

## **HORTICULTURE CROP PRODUCTION**

**UNIT CODE:** 0811 551 03A

**TVET CDACC UNIT CODE:** AGR/CU/EXT/CR/03/4/MA

**UNIT DURATION:** 100 HOURS

### **Relationship to Occupational Standards**

This unit addresses the Unit of Competency produce horticulture crops: it involves Preparation of planting materials, preparation of crop seedbed, planting horticultural crops, harvesting horticulture crop and processing horticulture crops products.

### **Unit Description**

This unit specifies competencies required to produce horticulture crops.

### **Summary of Learning Outcomes**

By the end of this unit, the learner should be able to:

| <b>S/No</b>  | <b>Learning Outcomes</b>             | <b>Duration (Hours)</b> |
|--------------|--------------------------------------|-------------------------|
| 1.           | Prepare planting materials           | 15                      |
| 2.           | Prepare crop seedbed                 | 15                      |
| 3.           | Plant horticulture crops             | 20                      |
| 4.           | Manage horticulture crops            | 20                      |
| 5.           | Harvest horticulture crops           | 10                      |
| 6.           | Process horticulture crops products. | 20                      |
| <b>Total</b> |                                      | <b>100</b>              |

### **Learning Outcomes, Content and Suggested Assessment Methods**

|                                      |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                           |
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| <p>1. Prepare planting materials</p> | <p><b>Theory</b></p> <p>1.1 planting materials preparation</p> <p>1.1.1 Definition of terms</p> <p>1.1.2 land preparation tools and equipment</p> <p>1.1.2.1 Axes</p> <p>1.1.2.2 Panga</p> <p>1.1.2.3 Rake</p> <p>1.1.2.4 Slasher</p> <p>1.1.2.5 Tillage tools/equipment/machinery</p> <p>1.1.2.6 Fork jembe</p> <p>1.1.2.7 Harrows</p> <p>1.1.2.8 Hoe</p> <p>1.1.2.9 Tractor</p> <p>1.1.2.10 Equipment</p> <p>1.1.2.11 Mower</p> <p>1.1.2.12 Rotavator</p> <p>1.1.2.13 Wheelbarrow</p> <p>1.1.2.14 Ridgers</p> <p>1.1.2.15 Mouldboard plough</p> <p>1.1.2.16 Disc plough</p> <p>1.1.2.17 Disc harrow</p> <p>1.2 land preparation tools and equipment use</p> <p>1.3 land preparation tools and equipment maintenance</p> <p>1.4 planting materials</p> <p>1.4.1 Types of planting materials</p> <p>1.4.1.1 Seeds and seedlings</p> <p>1.4.1.2 Splits</p> | <ul style="list-style-type: none"> <li>• Written tests</li> <li>• Projects</li> <li>• Interviews/ Oral questions</li> <li>• Individual/group assignments</li> <li>• Practicals</li> </ul> |
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|                        | 1.4.1.3 Crowns<br>1.4.1.4 Slips<br>1.4.1.5 Cuttings<br>1.4.1.6 Suckers<br>1.4.1.7 Vines                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                                                                          |
| 2 Prepare crop seedbed | <b>Theory</b><br>2.1 Land clearing<br>2.2 Importance of land clearing<br>2.3 Methods of land clearing<br>2.3.1 manual clearing<br>2.3.2 mechanical clearing<br>2.3.3 controlled burning<br>2.3.4 chemical clearing<br>2.3.5 grubbing<br>2.3.6 grazing<br>2.4 . Tillage operations<br>2.4.1 definition of terms<br>2.4.2 importance of tillage<br>2.4.3 Types of tillage<br>2.4.3.1 Primary tillage<br>2.4.3.2 Secondary tillage<br>2.4.3.3 Tertiary tillage<br>2.4.3.4 Zero/minimum tillage<br><b>Practice</b><br>2.5 carry out soil conservation measures<br>2.5.1 Contour planting<br>2.5.2 Terraces<br>2.5.3 Gabions<br>2.5.4 Mulching<br>2.5.5 Cover cropping<br>2.5.6 Minimum tillage<br>2.5.7 Crop rotation<br>2.5.8 Intercropping | <ul style="list-style-type: none"> <li>• Written tests</li> <li>• Projects</li> <li>• Interviews/ Oral questions</li> <li>• Individual/group assignments</li> <li>• practical</li> </ul> |

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|                             | 2.6 carry out tillage operations                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                                                                                                                           |
| 3 Plant horticulture crops  | <p><b>Theory</b></p> <p>3.1 horticulture crops establishment</p> <p>3.1.1 types of farm inputs</p> <p>3.1.1.1 inorganic fertilizer</p> <p>3.1.1.2 Vegetative propagation materials</p> <p>3.1.1.3 Manures</p> <p>3.1.2 methods of planting horticulture crops</p> <p>3.1.2.1 Direct seeding</p> <p>3.1.2.2 Transplanting</p> <p>3.1.2.3 Drilling</p> <p>3.1.2.4 Broadcasting</p> <p>3.1.2.5 Row planting</p> <p>3.1.3 advantages and disadvantages of various planting methods</p> <p>3.2 horticulture crops planting records preparation</p> <p><b>Practice</b></p> <p>3.3 carry out the establishment of different horticulture crops.</p> | <ul style="list-style-type: none"> <li>• Written tests</li> <li>• Projects</li> <li>• Interviews/ Oral questions</li> <li>• Individual/group assignments</li> <li>• practical</li> </ul>  |
| 4 Manage horticulture crops | <p><b>Theory</b></p> <p>4.1 Horticulture crop management.</p> <p>4.1.1 Definition of terms</p> <p>4.1.2 management practices in horticulture crops</p> <p>4.1.3 importance of management practices.</p> <p>4.2 Types of horticulture crops management practices.</p> <p>4.2.1 Mulching</p>                                                                                                                                                                                                                                                                                                                                                   | <ul style="list-style-type: none"> <li>• Written tests</li> <li>• Projects</li> <li>• Interviews/ Oral questions</li> <li>• Individual/group assignments</li> <li>• Practicals</li> </ul> |

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|                                 | <p>4.2.2 Gapping</p> <p>4.2.3 Thinning</p> <p>4.2.4 Training</p> <p>4.2.5 Fertilizer application</p> <p>4.2.6 Pruning</p> <p>4.2.7 Trellising</p> <p>4.4 prepare horticulture crops management records</p> <p><b>Practice</b></p> <p>4.3 Carry out management practices in horticulture crops.</p>                                                                                                                                                                                                                                                                                                                               |                                                                                                                                                                                          |
| 5 5. Harvest horticulture crops | <p><b>Theory</b></p> <p>5.1 Harvesting horticulture crops</p> <p>5.1.1 Definition of terms</p> <p>5.1.2 Importance of timely harvesting of perennial crops</p> <p>5.2 Harvesting tools and equipment</p> <p>5.2.1 Sickle</p> <p>5.2.2 Hoes and shovels</p> <p>5.2.3 Harvesting knife</p> <p>5.2.4 Buckets and baskets</p> <p>5.2.5 Pruning shears</p> <p>5.3 uses of harvesting tools and equipment in horticulture crops</p> <p>5.4 maintenance of harvesting tools and equipment in horticulture crops</p> <p>5.5 maturity indices in horticulture crops</p> <p>5.5.1 indices</p> <p>5.5.1.1 colour</p> <p>5.5.1.2 texture</p> | <ul style="list-style-type: none"> <li>• Written tests</li> <li>• Projects</li> <li>• Interviews/ Oral questions</li> <li>• Individual/group assignments</li> <li>• Practical</li> </ul> |

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|                                               | <p>5.5.1.3 size and shape</p> <p>5.5.1.4 firmness</p> <p>5.5.2 importance of maturity indices in horticulture crops</p> <p>5.6 Methods of harvesting horticulture crops</p> <p>5.6.1 Hand picking</p> <p>5.6.2 Use of tools</p> <p>5.6.3 Use of machinery</p> <p>5.7 prepare harvesting records</p> <p><b>Practice</b></p> <p>5.8 carry out establishment of horticulture crops</p> <p>5.9 Carry out harvesting of horticulture crops</p>                                                                                       |                                                                                                                                                                                           |
| <p>6. Process horticulture crops products</p> | <p><b>Theory</b></p> <p>1.1 Process horticulture crops products</p> <p>1.1.1 Definition of terms</p> <p>1.1.2 Importance of processing horticulture crops products</p> <p>1.2 processing tools and equipment and machines</p> <p>1.2.1 Blender</p> <p>1.2.2 Mortar and pestle</p> <p>1.2.3 Weighing scale</p> <p>1.2.4 Knives/cutting materials</p> <p>1.2.5 Weighing cup</p> <p>1.2.6 Bowl choppers</p> <p>1.2.7 Bandsaws</p> <p>1.2.8 Slicers</p> <p>1.2.9 Marinating</p> <p>1.2.10 vacuum tumblers</p> <p>1.2.11 Peelers</p> | <ul style="list-style-type: none"> <li>• Written tests</li> <li>• Projects</li> <li>• Interviews/ Oral questions</li> <li>• Individual/group assignments</li> <li>• Practicals</li> </ul> |

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|  | 1.3 Uses of processing tools and equipment<br>1.4 Maintenance of processing tools and equipment<br>1.5 Methods of processing horticulture crops products<br>1.5.1.1 Cleaning and grading<br>1.5.1.2 Cooling and storage<br>1.5.1.3 Canning<br>1.5.1.4 Juicing and pulping<br>1.5.1.5 pickling<br>1.6 Distribution of horticulture crops products<br>1.7 Preparation of horticulture crops product records<br><br><b>Practice</b><br>1.8 Carry out processing of horticulture crops products using various methods |  |
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### Suggested Methods of Instruction

- Role playing
- Group discussion
- Direct instruction

### Recommended Resources for 25 Trainees

| S/No.    | Category/Item             | Description/Specifications | Quantity | Recommended Ratio<br>(Item: Trainee) |
|----------|---------------------------|----------------------------|----------|--------------------------------------|
| <b>A</b> | <b>Learning Materials</b> |                            |          |                                      |
| 1.       | Journals                  |                            | 5 pcs    | 1:5                                  |
| 2.       | writing materials         |                            | 50       | 2:1                                  |
| 3.       | Charts                    |                            | 1        | 1:25                                 |
| 4.       | PowerPoint presentations  | For trainer's use          |          |                                      |

|          |                                                 |                   |       |             |
|----------|-------------------------------------------------|-------------------|-------|-------------|
| 5.       | Whiteboard                                      |                   | 1     | 1:25        |
| 6.       | Assorted color of whiteboard markers            | For trainer's use |       |             |
| 7.       | Printers                                        |                   | 1     | 1:25        |
| 8.       | Projector                                       |                   | 1     | 1:25        |
| <b>B</b> | <b>Learning Facilities &amp; infrastructure</b> |                   |       |             |
| 1.       | Lecture/theory room                             |                   | 1     | 1:25        |
| 2.       | Agriculture lab                                 |                   | 1     | 1:25        |
|          | <b>Consumable materials</b>                     |                   |       |             |
| 7.       | Fertilizers                                     | 1-50kg bag        | 1:25  | Fertilizers |
| 8.       | Seeds                                           | 1                 | 1: 25 |             |
| 9.       | Stem cuttings                                   | 0.25              | 1:25  |             |
| <b>C</b> | <b>Tools and Equipment</b>                      |                   |       |             |
| 1.       | Hoe                                             |                   | 1     | 1:25        |
| 2.       | Machete                                         |                   | 1     | 1:25        |
| 3.       | Rake                                            |                   | 5     | 5:1         |
| 4.       | Harvesting knives                               |                   | 5     | 5:1         |
| 5.       | Nursery trays                                   |                   | 1     | 1:25        |

## **MODULE II**