

The Effect of Repeated Harvesting on the Growth of Commercially Important Seaweeds in Mandapam Area

The Investigations made by the team consisting of Dr. N. Kaliaperumal, Shri S. Kalimuthu and J. R. Ramalingam revealed that commercial exploitation of seaweeds should be made only during peak periods of growth for each species leaving enough time for their regeneration.

Seaweeds are the only source for the production of phytochemicals such as agar, carrageenan and alginates which are widely used in many industries mostly as gelling, stabilizing and thickening agents. They are also used as human food, animal feed and manure. In India, seaweeds are mainly used as raw material for the manufacture of agar and sodium alginate. At present the red algae *Gelidiella* and *Gacilaria* are used for the extraction of agar and brown algae *Sargassum* and *Turbinaria* for sodium alginate. Now there are about 12 agar industries and 10 algin industries actively functioning at different places in the maritime states of Tamil Nadu, Andhra Pradesh, Kerala, Karnataka and Gujarat. All these seaweed based industries depend on the raw material being exploited from the natural seaweed beds occurring mainly in the southeast coast of Tamil Nadu from Rameswaram to Kanyakumari.

Because of the extensive and unrestricted commercial harvest of seaweeds, particularly agar yielding seaweeds, there is depletion in the stock of agarophytes from the natural beds in Mandapam area during recent years. In order to find out the effect of repeated harvesting on

the regeneration, growth and interval required for attaining harvestable size and also suitable period for commercial exploitation, studies were made for a period of 1-2 years for each algae during the years 1986-89 on commercially important agar yielding seaweeds *Gelidiella acerosa* and *Gracilaria corticata* and algin yielding seaweeds *Sargassum cristaefolium*, *S. ilicifolium*, *S. myriocystum*, *S. wightii* and *Turbinaria conoides* growing in the vicinity of Mandapam namely Krusadai Island, Pudumadam and Kilakkarai.

For studying the effect of repeated harvesting on the growth of these algae, 12 numbers of permanent quadrats (1 sq. m. area each) for each species were marked randomly in their natural beds by fixing four iron pegs at the four corners of each quadrat. At the start of the experiment, the plants were harvested from all 12 quadrats by hand picking as followed in commercial exploitation leaving the basal portion of the plants. To study the effect of repeated harvesting, the quadrats were systematically harvested as follows. After one month period the first quadrat with one month regrown plants was harvested. In the second month the

first and second quadrats with one month and two months regrown plants respectively were harvested. This method of harvesting was continued till the end of the experiment. The wet weight of the harvested plants from each quadrat was taken every month.

The regrowth of these algae depended on the harvesting period and interval between successive harvests. The regeneration of these seaweeds continues as long as the basal remnants of the plants in intact with the substratum. Hence harvest should be done by pruning the plants leaving the basal part instead of removing the whole plants. The present study reveals that plants with maximum biomass and stature occur during April to July for *G. acerosa*, April-June and September-November for *G. corticata* and September-January for species of *Sargassum* and *Turbinaria* and these seaweed require an interval of 3 to 8 months for their regrowth to harvestable size from the remnants. Hence commercial exploitation of these seaweeds should be made only during the peak growth periods mentioned above for each species leaving enough time for their regeneration to harvestable size plants.