

Finger millet (*Eleusine coracana*), is an annual grass in the family Poaceae. It is grown for its grain which can be used for food or for brewing. Its straw can be used as an animal feed. It is a robust tillering grass which grows in tufts, has erect, light green stems, leaves are dark green, linear and mainly smooth with some hair along the leaf edges and the inflorescence is a cluster of 3–26 ‘fingers’ composed of dense spikelets where the grain, or seed, is produced.

Finger millet can reach 1.7 m in height and is harvested after one growing season.

### **Finger millet farming in Kenya is an important agricultural activity especially in Western Kenya.**

#### **Varieties**

They include;

- **P224-** this is a brown seeded variety, usually tall with uniform plant height and is tolerant to lodging and blast. It takes 3-4 months to mature.
- **Katamani-** it is a red seeded variety, short and is drought tolerant. It takes 3 months to mature
- **U-15, Gulu and Okahale-1-** these are new, superior finger millet varieties, which guarantee higher yields, tolerance to drought, striga weed and blast disease.

#### **Ecological Requirements**

Finger millet is very adaptable to a wide range of environmental and climatic conditions, it thrives at higher elevations than most other tropical cereals and tolerates salinity better than most cereals.

It grows best in an environment with medium rainfall, about 750-900mm, an annual temperature range of 15- 28°C and in a fertile, well-draining sandy loam soil with a pH between 5-8.

Areas with low rainfall and low relative humidity during seed ripening and maturation are best for regeneration.

#### **Field Operations**

##### **Planting**

Sowing is usually done by broadcasting or planting the seeds in furrows.

The seedbed should be thoroughly prepared to a fine tilth because the seeds are very tiny.

Seeds are sown to a depth of 2.5 cm allowing 25 cm between rows and 10–12 cm between plants.

Finger millet should be planted as early as possible in the season on the onset of rains. The earlier it is sown the higher the yields.

The crop can be planted as a pure stand or intercropped with other crops like maize, beans, and cowpeas, among others.

Germination occurs within a week after sowing.

##### **Thinning**

Plants should be thinned when seedlings are about 2–3 weeks old, leaving 10 cm spacing between the plants and a minimum of 40 plants per accession. This ensures proper air circulation within the crop, promoting sufficient performance.

## **Irrigation**

If the soil is not moist enough, (which could be due to inadequate rainfall), supplemental watering should be done. At flowering stage, enough moisture should be ensured.

## **Weeding**

*Eleusine Africana* and *Eleusine Indica* are the common weeds found in finger millet fields, and are quite difficult to distinguish from the crop in the early stages of growth.

Spraying weeds with CLAMPDOWN 480SL 200ml/20l before planting to kill all kinds of weeds and this greatly reduces weed development throughout the crop season.

AGROMINE 860SL 150ml/20l is a selective herbicide which kills broadleaved weeds and is applied when crop is about 30cm high.

## **Pests & Disease Management**

### **Pests**

**Cutworms**– these are black or brown in colour and cut off young plants at or slightly below the soil level. The attacked plants may eventually die.

Dress seeds with SHIELD 600FS 3ml/kg

DRENCH soil with PROFILE 440EC 60ml/20l or PENTAGON 50EC 20ml/20l

**Chafer grubs**– these are whitish C-shaped caterpillars found in the soil which feed on the roots and may kill young seedlings.

Dress seeds with SHIELD 600FS 3ml/kg

Drench soil with RANGER 480SL 60ml/20l or PROFILE 440EC 60ml/20l or LOYALTY 700WDG 10g/20l

**Stem borer**– the larvae/maggots feed on the funnels of the crop before tunneling down to feed on the developing tissues. Others bore holes straight into the centre of the stem. Feeding causes stunted growth and production of sterile or poorly developed ear heads. In severe cases, the plant dies. Young plants are more susceptible to attack by stem borers

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

**Shoot fly**– the larva enters the funnel of the crop and moves down to feed on the young shoot killing the growing point and the youngest leaf which turns brownish and withers. This damage is commonly referred to as ‘dead heart’. Tillers can also be attacked.

Spray KINGCODE ELITE 50EC 10ml/20l or PENTAGON 50E 10ml/20l or LEXUS 247SC 8ml/20l

**Midge**– the larvae feed on the developing grains causing them to shrink and flatten. Damaged panicles have small, transparent midge pupae attached to the tips of the damaged spikelets.

Spray LOYALTY 700WDG 5g/20l or EMERALD 200SL 10ml/20l

**Armyworms**– these are seriously destructive pests which cause serious damages to mostly the young plants by eating away the leaves. Heavy infestations can cause defoliation.

Spray SINOPHATE 750SP 40g/20l or KINGCODE ELITE 50EC 10ml/20l or LEXUS 247SC 8ml/20l

**Aphids**– they suck plant sap on the ear heads or on the undersides of the leaves and produce honeydew which encourages development of sooty mold. Infested plants become stunted, leaves dry up and yield is considerably reduced.

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

Spray JAMBO CLEAN 100ml/20l to clean the sooty mold

**Earhead bugs**– the adults and nymphs feed on the developing kernels by sucking the juice from within the grains when they are in the milky stage. Kernels shrivel, become small and discoloured, especially if attacked in early development stages.

Spray EMERALD 200SL 10ml/20l or LOYALTY 700WDG 5g/20l or PRESENTO 200SP 5g/20l

### **Diseases**

**Damping off**– infection causes rotting of seeds before they emerge as well as seedlings after emergence from the soil.

Drench soil with PYRAMID 700WP 100g/20l

Spray crop with CHANCETYL ELITE 800WDG 50g/20l or DOMAIN 250EC 10ml/20l or MILLIONAIRE 690WG 40g/20l

**Cercospora leaf spot**– small dark lesions develop on leaves which are usually oval in shape but may be oblong to rectangular. The centers of the lesions are gray to tan in color with visible black dots and may be covered in spores during wet weather. These lesions may also be present on the stems and are slightly longer than those on the leaves.

Spray RANSOM 600WP 15g/20l or DUCASSE 250EC 20ml/20l or JUPITER 125SC 15ml/20l

**Blast**– elliptical or diamond shaped lesions form on leaves. The centers of these lesions are grey and water-soaked, surrounded by chlorotic halo and there is an appearance of concentric rings on leaves

Spray CHARIOT 500SC 20ml/20l or RANSOM 600WP 15g/20l or DUCASSE 250EC 20ml/20l

**Rust**- small yellow or white raised spots develop on the upper and lower leaf surfaces. These spots tend to be more numerous on lower leaf surface. They enlarge and develop into red-brown pustules which may be surrounded by a yellow halo.

Spray RANSOM 600WP 15 g/20l or EXEMPO CURVE 250SC 15ml/20l or MILESTONE 250EC 10ml/20l

**Downy mildew**– the infected plants develop thick, stiff, twisted, pale green leaves with bumpy surfaces. In severe cases of infection, the plants do not produce.

Spray GEARLOCK TURBO 250WP 25g/20l or FORTRESS GOLD 720WP 40g/20l or TOWER 720WP 50g/20l

### **Nutrition & Nutritional Deficiencies**

To achieve maximum production, the crop should be supplied with enough nutrients. The amount of fertilizer to be applied to the crop however depends on the fertility of the soil. Application of both basal and foliar fertilizers is recommended.

Basal fertilizers (DAP, CAN, NPK, etc.) should be mixed with HUMIPower at all times of application at the ratio 50:1.

Foliar fertilizers like OPTIMIZER, LAVENDER, GATIT SERIES, among others are sprayed to the crops in order to supply both macro and micro elements required by the plants for their growth and development. Timely application of fertilizer should be observed.

### **Deficiencies**

***Nitrogen deficiency***– the growth rate of the plant is highly reduced and leaves turn yellow, starting with the older ones. Plants become stunted as deficiency continues.

Correction; use LAVENDER or GATIT SUPER GROWTH

***Phosphorous deficiency***– plants turn dark green and leaves show reddish purple discolouration starting with the older to the young leaves. Stunted growth occurs as deficiency progresses.

Correction; use DIMIPHITE or GREENPHITE or LAVENDER

***Potassium deficiency***– leaves develop marginal chlorosis then necrosis starting with the older ones to the young ones. Stunted growth occurs in severe cases of deficiency.

Correction; use DIMIPHITE or GREENPHITE or LEGENDARY

***Zinc deficiency***– leaves develop broad bands of yellow coloration which later turn pale brown or grey. Symptoms start with young leaves and progress towards the older ones.

Correction; use ZINC GOLD

**NOTE;** whenever doing any foliar spray, the product (insecticide, fungicide, foliar feed or herbicide) should be mixed with INTEGRA 3ml/20l. This is a sticker, spreader and penetrant, which improves the effectiveness of the product.

### **Maturity, Harvest & Postharvest Handling**

Finger millet is usually ready to harvest between 3.5 and 5 months after sowing depending on the variety.

The crop is usually harvested by hand by cutting the seed heads or by cutting the entire plant.

For large scale farming, combine harvesters are used.

The heads are then dried, threshed and winnowed.

Grains are dried and stored in bags and put in a dry place.