

Terms of Reference

Title

Client Country Project number Assignment number Period Cooperative advisor (CA) : Design of Laboratory Layouts and Technical Posters for Shrimp Health and Water Quality Monitoring in Cooperatives : Phuoc Binh, Toan Thang and Hoa Nho coop : Vietnam : 24ATVN-9764 : ADV.21430

- : May June 2025
- : Pham Nguyen Duy
 - ⊠ Field visit included

Introduction cooperative

Toan Thang Aquaculture Cooperative (TTC), located in Vinh Hiep commune, Vinh Chau township, Soc Trang province, was founded in 2016 and has grown to 72 members. TTC has a well-established foundation with strong relationships in both upstream and downstream sectors, enabling it to contribute meaningfully to the regional shrimp value chain. It is now focusing on enhancing its service portfolio by integrating in-house laboratory diagnostic capabilities.

Phuoc Binh Cooperative, founded in 2020 in Tra Vinh province, has 18 core members. It actively promotes youth involvement in aquaculture innovation and governance. Although relatively young, the cooperative has demonstrated growth potential and a strong interest in adopting modern shrimp farming practices and technologies.

Hoa Nho Cooperative, based in Soc Trang, oversees over 53 hectares of shrimp farming and produces approximately 3,012 metric tons annually. It caters to high-value markets such as the EU, USA, Japan, and South Korea. Hoa Nho is pursuing laboratory services to meet growing export requirements and ensure better disease control.

Background of the assignment

In response to capacity gaps identified during technical assessments and recent lab training missions, Agriterra aims to reinforce the practical application of shrimp diagnostics and water quality monitoring in three key cooperatives. While members have undergone training in lab techniques such as water sampling, PCR analysis, and microscopy, there remains a pressing need for:

- A cost-effective, spatially efficient lab design suitable for rural cooperative settings.
- Illustrated, easy-to-follow technical posters to act as daily reference tools for cooperative members.
- Integration of lab services into the business model of each cooperative to ensure financial viability and farmer access.

This assignment directly supports the implementation of post-training infrastructure and materials under the MACIB project. It aims to bridge the gap between knowledge and

practice, institutionalizing diagnostic services as part of the cooperatives' long-term strategies.

Main objective

To reinforce the operational capacity of aquaculture cooperatives by designing functional, cooperative-friendly laboratory layouts and producing visually accessible technical posters that empower shrimp farmers to apply diagnostics and monitoring practices effectively.

Specific objectives

- Design a Practical Wet Lab Layout: To create a cost-effective, functional wet lab setup tailored to the needs and resource levels of the participating cooperatives, enabling routine water quality testing and shrimp health diagnostics.
- Develop Educational Posters on Shrimp Health: To design easy-to-understand, illustrated posters that cover key topics such as common shrimp diseases, early warning signs and common treatments.
- Create Water Quality Monitoring Posters: To produce a poster that explains the importance of key water parameters (e.g., pH, salinity, ammonia, DO, temperature).

Expected results

- 1. Design modular and scalable laboratory layouts that account for cooperative resource constraints, including physical space, budget, and staffing.
- Develop educational posters in Vietnamese with strong visual content, focusing on:
 - Common shrimp diseases (e.g., Vibrio spp., white spot, EMS, EHP and TPD)
 - Early symptom recognition and prevention techniques
 - Critical water quality parameters (pH, salinity, DO, NH3, temperature)
 - Sample collection, testing workflows, and safety protocols
- 3. Ensure all outputs are field validated with feedback from users with diverse literacy and technical backgrounds.
- 4. Strengthening cooperatives' ability to deliver reliable, affordable testing services through improved member engagement and visual tools.

Deliverables and Outputs

- 1. 3D Laboratory Layout Designs for each cooperative, including:
 - Functional zoning (intake, analysis, sanitation, storage)
 - Equipment placement and workflow routing
 - Equipment list with cost estimates (Bill of Materials)
 - Considerations for ventilation, biosafety, and electrical access
- 2. At least five Thematic Posters (in Vietnamese):
 - Poster 1,2,3: "Common shrimp diseases (EMS, EHP, TPD and white spot) and early clinical signs"
 - Poster 4: "Water Quality Testing: Parameters and Interpretation"
 - Poster 5: "Using Laboratory Tools: A Step-by-Step Visual Guide"
- 3. Digital and Print Formats:

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- High-resolution files (.PDF and .PNG)
- Editable templates for future updates
- A2 and A1 print sizes (laminated or water-resistant where feasible)
- 4. Field Testing and Validation Report:
 - Summary of cooperative feedback on usability and effectiveness
 - Finalized designs reflecting suggested adjustments

- 5. Usage Guidelines:
 - Practical guidance on how cooperative members can incorporate posters and lab layout into daily operations
 - Recommendations on display and orientation sessions

Scope of Work

- 1. Needs Assessment and Desk Review:
 - Review of past training materials, lab reports, and cooperative business strategies
 - Consultations with cooperative leaders and youth trainees
- 2. Wet Lab Design and Drafting:
 - Layout schematics using CAD or similar design tools
 - Ensure ergonomic and process-flow compatibility with lab SOPs
- 3. Poster Design Development:
 - Use of infographics, color coding, and minimal text
 - Illustrate real-world farm and lab conditions
 - Iterative co-creation with farmer input
- 4. Validation and Feedback Loop:
 - Conduct testing sessions with cooperative members
 - Record suggestions, assess clarity and applicability
- 5. Finalization and Submission:
 - Integrate validated designs into the cooperatives' operations
 - Train CA and cooperative leads on poster use and lab setup

Required Qualifications for the Consultant

- MSc or PhD in Aquaculture, Pathology, Laboratory Sciences, or a related field
- Minimum 5 years of experience in shrimp farming diagnostics and water quality management
- Demonstrated portfolio in lab infrastructure design and educational material development
- Familiarity with participatory design approaches in rural/low-literacy settings
- Vietnamese language proficiency and experience working in cooperative development preferred

Assignment details

- Composition of the Agriterra assignment team:
 - Pham Nguyen Duy CA
 - Tran Quang Dieu CA
- Duration of the assignment: The time frame of the assignment will be 10 days in the period of 19/05/2025-30/05/2025 (including 1 day for proposal preparation and review, 2 days for field visit, 6 days for design posters, lab lay-out and 1 day for report)
- Arrangements: Agriterra will arrange and cater for flight, hotel, transportation, programme for the Agriterra assignment team.

Tentative programme

Day	Programme	Available
May 20 - 6 th	Preparation, contact, budgeting and finding contractors (consultants or organization including proposal and activities screening Contract preparation and action plan for cooperatives	Agriterra CA (Duy/Dieu)
June 9 – 20 th	Field visit to cooperatives Wet lab design Educational posters design Field testing	Agriterra CA (Duy) Consultant
After 20 th	Final submission and handover to Agriterra and cooperatives	Agriterra CA Consultant

Annexes

Agriterra, for cooperatives

We are a purpose-driven organisation, aimed at strengthening farmer cooperatives in 13 countries in Africa and Asia. Agriterra's wheel of impact depicts how strong farmer cooperatives contribute to societal development and the relevance to many of the Sustainable Development Goals of the United Nations.

Positively impacting farmer cooperatives is at the heart of our identity and is reflected in our legal entity as a Dutch non-profit foundation.



Agriterra provides high quality and hands-on advice, training and exchange services to farmer cooperatives with maximum impact to support dynamic, economic and sustainably strong and productive rural areas. We draw on a century of cooperative knowledge in the Netherlands shared through our extensive network in the Dutch agrifood sector. These Agripool experts from farmer organisations across the world work with Cooperative advisors from our country offices, supported by staff teams in the Netherlands.

In 2022 Agriterra worked together with 579 farmer organisations, trained 8,989 people and 3,808,366 farmers were reached.