

Maize is an important food which is eaten in form of grains, processed to offer various product ranges including maize flour, used to make Kenya's common meal ugali & porridge, vegetable oils and sometimes fermented to produce alcohol to make local beer. Its remnants after harvesting are used as fodder and can be used to make silage when completely dried.

ECOLOGICAL REQUIREMENTS

Maize crop is adaptable to a wide range of climatic conditions and it is thus grown extensively in the country.

Rainfall– the crop can flourish in regions with different rainfall ranges. For instance, a high rainfall of 1200- 2500mm, at times 600-1150mm and can also adapt to regions receiving rainfall total of 400mm. Rainfall requirements vary with different varieties but should be evenly distributed during the growing period, especially during the first five weeks after planting and at flowering stage.

Temperature– warm temperatures of between 15-30 °C are fit for the growth and development of this crop. Cold conditions extend the maturity period.

Soil– maize crop prefers a well-drained light loam or alluvial soil with a pH of between 5.5-7.0. However, it also tolerates a wide range of soils found in most parts of Kenya but it is not tolerant to waterlogged soils.

Altitude– the crop grows in a wide range of zones with altitude ranging from 100-2900M ASL. This however depends on the maize variety.

CHOICE OF SEED

It is very important to choose the right seed for your altitude and rainfall conditions.

For example;

- H614, H626, H627- for attitudes range of 1500- 2100 M ASL
- KATUMANI, DH O2, DH O4, Drought TEGO- for attitudes of 600- 1300M ASL
- H 513, H 511, H 516- attitudes of 800- 1500 M ASL
- PH1, PH4- for attitude range of 0-1200M ASL

LAND PREPARATION

It should be done early to allow for weeds to dry and decompose before planting. First plough is best done after harvesting the previous crop.

Procedure

1. Spray weeds with CATAPULT® 480SL 200ml/20L.
2. Plough land and make it level with a fine tilth.
 - Mix soil with manure and DAP. For efficient and improved nutrient uptake as well as stabilizing soil pH, mix 1kg HUMIPower® with 50kg DAP and /or 1 ton of manure.
1. Make holes at a spacing of 90*30-50cm if soil fertility is low or 75*25-50cm if soil is fertility is relatively high.
2. Place either 2 or 1 seed per hole or alternate 1 and 2 seeds at a depth of about 4cm if soil is moist and about 10cm if soil is dry.
3. Cover seeds with loose soil

Considering the size of land, machines like tractors or ox-drawn ploughs can be used, observing the correct spacing.

NB; Optimal yields are realized if the correct number of plants per unit area are grown.

PLANTING TIME

Early planting is essential as yields are greatly reduced by late planting.

Planting is best done within the first two weeks of the onset of rainfall in highlands, while in lowlands, maize is best planted before the onset of rain for it to benefit from the scarce rainfall in these areas.

If the rainfall is not enough, irrigation should be done.

FIELD OPERATIONS

Thinning & Gapping

Gapping is done to replace ungerminated seeds immediately after germination is complete while thinning is done when maize has grown to height of about 15 cm by removing the weak and deformed seedlings to leave the desired number of seedlings per hole.

Fertilizer application

Timely application of both basal and foliar fertilizers is highly recommended in order to achieve optimum yields. Manure should be added especially for soils with little or no organic matter.

During planting

When planting manually, place a teaspoonful of fertilizer (DAP) into each planting hole, mix it thoroughly with the soil to make sure that the fertilizer doesn't burn the seeds, then place the seeds. Under mechanical planting well calibrated planters with fertilizer hoppers are used. The fertilizer can also be mixed with soil before planting, at a rate of 50Kg per acre.

DAP contains phosphorus which helps the crop with root development.

Spray the young plants with LAVENDER SUPER STARTER® 20ml/20L or GATIT SUPER START® 50g/20L to promote early crop establishment

Top dressing

Top dressing with CAN is done after 2-3 weeks after planting or when the crop is 45cm or 1.5ft high. Apply 1 teaspoonful of fertilizer (CAN) at the base of each plant in a ring or along the row, about 15 cm away from the plant. In high rainfall areas top dressing is done in two splits. 1st split is done 6 weeks after sowing and 2nd split is done 10-15 days later or just before tasseling. In low rainfall areas fertilizer is applied once, at a rate of 50-100Kg per acre.

CAN fixes nitrogen in the soil which increases the green color of the leaves, responsible to make food for the plant. Other nitrogenous fertilizers like urea can be used.

To promote vigorous vegetative growth of the crop, spray it with GATIT SUPER GROWTH® 50g/20L or LAVENDER SUPER GROWTH & VEGETATIVE® 20ml/20L.

During flowering and grain filling stages, spray GATIT SUPER FLOWERS & FRUITS® 50g/20L or DIMIPHITE® 20ml/20L, to promote quality and quantity production.

Weeding

Weeds compete with maize for nutrients, water and light and harbor diseases and pests which lowers yields.

Weeding can be done mechanically/manually or by use of herbicides.

If done manually, the first weeding should be within the 3rd week after planting or depending on the growth of weed in the area.

In pure stand, herbicides can be used to effectively control weeds. The herbicides are mainly grouped in two, pre-emergence herbicides (e.g. CATAPULT® 480SL) which are applied before the maize germinates and weeds appear, and post-emergence herbicides (e.g. AGROMINE® 860SL) which are applied when the maize and weeds have germinated.

- After planting, before germination, spray weeds with CATAPULT® 480SL 200ml/20L to get rid of all types of weeds.
- When maize crop is at knee high stage, about 30cm high, spray AGROMINE® 860SL 150ml/20L which selectively kills broadleaved weeds.
- Spray HURRICANE® 200SL 200ml/20L between the rows, when maize is waist high, at later stages of growth. It clears all types of weeds leaving the fields weed-free.

The field should be kept weed free till maize tasseling after which their presence might not cause crop loss.

MAJOR PESTS & DISEASES

Pests

Fall armyworm— it attacks the crop at seedling, vegetative, flowering and fruiting growth stages and its rapid spread and the damage potential can cause up to 100% crop loss

Use OCCASION STAR® 200SC 3ml/20L or TOTAL TOUCH® 250SC 18ml/20L or ESCORT® 19EC 10ml/20L

Apply the insecticides in the evening or early in the morning for effective control because fall armyworms are nocturnal

Stalk borer— the larvae are caterpillars which feed on leaves. As infestation continues, they find their way into the stalk of the plant, feed on the stalk tissues making the stalk weak. They also tunnel into maize cobs causing significant losses.

Spray KINGCODE ELITE® 50EC 10ml/20L or PROFILE® 440EC 30ml/20L or LEXUS® 247SC 8ml/20L

Maize aphids— these are soft bodied insects which feed by piercing and sucking. Heavy infestation by these aphids causes leaves to curl and become distorted. Plant also becomes stunted. As they feed, they secrete honeydew which encourages the development of sooty mold which lowers the rate of photosynthesis, especially if on the leaves. Aphids are also vectors of viral diseases.

Spray KINGCODE ELITE® 50EC 10ml/20L or LEXUS® 247SC 8ml/20L or PENTAGON® 50EC 10ml/20L

Cutworms- these are found in the soil and attack the stems of young plants.

Drench soil with PROFILE® 440EC 60ml/20L or PENTAGON® 50EC 20ml/20L

Diseases

Maize Lethal Necrosis Disease (MLND) – this is a combination of two viral diseases which can attack the crop at any stage of growth and development. Infection is shown by the appearance of chlorotic mottling on leaves which starts from the older to the younger leaves. Leaves also show marginal necrosis which extends to the midrib as infection advances eventually causing the leaf to die. Dead hearts are very common.

Control vectors (aphids, thrips and leaf beetles) then spray ensure proper nutrition.

Maize smut—this is a soil borne disease which is manifested in the tassel or kernel of the crop causing severe crop losses. Infection causes formation of whitish galls/swellings which rupture releasing dark spores.

Drench soil with PYRAMID® 700WP 100g/20L or GREEN COP® 500WP 100g/20L

Northern leaf blight– infection starts as gray-green lesions on the leaves which turn pale gray as infection progresses.

Spray GEARLOCK TURBO® 250WP 25g/20L or FORTRESS GOLD® 720WP 40g/20L

Tip! Use certified seeds, resistant varieties and practise crop rotation.

HARVESTING & STORAGE

Maize matures after 3-4 months especially for the short season varieties with others going up to 10 months or more. Harvesting can be done while the maize is green or when dry. Cobs are harvested by hand or by use of mechanized harvesters e.g. combine harvesters.

Maize should be properly dried before storage.

Treat your maize before storage against storage pests like weevils or use treated gunny bags. This increases their shelf-life.

Store the maize in clean and dry storage places or silos to prevent fungal disease attack and to control storage pests like weevils.

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