Feed the Future Innovation Lab for Food Security Policy

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Aquaculture in Myanmar: Fish Farm Technology, Production Economics and Management

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Introduction

Fish farming (aquaculture) has grown rapidly in Myanmar over the last two decades and plays an increasingly important role in national fish supply, but its technical and economic characteristics have been little studied. Feed the Future Innovation Lab for Food Security Policy (FSP) has conducted the first statistically representative survey of fish farms conducted in Myanmar: the Myanmar Aquaculture-Agriculture Survey (MAAS). Features analyzed include: farm productivity and profitability; farm size; production cycle duration; use of feed, seed and other production inputs; demand for labor; harvesting and marketing behaviors; technological change; the economic and social characteristics of fish farming households; and land access and tenure.

Key Recommendations

- Fish farming should be recognized and promoted as a mechanism for generating rural growth.
- Small farms (sized 10 acres or less) and nurseries should be the principal target of policy and technical interventions.
- Conduct research and outreach on use of fertilizers.
- Identify mechanisms for providing commercial loans, tailored to the needs of actors in aquaculture value chains.
- Encourage private investment in the feed sector.

Implications for policy and programing

Based on this survey findings, the following recommendations are made to promote the growth of aquaculture in Myanmar:

1. **Fish farming should be recognized and promoted as a mechanism for generating rural growth**. Average returns from aquaculture are four times higher than those earned from crop farming. In addition, aquaculture creates numerous economic linkages within the rural economy where farms are located. These include demand for labor, intermediate inputs (e.g. fish seed from nurseries) and services (e.g. transport). However, yields and profitability are highly variable, and small farms in particular perform sub-optimally. Simple management improvements could enhance their performance.

2. **Small farms (sized 10 acres or less) and nurseries should be the principal target of policy and technical interventions**. Considered together, these account for 70% of all fish farms. Small farms create greater relative demand for labor and many goods and services than large farms. However, they remain disadvantaged in terms of tenure security, access to credit, and their capacity to invest in adequate levels of production inputs. Overcoming these constraints would help boost small farm productivity and profitability and bring them closer to that of larger farms.

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3. **Smaller farms have a competitive advantage in the production of non-carp species** – especially tilapia, pacu and freshwater prawn, as indicated by small farms attaining higher yields of these species than medium or large. Investments in these species should be prioritized; especially by supporting the establishment of privately operated mono-sex tilapia hatcheries, and research to overcome bottlenecks in the hatchery production of freshwater prawn.

4. **Conduct research and outreach on use of fertilizers**. Pond fertilization is a simple low cost technique that can significantly improve production efficiency, and is widely adopted by fish farmers elsewhere in Asia. Only 25% of fish farms in Myanmar make use of any type of fertilization, and expenditure on fertilizers accounts for much less than 1% of fish farm operating costs. Research is needed to understand farmers' attitudes toward and use of fertilizers, identify management protocols for optimal fertilizer use under Myanmar conditions through field trials, and disseminate results and recommendations to users.

5. **Identify mechanisms for providing commercial loans, tailored to the needs of farms and other actors in aquaculture value chains**. Operating costs for these enterprises are high and access to even informal forms of credit is currently limited.

6. **Encourage private investment in the feed sector** to increase competitiveness, lower feed prices, and improve ease and terms of access to pelleted fish feeds. Currently only 15% of farms use any kind of manufactured pelleted feed. As a result, fish yields and growth rates are lower than they could be.

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