Level: Forms 4 & 5

CSEC Agricultural Science Syllabus

SECTION B: CROP PRODUCTION

5. Crop management

Specific objective(s):

5.1 Cultivate a fruit, root, and leaf crop;
Leaf crop – for example, lettuce, cabbage, Chinese cabbage (pakchoi), spinach, **seasoning herbs. (CELERY)**

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 Seasoning Herbs:

Celery

Objectives

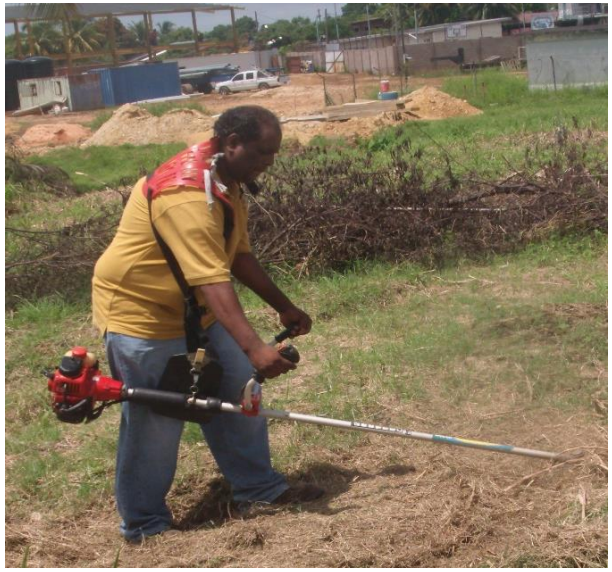
Explain the cultivation of **Celery** under the following headings:

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

Land Preparation- Land Clearing

- Remove Weeds and crops residues either by:
  - Manually using a cutlass
  - Mechanically using a mechanical brush cutter or weed wacker
  - Chemically using weedicides/herbicides

Manual weed control using a cutlass



Mechanical weed control using a mechanical brush cutter

Chemical weed control using weedicide/ herbicide

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 (rototiller)
  - At this stage, well-rotted pen manure can be incorporated into the soil.

Primary tillage using a garden fork

Secondary tillage using a rototiller

Land Preparation- Drain and Bed Formation

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

Land Preparation- Prepared Bed

Preparation of celery seedlings for transplanting

1. Select hardened seedlings
2. Saturate tray with water just prior to transplanting. This ensures easier removal of seedlings from the speedling tray.

Preparation of celery seedlings for transplanting

- Hold seedling firmly between thumb and index finger close to base of stem and gently remove from speedling tray.

Planting material and recommended spacing

- Transplant celery seedlings
- Spacing:
  - Within row spacing = 25 cm apart
  - Between row spacing = 25 cm apart

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 irrigation systems can also be used e.g. overhead sprinkler, drip irrigation
  - Ensure that the soil is moistened thoroughly when watering

Using a watering can to irrigate crop

Using a overhead irrigation to irrigate crop

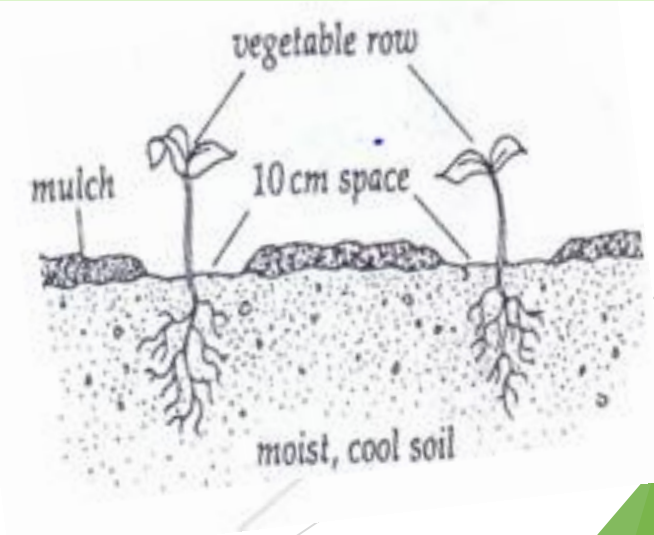
Cultural Practices – Weed Control

- Weeds can be controlled by:
  - Hand pulling
  - Apply mulch to suppress weed growth
  - Using a Selective Herbicide to chemically control weeds

Cultural Practices- Mulching

Celery 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.



Cultural Practices – Moulding

- Place the hoe out side the leaf drip area of the plant and gently pull soil around the plant.
- Benefits of Moulding:
  - Removes weeds
  - Breaks up any surface crust allowing more water and fertilizers to reach the roots.

Application of Inorganic Fertilizers

1. Ten days after transplanting apply 12-24-12 at 5 g per plant around base.
2. Fertilize every 10-15 days with 20-10-10 at 4 grams per plant or alternate with calcium nitrate at 5 g per plant.

Disease Control e.g. Fungal Leaf Spot

- Yellow spots on outer leaves that become enlarged to form gray-brown streaks may be due to celery early blight or *Cercospora*
- This leaf spot disease is a fungal disease spread by heavy rainfall or over-watering and warm temperatures.
- Fungal infection can be controlled using a fungicide e.g. *Trimiltox forte* or *Dithane M45* at a rate of 15 g/l of water

Sourcehttps://gardener.fandom.com/wiki/Septoria_leaf_spot_of_celery

Harvesting and Preparation for Market

- 80-90 days after transplanting, the plants should be ready for harvesting .
- The entire plant is raised to extract the root.
- The leaves of the plant are then severed at the base at the lowest point above the root

Harvesting and Preparation for Market

- Harvested Celery Stalks

Harvesting and Preparation for Market

- Removed dried and damaged stalks
- Wash celery stalks thoroughly
- Tie stalks into bundles
- Package and store in a cool dry place

Harvesting and Preparation for Market

- Harvested celery stalks ready for market

EVALUATION

1. Identify the recommended spacing for planting celery.
2. List 4 benefits of mulching.
3. Explain the recommended treatment for fungal leaf spot in celery.
4. List 2 benefits of moulding.

ANSWERS

1. Identify the recommended spacing for planting celery?

Within row spacing = 25 cm apart Between row spacing = 25 cm apart

2. List 4 benefits of 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

ANSWERS

3. Explain the recommended treatment for fungal leaf spot in celery.

Fungal infection such as leaf spot can be controlled using a fungicide e.g. *Trimiltox forte* or *Dithane M45* at a rate of 15 g/l of water

4. List 2 benefits of moulding.

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