

## BEE PRODUCTION

**UNIT CODE:** 0811 451 23A

**TVET CDACC UNIT CODE:** AGR/CU/AP/CR/02/5/MA

### Relationship to Occupational Standards

This unit addresses the Unit of Competency: Bee production

**Duration of the unit: 100 Hours**

### UNIT DESCRIPTION

This unit specifies competencies required to carry-out bee production. It involves establishing an apiary, managing bee facilities, tools and equipment; managing bee colony, managing bee pests and diseases, harvesting bee products and marketing of bee products.

### Summary of Learning Outcomes

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

| S/No         | Learning Outcomes                          | Duration (Hours) |
|--------------|--|------------------|
| 1.           | Establish an apiary                        | 20               |
| 2.           | Manage bee facilities, tools and equipment | 10               |
| 3.           | Manage bee colony                          | 20               |
| 4.           | Manage bee pest and diseases               | 20               |
| 5.           | Harvest bee products                       | 20               |
| 6.           | Market bee products                        | 10               |
| <b>Total</b> |  | <b>100</b>       |

### Learning Outcomes, Content and Methods of assessment

| Learning Outcome | Content | Methods of assessment |
|------------------|---------|-----------------------|
|------------------|---------|-----------------------|

|                        |  |  |
|------------------------|--|--|
| 1. Establish an apiary | 1.1. Materials, tools and equipment for preparing the apiary   | <ul style="list-style-type: none"> <li>• Written assessment</li> </ul>   |
|                        | <ul style="list-style-type: none"> <li>• Panga</li> <li>• Slasher</li> <li>• Jembe</li> <li>• Auger</li> <li>• Tape measure</li> </ul> <p>1.2. Apiary site selection</p> <p>1.3. Apiary site preparation</p> | <ul style="list-style-type: none"> <li>• Practical</li> <li>• Projects</li> <li>• Third party report</li> <li>• Portfolio of evidence</li> <li>• Oral questions</li> </ul> |

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| <p>2. Manage bee facilities, tools and equipment</p> | <p>2.1. Personal protective equipment (PPEs)</p> <ul style="list-style-type: none"> <li>• Bee suit</li> <li>• Gloves</li> <li>• Gumboots</li> </ul> <p>2.2. Apiary management tools and equipment</p> <p>2.2.1. Smokers</p> <p>2.2.2. Hive tools</p> <p>2.2.3. Conical honey strainer</p> <p>2.2.4. Wax press</p> <p>2.2.5. Solar wax melter</p> <p>2.3. Repairable Bee facilities, equipment and tools</p> <p>2.3.1. Bee hives</p> <p>2.3.2. Smokers</p> <p>2.3.3. Queen cages</p> <p>2.3.4. Feeders</p> <p>2.3.5. Queen cell protector</p> <p>2.3.6. Drone trap</p> <p>2.3.7. Queen excluder</p> <p>2.3.8. Pollen trap</p> <p>2.4. Bee facilities, tools and</p> | <ul style="list-style-type: none"> <li>• Written assessment</li> <li>• Practical</li> <li>• Projects</li> <li>• Third party report</li> <li>• Portfolio of evidence</li> <li>• Oral questions</li> </ul> |
|  | <p>equipment storage</p>   |  |

|   |  |  |
|---|--|--|
| <p>3. Manage bee colony</p>             | <p>3.1. Personal protective equipment</p> <ul style="list-style-type: none"> <li>• Bee suit</li> <li>• Gloves</li> <li>• Gumboots</li> </ul> <p>3.2. Opening of Bee hives</p> <p>3.3. Tools and equipment for colony division</p> <p>3.3.1. Smokers</p> <p>3.3.2. Hive tools</p> <p>3.3.3. Bee brush</p> <p>3.4. Division of honey bee colony</p> <p>3.4.1. Strong colony identification</p> <p>3.4.2. New queen selection</p> <p>3.4.3. Resource division</p> <p>3.4.4. Queen cell introduction</p> <p>3.4.5. Location of new colonies</p> <p>3.5. Colony divisions</p> | <ul style="list-style-type: none"> <li>• Written assessment</li> <li>• Practical</li> <li>• Projects</li> <li>• Third party report</li> <li>• Portfolio of evidence</li> <li>• Oral questions</li> </ul> |
| <p>4. Manage bee pests and diseases</p> | <p>4.1. Personal Protective gears</p> <p>4.1.1. Bee suit</p> <p>4.1.2. Gloves</p> <p>4.1.3. Gumboots</p> <p>4.2. Hive smoking and opening</p> <p>4.3. Colony inspection</p> <p>4.4. Signs and symptoms of pest and diseases</p> <p>4.4.1. Diseases</p> <p>4.4.1.1. Foul brood</p> <p>4.4.1.2. Fungal brood</p>   | <ul style="list-style-type: none"> <li>• Written assessment</li> <li>• Practical</li> <li>• Projects</li> <li>• Third party report</li> <li>• Portfolio of evidence</li> <li>• Oral questions</li> </ul> |

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|                                | <p>4.4.1.3. Bee diarrhoea</p> <p>4.4.1.4. Chalkbrood</p> <p>4.4.1.5. Stonebrood</p> <p>4.4.2. Parasites</p> <p>4.4.2.1. Small Hive Beetle (SHB)</p> <p>4.4.2.2. Carpenter bee</p> <p>4.4.2.3. Honey bee</p> <p>4.4.2.4. Bumblebee</p> <p>4.4.2.5. Ants</p> <p>4.4.2.6. Mite</p> <p>4.4.2.7. Lesser wax moth</p> <p>4.4.2.8. Bee louse</p> <p>4.4.2.9. Greater wax moth</p> <p>4.5. Control measures</p> <p>4.5.1. Hygienes</p> <p>4.5.2. Regular inspection</p> <p>4.5.3. Destruction of infected combs</p> |  |
| <p>5. Harvest bee products</p> | <p>5.1. Personal protective gears</p> <p>5.1.1. Bee suits</p> <p>5.1.2. Veil</p> <p>5.1.3. Gloves</p> <p>5.1.4. Boots</p> <p>5.1.5. Smoker</p> <p>5.1.6. First aid kit</p> <p>5.2. Identification ocolonies to be harvested</p> <p>5.3. Hive opening</p> <p>5.4. Hive products harvesting</p> <p>5.4.1. Ripe honey</p>  | <ul style="list-style-type: none"> <li>• Written assessment</li> <li>• Practical</li> <li>• Projects</li> <li>• Third party report</li> <li>• Portfolio of evidence</li> <li>• Oral questions</li> </ul> |

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|                        | 5.4.2. Bee propolis harvesting<br>5.4.3. Bee pollen trapping and harvesting<br>5.4.4. Bee broods harvesting   |  |
| 6. Market bee products | 6.1. Hive products packaging<br>6.1.1. Honey<br>6.1.2. Propolis<br>6.1.3. Bee venom<br>6.1.4. Creamed honey<br>6.1.5. Comb honey<br>6.1.6. Honeycomb<br>6.1.7. Beeswax<br>6.1.8. Bee pollen<br>6.1.9. Royal jelly<br>6.2. Hive products labelling and branding<br>6.3. Marketing of Hive products | <ul style="list-style-type: none"> <li>• Written assessment</li> <li>• Practical</li> <li>• Projects</li> <li>• Third party report</li> <li>• Portfolio of evidence</li> <li>• Oral questions</li> </ul> |

### Suggested Methods of delivery

- Practical
- Projects
- Demonstrations
- Group discussion
- Direct instructions
- Site visit

### Recommended Resources for 25 trainees

| S/No. | Category/Item | Description/Specifications | Quantity | Recommended Ratio<br>(Item: Trainee) |
|-------|---------------|----------------------------|----------|--------------------------------------|
|       |               |                            |          |                                      |

| <b>A Learning Materials</b>                       |                            |  |         |      |
|---|----------------------------|--|---------|------|
| 1   | Charts                     | Flip Charts<br>Rules and<br>Regulations                        | 5       | 1:5  |
| 2.  | Markers                    | whiteboard<br>markers and<br>permanent<br>markers              | 5       | 1:25 |
| 3.  | Video clips<br>Audio tapes | MP4, MP3   | 5       | 1:5  |
| 4.  | Newspapers and Handouts    | Daily  | 25      | 1:1  |
| 5.  | Business Journals          | Annual, Monthly,<br>Daily                                      | 25      | 1:1  |
| <b>B Learning Facilities &amp; Infrastructure</b> |                            |  |         |      |
| 1.  | Lecture/Theory<br>Room     | (9* 8 sq. metres)  | 1       | 1:25 |
| 2.  | Internet Connection        | WI-FI, Dial-Up, Cable,<br>Fixed-wireless,                      | 1       | 1:25 |
| 3.  | Flowering plants           | sufficient   | 1       | 1:25 |
| <b>C Consumable Materials</b>                     |                            |  |         |      |
| 1.  | Flashcards                 | Alphabet, Numbers, Math  | 25      | 1:1  |
| 2.  | Stationery                 | Printing Papers, and<br>Exercise Books Sizes A4,<br>A3, A2 etc | 5 reams | 1:5  |
| .3.   | water                      | sufficient   | 5       | 2:5  |
| <b>D Tools And Equipment</b>                      |                            |  |         |      |
| 1.  | Computers/Laptops          | Any model  | 1       | 1:25 |
| 2.  | Projector                  | LED.LCD, Laser   | 5       | 1:5  |
| 3.  | Whiteboard                 | Glass, melamine, porcelain                                     | 1       | 1:25 |

|    |                        |   |   |      |
|----|------------------------|---|---|------|
| 4. | Solar wax maker        | Any five                                | 2 | 2:25 |
| 5. | Conical honey strainer |   | 5 | 1:5  |
| 6  | Bee hive               | Any five; langstroth, top bar, log, box | 5 | 1:5  |
| 7. | Smoker                 |   | 5 | 1:5  |
| 8. | Hive tool              |   | 5 | 1:5  |
| 9. | Centrifugal machine    | any                                     | 1 | 1;25 |