**Consortium Members**

- **Catherine Ragasa**: Project Lead, Senior Research Fellow, IFPRI
- **Seth Agyeakwa**, **Ruby Asmah**, **Emmanuel Tetteh-Doku** (Scientists) - CSIR-Water Research Institute, Ghana
- **Nhuong Tran**, **Olivier Joffre**, **Trinh Quoc Trong**
- **Women's Empowerment in Agriculture Index (WEAI)** and **Testing business models for sustainable provision of technical support and seed distribution** (Crystal Lake Fish Ltd)
- **Impact evaluation results and project closing**
- **FISH's programs on seed distribution systems**
- **Godfred Alimo** (Scientists)
- **Building the capacity of hatchery operators and small GHANA**
- **Working with private hatcheries, multiplication centers and nurseries, and provision of technical support to ensure long-term feasibility and sustainability**
- **Water quality and molecular analysis of tilapia seed**
- **Analyzing the tilapia seed supply chain, assessing its accessibility to existing producers and identifying options to improve the integration of women and youth**
- **Facilitating finalization and pilot implementation of certification processes to provide long-term feasibility and sustainability**
- **Improving productivity and profitability at farm level to ensure good returns and sustainable enterprises**
- **Identifying gender practices for new or existing producers, with specific attention for women and youth**
- **Examining farmers’ current use, perception and experience with fish seeds, and measuring demand and willingness to pay for high-quality fingerlings**
- **Developing and assessing improved models for seed dissemination**
- **Identifying gender-inclusive and pro-youth approaches to training and information systems**
- **Modeling and identifying factors and constraints in improving farm productivity and profitability**

**Synergies with other initiatives**

- **FISH’s programs on seed distribution systems**
- **PIM’s programs on seed systems and on inclusive value chain development**
- **Women’s Empowerment in Agriculture Index (WEAI)** and **Women’s Empowerment in Fisheries (WEFI)**
- **AUDA/NEPAD’s Agricultural Technical and Vocational Education and Training (AVTETI) Program**

**Different aquaculture systems**

- Extensive, semi-intensive and intensive systems
- Polyculture (e.g., tilapia and catfish) and monoculture

**Actors in the Tilapia seed chain**

- **Public institute (ARDEC)** - broodstock multiplication
- **The project will help set up additional broodstock multiplication centers**
- **Hatcheries (3 public, 45 private)** - The project will provide technical support to hatchery operators on good hatchery management and certification system
- **Grow-out farmers** (500 cage and pond grown-out farmers mostly small-scale, <50 tons/year)
- **The project will help set up new networks and test other improved and inclusive seed distribution models**
- **Aggregators/Traders** (by 20% for cage, 15% for pond) and reduced fingerling mortality by 50%.

**Impact activities**

- The project combines research, impact evaluation, capacity strengthening, working with government and private sector, and facilitation of stakeholder platforms
- Technical support to Nucleus Breeding Centre, 30 hatcheries, 3 multiplication centers, and 6 nurseries
- Water quality and molecular analysis of tilapia seed
- Broodstock performance and seed culture trials and monitoring
- Testing business models for sustainable provision of technical support and seed distribution
- Facilitating stakeholder platforms and networks to enhance communication and coordination
- Conducting farm surveys, interviews, feasibility and profitability analysis, effectiveness analysis, experiments, and impact evaluation to inform researchers, regulators, and industry
- Supporting 3 MS students on breeding and molecular genetics and hatchery management

**Activities to enhanced project sustainability**

- Working with private hatcheries, multiplication centers and nurseries, and provision of technical support to ensure long-term feasibility and sustainability
- Strengthening technical and institutional capacity of various actors (broodstock and multiplication centers, hatcheries, nurseries, farmers)
- Facilitating finalization and pilot implementation of certification processes to provide long-term quality improvement to the entire tilapia sector
- Improving productivity and profitability at farm level to ensure good returns and sustainable enterprises
- Testing cost-effective extension services to ensure information provision will continue after the project
- Facilitating platforms and networks for strengthening coordination among various actors and sustaining collective action beyond the project
- Generating data and rigorous analysis for stakeholders’ networks to use to lobby for investors, donors and government support for the aquaculture sector

**Project objectives and description**

**Development goal:** To improve productivity and profitability of small-scale tilapia cage and pond farming.

**Project outcome indicators:** Increased productivity of 400 small-scale tilapia farmers (by 20% for cage, 15% for pond) and reduced fingerling mortality by 50%.

**Two research objectives and their components**

1. To improve the quality and service level of public and private hatcheries
   - Generating an understanding of seed quality presently being used
   - Developing and disseminating best practice guidelines and quality standards for hatcheries
   - Building the capacity of hatchery operators and small-scale farmers in sustainable hatchery and seed management
   - Supporting hatchery registration and certification system

2. To increase access to and adoption of high-quality fish seed and good aquaculture practices for new or existing producers, with specific attention for women and youth
   - Analyzing the tilapia seed supply chain, assessing its accessibility to existing producers and identifying options to improve the integration of women and youth
   - Examining farmers’ current use, perception and experience with fish seeds, and measuring demand and willingness to pay for high-quality fingerlings
   - Developing and assessing improved models for seed dissemination
   - Identifying gender-inclusive and pro-youth approaches to training and information systems
   - Modeling and identifying factors and constraints in improving farm productivity and profitability

**Major activities and timeframe**

**YEAR 1 (Q1-Q2) - Exploratory research and baseline studies**
- Launch meeting (Feb 19, Accra)
- Review of certification system and training(extension materials (Q1)
- Capacity assessment of hatcheries (Q1)
- Baseline farm survey design and implementation (Q1-Q2)
- Qualitative seed system and seed value chain analysis (Q2)
- Review and selection of seed distribution & extension business models (Q1-Q2)

**YEAR 1 (Q3-Q2) - Interventions for total of 2 years**
- Broodstock management; accreditation support
- Action research on business models
- Water quality and molecular analysis of tilapia seed
- Broodstock performance and seed culture trials and monitoring of seed quality
- Farmers’ training and extension services
- MS students enrollment and thesis completion

**YEAR 3 (Q3-Q4) – Impact evaluation results and project closing**
- Endline survey and impact evaluation (quantitative and qualitative)
- Documentation of processes, viability and lessons

**YEARS 1-3:** Facilitation of stakeholder platforms and networks to enhance communication and coordination and dissemination and publication of research results