

VEGETABLES

1. They are sources of income when a farmer decides to sell.
2. They are very good source of vitamin like vitamin A and C.
3. They act as appetizers for food e.g. onions and tomatoes.
4. They are a good source of minerals e.g. Iron, magnesium.
5. They help in controlling digestive problem like constipation
6. They can be used as animal feeds like cabbages to rabbits.
7. Vegetables growing provide employment for people working as attendants in vegetable gardens.
8. Vegetables are a good source of manure since they rot fast.
9. Leguminous vegetables fix nitrogen into the soil e.g. beans
10. They can act as cover crops hence controlling soil erosion.
11. Some vegetables have medical value e.g. malakwang, red amaranthus.

CLASSIFICATION OF VEGETABLES

Vegetables can be classified into two ways. i.e. according to the part eaten and family

ACCORDING TO PART EATEN.

1. **Leaf vegetables**
 - o Cabbages o Amaranthus o Spinach.
2. **Fruit vegetable**
 - o Egg plant o Tomatoes o Water melon o Cucumber o Pumpkin. o Okra
3. **Seed vegetables**
 - Cowpeas o G-nuts o Beans o Garden pea
 - o Field pea
4. **Root vegetables**
 - o Onions o Sugar beet o Garlic o Carrots o Irish potato o Turnip
 - o Radish
5. **Flower vegetables** o Cauliflower

Family classification

Here vegetables are grouped into six families:-

1. **Leguminosae (pulse)**

This include

- o Beans o Pigeon pea o G-nuts o Garden peas
- o Cowpeas

Solanaceae (Tomato family)

This include

- o Irish potatoes o Egg plant o Tomatoes o Sweet pepper

Brassicaceae (cabbage family)

It includes

- o Cabbage o Cauliflower o Radish o Turnip o Kale

4 **Cucurbitae (gourd family)**

Includes

- o Pumpkins
- o Water melon
- o Cucumber
- o Gourds.

5. **Alliaceae**

This includes

- o Onions
- o Leek
- o Garlic

6. **Apiaceae**

- o Carrots
- o Parsely
- o Celety
- o Carriander
- o Parsely.

7. **Amaranthaceae**

- o Amaranthus hybridus
- o A. dubius
- o A. caudatus

PROCEDURE FOLLOWED IN GROWING VEGETABLES

1. **Choosing the site.**

The site to be considered for growing vegetable should measure up to the following:-

- a. The soil should be deep and fertile. In case of low fertility fertilizers should be applied.
- b. Availability of water, the site should have enough water supply hence the site should be close to a water source.
- c. Distance from home. The site shouldn't be far from home for security reasons and easy management.
- d. The area should be free from frost and the farmer to effect this should avoid valley bottom.
- e. The place shouldn't be having shade since some vegetable like tomato and egg plant do not thrive well in shade.
- f. Gentle slope or flat land and require for fair drainage.

2. **Preparing a nursery bed.**

A nursery bed is an area where seedlings are grown before they are transferred to the actual vegetable field / garden. The seeds can be planted in a seed bed, seed boxes or soil blocks.

Treatment of planting materials o Seed dressing – coating seeds with pesticides e.g. copper Sulphate.

- o Chitting or encouraging sprouting e.g. in potato seeds.
- o Inoculation, usually done legumes where seeds are coated with right bacterial for nodule formation.
- o Hot water treatment against viral diseases e.g. in sugarcane and cassava.

Importance of a nursery bed.

- When propagating seeds which are too small to be planted directly into the soil.
- The crop seedlings are delicate and need great care
- Bulking up of planting materials is necessary like in sugarcane
- Helps in selecting healthy and strong seedlings.
- When cuttings to propagate the crop need special treatment e.g tea.

Procedure of making a nursery bed

- Remove all grasses, roots and tree stumps on the area.
- The place should be cultivated deeply to encourage proper root development.
- All large soil pieces should be broken down to encourage a fine bed.
- Incorporate manure containing phosphorous into the soil to improve fertility
- Leave the area to settle for Atleast 3 – 4 weeks before planting seeds
- Measure off the seed bed to a width of 1 metre and any length that you feel.

- Erect a shade on the prepared place to control light and water delivered to the seedlings.
- Make ridges across the bed where the seeds are to be planted.
- Place the seeds in the ridges and cover it with a thin layer of mulch to facilitate germination.
- Place a thin layer of mulch over the seeds to conserve soil moisture and control weeds.
- As soon as the seeds germinate the mulch should be removed since it may interfere with germination.
- The seeds should be watered twice each day in the morning and evening.
- After germination excess seedlings can be removed a practice called pricking out.
- At a later stage before transplanting seedlings are exposed to environmental conditions referred to as hardening off
- Transplanting should be done in the evening hour or morning to reduce the rate of water loss from the seedlings by transpiration.

3. **Preparation of a seed bed.**

A seed bed is a well prepared piece of land ready to receive planting materials.

- The land should be cleared of large bush, all trees and grasses
- All tree roots and stump should be removed in advance.
- The whole place should be deeply cultivated and big pieces of soil broken.
- The whole place should be measured to establish the size in accordance to the number of seedlings to be planted.
- The place should be leveled before planting seedlings.
- The whole vegetable should be along the contour of land to reduce erosion.

Nursery bed management

- Seedlings must be watered Atleast twice a day i.e in the morning and evening.
- Apply fertilizers to the seedlings to improve growth.
- Apply pesticides to control pests on the seedlings

- Spray fungicides on the seedlings to control fungal infections like damping off
- Provide a good shade over the nursery bed to control damage to seedling due to harsh environmental conditions
- Remove diseased and excess seedlings from the nursery bed i.e prick out to reduce disease spread and allow proper seedling growth.
- Weed the bed to reduce competition for nutrients and control disease spread

4. **Transplanting**

Precautions to be taken when transplanting

Seedlings in the nursery bed should be well watered before lifting to reduce root breaking

- Seedlings should be lifted with soil in their roots to control distorting of roots.
- Care should be taken not to damage roots as it may deter proper crop establishment and development. ○ Transplanting holes should be big enough to accommodate seedlings without bending roots since it may affect root development.
- Where fertilizers are used it should be thoroughly mixed with soil for efficient utilization by the seedlings.
- Seedlings should not be planted deeper than they were in the nursery for proper establishment.
- Transplanting should be done during the cool hours to reduce wilting of seedlings through excessive loss of water by transpiration.
- Seedlings should be watered after transplanting if the soil in the field is dry to provide adequate moisture for crop establishment and growth.

Transplanting the seedlings.

1. Only healthy, strong seedlings should be selected.
2. Watering of the nursery to soften the soil to ease transplanting and reduce root damage.
3. Transplanting should be done in the evening or in cool weather.
4. Thorough preparation of the seedbed by removing all tree stumps and roots remove any other vegetation Atleast two months before transplanting.
5. Dig holes before transplanting at the required spacing
6. Fill the holes with a mixed top soil and double supper phosphate or organic manure Atleast 2 -3 weeks before planting.
7. Top soil and sub soil should not be mixed but filled to holes separately
8. Transplant at the beginning of rain for easy crop establishment.
9. Provide temporary shade to the transplanted plant (seedlings)
10. Mulch around the seedling
11. Continue watering until the plant has fully established it's self.

5. **Application of fertilizers.**

- Vegetable require more of N, P and K which should be applied early for vigorous plant growth.

6. **Weeding**

Effective weed control is needed to ensure proper growth of the vegetable since they are more sensitive to competition.

7. **Disease and pest control.**

Vegetables are attacked by a number of fungal and bacterial diseases like dumping off, downy mildew, bacterial wilt, mosaic, dry rot, black rot, stem rot, and blight. The common pests are cut worms, termites, grasshoppers, caterpillars, mole crickets, aphids, thrips, nematodes and beetles.

8. **Harvesting**

Most vegetables are early maturing and are normally harvested manually after harvesting they should be kept in a cool place to that they don't go bad.

GROWING OF TOMATO SEEDLINGS FROM NURSERY BED PREPARATION TO TRANSPLANTING.

1. Select a good site for vegetable production
2. Remove all vegetation from the area where to prepare the seed nursery bed.
3. Cultivate deeply removing all roots from the bed.
4. Raise a nursery bed to facilitate good drainage.
5. Incorporate well rotten F.Y.M / compost or S.S.P fertilizer.
6. Level the soil by raking and remove any foreign material like stone, polyethene or glasses and break any big clods of soil.
7. Sow the seed at 0.5cm deep and cover lightly with soil
8. Spacing should be 15cm between the rows.
9. Mulch the bed lightly and remove after seeds have germinated
10. Erect a shade over a nursery bed to protect seedlings from harsh environmental conditions.
11. Water from the top of the shade twice a day, morning and evening using a watering can.
12. When the seedlings grow up to about 2.5cm high, prick out to ensure proper spacing and growth.
13. Weeding should be carried out with a garden trowel or suitable tool
14. Spraying seedlings with copper fungicides such as ridomil and diethane M45 to control late blight and other pests should be done.
15. As seedlings near 15cm in height, reduce the shade to ensure hardening off.
16. A week before transplanting water the seedling to ensure the soil is soft to avoid breaking roots.
17. A week before transplanting, remove all the shade to ensure full hardening off.

18. Transplanting should be done in the evening or cloud cast day to reduce water loss from the seedlings.
19. At transplanting use a trowel to remove seedling with soil around the roots.
20. At transplanting use a trowel to remove seedling with soil around the roots.
21. Water immediately after transplanting.

Diseases of tomato.

Tomato Blight-It's a fungal disease, it attacks leaves, stems and fruits causing brown – black sunken lesions

- It's very severe in humid weather.
- It can be controlled by spraying with copper fungicides such as ridomil and diethane M45.

Bacterial Wilt - Its caused by pseudomonas solanacearum, it causes wilting and death of growing point and upper leaves.

- Its airborne and controlling its spread is difficult. However the following control measures are recommended:-
- Remove and burn all infected plants.
- Crop rotation
- Use resistant varieties
- Sterilize the soil by burning grass on top or apply formalin or boil
- By fallowing

Tomato Mosaic

-This is a rival disease, which causes curling and molting of leaves thus reducing the area of photosynthesis.

- It may be transmitted from tobacco shred or a smoker's hand

Its controlled by

- planting resistant healthy seeds
- burning all affected plants and planting healthy seeds
- smokers should wash their hands before touching tomato plants.

Pruning tomato

- One or two stems are left per plant.
- Remove lateral shoot weekly
- When 6 – 8 trusses of flowers pinch out the growing it this pruning will encourage the growth of good size marketable tomato.
- Remove leaves close to the ground to prevent the entry of blight.

Importance of pruning tomatoes

1. Improves the quality of fruits by exposing each to enough light.

2. Improve yields by ensuring big fruits due a reduced competition for nutrients between various branches
3. Makes spraying against disease more easy
4. Removes a micro climate that can encourage pests.
5. Harvesting becomes easier since fruits are properly exposed
6. Makes movement with in the garden simpler.

Staking tomatoes

There are several methods of staking tomato the common method includes:-

- Single staking
- Cross staking using a wire cross poles.

Importance of staking tomatoes

1. Controls fungal diseases that can attack tomato fruits especially soil borne diseases.
2. Improves the quality of fruits by preventing contact between soil and fruits.
3. Prevents pest attack of tomatoes by crawling pests
4. Exposes fruits to adequate air and light which improves quality.
5. Reduces wastage of pesticides by exposing fruits for easy spraying.
6. Make movement with in the garden easy.

