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Facilitator Guide



Sector
Agriculture

Sub-Sector
Fisheries

Occupation
Aquaculture

Reference ID: **AGR/Q4910**, Version **3.0**
NSQF Level: **4**

Ornamental Fish Farmer



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Shri Narendra Modi
Prime Minister of India

“ Skilling is building a better India.
If we have to move India towards
development then Skill Development
should be our mission. ”

Acknowledgements

We are thankful to all organizations and individuals who have helped us in preparation of this Facilitator Guide. We also wish to extend our gratitude to all those who reviewed the content and provided valuable inputs for improving quality, coherence and content presentation of chapters. This Facilitator Guide will lead to successful roll out the skill development initiatives, helping greatly our stakeholders particularly trainees, trainers and assessors etc. We are thankful to our Subject Matter Expert for the content and helping us in preparation of this Facilitator Guide.

It is expected that this publication would meet the complete requirements of QP/NOS based training delivery. We welcome the suggestions from users, industry experts and other stakeholders for any improvement in future.

About this Guide

The objective of the guide is to provide an approach map for interacting with the trainees undergoing training on this job role. The aim of the course is to provide both theoretical and practical knowledge to the trainees, and also to guide them for marketing the product and generating finances for the unit. The guide is neither a substitute nor complete road map, but an aid to help to pass on the knowledge on all the aspects to the trainees in a systematic manner. It is expected that the trainer is fully conversant with all the contents of the guide. The guide is just to indicate that how to proceed for covering a topic and includes some additional information that may be necessary for the trainer to develop better comprehension on following aspects:

- **Knowledge and Understanding:** Satisfactory operational learning and comprehension to play out the required chore
- **Performance Criteria:** Pick up the required aptitudes through hands on preparing and play out the required operations inside the predetermined measures
- **Professional Skills:** Capacity to settle on operational choices relating to the zone of work

The job will also include judging the comprehension and also help them learn more by hands on training. Ornamental fishery covers different types of ornamental fishes and the focus may vary from region to region. Accordingly, the evaluation parameters may also vary slightly from place to place. But it has to be ensured that these are in accordance with the knowledge imparted and time spent on each unit. It is expected that irrespective of the region, knowledge on all aspects of ornamental fishery will be imparted to trainees.

Symbols Used



Exercise



Notes



Objectives



Do



Ask



Explain



Elaborate



Activity



Team Activity



Facilitation Notes



Learning Outcomes



Summarize



Role Play



Example



Demonstrate



Resources



Say



Practical



Tips

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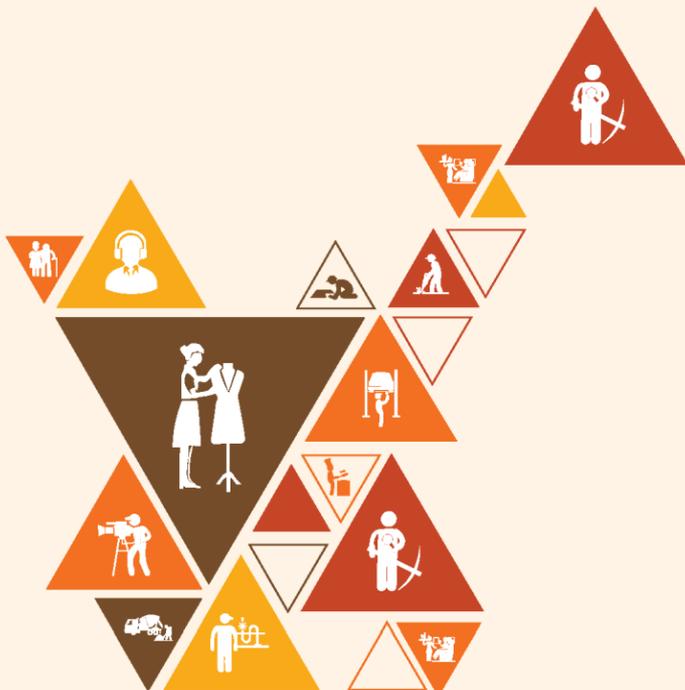
ASCI

Agriculture Skill Council of India

1. Introduction to the Role of an Ornamental Fish Farmer

Unit 1.1 - Definition, Status and Prospects of Ornamental Fish Culture

Unit 1.2 - Ornamental Fish Diversity, their Classification and Identification



Bridge Module

Key Learning Outcomes

After the completion of this module, the participant will be able to:

1. Describe the size and scope of the agriculture industry and its subsectors.
2. Discuss the role and responsibilities of an Ornamental Fish Farmer.
3. Identify various employment opportunities for an Ornamental Fish Farmer.

UNIT 1.1: Definition, Status and Prospects of Ornamental Fish Culture

Unit Objectives

After the completion of this unit, the participant will be able to:

1. Recognize the scope to adopt of ornamental fish culture as an entrepreneur.
2. Describe global scenario of ornamental fish culture.

Resources to be Used

- Available objects such as a whiteboard, duster, pens, pencils, sticky notes, notepad, computer, projector, white board, flip charts/paper, marker, duster
- Power point slides, pictures / posters e.g. to depict ornamental fish culture.
- Video film to show varieties of ornamental fish and their culture status
- Teaching aids such as posters and charts to depict probable water resources for collection of ornamental fish in India

Say

- Welcome the participants and thanks everyone for their participation in this training program.

Ask

- Explore with participants what they understand about the word skill, ornamental fish etc.
- Ask few volunteers to share as what will they do to improve their own skills in ornamental fish culture
- How many of them have visited public aquarium? has any one has ornamental fish in their home or in neighbours etc.
- Name few ornamental fish commonly available.
- Ask participants to describe people / occupations who are directly dependent on aquaculture to earn living.

Explain

- Introduce participants to definition of ornamental fish culture and explain the ornamental characters of fish as mentioned in participant handbook.
- Explain different categories of business associated with ornamental fish culture with examples and pictures. Explain their role in livelihood, human health and vastu.
- Explain various groups of ornamental fish (e.g. egg layer, live bearer, nest builder, fighter etc.).

Elaborate



- Ornamental Fish Culture
- Opportunities for women/Unemployed youth
- Capture of wild stock
- Breeding of ornamental fishes
- Export of ornamental fishes
- Marketing of accessories

Team Activity



Purpose: Knowledge enhancement, effective communication.

Methodology: Group discussion and stage presentation for about 20- 30 minutes.

Expected outcome:

- Confidence building
- Group involvement
- Knowledge enhancement

Divide the participants into groups and ask them to discuss among themselves on the topic that has been taught in the class. Now call one volunteer from each group and ask him to summarize the topic and appreciate everyone.

Say



- Thank everyone for their participation.
- Review the presentation of each group and enrich the same with your comments/valuable information/corrections etc.

Notes of Facilitation



- Help participants to complete all the tasks included in the participant handbook.
- A thorough understanding of the meaning of ornamental fish culture will help in inculcating serving attitudes and create awareness of 'people' dimensions associated with aquarium care and management.
- While describing the role and importance of ornamental fish culture, help participants to develop a sense of pride amongst them as would-be service providers of a sector that is important to country's economy, social and cultural well-being.

UNIT 1.2 : Ornamental Fish Diversity, their Classification and Identification

Unit Objectives

After the completion of this unit, the participant will be able to:

1. Identify and classify different types of ornamental fish.
2. Infer the behaviour of various ornamental fish.

Resources

- Available objects such as a white board, duster, flip chart board / paper etc.
- Fish specimens either live or preserved (refer participant hand book of ornamental fish technician).
- Charts showing fish behaviour.
- Photographs of different types of ornamental fish as much as possible.

Say

- Good day and welcome all the participants to the training session. Recall the key points of previous session discussion.

Ask

- Who will explain the difference between food fish and ornamental fish?
- How many of you have aquarium in the house? Do you know their names?
- Why ornamental fish culture is done?
- Have you ever seen gold fish in the market? What would be its price?

Team Activity

Purpose: Knowledge enhancement, effective communication.

Methodology: Group discussion for about 20- 30 minutes.

Expected outcome:

- Confidence building
- Group involvement
- Knowledge enhancement

Procedure

Make students into two or three groups. Ask them to do activities like identifying each fish name and its breeding habit. Taking clue from the name of fish, groups should discuss amongst themselves the behaviour of each fish.

Explain



- Explain importance of ornamental fish farming.
- Enlist fishes which are used in farming to meet the market demand for ornamental fish.
- Explain ornamental value of fish.
- Fish varieties commonly grown for commercial purpose, which may include indigenous and exotic varieties (Show specimens and picture of these fishes).
- Explain the criteria of selecting these varieties i.e. growing in confined water and different colours. Fins etc.
- Procurement of mature fish-displayed in aquarium and stock in ponds for breeding.

Notes of Facilitation



- Trainer may use rotational basis for individuals or in groups to take up different activities, answering the question, etc.
- The activities at the aquarium house for specific ornamental characters may be asked to point out by making drawings. Rotation may be done on weekly basis.
- They may be asked to pin point the location of ornamental fish hubs in world and India's map.

Exercise



Key Solutions to PHB Exercises

1. Multiple Choice Question
 1. China
 2. 1805
 3. 1853
 4. Oceanarium
 5. Mumbai
 6. Classified ornamental fishes
 7. Non classified ornamental fishes
 8. Chela laubuca
 9. Western ghats
 10. Barca snakehead



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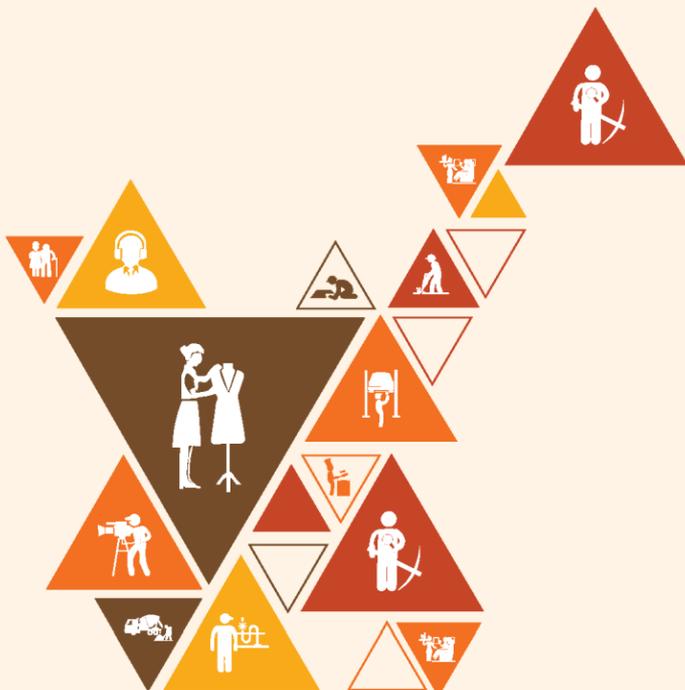


2. Tank & Pond Preparation Activities

Unit 2.1 - Design of Small Scale & Commercial Farms

Unit 2.2 - Re-circulatory System

Unit 2.3 - Design & Construction of Aquarium Tanks



AGR/N4936

Key Learning Outcomes

After the completion of this module, the participant will be able to:

1. Explain the types of tanks and ponds to keep the ornamental fish.
2. Build the aquarium.
3. Explain the right materials to make tanks.
4. Identify the ponds for rearing of ornamental fish.
5. Explain the advantage of re-circulatory system.

UNIT 2.1: Design of Small Scale & Commercial Farms

Unit Objectives

After the completion of this unit, the participant will be able to:

1. Explain about ornamental fish farm and tanks.
2. Design ornamental fish farm.

Resources

- Laptop, power point slides, pictures / videos / posters / depicting various types of ornamental fish farm.
- Water pump, filters, aerators, power backup, oxygen cylinder, fiber tanks, rcc material, silpauline etc.
- Model of fish farm showing drawing and with details of network of pipelines, filter, aeration system.
- Pictures of fish tanks of various design and materials to be used for manufacturing fish tanks.

Elaborate

- Design of Small Scale & Commercial Farms.

Demonstrate

- Demonstrate various parts of water filter.
- Show various types of designs of fish tanks and farm.

Activity

Purpose : Knowledge enhancement about breeding ornamental fishes.

Methodology : Pen and paper activity

Tentative time : It may be 20-30 minutes.

- Arrange the participants into 2-3 groups
- Ask the participants to enlist some pond breeding ornamental fishes and get a volunteer out from every group one by one to write the points on the board.
- Then discuss those points with the participants.

Say



- Sum up key learnings of the above discussion.

Notes of Facilitation



- Give assignment to trainees to draw the best ornamental fish farm and design.
- Ask them to collect water from different resources and select the suitable one for fish culture.
- Organize practical sessions for water analysis for hands on experience.
- Trainees may be guided to make a layout plan for inlet and outlets at the farm from drawing water and expelling water during flooding.

UNIT 2.2: Re-Circulatory System

Unit Objectives

After the completion of this unit, the participant will be able to:

1. Discuss about the maximum utilization of water.
2. Describe the function and advantage of re-circulatory system in ornamental fish culture.

Resources

- Available objects such as a white board, duster etc.
- Slides in power point presentation showing specific images (May refer participant handbook for images).
- Mechanical and biological filter, water pump, fish tanks etc.

Explain

- Explain the process to re-use the water in fish tanks.
- Clearly explain the steps to filter water in the system for re use.
- Must inform the participants regarding the parameters to be checked during re-circulation of water.

Elaborate

- Need to re-circulate the water in fish tank.
- Describe the process of filtration of water as specified in participant handbook.

Demonstrate

- How to set up filters in fish tanks.
- Techniques to filter the water for culture of another batch of fish.

Activity

Purpose : Knowledge enhancement and the tentative time limit is 30 min.

Methodology : Group discussion

- Arrange the participants into three groups.
- Assign each group to one of the following topics for Re-Circulatory system.
- No team should get same topic.

- Ask the teams to conduct group discussion of the following topics:
 - ✓ Mechanical Filtration
 - ✓ Biological Filtration
 - ✓ Sterilization
 - ✓ Water Quality Management

Notes of Facilitation

- Guide trainees to collect samples of water and undertake test for pH, dissolved oxygen and pathogens.
- Make notes as whether or not the water is suitable for fish culture.
- Discuss about simple method to filter drinking water.
- Ask them about resources available for water and its scarcity in future.

UNIT 2.3: Design & Construction of Aquarium Tanks

Unit Objectives

After the completion of this unit, the participant will be able to:

1. Describe the requirements to construct and aquarium.
2. Explain different types of aquarium as per the choice of hobbyist.

Resources

- Glass pieces, sealant, tank, hood fitted with bulb
- Gravels and stone chips, sand
- Aquatic plants (artificial plants especially meant for aquarium can also be used)
- Colour posters for background
- Aquarium toys, aerator, air stone
- Thermometer, thermostat, filtration unit
- Clean, chlorine free water
- Colourful fishes of ornamental nature
- Artificial food, hand net, bucket and mug, sponge

Ask

- What is aquarium?
- How it is made?
- Why ornamental fish are kept in it?
- How can you prepare a glass tank?
- How can you make the aquarium attractive?

Elaborate

- Design and construction of Aquarium tanks
- Setting of Aquatic Ornamental Plants In The Aquarium
- Aeration and Heating Arrangement
- Acclimatization Before Stocking of Fish in The Aquarium
- Number of Fishes in Aquarium
- Maintenance of Aquarium

Activity

Purpose : To perceive the topic and time will be 20 minutes.

Methodology : Pen and paper activity

- Divide the participants into three groups
- Ask the participants to short note on design and construction of aquarium tanks.
- Now discuss the points of every group.

Say

- Thankyou everyone for their participation
- Discuss responses of the participants regarding the discussion.

Notes of Facilitation

Trainees may be asked to collect the following:

- Pictures of aquarium tanks a wall paper
- Aquatic plants, stones for decoration of aquarium
- Draw and step wise lay out for construction of a glass aquarium
- Display different types of designs of aquarium showing fitted in table, walls, desks etc.
- Trainees should be given freedom to draw and design an aquarium of their imagination

Exercise

Key Solutions to PHB Exercises

1. Multiple Choice Questions
 1. Earthen ponds
 2. *Betta spleridens*
 3. All of the above
 4. USA
 5. 200 L
 6. 85%
 7. 24th
 8. Earthern container
 9. 250
 10. Barbs

Key Learning Outcomes

After the completion of this module, the participant will be able to:

1. Explain the feeding schedule and types of feed for ornamental fish.
2. Differentiate between efficiency of live food and artificial feed.
3. Demonstrate the technique of preparation of artificial feed.
4. Setup a live fish food culture unit.

UNIT 3.1: Feed Formulation and Feeding Strategies

Unit Objectives

After the completion of this unit, the participant will be able to:

1. Explain the feed and feeding strategies.
2. Explain and formulate on farm feed using local ingredients.

Resources

- Different types of feed ingredient to exercises selection of feed ingredients for feed formulation.
- Grinder-mixer, pelletizer for manufacturing on farm feed.
- Polythene bags, spatula, containers
- Permanent marker pen for numbering and labelling the feed sample bottles and bags regarding data, location and date of preparation.
- Tray or racks for keeping feed samples bags and bottles.
- Teaching aids such as illustrations showing method to grinding, mixing, pelletizing and drying.

Say

- Greet the participants and revise the key learnings of previous session discussion.

Elaborate

- Feed Formulation and Feeding Strategies.
- Formulation of Different Types of Feeds.
- Formulate Feed According To The Growth Stage & Size of Fish.

Practical

- Ask participants to do formulate feed and process
- Ask participants to practice estimation of quantity of supplementary feed in fish ponds/tanks

Activity



Purpose : To perceive the topic and time will be 20 minutes.

Methodology : Pen and paper

- Divide the participants into groups.
- Ask the participants to Prepare flow charts for formulation and preparation of supplementary feed.
- Now discuss the points of every group.

Do



- During the activity, encourage the participants to ask questions and have active participation.
- At the end of the activity, clarify the doubts the participants.
- Provide your own expert advice and opinion regarding the topic.

Notes of Facilitation



- Teaching aids should be prepared such as charts and tables for different types of feed ingredients
- Organize visit to nearby fish farm to show method of feeding the fish, netting of fishes to check their growth and diseases
- Table must be put in the laboratory regarding contents of protein, fat, vitamins and minerals in feed ingredient
- Provide guidance to trainees with respect to procurement of feed ingredients and their storage
- Trainees may be asked to compile information on feeding fish in nearby pond
- Allow them to search online the available market feed for ornamental fish

UNIT 3.2: Live Fish Feed and their Culture

Unit Objectives

After the completion of this unit, the participant will be able to:

1. Explain live fish food for ornamental fish unit.
2. Reduce the cost of ornamental fish culture by feeding live feed.

Resources

- Microscope to examine live fish food organisms
- Plankton net, sample collection bottle
- Teaching aid for showing pictures of live fish food organisms
- Live feed culture tanks, aerators, bulb with power connection

Explain

- Natural feeding habits of ornamental fish
- Types of live food organisms preferred by ornamental fish
- Methods to culture live fish food organisms for breeding and culture of live feed
- Daily feed requirement in hatchery and their advantages

Ask

- Do you know fish also need food as human beings?
- What type of food they get from nature?
- How does fish eat their food?

Elaborate

- Live fish feed and their culture
- Classification of Natural Live Foods
- Sources of Live Foods

Team Activity

Purpose : To perceive the topics . The tentative time will be 1 hour.

Methodology : Quiz on Classification of Natural Live Foods

Procedure :

- Divide the class into two groups.
- In turns ask the quiz questions to the groups.
- If the answer is incorrect pass the questions to other group.
- Share the answer if the groups are not able to answer.
- Congratulate the participants who answered correctly

Do

- Encourage the students to actively participate in the activity.
- Encourage the non-participants to open up and speak up.
- Share your own thoughts and viewpoints related to the topic.

Notes of Facilitation

- Trainer must organize the visit to a fish farm to give demonstration and exposure to real situation of feeding in fish farm.
- Teaching aids i.e. tabular presentation of feeding schedule and quantity of feed.
- Participation of trainees must be encouraged specially in preparation of culture media for raising live feed, inoculation of species and harvesting.
- Also an exposure must also be given for live feed operation in hatcheries.

Exercise

Key Solutions to PHB Exercises

1. Multiple Choice Questions
 1. 0.5-10 μm
 2. food
 3. Multi cellular unbranched filamentous
 4. Cyanophyceae
 5. Zooplankton
 6. Infusoria
 7. *Brachionus*
 8. Cladocerans
 9. Bivalve crustaceans
 10. Sea Monkey



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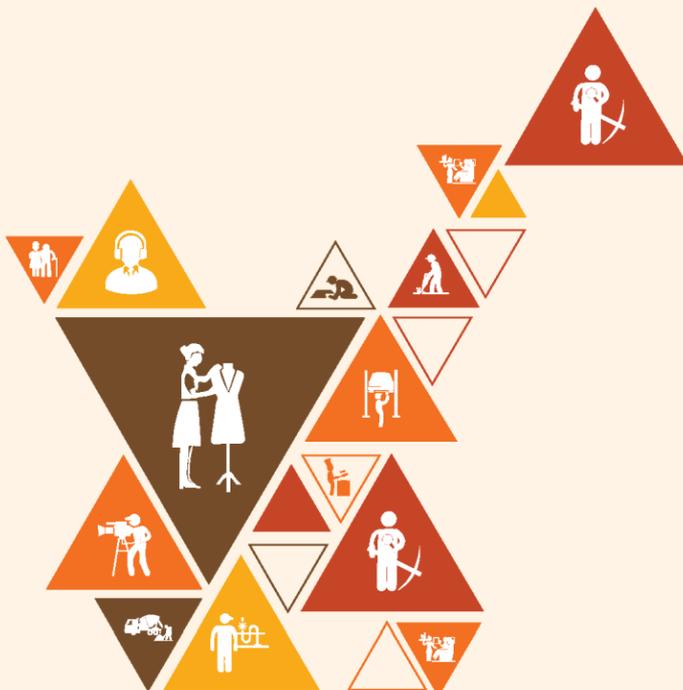
4. Breeding Seed Production & Culture of Ornamental Fish

Unit 4.1 - Breeding of Live Bearers and Egg Layers

Unit 4.2 - Fish Health Monitoring

Unit 4.3 - Disease Identification & Prophylactic Treatment

Unit 4.4 - Packaging and Conditioning for Transport



AGR/N4938

Key Learning Outcomes

After the completion of this module, the participant will be able to:

1. Describe breeding behavior of different ornamental fish.
2. Discover how to breed common ornamental fish.
3. Define the role of water quality in breeding and rearing of ornamental fish.
4. Identify the symptoms of disease and treat the infections.

UNIT 4.1: Breeding of Live Bearers and Egg Layers

Unit Objectives

After the completion of this unit, the participant will be able to:

1. Explain breeding behavior of different ornamental fish.
2. Discuss the techniques to breeding the important ornamental fish.

Resources

- **Teaching aids:** Pictures of fish important ornamental fish and their male and female identification characters
- Fish tanks with accessories like floating plants, pebbles, aerators, aeration stone etc.
- Breeding mops, PVC pipes, filter, water heater, pH meter, oxygen cylinder, chemicals and glassware to test the water quality, hand nets, sponges etc.
- Quality brood stock ready to breed
- Charts of diseases, their control and prophylactic measures

Ask

- Have you ever seen breeding of any ornamental fish?
- Do you know parents of ornamental fish eat their own eggs and newly hatched young one?
- Which fish gives birth to young ones directly?
- Tell some precautionary measures coming to your mind to protect the young ones from their parents?

Elaborate

- Breeding of Live Bearers
- Breeding of Egg layers

Activity

Production : To perceive the given topic . Time may be plan for 20-30 minutes.

Methodology : Pen and Paper activity

- Make groups of 2 or 3 students and ask them to Prepare list of do's and don'ts for the breeding of ornamental fish
- Ask each participate to maintain the records of llive bearers and egg layers.
- Address any queries of the participants.
- At the end of the activity students able to maintain the records.

Do



- Take trainees to the workshop to show models, nets and other equipment used at the fish farm. Show model of hatchery, explain its components, use and operation.
- Make a model of fish breeding tank and show how tanks can be prepared for breeding.
- Inculcate awareness and observing behaviour of ornamental fish at the time of breeding.
- Prepare charts regarding measures to be taken at the time of breeding of different ornamental fish.

Notes of Facilitation



- Prepare of teaching/training aids.
- Establish linkages with the fish farm for conducting practical and hands on experience.
- Display of charts, posters, collages, showing good management practices to be followed with respect to breeding of fish.
- Display basic safety checks and guidelines to carry out regular inspection to prevent cannibalism during breeding.

UNIT 4.2: Fish Health Monitoring

Unit Objectives

After the completion of this unit, the participant will be able to:

1. Describe about suitable water quality for breeding and culture of ornamental fish.
2. Describe common techniques to monitor the water quality.

Resources

- Self-learning materials and teaching aids to explain factors responsible for contaminating water of fish tank and practices to be undertaken for maintaining water quality.
- Apron/working uniform, gloves, soap, towels, boots etc.
- Power point slides, pictures / videos / posters etc.
- Pictures of local fish farm to demonstrate/locate nearby water resources to draw water in the farm for storage.
- Model of fish farm showing drawing and storage of water, with details of network of pipelines.

Say

- Good day and welcome all the participants to the training session. Recall the key points of previous session discussion.

Ask

- What do you understand about a healthy fish?
- Why the water quality parameters are being studied in fish culture?
- What type of water is required for breeding ornamental fish are?
- Do you know a fish may be infected by bacteria?
- Will you be able to cure the fungal infection in fish?

Elaborate

- Water quality management
- Dissolved oxygen
- Nitrogenous Waste Products
- Water Temperature
- Water hardness

- Water exchange
- Measures To Maintain Good Water Quality
- Aquarium Filters

Activity



Purpose : To enhance the knowledge of different types of Aquarium Filters. It may be planned for 20-30 minutes.

Methodology: Pen and paper activity

Procedure :

- Divide the participants into 2 or 3 groups.
- Ask the participants to enlist the different types of Aquarium Filters and get a volunteer out from every group one by one to write the points on the board.
- Then discuss those points with the participants.

Say



- Sum up key learnings of the above discussion.

Notes of Facilitation



- Prepare teaching aids and learning resource material
- Make an inventory of regulations for maintaining hygienic environment.
- Prepare strategy to enact regulations about sanitation and hygiene strictly.
- Organise a field visit to a commercial ornamental fish farm to show these practices. Collect water from different sources and compare physical parameters like colour, smell, taste etc

UNIT 4.3: Disease Identification & Prophylactic Treatment

Unit Objectives

After the completion of this unit, the participant will be able to:

1. Identify the diseases occurring during culture period
2. Identify the causative agent for diseases
3. Discover how to cure the disease and follow prophylactic treatment

Resources

- Available objects such as a white board, duster, marker, flip chart, pen, paper etc.
- Slides in power point presentation
- Polythene bags, scissor, rubber band, oxygen cylinder, card board made cartoons, plastic tapes etc.

Ask

- What do you understand about a healthy fish?
- How will you judge that the fish is not healthy? Share your experience or thoughts with peer members.
- Do you think that infection in fish could be cured?

Say

- Like human beings, fish also suffer from various bacterial, fungal and viral diseases.
- Timely identification of disease symptoms will help in their timely and correct treatment.
- Restless behavior or off colour of the fish may be alarming

Elaborate

- Explain different types of diseases with their symptoms and treatment

Team Activity

Purpose : To perceive the topics . The tentative time will be 30-40 minutes.

Methodology : Pen and paper activity

Procedure :

- Divide the class into groups.
- Give each group assignment of preparing list of signs, symptoms and cure for bacterial, fungal, viral and other infections, respectively.

- Give them enough time to recall and refer the participant handbook.
- Ask one of the members from each team to share the list and discuss with peer members.

Do



- During the activity, encourage the participants to ask questions and have active participation.
- At the end of the activity, clarify the doubts the participants.
- Provide your own expert advice and opinion regarding the topic.

Notes of Facilitation



- Ensure that each participant understand the concept thoroughly.
- Participation of trainees must be encouraged specially in identification of diseases and their treatment.

UNIT 4.4: Packaging and Conditioning For Transport

Unit Objectives

After the completion of this unit, the participant will be able to:

1. Describe the technique of packing for short and long distance transportation.
2. Classify different medicines used during transportation.

Resources

- Available objects such as a white board, duster, marker, paper etc.
- Slides in power point presentation
- Polythene bags, scissor, rubber band, oxygen cylinder, card board cartons, plastic tapes etc.

Explain

- About packaging procedure and packaging area
- Importance of acclimatization of fish before packaging

Elaborate

- Methods of packaging of fish for short distance and long distance
- How to acclimatize the fish before packaging?
- Relation between quantity of water and number of fish to be packed
- Why oxygen packing is essential

Practical

- Ask participants to prepare bags to pack the fish for transportation.
- Visit the nearby shops of ornamental fish to know the process of packing the fish.
- Ask them to count the fish in the bag and quantity of water.

Team Activity

Purpose : To understand the topic. This may be plan for 15 – 20 minutes.

Methodoly : Group Discussion

- Make team of 2-3 participants and ask each team to have group discussion on the topic packaging and conditioning for transport.
- Facilitate team members to answer any query related to topics.

Do

- Make sure the participants have properly understood the topic.
- Ask the participants if they have any questions.

Notes of Facilitation

- Participants should be asked to bring fish for packing, select the species and keep for acclimatization
- They should be given different exercise to calculate number of fish for different volume of water

Exercise**Key Solutions to PHB Exercises**

1. Multiple Choice Questions
 1. Viviparous
 2. Angel Fish
 3. Beef liver
 4. All the above
 5. Gonopodium
 6. 6-8 weeks
 7. Tiger barb
 8. Potassium permanganate
 9. *Barbus tetrazona*
 10. Nest builders
 11. 7.5-8.5
 12. Aeromonas
 13. Sodium chloride
 14. Small white spot appear on the body and fins
 15. Nitrogen
 16. There is no change of gill colour
 17. A process by which fishes are accustomed to live in artificial condition
 18. activated charcoal and 'Amberlit' resin



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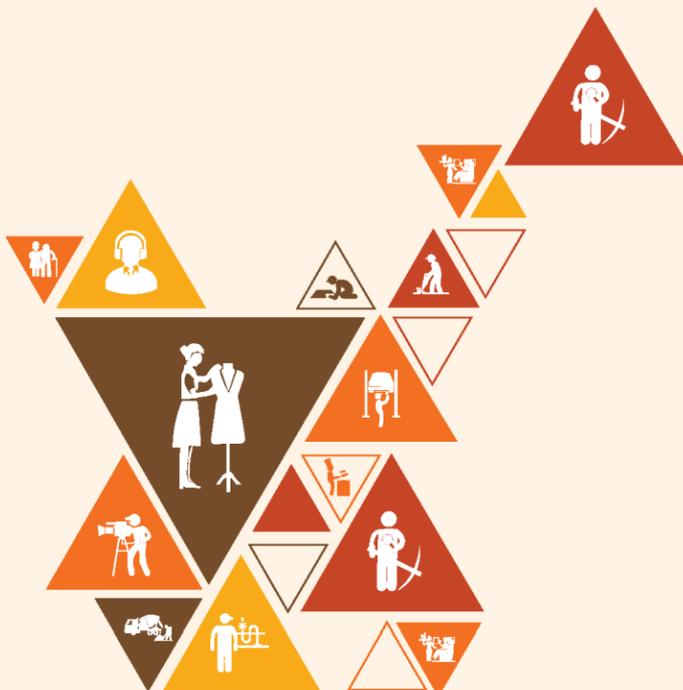


5. Basic Entrepreneurial Activities for Small Enterprise

Unit 5.1 – Agriculture Enterprise Scheme

Unit 5.2 – Agriculture Production Planning Process

Unit 5.3 – Post-production and Marketing Management



AGR/N9908

Key Learning Outcomes

After the completion of this module, the participant will be able to:

1. Identify the safety measures for sustainable business.
2. Describe best management practices for maintain the culture.
3. Explain the different measures to introduce new species in your culture system
4. Explain the procedure to maintain records of your breeding , rearing and marketing details .

UNIT 5.1 : Agriculture Enterprise Scheme

Unit Objectives

After the completion of this unit, the participant will be able to:

1. Analyzing the demand and supply of relevant agricultural produce in the market.
2. Checking the identity of target customers.
3. Explain the planning process of various business opportunities.
4. Describe the government ecosystem for various business opportunities.
5. Explain government schemes related to the provision of subsidy/funds to promote agricultural produce.
6. Explain the basic of a Business Plan.
7. Describe stockholder coordination and procedural compliance in business.

Resources

- Available objects such as a white board, duster, flip chart board/paper etc.
- Slides in power point presentation showing relevant images.

Say

- Greet the participants and revise the key learnings of previous session discussion.

Elaborate

- Demand vs Supply
- Target customers and their expectations
- Basic business plan
- Sources and availability of funds
- Government schemes and supporting ecosystem

Team Activity

Purpose : To perceive the topics . The tantative time will be 1 hour.

Methodology : Quiz

Procedure :

- Divide the class into two groups.
- In turns ask the quiz questions to the groups.

- If the answer is incorrect pass the questions to other group.
- Share the answer if the groups are not able to answer.
- Congratulate the participants who answered correctly

Do



- Encourage the students to actively participate in the activity.
- Encourage the non-participants to open up and speak up.
- Share your own thoughts and viewpoints related to the topic.

Notes for Facilitation



- Check out different Government schemes for small entrepreneurs. Share the information with the participants.
- You can tell them about the government websites like Start Up India, mudra.org.in etc.
- Discuss about various schemes and policies by the Government of India for entrepreneurs.

UNIT 5.2: Agriculture Production Planning Process

Unit Objectives

After the completion of this unit, the participant will be able to:

1. Describe resource and natural resource management.
2. Explain the concept of sustainability for agricultural production.
3. Explain the importance of smart farming in modern day agriculture.
4. Explain how to calculate the economics of the produce viz. production cost, price of the produce, B:C Ratio etc.
5. Explain the recommended sustainability practices to be followed during agricultural production.

Resources to be Used

- Available objects such as a white board, duster, flip chart board/paper etc.
- Slides in power point presentation showing relevant images.

Say

- Greet the participants and appreciate participants for their participation. Recall the previous session outcomes and then proceed towards the session.

Elaborate

- Resource Management
- Natural Resource Management
- Sustainability Practices for Long Term Effects
- Economies of Produce
- Resource Planning for Successful Agricultural Production
- Amalgamation of Farming and Technological Innovations
- Recommended sustainable agricultural practices

Notes for Facilitation



- Help the participants to complete all the tasks involved in the participant hand book.
- Motivate the participants by involving them in sense of participation and the realization of the importance of their work .
- Tell them their important role for the farming community of the country and they will be service providers of a sector which is important to a country's economy, social and cultural well-being.

UNIT 5.3: Post-Production and Marketing Management

Unit Objectives

After the completion of this unit, the participant will be able to:

1. Explain about adequate storage facilities.
2. Describe the marketing price and related aspects.
3. Explain how to collect information related to the wholesale and retail price of agricultural produce.
4. Explain various marketing channels of distribution for agricultural produce.
5. Describe the marketing plan in association with 4Ps and 4As.
6. Explain the digital marketing process and related details.
7. Describe the stakeholder coordination and relationship management.
8. List the relevant buyers of different types of agricultural produce.
9. Explain how to identify and manage various risks to production and post-production processes.

Resources to be Used

- Available objects such as participant handbook, white board, duster, marker, flip chart, board, paper etc.
- Slides in power point presentation showing relevant images.

Say

- Greet the participants and recall the previous session learning outcomes.

Elaborate

- Importance of Storage
- Marketing price
- Marketing channels
- Marketing mix
- Digital services and Related applications of marketing
- Stakeholder Coordination and Relationship Management

Notes for Facilitation

- Help the participants to complete all the exercises mentioned in the participant handbook.
- Encourage participants of group discussion to ask questions so that they can clear their doubts (if any).

Exercise

Key Solutions to PHB Exercises

A. Short Questions

1. Understanding the factors by which the seller can influence the perceptions is very important for the companies in order to attract and retain customers. This can help them to determine the pricing strategy that will ensure their competitiveness in the market and thus, superior financial returns.
2. They allow the seamless exchange of information between your brand and its buyers, providing the opportunity to reach more people and expand awareness of your product and services.
3. Types of Channels
 1. **Direct Channel (Zero Level):** The simplest and the shortest mode of distribution is direct distribution, where in the goods are made directly available by the manufacturers to customers, without involving any intermediary.
 2. **Indirect Channels:** When a manufacturer employs one or more intermediary to move goods from the point of production to the point of consumption, the distribution network is called indirect.
 3. **Manufacturer-Retailer Consumer (One Level Channel):** In this form of arrangement one intermediary i.e., retailers are used between the manufacturers and the customers.
 4. **Manufacturer-Wholesaler-Retailer-Consumer (Two Level Channel):** This is the most commonly adopted distribution network for most consumer goods like soaps, oils, clothes, rice, sugar and pulses.
 5. **Manufacturer-Agent-Wholesaler-Retailer-Consumer (Three Level Channel):** In this case, manufactures use their own selling agents or brokers who connect them with wholesalers and then the retailers.
4. 4A : Acceptability, Affordability, Accessibility and Awareness
4P: Product, Price , Place and Promotion
5. we need to manage the resources for agricultural operations because it provides a no. of advantages such as Sustainability, Enhanced biodiversity, Labour savings, Healthier soils, Increased yields, Reduced costs.
6. Gene editing technology, Technology for bringing compositional changes, etc
7. Land serves as storage for water and nutrients required for plants and other living micro-macro-organisms. The demand for food, energy and other human requirements depends upon the preservation and improvement of the productivity of lands, which is not only inelastic but also heterogeneous in different parts and regions of the country with a definite set up, capabilities, suitability for different land resources.

B. Multiple Choice Questions

1. Agri clinic and agribusiness centre
2. Marketing factors
3. All of the above



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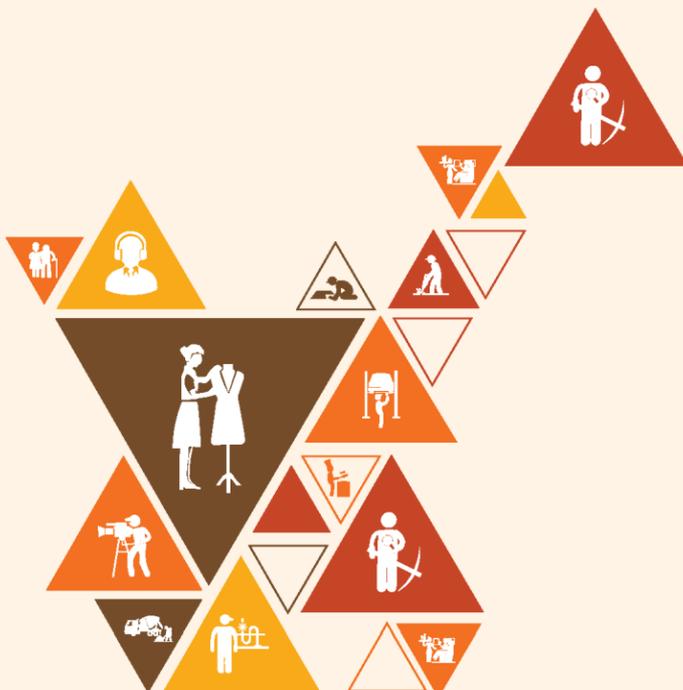


6. Healthy Hygiene and Safety Practices for Culture Operations

Unit 6.1 - Quarantine Protocol

Unit 6.2 - Bio Security Protocol

Unit 6.3 - Record Keeping and Marketing



AGR/N4955

Key Learning Outcomes

After the completion of this module, the participant will be able to:

1. Identify the safety measures for sustainable business.
2. Describe best management practices for maintain the culture.
3. Explain the different measures to introduce new species in your culture system
4. Explain the procedure to maintain records of your breeding , rearing and marketing details .

UNIT 6.1: Quarantine Protocol

Unit Objectives

After the completion of this unit, the participant will be able to:

1. Explain the role of quarantine protocol before bringing the fish from outside
2. Describe measures to protect the in house stock from outsiders

Resources

- Available objects such as a white board, duster, marker, flip chart board, pen, paper etc.
- Slides in power point presentation
- Charts on quarantine protocol, best management practices in ornamental fishes etc.

Say

- Good day and welcome all the participants to the training session. Recall the key points of previous session discussion.

Explain

- About quarantine area and how to implement protocols of quarantine to protect the fish from stress.
- Stocking density varies by species, temperature and other environmental factors.

Elaborate

- Bacterial contamination and personal hygiene in fish culture
- The fisheries industry is currently facing a number of environmental problems.
- Fish culture activities of building ponds, stocking and harvesting fish can contaminate hands and clothes with chemicals or dangerous microorganisms. Changing clothes after working around fish units and harvesting fish helps prevent contamination of fish.
- What happens when new species are being introduced to the ornamental fish culture unit.
- What should be done when a new species is brought to introduce in the unit.

Activity



Purpose : To enhance the knowledge about the quarantine regulations. This activity may be planned for 30-40 minutes.

Methodology: Pen and paper activity

Procedure :

- Divide the participants into 2 or 3 groups.
- Ask the participants to enlist the points to quarantine regulations and get a volunteer out from every group one by one to write the points on the board.
- Then discuss those points with the participants.

Say



- Sum up key learnings of the above discussion.

Notes for Facilitation



- Display relevant pictures, slides or videos related to the topic.
- Plan an outing to nearby fish shops so that students have practical exposure.
- Encourage more participants to involve in group discussion and group activity.
- Facilitate the students if they face any kind of problem.

UNIT 6.2: Bio Security Protocol

Unit Objectives

After the completion of this unit, the participant will be able to:

1. Explain rules for import and export of ornamental fish.
2. Explain the measures to protect the indigenous fish.

Resources

- Available objects such as a white board, duster, marker, flip chart, pen, paper etc.
- Slides in power point presentation, import-export regulations

Say

- Greet the participants and recall the previous session learning outcomes.

Explain

- Different types of pathogens can affect the fish health
- Explain the term bio security protocol
- There are certain regulations to import or export the fish

Elaborate

- How do the pathogens enter in an ornamental fish culture unit?
- The ways pathogens get entry to the system and affect the existing stock
- The precautions and measures to be taken to control the pathogens

Activity

Purpose: To acquaint about the Bio-security protocol. This activity may be planned for 15-20 minutes.

Methodology : Pen and per activity

- Ask the participants to write short note on bio-security protocol consider all points.
- Ask any one of the participants to pin point the factors on white board.
- Ask the other participants to discuss amongst themselves and ask any queries realised to the topic.

Say



- Emphasize and elaborate the key points of the discussion.
- Share your views regarding the topic.

Notes of Facilitation



- Assist all groups to understand the topic clearly through visualization.
- Keep some exercises handy for the activity.
- Constantly motivate each student to participate.
- Address the queries of the participants and clear all the doubts participants.

UNIT 6.3: Record Keeping and Marketing

Unit Objectives

After the completion of this unit, the participant will be able to:

1. Prepare and maintain records promptly with useful data of fish culture.
2. Organise transaction of money during marketing.
3. Identify existing markets and value of the fish.

Resources

- Available objects such as a white board, duster, flip chart board / paper etc.
- Slides in power point presentation
- Record books, registers, data sheets

Say

- Greet the participants and appreciate participants for their participation. Recall the previous session outcomes and then proceed towards the session.

Explain

- Importance of keeping records
- Different types of ornamental fish marketing system in India

Elaborate

- Farm Record Keeping Methods
- Procedure to Maintain Records
- Common Mistakes of An Aquarist
- Different Markets
- Ancillary / Supporting Unit
- Role of Institutions and Financial Agencies in Development of Ornamental Fisheries
- Developmental Schemes

Field Visit



Purpose : To enhance the knowledge .

Methodology : Field visit and the time varies according to the location, it may be 2 hours.

- Visit an ornamental fish breeding unit.
- Ask the participants to collect data for the activities happened on that day in the farm/unit
- They will see the records of the owner of the farm.
- Ask them to frame the outlook to enter the daily data for keeping record.

Notes for Facilitation



- Students must be encouraged for going through the participant handbook and come prepared with thorough reading.

Exercise



Key Solutions to PHB Exercises

1. Multiple Choice Questions
 1. Both
 2. 20 days
 3. To avoid infections
 4. Light must be on
 5. MPEDA



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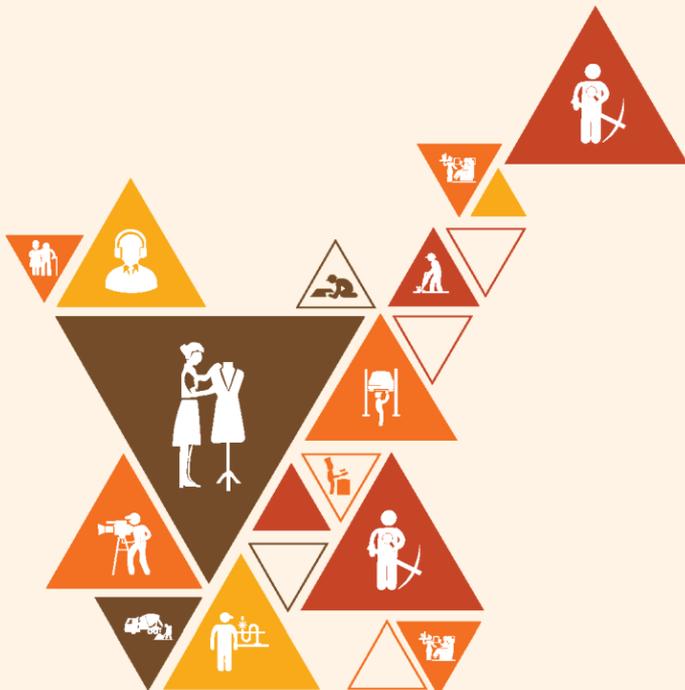
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7. Process of Setting up and Maintaining Marine and Fresh Water Aquarium

Unit 7.1 – Setting up Marine Aquarium

Unit 7.2 – Setting up and Maintenance of Freshwater Aquarium



AGR/N4963

Key Learning Outcomes

After the completion of this module, the participant will be able to:

1. Describe breeding behavior of different ornamental fish.
2. Discover how to breed common ornamental fish.
3. Define the role of water quality in breeding and rearing of ornamental fish.
4. Identify the symptoms of disease and treat the infections.

UNIT 7.1 : Setting Up Marine Aquarium

Unit Objectives

After the completion of this unit, the participant will be able to:

1. Identify the salinity of natural seawater.
2. Prepare artificial seawater.
3. Identify special equipment required for marine aquarium.
4. Determine the role and function of protein skimmer, UV steriliser, etc.
5. Recognise lighting requirements for marine aquarium .
6. Explain different types of marine aquarium setups.
7. Explain importance of live rocks in marine aquarium.
8. Setup a marine aquarium.

Resources to be Used

- Available objects such as a white board, duster, flip chart board/paper etc.
- Slides in power point presentation showing relevant images.

Elaborate

- Freshwater vs Marine Aquarium
- Salinity of seawater
- Sources of seawater
- Equipment for Marine Aquarium
- Types of Marine Aquarium Setups
- Installation of Marine Aquarium
- Tank syndromes

Activity

Production : To perceive the given topic . Time may be plan for 20-30 minutes.

Methodology : Pen and Paper activity

- Make groups of 2 or 3 students and ask them to differentiate between freshwater and marine aquarium.
- Address any queries of the participants.
- At the end of the activity students able to maintain the records.

Do



- Encourage the students to actively participate in the activity.
- Encourage the non-participants to open up and speak up.
- Share your own thoughts and viewpoints related to the topic.

Notes for Facilitation



- Students must be encouraged for going through the participant handbook and come prepared with thorough reading.

UNIT 7.2: Setting Up and Maintenance of Freshwater Aquarium

Unit Objectives

After the completion of this unit, the participant will be able to:

1. Decide the location of keeping an aquarium in any premises.
2. Calculate the total weight of an aquarium.
3. Set up an aquarium with all the equipments.
4. Beautify an aquarium with decorative items.
5. Acclimatize the fishes in the tank.
6. Take the day to day care of aquarium fishes.
7. Identify different types of feed for ornamental fishes.
8. Use siphoning pipe, magnetic cleaners etc.
9. Develop maintenance schedule of an aquarium.
10. Organize an aquarium servicing kit.
11. Diagnose the problem / disease and treat to fishes if any.
12. Monitor the condition of fish in the hospital tank and use appropriate medicines for improvement.

Resources to be Used

- Available objects such as a white board, duster, flip chart board/paper etc.
- Slides in power point presentation showing relevant images.

Elaborate

- Selection of aquarium
- Selection of location
- Weight of an aquarium
- Installation of aquarium
- Care of fishes
- Maintenance of aquarium
- Maintenance of equipments
- Aquarium servicing kit

Activity



Purpose : Knowledge enhancement about the factors for selecting a location for installation.

Methodology : Pen and paper activity

Tentative time : It may be 20-30 minutes.

Procedure

- Divide the participants into 2 or 3 groups.
- Ask the participants to enlist the Factors and get a volunteer out from every group one by one to write the points on the board.
- Then discuss those points with the participants.

Notes for Facilitation



- Students must be encouraged for going through the participant handbook and come prepared with thorough reading.

Exercise



Key Solutions to PHB Exercises

A. Short Questions

1. Factors to be considered for selecting a location-
 - No exposure to direct sunlight or even day light for a long time.
 - Easy accessibility to electrical points.
 - Facility of filling the aquarium and drainage.
 - Total weight of the aquarium.
2. Learning by doing with the help of trainer. Refer section 7.2.3.
3. Refer section 7.2.4. in PHB.
4. Holiday feed blocks : Fish feeding blocks in 2-day (weekend), 7-day and 14-day sizes are available at aquarium stores.

Functions of automatic feeder : It will auto release a pelletized food into the aquarium as programmed.

Refer section "Tips" in PHB.

5. Treatment of natural seawater
 - Dark storage
 - Chlorination
 - De-chlorination

6. Steps to set up a fish only marine tank :
 - Prepare the aquarium
 - Arrange the sump equipment
 - Run a wet test
 - Install UG filter
 - Set up gravel bed and other equipments
 - Fill up with salt water
 - Arrange live rocks & aqua scaping
 - Turn on filters and lights
 - Build up nitrogen cycle
 - Add the final stock of fish
7. Fish only marine tank are designed to house and showcase exclusively the marine fishes only. Coral reef tank is the most challenging and expensive of all type of aquarium and reserved for experienced hobbyists only.
8. Live rocks are aragonite skeletons of long dead corals or other calcareous organisms which are formed in the ocean from the majority of coral reefs. Refer section 7.1.5 in unit 7.1.

B. State True or False.

1. False
2. True
3. False
4. False
5. True
6. True
7. False
8. False
9. True
10. False



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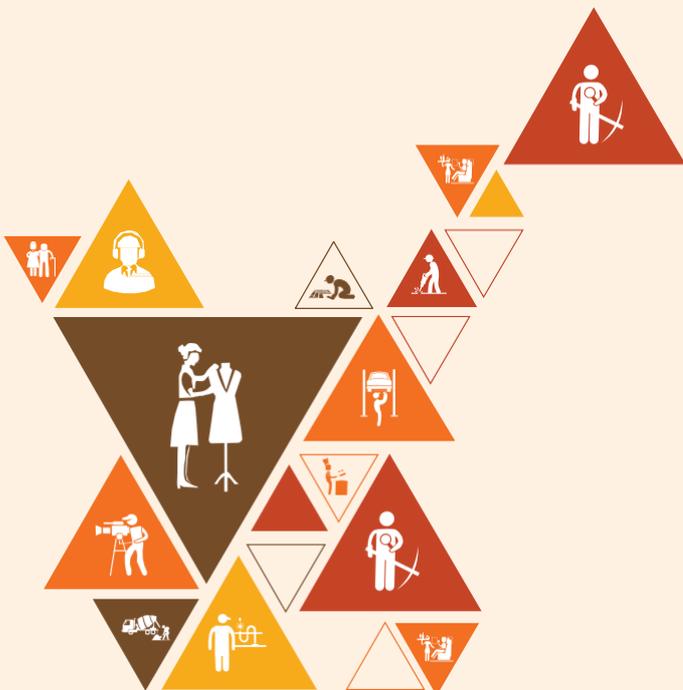


8. Annexures

Annexure I - Training Delivery Plan

Annexure II - Assessment Criteria

Annexure III - QR Codes –Video Links



Annexure I

Training Delivery Plan

Training Delivery Plan			
Program Name:	Ornamental Fish Farmer		
Qualification Pack Name & Ref. ID	AGR/Q4910		
Version No.	3.0	Version Update Date	17/11/2022
Pre-requisites to Training (if any)	Class with 2 Years of relevant experience OR 10th Class Pass and pursuing continuous regular schooling OR 8th Class with 3 Years of relevant experience OR 5th Class with 5 Year of relevant experience OR Previous relevant qualification of NSQF Level 3 with minimum education as 5th grade pass with 2 Years of relevant experience Minimum Age: 18 Years		
Training Outcomes	<p>After completing this programme, participants will be able to:</p> <ul style="list-style-type: none"> • Demonstrate the process of carrying out pond and tank preparation activities. • Describe the process of accessing the feed requirements and culturing live feed. • Demonstrate the process of stocking, maintaining and harvesting the ornamental fish. • Explain the basic entrepreneurial activities for small enterprise. • Describe the process of undertaking employability and entrepreneurial practices. • Demonstrate various practices to maintain personal hygiene, cleanliness, and safety in culture operations. • Demonstrate the process of setting up and maintaining marine and freshwater aquariums. 		

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
							HH: MM
1	Introduction T : 05:00 (HH:MM)	1. Definition, status and prospects of Ornamental Fish Culture	<ul style="list-style-type: none"> • Scope to adopt of ornamental fish culture as an entrepreneur • Describe global scenario of ornamental fish culture 		Class room lecture, group discussion, group activity	Laptop, white board, marker, projector, power point slides, pictures/posters that depict various roles of ornamental fish culture , audio-visual aids, etc.	T: 2:00
		2. Ornamental Fish Diversity, their Classification and Identification	<ul style="list-style-type: none"> • Identify and classify different types of ornamental fish • Infer the behaviour of various ornamental fish 		Class room lecture, group discussion, group activity	Laptop, white board, marker, projector, power point slides, pictures/posters that depict various roles of ornamental fish culture , audio-visual aids, etc.	T: 3:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
							HH: MM
2	Tank and Pond Preparation Activities T: 20:00 P: 35:00 (HH:MM)	1. Design of small scale & commercial farms-I	<ul style="list-style-type: none"> Explain about ornamental fish farm and tanks 	AGR/N4936 PC12, KU2, GS1-GS9	Class room lecture, demonstration, Group discussion	Laptop, projector, white board ,marker, powerpoint slides/pictures/ posters that depict various types of ornamental fish farm, audio-visual aids, water pump, oxygen cylinder, aerator, fiber tanks, etc.	T: 3:00 P: 5:00
		2. Design of small scale & commercial farms-II	<ul style="list-style-type: none"> Design ornamental fish farm 	AGR/N4936 PC12, KU1, GS1-GS9	Class room lecture, demonstration, Visit to fish farm	Laptop, projector, white board ,marker, powerpoint slides, audio-visual aids, water pump, oxygen cylinder, aerator, fiber tanks, RCC material, silpaulin, etc.	T: 3:00 P: 5:00
		3. Re-circulatory system-I	<ul style="list-style-type: none"> Discuss about the maximum utilization of water 	AGR/N4936 PC6, KU1, GS1-GS9	Class room lecture, demonstration, practical, trainer led discussion	Laptop, projector, white board marker, audio-visual aids, mechanical and biological filters, water pump, fish tanks, etc.	T: 3:00 P: 5:00
		4. Re-circulatory system-II	<ul style="list-style-type: none"> Describe the function and advantage of re-circulatory system in ornamental fish culture 	AGR/N4936 PC11, KU5, GS1-GS9	Class room lecture, demonstration, activity to draw & design aquarium	Laptop, white board, marker, projector, pictures of fish tanks of various designs ,audio-visual aids, water pump, Power backup, inch tape, oxygen cylinder, glass tanks, etc.	T: 3:00 P: 5:00
		5. Design & Construction of aquarium tanks-I	<ul style="list-style-type: none"> Describe the requirements to construct and aquarium 	AGR/N4936 PC5, KU1, GS1-GS9	Class room lecture, demonstration	plastic tanks, glass tanks, sealant tank, hood fitted with bulb, aerator, thermometer, thermostat, filtration unit, etc.	T: 3:00 P: 5:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
							HH: MM
		6. Design & Construction of aquarium tanks-II	<ul style="list-style-type: none"> Explain different types of aquarium as per the choice of hobbyist 	AGR/N4936 PC8, KU2, GS1-GS9	Class room lecture, demonstration, activity related to collection of decorative items for aquarium	Glass pieces, tank, gravels and syone chips, aquatic plants, aquarim toys, clean watercolourful fishes of ornamental nature, etc.	T: 3:00 P: 5:00
		7. Recap	<ul style="list-style-type: none"> Recall the tasks 	AGR/N4936 PC6, PC8, PC12, KU1-KU5, GS1-GS9	Trainer led discussion Q & A	Laptop,projector, white board marker,audio-visual aids,etc.	T: 2:00 P: 5:00
3	Preparation of feed and live feed culture T: 20:00 P: 40:00 (HH:MM)	1. Feed Formulation and Feeding Strategies -I	<ul style="list-style-type: none"> Explain the feed 	AGR/N4937 PC2, KU1, GS1- GS7	Class room lecture, demonstration, activity	Laptop, projector, white board marker, charts that depict nutritional requirement of ornamental fishes, audio-visual aids, different types of feed ingredients, etc.	T: 2:00 P: 5:00
		2. Feed Formulation and Feeding Strategies -II	<ul style="list-style-type: none"> Explain feeding strategies 	AGR/N4937 PC3, KU3, GS1-GS7	Class room lecture, demonstration, activity to observe and record feeding cycles	Laptop, projector, white board marker, illustrations about feeding cycles of ornamental fishes, record keeeping book audio-visual aids,etc.	T: 3:00 P: 5:00
		3. Feed Formulation and Feeding Strategies -III	<ul style="list-style-type: none"> Explain and formulate on farm feed using local ingredients 	AGR/N4937 PC4, PC5, KU3, KU4, GS1-GS7	Class room lecture, demonstration, practical	Laptop, white board, marker, projector, Audio-visual aids, Power backup, feeding trays, tanks, buckets.	T: 2:00 P: 5:00
		4. Live Fish Feed and their Culture-I	<ul style="list-style-type: none"> Explain live fish food for ornamental fish unit-I 	AGR/N4937 PC9, KU5, GS1-GS7	Class room lecture, demonstration, practical	Laptop, white board, marker, projector, Audio-visual aids, Power backup, feeding trays, tanks, buckets	T: 3:00 P: 5:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
							HH: MM
		5. Live Fish Feed and their Culture-II	<ul style="list-style-type: none"> Explain live fish food for ornamental fish unit-II 	AGR/N4937 PC9, KU5, GS1-GS7	Class room lecture, demonstration, group discussion	Laptop, white board, marker, projector, PPTs, flip charts, ornamental fish specimens, audio-visual aids, etc.	T: 3:00 P: 5:00
		6. Live Fish Feed and their Culture-III	<ul style="list-style-type: none"> Reduce the cost of ornamental fish culture by feeding live feed-I 	AGR/N4937 PC9, KU6, GS1-GS7	Class room lecture, demonstration, visit to fish farm	Laptop, white board, marker, projector, PPTs, posters, ornamental fish specimens, audio-visual aids, etc.	T: 2:00 P: 5:00
		7. Live Fish Feed and their Culture-IV	<ul style="list-style-type: none"> Reduce the cost of ornamental fish culture by feeding live feed-II 	AGR/N4937 PC9, KU6, GS1-GS7	Class room lecture, practical demonstration	Laptop, white board, marker, projector, audio-visual aids, feed ingredient, feeding tray, etc.	T: 3:00 P: 5:00
		8. Recap	<ul style="list-style-type: none"> Recall the tasks 	AGR/N4937 PC1-PC9, KU1-KU6, GS1-GS7	Trainer led discussion Q & A	Laptop, projector, white board marker, audio-visual aids, etc.	T: 2:00 P: 5:00
4	Breeding , seed production and culture of ornamental fish T: 20:00 P: 40:00 (HH:MM)	1. Breeding of Live Bearers and Egg Layers -I	<ul style="list-style-type: none"> Explain breeding behavior of different ornamental fish 	AGR/N4938 PC17, KU10, GS1-GS9	Class room lecture, practical demonstration	Laptop, projector, white board marker, PPTs, audio-visual aids, etc.	T: 2:00 P: 5:00
		2. Breeding of Live Bearers and Egg Layers -II	<ul style="list-style-type: none"> Discuss the techniques to breeding the important ornamental fish 	AGR/N4938 PC17, KU10, GS1-GS9	Class room lecture, demonstration, group discussion activity	Laptop, projector, white board marker, PPTs, audio-visual aids, etc.	T: 3:00 P: 5:00
		3. Fish Health Monitoring-I	<ul style="list-style-type: none"> Describe about suitable water quality for breeding and culture of ornamental fish 	AGR/N4938 PC15, KU8, GS1-GS9	Class room lecture, demonstration, group discussion activity	Laptop, projector, white board marker, PPTs, audio-visual aids, etc.	T: 2:00 P: 5:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
							HH: MM
		4. Fish Health Monitoring-II	<ul style="list-style-type: none"> Describe common techniques to monitor the water quality 	AGR/N4938 PC35, KU7, GS1-GS9	Class room lecture, demonstration, trainer led discussion	Laptop,projector, white board marker, PPTs, audio-visual aids,etc.	T: 3:00 P: 5:00
		5. Disease Identification & Prophylactic Treatment -I	<ul style="list-style-type: none"> Identify the diseases occurring during culture period Identify the causative agent for diseases 	AGR/N4938 PC6, KU5, GS1- GS9	Class room lecture, demonstration, group discussion	Laptop, projector, white board marker, pictures showing sexual dimorphism of fishes, audio-visual aids,etc.	T: 2:00 P: 5:00
		6. Disease Identification & Prophylactic Treatment -II	<ul style="list-style-type: none"> Discover how to cure the disease and follow prophylactic treatment 	AGR/N4938 PC3, KU3, GS1-GS9	Class room lecture, group discussion, visit to fish aquarium	Laptop, projector, white board marker, audio-visual aids, live specimens of exotic ornamental fishes etc.	T: 3:00 P: 5:00
		7. Packaging and Conditioning for Transport-I	<ul style="list-style-type: none"> Describe the technique of packing for short and long distance transportation 	AGR/N4938 PC24, PC25, KU11, KU12, GS1-GS9	Class room lecture, demonstration, visit to hatchery, group discussion	Laptop, projector, white board marker, audio-visual aids, fish tank, Quality brood stock etc.	T: 2:00 P: 5:00
		8. Packaging and Conditioning for Transport-II	<ul style="list-style-type: none"> Classify different medicines used during transportation 	AGR/N4938 PC29, KU6, GS1-GS9	Class room lecture, demonstration, group discussion	Laptop,projector, white board marker, PPTs, audio-visual aids,etc.	T: 3:00 P: 5:00
5	Basic entrepreneurial activities for small enterprise T: 15:00 P: 15:00 (HH:MM)	1. Agriculture Enterprise Scheme-I	<ul style="list-style-type: none"> Analyzing the demand and supply of relevant agricultural produce in the market. Checking the identity of target customers. Explain the planning process of various business opportunities 	AGR/N9908 PC1-PC3, KU1-KU3, GS1-GS8	Class room lecture, demonstration, group discussion	Laptop,projector, white board marker, PPTs, audio-visual aids,etc.	T: 2:00 P: 2:00
		2. Agriculture Enterprise Scheme-II	<ul style="list-style-type: none"> Describe the government ecosystem for various business opportunities. Explain government schemes related to the provision of subsidy/funds to promote agricultural produce. Explain the basic of a Business Plan. 	AGR/N9908 PC8, PC9, KU4-KU6, GS1-GS8	Class room lecture, demonstration, group discussion	Laptop,projector, white board marker, PPTs, audio-visual aids,etc.	T: 2:00 P: 2:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
							HH: MM
		3. Agriculture Production Planning Process -I	<ul style="list-style-type: none"> Describe resource and natural resource management. Explain the concept of sustainability for agricultural production. Explain the importance of smart farming in modern day agriculture. 	AGR/N9908 PC14, KU16, GS1-GS8	Class room lecture, demonstration, activity	Laptop,projector, white board marker, PPTs, audio-visual aids,etc.	T: 2:00 P: 2:00
		4. Agriculture Production Planning Process -II	<ul style="list-style-type: none"> Explain how to calculate the economics of the produce viz. production cost, price of the produce, B:C Ratio etc. Explain the recommended sustainability practices to be followed during agricultural production. 	AGR/N9908 PC13, PC17, KU13, KU15, GS1-GS8	Class room lecture, demonstration, activity	Laptop,projector, white board marker, PPTs, audio-visual aids,etc.	T: 2:00 P: 2:00
		5. Post-production and Marketing Management-I	<ul style="list-style-type: none"> Explain about adequate storage facilities. Describe the marketing price and related aspects. Explain how to collect information related to the wholesale and retail price of agricultural produce. 	AGR/N9908 PC15, PC16, KU14, GS1- GS8	Class room lecture, demonstration, trainer led discussion	Laptop,projector, white board marker, PPTs, audio-visual aids,etc.	T: 2:00 P: 2:00
		6. Post-production and Marketing Management-II	<ul style="list-style-type: none"> Explain various marketing channels of distribution for agricultural produce. Describe the marketing plan in association with 4Ps and 4As. Explain the digital marketing process and related details. 	AGR/N9908 PC20, PC23, KU17, KU21, GS1-GS8	Class room lecture, demonstration, visit to fish farm	Laptop,projector, white board marker, PPTs, audio-visual aids,etc.	T: 2:00 P: 2:00
		7. Post-production and Marketing Management-III	<ul style="list-style-type: none"> Describe the stakeholder coordination and relationship management. List the relevant buyers of different types of agricultural produce. Explain how to identify and manage various risks to production and post-production processes. 	AGR/N9908 PC21, PC27, KU9, KU19, GS1-GS8	Class room lecture, demonstration, activity	Laptop,projector, white board marker, PPTs, audio-visual aids,etc.	T: 3:00 P: 3:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
							HH: MM
6	Health Hygiene and safety practices for culture operations T: 10:00 P: 20:00 (HH:MM)	1. Quarantine Protocol	<ul style="list-style-type: none"> Explain the role of quarantine protocol before bringing the fish from outside Describe measures to protect the in house stock from outsiders 	AGR/N4955 PC1, KU1, GS1-GS8	Class room lecture, demonstration, activity	Laptop, projector, white board, flip chart board/paper, PPTs ,etc	T: 3:00 P: 5:00
		2. Bio Security Protocol	<ul style="list-style-type: none"> Explain rules for import and export of ornamental fish Explain the measures to protect the indigenous fish 	AGR/N4955 PC5, PC6, KU5, GS1-GS8	Class room lecture, group discussion, demonstration	PHB, White board, duster, flip chart board/paper etc., slides in power point presentation showing relevant images	T: 3:00 P: 5:00
		3. Record Keeping and Marketing	<ul style="list-style-type: none"> Prepare and maintain records promptly with useful data of fish culture Organise transaction of money during marketing Identify existing markets and value of the fish 	AGR/N4955 PC5, KU10, GS1-GS8	Class room lecture, group discussion, demonstration activity	PHB, White board, duster, flip chart board/paper etc., slides in power point presentation showing relevant images	T: 3:00 P: 5:00
		4. Recap	<ul style="list-style-type: none"> Recall the tasks 	AGR/N4955 PC1-PC5, KU1-KU5, GS1-GS8	Trainer led discussion Q & A	Laptop,projector, white board marker,audio-visual aids,etc.	T: 1:00 P: 5:00
7	Process of setting up and maintaining marine and freshwater aquarium T: 30:00 P: 30:00 (HH:MM)	1. Setting up Marine Aquarium-I	<ul style="list-style-type: none"> Identify the salinity of natural seawater. Prepare artificial seawater. 	AGR/N4963 PC10, PC12, KU4, GS1-GS9	Lecture, group discussion, activity	PHB, White board, duster, flip chart board/paper etc., slides in power point presentation showing relevant images	T: 3:00 P: 3:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
							HH: MM
		2. Setting up Marine Aquarium-II	<ul style="list-style-type: none"> Identify special equipment required for marine aquarium. Determine the role and function of protein skimmer, UV steriliser, etc. 	AGR/N4963 PC1, KUKU1, KU13, GS1-GS9	Lecture, group discussion, activity	PHB, White board, duster, flip chart board/paper etc., slides in power point presentation showing relevant images	T: 3:00 P: 4:00
		3. Setting up Marine Aquarium-III	<ul style="list-style-type: none"> Recognise lighting requirements for marine aquarium . Explain different types of marine aquarium setups. 	AGR/N4963 PC1, PC4, PC5, KU4, KU5, GS1-GS9	Lecture, group discussion, activity	PHB, White board, duster, flip chart board/paper etc., slides in power point presentation showing relevant images	T: 4:00 P: 3:00
		4. Setting up Marine Aquarium-IV	<ul style="list-style-type: none"> Explain importance of live rocks in marine aquarium. Setup a marine aquarium. 	AGR/N4963 PC3, KU4, GS1-GS9	Lecture, group discussion, activity	PHB, White board, duster, flip chart board/paper etc., slides in power point presentation showing relevant images	T: 3:00 P: 3:00
		5. Setting up and Maintenance of Freshwater Aquarium-I	<ul style="list-style-type: none"> Decide the location of keeping an aquarium in any premises. Calculate the total weight of an aquarium. Set up an aquarium with all the equipments 	AGR/N4963 PC14, KU13, GS1-GS9	Lecture, group discussion, activity	PHB, White board, duster, flip chart board/paper etc., slides in power point presentation showing relevant images	T: 3:00 P: 4:00
		6. Setting up and Maintenance of Freshwater Aquarium-II	<ul style="list-style-type: none"> Beautify an aquarium with decorative items. Acclimatize the fishes in the tank. Take the day to day care of aquarium fishes. 	AGR/N4963 PC3, KU4, GS1-GS9	Lecture, group discussion, activity	PHB, White board, duster, flip chart board/paper etc., slides in power point presentation showing relevant images	T: 4:00 P: 3:00
		7. Setting up and Maintenance of Freshwater Aquarium-III	<ul style="list-style-type: none"> Identify different types of feed for ornamental fishes. Use siphoning pipe, magnetic cleaners etc. Develop maintenance schedule of an aquarium. 	AGR/N4963 PC10, KU3, GS1-GS9	Lecture, group discussion, activity	PHB, White board, duster, flip chart board/paper etc., slides in power point presentation showing relevant images	T: 4:00 P: 3:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
							HH: MM
		8. Setting up and Maintenance of Freshwater Aquarium-IV	<ul style="list-style-type: none"> Organize an aquarium servicing kit. Diagnose the problem / disease and treat to fishes if any. Monitor the condition of fish in the hospital tank and use appropriate medicines for improvement 	AGR/N4963 PC18, PC19, KU14, GS1- GS9	Class room lecture, demonstration, trainer led discussion	Laptop,projector, white board marker, PPTs, audio-visual aids,etc.	T: 3:00 P: 4:00
		9. Recap	<ul style="list-style-type: none"> Recall the tasks 	AGR/N4963 PC18, PC19, KU1-KU5, GS1-GS9	Trainer led discussion Q & A	Laptop,projector, white board marker,audio-visual aids,etc.	T: 3:00 P: 3:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
							HH:MM
8.	Employability Skills (60hrs)	Introduction to Employability Skills	<ul style="list-style-type: none"> Describe importance of Employability Skills Prepare a note on different industries, trends, required skills 	DGT/VSQ /N0102	Classroom lecture, Team Activity	White-Board and, Markers, Chart Paper and Sketch pens, LCD Projector	1:30
		Constitutional Values: Citizenship	<ul style="list-style-type: none"> Detail the principles of constitution of India Identify the various environmentally sustainable practices 		Classroom lecture, Team Activity	Laptop, PPT, White board Markers, note pad, pen etc.	1:30
		Becoming a Professional in the 21st Century	<ul style="list-style-type: none"> Discuss relevant 21st century skills required for employment Practice critical thinking and decision making skills 		Classroom lecture, Team Activity	Laptop, PPT, White board Markers, note pad, pen etc.	2:30
		Basic Skills-I	<ul style="list-style-type: none"> Read English text with appropriate articulation Practice basic English words, sentences, punctuation 		Classroom lecture, Team Activity, Role play, video session	Laptop, PPT, White board Markers, note pad, pen etc.	5:00
		Basic Skills-II	<ul style="list-style-type: none"> Demonstrate active listening and reading skills 		Practical, demonstration, role play		5:00
		Career Development and Goal Setting	<ul style="list-style-type: none"> Identify well-defined short- and long-term goals Explain how to build a career pathway Conduct job market research Discuss how to set career goals. 		DGT/VSQ /N0102	Class room lecture, discussion, demonstration, practical	Laptop, PPT, White board Markers, note pad, pen etc.

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
							HH:MM
		Communication Skills	<ul style="list-style-type: none"> Explain the importance of communication at workplace Demonstrate effective communication strategies Demonstrate how to communicate effectively using verbal and nonverbal communication 	DGT/VSQ /N0102	Class room lecture, discussion, demonstration, practical	Laptop, PPT, White board Markers, note pad, pen, audio visual aids etc.	5:00
		Diversity and Inclusion	<ul style="list-style-type: none"> Explain the need of diversity at workplace Identify the various PwD policies applicable at workplace Discuss the significance of the POSH Act 	DGT/VSQ /N0102	Class room lecture, Inter-active discussion	Laptop, PPT, White board Markers, note pad, pen, audio visual aids etc.	2:30
		Financial and Legal Literacy	<ul style="list-style-type: none"> Discuss various financial institutions, products, and services Explain the common components of salary such as Basic, PF, Allowances (HRA, TA, DA, etc.), tax deductions 	DGT/VSQ /N0102	Class room lecture, demonstrations, group discussion, practical	Laptop, PPT, White board Markers, note pad, pen, audio visual aids etc.	5:00
		Essential Digital Skills-I	<ul style="list-style-type: none"> Detail the use and features of various MS Office tools, like MS Word, MS Excel, MS PowerPoint, etc. Demonstrate how to operate digital devices Create an e-mail id and follow e- mail etiquette to exchange e -mails Describe the role of digital technology in day-to-day life and the workplace 	DGT/VSQ /N0102	Class room lecture, discussion, Demonstration, practical, learning by doing	Laptop, PPT, White board Markers, note pad, pen, audio visual aids etc.	6:00
		Essential Digital Skills-II	<ul style="list-style-type: none"> Practice Digital skills 		Demonstration, practical, learning by doing		4:00

S.No.	Module Name	Session Name	Session Objectives	NOS Reference	Methodology	Training Tools / Aids	Duration
							HH:MM
		Entrepreneurship	<ul style="list-style-type: none"> Describe the types of entrepreneurship and enterprises Describe the 4Ps Of Marketing- Product, Price, Place and Promotion and Apply the mas Per requirement Create a sample Business plan, For the selected business 	DGT/VSQ /N0102	Class room lecture, discussion, Demonstration, practical	Laptop, PPT, White board Markers, note pad, pen, audio visual aids etc.	7:00
		Customer Service	<ul style="list-style-type: none"> Identify types of customers and how to deal with them Identify methods to get customer feedback and how to implement them Explain various tools used to collect customer feedback Discuss the significance of maintaining hygiene and dressing appropriately 	DGT/VSQ /N0102	Class room lecture, activity, role play, video session	Laptop, PPT, White board Markers, note pad, pen, audio visual aids etc.	5:00
		Apprenticeships and Jobs	<ul style="list-style-type: none"> Practice personal grooming strategies Illustrate the use of online platforms for job hunting Detail the concept of Apprenticeship Demonstrate how to enroll for Apprenticeship programs. Draft a professional Curriculum Vitae (CV) Role play a mock interview 	DGT/VSQ /N0102			8:00

Annexure II

Assessment Criteria

CRITERIA FOR ASSESSMENT OF TRAINEES

(For Updated 'Assessment Criteria', please refer to Qualification Pack of this Job role available at <https://www.nqr.gov.in/>)

Assessment Criteria for ASCI- Ornamental Fish Farmer	
Job Role	Ornamental Fish Farmer
Qualification Pack	AGR/Q4910
Sector Skill Council	Agriculture

S.No.	Guidelines for Assessment
1.	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2.	The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3.	Assessment will be conducted for all compulsory NOS, as well as the selected elective NOS/set of NOS.
4.	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
5.	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria.
6.	To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.
7.	In case of <i>unsuccessful completion</i> , the trainee may seek reassessment on the Qualification Pack.

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
AGR/N4936.Carry out pond and tank preparation activities	30	40	-	30	100	30
AGR/N4937.Assess the feed requirements and culture live feed	30	40	-	30	100	25
AGR/N4938.Stock, maintain and harvest the ornamental fish	30	40	0	30	100	30
AGR/N9908.Undertake basic entrepreneurial activities for small enterprise	30	40	-	30	100	5

AGR/N4955.Follow the hygiene and safety practices in culture operations	30	40	-	30	100	5
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	-	-	50	5
Total	170	230	0	150	550	100

Optional: 1 Aquarium

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
AGR/N4963.Set up and maintain marine and freshwater aquariums	30	40	-	30	100	10
Total	30	40	-	30	100	10

Annexure-III

QR Codes –Video Links

Chapter No.	Unit No.	Topic	QR Code Links	QR code (s)
Chapter -1 Introduction	Unit 1.1 - Definition, Status and Prospect of Ornamental Fish Culture	Introduction Ornamental Fish	https://www.youtube.com/watch?v=TnCm3032cAM	 Introduction Ornamental Fish
Chapter -2 Tank & Pond Preparation Activities	Unit 2.3 - Design & Construction of Aquarium Tanks	Designing Fish Tank	https://www.youtube.com/watch?v=bJRBij1cnrg	 Designing Fish Tank
Chapter -3 Preparation of Feed and Live Feed Culture	Unit 3.1 - to Unit 3.2	Know the Fish Feed Before You Choose It	https://www.youtube.com/watch?v=wsuWC4LvnXo	 Know the Fish Feed
		Live Feed Culture and Feeding Technique of ornamental Fish	https://www.youtube.com/watch?v=sd906BWhWQM	 Live Feed Culture
		Farm Made Fish Feed	https://www.youtube.com/watch?v=cfoisrezD3g	 Farm Made Fish Feed
Chapter -4 Breeding Seed Production & Culture of Ornamental Fish	Unit 4.1 - Breeding of Live Bearers and Egg Layers	Entrepreneurial Start-Up Guide for Ornamental Fish Breeding & Seed Production	https://www.youtube.com/watch?v=WClS69V-eC8	 Entrepreneurial Start-Up Guide
		Ornamental Fish Breeding & Culture	https://www.youtube.com/watch?v=IUUbINZzURO	 Ornamental Fish Breeding & Culture
	Unit 4.3 - Disease Identification Prophylactic Treatment	Ornamental Fish Diseases and Management, Biosecurity and Quarantine	https://www.youtube.com/watch?v=EKrLcl_Rmlk https://www.youtube.com/watch?v=K7aVXgWc5Oc http://eprints.cmfri.org.in/8416/1/Lipton.pdf	 1  2  3

Chapter No.	Unit No.	Topic	QR Code Links	QR code (s)
	Unit 4.4 - Packaging and Conditioning for Transport	Ornamental Fish Transportation Methods, Packaging Methods, Conditioning	https://www.youtube.com/watch?v=PwG5BNhH9Lo&t=293s	 <p>Ornamental Fish Transportation Methods, Packaging Methods, Conditioning</p>
Chapter -5 Basic entrepreneurial activities for small enterprise	Unit 5.3 – Post-production and Marketing Management	Ornamental Fish Management - Entrepreneurship Education	https://www.youtube.com/watch?v=IJwUaMe-Qnw	 <p>Ornamental Fish Management-Entrepreneurship Education</p>



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