



“THE QUALITATIVE STUDY OF ECO-ENVIRONMENTAL FACTORS AND FRESH WATER ALGAL FORM”

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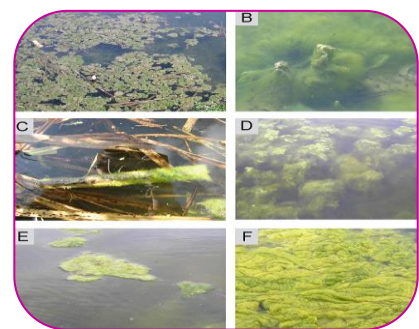
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ABSTRACT

Morshi is one of the taluka place in the Vidarbha region of Maharashtra State. The physicochemical and environmental factors play instrumental role towards the determination of algal flora. The present assessment has been furnished toward the eco-environmental impact and aquatic algal profile with respect to Cyanophyceae algal members from this region. The correlation between physico-chemical parameter, ecological, environmental factors and qualitative aquatic algal flora has been evaluated. The 20 algal forms have been observed during the present study. The physicochemical parameters and environmental factors have cumulative effect on the algal profile.



KEYWORDS : Physicochemical parameter, Cyanophyceae, Algal form, Hydrobiology.

INTRODUCTION

Morshi is one of the taluka place in vidarbha region of Maharashtra state positioned at 78° 00' 11" East longitude and 21° 20' 08" North latitude under the purview of tropical region with maximum temperature around 42.2⁰ C and minimum temperature around 15⁰ C during the present study. A very few papers are available with respect to hydrobiological study about this region and the nearby area . The present investigation has been executed relative to eco-environmental factors and algal flora in one of the seasonal water streams just 9 km away from the Morshi adjacent to the village Chincholi, which is in close vicinity to Morshi during 2016 . The water stream is closely lined with agricultural farm land on both side of the stream.

MATERIAL AND METHOD

The monthly algal collections were brought to the laboratory throughout the present study from 4-5 selected spot and preserved in the 4% formalin in the bottle for further microscopic study. The material was used for temporary slide preparation mounted with glycerine. The temporary slide were observed under microscope. the diagrams were drawn with help of camera lucida for identification purpose. The monthly sufficient water samples were collected from the site in separate bottle for the physicochemical parameters. The physicochemical parameters were carried out by following the standard method (APhA,1971; Kodarkar,1992) and tabulated in the **table 1**.

SYSTEMATIC ENUMERATION OF ALGAL FORMS

Division- Cyanophyta
Class-Cyanophyceae
Order- Chroococcales
Family- Chroocaceae

Genus –*Chroococcus* Nag.

- 1) *Chroococcus turbidus* (Kutz) Nag.
- 2) *Chroococcus. tenax* (Kirchn) Nag

Genus- *Aphanocapsa* Nag.

- 1) *Aphanocapsa biformis* A.Br,

Genus-*Merismopedia* Meyen.

- 1) *Merismopedia minima* Beck
- 2) *Merismopedia punctata* Meyen
- 3) *Merismopedia glauca* (Ehrenb) Nag

Order- Nostocales
Family-Oscillatoriaceae

Genus- *Oscillatoria* Vaucher

- 1) *Oscillatoria limosa* Ag. Ek. Gomont
- 2) *Oscillatoria curvicep* Ag. ek. Gomont
- 3) *Oscillatoria princeps* Vaucher ek. Gomont
- 4) *Oscillatoria tanganyikae* G. S. West
- 5) *Oscillatoria rubescens* DC ex. Goment

Genus-*Phormidium* Kutz

- 1) *Phormidium fragile* Meneghini Gomont
- 2) *Phormidium laminosum* Gomont
- 3) *Phormidium mucosum* Gardner
- 4) *Phormidium retzi* (Ag.) Gomont
- 5) *Phormidium incrustatum* (Nag) Gomont

Genus- *Lyngbya* Ag.

- 1) *Lyngbya perelegans* Lemm.
- 2) *Lyngbya amplivaginata* Van Goor

Family- Nostocaceae**Genus-*Anabaena* Bory**

- 1) *Anabaena vaginicola* Fritsch et.Rich
- 2) *Anabaena circinalis* Rebenhorst ex Born. Flah.

RESULT AND DISCUSSION

The 20 Cyanophycean algal forms were observed in the present investigation. The environmental factor plays a very important role towards the determination of population of algal forms in water body (Ganpati, 1960).The abundance in chlorophycean flora has been reported in summer season (Whiteford and

Schumcher, 1963). The temperature has considerable effect on algal growth (Nazneen,1980). The high aquatic nutrient environ has also favourable effect relative to the presence of phytoplanktons (Ferguson and Harper,1982). The more chloride content is also favourable factor to more growth of algal forms(Verma and Shukla, 1979,Kamble,2015).The present investigation represented that the moderate range, high chloride content, and high pH and alkalinity collectively favoured the luxuriant growth of algal flora and phytoplankton.(Kamble2015; Kamble and Tayde,2001).The high temperature favoured the more desmid population(Venkteshwarlu, 1983) It has been reported that the turbidity has considerable effect on algal growth (Barhate and Kamble, 2007).The present study revealed the agreement with previous study. The pH ranged between 5-8.5 has been reported as favourable for plankton growth (Umavathi *et al.*,2007)). According to Elayaraj and Selvaraju (2014) high nitrate concentration could result in excess algal blooms in water body. The important source of nitrate in water body may be attributed to the agricultural use of fertilizers in adjacent agricultural land. .It has been reported that there is correlation between physicochemical parameters and phytoplankton density (Elayaraj and Selvaraju, 2014). In the present study, eutrophication causing dense growth of cyanophycean algal flora and algal bloom was observed during September to December 2016 . The present observation revealed the conformity with previous study ..

CONCLUSION

The various physicochemical parameters as high pH, nitrate, chloride, turbidity, hardness are found to be associated with the abundance growth of cyanophycean algal form. The more nutrient concentration in aquatic environ favoured luxuriant growth of algal flora in present study. The genus *Oscillatoria*, *Phormidium*, *Mersmopedia* and *Anabaena* were abundance in population.

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Table 1. Physicochemical parameter and environmental factors.

| Sr. No | Month | pH | Nitrate in ppm | Total hardness in ppm | Chloride in ppm | Turbidity in ppm | Rainfall | Temperature | |
|--------|-----------|-----|-------------------|-----------------------------|--------------------|---------------------|----------|-------------|---------|
| | | | | | | | | Maximum | minimum |
| 1 | July | 7.4 | 0.39 | 219 | 28 | 1.1 | 427 | 36.7 | 22.5 |
| 2 | August | 7.7 | 0.42 | 220 | 28 | 1.2 | 475 | 36.5 | 22.2 |
| 3 | September | 7.9 | 0.42 | 204 | 22 | 1.6 | 382 | 36.4 | 21.2 |
| 4 | October | 8.2 | 0.45 | 200 | 20 | 1.3 | 192 | 36.2 | 21.2 |
| 5 | November | 8.2 | 0.38 | 198 | 18 | 1.8 | 110 | 32.1 | 20.9 |
| 6 | December | 8.4 | 0.38 | 198 | 18 | 1.8 | 12 | 32.1 | 15.8 |



Plate 1. One of the Collection spots



Plate 2. Algal Bloom