

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: Hot Pepper

How To Grow Hot Pepper

Capsicum chinense var. *Scotch Bonnet*



Objectives

Explain the cultivation of Hot Pepper under the following headings:

1. Land preparation
2. Planting and Spacing requirements
3. Cultural practices:
 - a) Irrigation
 - b) Weed control
 - c) Moulding
 - d) Pest Control
 - e) 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



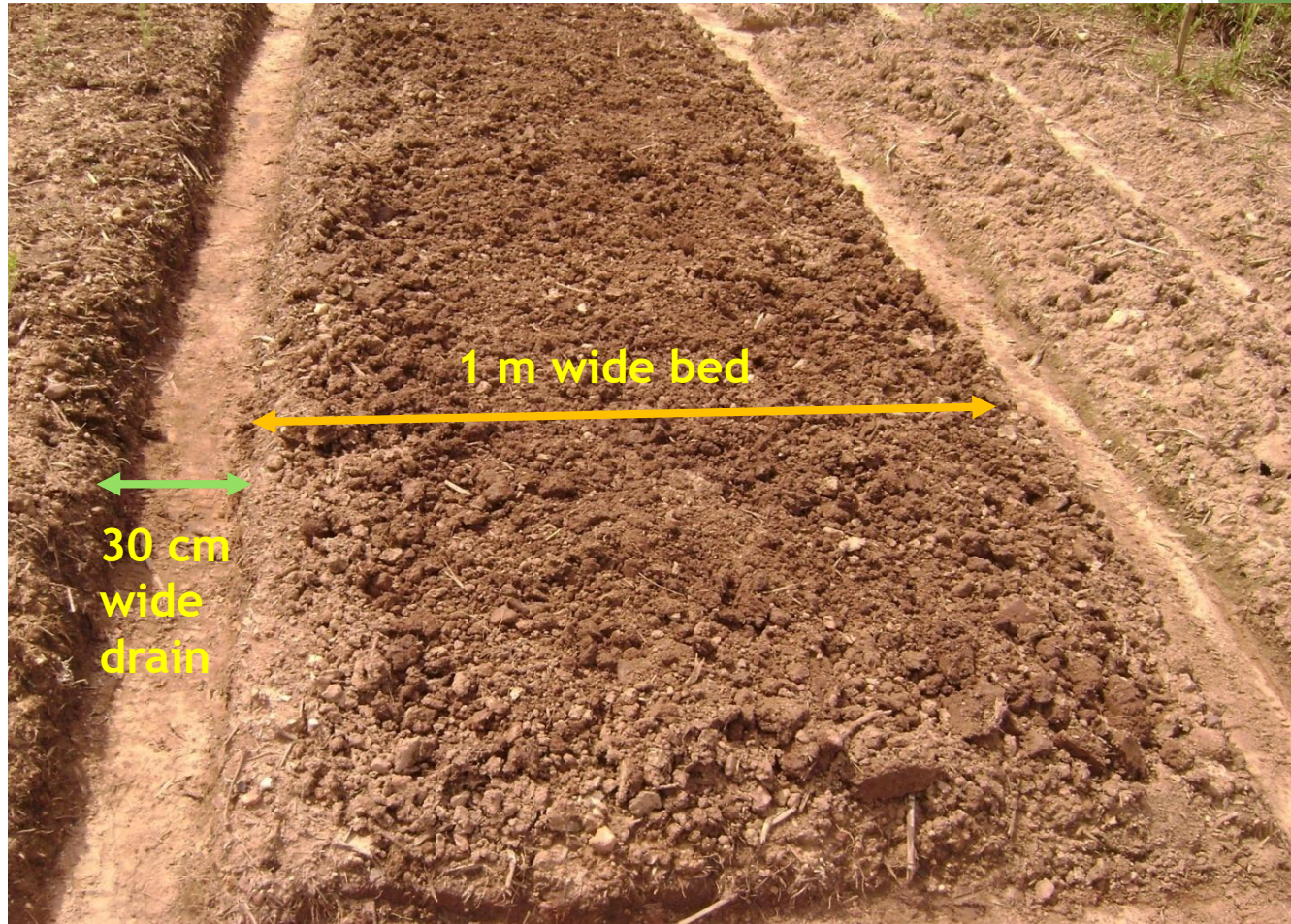
Secondary tillage using a rototiller

Land Preparation- Drain and Bed Formation



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

Land Preparation- Prepared Bed



Planting material and recommended spacing



- ▶ Transplant 2 to 3 week old, hardened hot pepper seedlings
- ▶ Spacing:
 - ▶ Within row spacing = 60 cm to 90cm apart
 - ▶ Between rows spacing = 60cm to 90cm 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 an overhead irrigation to irrigate crop

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.



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



Application of Inorganic Fertilizers

- ▶ The recommended rates for mineral fertilizers is
 - ▶ 400 - 600 kg NPK/ha in a 4:1:3 N:P:K proportion
- ▶ Fertilizer application can be scheduled as follows:
 - ▶ 1st application (basal application)
 - ▶ 1/3 the total requirement of NPK (170kg/ha)
broadcast evenly over the field during bed formation.
 - ▶ 2nd application (after transplanting)
 - ▶ Can be fertigated with a water soluble fertilizer e.g. Nutrex @ 2.5 L/ha
 - ▶ 3rd application
 - ▶ Apply the remaining 2/3 of the required NPK fertilizer (340 kg/ha) as a side dressing at the appearance of the first flower buds



Pest Control e.g. Mites and White flies

► Mites:

- Use an insecticide e.g. Cascade @ 1-2 tsp/gal every 5 days
 - Start immediately after transplanting
- Use Torque between Cascade sprays to control adult stages



Source: <https://chilli-seedz.com/15-2/chilli-pests/>

► Whiteflies, Thrips, Aphids

- Use an insecticide e.g. Admire @ 4-5 tsp/gal 1-2 weeks after transplanting to provide control during vegetative growth

Disease Control e.g. Bacterial Leaf Spot and *Phytophthora* Root Rot

- ▶ During the rainy season both Bacterial Leaf Spot and *Phytophthora* can be a problem. A copper based fungicide can be used to control these organisms
 - ▶ Bacterial spot - use Mankocide @ 2-4 tbsp/gal every 5-7 days
 - ▶ *Phytophthora* Root Rot - Drench root area with Banrot @ 2tsp/gal



P. Lopes, UMass

Source: <https://ag.umass.edu/greenhouse-floriculture/photos/pepper-bacterial-leaf-spot-xanthomonas-campestris>

Harvesting and Preparation for Market

- ▶ Usually 3 months after transplanting, the peppers are ready for harvesting
- ▶ The harvesting period continues for 3-4 months
- ▶ Readiness of fruits for harvest
 - ▶ Fruits should be mature, firm, shiny and vary in colour from green to yellow to orange to red
- ▶ Harvest fruits by cutting off fruits with stems attached. Harvest early in the morning and avoid picking during rainy conditions
- ▶ Place harvested fruits in well-ventilated baskets and carry immediately to a shady area
- ▶ Discard diseased and blemished fruits
- ▶ Gently wipe peppers to remove soil and stains.
- ▶ Do not over pack storage containers to avoid crushing the peppers
- ▶ Store under cool/refrigerated conditions



Source:
<https://pepperdatabase.org/variety/showVariety/Scott-Bonnet-Mojito>

EVALUATION

1. What are the recommended planting material and spacing for hot peppers?
2. What are the recommended rates for mineral fertilizers when cultivating hot peppers?
3. Identify 2 pests of hot peppers and explain how these can be controlled?
4. Identify 2 diseases of hot peppers and explain how these can be controlled?

ANSWERS

1. What is the recommended planting material and spacing for Hot Peppers?

- ▶ Transplant 2 to 3 week old, hardened hot pepper seedlings
- ▶ Spacing: Within row spacing = 60 cm to 90cm apart. Between rows spacing = 60cm to 90cm apart.

2. What are the recommended rates for mineral fertilizers when cultivating hot peppers?

Fertilizer application can be scheduled as follows:

- ▶ 1st application (basal application)
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ANSWERS

3. Identify 2 pests of hot peppers and explain how these can be controlled?

Mites:

Use an insecticide e.g. Cascade @ 1-2 tsp/gal every 5 days

Start immediately after transplanting

Use Torque between Cascade sprays to control adult stages

Whiteflies, Thrips, Aphids

Use an insecticide e.g. Admire @ 4-5 tsp/gal 1-2 weeks after transplanting to provide control during vegetative growth

4. Identify 2 diseases of hot peppers and explain how these can be controlled?

During the rainy season both Bacterial Leaf Spot and *Phytophthora* can be a problem. A copper based fungicide can be used to control these organisms

Bacterial spot - use Mankocide @ 2-4 tbsp/gal every 5-7 days

Phytophthora Root Rot - Drench root area with Banrot @ 2tsp/gal