

Algal flora of sugarcane fields in paundul area of shirur kasar taluka in beed district (M. S.) India

M.N. Sonawane * and S. M. Talekar

Department and Research Center of Botany, Mrs. K. S. K. College, Beed, Dist. Beed (431122), Maharashtra, India.

International Journal of Science and Technology Research Archive, 2023, 04(01), 341–344

Publication history: Received on 07 February 2023; revised on 22 March 2023; accepted on 25 March 2023

Article DOI: <https://doi.org/10.53771/ijstra.2023.4.1.0049>

Abstract

In Paundul area Narayangad Dam is constructed on Eidrupa river which is tributary of Sindphana river. The major crops in the Beed districts are Sugarcane, Cotton, Soybean, Wheat, Jawar, Bajara, Tur and Udied bean. The Sugarcane is most important cash crop of study area. The present investigation was carried out during the period of March 2022 to December 2022 and rivals that the algal flora sugarcane fields of Paudul area are very rich infancy. A total of 50 algal taxa ware encounter under 24 genera belongs to three classes Cyanophyceae 31 species of 15 genera Fowled by Cholorophyceae 12 taxa of 7 genera and Bacillariophyceae 7 species of 4 genera.

Keywords: Sugarcane; Narayangad dam; Bacillariphyceae; Eidrupa

1 Introduction

The Beed is one of the most important district of Marthwada region situated at north latitude 18°28" and 19°28" and east longitude between 74°48" and 76°45". The main source of water is Godavari, Manjra, Sindphana and Sina rivers and dams on same rivers and its tributaries. The major crops in the Beed districts are Sugarcane, Cotton, Soybean, Wheat, Jawar, Bajara, Tur and Udied bean. In Paundul area Narayangad Dam is constructed on Eidrupa river which is tributary of Sindphana river. The major crop of study area is Sugarcane and no reports on soil algal flora of Paundul area hence we decide work algal flora of Sugarcane fields in Paundul Area of Shirur Kasar Taluka in Beed district (M. S.) India.

2 Material and methods

Algal samples were collected from moist soil surface of sugarcane fields at monthly intervals in acid washed bottles. After collection, algal samples were brought immediately to the Laboratory. The algal samples were preserved in 4% formalin for further taxonomic investigations. The sun dried soil samples were also collected for their algal components in order to culture by petri plate method. 1 gram of pulverized soil was poured and spread uniformly into the petri plates cantoning agarized bolds basal medium (Bold 1942). Liquid nutrient medium was poured into plated at the time of keeping for incubation and frequently supplemented for the same. The petri plates incubated under the UV tube lights in algal culture chamber. The growth algal colony and preserved sample observed under the microscope and identified with standard literature on algae (Prescott 1951, Desikachary 1959, Sarode and Kamat 1984, Scott and Prescott 1961).

3 Results and discussion

The present investigation was carried out during the period of March 2022 to December 2022 and rivals that the algal flora sugarcane fields of Paudul area are very rich infancy. A total of 50 algal taxa ware encounter under 24 genera

* Corresponding author: M.N. Sonawane

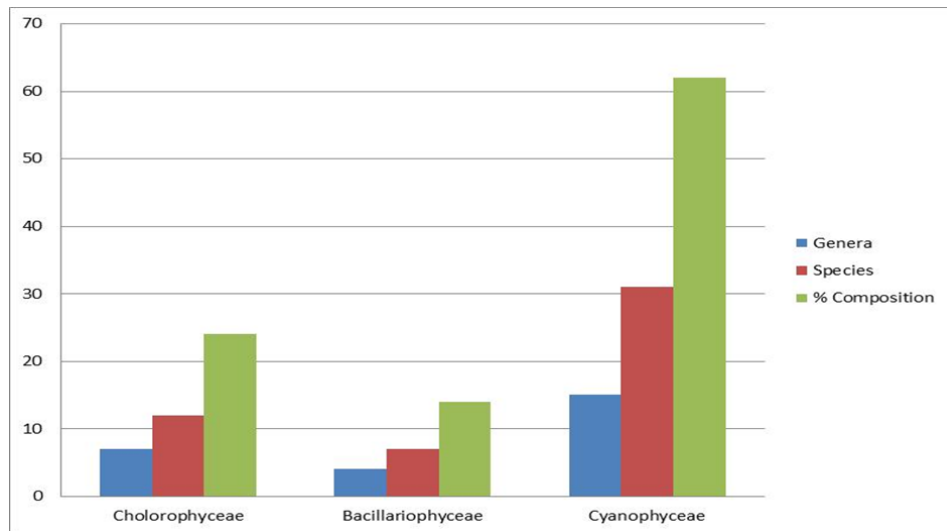
belongs to three classes Cyanophyceae 31 species of 15 genera Fowled by Cholorophyceae 12 taxa of 7 genera and Bacillariophyceae 7 species of 4 genera (Table 2 and Graph 1). Similar kind of observation made by Gadewar and Lambat 2011 observed the Xanthophyta is represented by single genus while three genus in Euglenophyta and 04 genus in Bacillariophyta. This shows that Cynophyceean members are dominant in the cultivated fields. Out of the 87 spp of algal forms 21 spp of Cynophyceean member is nitrogen fixing forms. Only 16 spp were found in regularly cultivating sugarcane field. Out of the 16, 10 were of Cynophyceean member, 03 Chlorophyceean members, 01 Xanthophyceean member and 02 Bacillariophyceean members. Wagh S.G. and Jadhav M.J. 2017 observed that a total 33 species under the 19 genera belongs to Chlorophyceae, Bacillariophyceae and Cyanophyceae. Yadav 2022 studied soil algal flora of sugarcane field of Renapur tehsil a total of 166 algal forms were identified from the soils of Renapur tehsil in which 91 belongs to Cyanophyceae, 65 forms to Chlorophyceae and 10 forms belongs to Bacillariophyta. Among the 166 forms of Cynophyceae belongs to 27 genus, while the Chlorophyceae reperednted by 26 genus and the Bacillariophyceae is represented by its 10 genus.

Table 1 Algal texa of Sugarcane fields in Paundul Area of Shirur Kasar Taluka in Beed district of Maharashtra

Sr. No.	Name of Algal Texa	Sr. No.	Name of Algal Texa
Cholorophyceae		6.	<i>Aphanocapsa nivalis</i>
1.	<i>Chlamydomonas mucicola</i>	7.	<i>Oscillatoria acuminata</i>
2.	<i>Chlorococcum humicola</i>	8.	<i>Oscillatoria acuta</i>
3.	<i>Ankistrodesmus falcatus</i>	9.	<i>Oscillatoria obscura</i>
4.	<i>Scenedesmus arcuatus</i>	10.	<i>Oscillatoria princeps</i>
5.	<i>Scenedesmus dimorphus</i>	11.	<i>Oscillatoria salina</i>
6.	<i>Protococcus viridis</i>	12.	<i>Oscillatoria tenuis</i>
7.	<i>Oedocladium indicum</i>	13.	<i>Phormidium abronema</i>
8.	<i>Oedogonium acerosum</i>	14.	<i>Phormidium bohneri</i>
9.	<i>Closterium acerosum</i>	15.	<i>Phormidium jenkelianum</i>
10.	<i>Closterium acutum</i>	16.	<i>Phormidium molle</i>
11.	<i>Closterium venus</i>	17.	<i>Phormidium tenue</i>
12.	<i>Cosmarium granatum</i>	18.	<i>Lyngbya allorgei</i>
Bacillariophyceae		19.	<i>Lyngbya hieronymusii</i>
1.	<i>Synedra affinis</i>	20.	<i>Lyngbya lachneri</i>
2.	<i>Navicula clavata</i>	21.	<i>Lyngbya martensina</i>
3.	<i>Navicula grivillei</i>	22.	<i>Symploca muscorum</i>
4.	<i>Cymbella cymbiformis</i>	23.	<i>Microcoleus acutissimus</i>
5.	<i>Nitzschia dissipata</i>	24.	<i>Microcoleus subtorulosus</i>
6.	<i>Nitzschia gracilis</i>	25.	<i>Nostoc commune</i>
7.	<i>Nitzschia vermicularis</i>	26.	<i>Nostoc linckia</i>
Cyanophyceae		27.	<i>Plectonema gracillimum</i>
1.	<i>Microcystis stagnales</i>	28.	<i>Plectonema tomasinianum</i>
2.	<i>Chroococcus minor</i>	29.	<i>Scytonema hofmanni</i>
3.	<i>Gloeothece palea</i>	30.	<i>Microchacte tenera</i>
4.	<i>Gloeothece samoensis</i>	31.	<i>Calothrix marchica</i>
5.	<i>Aphanothece nidulans</i>		

Table 2 Class wise percentage composition of Algal taxa in Sugarcane fields of study area.

Class	Genera	Species	% Composition
Cholorophyceae	07	12	24
Bacillariophyceae	04	07	14
Cyanophyceae	15	31	62
Total	26	50	100

**Figure 1** Class wise abundances and percentage composition of Algal taxa in Sugarcane fields of study area

4 Conclusion

The present investigation is beneficial to know the algal flora of sugarcane fields. The dominance of cyanobacteria indicates health of soil and heterocyst's bearing cyanobacteria are the nitrogen fixing bacteria are beneficial to the sugarcane yield.

Compliance with ethical standards

Acknowledgments

I am very much thankful to Principal Mrs. K.S.K. College of Beed and Head Botany Research Center Mrs. K.S.K. College Beed to provide me laboratory facility's and permission to research work.

References

- [1] Bold H.C. (1942). The cultivation of Algae. Bot. Rev. 8: 69-138.
- [2] Desikachary T.V. (1959). Cyanophyceae I.C.A.R. Monographas on Algae New Delhi. Pp.680.
- [3] Gadewar R. D. and Lambat A. P. (2011). Studies of algae flora of sugarcane fields of Digras Region of Yavatmal District, International Journal for Environmental Rehabilitation and Conservation, 1, 81-86.
- [4] Prescott G. W. (1951). Algae of the western grate lake area Cranbook, Ist Sci. Bloomfield Hill. Mich, 946 pp.
- [5] Sarode P. T. and Kamat N. T. (1984). Fresh water diatoms of Maharashtra. Saikrupa rakashan, Aurangabad Pp. 1-338.
- [6] Scott A. M. and Prescott C. W. (1961). Indian Desmids. Hydrobiologi 17:2-132, Plts 1-63.

- [7] Wagh S.G. (2021) Ecological studies on soil algae of Ahmednagar district (M.S.), Ph.D. Thesis
- [8] Dr. Babasaheb Ambedkar Marathwada University Aurangabad. Pp 177.
- [9] Wagh S.G. and Jadhav M.J. (2017). Soil algae of sugarcane fields in Ahmednagar district of Maharashtra, flora and fauna, 23:2(2), 228-231.
- [10] Yadav S. G. (2022). Soil Algal Flora of Sugarcane Fields from the Marathwada Region of Maharashtra, International Journal of Research Publication and Reviews, 3:2, 842-848.