

Tips for successful freshwater prawn culture

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Giant freshwater prawn, *Macrobrachium rosenbergii* (local name, scampi) culture is attracting considerable attention from farmers in India and many Asian countries owing to its profitability and lesser disease incidences in the culture operations. They can also be cultured in salinities ranging from 0-10 ppt, and are suitable species for both monoculture and polyculture. This article provides some useful guidelines to the farmers for successful scampi farming.

Site selection

The site selected for scampi culture should have an adequate supply of good and pollution free freshwater. Although run-off from rivers, streams and reservoirs can be used, well water would be an ideal choice. Check the quality of water and soil to know if all the essential parameters are within the optimal range especially if they are free of pollutants and pesticides which may be harmful for prawns.

Pond design and pond preparation

Rectangular ponds of 0.5–1 ha size with a depth of 1-1.5 m are ideal for scampi culture. The pond should have a good inlet and the slope of the pond bottom towards the outlet should allow for rapid draining. During pond preparation, the ponds have to be sun dried and ploughed to expose the soil for oxidation. Check the soil pH using a soil pH meter at 6 different points in each pond. If the pH of the soil is less than 6.5, agricultural limestone should be added to increase the pH to a minimum of 6.5, and preferably to 6.8. After filling the pond, fertilize the pond using 5 kg urea and 10 kg superphosphate per hectare for 1 m water depth. The fertilizers have to be dissolved in water and spread evenly all over the pond during morning hours. This would help in the development of abundant phytoplankton which serve as a natural food for the prawns and to shade out unwanted aquatic weeds. If a phytoplankton bloom has not developed within a week, make a second application of fertilizer. Additionally, organic fertilizer such as dried cow dung (500 kg per ha) has to be soaked in water overnight and it has to be filtered and the extract can be applied. If a water source other than well water is used, it is important to prevent the entry of unwanted fishes into the culture ponds by the installation of suitable meshes in the inlet.

Seed selection and stocking

Health and disease free postlarvae (PL 10 or above) are ideal for stocking in nursery ponds. Seed selected should be of uniform size, strong and healthy without any deformities. They should have passed the quality check with 100% survival for 1 hour in 100 ppm formalin and a salinity increase of up to 5 ppt. Early morning or evening hours are ideal for seed stocking. Seeds brought from the hatcheries or elsewhere should be first acclimatized to culture pond conditions, which is done by slowly replacing the water in the seed bags with pond water.

Nursery phase

A nursery phase of culture has become a standard part of scampi culture. Ideal nursery ponds should be of 0.5-1 acre size (about 0.2 to 0.4 ha) with a water depth of 1-1.5 m. PL 10-15 stage seeds are stocked in the nursery ponds at 25 pcs per m² without aerators, which can be increased up to 50 pcs per m² if provided with 4 aerators per ha and reared for a period of 40-45 days after which they are shifted to grow-out ponds. This phase has been adopted to improve the growth and survival of prawns in grow-out ponds besides bringing about effective feeding. It also helps to estimate the number of animals that have been transferred to the grow-out ponds. After the juveniles are shifted from the nursery, the nursery pond can again be restocked.

Grow-out phase

Juveniles of about 3-4 g size can be transferred from the nursery to the grow-out ponds with cast net or drag net. The grow-out ponds are stocked at 2-3 pcs per m² without aerators, which can be increased up to 4-6 pcs per m² with 4 aerators per ha. During transfer, even sizes are counted and released into the grow-out ponds. This helps to calculate the actual stocking density and helps in better feed management.

Shelters

Since scampi is highly cannibalistic, it is necessary to provide shelters which should occupy 2-5% of the total pond area. Shelters can be hiding places for the prawns during the moulting period and improve their survival rate. Aquatic plants such as morn-

➡ NEXT PAGE

ing glory and water hyacinth are grown along the bunds with branches of coconut fronds and palm fronds placed inside the pond.

Water quality management

Water quality is just as important in scampi culture as it is in any other species of aquatic animal. Although freshwater prawns have been successfully raised in soft water (5 to 7 ppm total hardness), a softening of the shell was noticed. Hard water with a total hardness of 300 ppm and above has been reported to cause reduced growth and lime encrustations on freshwater prawns. Therefore, use of water with a hardness of above 300 ppm is not recommended. Water transparency is maintained between 30-40 cm of secchi disc visibility. During the first month of culture, water exchange is not necessary, pumping of water is done to maintain the water level. Whenever there is a dense algal bloom, the top 15 cms of the pond water has to be drained. Herbivorous fishes such as the carp (*Catla*) are stocked at 500-1000 pcs per ha one month after stocking scampi seeds to maintain the water quality. The optimal water quality parameters are given below:

	Optimal range
pH	7.5-8.5
Dissolved oxygen	at least 4 ppm
Total alkalinity	at least 80 ppm
Hardness	below 300 ppm
Ammonia	not more than 0.1 ppm

Feed and feed management

Commercially available pelletized feed is used for feeding scampi. Feeding is done four times a day by broadcasting from the bund in the nursery ponds, whereas in the grow-out ponds broadcasting from the boat is generally practiced. The feeding program is given below:

Average body wt (g)	% Feed
0.1	20.0
1.0	15.0
2.0	10.0
3.5	7.5
5.0	5.5
7.5	4.5
10.0	4.2
15.0	3.0
20.0	3.0
25.0	2.5
30.0	2.0
35.0	1.7
40.0	1.5
>40.0	1.0

Sampling

Periodic sampling is very vital for successful scampi culture. It is recommended to do weekly or fortnightly sampling to check the health condition as well as to estimate the growth of prawns. At least 150-200 prawns should be sampled. It is also necessary to estimate the ratio of males to females in the pond -- weigh them separately -- as this would help in estimating the total biomass in the pond and for better feed management.

Disease

Diseases so far do not appear to be a significant problem in scampi culture but as densities are increased to improve production, disease problems are bound to become more prevalent. Generally, "black spot disease" or "shell disease" is encountered which is caused by bacteria that break down the outer skeleton. Usually it follows physical damage and can be avoided by careful handling. At other times, algae or insect eggs may be present on the shell. This condition is not a disease, but rather an indication of slow growth, and is eliminated when the prawn molts.

Harvesting

Generally, partial harvesting is followed in scampi grow-out ponds because of the differential growth rates encountered among the males and females and also among the different morphometric types of the former. Partial harvesting is done beginning from the fourth month of culture in the grow-out ponds and subsequent harvesting is done every fortnight. During partial harvesting, only the blue-clawed males with an average size of above 50 gms and above and big and berried females are harvested while the small males and the orange-clawed males are put back into the culture ponds for further growth. ###

FISHWORLD ... CONTINUED FROM PAGE 12

- **Aquaculture Week.** Held in July every year during the AQD anniversary — arts, writing, song, dance, and science competitions among elementary and high school children (about 20-25 schools and 250 students participating each year)
- **International Coastal Cleanup.** Held on the third Saturday of September every year — removal of marine debris by multi-sectoral groups and local communities (10-20 schools and local government units, about 1,500 volunteers and 1,500 kg of marine debris removed every year in southern Iloilo)
- **Seafood Festival.** Showcases local cooking skills and novel recipes using products from fisheries and aquaculture
- **Pasko sa Dagat and Parol ng Dagat.** Christmastime art contests focusing on aquatic ecosystems and biodiversity
- **AquaScience Fair.** Elementary and high school students conduct science projects in aquaculture and aquatic ecosystems and biodiversity, and teachers attend science workshops
- **FishWorld Publications.** A bimonthly newsletter *Nature Matters* featuring instructional materials, and occasional journal papers about biodiversity, systematics, conservation and environment education
- **Invited Lectures.** Lectures and seminars by professionals in environment education, biodiversity research, systematics, ecotourism, environmental protection and related fields
- **Ecology Camp.** Seminar-training (nature immersion, practicals and lectures) for school children towards environment consciousness and stewardship
- **Eco-Jobs for the Youth.** Training-on-the-job for out-of-school youth and high school students in plant nursery, gardening, raising ornamental fish, composting, solid waste management, etc.
- **Ecotourism from FishWorld.** Tours to various aquatic ecosystems to encounter nature and wildlife and see environmental threats and problems first-hand ###