



# AQUA BRIDGE HOLDING

Pioneering Aquaculture and Fisheries Solutions

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**UP AQUACULTURE CAPACITY BUILDING TRAINING PROGRAMME  
DETAILED REPORT**

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**21<sup>st</sup> NOVEMBER 2025**





## 1. Executive Summary

The Aquaculture Capacity-Building Training Programme, delivered by AquaBridge under the World Bank supported UPAGREES Project, was successfully concluded as a structured five-day pilot initiative aimed at enhancing the technical capabilities and practical understanding of fish farmers in Uttar Pradesh. The programme was designed to expose farmers to modern, efficient, and scalable aquaculture practices that support higher productivity, improved farm management, and long-term sustainability.

Across the five days, participants engaged in a comprehensive and interactive learning experience that combined technical presentations, hands-on demonstrations, guided exercises, and open discussions. The curriculum covered the full aquaculture production cycle, including pond preparation, seed-quality considerations, feed management, water-quality monitoring, fish-health recognition, post-harvest handling, and the integration of AI-enabled systems and digital aquaculture technologies to support informed and efficient farm decision-making.

A total of 50 farmers from Varanasi District, Uttar Pradesh, successfully completed the programme. Farmers actively participated in practical exercises involving water-quality parameter testing, feed-type identification, digital dashboard-based farm-management tools, and basic fish-health assessment techniques. As part of the practical sessions, participants were also introduced to technology-enabled monitoring solutions, including the AquaBridge Water-Quality Monitoring AI System, demonstrating how real-time insights can enhance on-farm decision-making. In addition, they observed the functioning of an automated precision e-feeder, which illustrated how uniform and controlled feed delivery can improve efficiency and reduce wastage.

Participants expressed strong interest in adopting portable testing kits, digital monitoring dashboards, automated feeding systems, and improved feed and health-assessment practices, indicating a clear readiness to integrate modern, data-supported methods into their aquaculture operations.

The level of participation and engagement observed during the five-day programme demonstrates that farmers are highly receptive to modern, evidence-based aquaculture practices. Their readiness to explore tools such as water-quality testing systems, AI-enabled





monitoring solutions, automated precision feeders, and digital farm dashboards reflects a strong willingness to adopt improved techniques that enhance efficiency and sustainability. This adoption mindset provides a robust foundation for scaling future training initiatives and expanding technology-driven aquaculture interventions under the UPAGREES project.

## 2. Modules Covered

### Day 1

- Session 1: Introduction to Modern Aquaculture Farming
- Session 2: Water Quality-Core Principles and Introduction to Modern Monitoring Tools

### Day 2

- Session 1: Seed Quality Assessment and Stocking Protocols
- Session 2: Feed Management and Efficient Feeding Strategies

### Day 3

- Session 1: Fish Health Management and Biosecurity Measures & AquaBridge Holding Water quality monitoring AI system detailed demonstration
- Session 2: AquaBridge Digital Dashboard Introduction & Drone-Based Precision Feeding Demonstration

### Day 4

1. Session 1: Harvesting Techniques and Post-Harvest Handling & Market Access
2. Session 2: Field Level Hands-On Training

### Day 5

- Session 1: Advanced Aquaculture Farming Practices
- Session 2: Farmer Feedback Collection followed by Certificate Distribution

### 2.1 Day 1 – Session 1: Introduction to Modern Aquaculture Farming

This session introduced farmers to the evolving landscape of aquaculture, with a strong focus on the transition from traditional fish-farming methods to modern, data-driven aquaculture systems. Farmers were guided through how the sector has progressed from experience-based, manual practices to structured, measurable, and technology-enabled approaches that support higher efficiency and more consistent outcomes.

The discussion highlighted the limitations of traditional farming, where decisions often rely on



intuition and inconsistent observations, leading to variability in growth and higher operational risks. In contrast, data-driven aquaculture enables farmers to base decisions on objective parameters such as water-quality indicators, feed consumption patterns, growth data, and digital monitoring insights. This shift empowers farmers to improve predictability, optimize resource use, and enhance overall farm performance.

Key concepts covered included the role of quality seed, planned feeding strategies, routine water-quality assessment, and the adoption of digital support tools to strengthen daily farm management. Farmers were encouraged to reflect on their current practices and recognize opportunities where modern, evidence-based methods could significantly improve survival rates, growth performance, and profitability.

This session laid a strong foundation for the programme, reinforcing the importance of embracing modern, scientific, and data-supported practices to build resilient and commercially sustainable aquaculture operations.



*The CEO of AquaBridge Holding interacting with farmers and addressing key questions on transitioning to data-driven aquaculture.*



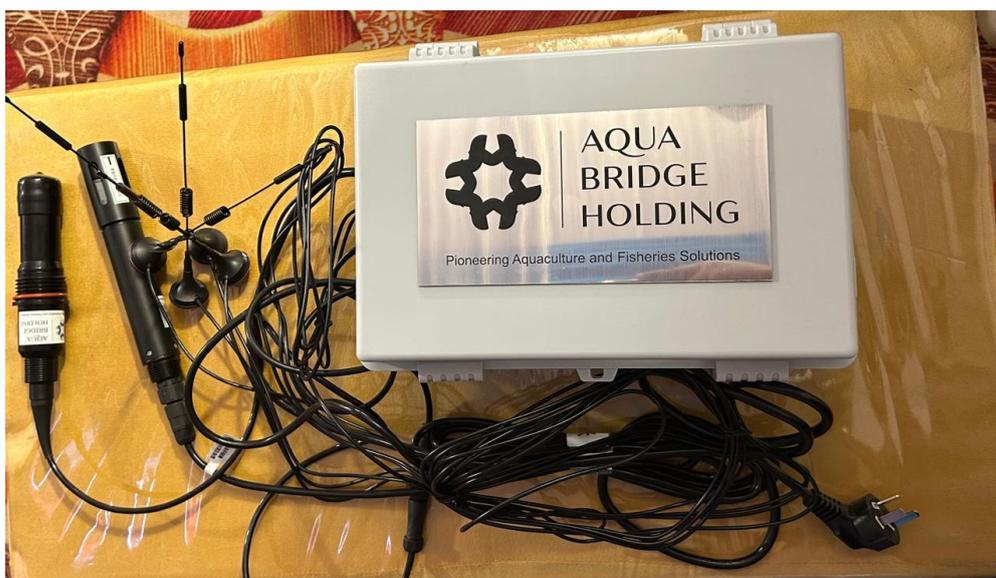


## 2.2 Day 1 – Session 2: Water Quality; Core Principles and Introduction to Modern Monitoring Tools

This session provided farmers with a comprehensive understanding of water quality as the foundational pillar of successful aquaculture management. Participants were introduced to the essential water parameters that directly influence fish health and farm productivity, including pH, dissolved oxygen (DO), temperature, alkalinity, ammonia, nitrite, and nitrate. Each parameter was explained in terms of its biological significance, acceptable ranges, and the operational implications of poor water conditions. The session emphasized the shift from traditional, observation-based assessments to systematic, data-driven water-quality monitoring, enabling more consistent and predictable farm outcomes. Trainers demonstrated how even minor fluctuations in water chemistry can affect feeding behavior, growth rates, stress levels, and susceptibility to disease, thereby highlighting the need for routine and accurate measurement.

Farmers were introduced to modern monitoring tools, ranging from portable test kits and digital meters to AquaBridge' AI-enabled Water-Quality Monitoring System, which provides real-time parameter tracking, alerts, and predictive insights. This exposure helped participants understand how digital tools can simplify daily monitoring, reduce human error, and support timely decision-making.

The session concluded with a clear explanation of how water-quality parameters should be measured, recorded, and interpreted, preparing farmers for the hands-on demonstrations planned in the following days. This provided participants with a strong conceptual grounding and helped them understand the importance of consistent, data-driven monitoring in modern aquaculture.



*Introduction of AquaBridge Holding's AI-based water-quality monitoring system as part of modern aquaculture practices.*





*AquaBridge Team introducing digital water quality monitoring Tools*





### 2.3 Day 2 – Session 1: Seed Quality Assessment and Stocking Protocols

This session reinforced the critical importance of seed quality, emphasising that strong and healthy fingerlings form the foundation of productive and profitable aquaculture. Farmers were trained to identify key indicators of high-quality fingerlings, including uniform size, active and consistent movement, healthy coloration, and the absence of deformities or visible stress symptoms. The trainers highlighted that fingerling quality at the time of stocking has a direct impact on growth uniformity, survival, feed efficiency, and overall farm performance.

Participants were also introduced to advanced seed quality verification methods, including the use of X-ray diagnostics for fingerlings to detect internal deformities and skeletal abnormalities that cannot be identified visually. In addition, the session covered the importance of laboratory-based seed health testing, which screens for pathogens and ensures that stocked fingerlings are biologically sound and disease-free.

Farmers were strongly encouraged to obtain and maintain seed quality test reports, hatchery certifications, and batch documentation, which improve traceability, confirm biological integrity, and support informed decision-making when selecting seed sources. These documents form an essential part of responsible and risk-mitigated aquaculture operations.

The session further introduced the principles of scientific stocking, including species-specific density planning, pond carrying capacity, and proper handling during transportation and pond introduction. The importance of minimising stress during stocking through temperature matching, careful transfer, and controlled acclimatisation was emphasised to safeguard fingerling survival and ensure strong initial establishment.

By the end of the session, farmers gained a clear and comprehensive understanding of how high-quality, scientifically verified fingerlings combined with responsible stocking practices significantly enhance predictability, performance, and sustainability in aquaculture.





*Interactive Session with Farmers on Seed Quality and Stocking Techniques*



*Demonstrating how X-ray scanning and lab diagnostics help identify robust, disease-free seed.*





## 2.1 Day 2 – Session 2: Feed Management and Efficient Feeding Strategies

This session provided farmers with a comprehensive understanding of scientific feed management, emphasising its importance as both a major operational cost and a key driver of growth performance and overall farm profitability. Farmers were guided on identifying high-quality feed, distinguishing between floating and sinking pellets, and selecting the appropriate pellet size for each species and growth stage.

Key feeding principles were discussed, including feeding frequency, optimal feeding windows, and ration planning based on biomass and prevailing water-quality conditions. The trainers highlighted how overfeeding contributes to water-quality deterioration and increased ammonia levels, while underfeeding compromises growth, uniformity, and fish health. Farmers were encouraged to follow measured and environmentally aligned feeding practices to maximise efficiency and maintain stable pond conditions.

The session also introduced farmers to automated feeding approaches, including the use of an e-feeder for precision and consistency. The demonstration illustrated how an e-feeder can deliver uniform feed distribution at controlled intervals, reduce wastage, improve feed-conversion efficiency, and minimise labour requirements. This allowed farmers to understand how even simple automation can significantly enhance accuracy and predictability in daily feeding operations.

By the end of the session, participants gained a clear understanding of how structured feed management, combined with modern automated tools such as an e-feeder, contributes to improved biological performance, cost savings, and sustainable aquaculture operations.





*AquaBridge team introducing farmers to different types of fish feed and their applications in modern aquaculture.*





*AquaBridge team explaining the working principles and operating procedures of the automated e-feeder*





## 2.2 Day 3 – Session 1: Fish Health Management and Biosecurity Measures

This session provided farmers with a structured understanding of fish health management, emphasising the importance of early detection, preventive care, and responsible farm hygiene. Participants were introduced to key behavioural and physical indicators of fish stress and emerging health concerns, including reduced feeding, abnormal swimming patterns, erratic behaviour, discoloration, fin erosion, and surface gasping. These concepts were clearly explained during the session to ensure farmers could recognise and interpret early warning signs with confidence.

A major focus was placed on the principles of biosecurity, presented as the cornerstone of disease prevention in aquaculture. Farmers were guided through essential measures such as maintaining clean pond environments, avoiding equipment cross-contamination, regulating movement between ponds, and ensuring proper sanitation of tools and inputs. The trainers explained how strong biosecurity practices reduce disease risks, protect stock integrity, and limit the need for emergency treatments.

The session further highlighted the role of high-quality seed, balanced nutrition, and stable water conditions in enhancing immune response and overall fish resilience. Farmers were encouraged to adopt regular observation routines, maintain basic health logs, and seek timely technical support when abnormalities are detected. These systematic practices were thoroughly explained to ensure farmers understood how to implement them in their daily operations.

By the conclusion of the session, farmers gained a clear appreciation for how integrated health management and strong biosecurity protocols can significantly reduce losses, improve productivity, and support a more sustainable and professionally managed aquaculture operation.





*AquaBridge team explaining common fish diseases and essential prevention measures to farmers.*



*Vinayak Ghatate, Senior Rural Development Specialist (World Bank) interacting with farmers*





### 2.3 Day 3 – Session 2: Detailed Demonstration of the AquaBridge Holding Water-Quality Monitoring AI System

In this session, farmers were introduced to the operational features and practical benefits of the AquaBridge Holding Water-Quality Monitoring AI System, a technology designed to bring accuracy, automation, and real-time visibility into aquaculture water management. The demonstration focused on how the system collects essential data through two specialised sensors and converts it into timely insights that support informed and proactive farm-level decisions.

Farmers were introduced to the system's two dedicated sensors:

- **Sensor 1: Ammonia Monitoring Unit**

Continuously measures ammonia concentration, allowing early identification of toxic buildup that can affect fish health, feeding behaviour, and survival. Early alerts from this sensor help farmers act promptly before conditions deteriorate.

- **Sensor 2: DO, pH, and Temperature Monitoring Unit**

Tracks dissolved oxygen, pH, and temperature simultaneously, providing a complete snapshot of pond stability and environmental balance parameters that are critical for maintaining optimal growth and preventing stress-related problems.

The AI platform analyses live data from both sensors, generating real-time alerts whenever values move outside the optimal range. Farmers were also shown how the system's output can be connected to a mobile application, enabling them to view live readings, receive alerts instantly, and monitor parameter trends remotely. This functionality enhances convenience, responsiveness, and overall farm management efficiency.

Through interactive discussion and demonstration, farmers gained clarity on how adopting automated, sensor-based monitoring can reduce risk, improve environmental control, and support more predictable and sustainable aquaculture operations.







*AquaBridge technical team providing a detailed explanation of the AI-driven water quality monitoring system to participating farmers*

#### **2.4 Day 3 – Session 3: Introduction to the AquaBridge Digital Farm Management Dashboard**

This session introduced farmers to the AquaBridge Digital Farm Management Dashboard, an advanced digital platform designed to integrate and visualise critical information across the full aquaculture production cycle. The dashboard was presented as a modern decision-support system that consolidates key operational data, enabling farmers to manage their ponds more efficiently and with greater precision.

Farmers were shown how the dashboard provides real-time visibility of essential water-quality parameters, including ammonia, dissolved oxygen, pH, and temperature, streamed directly from the AI-enabled sensor units. By centralising these readings, the platform enables quick interpretation of environmental fluctuations and supports timely and informed decision-making.

A major focus of the session was the dashboard’s capability to monitor and track the entire production cycle, from seed stocking and daily field observations to feeding activities, fish health notes, growth progression, and harvest planning. The platform organises these records





in a structured manner, helping farmers identify trends, evaluate management practices, and implement targeted improvements based on data.

Participants were also introduced to the system's mobile-accessibility feature, which allows them to view live data, receive alerts, and monitor pond conditions remotely through their mobile devices. This ensures continuous oversight and strengthens farm responsiveness even when farmers are away from the pond.

Through this session, farmers gained a clear understanding of how digital tools like the AquaBridge Digital Farm Management Dashboard can streamline daily operations, enhance documentation accuracy, reduce management uncertainties, and support a more organised, efficient, and data-driven approach to modern aquaculture.





*AquaBridge team introducing farmers to the ABFM Digital Farm Management Dashboard.*





Farmer receiving a hands-on introduction to the ABFM Digital Dashboard from the AquaBridge Technical team.

## 2.5 Day 3 – Session 2: Drone-Based Feeding Demonstration

This session introduced farmers to the innovative concept of drone-assisted feeding, demonstrating how modern mechanisation can enhance efficiency, precision and labour optimisation in aquaculture. The objective was to familiarise participants with emerging technologies that support large-scale and systematic pond management.

Farmers were briefed on the principle of drone-enabled feed broadcasting and how aerial delivery ensures uniform feed distribution across large pond surfaces. Trainers explained how this approach reduces manual labour, minimises feed wastage and supports improved feed utilisation, ultimately contributing to better growth performance and reduced water-quality deterioration associated with overfeeding.

During the live demonstration, participants observed how the drone follows controlled flight paths and disperses feed evenly over designated feeding zones. Key operational aspects were highlighted, including payload capacity, battery duration, feed-release calibration, range of





operation and essential safety protocols. The demonstration helped farmers understand how drone-based feeding can be integrated into different pond sizes and production systems.

By the end of the session, participants gained a clear understanding of how technology-enabled precision feeding can complement traditional practices and significantly improve operational efficiency, especially in larger ponds or farms where labour availability is limited.



Drone assisted Feeding demonstration





## 2.6 Day 4 – Session 1: Harvesting Techniques, Post-Harvest Handling, and Market Access

This session provided farmers with a detailed understanding of scientific harvesting methods, followed by an in-depth focus on post-harvest handling, market access, and value-addition opportunities. These components were highlighted as critical factors that influence product quality, shelf life, and overall farm profitability.

The session began with guidance on identifying the optimal harvest window, considering growth uniformity, species-specific size targets, water-quality stability, and prevailing market trends. Farmers were trained in low stress harvesting techniques designed to reduce handling stress, prevent physical damage, and preserve the natural quality of fish during capture.

A major emphasis was placed on post-harvest handling, presented as one of the most crucial stages in the aquaculture value chain. Farmers were educated on the importance of maintaining strict hygiene, handling fish gently to avoid bruising or scale loss, and rapidly cooling harvested fish to preserve freshness and slow bacterial activity. Trainers reinforced that maintaining clean, shaded, and temperature-controlled conditions is essential for protecting product quality and ensuring market readiness.

To provide practical clarity, the team also showcased the harvest-flow process followed at our facility, offering farmers a real-world view of how organised, structured, and hygienic post-harvest operations are conducted. This demonstration helped participants translate theoretical concepts into practical field-level applications aligned with industry standards.

The session further addressed market access, explaining how high-quality, well-handled fish secure better pricing and greater acceptance among premium buyers. Farmers were briefed on buyer expectations related to cleanliness, uniformity, freshness, traceability, and supply consistency.

Additionally, farmers were introduced to various value-addition methods, including basic fish cleaning, precise chilling and icing techniques, filleting options, hygienic packaging practices, and simple preservation approaches suitable for local market conditions. These approaches were presented as effective strategies to extend shelf life, reduce losses, diversify product offerings, and enhance income potential.



By the end of the session, participants clearly recognised that harvesting, post-harvest handling, value addition, and market access function as interconnected profitability drivers. Adopting structured, hygienic, and quality-focused practices can significantly improve income, reduce wastage, and strengthen long-term market relationships.



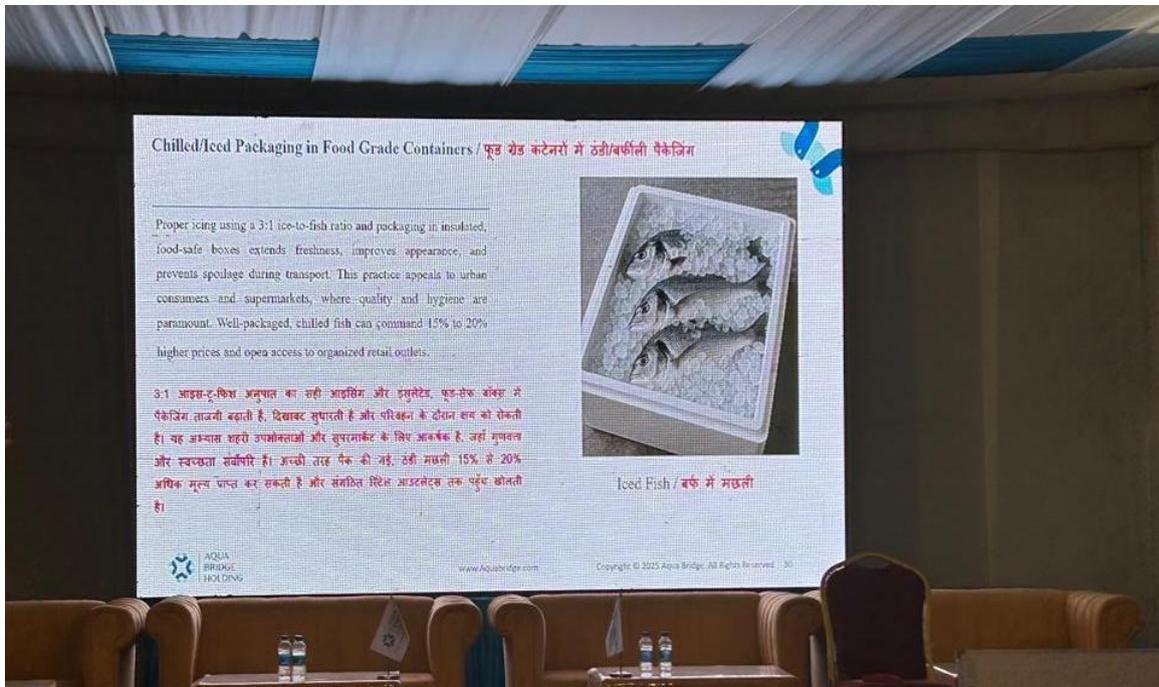
*AquaBridge team guiding farmers through best practices in harvesting and post-harvest handling*





*AquaBridge team providing awareness on proper post-harvest handling by explaining the harvest-flow process followed at our facility.*







*Slide illustrating various value-addition methods introduced to farmers for improving product quality and market opportunities*

## 2.7 Day 4 – Session 2: Field-Level Demonstration and Hands-On Training

This session provided farmers with practical, field-level exposure to essential aquaculture operations, enabling them to translate classroom knowledge into real-world application. The demonstrations were designed to strengthen farmers' confidence by allowing them to observe, participate, and perform key activities under guided supervision.

Farmers were trained on how to visually identify healthy and diseased fish, with clear explanations of behavioural and physical indicators. Trainers demonstrated signs of good health such as active swimming, uniform coloration, intact fins, and normal feeding behaviour. They were also shown early warning indicators of disease or stress, including lethargy, abnormal swimming patterns, discoloration, lesions, fin erosion, surface gasping, and irregular feeding responses. This practical exposure helped farmers understand how early detection prevents major losses.

A major component of the session focused on water-quality testing, where farmers were guided through simple, farm-level water analyses. Participants themselves conducted tests for pH, ammonia, nitrite, and temperature using field kits and learned how these parameters influence daily feeding, fish behaviour, and overall pond performance. Trainers explained how to interpret results and link them to corrective actions, reinforcing the role of regular monitoring





in maintaining pond stability.

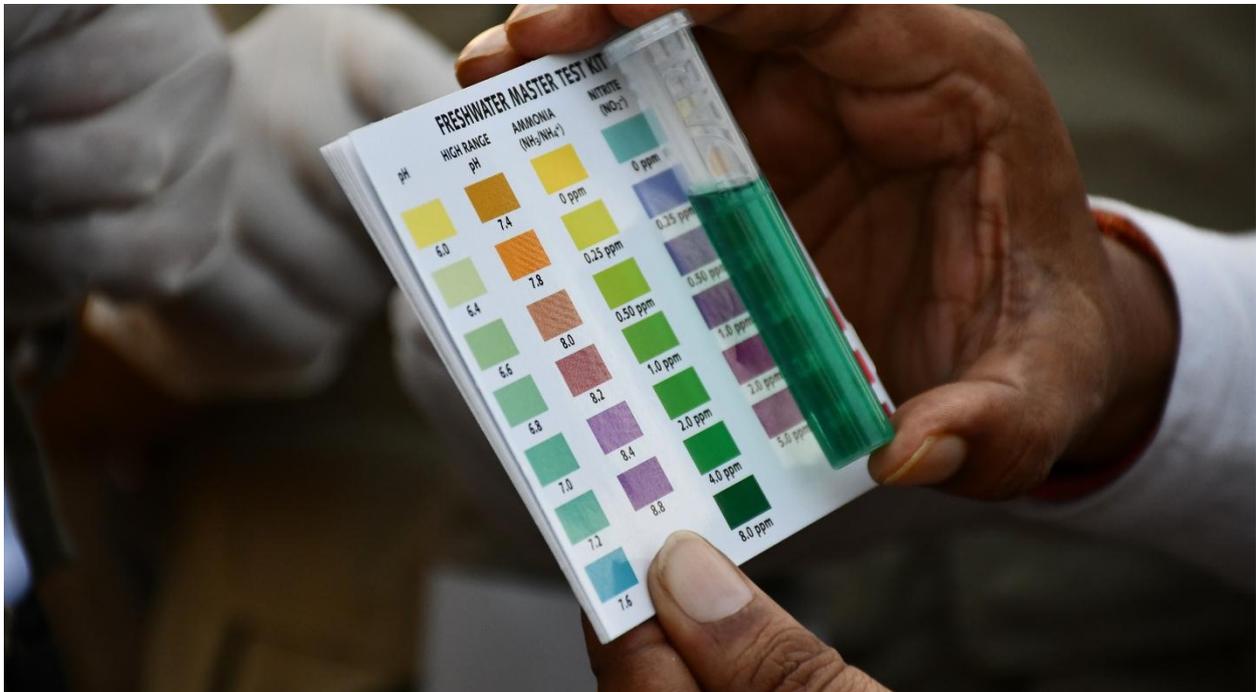
The session also covered on-ground observations of pond conditions, demonstrating how environmental factors such as turbidity, colour, surface movement, and aeration patterns provide valuable clues about pond health. Farmers engaged actively, asking questions and testing water samples from different locations around the pond.

Through this hands-on exposure, participants gained practical clarity on how to assess fish health, monitor water quality, and respond effectively to changing pond conditions. The session strengthened their ability to apply modern aquaculture practices consistently and confidently at their own farms.





## Glimpse from the field-level hands-on training















## 2.8 Day 5 – Session 1: Advanced Farming Practices (RAS, Biofloc, and Aquaponics)

The final day of the training programme introduced farmers to advanced aquaculture systems, providing a forward-looking perspective on modern, technology-driven farming approaches that enhance productivity, resource efficiency, and income diversification. The session aimed to broaden participants' understanding of next-generation farming models that are increasingly shaping the future of aquaculture worldwide.

Farmers were first briefed on the Recirculating Aquaculture System (RAS), an intensive and highly controlled farming method that enables high-density culture through continuous water treatment and reuse. Trainers explained the core components of RAS, including mechanical filtration, biological filtration, oxygenation, and automated monitoring. The advantages of this system, such as reduced water consumption, improved biosecurity, year-round production, and suitability for land or water-limited areas, were emphasised to give farmers a clear understanding of its practical benefits.

The session then introduced Biofloc Technology (BFT), a microbial-based system designed to recycle nutrients within the culture water. Farmers learned about the principles of biofloc formation, the role of carbon to nitrogen balance, aeration requirements, and the system's ability to improve feed utilisation. Trainers explained how biofloc can significantly reduce feed costs, minimise environmental impact, and support sustainable aquaculture operations for both small and large farms.

Participants were also introduced to Aquaponics, an integrated farming model that combines aquaculture with hydroponic plant production in a single, mutually supportive system. The session explained how nutrient-rich water from fish tanks supports plant growth while plants naturally purify the water for reuse. Aquaponics was presented as an efficient and environmentally friendly model with strong potential for household adoption, urban farming, and income diversification.

Throughout the session, practical illustrations and simplified system diagrams were used to help farmers understand operational requirements, infrastructure needs, and the suitability of each technology for different farming contexts. The session encouraged participants to consider these advanced systems as future opportunities for innovation, sustainability, and improved



commercial viability.



*AquaBridge team explaining advanced aquaculture farming practices to participating farmers.*





## 2.9 Day 5 – Session 2: Farmers’ Feedback Collection and Certificate Distribution

The final session of the training programme focused on gathering participant reflections and formally closing the programme with the certificate distribution ceremony. Farmers shared positive feedback on the overall structure of the training, noting that the combination of classroom learning, field demonstrations, and practical activities strengthened their understanding of modern aquaculture practices. They expressed appreciation for sessions on water-quality monitoring, fish health identification, feed management, and the introduction to advanced systems such as RAS, Biofloc, and Aquaponics.

Many participants also conveyed their readiness to adopt improved and advanced farming tools, including digital water-quality monitoring systems, automated feeding devices, and structured data-recording methods. They acknowledged that integrating such tools into their farms would enhance efficiency, reduce risk, and support more informed daily decision-making.

The session concluded with a formal certificate distribution ceremony, where AquaBridge awarded participation certificates to all farmers who completed the programme. The certificates recognised their commitment, active engagement, and readiness to adopt improved aquaculture practices. The ceremony provided a meaningful closure to the training, reinforcing farmers’ confidence and motivation to implement modern, sustainable farming methods.





*Feedback being collected from farmers to evaluate the training experience.*





*AquaBridge distributing Certificates of Participation to trainees upon successful completion of the programme.*

### **3. Key Challenges Raised by Farmers**

During the feedback and interaction sessions, farmers highlighted several operational, infrastructural and market-related challenges that influence the efficiency, sustainability and profitability of aquaculture in the region. These observations reflect real field-level conditions and indicate areas where continued support, investment and capacity-building will be essential.

#### **3.1 Limited Access to Quality Seed and Certified Hatcheries**

Farmers reported persistent difficulty in obtaining reliable, disease-free and size-uniform seed due to the limited number of certified hatcheries and insufficient mechanisms for quality verification and grading.

#### **3.2 Challenges in Water-Quality Management**

Participants highlighted constraints in routine water-quality monitoring, citing limited access to testing kits, lack of experience in interpreting results and significant seasonal fluctuations. They requested more practical tools and ongoing technical guidance.





### **3.3 Rising Cost of Feed**

The increasing price of commercial fish feed was identified as a major constraint affecting farm profitability. Farmers noted irregular availability, dependence on external suppliers and the need for support in adopting cost-efficient feeding strategies.

### **3.4 Inconsistent Feed Supply and Need for Improved Feeding Practices**

Beyond pricing issues, farmers raised concerns about inconsistent feed supply. They requested clearer guidance on feed selection, feeding schedules and the advantages of adopting modern feeding technologies such as automated feeders.

### **3.5 Difficulty in Early Disease Detection**

Farmers expressed challenges in recognising early signs of fish disease or stress. They requested more training on key behavioural indicators, preventive health management and practical biosecurity measures.

### **3.6 Limited Access to Field-Level Technical Support**

Many participants emphasised the need for more frequent and easily accessible technical assistance, particularly during periods of water deterioration, climatic stress or sudden disease incidents. They expressed interest in structured farm visits and ongoing advisory support.

### **3.7 Market Access and Pricing Constraints**

Farmers reported difficulties in accessing stable and remunerative markets. Heavy dependence on intermediaries, limited buyer connections and lack of awareness about value-addition opportunities were identified as major barriers to achieving fair prices.

### **3.8 Infrastructure Limitations**

Participants highlighted gaps in basic infrastructure, including inadequate aeration systems, suboptimal pond design, lack of proper drainage and insufficient equipment needed for routine operations.

### **3.9 Limited Exposure to Advanced Technologies**

Although farmers showed strong interest in adopting modern tools such as digital water-quality





monitoring and automated feeders, they expressed concerns related to affordability, accessibility and the technical skills required for their effective use.

### 3.10 Absence of Fish Crop Insurance

Farmers noted that the lack of accessible fish crop insurance leaves them vulnerable to sudden climatic shifts, water-quality deterioration and disease outbreaks. They emphasised the need for affordable insurance products tailored to aquaculture.

### 3.11 Limited Access to Value-Addition Facilities

The absence of value-addition infrastructure, such as cleaning units, filleting stations and hygienic packing facilities, restricts farmers' ability to improve product quality, extend shelf life and enter higher-value markets.

### 3.12 Post-Harvest Handling and Ice Availability Challenges

Farmers raised concerns regarding inadequate post-harvest handling support, including limited access to clean ice, lack of cold-storage facilities and the absence of nearby ice factories. These gaps lead to rapid quality deterioration during harvesting and transport. Participants expressed the need for community-level ice plants, cold-chain infrastructure and basic post-harvest handling centres to reduce spoilage and improve market returns.

## 4. Recommendations for Future Training Programmes

Based on the overall experience of the five-day programme, the operational requirements and the feedback received from both trainers and participants, the following recommendations are proposed for structuring future aquaculture capacity-building initiatives:

### 4.1 Optimise Training Duration to a Four-Day Format

It is recommended that future programmes be conducted over **four days** instead of five, with a balanced structure that includes:

- **Two days** of classroom-based theoretical and conceptual learning, and
- **Two days** of field-level practical demonstrations and hands-on exercises.

This revised structure will ensure efficient utilisation of time while maintaining depth, clarity and practical exposure for participants.





#### **4.2 Allocate Dedicated Training Time Exclusively for AquaBridge Trainers**

To maintain delivery quality and ensure seamless progression of modules, AquaBridge requires uninterrupted and clearly allocated training slots. Dedicated time will allow trainers to manage session flow effectively, cover all learning components thoroughly and provide adequate space for participant questions and clarification.

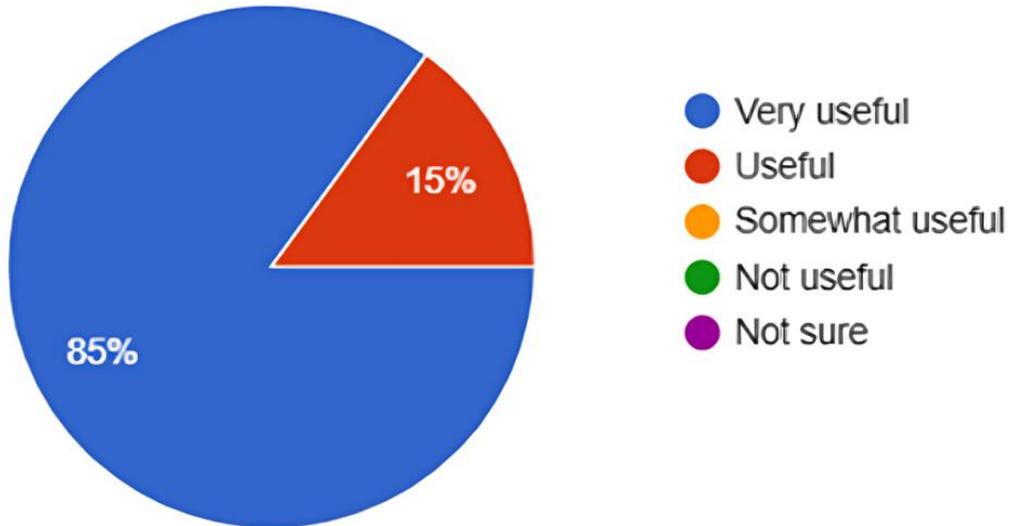




### Annexure 1: Farmers Feedback English Version

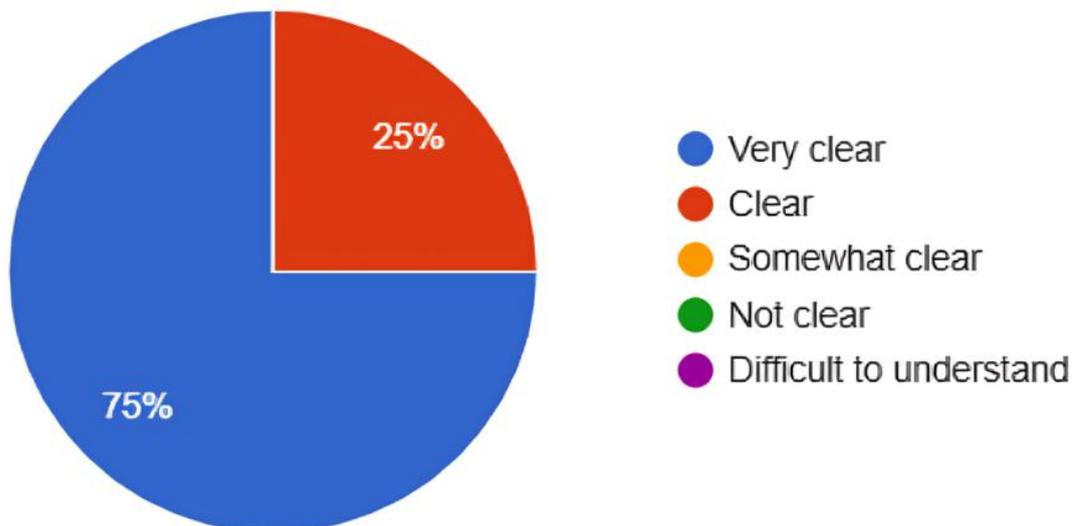
1. How useful was the 5-day training for improving your fish-farming knowledge and skills?

20 responses



2. How clearly were the training topics explained by the trainers?

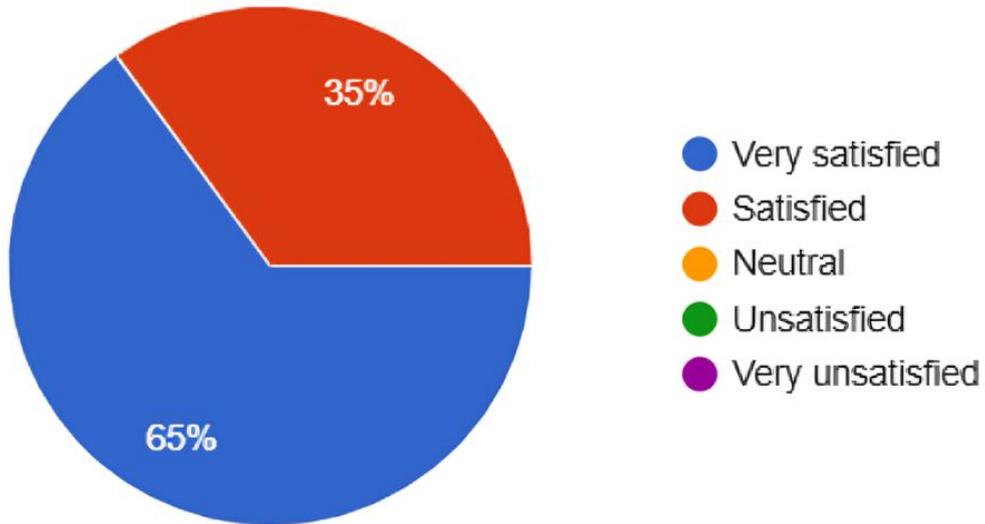
20 responses





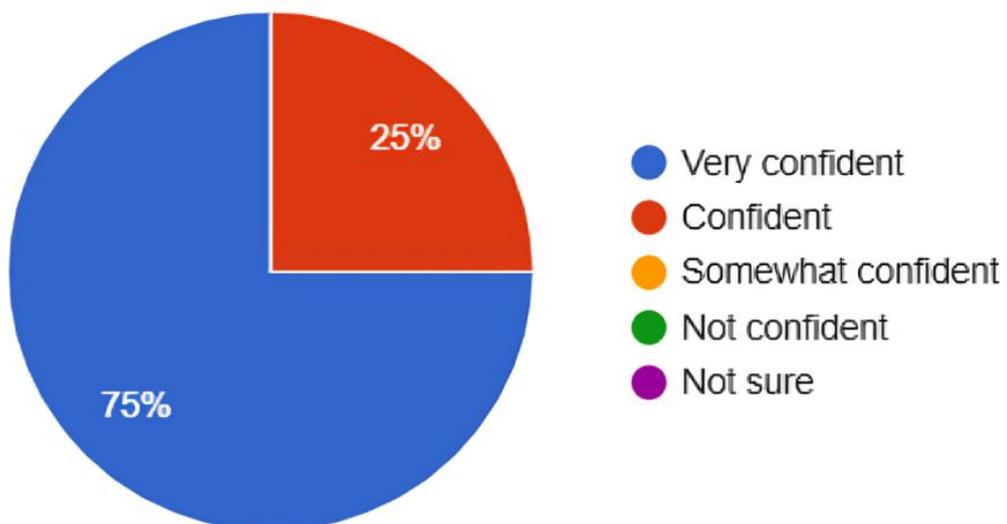
3. How satisfied are you with the practical field training (pond demonstrations) ?

20 responses



4. How confident do you feel about applying what you learned on your own farm?

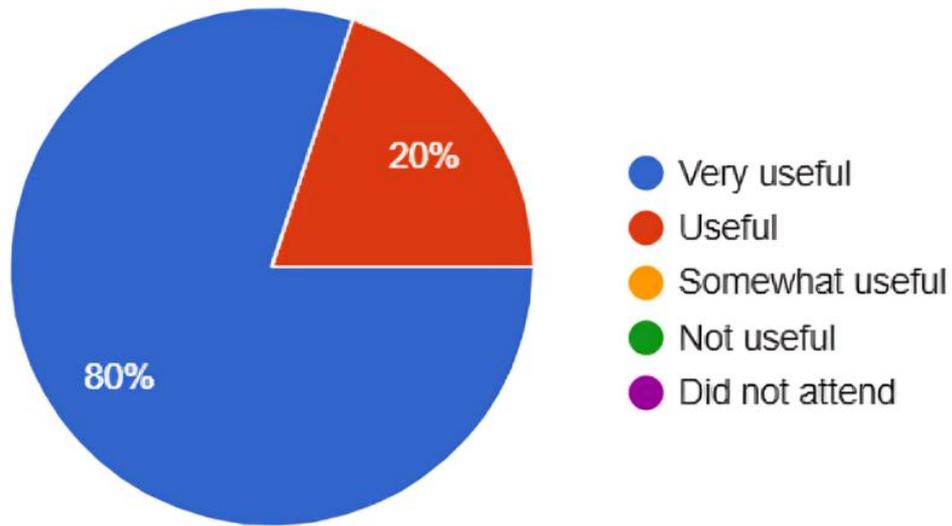
20 responses





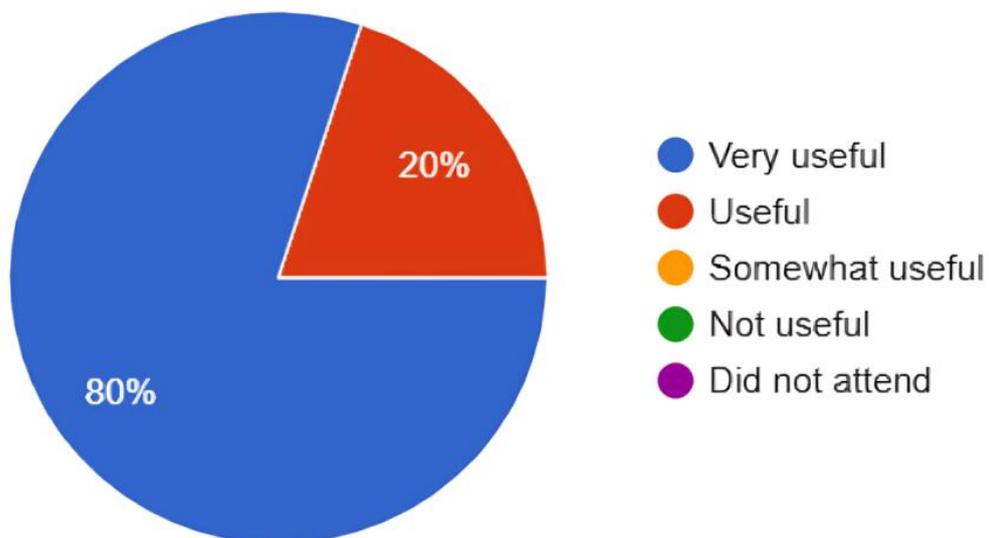
5. How useful were the sessions on water quality and environmental management?

20 responses



6. How useful were the sessions on seed quality and stocking techniques?

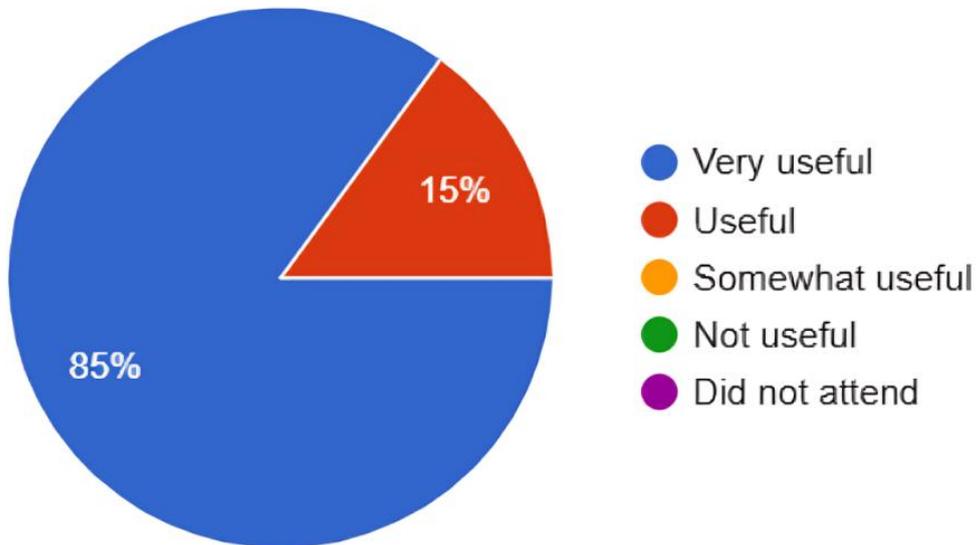
20 responses





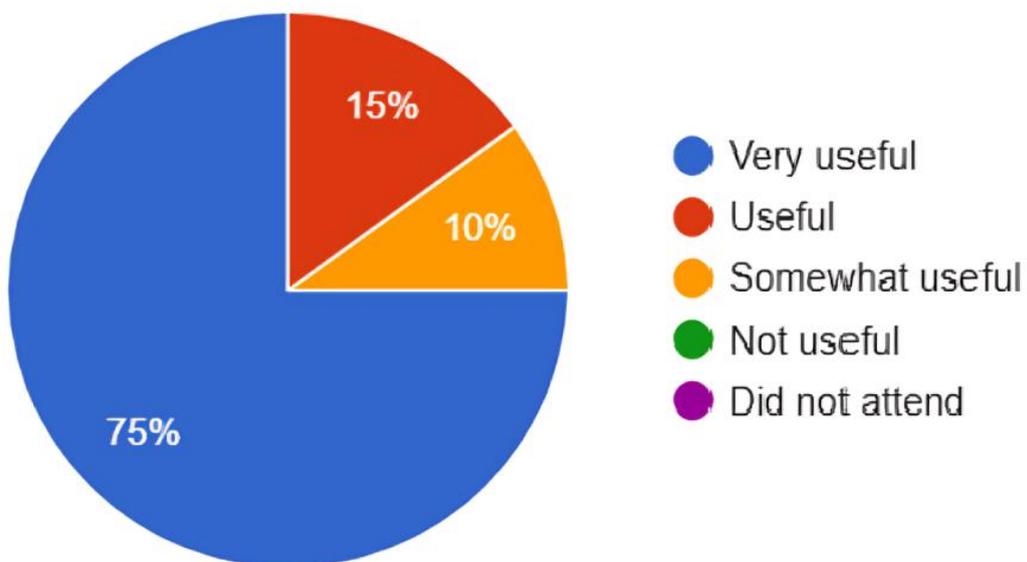
7. How useful were the sessions on *feed management and use of smart feeders*?

20 responses



8. How useful were the sessions on *fish health, biosecurity, and disease control*?

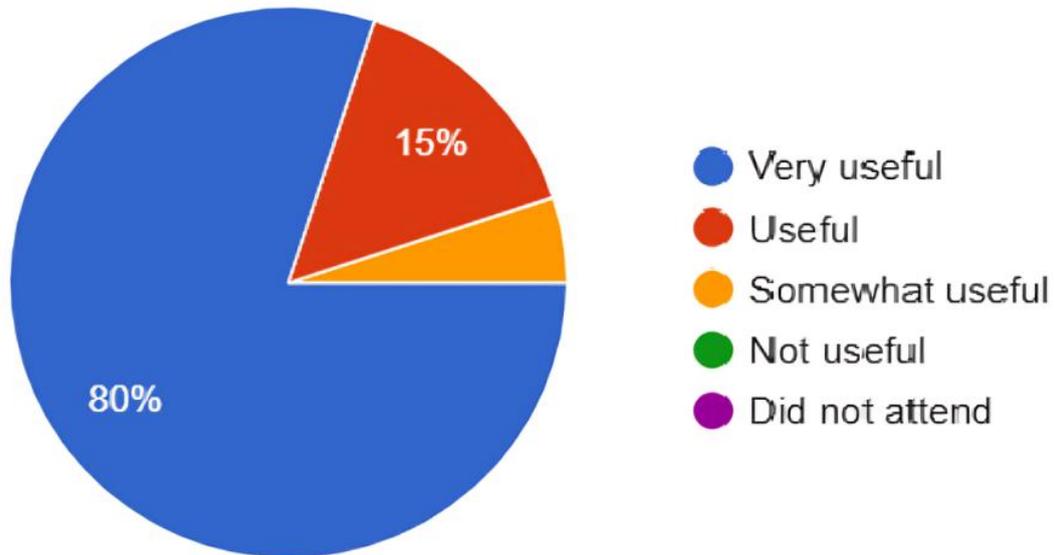
20 responses





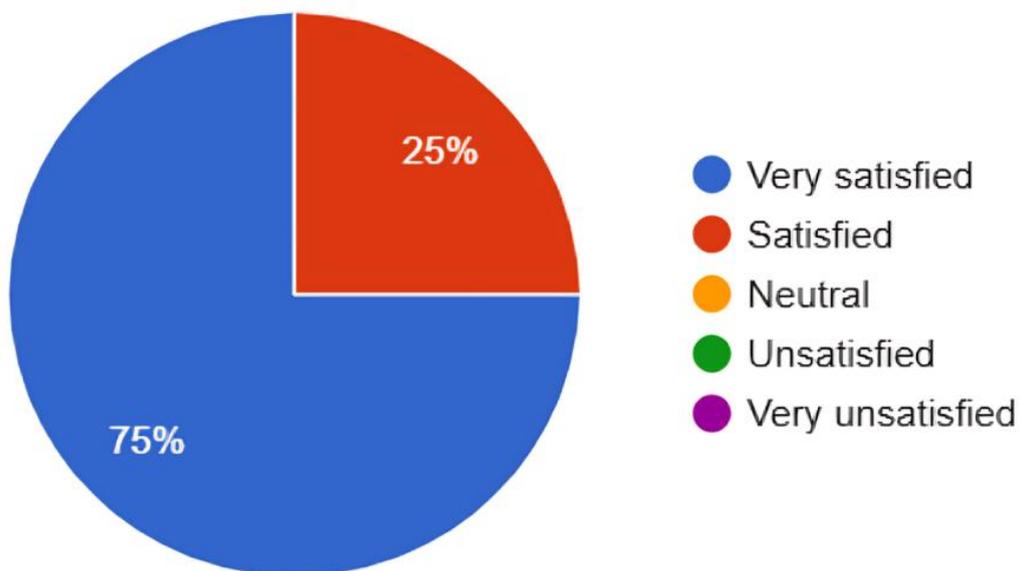
9. How useful were the sessions on harvesting, post-harvest handling, and marketing?

20 responses



10. Overall, how satisfied are you with the organization and delivery of the training (venue, timing, trainers, materials, meals, etc.)?

20 responses





11. What changes or improvements would you suggest for future training programs?

1. Additionally, a discussion regarding fundamental human needs is warranted.
2. Excellent 🙌
3. All good
4. आए
5. It can be more summarised
6. Excellent performance 🙌
7. Everything is great about the training
8. No
9. Very nice meeting arrangement
10. More summarized
11. Very Nice Meet With Aqua Bridge Holding
12. I am so proud for came to the five days training program through aqua bridge and I am also waiting next training program
13. Yes
14. Nothing to improve
15. You
16. New species Training program and Marketing statgee..
17. Fild training on lmc pangasius and Telapia farming and Breeding
18. Please come to my fish farm to give me extra knowledge and help to fish farming
19. Yes, this is good.
20. Nothing to improve, everything is great.

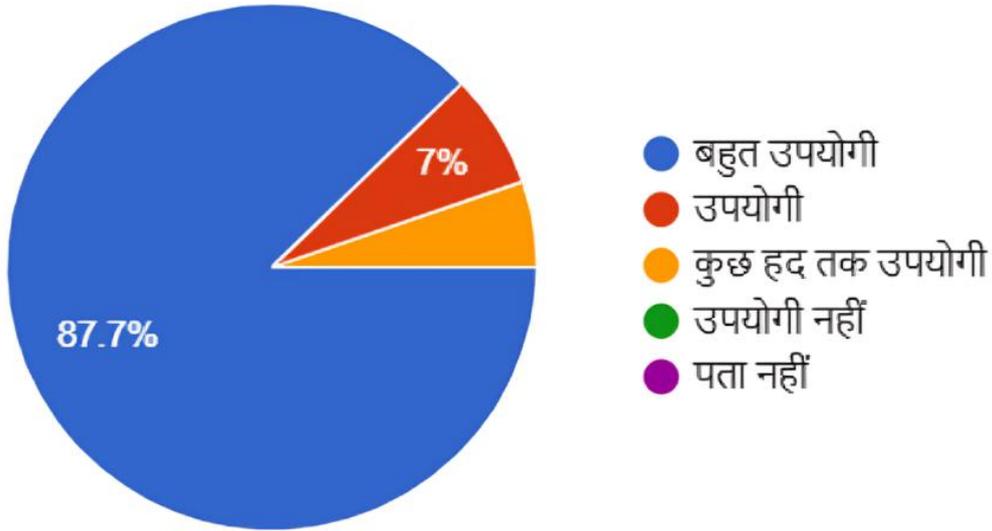




## Annexure 2: Farmers' Feedback Hindi Version

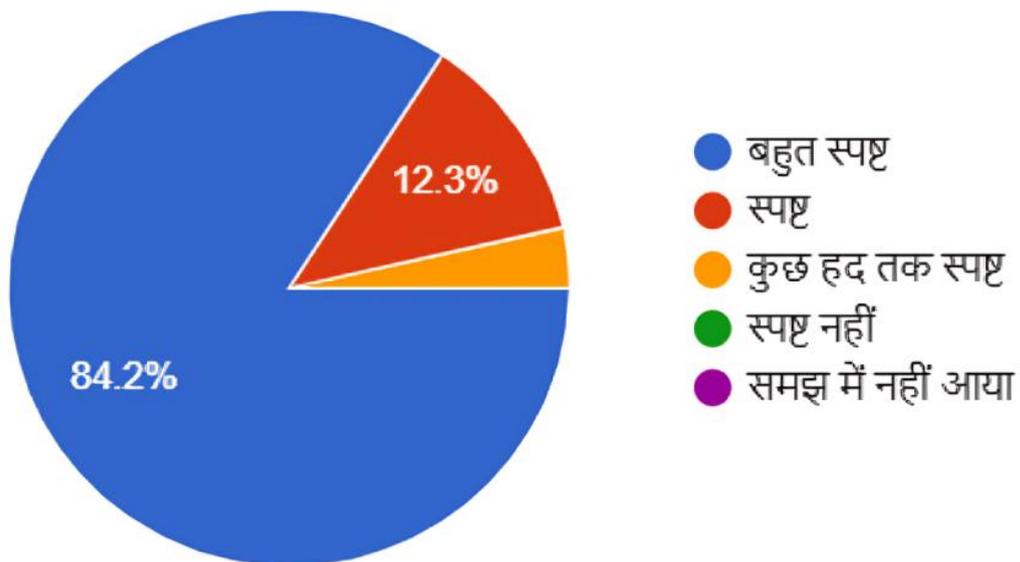
1. यह 5-दिवसीय प्रशिक्षण आपके मत्स्य पालन ज्ञान और कौशल को बढ़ाने में कितना उपयोगी रहा?

57 responses



2. प्रशिक्षण विषयों को प्रशिक्षकों द्वारा कितनी स्पष्टता से समझाया गया?

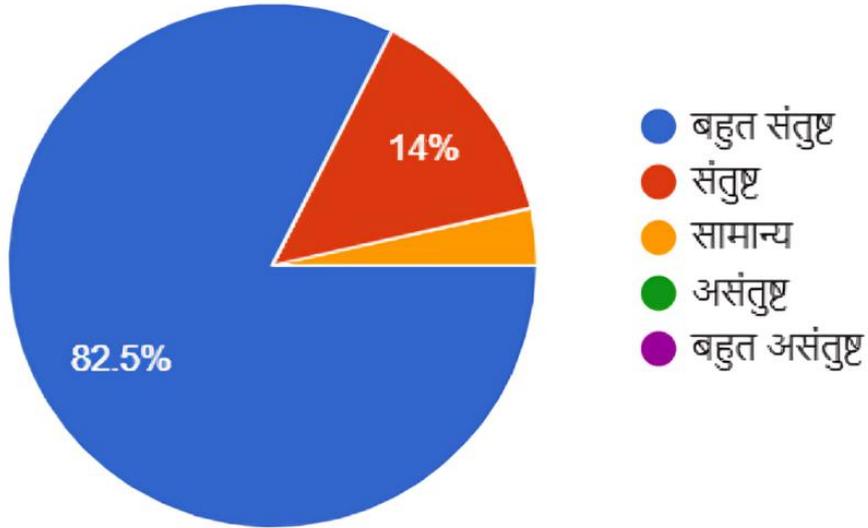
57 responses





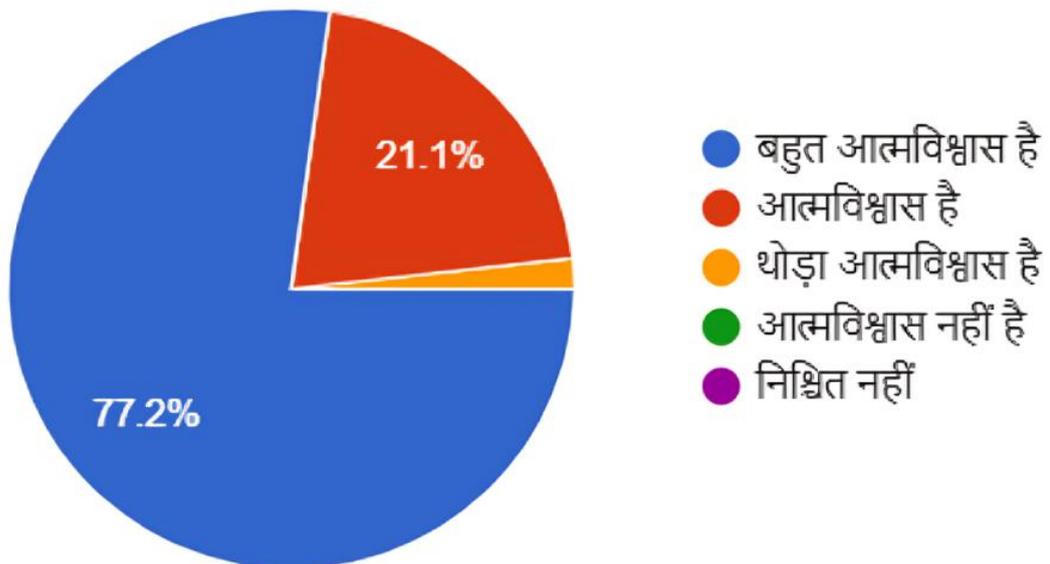
3. व्यावहारिक फील्ड प्रशिक्षण (डेमो तालाब) से आप कितने संतुष्ट हैं?

57 responses



4. क्या आप अपने फार्म पर सीखी हुई बातों को लागू करने में आत्मविश्वास महसूस करते हैं?

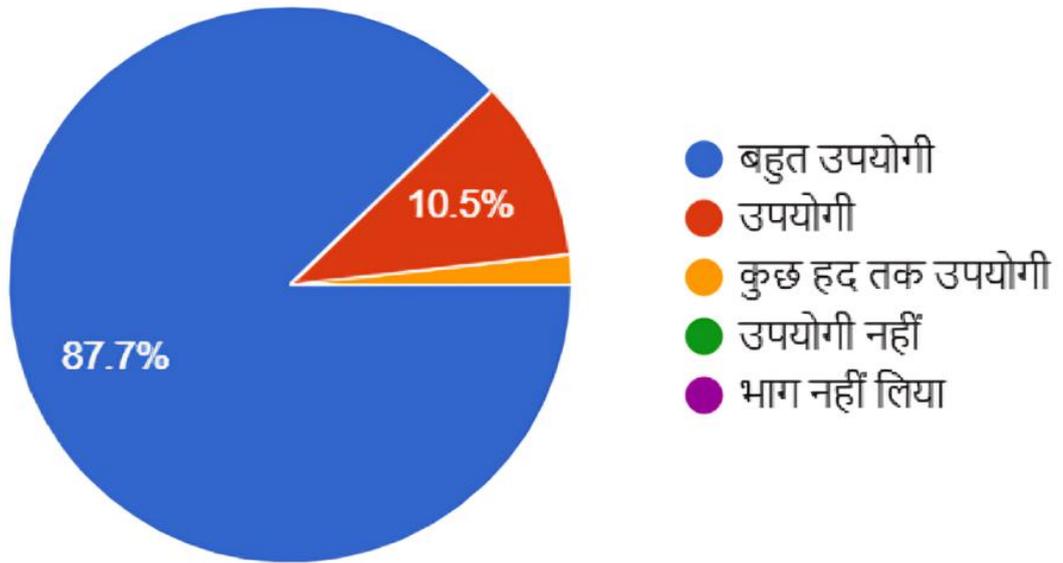
57 responses





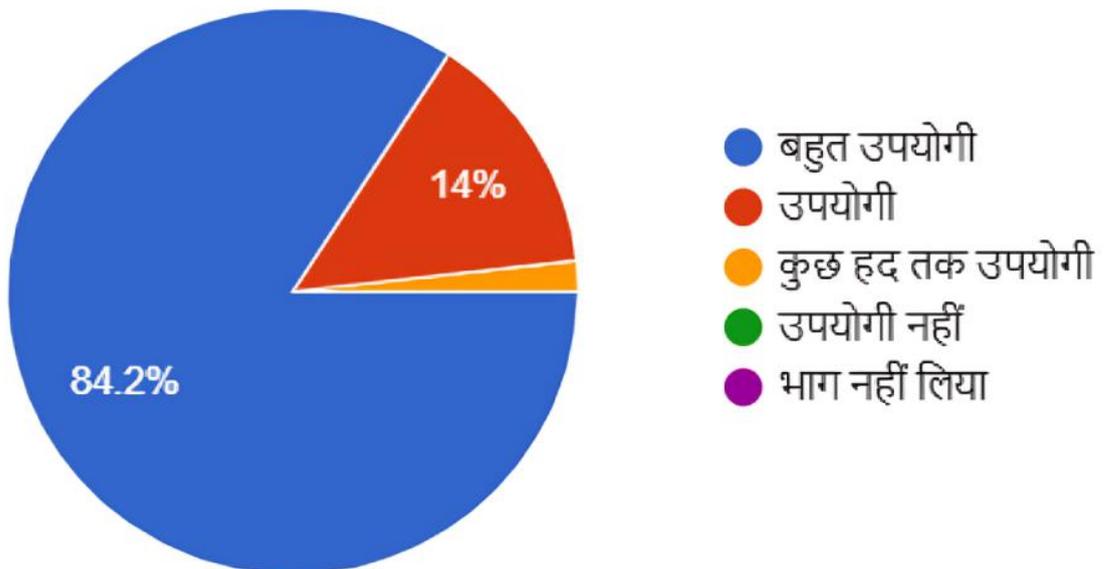
5. "पानी की गुणवत्ता और पर्यावरण प्रबंधन" सत्र आपके लिए कितना उपयोगी रहा?

57 responses



6. "बीज की गुणवत्ता और संचयन तकनीक" सत्र आपके लिए कितना उपयोगी रहा?

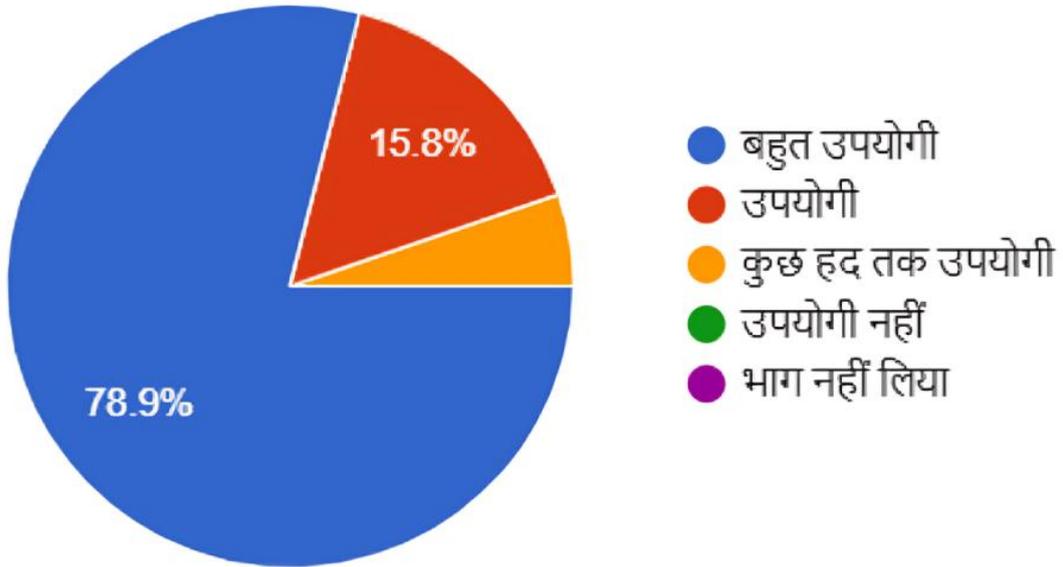
57 responses





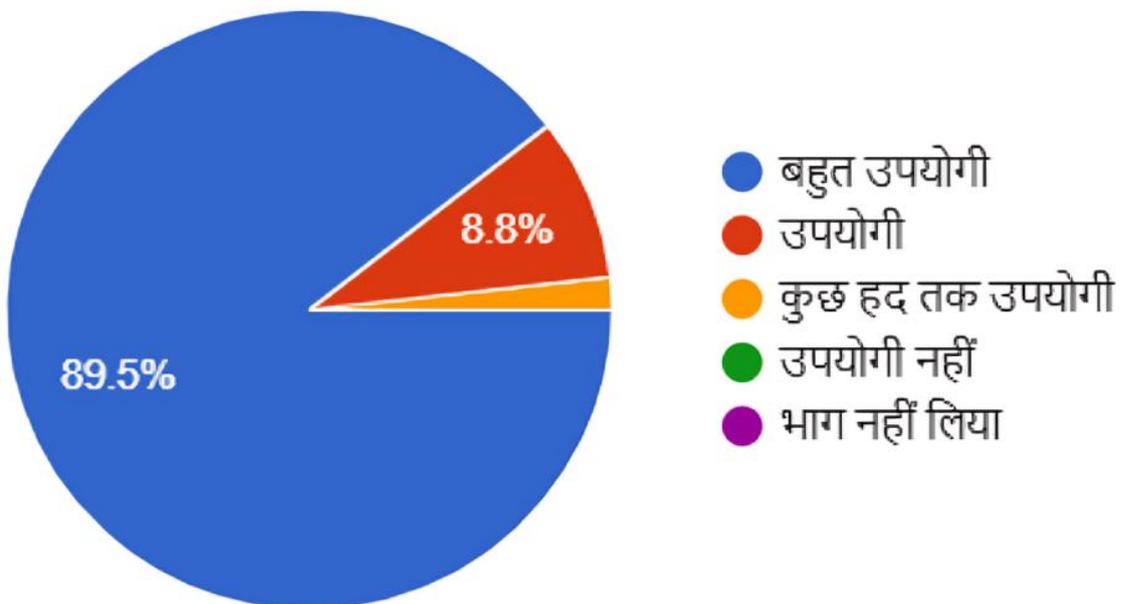
7. "खाद्य प्रबंधन और स्मार्ट फीडर का उपयोग" सत्र आपके लिए कितना उपयोगी रहा?

57 responses



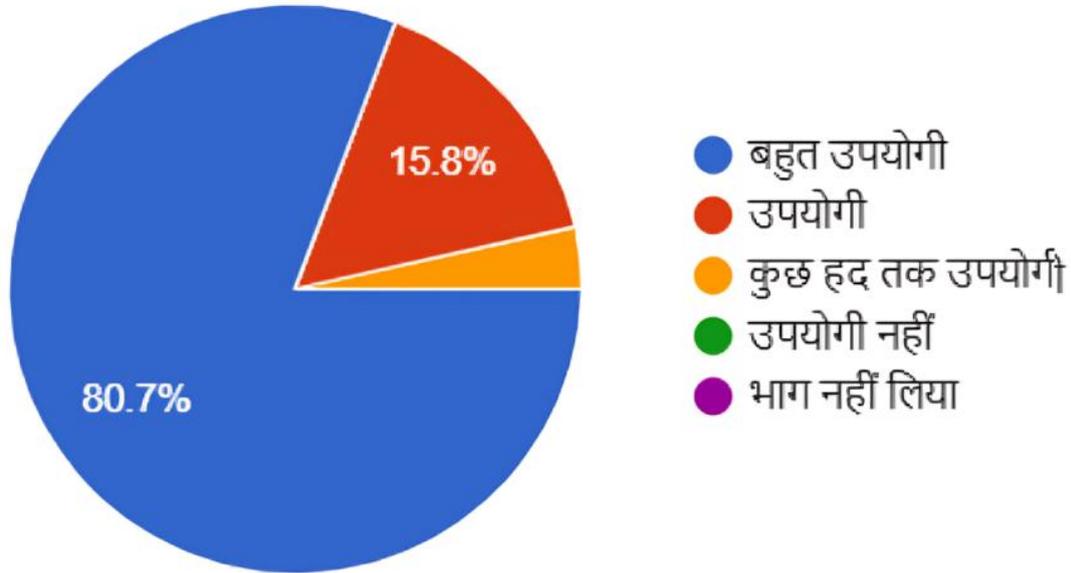
8. "मछली स्वास्थ्य, जैव सुरक्षा और रोग नियंत्रण" सत्र आपके लिए कितना उपयोगी रहा?

57 responses



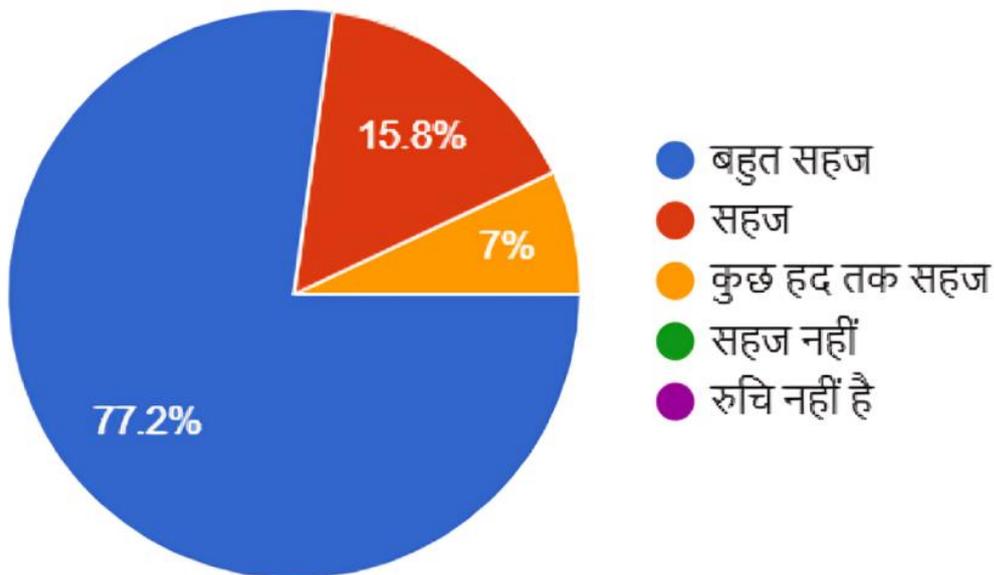


9. "हार्वेस्टिंग, पोस्ट-हार्वेस्ट हैंडलिंग और मार्केटिंग" सत्र आपके लिए कितना उपयोगी रहा?



10. प्रशिक्षण के दौरान दिखाए गए डिजिटल टूल्स (जैसे मोबाइल डैशबोर्ड, व्हाट्सएप सलाह सेवा आदि) का उपयोग करने में आप कितने सहज हैं?

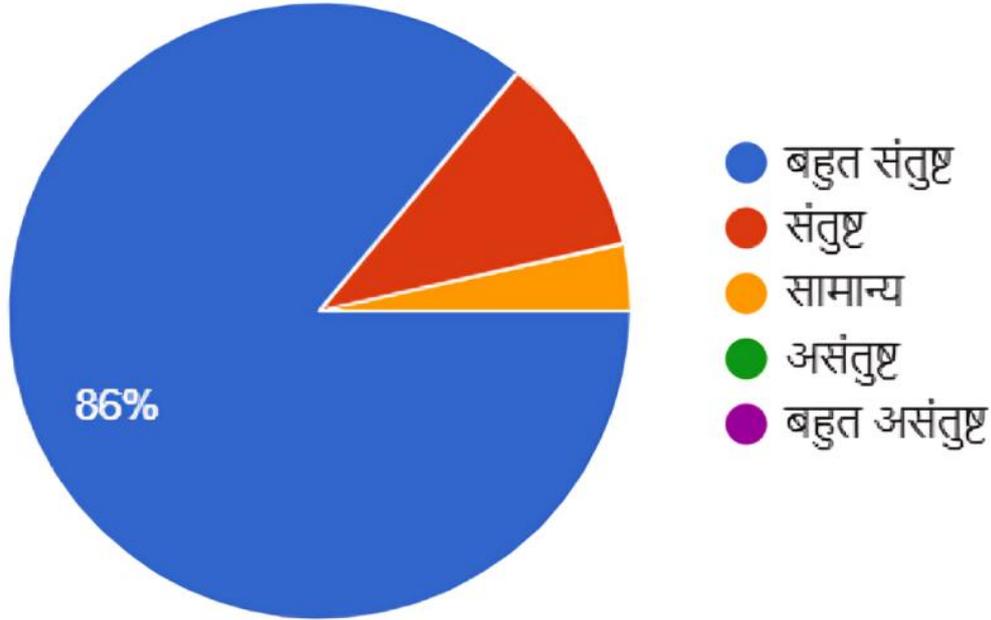
57 responses





11. प्रशिक्षण के आयोजन (स्थान, समय, प्रशिक्षक, सामग्री, भोजन आदि) से आप कितने संतुष्ट हैं?

57 responses



12. भविष्य के प्रशिक्षण कार्यक्रमों के लिए आप क्या सुझाव देना चाहेंगे?

1. प्रशिक्षण कार्यक्रम में बहुत ही अच्छा लगा होने के लिए मिली नई टेक्नोलॉजी सुनने के लिए मिली हवा हम अपने तालाब पर उपयोग करने पर बहुत ही लाभदायक कदम होगा
2. आगे भी ऐसे किसान के तालाब पे ट्रेनिंग होगा तो किसान को ज्यादा से ज्यादा लाभ मिलेगा
3. Thanks for the support, it was very helpful for us.
4. Good
5. Aage bhi hame mauka mile
6. One More Time please Recognised This Aqua Bridge Holding
7. किसान के साथ तालाब पर जाकर जुड़े जिससे किसान की समस्या का सहजता पूर्वक समाधान हो सके।
8. Ha
9. Very nic





10. Ha
11. किसानों की हित की बात किसान के तलब पे होनी चाहिए
12. Bilkul aisa hi
13. Aise hi chlate rahna chahiye
14. Is pratishat se hamen 65 percent Sikh Mila next mein aane wale prashikshan mein ham samajh rahe Hain ki purv Tarika apna lenge yah meri sujhav hai
15. Aqua company bahut achcha hai humko bahut acchi acchi baat machhali ke bare mein samjhaen aur ham isko samajhne ke bad ISI per kam karenge
16. All good
17. Fir se isa program hona chaiye
18. समय-समय पर ट्रेनिंग की रिपीट की जरूरत है
19. Products Demonstration Video , 2-3 trenar , local problem ppt
20. Excellent 👍
21. Bahut achcha Laga company Se milkar
22. तालाब से सीधे जुड़े जिससे किसान अपनी बात रख सके
23. Ready for new Technologuy adoption
24. हम चाहते हैं कि भविष्य मे हमे लेटेस्ट टेक्नालाजी पर और पारगत किया जाय जिससे हम बराबरअपडेट होते रहे
25. Aise hi anwarat ine karyon ko aap Karate rahiye bahut hi achcha Laga bahut hi santusht hai ham log
26. Is pratishat se hamen 65% Sikh Mila aage jab bhi pratikshan hoga ham sikhane ka kam karenge aur pratikshit hone ka kam karenge jitna bhi आपको जानकारी Mila usse kafi samajhdari ke Labh aage wale karne Wale mast palan mein hamesha yog milega
27. bahut
28. Mai bhut khus hu training leke aur future me bhi lena chaahunga
29. 3 दिन का ट्रेनिंग एवम 2दिन का विजिट कार्यक्रम जैसे फीड मिल पर , झींगा फार्म, मत्स्य मंडी आदि मत्स्य रिलेटेड विजिट कार्यक्रम।
30. इसे ट्रेनिंग से मैं बहुत अच्छी तरह मछली पालन और बड़े बिजीनिस मेन होंगे
31. बहुत अच्छा
32. आने वाले समय में बहुत ही लाभदायक होगा और भविष्य में हमे इसकी आवश्यकता पड़ेगी धन्यवाद मैं आप का अभारी हूँ की आ यहाँ पर आ कर जो ज्ञान दिए हैं वह बहुत ही अच्छा था
33. Hamen yah training bahut acchi lagi hamen iske vishay mein soch kar kam karenge aur agali bar kahin per viksit hota Hai to Ham vahan Sahyog Lena chahenge
34. बड़े पैमाने पर हम जा सकते हैं इस ट्रेनिंग से





35. Ha ye sub training fir hona chahiye.
36. Very thankful for your support, i hope your knowledge help more & more people for fish farming. Thank you
37. 2दिन का मत्स्य रिलेटेड विजिट कार्यक्रम जैसे फीड मिल, मत्स्य मंडी, हचारी फार्म, केज कल्चर फार्म आदि।
38. उम्मीद करते हैं कि भविष्य में ऐसे ही और प्रशिक्षण कार्यक्रम आयोजित समय समय पर होता रहे जिससे किसान भाइयों में जरूरी जानकारी उपलब्ध होता रहे।
39. Ham chahte hai blok Astar par Aek sort. Rakha jaye
40. Bhot acha hai baki team aage upgrade ki taiyaari kare
41. Field training pangaasia tilaapiya and IMC
42. मैं बहुत संतुष्ट हूँ । भविष्य में ऐसी प्रशिक्षण मिलनी जरूरी हैं,, किसानों को और हमें अच्छा मत्स्य उत्पादन करने में बायोलॉजिकली पैरामीटर से और पानी का गुणवत्ता जानने का मौका मिला इससे हमें भविष्य में मत्स्य ज्यादा कर सकेंगे
43. ALL OK
44. उम्मीद करते हैं कि भविष्य में ऐसे ही और प्रशिक्षण कार्यक्रम आयोजित समय समय पर होता रहे जिससे किसान भाइयों में जरूरी जानकारी उपलब्ध होता रहे।
45. Ya to humko bahut sikhane Ko Mila bahut achcha Laga bahut jankari is baat mein Hui Hai
46. Visit to fish feed meel farm , prawn farm
47. भविष्य में प्रशिक्षण कार्यक्रम में किसानों को प्रशिक्षण के साथ प्रैक्टिकल और उपयोगी टूल भी किसानों को देना चाहिए जिससे किसान समय समय पर अपने तालाब पर अपनी पानी की जाँच कर सके । प्रशिक्षण में भोजन और पैसा नहीं देना चाहिए उसकी जगह प्रशिक्षण सर्टिफिकेट कितना उपयोगी है ये मछली पालकों को इससे लाभ मिलना चाहिए ।
48. Aisa karykram hamesha hona chahie bahut hi achcha karykram tha Aisa Ho to
49. अगले मीटिंग में मछली बेचने के बारे में जानकारी दी जाए
50. Bhavishya ke Prashikshan ke liye mera ek hi sujhav hai ki Machhali ka rate Humko Sahi mile
51. bahut aksh
52. अच्छा, प्रशिक्षण तीन दिवसीय होना चाहिये, अन्य तालाबों का निरीक्षण आवश्यक,
53. bahut acha huga aur sikhane ko mile
54. Fish trading
55. Need modern techniques in our farms





56. प्रशिक्षण का कार्यक्रम बहुत सराहनी वह छोटी-छोटी जानकारी नया एक आयाम मिला
57. हमको बहुत अच्छे से समझाया गया और उसके बारे में बहुत अच्छी जानकारी मिली  
की कैसे क्या करना है क्या नहीं करना है

\*\*\**End*\*\*\*

