

Establishing Successful Young Aquapreneurs in Shrimp Farming in Lined Pond Through Interventions of FAITT at Haryana

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Shrimp farming has gained popularity in south India, especially in Andhra Pradesh, but today, the scenario has changed from North India to Viz. Punjab, Bihar, Haryana, Uttar Pradesh, etc., are getting attention, as a few farmers have started venturing into this remunerative business in shrimp farming. In 2024, Shri. P. Prasanth and Shri. Gaurang, two educated youths, began their shrimp aquaculture venture in Zahidpur, Jhajjar, Haryana. They started their venture in Haryana after gaining confidence in shrimp farms. However, their initial shrimp culture failed due to mass mortality of stocked seeds, resulting in a loss. Despite this, they remain committed to aquapreneurship and plan to give a second try to shrimp aquaculture with the support of professionals in the duo contacted the FAITT team from the Division of Agro Global Agency, Maharashtra, for technical support.

qualified technical executive, Mr. Ashish Prakash, to take care of farming, and experts have started using the mobile application to address shrimp diseases, manage them, and report them in real time.

Glimpse of the harvested shrimp

The Aquapreneurs successfully stocked PL 12 of 9 lakh in 3.2 acres of three ponds. Partial harvesting is done at 6 tons, then a complete harvest of 8 tons, a total of 14 tons of production within 120 days of the crop.

The Aquapreneurs aim to expand the shrimp culture from 3.2 acre to 10 acre. The shrimp aquaculture sector is expected to be significantly transformed by improved management practices, thereby increasing productivity in North India.

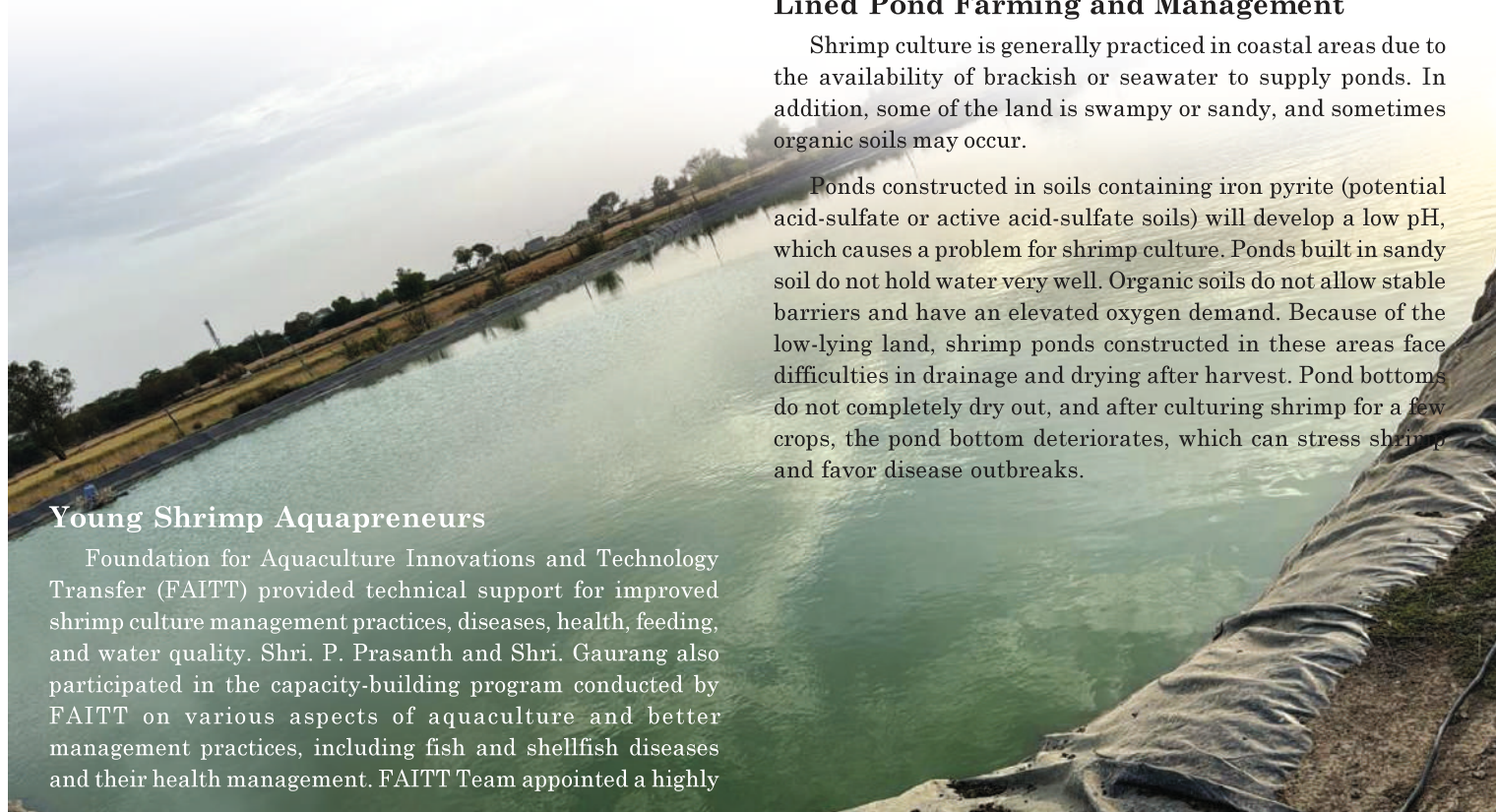
Lined Pond Farming and Management

Shrimp culture is generally practiced in coastal areas due to the availability of brackish or seawater to supply ponds. In addition, some of the land is swampy or sandy, and sometimes organic soils may occur.

Ponds constructed in soils containing iron pyrite (potential acid-sulfate or active acid-sulfate soils) will develop a low pH, which causes a problem for shrimp culture. Ponds built in sandy soil do not hold water very well. Organic soils do not allow stable barriers and have an elevated oxygen demand. Because of the low-lying land, shrimp ponds constructed in these areas face difficulties in drainage and drying after harvest. Pond bottoms do not completely dry out, and after culturing shrimp for a few crops, the pond bottom deteriorates, which can stress shrimp and favor disease outbreaks.

Young Shrimp Aquapreneurs

Foundation for Aquaculture Innovations and Technology Transfer (FAITT) provided technical support for improved shrimp culture management practices, diseases, health, feeding, and water quality. Shri. P. Prasanth and Shri. Gaurang also participated in the capacity-building program conducted by FAITT on various aspects of aquaculture and better management practices, including fish and shellfish diseases and their health management. FAITT Team appointed a highly





Shrimp Sampling

Among several management schemes that can be used is separating the pond water and the soil by using plastic pond liners, which typically have achieved the best, cost-effective results in shrimp aquaculture. Plastic materials have been used for a long time in reservoirs, dams, and ponds for agricultural purposes. However, it has only been in the last few years that this technology has been widely applied to aquaculture.

HDPE (high-density polyethylene) and polyvinyl chloride (PVC) are plastic materials suitable for lining shrimp ponds. As both HDPE and PVC incorporate anti-ultraviolet

substances, these two materials can resist deterioration by UV light, which allows them to last for many years. These flexible materials come in rolls of sheeting that can be easily fused or glued together during installation. The recommended thickness for a shrimp pond liner is at least 0.75 mm, and many suppliers of HDPE and PVC liners guarantee their product use under normal conditions for five to 10 years.

Pond liners

Lined shrimp ponds that are well-designed, built, and managed can efficiently manage organic matter and sludge. Note the central drain and accumulated sludge in the center of the pond.

Significance

Using plastics to line pond aquaculture bottoms and embankments prevents contact with acid-sulfate soils from avoiding low pH in pond bottoms and water, which generally would create problems in shrimp ponds, especially during the rainy seasons.

Pond water quality is more easily managed because there are no adverse effects on pond water quality from contact with bottom and dike soils. Liners effectively prevent soil-water interaction and avoid the issue of soil acidity, stop salinization of neighboring areas, and control seepage of water into the ponds in areas with a high water table.

Liners shorten pond cleaning and preparation time, requiring only four to eight days to complete the process compared with 30 to 45 days for the normal earthen pond cleaning and extensive drying process. Therefore, the number of crops per year can be increased to make annual pond productivity higher. In addition, harvesting can be more effective during the rainy season because plastic-lined ponds can still be cleaned. And no tractor earthwork is required after the liners have been installed.

During the culture period, suspended solids and other waste can easily be removed by gravity flow through drains (typically in the pond's center), so less organic matter will accumulate in the ponds.

Liners prevent the erosion of dikes and levees from waves, wind, and aerator-generated water currents, which reduces pond maintenance and repair expenses. Lined ponds can generally be aerated more intensively, supporting higher stocking densities and yields per unit area.

Because the pond bottom is cleaner, there are fewer shrimp with dirty gills (accumulated organic sludge) at harvest, and cleaner shrimp will command better prices.



Cultivated adult shrimp by Young Aquapreneurs

Pond preparation

Agricultural lime is applied @500-1000 kg/ha as a basal dose with 150 kg of dolomite and 25 kg of zeolite to adjust the pH, improve the plankton availability, and get a proper algal bloom. Sometimes, based on need, we can apply dolomite as a substitute to lime @ 750 kg/ha as a basal dose and, if necessary, top-dress with 50kg/ha once in 10-15 days to neutralize pH fluctuations. In addition, 10-12 kg of urea and 3-5 kg of sulphurphosphate are commonly applied when algal blooms are poor. Pond water parameters, including dissolved oxygen (DO), salinity, temperature, and transparency, are monitored regularly by the farmers.

Stocking

Shrimp (*Leptopeneaus Vannamei*) seed (PL-12) are from Tamil Nadu and Pondicherry commercial hatcheries. They are stocked at a density of 70/m² in ponds. Before stocking, the seed was tested for its quality, including the PCR analysis for the white spot virus, in private laboratories.

Feeding

IB Group Company, ABIS Shrimp crumble, and pelleted feeds are used. The farmers use two feeding strategies - 'pre-starter' (38% c.p) for the first 30 days and 'Starter to Grower' (38% c.p) for the remaining period. Feeding frequency varied from 3-4 times during the culture period (3-4 times per day up to one month, 3-4 times/day up to the second month, and 4 times/day after 90 days). The average feed conversion ratio (FCR) for i-feeding was 1.1-1.3. Generally used commercial feed attractant (gut probiotic and micro mineral) only and Yeast @10g/ kg of feed mixed with Allgel Plus Gel as a binder. Commercially available probiotics and origo PB-15 kg per acre were also Zeo Pro applied once in 15-30 days, depending on the pond bottom condition.

Pond Management

There is no water exchange from the pond. They regularly add water to balance the evaporation, and only at the time of slug removal did 5 percent of water exchange occur. Aeration of the ponds using paddle wheel aerators (2/ha) for 4-6 hours/day is conducted by most farmers who also regularly monitor soil and water quality conditions of ponds, feed intake, and health of the animals. On average, two laborers per hectare are employed permanently for the routine culture operation. Additional casual laborers are employed during pond construction/preparation, harvest, and post-harvest operations. The daily wages range between Rs. 400-500 for men and Rs. 400-500 for women

Production and Marketing

Shrimp growth of the shrimp is better during the summer crop, with a yield of 0.8 to 2.0 t/ha/crop in 120-150 days. The yield during the winter crop is around 0.5-1.0 t/ha, but it is also more uncertain as per the scientific study and field. However, the FAITT team was able to harvest 12800 m² area 14tonns of shrimp within 120 days. After harvesting the crop, the animals were segregated/graded into different size groups, counted, weighed, and iced. The harvested crops are sold at the local market in Delhi. The price of harvested shrimp varied from Rs. 275- 400/kg depending on the season, stage, and time of harvest (Fig.1-3).

Conclusions

Shrimp farming is successfully practiced in South India. Everyone thought their soil, weather, and climate were more suitable for farming, but even other parts of India could be farming using lined pond systems.





FAITT has highly qualified experts in the aqua field, which is why we can stock high density, as it is done in another country with the same technology we transferred here. Water quality maintenance in the lined ponds is challenging, and bore water is used for this farming. To enrich the pond, health care products for that production cost Rs.40, which is the same in south India. We have technical expertise in Bore water pond management. Due to the higher temperature in Haryana than in south India,

water evaporation and seepage, which are more so in lined ponds, could be controlled. Adjusting to shrimp farming, many were agriculture farmers. They should not face any challenges due to this pond water, and to reduce the risk, we did not exchange the water from the pond. It is proven that knowledge can be transferred very quickly if you have a fundamental mindset and effort. FAITT can support people with non-Aqua backgrounds in achieving this success rate in aquaculture.



Fig.1 Cultivation of shrimp by Young Aquapreneurs