

APPLY KNOWLEDGE OF APICULTURE AND AQUACULTURE

UNIT CODE: 0831 541 33A

TVET CDACC UNIT CODE: HE/OS/AHP/CC/23/6/MA

UNIT DESCRIPTION:

This unit specifies the competencies required by a animal health technologist to apply knowledge of apiculture and aquaculture. It involves selecting and establishing an apiary site, preparing hive equipment, monitoring and managing swarming, rearing queen bees, performing apiary maintenance, conducting bee feeding, preparing and maintaining bee records, carrying out harvesting, grading, processing, packaging, and marketing, selecting and establishing fish pond, monitoring and managing fish health, conducting fish feeding and rearing fingerlings.

ELEMENTS AND PERFORMANCE CRITERIA

ELEMENT	PERFORMANCE CRITERIA
These describe the key outcomes, which make up workplace function.	These are assessable statements, which specify the required level of performance for each of the elements. <i>Bold and italicized terms are elaborated in the range.</i>
1. Select and establish Apiary site	1.1 Apiary site is selected based required standards 1.2 Apiary is set up as per work requirement 1.3 Type of hive is identified and setup according to the work requirements. 1.3 Species is selected based on ecological zone
2. Prepare hive equipment	2.1 Type of colony to be used is identified as per work requirement 2.2 Hive equipment are identified as per work requirement 2.3 Hive equipment are assembled as per workplace requirement
3. Monitor and manage swarming	3.1 Colonies in swarm mood are identified as per work requirement 3.2 Swarm prevention method is applied as per workplace requirement 3.3 Swarm bees is captured as per work requirement

4. Rear queen bee	<p>4.1 Method of queen rearing is selected as per work requirement</p> <p>4.2 Parent colony for queen rearing is selected as per work requirement</p> <p>4.3 Queen rearing equipment are prepared as per work requirement</p> <p>4.4 Queen rearing program is implemented as job requirement</p> <p>4.4 Queen is prepared for transport as per work procedure</p>
5. Perform apiary maintenance	<p>5.1 Apiary is maintained during the dearth period as per work requirement</p> <p>5.2 Apiary is maintained during pre-season as per work requirement</p> <p>5.3 Apiary is maintained during main season as per work requirement</p> <p>5.4 Apiary is maintained during post season as per work requirement</p>
6. Conduct bee feeding	<p>6.1 Feed ration is prepared as per work procedure</p> <p>6.2 Feeding method is selected as per work requirement</p> <p>6.3 Bee is fed based on nutritional need and purpose of production</p>
7. Prepare and maintain bee record	<p>7.1 Bee records are prepared as per work requirement</p> <p>7.2 Inventory of apiary and equipment is prepared as per work requirement</p> <p>7.3 Work schedule is planned as per workplace policy</p>
8. Carry out harvesting, grading, processing, packaging and marketing	<p>8.1 Honey is harvested as per work requirement</p> <p>8.2 Beeswax, propolis and honey are processed graded and packaged</p> <p>8.3 Pollen, royal jelly and bee venom are harvested as per work requirement</p>
9. Select and establish fish pond	<p>9.1 Fish pond site is selected based on standard</p> <p>9.2 Pond size is determined as work requirement</p> <p>9.3 Equipment is selected and pond set up as per work requirement</p> <p>9.4 Fish species is selected as per work requirement</p>

	<p>9.5 Stocking rate, water temperature, and oxygen quality is determined as per work procedure</p> <p>9.6 Fingerlings are obtained and transported to new pond as per work procedure</p> <p>9.7 Specific environmental need is determined as per work requirement</p>
10. Monitor and manage fish health	<p>10.1 Feeding habit is assessed as per work requirement</p> <p>10.2 Reproduction behaviour is monitored as per work requirement</p> <p>10.3 Diseases and parasites are managed as per work requirement</p>
11. Conduct fish feeding	<p>11.1 Feeding method is selected as per work requirement</p> <p>11.2 Feeding ration is prepared as per requirement</p> <p>11.3 Fish feeding is conducted based on nutritional need, age and purpose of production</p> <p>11.4 Changes in feeding rate is identified as per work requirement</p>
12. Rear fingerlings	<p>12.1 Method of rearing is identified and selected as per work requirement</p> <p>12.2 Species of choice is selected as per work requirement</p> <p>12.3 Fingerlings are prepared for transportation as per procedure</p> <p>12.4 Feeding regime is established as per work requirement</p> <p>12.5 Fingerlings are harvested and processed for marketing as per work procedure</p>

RANGE

This section provides work environments and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

Variable	Range
1. Bee species include but not limited to	<ul style="list-style-type: none"> ● <i>Apis mellifera yemenitica</i> ● <i>Apis mellifera scutellata</i>

Variable	Range
	<ul style="list-style-type: none"> ● <i>Apis mellifera littorea</i> ● <i>Apis mellifera monticola</i> ● Hybrid species (of A.m. littorea and monticola)
<p>2. Personal Protection Equipment and Apparel include but not limited to</p>	<ul style="list-style-type: none"> ● Bee gloves ● Veils ● Bee suit ● Gum boots ● Aprons
<p>3. Diseases include but not limited to</p>	<ul style="list-style-type: none"> ● Bee paralysis virus ● Sacbrood virus ● Deformed wing virus ● Slow bee paralysis virus ● Tobacco ringspot virus ● Colony collapse disorder ● Stonebrood ● Chalk brood ● Nosema ● PESTS (small hive beetles SHB, tracheal mite, wax moths, mice, toad/ frogs, ants, humans, varroa mites, lizard, birds, honey badger, wax moth, pirate wasp, bee louse)
<p>4. Drugs include but not limited to:</p>	<ul style="list-style-type: none"> ● Oxytetracycline ● Tylosin ● Lincomycin
<p>5. Equipment include but not limited to</p>	<ul style="list-style-type: none"> ● Bee brush ● Catcher box ● Bee propolis trap collector ● Honey warmer ● Clearer board ● Double sieve ● Refractometer

Variable	Range
	<ul style="list-style-type: none"> ● Uncapping tray ● Wax melter ● Dip tank/ vat ● Roller/ mold ● Hives (log, top bar, box, pot, langstroth)
6. Tools include but not limited to	<ul style="list-style-type: none"> ● Hammer ● Pliers ● Cutting tools ● Uncapping knife ● Comb cutter
7. Environment protection regulations includes but not limited to:	<ul style="list-style-type: none"> ● Public Health Act ● EMCA 1999 ● OSH Act 2007
8. Fresh water species include but not limited to	<ul style="list-style-type: none"> ● Nile perch ● Common carp ● Nile tilapia ● Black bass ● Omena
9. Personal Protection Equipment and Apparel include but not limited to	<ul style="list-style-type: none"> ● Gloves ● Gum boots ● Aprons ● Bee suit
10. Diseases include but not limited to	<ul style="list-style-type: none"> ● Viral esocid ● Lymphosarcoma ● Lymph virus ● Common mouth rot, tail rot ● Colunaris ● Swim bladder infection

Variable	Range
	<ul style="list-style-type: none"> ● Environmental dropsy
11. Drugs include but not limited to:	<ul style="list-style-type: none"> ● Oxytetracycline ● Ciprofloxacin ● Enrofloxacin ● Erythromycin ● Sulphadiazine ● Trimethoprim
12. Tools include but not limited to	<ul style="list-style-type: none"> ● Digging tool ● Leveling tool ● Desilting tool ● Net and traps (fingerling seine, fingerling suspension net, gillnet seine) ● Screens on water control ● Harvesting bag net ● Analysis kit
13. Equipment include but not limited to	<ul style="list-style-type: none"> ● Pond liner ● Pond filter ● Pond plant ● Pond pump and fish elevator ● Fish grader
14. Environment protection regulations includes but not limited to:	<ul style="list-style-type: none"> ● Public Health Act ● EMCA 1999 ● OSH Act 2007

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit of competency.

Required skills

The individual needs to demonstrate the following skills

- Location of site
- Assess and select species of choice

- Prepare substitutes and supplements feed
- Handling of queen, drone, worker and young bees
- Detect disease
- Treat disease
- Harvest
- Handling of fingerlings

Required knowledge

The individual needs to demonstrate knowledge of:

- Pharmacokinetics
- Pharmacodynamics
- Animal nutrition
- Types of diseases
- Anatomy and physiology
- Ecology and environmental sciences
- Farm structure

EVIDENCE GUIDE

This provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge and range

<p>1. Critical Aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <p>1.1 Identified the site based on required standards</p> <p>1.2 Identified different species as per work requirement</p> <p>1.3 Identified importance of beekeeping/aquaculture</p> <p>1.4 Identified tools, equipment and supplies as per work requirement</p> <p>1.5 Monitored, manage activities and health at the hive/pond as per work requirement</p> <p>1.6 Disposed of diseased colonies and ponds as per work procedure</p> <p>1.7 Identified feeding pattern as per work requirement</p> <p>1.8 Identified different processing and packaging of products as per work procedure</p> <p>1.9 Prepared balanced feed as per work requirement</p>
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<p>2. Resource Implications</p>	<p>The following resources must be provided:</p> <p>2.1 Appropriately simulated environment where assessment can take place</p> <p>2.2 Access to relevant work environment</p> <p>2.3 Resources relevant to the proposed activities or tasks</p>
<p>3. Methods of Assessment</p>	<p>Competency may be assessed through:</p> <p>3.1. Observation</p> <p>3.2. Oral questioning</p> <p>3.3. Written test</p> <p>3.4. Portfolio of Evidence</p> <p>3.5. Interview</p> <p>3.6. Third party report</p>
<p>4. Context of Assessment</p>	<p>Competency may be assessed in a:</p> <p>Workplace or simulated workplace.</p>
<p>5. Guidance information for assessment</p>	<p>Holistic assessment with other units relevant to the industry sector, workplace and job roles is recommended.</p>