

# Pumpkin (*Cucurbita maxima*) Vegetable Growing Module Training Set



## FACILITATOR'S GUIDE

This guide will help you use the **Pumpkin Vegetable Growing Module Training Set**. The set is designed to encourage group discussion as well as provide information on the production techniques of pumpkin. As the facilitator, read through and familiarize yourself with the entire guide before facilitating any discussion for the first time.



## Using Visual Aids and Participatory Learning

We know that people learn better if they are actively engaged in the learning process. Studies have shown that we remember only 20% of the information we hear and 40% of the information we see and hear. However, when we see ideas represented visually and also actively engage with the information through discussion, debates, role-plays or other participatory teaching methods, learners retain 80% or more of the information that is presented to them.

Clearly as instructors, it is worth the time and effort to create participatory, multi-sensory presentations. The **Pumpkin Vegetable Growing Module Training Set** is a tool designed to assist you in this effort. There is no one way to use it. We are always interested in improving our products, so if you have suggestions, comments, or questions please contact us.

This facilitator's guide is written in English but depending on your audience, you may need to make your presentation in the local language. Read through the guide and consider how you translate concepts into the local language.

# **PART 1. TRAINING CHECKLIST**

Make sure you can answer YES to each question before beginning the session.

- Did you gather background information about the group you are going to train?
- Did you review the facilitator's guide and charts?
- Do you understand the key issues to cover for each chart?
- Does the venue have enough seats and space?
- Do you have all the materials you need for the activities and discussions?

## **Outline of a training session:**

1. Welcome and introductions (5 minutes)
2. Review of the session objectives (5 minutes)
3. Large group presentation and discussion of the charts in the training module (Approximately 5 minutes per chart)
4. Ice breaker (5 minutes)
5. Break into small groups and answer the following: (20 minutes)
  - What are 3 things I learnt today?
  - What is 1 action I will take as a result of this training?
  - What questions do I still have about the topic?
6. Sharing of small group discussions in the large group (10 minutes)
7. Summarize and conclude the session (15 minutes)

## **PART 2. OBJECTIVES FOR THE TRAINING**

By the end of this training, participants will have learnt:

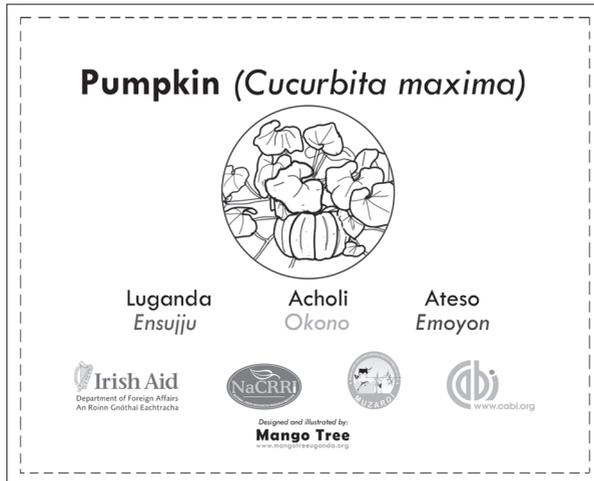
- The benefits of using quality seed
- To conduct a germination test
- To selecting a good site for pumpkin vegetable growing
- To prepare quality seed for planting
- To prepare and apply fertilizer/manure
- To plant pumpkin vegetable
- When and how to weed
- To manage pests and diseases
- To carry out proper harvesting of pumpkin vegetable
- The methods used to preserve vegetables

## **PART 3. HOW TO USE THE TRAINING SET**

- Show the first chart to the participants.
- Read the title of the chart.
- Ask participants to explain what they know about the topic and what they understand from the visual.
- Reinforce accurate information given and correct wrong information.
- Read the tagline on the chart if there is one.
- Ask participants if they have any questions about what has been discussed.
- Go to the next chart.

# PART 4: THE DISCUSSION SESSION

## A) VEGETABLE CHART SET

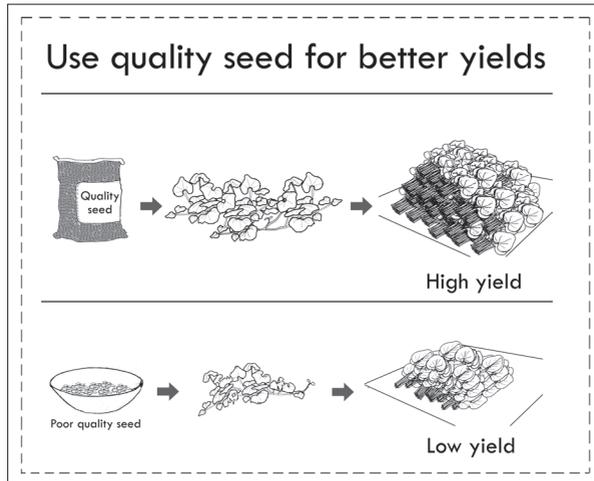


### CHART 1: Logo chart\*

Pumpkin is known by different names across the country - in Luganda *Ensujju*, in Acholi *Okono*, and in Ateso *Emoyon*. The scientific name for pumpkin is ***Cucurbita Maxima***.

Pumpkin leaves are usually picked when and eaten as a vegetable. The fruit is later picked and also eaten as a vegetable.

\* *This is a logo chart.*

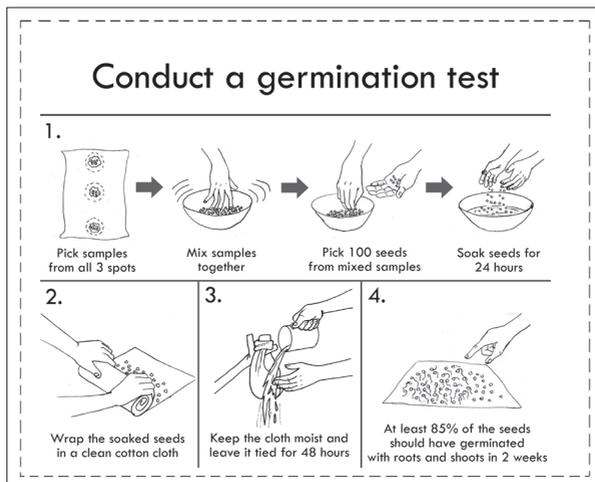


## CHART 2: Use quality seed for better yields

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 processed and stored. Using quality seeds ensures:

- Lower seeding rate
- Higher seedling emergence, usually above 85%
- Vigorous seedlings
- More uniform plant stand
- Faster growth rate
- Better resistance to pests and diseases
- Uniformity in maturity
- The plant is more tolerant to drought

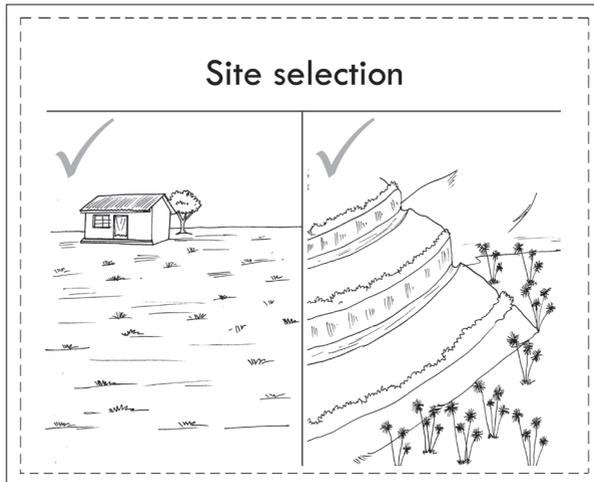
Quality seed should be of uniform size, colour and shape. It should also be free of foreign matter such as weed seed, chaff and should be pest and disease free.



## CHART 3: Conduct a germination test

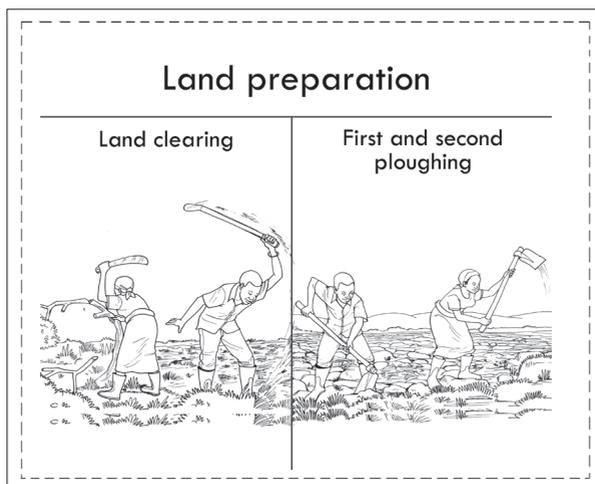
Before sowing, test seed for viability and germination potential by conducting a quick germination test. Follow the steps below:

- Get representative samples of seeds from the top, middle and bottom of the seed bag.
- Mix the sample seeds and count 100 seeds to use for the test (for small seed quantities, farmers can count 20 seeds).
- Put the seeds in a container of water for 24 hours.
- Drain off the water and wrap the seeds in the soaked cotton cloth to create a bag holding the seeds.
- 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.
- Untie the cloth bag and count the number of seeds that have fully germinated (both the shoot and roots have emerged).
- 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.
- If the percentage is slightly less than 85 of the 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.



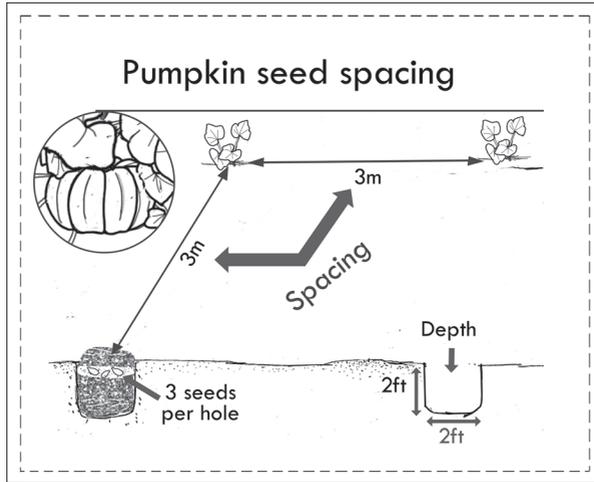
## CHART 4: Site selection

- Vegetables grow well on flatland, lowland and upland if terracing and raising of beds is practiced to control soil erosion.
- In lowlands, dig channels to drain or divert excessive water. Vegetables grow well in lowlands during the dry season (off season).
- Fertile loam soil is the best soil for growing vegetables.
- The site should not have tree shades as some trees have pests and diseases. They could damage the plants.
- The soil should not be rocky.
- The soil should be fertile or manure should be added.
- The soil should be well drained.
- Close proximity to home is ideal but vegetables are threatened by domestic birds and animals.
- The site should have good access to a water source.



## CHART 5: Land preparation

- 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 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.
- After clearing the land, plough the field for the first time and ensure that the soil has very small debris.
- If the field has perennial weeds, spray with glyphosate herbicide such as weedmaster or round up. Remember to contact an agriculture extension worker for guidance on herbicide.
- First and second ploughing are enough for pumpkin growing. Harrowing is not necessary because it does not need a fine tilth like the rest of the vegetables.



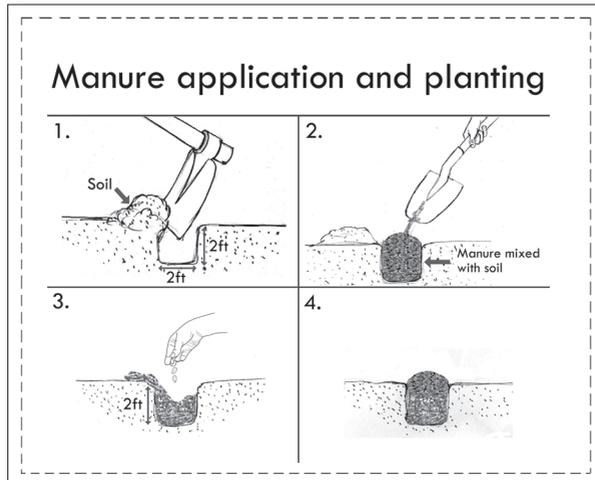
## CHART 6: Pumpkin vegetable spacing

Pumpkins are planted by directly sowing the seeds into the soil. The following factors are important to consider when preparing a site for the pumpkins:

- Pumpkins require a lot of water, it is therefore important to plant at the onset of rains.
- The soils should be well drained and deep.
- Plant a maximum of 3 seeds in each hole.
- After the seedlings emerge, thin to leave only 2 strong plants.
- Spacing should be at 3m x 3m or 10ft x 10ft to give a plant population with 900 plants per acre.

Proper spacing is important because it will ensure maximum growth and productivity.

Thinning should be done 2-3 weeks after after germination. The frequency of thinning depends on whether germination is low or high. In case of low germination, gaps filling should be done.



## CHART 7: Manure application and planting

Farmers are encouraged to apply organic fertilizer to improve on the soil fertility that results into high yields.

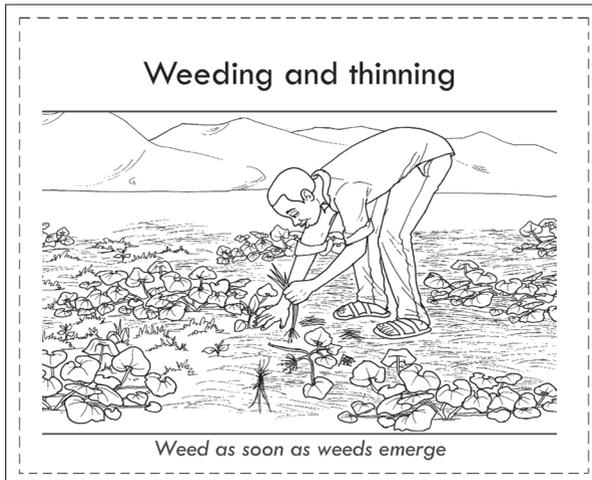
Organic manures are cheap and can be made using materials that are often readily available to farmers.

Such materials include:

- Animal and poultry droppings
- Coffee husks
- Plant remains (after harvesting)
- Food peelings (fruit, banana, sweet potatoes)

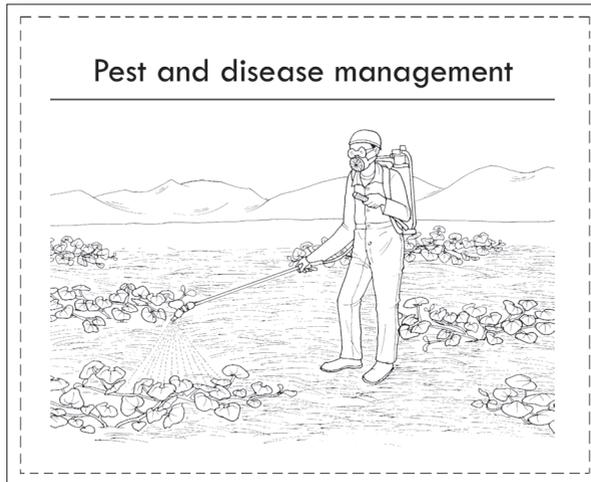
**Note:** Other fertilizers can also be good as long as these are also decomposed. Inorganic fertilizers e.g UREA, NPK can also be used but only after receiving advice from your extension worker and agrodealer.

Pumpkins are planted by directly sowing the seeds into the mound in the field. Dig a hole of 2ft x 2ft. Fill the hole with manure/fertilizer. Open a hole of about 1 inch, place 3 seeds and then cover with soil. Use spacing of 10ft x 10ft or 3m x 3m.



## **CHART 8: Weeding and thinning**

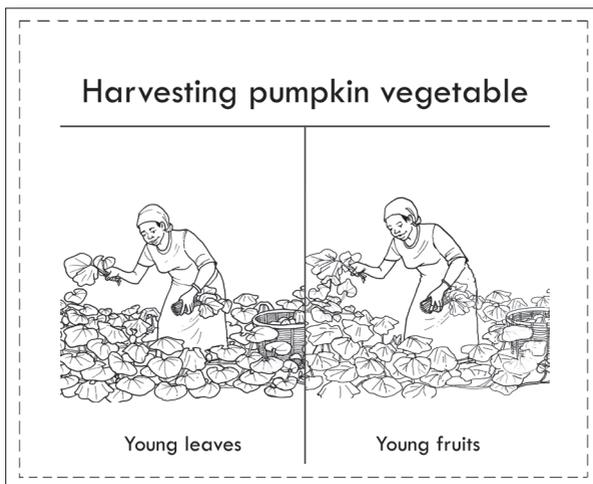
- Timely weeding will lead to increases in the yield.
- Timely weeding minimizes competition for food and light between weeds and pumpkin. It will give pumpkin better conditions to grow.
- Weeding also reduces pest and disease infestation at the early stages which will lead to increased yields.
- Weeding should be done as soon as weeds emerge and before the flowering of weeds. This will reduce the risk of weeds spreading.
- Thinning is done at the time of weeding. During thinning the less vigorous, off-types or relatives and diseased plants are removed. The good quality thinned plants can be sold or consumed at home.
- Rouging of off-types should be done at flowering and at fruiting (early maturity) when its easy to identify the off-types.



## **Chart 9: Pest and disease management**

- Pest and disease management should be a continuous effort by the farmer to ensure early intervention in case of an outbreak.
- Both organic and inorganic pesticides can be used to control pests and diseases.
- It is recommended to always seek advice from an agriculture extension worker on pest and disease identification and management.

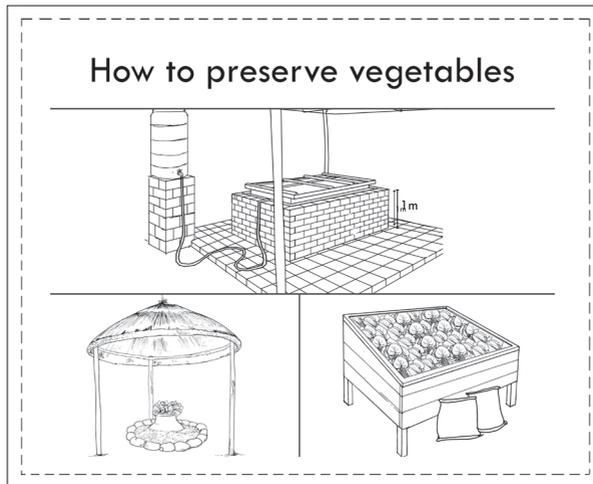
**Note:** *The farmer should monitor the field to ensure quick action is taken in case of break out of pests and diseases.*



## **CHART 10: Harvesting pumpkin vegetable**

**Leaves:** Start picking pumpkin leaves as early as 3-4 weeks after the plant germinates. Leaves are picked by hand. Harvest leaves that are still tender and near the tip of the plant. Remember to leave at least 3 leaves and a bud for re-growth.

**Young fruits:** When harvesting, pick healthy young fruits that still have the flower with it. Fruits are ready for harvest as a vegetable at 3-4 weeks after planting. The young fruits are soft and can be prepared as a vegetable as well. These are sliced into smaller pieces and boiled.



## Chart 11: How to preserve vegetables

There are several ways to preserve vegetables as explained below:

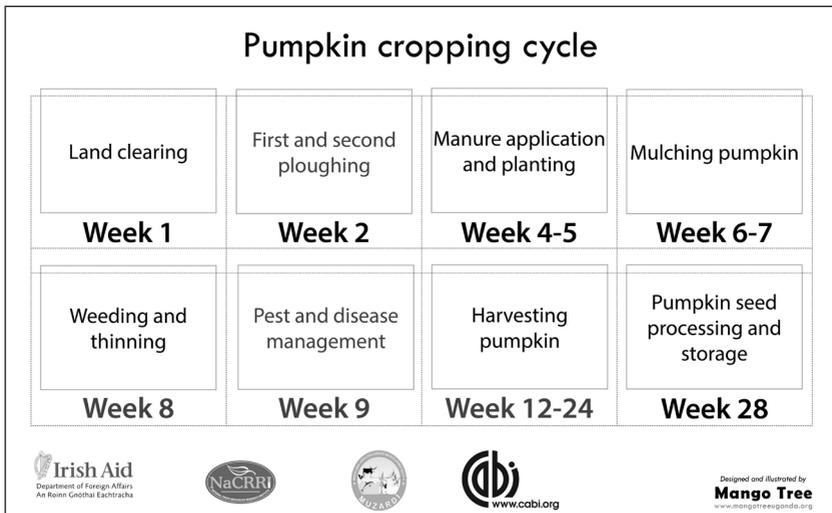
**Local refrigeration:** This is a 1m high construction made of bricks with 2 separate walls and sand/charcoal dust between the walls, preferably under a shade. Add an elevated water tank and use a small pipe to allow water to keep the sand/charcoal dust moist. The vegetables should be placed inside the structure on racks.

**Preservation using a pot:** African indigenous vegetables can also be stored for future consumption by placing harvested vegetables in a pot under a shade. Pile sand or charcoal dust around the pot and continue to keep the sand charcoal moist by regularly adding water. Do not pour water in the pot.

**Preservation using a solar dryer:** Vegetables can also be preserved by drying them using solar dryers after which they will be packaged for use during the dry season. Though vegetables can be dried traditionally under the sun, more nutrients are lost compared to the use of solar dryers, and it is therefore not a recommended practise.

# PART 4. DISCUSSION SESSION

## B) THE CROPPING CYCLE



### Week 1:

Land preparation is the first step for your farming venture. If you prepare the land properly, the rest of your farming activities will become much easier to complete.

Start with clearing or cutting all the tall grasses.

Remove trees and all heavy bushes and tree stumps.

Take care to also remove stones and any other obstacles from your field.

The result should be a field that is ready for ploughing.

Do not burn the bushes because burning exposes the soil to erosion and also causes loss of soil nutrients.



## Week 2:

First ploughing is done prior to the onset of rains to turn plant material into manure and while also breaking the soil to allow more water to enter. This process also increases the amount of air available in the soil.



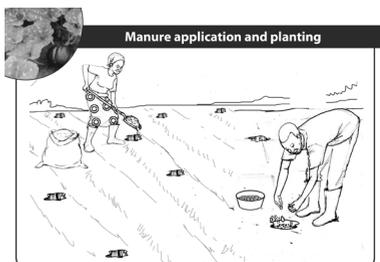
Depending on the resources available, the farmer can use a hand hoe, an oxen or a tractor.

If your field has perennial weeds such as couch grass, spear grass and wandering jew, spray using a herbicides like glyphosate, round up and weedmaster. Always contact a technical person for more guidance before buying once using herbicide.

A germination test should be carried out during this period to ensure that seeds are capable of germinating. It should also be of high germination percentage, not less than 85% in 2 weeks. Contact agro-dealers and seed producers for quality seed.

## Week 4-5:

Farmers are encouraged to use organic fertilisers to improve the fertility of their soil. It can be made from materials such as animal and crop dropping, coffee husks etc. Give the fertilizer time to decompose and then mix the soil with the seeds to prepare for planting.

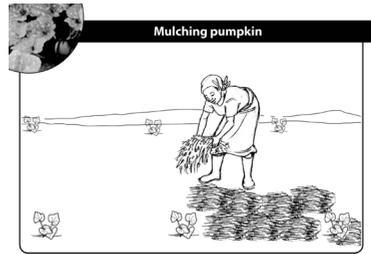


Plant at the onset of rain. Pumpkins are planted by directly sowing the seeds into the mound in the field. Plant at least 3 seeds in each mound, leave spacing of between 10 ft by 10 ft or 3m by 3m.

## Week 6-7:

Mulching is the covering of soil with grass. Mulching is important because it:

- Prevents weeds from emerging
- Adds soil fertility
- Helps the crops retain water for better growth and yield.



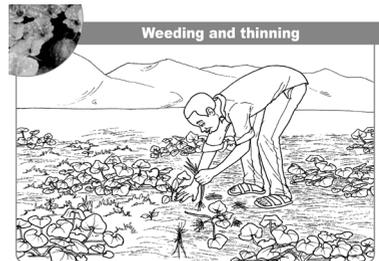
## Week 8:

Timely weeding will lead to increased yields because it will minimize competition for nutrients and light between the pumpkin plant and weeds.

Weeding will also reduce pest and disease infestation at the early stages which will again lead to increased yields.

Weeding should be done as soon as weeds emerge and especially before the flowering of weeds. This will reduce the spreading of the weeds.

Thinning is done at the time of weeding. During thinning the less vigorous, off-types or relatives and diseased plants are also removed.



## Week 9:

Pest and disease management should be continuous.

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

It is recommended to always seek advise from extension/technical staff on pest and disease identification and management.



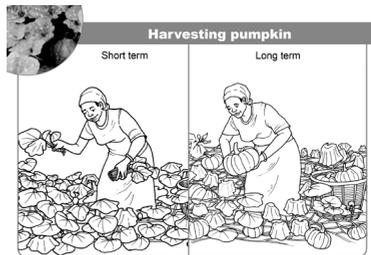
**Note:** The farmer should monitor the field to ensure quick action is taken in case of break out of pests and diseases.

## Week 12-24:

Pumpkin is ready for harvest starting from 3-4 weeks after germination. The crop can be harvested in two ways:

**Leaves:** Start plucking leaves as early as 3-4 weeks after the plant germinates. Pick the tender leaves from the tip of the plant and skin the stem to remove long hairs. Remember to leave at least 3 leaves and a bud for re-growth. Wash them and chop the leaves and the stems into very small pieces. Prepare into a stew using spices of your choice.

**Young fruits:** When harvesting, pick healthy young fruits that still have the flower with it. Fruits are ready for harvest as a vegetable at 3-4 weeks after planting. The young fruits are soft and can be prepared as a vegetable as well. These are sliced into smaller parts and boiled.



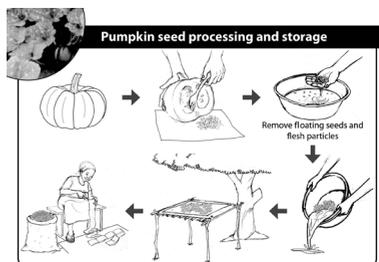
## Week 24:

**Long term:** Harvest only mature fruits by checking the pale holder to the fruit or listen to the sound when you hit it. Mature pumpkins make a hollow sound when slapped.

Only collect seeds from healthy and fully mature plants.

## Week 28:

**Step 1:** Identify mature fruits by checking the pale holder to the fruit or listen to the sound when you hit it. Mature pumpkins make a hollow sound when slapped. Harvest only the mature fruits.



**Step 2:** Cut the fruit open to extract fresh fruits using a stick or a knife. Extract the seeds by scooping the seeds on a flat surface or a basin of water and rub gently, do this several times till the seeds are completely detached from flesh particles.

**Step 3:** Stir to allow the pieces of flesh and skin sticking on the seeds to float. Gently remove the floating fruit skin and seed and then and tilt the container to allow any other floating seeds to pour out. The quality seeds will remain at the bottom. Repeat the washing several times with fresh water until all the flesh and skin are completely removed.

**Step 4:** Place the washed seeds in a bag or cotton cloth and hang in the shade for about 24 hours to remove excess water.

**Step 5:** Place the partially dried seeds on a flat plastic surface like a tarpaulin which is raised off the ground and not under direct sun light. Loosen any clump of seeds and stir 2 to 3 times daily so that seeds dry uniformly.

**Step 6:** Clean and package the seeds and store them in a cool, well ventilated and dry place.

# Facilitator's Notes

## How to make compost manure

### Materials:

Dry materials: Sorghum, maize, millet straws, bean, soybean, groundnut haulms, napier grass

Green materials: Weeds, hedge trimmings and food peelings

Animal wastes: Cow dung, poultry litter, goat and sheep droppings

Covers: Top soil, wood, plastic sheeting, carpet scraps and dry grass

Mixer: Water and a turn stick

1. Prepare a pit of reasonable depth. It can be any length depending on the amount of materials available.
2. Lay twigs or chopped dry materials at the bottom.
3. Add compost materials in layers, alternating moist and dry. Moist ingredients: food scraps, tea bags and seaweed. Dry materials: straw, leaves, sawdust pellets and wood ashes.
4. Add manure, green manure (napier grass and grass clippings) or any nitrogen source.
5. Keep compost moist. Water occasionally, or let rain do the job.
6. Cover with anything you have - wood, plastic sheeting, carpet scraps, topsoil or dry grass/straw to keep it moist, but not soaked and sodden.
7. Turn every few weeks give the pile a quick turn with a pitchfork or shovel.
8. Once your compost pile is established, add new materials by mixing them in, rather than by adding them in layers. Mixing or turning the compost pile is key to aerating the composting materials and speeding the process to completion.

**Note:** *If you want to buy a composter rather than build your own compost pile, you may consider buying a rotating compost tumbler which makes it easy to mix the compost regularly.*

## ***References:***

Association for Strengthening Agricultural Research in Eastern and Central Africa (ASARECA-2012); Production of Quality Seed of African Indigenous Vegetables - ***Training Manual***

National Agricultural Research Organisation; Nakati (*Solanum aethiopicum*) - ***Seed Production Brochure***.

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