before planting, only for machine planting might a fine seed bed be required.

Climatic conditions

Maize is grown in temperatures between 18-27degrees Celsius during the day and around 14degrees Celsius at night

Land Preparation

Plough at a depth of 15-20cm when soil moisture is right, that is when soil particles 15cm below the surface separate and only thin portion sticks to the figure but no ball forms. Harrow twice with 2-3 passing to break the clods.

Make furrows a day before or on the day of planting spaced at 75cm or 8cm deep

Planting

Best time to plant: You need to plant your maize at the onset of the rains either in March or in August to September. However, you could also plant your maize when it's still dry but during the time when the rains are expected soon. In this case though, you need to treat your seeds against soil pests before planting.

Depth of planting: make an estimate of about 5-7 cm deep, and you can make the holes deeper for dry planting and sandy soil. Saw at least 3 seeds per hole. Sawing should be in rows then thinly cover with a layer of soil.

Spacing: Adopt a spacing of 45 cm between rows and 20 cm between plants in the row.

Population: 10 - 11plants/m2.

Fertilizer application

Apply NPK fertilizers as per soil test recommendation as far as possible. If soil test recommendation is not available adopt a blanket recommendation of 135:62.5:50 NPK kg/ha.

Apply quarter of the dose of N; full dose of P2O and K2O basally before sowing.

In the case of ridge planted crop, open a furrow 6 cm deep on the side of the ridge, at two thirds the distance from the top of the ridge.

Apply the fertilizer mixture along the furrows evenly and cover to a depth of 4 cm with soil.

If bed system of planting is followed, open furrows 6 cm deep at a distance of 60 cm apart.

Place the fertilizer mixture along the furrows evenly and cover to a depth of 4 cm with soil.

When Azospirillum is used as seed and soil application, apply 100 kg of N/ha (25% reduction on the total N recommended by soil test)

Weed control

Weeding maize is quite simple and you can do it manually with hand hoe or spraying. We recommend that you weed your maize plantation as early as possible; at least within the first 45 days.

Weeding depends on the environment, rainfall amount and the soil weed bank.

Broad spectrum herbicides' like roundup could also be used before ploughing the field during land preparation to control perennial weeds and to generally control weeds in young plants.

Disease management

Grey leaf spot

Symptoms

- Lesions are pale brown or grey to tan, long, narrow and rectangular, being characteristically restricted by veins.
- The lesions may merge forming large grey blotches with irregular margins killing the leaves
- Starts on lower leaves progressing upwards

Management

- Grow tolerant hybrids
- Clean ploughing with crop rotation will reduce disease severity
- Apply foliar fungicide sprays e.g Tilt, Amistar, Bravo, Duett and Score.

Phaesosphaeria Leaf Spot

Symptoms

- Circular or oval necrotic lesions, bleached, and dried with dark brown margins, similar to herbicide damage.
- Lesions can coalesce and blight the entire leaf, black fungi fruiting bodies develop within lesions.

Management

- Grow tolerant hybrids
- Destroy infected crop residues to reduce disease inoculums.
- Apply foliar fungicide sprays e.g Abacus, Amistar, Bravo, Duett and Score.

Northern Corn Leaf Blight

Symptoms

- Long, elliptical, grayish-green or tan lesions ranging from 2.5 to 15cm in length develop firston the lower leaves
- Severe infection causes premature death and gray appearance that resembles frost ordrought injury

Management

- Grow tolerant hybrids.
- Apply foliar fungicide sprays e.g Abacus, Amistar, Bravo, Duett and Score when lesions occur on 1/3 of the leaves before pollination
- Clean ploughing, crop rotation, or both

Northern Corn Leaf Spot

Symptoms

- Produces circular or oval foliar lesions with concetric zones within them
- These lesions may have a reddish-brown appearance on the leaves, sheaths and husks
- Infected kernels can develop a black, felt like mold

Management

- Grow Seed Co tolerant hybrids
- Apply foliar fungicide sprays e.g Abacus, Amistar, Bravo, Duett and Score when lesions occuron 1/3 of the leaves before pollination
- Clean ploughing, crop rotation, or both

Physoderma brown spot

Symptoms

- Lesions start as small yellowish spots that latter turn dark-purple to black, oval spots usually occur on the midribs of leaves
- Dark-purple, round spots may also occur on leaf sheaths, stalk, and sometimes on the outer ear husks and tassels of maize

Management

- Grow Seed Co tolerant hybrids
- Applying foliar fungicide sprays e.gFolicur, Ridomil Gold, Bravo and Score, starting when lesions first occur.

Common Rust

Symptoms

- Produces brown to brick-red pustules on both upper and lower leaf surfaces, whereas southern rust has orange to light-brown pustules on primarily the upper leaf surface
- The pustules produced by common rust are less densely clustered than those produced by southern rust
- The presence of ruptured epidermal leaf tissue surrounding lesions can help distinguish common rust from gray leaf

Management

- Grow Seed Co tolerant hybrids
- Applying foliar fungicide sprays e.g Copper oxychloride, Folicur, Amistar, Bravo and
  Score, starting when pustules first appear on the leaves, may be feasible, especially in
  seed-production fields.

Eye Spot

Symptoms

- Numerous, round to oval spots, up to ½ cm in diameter, with tan to cream center, brown to purple margin, and surrounded by a yellowish halo, form on the leaves
- Upper leaves may wither and die prematurely, develop early or late in the season in zones or patches

Management

- Grow Seed Co moderate to tolerant hybrids
- Clean tillage, crop rotation, or both reduces early season inoculum levels
- Apply foliar fungicide sprays e.g Vanguard, Unix, Amistar, Bravo and Score

Common or Boil Smut

Symptoms

- Kernels are replaced by galls
- The galls are at first covered with a glistening, greenish-white to silvery-white tissue that later ruptures to release masses of black smut spores
- Severe in young, actively growing plants after mechanical injuries

Management

- Grow Seed Co tolerant hybrids
- Avoid mechanical injuries to plants during cultivation and spraying
- Maintain well-balanced soil fertility
- Remove and burn galls from infected plants before they rupture

Bacterial Stalk Rot

Symptoms

- Causes decay of one or more internodes above the soil. The outer stalk and the pith become slimy, soft, brown, and water soaked, the decayed tissue usually has a strong odour.
- The stalks typically twists and falls over, but the plant may remain green for several weeks
- The leaves that that form the whorl die before tasseling, and affected leaves can be easily be pulled from the whorl

Management

- Hybrids with strong stalks are less susceptible to lodging
- Residues should be incorporated during offseason to reduce inoculum.
- Ensuring balanced fertilization, maintaining appropriate plant populations, and providing good drainage will reduce the stress that predispose plant to stalk rot.

Fusarium Stalk Rot

Symptoms

- A whitish-pink to salmon discoloration of the pith, stalk breakage, and premature ripening.
- Rot normally begins soon after pollination and becomes severe as the plant matures

Management

- Grow Seed Co tolerant hybrids. Hybrids that are more resistant to foliar diseases are at less risk of developing stalk rot, since the stress caused by leaf blight increases susceptibility to stalk rot
- Balance soil fertility, avoid high levels of N and low levels of K
- Maintain appropriate plant populations, practicing adequate insect control, and

Aspergillus Ear Rot

Symptoms

- Produce greenish yellow powdery mold on and between or within kernels

Management

- Grow Seed Co tolerant hybrids
- Control earworms, stalk borers and other ear feeding insects with insecticides e.gDipterex, Thionex, Karate Zeon and Decis Tab

Fusarium Ear Rot

Symptoms

- The caps of individual kernels or groups of kernels scattered over the ear develop a salmon pink to reddish discoloration
- A powdery, cottony pink mold forms later. Infection commonly follows channels made by earworms or stalk borers.

Management

- Grow Seed Co tolerant hybrids
- Control earworms, stalk borers and other ear feeding insects with insecticides e.gDipterex, Thionex, Karate Zeon and Decis Tab
- Harvest as soon as moisture levels permits.

Gibberella Ear Rot

Symptoms

- A pink to reddish mold, often starting at the ear tip, grows on and between the kernels and tightly stuck husks.

Management

- Grow Seed Co tolerant hybrids
- Provide adequate fertility
- Control earworms, stalk borers and other ear feeding insects with insecticides e.gDipterex,Thionex, Karate Zeon and Decis Tab

Diplodia Ear Rot

Symptoms

- Husks of early infected ears appear bleached or straw-coloured.
- Entire ear may rot, turn grayish brown, shrink, is very lightweight and remain upright with the husks stuck tightly together. White mold grows between the kernels.
- Black specks (pycnidia) may form at the base of the husks or on the sides of the kernels.
- Infection usually begin at the base of the ear and progress toward the tip

Management

- Grow Seed Co tolerant hybrids
- Early harvest.

Penicillium Ear Rot

Symptoms

- Powdery, green or blue-green mold on and between the kernels, usually at the ear tip
- Infected kernels are typically bleached and streaked
- Occurs on stored grain with high moisture content

Management

- Grow Seed Co tolerant hybrids
- Control earworms, stalk borers and other ear feeding insects with insecticides e.gDipterex, Thionex, Karate Zeon and Decis Tab
- Harvest as soon as moisture levels permits

Maize Streak Virus

Symptoms

- Long discontinuous chlorotic streaks distributed uniformly over all leaf surfaces
- Chlorosis with broken yellow streaks along the veins that contrast with the dark green of normal leaves
- Poorly filled cobs or lack viable kernels

Management

- Grow Seed Co tolerant hybrids
- Control vectors using seed treatment with insecticides e.g Gaucho and Criuser followed by foliar sprays with insecticides e.gDimethoate, Fenvalerate and Imidacloprid, plant certified seed only

Sugarcane Mosaic Virus

Symptoms

- The most distinctive symptom is a pattern of contrasting shades of green, often islands of normal green on a background of paler green or yellowish chlorotic areas on the leaf blade.
- The infection may be accompanied by varying degrees of leaf reddening or necrosis.
- Chlorotic areas are most evident at the base of the leaf

Management

- Johnson grass control with herbicides e.g Atrazine, Dual, Basagran and use of certified seed combine to keep the risk of virus infection and damage away.
- No effective insecticides or tolerant hybrids.

Nitrogen Deficiency

Symptoms

- Stunted, spindly growth and pale, yellowish-green foliage in young plants
- Older plants develop a V-shaped yellowing along the midrib to the tips of the bottom leaves
- Stalks remain thin and spindly
- Ears tend to be pinched at the tips,

Management

- Favored by cold, wet, or flooded soils, drought (especially after midseason), sandy soils low in organic, heavy leaching rains and ponded areas in warm weather
- Apply ammonium nitrate fertilizer at the recommended rate (400kg/ha)

Magnesium Deficiency

Symptoms

- Manifests in seedlings as general yellowing of upper leaves.
- Eventually, yellow-to-white interveinal stripping develops, and older leaves appear

Management

- Favored by strongly acid, sandy soils in regions of moderate to high rainfall, high K, and soil treated with limestone low in magnesium.
- Apply foliar spray of Magnesium suplhate

Phosphorous Deficiency

Symptoms

- Purpling or reddening of the leaves beginning early in the growing season.
- Leaf tips die and turn dark brown
- Ears on affected plants are small and often appear twisted with irregular kernel rows and with imperfectly developed ear tips

Management

- Favoured by: cold, too wet or too dry soils, restricted root growth in compacted soils and root damage by insects, cultivator or herbicides.
- Apply basal fertilizer (N,P,K) at the recommended rate (400kg/ha)

Potassium Deficiency

Symptoms

- Yellowing and dying of the leaf margins beginning at the tips of the lower leaves.
- Plants often lodge due to increased susceptibility to stalk rot
- Ears maybe small, chaffy, and dull with pointed, poorly developed tips

Management

- Favoured by sandy, organic, wet or compacted, strongly weathered soil and heavy K removal by the preceding crop(s)
- Apply basal fertilizer (N,P,K) at the recommended rate (400kg/ha)

Pinking

Causes

- A physiological disorder caused by genotype by environment interaction and occurs sporadic innature
- Common on hybrids with loose husks that expose the kernels at the tip of the cob to sunlight, which triggers the pink pigment formation

Notes

- Should not confused with Gibberella ear rot that causes a red discolouration starting from the cob tips due to fungal growth
- Pinking is restricted to the pericarp and does not affect flour colour after milling

Multiple Ears on same Shank

Causes:

- The condition is rare but some hybrids may be genetically prone to developing multiple ears on a single ear shank. A threshold genetic trait may be triggered by particular stress events that occur during primary ear formation
- A secondary ear may develop if the first ear does not adequately set seed during pollination
- A third, fourth, and fifth ear could develop on the same node, as each preceding ear did not set adequate seed

Management

- Minimizing crop stress conditions that might impact normal development of the primary ear,including using appropriate pest management practices, maintaining appropriate soil fertility,selecting adapted hybrids and seeding rates consistent for soil yield potential and date ofplanting

- Favourable growing conditions also result in more than one ear per plant in certain hybrids especially at lower than normal plant populations.

Harvesting

Harvest is best at 7-8th week of planting, harvest your maize when the cob is well filled or dry for the drying type or harvest it fresh.