CULTURE OF THE AGAR YIELDING SEAWEEDS ON ROPES FROM GUJARAT

ABSTRACT

This note deals with the comparative growth studies of three agar yielding seaweeds viz. *Gelidiella acerosa*, *Gracilaria corticata* and *Gelidiopsis variabilis* made under laboratory conditions by rope culture. Amongst these three, *Gelidiopsis variabilis* was found to gain the maximum height at the rate of 0.12 cm/day while *Gracilaria corticata* gained the weight at the comparatively highest rate of 0.07 gm/day. *Gelidiella acerosa* proved poor from cultivation point of view.

SEAWEEDS have extensive uses as food, fodder, fertilizer and in many industries (Chapman, 1970) but in India they are mainly used to extract alginic acid and agar agar. Rhodophytes *Gelidiella acerosa*, *Gelidium* species and *Gracilaria* species are used to extract agar agar. These agarophytes are available in commercially usable quantities along south Indian Coasts (Raju and Thomas, 1971) but are sparse and available in very small quantity along the Gujarat Coast as they are comparatively restricted in distribution. Hence to supplement the raw material available from natural resources it was thought desirable to investigate the possibility of the cultivation of some agarophytes.

In the present note an attempt has been made to study the comparative growth of the three agar yielding seaweeds *viz.*, *Gelidiella acerosa* (Forsskål) Feldmann and Hamel, *Gracilaria corticata* T. Agardh and *Gelidiopsis variabilis* (Grev) Schmitz by vegetative propagation in aquarium.

Materials and Methods

Vegetative fragments of 2.5 cm were obtained from the apical regions of the plants in each case, weighed and inserted in the twists of respective string of known weight and then they were suspended in an aquarium full of seawater on 21 June 1974. The aquarium was kept near window in laboratory and continuous aeration was given and water was changed once a week. Water level in the aquarium was maintained 1 ft at each time. Maximum increase in the linear growth as well as fresh weight gained by the plants were recorded at fifteen days intervals. For recording the increase in weight of fragments, strings were taken out from the aquarium and after proper drainage, kept in the beaker with seawater of known weight and then

it was weighed on analytical balance. Gradual increase in salinity and temperature variation were noted and regular deweeding was made to remove the epiphytic algae such as *Chaetomorpha* sp., *Cladophora* sp., *Bryopsis* sp., etc.

Results and Discussion

In the limited environment of an aquarium gradual increase in salinity from 2.8-5.3' Bo° and temperature variation from 26°-30°C were recorded. In such environment growth attained by the experimental plants in seven intervals of 15 days during which observations were made is shown in Fig. 1.

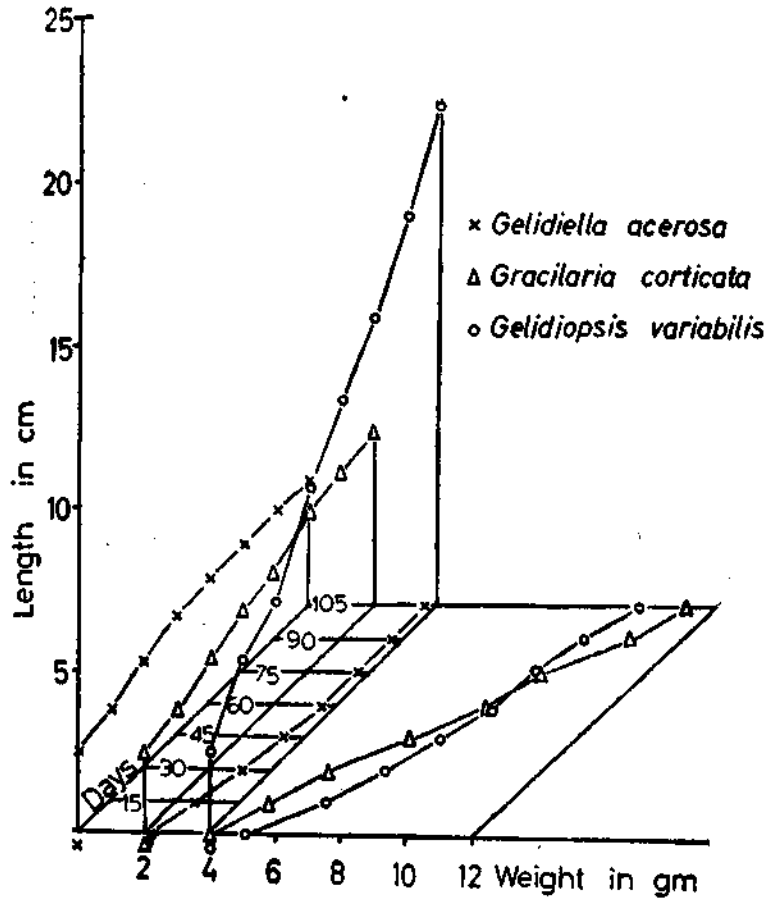

Fig. 1. Growth attained by the experimental plants in seven intervals of 15 days.

Highest increase in linear growth was found in *Gelidiopsis variabilis*, while in the case of fresh weight it was gained maximum by *Gracilaria corticata*. *Gelidiella acerosa* remained lowest and equal in both the cases (Table 1).

In the linear measurement slight equal increase was observed in the plants of *Gelidiella acerosa* and *Gracilaria corticata* for first two intervals and then increase slowed down in the former case for next three intervals and thereafter it

TABLE 1

Name of the Seaweed	Linear increase in cm/day	Increase weight in gm/day
Gelidiella acerosa ..	0.01	0.01
Gracilaria corticata ..	0.02	0.07
Gelidiopsis variabilis ..	0.12	0.04

stopped during last two intervals, while in latter case increase came little down for next two intervals and then it was seen high in the fifth interval and thereafter last two intervals were marked to be equal.

Present studies showed slight slow increase than the previous studies made by Umamaheswara Rao (1973).

In the case of *Gelidiopsis variabilis* increase in linear growth remained slight slow for first three intervals than next three intervals. Second, fourth and fifth intervals were in decreasing rate. So it was observed to be slight wavy.

In the case of fresh weight gained by the plants, *Gelidiella acerosa* and *Gelidiopsis variabilis* both were seen in the mode of decreasing rate from second to sixth intervals and then in the last interval both were found to be contradictive.

Former showed complete stop in the increase while latter was found little high. *Gracilaria corticata* showed same type of mode which was marked in the linear increase of *Gelidiopsis variabilis.*

Results obtained from the experiments clearly indicate that regenerating power is high in two low agar yielding seaweeds *viz., Gracilaria corticata* and *Gelidiopsis variabilis.* Therefore, for augmenting this natural resource cultivation of such seaweeds should also be carried out along with the cultivation of high agar yielding seaweed *Gelidiella acerosa.*

Gelidiella acerosa could not attain their natural height as it is seen on Veraval and Hanumandandi (near Okha) reefs of Saurashtra Coast. So it is assumed that light penetration and temperature might be responsible for dwarf condition of the plant in such a limited environment of an aquarium and in shaded condition of laboratory.

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