

**Syllabus for Fish Farm Worker**

<b>Course Name</b>	<b>FISH FARM WORKER, V2</b>
<b>Course Code</b>	<b>STC - AGR/2021/0201, V2</b>
<b>Level</b>	<b>3</b>
<b>Occupation</b>	<b>FISH FARM WORKER</b>
<b>Job Description</b>	Scientific Fish farming, Farm & disease Management of any private, public Fish farms under the supervision of the Farm Manager or supervisor.
<b>Course Duration</b>	<b>Total Duration 390 Hrs (T-90, P-180, OJT-60 and ES-60)</b>
<b>Trainees' Entry Qualification</b>	Grade 10 OR Grade 8 with two year of (NTC/ NAC) after 8 <sup>th</sup> OR Grade 8 pass and pursuing continuous schooling in regular school with vocational subject OR 8th grade pass with 2 yrs relevant experience OR Previous relevant Qualification of NSQF Level 2 with one yr experience OR Previous relevant Qualification of NSQF Level 2.5 with 6 months experience
<b>Trainers Qualification</b>	M.F. Sc. (Aquaculture)/B.F.Sc / Graduate with 10+2 in Science with 4 years of relevant work experience/ Diploma in Fisheries with 2 years relevant work experience with domain certification.

**Structure of Course:**

<b>Module No.</b>	<b>Outcome</b>	<b>Theory (Hrs)</b>	<b>Practical (Hrs)</b>	<b>Total (Hrs) [Multiple of 30]</b>
1	Apply Safe Working Practices	20	40	60
2	Explain the basics of Scientific commercial Fish Farming, Identification of freshwater carps, catfish, prawns, various methods of culture and types of culture.	10	20	30
3	Illustrate Pond preparation, fertilization, water quality checking, stocking of fish seed for profitable Fish farming.	20	40	60
4	Demonstrate feeding management, feed preparation and water quality monitoring,	10	20	30
5	Identify and manage various infectious and non- infectious diseases that occur in Fish farming and also demonstrate	10	20	30

	the different medication & Preventive measures in the fish farm.			
6	Illustrate the harvesting procedure, marketing and transportation of marketable fishes.	10	20	30
7	Demonstrate the process of documentation, record keeping and trade policy in commercial Fish Farming.	10	20	30
8.	<b>OJT</b>		60	60
9.	<b>Employability Skill- 60hrs</b>	--	--	60
	<b>TOTAL:</b>	<b>90</b>	<b>240</b>	<b>390</b>

**Employability Skill: 60Hrs (Provided by NCVET)**

**OJT: 60 hours (in multiple of 30)**

### **SYLLABUS:**

**Module No. 1:** Apply Safe Working Practices

**Outcome:** Apply Safe Working Practices

#### **Theory Content:**

Suitable measures for protection from natural calamities such as flood, storm, protect dyke from erosion or break, protection and prevent escape of the cultured fishes, various types of common predators (like Kingfisher, Cormorants, snake) and preying organisms (like spawn, fry, fingerling) in water bodies, suitable Preventive methods (net fencing, using of thread) to keep away predators in water bodies to protect fish culture, Structural (Includes cleaning and disinfecting the materials used in ponds and building, human traffic control and sanitation, effluent water recycling etc) and Operational Sanitation (i.e. includes daily active procedures like effective disease monitoring through routine disinfection like sterilisation of contact surfaces, control at the visitor's entry point and thorough check of carriers and sources of stocks etc, so as to prevent disease causing agents like virus, bacteria, protozoa, etc. from horizontal transmission of diseases)) measures in for effective bio-security measures (i.e healthy fish stock, disease free fishes, effective sanitation, proper disinfection)in fish farm. Effective systems and routines to ensure healthy and hygienic conditions during all stages of fish culture including transportation and marketing. Identify possibilities of bacterial (water borne, air borne,) and other contamination from human handling. Standard procedures to deal with accidents and emergency situations (i.e. Mass fish mortality, pond poisoning). Different procedure to ensure all nets, utensils and vessels used are decontaminated and clean.

#### **Practical Content:**

Demonstrate general farm hygiene & Sanitation procedures, quarantine, isolation, shed cleaning and disinfection procedures, Water sanitation, Disinfection, precaution and handling, Enlist bio-safety & bio-security, Proactive measures to minimize entry of infection agents, Draw & depict Structural and Operational Sanitation measures (Quarantine, Sanitation, Disinfection, Surveillance and Vaccination)in Fish farm.

**Module No. 2:** Basics of Commercial Fish Farming

**Outcome:** Explain the basics of Scientific commercial Fish Farming, Identification of freshwater carps, catfish, prawns, various methods of culture and types of culture.

**Theory Content:**

Introduction of different freshwater fishes, prawn, catfishes for commercial fish farming, scientific culture method (Extensive, semi intensive, Intensive) and culture types (monoculture or composite culture) for carps, catfishes and prawns, various Fish farming practices (Freshwater, Barckish water) in the state along with their future perspectives (scope and opportunity ) and constraints (marketing, seed production) of fish farming, various structure of commercial fish farms in the state along with their future perspectives.

**Practical Content:**

Identify different freshwater fishes, prawn, catfishes for commercial fish farming, scientific culture method (Extensive, semi intensive, Intensive) and culture types (monoculture or composite culture) for carps, catfishes and prawns, Elaborate various Fish farming practices in the state along with their future perspectives and constraints of fish farming, Elaborate various structure of commercial fish farms in the state along with their future perspectives.

**Module No. 3:** Pre-stocking Pond Preparation and management

**Outcome:** illustrate Pond preparation, fertilization, water quality checking, stocking of fish seed for profitable Fish farming.

**Theory Content:**

Preparation of pond for carp culture using appropriate methods for removal of unwanted organisms, filling of water to requisite depth, eradication of predatory and weed fishes, Preparation of ponds for freshwater cat fish culture (i.e. magur – *Clarias batrachus*), crustaceans (Prawn), Preparatory dose of lime, manures and fertilizers during the pond preparation for different culture fish species, Seed stocking procedure with due acclimatization, Different suitable water quality parameter (pH, DO, hardness, Alkalinity, Turbidity) before the stocking of fish seed, Stocking density and ratio of fishes in different culture system and culture method for variety of fishes.

**Practical Content:**

Demonstrate Preparation of pond for carp culture using appropriate methods for removal of unwanted organisms, filling of water to requisite depth, eradication of predatory and weed fishes, Preparation of ponds for freshwater cat fish culture (i.e. magur – *Clarias batrachus*), crustaceans (Prawn), Preparatory dose of lime, manures and fertilizers during the pond preparation for different culture fish species, Seed stocking procedure with due acclimatization, Checking of suitable water quality parameter before the stocking of fish seed, demonstrate Stocking density and ratio of fishes in different culture system and culture method for variety of fishes.

**Module No. 4:** Scientific Nutrient Management and water quality Management

**Outcome:** Demonstrate feeding management, feed preparation and water quality monitoring

**Theory Content:**

Feeding requirements in different fishes along with preparing low cost balanced Ration & feed formulation of fishes, Identify different types conventional feed as-De Oiled Rice Bran, Husk, Mustard oil cake, Ground nut oil cake, Fish meal etc. & non-conventional as- Neem Cake, Azolla etc. feed ingredients of fishes, proper aeration and water replenishment procedure, Formulation of various forms

of fish feed as-Mash, Pallet, Floating etc. feeding rate and methods feeding with good FCR, dosages of lime, manures, fertilizers to maintain suitable soil and water quality in the different culture method.

**Practical Content:**

Preparation of low cost balanced Ration & feed formulation, Identify the feed ingredients, Identify different types conventional feed as-De Oiled Rice Bran, Husk, Mustard oil cake, Ground nut oil cake, Fish meal etc. & non-conventional as- Neem Cake, Azolla etc. feed ingredients of fishes, Demonstrate proper aeration and water replenishment procedure, Formulate the various forms of fish feed as-Mash, Pallet, Floating etc. feeding rate and methods feeding, Estimation of FCR, Application of lime, manures, fertilizers to maintain suitable soil and water quality in the different culture method.

**Module No. 5:** Scientific disease management, prevention in fish farming

**Outcome:** Identify and manage various infectious and non- infectious diseases that occur in Fish farming and also demonstrate the different medication & Preventive measures in the fish farm.

**Theory Content:**

Classification of infectious diseases such as-Viral, Bacterial, Fungal, protozoa and Parasitic etc. occurred in fishes, diagnostic symptoms of infectious fish diseases and demonstrate various types of medication, safety and security protocols to prevent infectious disease outbreak in fish farm, identify abnormal behavior (such as surfacing, gasping, irritating their scale on the hard substrate) , if any, observed in pond or presence of parasites (Argulus, Ergasilus, lernaea), lesion on body etc.

**Practical Content:**

Identification of infectious diseases such as-Viral, Bacterial, Fungal, protozoa and Parasitic etc. occurred in fishes, diagnose the symptoms of infectious fish diseases and application various types of medication, safety and security protocols to prevent infectious disease outbreak in fish farm, identify abnormal behaviour, if any, observed in pond or presence of parasites, lesion on body etc.

**Module No. 6:** Harvesting and Marketing

**Outcome:** illustrate the harvesting procedure, marketing and transportation of marketable fishes.

**Theory Content:**

Explain the harvestable size, harvesting time of different culture method, market survey procedure, surveying species demand and marketing strategies, Identify the suitable mesh size of the harvesting net for different fish species for marketing, the packaging and transportation procedure for the harvested fishes in good condition, Procedure of minimum handling procedure during harvest till marketing.

**Practical Content:**

Identify the harvestable size, asses the harvesting time of different culture method, market survey procedure, surveying species demand and marketing strategies, Identify the suitable mesh size of the harvesting net for different fish species for marketing, Demonstrate the packaging and transportation procedure for the harvested fishes in good condition, Procedure of minimum handling procedure during harvest till marketing.

**Module No. 7:** Record Keeping, Marketing & trade Management in Fish farming

**Outcome:** Demonstrate the process of documentation, record keeping and trade policy in commercial Fish Farming.

**Theory Content:**

Elaborate to maintain documents efficient Fish farm management, procedure for record keeping in fish farm, How to maintain the record of harvest and sale proceeds, illustrate different value chain system and marketing process like-retail and whole sale process etc. in commercial fish farming.

**Practical Content:**

Demonstrate the documents maintaining efficient Fish farm management, procedure for record keeping in fish farm, Demonstrate How to maintain the record of harvest and sale proceeds, Identifying different value chain system and marketing process like-retail and whole sale process etc. in commercial fish farming.

**Learning Outcome – Assessment Criteria**

Module No.	Outcome	Assessment Criteria
1	Apply Safe Working Practices	<p><b>After completion of this module students will be able to:</b></p> <p>(1.1) Assessor will ask the trainee to explain suitable measures for protection of pond from natural calamities such as flood, storm, protect dyke from erosion or break, protection and prevent escape of the cultured fishes.</p> <p>(1.2) Trainee will be asked to explain various types of common predators (i.e. Kingfisher, Cormorants, Snake) and preying organisms (i.e. spawn, fry) in water bodies.</p> <p>(1.3) Trainee will be asked to explain suitable methods such as fencing to keep away predators in water bodies to protect fish culture.</p> <p>(1.4) Assessor will ask the trainee to explain various Structural ( Includes cleaning and disinfecting the materials used in ponds and building, human traffic control and sanitation, effluent water recycling etc) and Operational Sanitation measures (i.e. includes daily active procedures like effective disease monitoring through routine disinfection like sterilisation of contact surfaces, control at the visitor's entry point and thorough check of carriers and sources of stocks etc, so as to prevent disease causing agents like virus, bacteria, protozoa, etc. from horizontal transmission of diseases) for effective bio-security measures (i.e healthy fish stock, disease free fishes, effective sanitation, proper dis infection) in fish farm.</p> <p>(1.4) Assessor will ask the trainee to explain the effective systems and routines (i.e. Fish health checkup, DO level of water, pH) to ensure healthy and hygienic conditions during all stages of fish culture including transportation and marketing.</p> <p>(1.5) Assessor will examine whether the trainee is able to identify possibilities of bacterial (water borne, air borne,) and other contamination from human handling.</p> <p>(1.6) Trainee will be asked to explain standard procedures to deal with accidents and emergency situations (i.e. Mass fish mortality, pond poisoning).</p> <p>(1.7) Trainee will be asked about different procedure to</p>

Module No.	Outcome	Assessment Criteria
		<p>ensure all nets, utensils and vessels used are decontaminated and clean.</p> <p>(1.8) Trainee will be able to demonstrate general farm hygiene &amp; Sanitation procedures, quarantine, isolation, shed cleaning and disinfection procedures, Water sanitation, Disinfection, precaution and handling etc</p> <p>(1.9) Trainee will be asked to enlist different bio-safety &amp; bio-security measures, proactive measures to minimize entry of infection agents.</p> <p>(1.10) Trainee will be asked to draw &amp; depict Structural and Operational Sanitation measures (Quarantine, Sanitation, Disinfection, Surveillance and Vaccination) in Fish farm.</p>
2	<p>Explain the basics of Scientific commercial Fish Farming, Identification of freshwater carps, catfish, prawns, various methods of culture and types of culture.</p>	<p><b>After completion of this module students will be able to:</b></p> <p>(2.1) To ask the trainee to identify and elaborate different freshwater fishes, prawn, catfishes for commercial fish farming.</p> <p>(2.2) Trainee will be asked to explain the different scientific culture method (Extensive, semi intensive, Intensive) and culture types (monoculture or composite culture) for carps, catfishes and prawns.</p> <p>(2.3) Trainee will be asked to illustrate the various Fish farming practices (Freswater, Barckish water) in the state.</p> <p>(2.4) Trainee will be able to explain the future perspectives and constraints of fish farming.</p> <p>(2.5) To assess the trainee on the basis of report/assignment submitted regarding various Fish farming practices in the state along with their future perspectives and constraints of fish farming.</p> <p>(2.6) Assessor will assess the assignment or report submitted by trainee to supervisor or competent of authority regarding various structure of commercial fish farms in the state along with their future perspectives.</p>
3	<p>Illustrate Pond preparation, fertilization, water quality checking, stocking of fish seed for profitable Fish farming.</p>	<p><b>After completion of this module students will be able to:</b></p> <p>(3.1) Trainee will be asked to explain preparation of pond for carp culture using appropriate methods (i.e Mohua oil cake, Bleaching and Urea) for removal of unwanted organisms (weed fish, aquatic insect, predatory fish), filling of water to requisite depth, eradication of predatory (i.e <i>Channa sp</i>, <i>Clarias batraches</i>, <i>Heteropneustes fossailis</i>) and weed fishes (i.e. <i>Puntius sp.</i>, <i>Oxygaster sp.</i>, <i>Ambassis sp.</i>, <i>Amblypharyngodon mala etc.</i>)</p> <p>(3.2) Assessor will ask the trainee to explain the preparation of ponds for freshwater cat fish culture (i.e.</p>

Module No.	Outcome	Assessment Criteria
		<p>magur – <i>Clarias batrachus</i>), crustaceans (Prawn).</p> <p>(3.3) Assessor will ask the trainee to explain about the preparatory dose of lime, manures and fertilizers (Cowdung, Urea, Single Super Phosphate) during the pond preparation for different culture fish species.</p> <p>(3.4) Assessor will ask the trainee about the seed stocking procedure with due acclimatization.</p> <p>(3.5) Assessor will ask the trainee to enlist different suitable water quality parameters (pH, DO, Hardness, Alkalinity, Temperature) before the stocking of fish seed.</p> <p>(3.6) Trainee will be able to demonstrate how to check the water quality parameters before the stocking of fish seed.</p> <p>(3.7) Assessor will ask the trainee to explain about stocking density and ratio of fishes in different culture system (Monoculture and Composite culture) and culture method (Extensive, Semi Intensive, Intensive) for variety of fishes.</p>
4	<p>Demonstrate feeding management, feed preparation and water quality monitoring,</p>	<p><b>After completion of this module students will be able to:</b></p> <p>(4.1) Trainee will be able to demonstrate the feeding requirements in different fishes along with preparing low cost balanced ration &amp; feed formulation of fishes.</p> <p>(4.2.) Trainee will be able to explain different types conventional feed (as-De Oiled Rice Bran, Husk, Mustard oil cake, Ground nut oil cake, Fish meal etc.) &amp; non-conventional (as- Neem Cake, Azolla etc.) feed ingredients of fishes.</p> <p>(4.3) The trainee will be able to illustrate the suitable ways of providing proper aeration and water replenishment in the culture pond.</p> <p>(4.4) The trainee will be able to explain formulation of various forms of fish feed (as-Mash, Pallet, Floating etc.) feeding rate and methods of feeding for maintaining good FCR(Feed Conversion Ratio).</p> <p>(4.5) Trainee will be asked to demonstrate appropriate dosages of lime, manures, fertilizers to maintain suitable soil and water quality in the different culture method.</p>
5	<p>Identify and manage various infectious and non- infectious diseases that occur in Fish farming and also demonstrate the different medication &amp; Preventive measures in the fish farm.</p>	<p><b>After completion of this module students will be able to:</b></p> <p>(5.1) Assessor will ask the trainee to explain various category of infectious diseases (such as-Viral, Bacterial, Fungal, protozoa and Parasitic etc.) occurring in fish farming.</p> <p>(5.2) Assessor will ask the trainee to explain various category of non-infectious diseases (Gas bubble disease, Hypoxia, Alkalosis, Acidosis) occurring in fish farming.</p> <p>(5.3) Trainee will be asked to explain various diagnostic symptoms of infectious &amp; non-infectious fish diseases.</p> <p>(5.4) Trainee will be asked to demonstrate the different</p>

Module No.	Outcome	Assessment Criteria
		<p>types of medication applicable for such infectious &amp; non-infectious fish diseases.</p> <p>(5.5) Assessor will examine whether the trainee is able to perform various safety and security protocols to prevent infectious disease outbreak in fish farm.</p> <p>(5.6) The trainee will be able to identify abnormal behavior (such as surfacing, gasping, irritating their scale on the hard substrate), if any, observed in pond or presence of parasites (Argulus, Ergasilus, lernaea), lesion on body etc. and report it to the technician.</p> <p>(5.7) Trainee will be able to carry out periodic soil, water and fish sampling and netting operation for fish health observation.</p> <p>What are the tests to be carried out for soil, water &amp; fish samples??? pH, DO, Alkalinity, Hardness, Turbidity.</p>
6	<p>Illustrate the harvesting procedure, marketing and transportation of marketable fishes.</p>	<p><b>After completion of this module students will be able to:</b></p> <p>(6.1) Assessor will ask the trainee to explain the harvestable size, harvesting time of different culture method.</p> <p>(6.2) Assessor will ask the trainee to identify the harvestable size and assess the harvesting time of different culture method.</p> <p>(6.3) The trainee will be able to explain the market survey procedure, surveying species demand and marketing strategies.</p> <p>(6.4) The trainee will be able to identify the suitable mesh size of the harvesting net for different fish species for marketing.</p> <p>(6.5) The trainee will be able to demonstrate the packaging and transportation procedure for the harvested fishes in good condition.</p> <p>(6.6) The trainee will be able to demonstrate the minimum handling procedure during harvest till marketing.</p>
7	<p>Demonstrate the process of documentation, record keeping and trade policy in commercial Fish Farming.</p>	<p><b>After completion of this module students will be able to:</b></p> <p>(7.1) Trainee will be asked to demonstrate how to maintain documents efficient Fish farm management.</p> <p>(7.2) Trainee will be asked to demonstrate the procedure for record keeping in fish farm.</p> <p>(7.3.) Assessor will examine whether the trainee is able to maintain the record of harvest and sale proceeds.</p> <p>(7.4) Trainee will be able to illustrate different value chain system and marketing process like-retail and whole sale process etc. in commercial fish farming.</p> <p>(7.5) Trainee will be asking about the record cost of inputs and other miscellaneous expenditures.</p>
8	OJT	
9	Employability Skill	



**LIST OF TOOLS & EQUIPMENTS: MODEL COURSE ON FISH FARM WORKER**

<b>LIST OF GENERAL TOOLS &amp; EQUIPMENTS: ( For Batch of 30 Candidates)</b>			
<b>S No.</b>	<b>Name of the Tool &amp; Equipment</b>	<b>Specification</b>	<b>Quantity</b>
1.	Laptop & LCD Projector,	Standard & available size	01Set
2.	White board, Marker,	Minimum 5'X4'	01-02 each
3.	Record book, Balanced Feed Chart,	Standard & available size	02-03 each
4.	Public address system	Standard & available size	01 No

*N.B.: To conduct Practical for trainees on related trade/discipline, a fish pond demonstration unit with minimum 0.065 ha area are prerequisite for hands-on skill development under the training programme*

**LIST OF FARM EQUIPMENTS REQUIRED FOR FISHERY DEMONSTRATION UNIT**

<b>S. No.</b>	<b>Name of the Farm Equipment's</b>	<b>Specification</b>	<b>Quantity</b>
1.	Pond	0.65ha	1
2.	Pump set	1hp	1 No
3.	Water testing Kit (pH, DO, Alkalinity, Hardness, Nitrate, Nitrite)	Standard	02 Nos.
4.	Simple microscope, Plankton net, Refractometer, pHmeter, Secchi disk etc.	-Do-	01 No.
5.	Chemicals and medicine-Lime, KMnO <sub>4</sub> , bleaching powder, OTC tablet.	-Do-	02-03 each
6.	Aerator, mixer, grinder, pelletizer	-Do-	01 each
7.	Wt. Balance, Chemical storage rake, Fan, delivery pipe.	-Do-	01 each

**Marks Distribution**

<b>Outcome</b>	<b>Outcome Code</b>	<b>Total Th marks</b>	<b>Total Pr. marks</b>
Apply Safe Working Practices	AGR/0201/OC1	20	100
Explain the basics of Scientific commercial Fish Farming, Identification of freshwater carps, catfish, prawns, various methods of culture and types of culture.	AGR/0201/OC2	20	90
Illustrate Pond preparation, fertilization, water quality checking, stocking of fish seed for profitable Fish farming.	AGR/0201/OC3	30	100
Demonstrate feeding management, feed preparation and water quality monitoring,	AGR/0201/OC4	20	90
Identify and manage various infectious and non-infectious diseases that occur in Fish farming and also demonstrate the different medication & Preventive measures in the fish farm.	AGR/0201/OC5	20	90
Illustrate the harvesting procedure, marketing and transportation of marketable fishes.	AGR/0201/OC6	20	90

Demonstrate the process of documentation, record keeping and trade policy in commercial Fish Farming.	AGR/0201/OC7	20	90
Work in real job situation (OJT)	AGR/0201/OC8	0	150
Employability Skills (60 Hrs)	DGT/VSQ/N0102	50	0