# 6. SUMMARY

Summary and the salient findings of the present study on the economically important seaweed resources of Kerala coast for 2 year period from 1998-1999 and their phycocolloid yield and the effect of succesive harvest on the regeneration of natural stock of *Gracilaria corticata* studied monthly for one year during 2000 are presented in the following pages.

- A total of 37 species of seaweeds were observed and enlisted during 1998 and 1999.
- Out of the 37 species 13 were grouped under Class Chlorophyceae (green seaweeds), 7 under Phaeophyceae (brown seaweeds) and 17 under Rhodophyceae (red seaweeds).
- Agar yielding seaweeds were represented by seven species and the major resources were *Gracilaria corticata, G. foliifera, Gelidiopsis variabilis* and *Gelidium pusillum* during 1998 and 1999 besides the species of *Pterocladia* during 1999.
- Alginophytes were represented by *Sargassum wightii*, *S. duplicatum*, *S. tenerrimum*, *Stoechospermum marginatum, Dictyota dichotoma* and *Padina gymnospora* and *Padina tetrastromatica*.

- The carrageenan yielding red seaweeds were *Hypnea musciformis*, *H. valentiae* and a new resource *Gracilariopsis lemaneiformis* from Dhalavapuram and Kannur stations.
- Average wet biomass of *Gracilaria corticata* harvested by cutting (pruning) and by handpicking method from the two sets of quadrates laid on the *Gracilaria corticata* bed of Thirumallavaram coast showed only 27% regeneration in the plucked quadrates after 30 days while regeneration was 53 % in the cut quadrates.
- In the subsequent harvests made every month, the wet biomass harvested was more in the cut quadrates.
- The percentage regeneration after successive harvests also remained higher in the cut quadrates
- Exploitation of seaweeds on large scale is hence advisable through pruning method only to ensure the retention of holdfast/ rhizoids.
- Regression analysis of seaweed biomass availability per unit area were plotted with the hydrographic parameters. When all the hydrographic variables studied were used, only $PO_4$ and $NO_3$ showed significant regression coefficient.
- The total seaweed biomass availability was significantly correlated positively($p < 0.01$) with $PO_4$ only.

- The linear regression model tested was found unsuitable as a predictor of total seaweed biomass availability in the study locations based on their hydrographic variables.
- A total of seven agarophytes were observed from Kerala coast during the study period. Out of them, highest yield (% dry weight) of agar was obtained from *Gelidium pusillum* and the lowest from *Jania rubens.*
- Agar yield determined from *Gelidium pusillum* showed maximum values from Chettikulam samples (55%) and in the samples from Dharmadom (55% during December).
- *Gracilaria corticata* registered an yield of 38 % agar.
- *Gracilaria corticata* exhibited higher density and quantity of harvestable biomass as well as higher frequency of occurrence from Mullur, Thirumallavaram, Chettikulam and Kannur.
- *Gracilariopsis lemaneiformis,* though a major carrageenan yielding species yielded 27.84% of agar which were available in Dhalavapuram and Kannur stations in appreciable quantities.
- *Pterocladia* sp though available scarcely in Chettikulam and Thikkodi coasts, its agar yield registered 24.75% of its dry weight.
- *Gracilaria foliifera* was also a raw material whose mean agar yield was maximum from Bekal coast ( 29 %).

- Alginophytes of Kerala coast were represented by seven species during 1998 - 1999 belonging to four Genera.
- Mean yield of alginic acid (% dry weight) was highest (36.67%) for *Sargassum tenerimum* collected from Thikkodi followed by 35.56% for the *Sargassum wightii* samples collected from Mullur (34.25%), Thirumallavaram (36.67%), Thikkodi (35.75%) and Bekal (35%)coasts.
- *Stoechospermum marginatum* available in Thirumallavaram and Thikkodi rocky coasts showed a mean yield of 26%.
- *Sargassum duplicatum* also yielded 20.25% alginic acid but obtained only from Mullur coast.
- Carrageenan yielding seaweeds of Kerala coast were represented by nine species and highest yield of carrageenan (% dry weight) was recorded by *Gracilariopsis lemaneiformis* (39.25%) occurring in the bay waters of Dhalavapuram and Kannur stations.
- *Hypnea musciformis* (37.5%) occurring in five stations and *Hypnea valentiae* (35.28%) observed from seven stations along the Kerala coast also contained fairly good quantity of carrageenan.
- Among the species of *Grateloupia* , *G. lithophila* registered higher yield of carrageenan (20.84%) than *G. filicina* (17.43%).

- Mullur station had maximum number of carrageenan yielding species including *Acanthophora spicifera* ( 20.43%), *Asperagopsis taxiformis* ( 17.5% ) and *Laurencia paniculata* ( 26%).
- *Chondrus* sp available in Thikkodi station registered 22% carrageenan.
- The results on the availability and standing crop of seaweed resources and their phycocolloid content from nine seaweed beds along the Kerala coast for two year period generated through this study will be a comprehensive and base line information to the entrepreneurs of seaweed based industries.