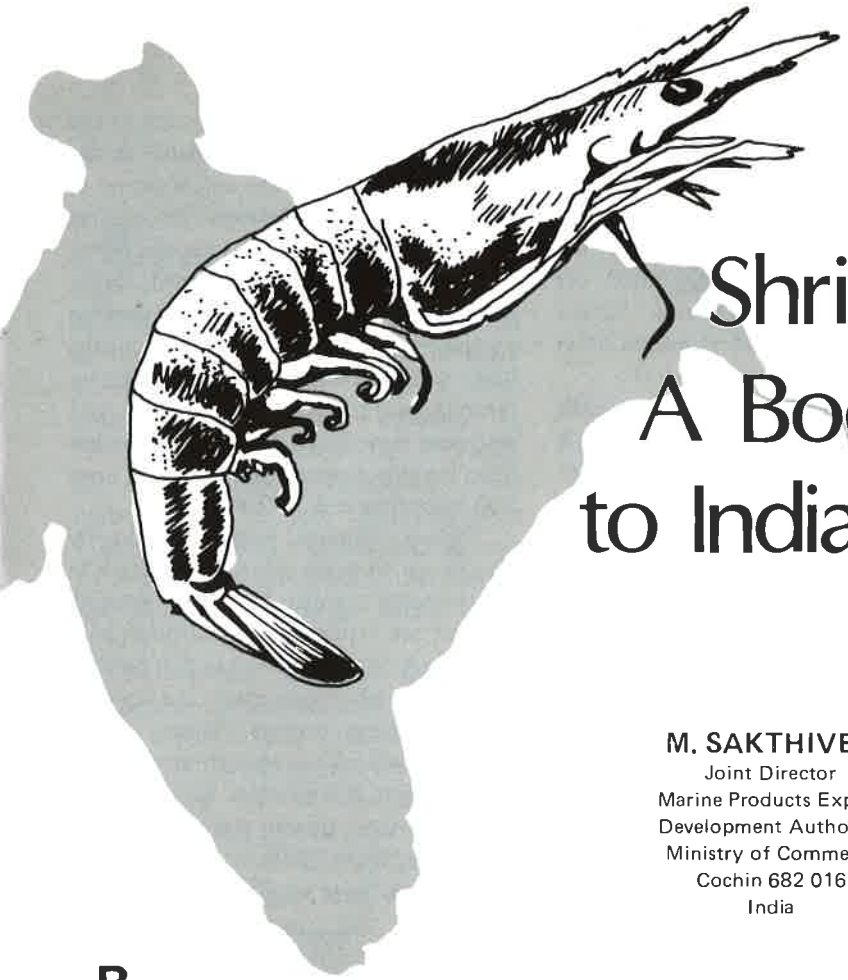

Shrimp Farming– A Boon or Bane to India

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Brackishwater fish and shrimp farming is an age old practice called "filtration" or "trapping" in the intertidal zone of the coastal belt of India, especially in West Bengal and Kerala. About 43,000 ha have been reported to be under traditional farming practice, producing 15,000-17,000 t of shrimps and probably another 30,000 t of brackishwater fishes, crabs, etc. In the olden days, these brackishwater areas were reclaimed with the idea of cultivating paddy and other agricultural crops. Since very low salinities prevail during the southwest monsoon and fairly saline waters during October-May, the farmers use these lands for agriculture during monsoon months and brackishwater filtration during the rest of the year.

The "trappings" in Kerala and West Bengal are undertaken by contract farmers and found to be remunerative since they do not have to invest large sums for strengthening of marginal dykes and sluice gates. The land is taken on lease at Rs.6,000* per ha for six months of the year from land owners by an individual or group for contract farming. The contract farmer allows tidal water with natural seed to ingress along with predators, trap them in the pond and harvest them periodically. The shrimps and fish are always harvested while still juvenile since the contract farmer does not want to take any chances and he has to give back the land to the owner in six months.

An analysis of how shrimp farming will be beneficial to India follows.

Effective Land Use

About 1.5 million ha of brackishwater area are available in India. Most of the area is lying idle or used for fishing by several thousand local fishermen. A fish farmer may earn Rs.2,000 to Rs.5,000/ha and brackishwater fisherman Rs.1,000 to Rs.2,000/year. West Bengal (bheries) and Kerala (pokkali fields) have nearly 30,000 ha under paddy and shrimp/fish cultivation which are highly productive and at least 10,000 ha could be used for semi-intensive farming, yielding not less than 30,000 t as against 15,000 t in 30,000 ha. The farmers can earn at least 4-5 times more than they are earning today.

According to the prevailing law in many coastal States of India, saline water ingress is not permitted and bunds are constructed to make use of the land for agriculture. This has resulted in the destruction of the natural ecosystem. For example, the bund constructed in Kuttanad, Kerala has virtually eliminated *Macrobrachium* fisheries, which were previously flourishing in the Cochin backwater. The area reclaimed from the intertidal zone for agriculture is unprofitable due to low yield. The prevailing law of the State Governments is being amended to support pisciculture.

India with a population of 700 million has perhaps the lowest per capita fish consumption in Asia. Production of fish either through fishing or aquaculture is vitally needed like any agricultural crop. The only water body which has not been properly used for production of fish is the vast brackishwater area and the current production does not exceed 50,000 t of shrimps and fish, which is negligible in terms of area and rich resources. By developing 20% of the 1.5 million-ha area, India should be able to produce another one million tonnes of fish and shrimps within the next few decades and, therefore, it is worthwhile making a long-term plan for fish production. Brackishwater shrimp culture is also more profitable than freshwater fish farming or paddy cultivation in India.

Use of Natural Shrimp Seed Resources

The estuaries, lagoons and creeks along the coast of India are rich in natural seed ingress. Chilka Lake, Pulicat Lake and Vembanad Lake are three large brackishwater lagoons which act as reservoirs of seed for many migratory marine species. Unfortunately, these valuable resources are being destroyed by the local fishermen. Fishermen living in about 200 fishing villages around Chilka Lake

*Rs.12.4 = US$1.00, July 1985.

catch several hundred tonnes of mullet and prawn fry every year. It has been estimated that about 600 t of juvenile shrimps are caught in the Cochin backwater every year by stake net and sluice gate operators. In Goa also, similar damage is being done by sluice gate operators.

These fry are at present sold either fresh or sundried at less than Rs.10/kg. A large quantity is consumed locally in various forms. Since the population of fishermen is increasing day by day, there is increased fishing effort every year in the brackishwater area, destroying more and more natural seed resources. This may affect the natural recruitment of stocks in the sea and at the same time they are not being rationally used.

Countries like Japan and Taiwan produce seed in hatcheries and release them in the sea to keep up the natural stocks but in India the mass harvesting of seeds is not even arrested. Attempts are being made to give alternative jobs to these fishermen and engage them in aquaculture. In 1984, the Orissa State Government developed about 500 ha of shrimp farms on the periphery of Chilka Lake, as a result of which the fishermen of the lake who were killing the shrimp fry for making paste have started selling them alive at the rate of Rs.100/1,000 for aquaculture. Some of the fishermen were also allotted land for farming and they too have started prawn culture.

Problems in the long run may crop up due to overexploitation of natural seed resources when farms develop on a large scale. Shrimp hatcheries are now needed for seed production. Meanwhile, it is proposed to use the natural seed resources for shrimp farming in all maritime States of India for which the seed requirement is small. It is proposed to set up hatcheries during the current year for the supply of seeds to the farmers.

In traditional areas of paddy and shrimp cultivation, the land is taken on lease every year and farming is undertaken by the contractors. The major profit goes to the contractors. In new farming areas, the poor groups are given land/water areas and training on shrimp farming. For example, 1,000 farmers/fishermen have been given a half-acre pond each in the periphery of Chilka Lake and they are farming shrimp under the guidance of the Brackishwater Fisheries Development Agency of the State Government. In two crops they earn a net income of Rs.5,000 to Rs.6,000 per annum, as against Rs.1,000-2,000 per annum in the normal course. Similar programs have been undertaken in other States.

A financial subsidy from 25 to 100% on development of land and inputs is given according to the scheme. Long-term loans are given at a reduced interest of 4.0-11.5%. Free training on farm management is given to the farmers. Monitoring is done by the Government agency periodically. Several thousand people are likely to benefit within the next few years in different parts of India.

About 300 seafood processing plants in India are working at about 25% capacity, mainly during the fishing season. Most of them concentrate on shrimps, which can be increased only through shrimp farming.

Foreign Exchange

Urgency to earn more foreign exchange for a developing country like India needs no emphasis. India is earning Rs.3,850 million every year in export of marine products of which shrimps contribute nearly 90%. Further growth in the export of shrimp can take place easily since India has well established markets all over the world.

Employment in Rural Areas

It is proposed to develop 10,000 ha during the seventh Five Year Plan (1985-90) and more area in the subsequent Plan period. If India develops even 2% of the total brackishwater area available in the country, it will provide employment to more than one million people. Supporting industries, such as feed manufacturing units, hatcheries, nurseries, seed banks, live feed production units, aeration equipment, pumps and net manufacturing units will also be developed. To take up farming in the existing 43,000 ha and proposed new area of 36,000 ha, it has been roughly assessed that India will need 800 hatcheries and 30 feed mills.

Shrimp farming does not directly contribute to eradicating malnutrition in a developing country like India, since all shrimps are exported. Fish cultured with shrimp add to the increase in fish production for local consumption and thereby help to some extent. When shrimp farming provides the opportunity to earn more money, it is possible for the farmer to buy other animal protein such as mutton, chicken, pork or beef. Thus it indirectly helps to eradicate malnutrition.

Gold Mines

A question always raised is whether shrimp farming is beneficial in the long run. Some argue that a mad race on shrimp farming may bring down the unit value to such an extent that it may no longer be economically viable. Production cost per kg of shrimps through farming varies from US$1-2 in India to $4-5 in Taiwan and $17-20 in Japan. When quality fish is fetching a price of Rs.30/kg today in India it is very difficult to predict that shrimps will fetch lower prices. When the price comes down from the present price of US$13/kg, India itself may hold a major market for shrimps. No doubt the profit margin may go down; that does not mean shrimp farming is uneconomical. One should not forget that the income of the people is going up and the percentage of people who can afford to buy high priced items like shrimps is on the rise. One should also give adequate allowance for inflation rate. If the price of shrimps falls from the present level, more and more people will eat shrimp, thereby increasing the world demand. Shrimp producing grounds, whether they exist in the sea or in inland waters, are nothing but "gold mines" and it is up to mankind to exploit them. •