

8. Pest and Disease management

- i. Monitor the field regularly to ensure that quick action is taken in case of an outbreak break out of pests and diseases.
- ii. Both organic and inorganic pesticides can be used to control pests.
- iii. Seek advice from an agricultural extension worker on pest and disease identification and management if necessary.

9. Harvesting Seed

- i. Harvesting spider plant seed starts at 10- 14 weeks after germination.
- ii. Keep the pods on the vine until they are fully mature. When mature, pods will be bright yellow before turning dull or brown. Harvest only the ripe pods for seed. Avoid fruits that are diseased or rotten. Pre-mature harvesting causes shrinking of seed, loss in germination vigour and difficulty processing. Delayed harvesting causes loss in seed quality, damage by pests, rain damage and secondary disease infestation.
- iii. It is recommended that one hand picks the fruits since there is always uneven ripening of the fruits.
- iv. Store harvested pods in a cool clean flat surface e.g. mat under minimum sunshine. Avoid contamination by soil.

10. Seed processing

- i. Thresh the seed on a clean hard surface to remove it from the pods. The dry pods are so soft that rubbing them between the hands can break them.
- ii. Discard the broken pods, stems and leaves. Any light debris still remaining can be removed through winnowing by pouring the seed onto a clean surface. Drying can take 3 to 4 days.

Note: Poor processing methods contribute to rapid seed deterioration for example beating the harvested fruits and storing them on wet floor

11. Packaging, labeling and sealing

- i. Clean and package seeds in a cool and dry place.
- ii. Packaging material should be durable, free from defects and allow seed to retain viability.
- iii. Well stored seeds will maintain seed quality and high germination capacity when needed for use.
- iv. Seed should be dressed (treated) to protect it against infestation by insects and infection by seed borne and /or soil borne disease causing organisms prior to and during germination and seedling establishment. Treated seeds are packaged in

clean bags and containers of various sizes according to customers' demands.

- v. Seeds of all classes must bear the official label on each bag or container which shows the lot number, type of crop, name of variety, class of seed, germination and purity levels and the packaging date.

Note: Because the spider plant seed contains oils that can be used as insecticides, they rarely have problems of insect damage when stored.

Other Points To Note

As a seed grower, you must ensure the following:

- i. Apply and register with an official seed certification agency e.g. National Seed Certification Services (NSCS).
- ii. Use seed of a known variety with well defined descriptors (unique/different characteristics from other varieties and distinguished from the rest of the varieties which can be obtained from an official agency like a NARO research station-.
- iii. Register the field crop for inspection within the recommended time as per seed regulations
- iv. All contract seed producers can be linked to registered seed companies e.g. Simlaw, Victoria or East Africa Seeds.

Farmers trained in seed production do qualify for registration as seed growers.

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Spider Plant (Jjobyo)

Seed Production Guide



Spider Plant (Jjobyo) Seed Production

Spider plant is known by different names across the Uganda: in Luganda, "Jjobyo", in Acholi "Akeo" and in Ateso, "Echadoi". The scientific name of the spider plant is *Cleome gynandra*. The leaves of the spider plant are usually picked when green and eaten as a vegetable.

To produce Spider plant seed, follow these simple steps:

1. Use quality seed for better yields

Use quality seed of a recommended variety to ensure good production. Quality seed refers to seed that is well processed and stored. When one uses quality seeds it leads to:

- i. Less seed used at planting
- ii. Higher seedling emergence, usually above 85%
- iii. Vigorous seedlings
- iv. More uniform plant stand
- v. Faster growth rate
- vi. Better resistance to pests and diseases
- vii. Uniformity in maturity
- viii. More tolerance to drought

Quality seed should be of uniform similar size, colour and shape. It is free from pests, diseases and foreign matter such as weed seed and chaff.

2. Conduct a germination test

Before sowing, the seed should be tested for viability and germination potential by conducting a quick germination test. This should be done using the following steps:

- i. Get representative samples of seeds from the top, middle and bottom of the seed bag.
- ii. Mix the sample seeds and count 100 seeds to use for the test (for small seed quantities, farmers can count 20 seeds)
- iii. Put the seeds in a container of water for 24 hours.
- iv. Drain off the water and wrap the seeds in the soaked cotton cloth to create a bag holding the seeds.
- v. Tie the cloth bag to stick. Tilt the stick to encourage drainage from the cloth bag holding the seeds. Keep the cloth moist by watering 3 times a day. Leave it tied for 48 hours.
- vi. Untie the cloth and count the number of seeds that have fully germinated (both the shoots and roots have emerged).
- vii. If 85 of the 100 seeds or 17 of the 20 seeds or more

have both the shoot and roots emerged within 2 weeks, then it is quality seed which can be used for planting.

viii. If the percentage is slightly less than 85 out of 100 seeds, increase the seed rate at planting. If the percentage is less than 40% discard the seed. Do not use the seed because it will have poor yields.

3. Site selection

- i. An open field is recommended as it will promote maximum flowering and fruiting. Spider plants need enough sunshine to grow and shade will only make them stunted. Sites with tree shades also harbor caterpillars and other insects which can damage the plant parts.
- ii. The field should be at least 200 meters away from other spider plant gardens or plant in the same family as the spider plant. Isolation can also be achieved by planting crops at different times to avoid an overlap of the flowering periods.
- iii. One should plant the crop on a flat or lowland while upland areas should only be used if terracing and raising of beds is to be practiced to control soil erosion. In lowlands, dig channels to drain or divert excess water. Spider plants grow well in lowlands (wetlands) during the dry season when soils are well drained.
- iv. Choose loam soils which are the best for growing seed.

4. Land preparation

- i. Clear or cut all the tall grasses and bushes, remove trees including stumps, remove stones and other obstacles from the field in order to ease the ploughing processes and all other farming activities. Do not burn the bushes because burning exposes the soil to erosion and also reduces soil fertility due to loss of nutrients.
- ii. Plough the field for the first time and ensure that the soil has very small debris.
- iii. If the field has perennial weeds, spray with herbicides such as Weed master, Glyphosate or Round-up according to the recommended rates. Contact an extension officer for guidance if necessary.
- iv. Conduct 2nd ploughing, followed by harrowing to make a fine tilth

5. Manure/fertilizer application

- i. Apply manure or fertilizer i.e. Farm yard manure is a low cost alternative to inorganic fertilizers and it still helps

farmers to achieve higher yields. Farm yard manure is made from animal dung either from cows, goats or from chicken droppings. It should be well decomposed. Use of manure encourages vigorous growth, resistance to pests and diseases and eventually high yields.

6. Planting

- i. Timely planting: Plant at the on-set of the rains. Farmers who have the capacity to irrigate can grow spider plants all year round.
- ii. Planting in lines: This ensures that the crop is well spaced, making it easier to weed and manage the crop. In addition, the recommended plant population is attained – the farmer will plant adequate seed (not too much or too little) for the given area.
 - Use a string to make rows.
 - Use a stick to make a 1cm deep furrow following the string.
 - Apply manure in furrow made
 - Plant the seeds in this furrow and cover lightly with soil.
 - Seed spacing: spider plant should be spaced at 45cm between rows and 5cm between plants for seed production. The seeds of spider plant are very small and the farmer risks pouring too many seeds in the same spot during planting. This can result in crowding of plants which will reduce the yield. To avoid this, the farmer mixes the seeds with manure in a ratio of 1 to 4 to disperse them at planting.

7. Weeding and Thinning

- i. Weeding should be done as soon as weeds emerge and before the weeds flower to reduce the risk of the weeds spreading.
- ii. Timely weeding leads to increased yields and minimizes competition for nutrients and light between weeds and the spider plant. It reduces pest and disease infestation at the early stages and generally provides better growing conditions.
- iii. Mulching is also recommended to reduce on weeds and control soil erosion.
- iv. Thinning is done at the time of weeding and at this stage, the less vigorous, off types or relatives and diseased plants are removed. The thinned plants can be sold or consumed at home.
- v. Removing off types should also be done at flowering and at fruiting (early maturity) when it's easy to identify the off types.