The frequency of thinning depends on whether the germination is low or high. In case of poor/low germination, gap-filling should be done.

PLANTING THE RED AMARANTHUS SEED

The seed of red amaranths are very small and the farmer risks pouring too much seeds in the same spot during planting. These results in overcrowding of the plants which leads to low yields. To avoid this, the farmer can using the following method:

1. Take 2 Kg of red amaranths seed and 8 Kg of well decomposed and dry soil/manure to plant 1 acre. Use only well decomposed dry manure as fresh manure will destroy the seed.
2. Thoroughly mix the seed and the soil in a large basin.
3. Put the manure-seed mixture in a large mineral water bottle and make a hole in the bottle top.

Planting in lines

- Use a string to make rows. Spacing between the rows should be 45cm.
- Use a stick to make a 1cm deep furrow following the string
- Plant the seeds in this furrow and lightly cover with soil.

4. The filled must be mulched immediately after planting

WEEDING AND THINNING

i. Timely weeding ensures that the specific field certification standards for weeds in the field and for processed seeds are achieved.

Note: Pure seed should not be mixed with weed

ii. Timely weeding will lead to high yields

iii. Timely weeding minimizes competition for nutrients, light and space between the weeds and the amaranths. It gives the red amaranths better conditions for growth

iv. Weeding also reduces pest and disease infestation at the early stages leading to increased yields

v. Weeding should be done immediately the weeds emerge and before flowering. This reduces the risk of weeds spreading

vi. Thinning is done at the time of weeding. During thinning the less vigorous, the off-types, or crop relatives and diseased amaranths plants are removed. The good quality thinned out plants can be sold or consumed at home.

vii. Rouging of off types should be done at flowering and at fruiting(early maturing) when it is easy to identify the off-types.

PEST AND DISEASE MANAGEMENT

i. Pest and disease management should be a continuous effort by the farmer to ensure early intervention in case of an outbreak.

ii. Both organic and inorganic pesticides can be used to control pests and diseases.

iii. It is recommended to always seek advice from and agricultural extension officer on pest and disease identification and management.

HARVESTING RED AMARANTHUS SEED

ii. Keep the seed on the plant until they fully mature. When mature, the fruits will fall easily when shaken. Harvest only the mature fruits for seed and avoid seeds that are diseased or rotting.

iii. Delayed harvesting causes loss in seed quality, damage by pests, rain damage and secondary disease infestation

iv. It is recommended to hand pick fruits due to uneven maturity of the fruits.

v. Store harvested fruits in a cool dry place on a mat to avoid contamination by soil.

RED AMARANTHUS SEED HARVESTING AND PROCESSING AND STORAGE

Harvesting red amaranths seed starts at 15 weeks after germination.

Step 1: Identify mature seeds by shaking the head so that the seeds easily fall out. Cut the whole plant from the bottom with a sickle.

Step 2: Place the harvested plants on a clean tarpaulin and place this under direct sunlight. Check if the seed is dry by rubbing in between the palms. If the seed sticks to the palm, it means it requires further drying. Alternatively a moisture meter can be used.

Step 3: Pack the dry fingers into a light pack and hit the pack gently until the seeds separate from the husk.

Step 4: Thresh to remove chaff using clean containers.

To determine if seeds are properly dry, pinch with fingers or use the salt method to determine the moisture content as follows:

- Get 20 g (3 bottle tops) of sale and 160 g(a hand full) of the seed
- Mix the two together and put in a glass bottle or polythene bag and tie.
- Shake well for two minutes
- Allow to settle for 15-30 minutes
- If the walls of the container or polythene bag become foggy, then the moisture content is still more than 15% so continue drying the seed.

Step 5: Clean and package the seeds in a cool well ventilated and dry place.

- Well stored seed will maintain the quality in size and high germination potential with vigour until it is required for use
- The main factors determining the storage life of the seed are moisture content and temperature.

Seed may be treated to protect it against insect pests and diseases prior to storage seed dressing.

CONTACT US
National Agricultural Research Organisation
NARO-MUKONO ZARDI
P.O.Box 164 Mukono Uganda
Tel: +256 414 290 232
Email: director@muzardi.go.ug

NARO

RED AMARANTHUS

(AMARANTHUS BLITUM) SEED PRODUCTION GUIDE



INTRODUCTION

Red amaranthus (amaranths) is one of the common indigenous vegetables in Uganda. Access to the seed of red amaranths is one of the major limitations to its production. In order to grow red amaranths seed as a business, the following should be considered:

1. Profitability compared to other seed crops
2. Capital and skill required
3. Available market and current weather conditions
4. Registration process by the seed certification agencies.

SEED PRODUCTION RULES

As a seed grower you must ensure the following:

- Apply and register with an official seed certification agency e.g. National Seed Certification Services.
- The certification agency will review your application and send you a reply
- Prepare a field map showing the location of the seed crop field.
- Use seed of a known variety with well defined descriptors (unique/different characteristics) which can be obtained from an official agency like a research institute-of. NARO or University.
- Register the field crop for inspection within the recommended time as per seed regulations.

FIELD INSPECTION

As a seed grower, you must register your crop for inspection. The inspectors look into the following factors:

- Previous cropping history of the field where seed is to be grown
- Isolation distance from other crops of the same species
- True to type status of the crop variety grown
- Pests: insect pests, diseases and environmental pollution/contaminations
- Proper crop husbandry practices e.g. timely weeding

Farmers trained in basic knowledge in seed production and technologies qualify for registration as seed growers.

TIME PROPOSED STAGE OF INSPECTION

FACTORS ASSASSED DURING INSPECTION

First At vegetative stage through flowering • Rouge/ select/remove the other crop varieties, off-types, plants of other species, diseased and weak plants.

- Assess variety purity as specified in the crop descriptor.
- Check for presence of noxious (invasive) weeds

Second At maturity of the crop but before harvesting 1. Assess variety purity as specified in the crop descriptor including morpholical characteristics such as colour of seed and pods.

2. Check disease incidence and pest infestation at maturity of the seed crop
3. Check general conditions of the seed crop including estimated expected yield.

Additional At any time or stage of crop growth Assess any other aspect that needs to be corrected following previous inspections e.g. confirm rouging if done as required, follow upon the disease or pest situation, correction of isolation distance.

USE QUALITY SEED FOR BETTER YIELDS

Use quality seeds of a recommended variety. Quality seeds are a fundamental requirement for good production. Home processed seed can also be of good quality if it is well handled and stored. Using quality seed ensures:

- Lower seed rate (less seed used during planting)
- Higher seedling emergence, usually above 85%
- Vigorous seedlings
- More uniform plant stand
- Faster growth rate
- Better resistance to pests and diseases
- Uniformity at maturity
- The plant is more tolerant to drought

Quality seed should be uniform size, colour and shape. It should also be free of foreign matter such as weed seed, chaff and should be pest and disease free.

CONDUCT A GERMINATION TEST

- Before sowing test seed for viability and germination potential by conducting a quick germination test. Follow the steps below:

i. Get representative samples of seed from the top, middle and bottom of the seed pack

ii. Mix the sample seeds and count 100 seeds to use for the test (for small seeds quantities the, farmers can count 20 seeds).

iii. Put the seed in a container of water for 24 hours

iv. Drain off the water and wrap the seeds in a soaked cotton cloth to create a bag holding the seeds

v. Tie the cloth bag to a stick. Tilt the stick to encourage drainage from the cloth bag. Keep the cloth moist by watering 3 times a day. Leave it tied for 48 hours.

vi. Untie the cloth bag and count the number of seeds that have fully germinated (both the shoot and the root have emerged).

vii. If 85 of the 100 seeds or 17 of the 20 seeds or more have emerged within 2 days, then it is quality seed which can be used for planting.

viii. If the percentage is slightly less than 85, increase the seed rate at planting. However if the percentage is less than 40, discard the seed. Do not use the seed because it will have poor yields.

SITE SELECTION

i. An open field is recommended as I will promote maximum flowering and fruiting.

ii. The field should be at least 200 meters away from any solanum or red amaranths relative crop. Isolation can be achieved by planting crops at different times to avoid an overlap of the flowering periods.

iii. The site should not have tree shades because some trees have caterpillars and they can damage the red amaranths plants. Red amaranths also needs enough sunshine to grow, shaded plants will be elongated.

iv. Red amaranths seeds grow well on flatland, lowland and upland if terracing and raising of beds is practiced to control soil erosion.

v. In lowlands, dig channels to drain or divert excess water. The plant grows well in lowland in the dry season in well drained soils.

vi. Loam soils are the best soils for growing seeds. The soil should be fertile, or fertilizer/manure should be added.

vii. Seed producers must ensure the seed crop is inspected during the vegetative stage through flowering, at maturity of the crop and before harvesting. This can also happen at any time or stage of crop growth.

LAND PREPARATION

i. Land preparation starts with clearing or cutting of all the tall grasses, removing trees including stumps, cutting down bushes and removing stones and other obstacles from the field. This is done to ease the ploughing process and all other farm activities.

ii. Do not burn the bush because burning exposes the soil to erosion and also reduces soil fertility.

iii. After clearing the land, plough the field for the first time and ensure that the soil has very small debris.

iv. If the field has perennial weeds, spray the field with glyphosate herbicide. Remember to contact an agricultural extension officer for guidance on the herbicide.

v. Second ploughing is followed by harrowing until the soil makes a fine tilth (has very small fine particles)

MANURE APPLICATION

All indigenous African vegetables need manure/ fertilizers for vigorous plants, resistance to pests and diseases and high yields. Farm yard manure is a low-cost alternative to in-organic fertilizers and can still help resource constrained farmers achieve higher yields. It is made from dung of cows, goats or chicken dropping. If a farmer already has a kraal, it is easy and cost effective to use the dung to make manure.

It is good practice for farmers to always collect the animal dung and heap it so there is always enough to make manure.

Making and applying Farm Yard Manure

1. Collect the animal dung from the Kraal
2. Heap the dung in small knee-height piles. It can be heaped directly in the garden during the dry season when there are no plants in the field or stored in a flat area close to the kraal.
3. Leave the dung to properly decompose for the best results
4. Before applying the manure, mix it with soil.

RED AMARANTHUS SEED SPACING

- Red amaranthus grown for seed production should be at a wider spacing compared to that grown for leafy vegetable production.
- The spacing should be 45cm between the rows and 15 cm between the individual plants.
- Proper spacing is important because it will ensure maximum growth and productivity.
- Thinning should be done 2-3 weeks after germination.