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Sustainable Aquaculture for a Secure Future

Title: Improving the Supply Chain of Tilapia Industry in the Philippines

Authors: ¹Wilfred E. Jamandre, ²Upton Hatch, ³Remedios B. Bolivar, ⁴Russell Borski

¹HC-PI, Central Luzon State University (CLSU)

²US-PI, North Carolina State University (NCSU)

³HC-Lead PI, Central Luzon State University (CLSU)

⁴US Lead PI, North Carolina State University (NCSU)

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Abstract: This study was designed to evaluate and develop an efficient tilapia supply chain to foster the development of viable fast food and supermarket purchases of tilapia from smallscale producers; with the following specific objectives: Phase 1 – Evaluation: (1.) Develop tilapia supply chain maps for each market level, i.e., producer, wholesale, restaurant, supermarket, fast food stores, etc., to identify specific activities and services, key players, logistical issues, external influences, and flow of product, information and payment among market levels. (2.) Analyze tilapia supply chain performance for efficiency, flexibility and overall responsiveness. (3.) Identify areas for improvement in supply chain (i.e. behavioral, institutional and process), (4.) Provide recommendations to improve the tilapia industry, in general and specific supply chain items. Phase 2 - Development Undertaking: (1.) Design specific improvement measures based on the identified areas of improvement from Phase 1. (2.) Test the improvement measures in the market place, then assess and refine the improvement measures.(3.) Design and implement measures to ensure the sustainability of the improved supply chain of tilapia.

The country's tilapia industry supply chain is composed of the following parts, namely the hatchery and nursery farms which are responsible for the introduction of improved brood stocks to commercial or backyard fish farms which in turn responsible in providing improved quality tilapia fishes for the end-users such as consumers and institutional buyers. The institutional buyers could be further decomposed as processors, consolidators or traders, supermarkets, specialty shops, food chains, restaurants, bars and canteens, among others.

The provinces of Pampanga, Batangas and Laguna are the major tilapia sources while the cities of Metro Manila, Angeles and Baguio are the major demand centers. Dagupan City, Pangasinan being known as "bangus" or milkfish capital is a major transshipment point of tilapia and other seafood for the Northern Luzon provinces including Cagayan Valley and the Cordillera Administrative

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Regions. In addition to the major supply centers, Camarines Sur in Bicol Region is becoming a key source of tilapia fries. The product flow of tilapia fries from the hatchery to the nursery farms generally follows a continuous 18-day cycle while tilapia fingerlings from nursery to commercial or backyard farms follows thirty to forty five-day cycle depending on fish sizes required by the customers. Direct buying and selling, wholesaling, and retailing at central markets through agents and “consignacion” are the most common marketing operations of the tilapia industry. Consumers generally prefer whole live fish with size ranging from 250 – 300 grams per fish (or 4-5 pieces per kilogram) but the requirements of institutional buyers are more varied depending on their customers’ preferences. Filleted tilapia requires about 2-3 pieces per kg or equivalent to 450 – 750 grams per fish. Grilled and barbequed tilapia are now becoming more popular recipes in the major demand centers.

The major concerns of hatcheries and nurseries are the high cost of outbound logistics, which is exacerbated by high competitive pressures of inferior quality but inexpensive stocks (e.g., non-sex reversed) and high levels of mortality due to environmental and cultural factors.

The fish farms’ major concerns include; expensive but low quality feeds (at times mislabeled) and other inputs, very low fish recovery and longer culture period to reach larger fishes. Their transaction costs include the cost of waiting for buyers, delays in delivery, intransit mortality, and toll fees or “goodwill” as well as shrinkage losses. In addition, the lack of cold storage and transport vehicles equipped with tanks and aerators or refrigeration facilities delimits them to take market opportunities. Interestingly, many farmers adapted a “circuitous” production technique to take advantage of markets preference on tilapia with darker skin.

The major concerns of processors are too few farms that could supply regularly the desired quality and volume of tilapia, the lack of capital for market expansion, and competition with cheaper imported counterparts.

The concerns of traders including “consignacion”, suppliers or consolidators are the following; (a) meeting the product quality and quantity orders on schedule (b) high logistics and transaction costs of consolidating and distributing fishes from sources to destinations (c) absence of product grades and standards.

The following are some recommendations to address the various issues and concerns namely of the various chain players: (1) encourage the establishment of more nursery farms for better quality brood stocks while intensifying technology transfer to farmers for better health and management of tilapia (2) conduct market promotion activities highlighting the various niche opportunities of tilapia among growers and consumers (3) motivate the participation of small farmers in supply chains by setting up an incentive scheme through a mix of patronage refund and profit sharing (4) institutionalize an accreditation program for feed manufacturers, hatcheries, processors and the like to improve the quality assurance of products and services (5) provide capital windows to improve facilities and reduce logistics and transaction costs in the entire supply chains of tilapia.

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