

## 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: Carry out 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><li>● Practical</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>● Projects</li> <li>● Third party report</li> <li>● Portfolio of evidence</li> <li>● Oral questions</li> </ul>
2. Manage bee facilities, tools and equipment	<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 equipment storage</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>

3. Manage bee colony	<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>
4. Manage bee pests and diseases	<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> <p>4.4.1.3. Bee diarrhoea</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>4.4.1.4. 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>	
5. Harvest bee products	<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> <p>5.4.2. Bee propolis harvesting</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>

	5.4.3. Bee pollen trapping and harvesting 5.4.4. Bee broods harvesting	
6. Market bee products	6.1. Hive products packaging 6.1.1. Honey 6.1.2. Propolis 6.1.3. Bee venom 6.1.4. Creamed honey 6.1.5. Comb honey 6.1.6. Honeycomb 6.1.7. Beeswax 6.1.8. Bee pollen 6.1.9. Royal jelly 6.2. Hive products labelling and branding 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 (Item: Trainee)
<b>A</b>	<b>Learning Materials</b>			
1	Charts	Flip Charts	5	1:5

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

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