

SUMMARY

The alga *Pithophora polymorpha* Wittrock was collected from Koneri Tank at Mahabalipuram in Tamilnadu. The morphological studies were carried out with fixed filaments. Dried samples were used for proximate analysis for estimation of total carbohydrates, total proteins and total fats.

Morphometry of the pond was also studied. Total area of the pond, length, breadth and depth were measured and morphometry map was constructed.

Water sample collected from the pond was used for studying both physical and chemical parameters. Physical analysis of pond water revealed that pH remains alkaline throughout the study period.

In the present study of the pond there is a direct correlation between water temperature and DO while a negative correlation was observed between phosphates and DO.

Chemical analysis of water showed that sodium and chloride content of the pond remained at maximum level. This is probably due to the seepage of these ions because of the proximity of the pond to the sea. Statistical analyses also revealed that there is positive correlation between sodium and chloride.

Proximate analysis of alga showed carbohydrate content was the major constituent that accounted for 37% to 76% of dry weight. The average total protein content was 11.03% and lipid content was in trace amounts except for few months when it was not even detectable. These results prove that *Pithophora polymorpha* cannot be recommended as a value adding nutrition for human consumption.

Mineral analysis of the alga was also studied and the concentration factor was calculated. The relation between the mineral content of water and their uptake by the alga has proved that the alga has the capacity of accumulating all the ions studied against the concentration gradient. It also shows the highest accumulation factor for iron. This indicate that it can be used as a bioremedial measure for removal of iron from water.

It also showed that the alga accumulates more of potassium than of sodium.

Culture study was carried out to find out the role of trace elements for the growth of the alga. The present study indicated Zn and Mn are considered to be the most essential trace elements in the nutrition of *Pithophora polymorpha* than the other trace elements supplied.

It has also brought out an interesting feature that cobalt as a trace element is essential for the development of rhizoids in *Pithophora polymorpha*. Transmission Electron Microscopic studies of detailed vegetative structure of *Pithophora* have been described. *Pithophora polymorpha* shows a typical chlorophycean structure.