

## **APIARY MANAGEMENT**

**UNIT CODE:** 0811 341 02 A

**TVET CDACC UNIT CODE:** AGR/CU/API/CR/02/4/MA

**UNIT DURATION:** 150 Hours

### **Relationship to Occupational Standard**

This unit addresses the Unit of Competency:Manage Apiary

### **Unit Description**

This unit covers the competencies required to manage an apiary. It involves managing bee forage resources;carrying out bee feeding;inspecting bee hives and controlling bee pests and diseases.

### **Summary of learning outcomes**

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

S/No	Learning Outcomes	Duration (Hours)
1.	Manage bee forage resources	30
2.	Carry out bee feeding	30
3.	Inspect bee hives	30
4.	Control bee pests and diseases	30
5.	Perform hygiene and sanitation	30
<b>Total</b>		<b>150</b>

## Learning Outcomes, Content and Suggested Assessment Methods

Learning Outcomes	Content	Suggested Assessment Methods
1. Manage bee forage resources	<p><b>Theory</b></p> <p>1.1 PPEs</p> <ul style="list-style-type: none"> <li>1.1.1 Types           <ul style="list-style-type: none"> <li>✓ Gumboot</li> <li>✓ Gloves</li> <li>✓ Bee suit</li> <li>✓ Dust coat</li> <li>✓ Overall</li> </ul> </li> <li>1.1.2 Uses</li> <li>1.1.3 Maintenance</li> <li>1.1.4 Importance</li> </ul> <p>1.2 Tools and equipment</p> <ul style="list-style-type: none"> <li>1.2.1 Types</li> <li>1.2.2 Uses</li> <li>1.2.3 Maintenance</li> <li>1.2.4 Importance</li> </ul> <p>1.3 Bee forages</p> <ul style="list-style-type: none"> <li>1.3.1 Mountain mint</li> <li>1.3.2 Purple coneflower</li> <li>1.3.3 Summer flox</li> <li>1.3.4 Wood mint</li> <li>1.3.5 Sunflower</li> <li>1.3.6 Rosemary</li> <li>1.3.7 Citrus trees</li> <li>1.3.8 Avocado</li> </ul>	<ul style="list-style-type: none"> <li>• Practical</li> <li>• Project</li> <li>• Written tests</li> <li>• Third party report</li> <li>• Portfolio of evidence</li> <li>• Oral questions</li> </ul>

	<p>1.3.9 Key apple</p> <p>1.3.10 Eucalyptus</p> <p>1.3.11 Passion</p> <p>1.3.12 Bananas</p> <p>1.3.13 Acacia species</p> <p>1.3.14 Cucumber</p> <p>1.3.15 Pumpkin</p> <p>1.3.16 Bottle brush</p> <p>1.3.17 Neem tree</p> <p>1.3.18 Calliandraspp</p> <p>1.3.19 Coffee</p> <p>1.3.20 Croton spp</p> <p>1.3.21 Sisal</p> <p>1.3.22 Maize</p> <p>1.3.23 Mango tree</p> <p>1.3.24 Leucena</p> <p>1.3.25 Prosopis</p> <p>1.3.26 Dombeya</p> <p>1.3.27 Clover</p> <p>1.4 Bee forage establishment</p> <p>1.5 Bee forage calendar</p> <p>1.6 Bee forage conservation</p> <p>1.7 Bee forage resources records</p> <p>1.8 Bee forage waste management</p>	
2. Carry out bee feeding	<p>2.1 PPEs</p> <p>2.2 Artificial bee feeds</p> <p>2.2.1 Fruit juices</p> <p>2.2.2 Sucrose solution</p> <p>2.3 Water provision</p> <p>2.4 Bee feeding records</p>	<ul style="list-style-type: none"> <li>• Practical</li> <li>• Project</li> <li>• Written tests</li> <li>• Third party report</li> <li>• Portfolio of evidence</li> </ul>

	2.5 Waste management	<ul style="list-style-type: none"> <li>• Oral questions</li> </ul>
3. Inspect bee hives	3.1 PPEs 3.2 Tools, equipment and materials <ul style="list-style-type: none"> <li>3.2.1 Smoker</li> <li>3.2.2 Hive tool</li> <li>3.2.3 Bee brush</li> </ul> 3.3 Bee hive external inspection 3.4 Bee hive smoking 3.5 Beehive opening 3.6 Inspection of bees and combs 3.7 Closing of the Hive 3.8 Inspection Record 3.9 Inspection waste management	<ul style="list-style-type: none"> <li>• Practical</li> <li>• Project</li> <li>• Written tests</li> <li>• Third party report</li> <li>• Portfolio of evidence</li> <li>• Oral questions</li> </ul>
4. Control bee pests and diseases	4.1 Inspection of bee and combs 4.2 Bee pests control measures <ul style="list-style-type: none"> <li>4.2.1 Bee pests               <ul style="list-style-type: none"> <li>✓ Varroa mites</li> <li>✓ Wax moths</li> <li>✓ Small hive beetles</li> <li>✓ Tracheal mites</li> </ul> </li> <li>4.2.2 bee pest control measures               <ul style="list-style-type: none"> <li>✓ Trapping active moths</li> <li>✓ Destruction of egg, larvae and pupa</li> <li>✓ Removing infested combs</li> <li>✓ Fumigating bee hives</li> </ul> </li> <li>4.3 Bee diseases and control measures               <ul style="list-style-type: none"> <li>✓ American foulbrood</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Practical</li> <li>• Project</li> <li>• Written tests</li> <li>• Third party report</li> <li>• Portfolio of evidence</li> <li>• Oral questions</li> </ul>

	<ul style="list-style-type: none"> <li>✓ European Foulbrood</li> <li>✓ Nosema</li> <li>✓ Bee paralysis virus</li> </ul> <p>4.3.2 Bee diseases Control measures</p> <ul style="list-style-type: none"> <li>✓ Apiary sanitation</li> <li>✓ Avoid disposal of hive materials</li> <li>✓ Hive inspection</li> </ul> <p>4.4 Bee pests and disease records</p> <p>4.5 Bee hive waste management</p>	
5 Perform hygiene and sanitation	<p>5.1 Cleaning and disinfection of feeders and drinkers</p> <p>5.2 Disposal of affected hives and bees and combs</p> <p>5.3 Hygiene and sanitation records</p> <p>5.4 Waste management</p>	<ul style="list-style-type: none"> <li>• Practical</li> <li>• Project</li> <li>• Written tests</li> <li>• Third party report</li> <li>• Portfolio of evidence</li> <li>• Oral questions</li> </ul>

### Suggested Methods of Instruction

- Direct instruction
- Project-Based Learning (PBL)
- Practical
- Group discussion
- Demonstrations

### Recommended Resources for 25 Trainees

s/no	Items	Specification	quantity	ratio
1.	Lecture room		1	1:25
2.	Computer		1	1:25
3.	Projector		1	1:25
4.	Bee forage farm ¼	With bee forage	1:25	1:25

5.	Hive tool		15	1:2
6.	Smoker		15	1:2
7.	Bee brush		15	1:2