

## PRODUCE FISH FEEDS

**ISCED UNIT CODE:** 0831 351 04A

**TVETCDACC UNIT CODE:** AQ/OS/AM/CR/02/4/MA

### UNIT DESCRIPTION

This unit specifies the competencies required to produce fish feeds. It involves the ability to culture natural fish feeds, produce on-farm formulated fish feeds, package and store fish feeds and keep records

| <b>ELEMENT</b>                                                    | <b>PERFORMANCE CRITERIA</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
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| These describe the key outcomes which make up workplace function. | <p>These are assessable statements which specify the required level of performance for each of the elements.</p> <p><b><i>Bold and italicized terms are elaborated in the Range</i></b></p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| 1. Culture natural fish feeds                                     | <p>1.1 <b>PPE</b>'s are identified and gathered as per task requirements</p> <p>1.2 <b>Materials and equipment</b> for producing natural fish foods are identified and gathered based on task requirements and identified food safety risks</p> <p>1.3 Pond is cleaned, limed, dried and flooded with <b>water fit for aquaculture</b></p> <p>1.4 <b>Natural productivity</b> of pond is determined based on secchi depth</p> <p>1.5 Fish pond is fertilized based according to pond's natural productivity and recommended rates of fertilization while observing food safety</p>                                                                                                                                                                                                               |
| 2. Produce on-farm formulated fish feeds                          | <p>2.1 <b>On-farm feed production materials and equipment</b> are identified and gathered based on task requirements and identified food safety risks</p> <p>2.2 Feed composition is formulated using Pearson's Square method based on available ingredients and <b>nutrient requirements</b> of target species</p> <p>2.3 Feed ingredients are subjected to specified <b>treatments</b> to inactivate anti-nutritional factors</p> <p>2.4 Feed ingredients are milled to fine particles while observing food hygiene standards</p> <p>2.5 Feed additives where required are added as per standard and statutory requirements</p> <p>2.6 Formulated feed proportions are weighed and mixed uniformly</p> <p>2.7 Feed mixture is pelletized and/or dried to a moisture content of 10% or less</p> |

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| 3. Package and store fish feeds | 3.1 Fish feed is weighed and packaged in sealed bags with clear <b><i>label details</i></b><br>3.2 Dry fish feeds are stored in cool and dry areas<br>3.3 Moist fish feeds are properly refrigerated as per the identified food safety risks                                                                                                                                                                                                           |
| 4. Keep records                 | 4.1 <b><i>Records of feed ingredients</i></b> are prepared and kept according to site requirements<br>4.2 Records of prepared feeds are prepared and kept according to site requirements<br>4.3 Records of food safety parameters are maintained<br>4.4 Produced feed is fed to target fish at recommended rates<br>4.5 Fish growth rate is monitored according to <b><i>sampling plan</i></b><br>4.6 Records are kept of fish growth response to feed |

## RANGE

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

| Variable                                                 | Range                                                                                                                                                                                                                                                                                                                                                                                         |
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| 1. Sources may include but not limited to:               | <ul style="list-style-type: none"> <li>• Ingredients used for formulation of feeds</li> <li>• Poor storage conditions</li> <li>• Pests</li> <li>• Rodents</li> <li>• Agrochemicals</li> </ul>                                                                                                                                                                                                 |
| 2. Contamination/hazards may include but not limited to: | <ul style="list-style-type: none"> <li>• Physical hazards</li> <li>• Chemical hazards           <ul style="list-style-type: none"> <li>• Heavy metals</li> <li>• Pesticides</li> <li>• Industrial chemicals</li> </ul> </li> <li>• Biological hazards           <ul style="list-style-type: none"> <li>• Aquatic animal diseases</li> </ul> </li> <li>• Naturally occurring toxins</li> </ul> |
| 3. Water fit for aquaculture include but not limited to  | <ul style="list-style-type: none"> <li>• Fish species specific recommended level of chlorine</li> <li>• Fish species specific Recommended pH range</li> <li>• Fish species specific Recommended Ammonia</li> <li>• Fish species specific recommended turbidity level</li> <li>• Free of infective pathogens</li> </ul>                                                                        |

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| 4. PPE's include but not limited to                                            | <ul style="list-style-type: none"> <li>Safety goggles, gum boots, helmets, gloves, dust coats, first aid kits, mouth piece</li> </ul>                                                                                  |
| 5. Materials and equipment include but not limited to:                         | <ul style="list-style-type: none"> <li>Fertilizers, secchi disk, weighing scale</li> <li>Buckets, gunny bags, sticks, stakes</li> </ul>                                                                                |
| 6. Natural productivity includes but not limited to:                           | <ul style="list-style-type: none"> <li>Phytoplankton</li> <li>Zooplankton</li> </ul>                                                                                                                                   |
| 7. On-farm feed production materials and equipment include but not limited to: | <ul style="list-style-type: none"> <li>Meat mincer, blender/ grinder, weighing scale, dryer, mixer, containers, bag sealer, oven, burner, drying racks</li> <li>Packaging bags, drying canvas/ polythene</li> </ul>    |
| 8. Nutrient requirements include but not limited to:                           | <ul style="list-style-type: none"> <li>Proteins,</li> <li>Lipids/fats</li> <li>Ash</li> <li>Carbohydrates</li> <li>Moisture</li> <li>Mineral and vitamin</li> </ul>                                                    |
| 9. Treatments include but not limited to:                                      | <ul style="list-style-type: none"> <li>Roasting</li> <li>Boiling</li> <li>Fermentation</li> <li>Sun-drying</li> </ul>                                                                                                  |
| 10. Label details include but not limited to:                                  | <ul style="list-style-type: none"> <li>Date of manufacture</li> <li>name of manufacturer</li> <li>date of expiry</li> <li>storage conditions</li> <li>protein level</li> <li>pellet size,</li> <li>species.</li> </ul> |
| 11. Records of feed ingredients include but not limited to:                    | <ul style="list-style-type: none"> <li>Types</li> <li>Date procured</li> <li>Store quantities</li> </ul>                                                                                                               |
| 12. Sampling plan includes but not limited to:                                 | <ul style="list-style-type: none"> <li>Sampling frequency</li> <li>Sample size</li> <li>Sampling time</li> </ul>                                                                                                       |

## 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:

- Trouble shooting
- Use of tools and equipment
- Measurement
- Mixing ingredients
- Communication
- Basic first aid
- Numeracy

### **Required Knowledge**

The individual needs to demonstrate knowledge of:

- Regulatory bodies/ Competent authorities
- Hazard Analysis Critical Control Point (HACCP)
- Types of tools, equipment and PPEs
- On-farm fish feed formulation
- Locally available raw materials
- Nutritional composition of the raw materials and their properties

### **EVIDENCE GUIDE**

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

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| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:<br><br>1.1 Implemented fish feed production food safety plan<br>1.2 Used secchi disk accurately<br>1.3 Formulated feed composition correctly as per target species<br>1.4 Applied the correct fertilizer at right amounts using appropriate method<br>1.5 Applied the right treatment to inactivate anti-nutritional factors in selected feed ingredients<br>1.6 Weighed accurate amounts of feed ingredients based on feed formulation<br>1.7 Mixed feed ingredients uniformly<br>1.8 Stored produced feed under recommended storage conditions |
| 2. Resource Implications for      | The following resources must be provided:<br><br>2.1 Access to relevant workplace where assessment can take place                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

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| competence certification               | 2.2 Appropriately simulated environment where assessment can take place<br>2.3 Materials relevant to the proposed activity or tasks                                   |
| 3. Methods of Assessment               | Competency may be assessed through:<br>3.1 Observation<br>3.2 Oral presentation<br>3.3 Oral questioning<br>3.4 Projects<br>3.5 Written tests                          |
| 4. Context of Assessment               | Competency may be assessed on the job, off the job or a combination of these. Off the job assessment must be undertaken in a closely simulated workplace environment. |
| 5. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.                                                          |