Ministry of Education
Curriculum Planning and Development Division

Level: CSEC

Subject Area: Agricultural Science

SECTION B: CROP PRODUCTION

5. Crop management

Specific objective(s):

5.1 Cultivate a fruit, root, and leaf crop;

Fruit crop – for example, bean, tomato, sweet pepper, hot pepper, cucumber, **ochro**.

SBA Skills:

 # 6. Demonstrate land preparation techniques:

(a) land clearing; (b) primary and secondary tillage; (c) drain formation; and, (d) ridges and furrows.

#11. Transplanting and proper spacing.

#12. Demonstrate cultural practices associated with crop production:

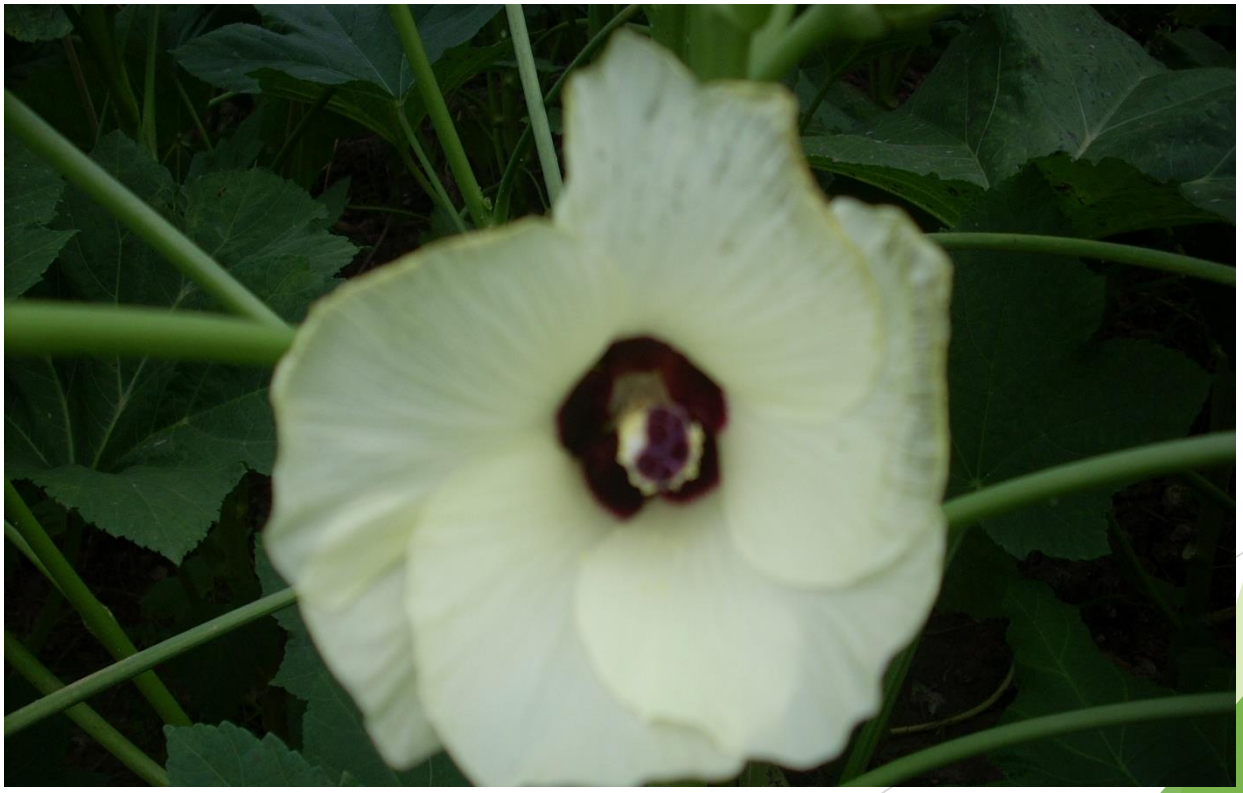
(a) moulding; (b) mulching; (c) staking; (d) pruning; **(e) irrigating; (f) weed control; and, (g) pests and diseases control.**

Crop Management

Cultivating A Fruit Crop: Ochro

How To Grow Ochro

Abelmoschus esculentus



Objectives

Explain the cultivation of **Ochro** under the following headings:

1. Ochro varieties
2. Land preparation
3. Planting and Spacing requirements
4. Cultural practices:
    1. Irrigation
    2. Moulding
    3. Mulching
    4. Weed control
    5. Pest Control
    6. Disease Control
5. Fertilizer Application
6. Harvesting and Preparation for market

Ochro Varieties

- Ochro, is a commonly grown vegetable in the Caribbean, and belongs to the family Malvaceae. Its scientific name is *Abelmoschus esculentus*
- The edible part of the Ochro plant is a long slender immature pod
- The pod is generally ribbed and spineless. It is used as a cooked or steamed vegetable with a very good nutritive value
- Three common varieties of Ochro grown in Trinidad and Tobago are:
  1. Clemson Spineless
  2. Local White
  3. Chaguaramas

Land Preparation- Land Clearing

- Remove Weeds and crops residues either:
  - Manually using cutlass or
  - Mechanically using a mechanical brush cutter or
  - Chemically using weedicides

Land Preparation- Tillage

- PRIMARY TILLAGE
  - Break up soil into large clumps using a garden fork
- SECONDARY TILLAGE
  - Refine soil into a fine tilth, either manually using rakes and hoes or mechanically using a mechanical rotovator
  - At this stage, well-rotted pen manure can be incorporated into the soil.

Land Preparation- Drain and Bed Formation

- Using a Spade, Cut drains 30 cm wide and form raised beds approximately 1m x 5m.

Planting material and recommended spacing

- 2 to 3 week old, well-hardened Ochro seedlings are sown directly in rows 45cm to 60cm apart and between rows 60cm to 90cm.

Drainage and Irrigation

Soils need to be well drained and moisture levels maintained close to field capacity.

- Irrigation
  - Water regularly as needed throughout the growing season, manually using watering can. Automated sprinkler systems can also be used.
  - Moisten the soil thoroughly when watering.

Application of Inorganic Fertilizers

- From the 15th day after transplanting, apply a nitrogen fertilizer e.g. Calcium nitrate or Urea or 20:10:10 at a rate of 10-20gm per plant
- When flowers appear apply 13:13:21 or 12:12:17:2 at a rate of 20-30gm per plant. Apply every 2-3 weeks.
- Apply all fertilizers as a Top dressing in the leaf drip area

Pests

Source: https://www.pinterest.com/pin/232357662003021427/

- Aphids and bugs and beetles attack leaves. Use an insecticide e.g. Malathion at a rate of 5ml/litre of water

Disease Control e.g. Leaf Spot and Sooty Mold

Source: https://www.sciencedirect.com/topics/agricultural-and-biological-sciences/cercospora

- Fungal infection e.g. leaf spot and sooty mold can be controlled using a fungicide e.g. Trimiltox forte or Dithane M45 at a rate of 15gm/litre of water

Cultural Practices – Weed Control

- Weeds can be controlled by:
  - Hand pulling
  - Using a Selective Herbicide to chemically control weeds

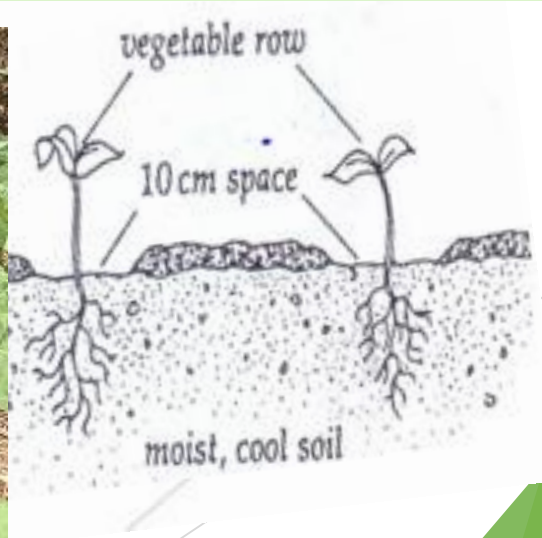
Cultural Practices – Moulding

- Each week, lightly mould the soil around the plant
- Moulding also
  - Removes weeds
  - Breaks up any surface crust allowing more water and fertilizers to reach the roots.

Cultural Practices- Mulching

Ochro thrive well in soil that is well drained and moist

- Mulching
  - conserves soil moisture during the dry season
  - Reduces soil water loss due to evaporation
  - Protects the plant from soil borne diseases spread by soil splash.
  - Controls weeds during the rainy season
- Apply mulch around the base of plants, ensuring the mulching material does not come into direct contact with the plant.



Harvesting and Preparation for Market

- Harvesting
  - Harvest every 3-5 days as the pods are 7.5 – 12.5cm long. Using a sharp knife the pods should be picked when they are bright green in colour.
  - Preparation for Market
  - Wash and allow to air dry
  - Place in plastic bags
  - Store in a cool dry place or refrigerate for prolonged storage

EVALUATION

1. What are THREE varieties of Ochro that are cultivated in Trinidad and Tobago?
2. What is the recommended spacing for Ochro?
3. Explain TWO benefits of moulding.
4. Define the term “mulching” and identify TWO benefits of mulching.
5. Outline the steps required to plant Ochro from land preparation to planting.

ANSWERS

1. What are THREE varieties of Ochro that are cultivated in Trinidad and Tobago?

Three common varieties of Ochro grown in Trinidad and Tobago are:

1. Clemson Spineless
2. Local White
3. Chaguaramas

2. What is the recommended spacing for Ochro?

2 to 3 week old, well-hardened Ochro seedlings are sown directly in rows 45cm to 60cm apart and between rows 60cm to 90cm.

ANSWERS

3. Explain TWO benefits of moulding.

- Moulding also:
  - Removes weeds
  - Breaks up any surface crust allowing more water and fertilizers to reach the roots.

ANSWERS

4. Define the term “mulching” and identify TWO benefits of mulching.

Mulching is the application of material (organic or inorganic) on soil surface in an attempt to control soil moisture during the dry season.

Two benefits of Mulching: Mulching reduces soil water loss due to evaporation. It also protects the plant from soil borne diseases spread by soil splash.

ANSWERS

5. Outline the steps required to plant Ochro from land preparation to planting.

1. Remove Weeds and crops residues Manually using cutlass or Mechanically using a mechanical brush cutter or Chemically using weedicides

2. PRIMARY TILLAGE and SECONDARY TILLAGE

Break up soil into large clumps using a garden fork. Refine soil into a fine tilth, either manually using rakes and hoes or mechanically using a mechanical rotovator. At this stage, well-rotted pen manure can be well incorporated into the soil.

3. Using a Spade, Cut drains 30 cm wide and form raised beds approximately 1m x 5m.

4. 2 to 3 week old, well-hardened Ochro seedlings are sown directly in rows 45cm to 60cm apart and between rows 60cm to 90cm.