

PRODUCE FISH FEEDS

UNIT CODE: AQ/OS/AT/CR/02/5/B

UNIT DESCRIPTION

This unit specifies the competencies required to produce fish feeds. It involves ability to implement fish feed production food safety plan, boost the growth of natural fish food, formulate and prepare artificial fish feed and evaluate fish feed performance.

<p>ELEMENT These describe the key outcomes which make up workplace function.</p>	<p>PERFORMANCE CRITERIA 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></p>
<p>1. Implement fish feed production food safety plan</p>	<p>1.1 Hazards at each fish feed production stage are identified and listed 1.2 Possible sources of physical, chemical and microbial contamination are identified based on identified hazards 1.3 Food safety corrective and preventive measures for fish feeds are implemented based on the identified risks and manual of standard operating procedures. 1.4 Risk is communicated as per policies for internal and external communication</p>
<p>2. Produce natural fish feeds</p>	<p>2.1 PPE's are identified and gathered as per task requirements 2.2 Materials and equipment for producing natural fish foods are identified and gathered based on task requirements while observing food safety 2.3 Nutritional requirement of fish is determined based on target species and age 2.4 Pond is cleaned, limed and dried and flooded with water fit for aquaculture 2.5 Natural productivity of pond is determined based on secchi depth 2.6 Quantities and types of fertilizer is determined based on the level of productivity and identified food safety risks</p>

	2.7 Fish pond is fertilized according to pond's natural productivity and recommended rates of fertilization
3. Produce on-farm formulated fish feeds	<p>3.1 <i>On-farm feed production materials and equipment</i> are identified and gathered based on task requirements and identified food safety risks</p> <p>3.2 Feed composition is formulated based on available ingredients and nutrient requirements of target species</p> <p>3.3 <i>Raw materials</i> are procured from approved sources and handled as per food hygiene standards</p> <p>3.4 Feed ingredients are subjected to appropriate <i>treatments</i> to inactivate anti-nutritional factors</p> <p>3.5 Feed ingredients are milled to fine particles while observing food hygiene standards</p> <p>3.6 Food safe feed additives are added</p> <p>3.7 Formulated feed proportions are weighed and mixed uniformly</p> <p>3.8 Feed mixture is pelletized and/or dried to a moisture content of 10% or less</p>
4. Package and store fish feeds	<p>4.1 Fish feed is weighed and packaged in sealed bags with clear label details</p> <p>4.2 Dry fish feeds are stored in cool and dry areas</p> <p>4.3 Moist fish feeds are properly refrigerated as per the identified food safety risks</p> <p>1.1 Prices of feed production is determined based on cost of production</p>
5. Evaluate fish feed performance	<p>5.1 Quantity of natural food in the pond is estimated based on secchi depth</p> <p>5.2 Fish growth rate is monitored according to <i>sampling plan</i></p> <p>5.3 Feeds are tested for suitability based on <i>physical parameters</i>, palatability and feed conversion ratio</p>

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
<ul style="list-style-type: none"> Sources of hazards may include but not limited to: 	<ul style="list-style-type: none"> Ingredients used for formulation of feeds Poor storage conditions Pests Rodents Agricultural chemicals (pestic)
<ul style="list-style-type: none"> Contamination/hazards may include but not limited to: 	<ul style="list-style-type: none"> Mycotoxins (microbial) Physical Chemical <ul style="list-style-type: none"> Heavy metals
<ul style="list-style-type: none"> Water fit for aquaculture include but not limited to 	<ul style="list-style-type: none"> Fish species specific recommended level of chlorine Fish species specific Recommended pH range Fish species specific Recommended Ammonia Fish species specific recommended turbidity level Free of infective pathogens
<ul style="list-style-type: none"> PPE's include but not limited to 	<ul style="list-style-type: none"> Safety goggles, gum boots, helmets, gloves, dust coats, first aid kits, mouth piece
<ul style="list-style-type: none"> Materials and equipment include but not limited to: 	<ul style="list-style-type: none"> Fertilizers, secchi disk, weighing scale Buckets, gunny bags, sticks, stakes
<ul style="list-style-type: none"> Nutritional requirements include but not limited to: 	<ul style="list-style-type: none"> Proteins, Lipids/fats Ash Carbohydrates Moisture Mineral and vitamin
<ul style="list-style-type: none"> Natural productivity includes but not limited to: 	<ul style="list-style-type: none"> Phytoplanktons Zooplanktons

<ul style="list-style-type: none"> On-farm feed production materials and equipment include but not limited to: 	<ul style="list-style-type: none"> Meat mincer, blender/ grinder, weighing scale, dryer, mixer, containers, bag sealer, oven, burner, drying racks Packaging bags, drying canvas/ polythene
<ul style="list-style-type: none"> Raw materials include but not limited to: 	<ul style="list-style-type: none"> Plant protein Animal protein Cereals and by-products Mineral and other additives
<ul style="list-style-type: none"> Treatments include but not limited to: 	<ul style="list-style-type: none"> Roasting Boiling Fermentation Sun-drying
<ul style="list-style-type: none"> Label details include but not limited to: 	<ul style="list-style-type: none"> Date of manufacture, name of manufacturer, date of expiry, storage conditions, protein level, pellet size, target species.
<ul style="list-style-type: none"> Storage conditions include but not limited to: 	<ul style="list-style-type: none"> Humidity, temperature, ventilation, FIFO
<ul style="list-style-type: none"> Sampling plan includes but not limited to: 	<ul style="list-style-type: none"> Sampling frequency Sample size Sampling time
<ul style="list-style-type: none"> Physical parameters include but not limited to: 	<ul style="list-style-type: none"> floatability bulk density water stability feed fines/ dust size shape Texture

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:

- Use of tools and equipment
- Measurement

- Mixing ingredients
- Communication
- Basic first aid
- Numeracy

Required Knowledge

The individual needs to demonstrate knowledge of:

- Food safety Standards (codes of practice for fish and fishery products)
- Regulatory bodies/ Competent authorities
- Hazard Analysis Critical Control Point (HACCP)
- Types of tools, equipment and PPEs
- Budgeting
- 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.

<p>1. Critical Aspects of Competency</p>	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> 1.1 Implemented fish feed production food safety plan 1.2 Used secchi disk accurately 1.3 Identified and calculated quantities and types of fertilizers to be used 1.4 Formulated feed composition correctly as per target species 1.5 Applied the correct fertilizer at right amounts using appropriate method 1.6 Applied the right treatment to inactivate anti-nutritional factors in selected feed ingredients 1.7 Weighed accurate amounts of feed ingredients based on feed formulation 1.8 Mixed feed ingredients uniformly 1.9 Tested feed for bulk density, water stability and floatability 1.10 Stored produced feed under recommended storage conditions
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2. Resource Implications	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> 2.1 Workplace or assessment location 2.2 PPEs 2.3 Materials and equipment 2.4 Raw materials 2.5 Writing materials
3. Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> 3.1 Observation 3.2 Oral presentation 3.3 Oral questioning 3.4 Projects 3.5 Written tests
4. Context of Assessment	<p>Competency may be assessed on the job, off the job or a combination of these or during industrial attachment. Off the job assessment must be undertaken in a closely simulated workplace environment.</p>
5. Guidance information for assessment	<p>Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended.</p>