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African Eggplant Seed Production Guide

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Introduction

Several species of African eggplant are cultivated but the most common ones are *Solanum aethiopicum* (medium sized fruit type), *S. macrocarpon* (big fruit type) and *S. anguivi* (small fruit type). These phenotypically diverse species are grown for their fruits and leaves. Stems and leaves can be hairy or glabrous leaves, the flowers are bisexual and mostly self-pollinate; fruits are produced singly or in groups from trusses or short cymes, depending on subspecies and varieties. The fruits at marketable stage vary in colour (green, white, striped, multi-coloured), in shape (round to long shape, smooth, grooved or ribbed) and size (small to very big). Taste ranges from bitter to sweet/less bitter, depending on saponin content. Fruits of all the three species are edible. Leaves of *S. macrocarpon*, *S. anguivi*, and the shum group of *S. aethiopicum* are edible. This guide briefs seed production procedures of African eggplant for quality seed availability. Care must be given at the various stages of the seed production activities described below.

Site selection

A selection of fields for African eggplant seed production is very important for maintaining produce quality and quantity. African eggplant requires less water than tomato and prefers sunny conditions. It grows on a wide range of soils, including sandy loam with the pH range of 5.5-6.8. Optimal temperature ranges for the crop are 23–35 °C (day) and 18–25 °C (night). It does not cope with waterlogging and intense shading. Dig channels to drain, or divert excessive water coming to the field. African eggplant grows well in lowlands during the dry season as far as sufficient water is available.

Sowing time

African eggplant is not as susceptible to cold temperature as other African indigenous vegetables like okra. It can be grown throughout the year provided that water is available. As African eggplant is susceptible to red spider mite during the hot dry season, growing of nursery seedlings and transplanting should be done well before the start of the hot season.

Raising seedlings

African eggplants grow best when propagated in a nursery and then transplanted into the main field. Seedlings can be raised either in seedling (seed) bed (Figure 1) or in seedling trays (Figure 2).



Figure 1: Seedlings in the nursery bed.



Figure 2: African eggplant in seedling trays.

Seedling bed preparation

When selecting a site for the nursery bed, ensure that it is not on a slope and should be near to a clean water source. It should not have previously grown Solanaceae crops such as tomato, African nightshade, peppers or potatoes over the last couple of years.

The nursery bed should be raised at least 20 cm from the ground. Recommended bed width is 1 meter by any convenient length. Loosen the soil for easy penetration of roots. Add 2-5 kg per m² of well decomposed chicken manure, compost or cow dung manure to the soil before sowing the seeds.

Sowing seed in a seed bed

Make drills 15-20 cm apart and 1 cm deep. Sow the seed and cover with a thin layer of soil. Apply mulch and water through the mulch. Continue watering to keep the soil moist but not too wet to avoid rotting of the seed. It is preferable to apply water in the evening. The optimum temperature for germination ranges 24 to 29 °C. At this temperature, seedlings should emerge in six to eight days after sowing. Once germinated, remove the mulch from the seed bed and put it between rows.

Set up a shade over the nursery bed especially if sun is intense. The shade should be 1 m high from the bed. The shade roof should be made out of light materials to allow sunshine to reach the seedlings.

Raising seedlings in seedling trays

Other method of raising African eggplant seedlings is in seedling trays (Picture 2), where by medium like peatmoss, cocopeat etc, can be used to fill in the trays and seed sown. Mixture of forest soil, well decomposed manure, and sand or rice husk also can be used in a ratio of 3:2:1 (in that order) to prepare the medium. This mixture should be well sterilized by steam or dry heat before using. Sow 1-2 seeds per cell depend on germination test.

Transplanting and crop management

About three weeks after sowing harden seedlings by slightly reducing the frequency of watering, shade and fertilizer to reduce the transplanting shock. Seedlings are ready for transplanting in 4-6 weeks or when they have four to seven true leaves. Seedlings should be watered well before uprooting for transplant and immediately after transplanting.

Spacing

For seed production, a spacing of 75 cm between rows and 50 cm between plants within row is recommended.

Isolation distance

Maintaining isolation distance is very important stages for any crop seed production. Isolation is important for African eggplant especially in areas with bee population. An isolation distance of 100 m between two varieties of African eggplant is sufficient for certified seed production. More distance may be required in areas or seasons of bee visiting flowers.

Manures and fertilizers

The fertilizer dose depends upon the fertility of soil and amount of organic manure applied to the crop. For a good yield, 15-20 t/ha of well-decomposed farmyard manure (Figure 3) should be incorporated into the soil before transplanting.



Figure 3: Manure.

Generally, for good management in low nutrient content soils, plant should be fertilized with 400 kg/ha of NPK (20-10-10; to be prorated to your local fertilizer ratio) and 120 kg/ha of Urea or any other nitrogen-based fertilizer. The 200 kg/ha of the NPK should be applied as a basal application during transplanting or as a side-dress one week after transplanting. The second application of 200 kg/ha should be applied six weeks after the first application. Urea application should be divided in three splits, with the first application applied together with the first NPK application during or one week after transplanting, the

second application three weeks after the first or when fruit formation begins and the third application another three weeks after the second application. A balanced ratio of nitrogen to potassium is about 1:1 to maximize yield.

Irrigation

Irrigation is given after transplanting the crop and before top dressing of fertilizers if there is no rain. Timely irrigation is quite essential for good growth, flowering, fruit setting and development of fruits. In areas or seasons depending on irrigation, sandy soils are generally irrigated three times per week, whereas loamy soils with organic matter are irrigated twice per week.

Weed management

African eggplant is a slow growing and long duration crop. Therefore, it has to compete with a variety of weeds especially at the initial crop growth stages. Weeds can be controlled by hand or manual weeding at least throughout the growing period due to continuous germination of weed seed. Use of mulch such as straws or stovers of rice, maize, sorghum, mustard or wheat can be used if they are available to suppress weeds.

Rouging

Seed growers should be well acquainted with the characterization of the variety so that they may effectively rogue out the off-types, undesirable plants and diseased plants at different stages of crop growth. The following three rouging stages have been suggested:

- *Before flowering*, by examining plant colour, growth habit and foliage characteristics such as shape, size and posture.
- *At early flowering and fruit development*, by observing general plant habit, vigour, degree of spininess.
- *At fruiting*, off-types can be identified on the basis of fruit characteristics like shape, size colour etc.

Field and seed standards certifications should be as per recommendations of national official seed certification authorities that may vary from country to country.

Pest and disease management

Pest and disease management should be a continuous effort. Both organic and inorganic pesticides can be used to control pests and diseases. It is recommended to always seek advice from agriculture researchers or extension workers on pest and disease identification and management in a given environment. There should be regular monitoring of the seed production field to ensure immediate action is taken in case of pests and diseases outbreaks.

Harvesting and seed extraction

Flowering, pollination and fruit formation in African eggplant generally take place about two months after transplanting. Fruits for seed extraction are harvested when they have fully developed a yellow, orange, or red colour depending on the species or variety. It is suggested that seeds should be collected from first or second tier fruits as those have a higher seed weight and higher germination rate than seeds collected from fruits beyond the second tier.

Seeds are extracted either mechanically using a seed extractor (Figure 4) or manually by crushing the fruits placed in net bags or sisal bags (Figure 5). Seeds are allowed to ferment overnight, then the next day the seed is washed, cleaned and dried in a partial shade to 8% or less moisture content.



Figure 4: African eggplant fruits in net bag



Figure 5: Seed extractor machine

Seed storage

When seeds are already dried and cleaned, they should be packed and stored properly to maintain high viability until planting time. Seed moisture content and storage temperature are the two important factors that affect seed viability in storage. When these factors are too high, the seed deteriorate rapidly. Packaging materials used in seed storage play a major role in regulating the moisture content of stored seeds. Seed moisture attains equilibrium moisture content with the relative humidity (RH) of the air surrounding it. The moisture content of the seed during storage will either be low or high, depending on the RH of the surrounding air and on the permeability of the packing material to moisture.

References

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