

(110)

**Comparative Study of Growth and Carrageenan Content of *Kappaphycus alvarezii* (Doty) Doty in Pen Culture and Raft Culture in Palk Bay Waters of Ramanthapuram District, Southeast Coast of India**

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**Abstract**

The cultivation of *Kappaphycus alvarezii*, a kappa carrageenan yielding red seaweed has been going on in different locations of the world since 1970. This seaweed has been introduced under field cultivation in more than 20 tropical countries. Philippines and Indonesia contribute to 92% of the entire global harvest of 183,000 ton dry and the other countries include Malaysia, China and Salmon Islands. In India, this alga has been introduced in the second half of 1995 and the commercial cultivation has picked up from 2006. In order to evolve an economically feasible method for commercial cultivation, this study was done for a period of one year from April 2010 to March 2011 in sub-tropical waters on Palk Bay side of Bay of Bengal of Ramanthapuram (Umialpuram, Mandapam) district on southeast coast of India. The experiments were carried out by two methods, 1) PEN culture i.e; cultivation in monolines enclosed with net and 2) raft method with net bottom. The minimum crop yields of 241.10±9.52 and 228.90±14.89 kg FW raft<sup>-1</sup> were obtained in May 2010 in PEN culture and raft respectively with respective maximum ones of 325.30±11.26 and 293.10±9.83 kg FW raft<sup>-1</sup> in October 2010. Similarly the minimum daily growth rates (DGRs) of 3.09±0.09 and 2.97±0.09 % were found in May 2010 in PEN culture and raft culture respectively with respective maximum daily growth rates (DGRs) of 3.76±0.08 % and 3.52±0.07% in October 2010. Environmental parameters like seawater temperature, salinity, nitrate and phosphate were recorded and they were found to influence the growth of the seaweed. The maximum carrageenan (SRC) content of 36.76±0.74% and 34.09±0.97% of dry weight was found in August 2010 for PEN culture and raft culture respectively whereas the minimum ones of 31.92±1.28% in December 2010 in Pen culture and 30.04±0.12% in October 2010 in raft culture. The income with mean annual crop yields would be Rs. 18,257/- and Rs. 16,063/- per month/person in PEN culture and raft respectively during the loan period and with the respective ones of Rs. 19,257/- and Rs. 18,063/- per month/ person after the loan period (after three years). In view of this, PEN culture was recommended for commercial cultivation rather than raft one in the shallow waters and this was arrived at considering the infra cost, replacement of the infra, cultivation operation, carrageenan yield and net income.

**Keywords:** Seaweed farming, Daily growth rate, *Kappaphycus*, Carrageenan, Crop yield