It is seen from the literature that *Ulva rigida* C. Ag. is a good source of protein, rich in certain essential amino acids. However, this alga is of restricted occurrence in India and has to be cultivated. An understanding of the growth response of the alga to different nutritive substances and growth promoters is essential for successful cultivation. Therefore, the present study was undertaken to ascertain the physiological responses to nutritional requirements of the alga.

The experimental material was collected freshly from a deep pool at Gopnath, near Bhavnagar.

It was found that the thallus of *Ulva rigida* C. Ag. showed a differential pattern of growth corresponding to the distribution of endogenous growth substances. Hence the cut pieces (10 x 10 mm) were obtained from the middle region of the thallus where growth was uniformly vegetative under all the conditions. These were cultured in a sea water medium under controlled conditions in the laboratory under treatment with different nutritive substances, growth promoters and two different conditions of photoperiod viz. continuous illumination and a photoperiod of 16 hours. Area
measurements and fresh weights were recorded at intervals of five days.

It was found that best vegetative growth was obtained under a photoperiod of 16 hours in most of the experiments although response to some growth substances was not affected by photoperiod.

**Ulva rigida** C. Ag. can utilise both inorganic and organic forms of phosphorus equally well.

Sodium nitrate and urea are good sources of nitrogen over a wide range of concentrations. The growth was very poor in sodium nitrite as a source of nitrogen, while asparagin gave best results at a very low concentration of 1 mg%.

Ammonium sulphate and di-potassium hydrogen phosphate are best fertilizers for the growth of young plantlets of **Ulva rigida** C. Ag. in nurseries.

**Ulva rigida** C. Ag. does not respond well to 3-indolyl acetic acid under continuous illumination but responds very well under a photoperiod of 16 hours. The response of 2-naphthyl acetic acid, gibberellic acid, kinetin and adenine was equally good under continuous illumination as well as photoperiod of 16 hours.

The optimum level for growth substances required by **Ulva rigida** C. Ag. were $10^{-7}$ M for 3-indolyl acetic acid,
-naphthyl acetic acid, $10^{-5}$ M to $10^{-6}$ M for gibberellic acid, $10^{-8}$ M for kinetin and $10^{-7}$ M for adenine.

Throughout the experimental period of 25 days the cut pieces in all the experiments were in the vegetative conditions only.

The results of the present investigations will be helpful in growing plantlets of *Ulva rigida* C. Ag. in nurseries before transplantation to field conditions in the cultivation of the alga.