



CURRENT PRACTICES FOR GIANT FRESHWATER PRAWN PRODUCTION IN ANTIQUE, ILOILO, NUEVA ECIJA, AND TARLAC, PHILIPPINES

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August 2023

Executive Summary

Giant freshwater prawns (*Macrobrachium rosenbergii*), locally known as ulang have high export potential and are considered as a substitute for tiger shrimp due to its market value and resistance to diseases (Culvin-Aralar et. al., 2011; Southeast Asian Fisheries Development Center [SEAFDEC], n.d). This species has many biological advantages for commercial culture, such as the ability to reach maturity in captivity (ponds, tanks, cages, and rice paddies) and a rapid growth rate (Rosario & Tayamen, 2007). However, despite being cultured for the past 40 years, the Philippines has not yet produced a significant volume of production of giant freshwater prawn for local and export markets using the current technologies (SEAFDEC, 2020). According to SEAFDEC, this can be attributed to the absence of a national standard on grow-out production that guides farmers and other stakeholders in producing safe and quality giant freshwater prawns. Hence, this study was conducted to obtain information on the local practices of ulang grow-out farms that will be used as a basis for the development of a Philippine National Standard (PNS) on Code of Good Aquaculture Practices (GAqP) for Grow-out of Freshwater Prawn.



The study conducted a survey of selected 10 grow-out farms in Antique, Iloilo, Nueva Ecija, and Tarlac. It aimed to gather information on practices in terms of site selection, source of stock, stocking density, feed and feeding, water and soil quality, animal health and management, biosecurity measures, harvesting and transport, and traceability and record keeping. The survey responses were analyzed using descriptive statistics with frequency distributions and frequencies computed for each survey question in terms of the number of responses.

The major findings of this study are as follows:

a. Site selection

Location: Most farms followed the Food and Agriculture Organization (FAO) (2002) recommendations for site selection particularly on ideal source of freshwater (well and spring), access to electricity, and suitable type of soil (clay, clay loam, and silt). Three recommendations (conduct of soil fertility analysis, consideration of proximity to chemical sources, and fulfilling all regulatory requirements) were often not observed by the majority of the farms.

Lay-out and design: Majority of farms followed the recommended practices of FAO (2002) for the layout and design in terms of type of holding structure (earthen pond and concrete tank), shape of ponds (rectangular), type of culture system (monoculture or polyculture), type of substrate (bamboo poles, twigs, and PVC pipe), and installation of net to water inlets and outlets. However, practices on the three recommendations [depth (0.75-1.2 m.), installation of perimeter fences and use of bird scaring devices] differed from one farm to the other.

b. Source of stock: Primary sources of post larvae (PLs) of most farms (90%) were from the official breeding stations in Bureau of Fisheries and Aquatic Resources (BFAR) -National Freshwater Fisheries Technology Center (NFFTC) and Southeast Asian Fisheries Development Center (SEAFDEC)-Iloilo. However the majority faced

challenges in sourcing free seedstock in official breeding stations due to seasonal availability.

- c. **Stocking density:** Most farms (80%) followed SEAFDEC's recommended range for stocking density (extensive culture: 1-4 post larvae (PL)/ m² and semi-intensive: 5-20 PL/ m²), with extensive culture (1-3 PL/ m²) being the most common.
- d. **Feeds and feeding:** Farms mostly used commercial and supplementary feeds, but farms deviated from SEAFDEC's recommended feeding rates. All of the farms used self-determined feeding rates without considering the average body weight of giant freshwater prawns.
- e. **Water and soil quality:** Farms mostly monitored water temperature and turbidity. Other water quality parameters (salinity, pH, dissolve oxygen, salinity, alkalinity, total hardness, non-ionized ammonia, nitrite nitrogen, nitrate nitrogen, boron, iron, copper, manganese, and zinc) recommended by FAO were mostly not or completely not tested due to a lack of equipment and skills. The use of reservoirs for conditioning intake water was observed. For soil management, urea was frequently used as fertilizer and some farmers applied lime to neutralize soil pH. However, recommended soil composition analysis was not conducted in all farms visited prior to the application of fertilizer and lime.
- f. **Animal health and management:** No diseases were reported in all farms. However, pest infestations (parasites, mudfish, and turtles) were observed. The use of bayluscide originally developed to eliminate snails was also observed which was not recommended by FAO (2002).
- g. **Biosecurity measures:** Only 10% of farms designated washing area at the farm entrance. However, none of the farms utilized other important biosecurity measures such as use of tire baths, vehicle wash or spray for incoming vehicles, foot baths for

the footwear of farm personnel and visitors, bird scaring devices above the water surface, and crab fences along the side of the dikes.

- h. **Harvesting and transport:** Farmers generally followed FAO's (2002) recommended methods (selective and total harvesting) and time of harvesting (early morning), harvesting equipment (use of seine net and plastic crates), and marketing practices (sold either live or fresh after harvest to local market and neighbors). Twenty percent of the farms used motorcycle and van to deliver produce.
- i. **Traceability and record keeping:** Farm expenses and feeding schedule were commonly documented. However, other activities were not consistently recorded (source of stock, stocking rate, date of stocking and harvest, feeding rate, date and frequency of water exchange, type of pests encountered and control measures applied, mortality rate, and record of sales), which were contrary to FAO's (2002) recommendations.

The following recommendations include specific practices unique to the grow-out farming of ulang that are currently not covered in the existing PNS on Code of GAqP (PNS/BAFS 135: 2014). These may be considered by the BAFS-SDD on the development of a PNS on Code of Good Aquaculture Practices (GAqP) for the Grow-out of Giant Freshwater Prawn:

- a. **Site selection:** The site selection provision of the standard should include location, and layout and design. In terms of location, these specific requirements of ulang should be considered: sources of freshwater (preferably well and spring) and types of soil (clay, clay loam, or silt). Layout and design should take into account the following: type of holding structure (earthen pond or concrete tank), culture system (monoculture or polyculture), pond area (preferably 0.2-0.16 ha. but small pond can also be utilized), pond depths (0.75-1.2 m.), and type of shelter (bamboo poles, twigs, and PVC pipe).

- b. **Source of stock:** Farmers should source stocks from official breeding stations and private hatcheries. As per recommendation of FAO, explore potential sources of ulang in the wild, if not available.
- c. **Stocking density:** Farmers should adhere to recommended stocking densities (extensive culture: 1-4 post larvae (PL)/ m², semi-intensive: 5-20 PL/ m², and intensive: more than 20 PL/ m²), to avoid overstocking.
- d. **Feeds and feeding:** Farmers should follow feeding rate and conduct periodic sampling of the giant freshwater prawns for proper feed management. Ulang weighing less than 5g should be given 10% of their total weight in feed, those weighing 5-15g should receive 7%, ulang weighing 15-25g should be provided with 5% of their total weight in feed, and ulang weighing over 25g should be given 3% of their total weight in feed.
- e. **Water and soil quality:** Farmers should regularly test and monitor the water and soil quality parameters to ensure that it is within optimal range.
- f. **Animal health and management:** Farmers should be equipped with appropriate control measures to maintain healthy stocks in case diseases and pest infestation arise.
- g. **Biosecurity measures:** Farmers should install washing area, tire baths, vehicle wash or spray, footbath, bird scaring device, and crab fences to prevent the risk of spread of diseases that are of animal origin.
- h. **Harvesting and transport:** Farmers should follow the recommended methods of harvesting such as selective and total harvesting. Ensure that harvesting is done early in the morning and utilize harvesting equipment such as seine nets and plastic crates. Market the produce by selling it live or fresh (with clean ice) to local markets

and neighboring communities. Additionally, consider integrating transportation vehicles for efficient delivery of produce.

- i. **Traceability and record keeping:** Farmers should regularly have accurate, detailed, and complete records of all of the farm activities (stocking rate, date of stocking and harvest, feeding rate, feeding schedule, date and frequency of water exchange, mortality rate, type of pests encountered and control measures applied, farm expenses and record of sales) for traceability purposes.

