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Short Communications

Increasing the production of Lab Lab, the ideal food for successful culture of the milkfish, *Chanos chanos* (Forsskal)

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The favourite food item of the milkfish in the South-East Asian countries, where it has been cultured, is the benthic complex of periphyton called Lab Lab (Pillai 1962, Bardach *et al.* 1972). This is composed of microscopic organisms, dominated chiefly by blue-green algae like *Phormidium* and *Oscillatoria*, diatoms like *Navicula* and *Pleurosigma*, amphipods, nematodes, etc. The sustained growth and maintenance of Lab Lab in culture ponds has been the key factor for high production of milkfish in Indonesia, Philippines and Taiwan. Successful commercial farming of this fish in India also seems to be possible by the development of a technology for substantial growth and maintenance of Lab Lab (Bensam 1991).

For enhancing the growth of Lab Lab at Mandapam, 4 experiments were conducted from August to September 1981, each in a pond of 40 m × 20 m, with water pumped from the sea. The ponds were not stocked with fish or other macroorganisms. The production of Lab Lab was estimated by dividing each pond into 32 squares, each of 5 m × 5 m. From each such square, 5 subsquares each of 1 m × 1 m, were selected at random. From the subsquare an area of 10 cm × 10 cm, also selected at random, was used for removal of Lab Lab with the aid of a G I basal plate. The Lab Lab growth was scrapped off the substratum with a scalpel. The samples were made into a known volume of water, the number of algal filaments from an aliquot was counted, length of the filaments were recorded and mean length in each sample was calculated.

For knowing the quantity of *Phormidium* in the samples, the total length of the filaments per 100 cm^2 was computed by multiplying the estimated number of filaments with their mean length in each case. The experiments were carried out in the natural (unmanured) condition as a control, and manuring 3 ponds with cowdung, groundnut oilcake cum rice bran and leaves of *Tephrosia*. Lab Lab was allowed to grow for 30 days in all the experiments simultaneously. The increase in the production of the alga would become obvious by comparing the total length of the filaments in the 100 cm^2 samples of unmanured and manured ponds.

The data from the experiments (Table 1) showed that in the control, the number of *Phormidium* filaments after 30 days was 0.6004 million/100 cm^2, with length ranging from 0.203 to 0.304 mm and mean at 0.254 mm. The production was computed as 1 52 501 mm/100 cm^2. In the experiment with cowdung, a quan-

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Table 1. Production of Lab Lab at Mandapam during August-September 1991 in unmanured and manured ponds

Observations	Unmanured pond (Control)	Pond manured with		
		Cow dung	Groundnut-cake cum rice bran	Compost of the leaves *Tephrosia*
Quantity applied (kg)	—	136	16	12
Estimated no. of filaments of *phormidium* (million/100 cm²)	0.6004	12.15	12.34	11.80
Mean length of filaments (mm)	0.254	0.291	0.820	0.640
Estimated length of filaments/ 100 cm² (mm)	1 52 50)	35 35 650	1 01 18 800	75 52 000
Cost of manure/kg (Rs)	—	0.62	1.52	1.33

tity of 136 kg was made into a compost and applied. Analyses of algal growth after 30 days revealed the number of *Phormidium* filaments as 12.15 million/100 cm². Length of filaments was 0.186 – 0.760 mm, with mean at 0.291 mm. The production was computed as 35 35 650 mm/100 cm², about 23 times more than the control. In the second experiment, a quantity of 16 kg of groundnut oilcake and rice bran in equal proportions was used by making the mixture into an aqueous state. The mat of Lab Lab that developed after 30 days is shown in Fig. 1. The estimated number of *Phormidium* filaments was 12.34 million/100 cm², having length 0.590 – 1.210 mm, with mean at 0.820 mm. The production was 1 01 18 800 mm/100 cm², about 66 times more than the control. The manure in the third experiment was a compost of leaves of the herb, *Tephrosia* weighing 12 kg (dried condition). After 30 days, an estimated 11.80 million filaments/100 cm² developed, with length of 0.370 – 0.910 mm and mean at 0.640 mm. The production was 75 52 000 mm/100 cm², about 50 times more than the control.

Fig. 1. A sample of Lab Lab, dominated by *Phormidium*, grown by manuring with groundnut oilcake cum ricebran

Among the 3 experiments, the pond manured with groundnut oilcake cum rice bran at a rate of 200 kg/ha gave the highest production of Lab Lab followed by those with leaves of *Tephrosia* at 150 kg/ha and cowdung at 1 700 kg/ha. The actual cost of the manures during 1981 (Table 1) showed that although cowdung was the cheapest, in terms of production of Lab Lab, it was less effective than the other 2 manures.

Milkfish did not require extraneous feeding, but subsisted on Lab Lab (Bardach *et al.* 1972). By using organic and inorganic manures it was possible to increase the growth of Lab Lab for successful culture of this fish in

South-East Asian countries (Bardach *et al.* 1972, Chen 1972). Tang (1972) showed that by using each group of algal food, it was possible to manipulate culture stocks in such a way as to enhance production. The study indicated that in India also the production of Lab Lab can be realised and milkfish can be cultured by sustained growth of Lab Lab in culture ponds, instead of resorting to supplementary feedings.

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REFERENCES

Bardach J E, Rhyther J H and Mc Lamey W O. 1972. *Aquaculture, the Farming and Husbandry of Freshwater and Marine Organisms*. John Wiley & Sons Inc, New York.

Bensam P. 1991. Current status of the cultivation of the microalgal complex Lab Lab in India with suggestions for future research. Paper presented at the National Symposium on marine algae — Current status and emerging trends, Department of Botany, Andhra University, Visakhapatnam; Abstract in *Programme and Abstracts:* 30.

Chen T P. 1972. Fertilization and feeding in coastal fish farms in Taiwan. *Coastal Aquaculture in the Indo-Pacific Region*. (Ed.) Pillay T V R. F A O, Italy.

Pillai T G. 1962. *Fish farming methods in the Philippines, Indonesia and Hong Kong*. Fishery Biological and Technical Paper No. 18, F A O, Rome.

Tang Y A. 1972. Stock manipulation of coastal fish farms. *Coastal Aquaculture in the Indo-Pacific Region*. (Ed.) Pillay T V R. F A O, Rome.