

EXPERIMENTAL FIELD CULTIVATION OF *ACANTHOPHORA SPICIFERA* IN THE NEARSHORE AREA OF GULF OF MANNAR

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ABSTRACT

Results of experimental field cultivation of the red alga *Acanthophora spicifera* (Vahl.) Boergesen, following vegetative-propagation method, are presented. Vegetative fragments 5 cm in length were tied into clusters with polypropylene straw and were fastened to nylon fishing lines. The weight of seed material thus introduced was 4.85 kg. The algae grew rapidly and reached harvestable size of 15.9 cm mean length in 25 days. The weight of fresh harvested plants was 12.85 kg, having had a 2.6 fold increase over the weight of the seed material, indicating that the nearshore area of Hare Island in Gulf of Mannar, where the experiment was conducted, is suitable for large-scale cultivation of this seaweed.

Acanthophora spicifera (Vahl.) Boergesen is an economically important red alga and occurs commonly in Mandapam area. This seaweed yields a maximum of 12% agaroid (Umamaheswara Rao 1970; Subba Rao et al 1977). It is also a good source of food for human consumption (Thivy 1960; Umamaheswara Rao 1970; and Chennubhotla et al 1981). Studies on seasonality in growth and reproduction of *A. spicifera* from the Mandapam region in Tamil Nadu was made by Rama Rao and Subbaramaiah (1982).

The culture experiment was conducted at 1 m depth on the southern side of Hare Island near Mandapam (78°8' E, 9°17' N). Young and healthy plants of *A. spicifera* collected from the subtidal region at Krusadai Island and transported to the culture site in plastic drums containing sea water were used as seed material. A new method known as "tie-tie" method, which is being used for the culture of *Eucheuma* spp. at Philippines, was adopted in the present study. In this method, 5 cm long fragments obtained from mother plants were tied at one end of 25 cm long polypropylene straws (plastic tying material called Sutali). The other end of the straw was tied to 10 m long nylon fishing lines (1.7 mm thick) at intervals of 20 cm. The nylon fishing lines were tied to casuarina poles of 1.5 m length erected in the culture site in such a way that

they were always immersed in sea water but 25 cm above from the sea bottom. Seven numbers of nylon fishing lines were introduced with a total of 4.85 kg seed material on 10-5-1985.

The fragments of *A. spicifera* grew rapidly and reached harvestable size in 25 days. The harvest was done on 5-6-1985 by hand-picking. The quantity of material harvested was 12.85 kg, which was a 2.6 fold increase over the seed material. The fragments introduced, which was about 5 cm in length, grew to a mean height of 15.9 cm in 25 days. The density of the crop was 184 g/m of the nylon fishing line and the growth rate was 4.36 mm/day.

Though the rate of production of *A. spicifera* in the present study was only 320 g/day, less than that obtained in fish-farm pond, the algae grew rapidly and reached harvestable size in 25 days. The harvested quantity is, however, less when compared with that was obtained in the culture of *Hypnea musciformis* in a lagoon at Krusadai Island using longline coir ropes, wherein four-fold increase over seed material in 25 days was reported (Rama Rao and Subbaramaiah, 1980). But the rate of production in the present experiment was more than that obtained in the culture experiments of *Gelidiella acerosa* (Subbaramaiah *et. al.*, 1975) and *Gracilariaria edulis* (Chennubhotla *et. al.*, 1978), though was less than that in the culture experiments conducted on *G. edulis* by Raju and Thomas (1971) and Umamaheswara Rao (1974). The present culture method is more advantageous for culture of seaweeds than the previous methods such as long line coir rope method (Raju and Thomas 1971; Subbaramaiah *et. al.*, 1975. Krishnamurthy *et al* 1975) and coir nets method (Chennubhotla *et al* 1977 and 1978), as the nylon fishing line survives many years and is very easy to handle. The results obtained in the present study indicates that the shallow waters in the vicinity of Gulf of Mannar Islands near Mandapam may be suitable for commercial scale cultivation of *A. spicifera* by vegetative propagation method using nylon fishing line and polypropylene straw.

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