Studies on soil algae from Sugarcane crop field of Tehsil Indapur, Dist.-Pune, Maharashtra

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Abstract: **Soil algae are important group of alga which are found in rhizosphere as well as non-rhizosphere soil. Algae play a vital role in maintaining soil health and supporting plant growth. Present work deals with study of soil algae found in Sugarcane crop fields of Indapur tehsil area located in Pune district of Maharashtra. To study algal flora of sugarcane crop field, algal samples from moist places of field were collected at regular intervals from July to November 2024. Bold's Basal medium was also used to culture algae from sugarcane field. Collected microalgae and cultured algal samples were observed with the help of standard literature on algae. Several members of Chlorophyceae, Bacillariophyceae and Cyanophyceae were found. Cynophycean algae are dominant in sugarcane field. A total of 35 species of 21 genera were found from soil. Physicochemical analysis of soil was done from sugarcane crop fields by selecting certain physicochemical parameters such as pH, electrical Conductivity, organic carbon, available nitrogen, available phosphorus, and available potassium to understand fertility status of soil. The soil of Sugarcane field is moderate alkaline with moderate electrical conductivity. Nitrogen and phosphorus is found in low amount whereas carbon is moderate and potassium is high.**

Keywords: **Sugarcane field, Soil Algae, Soil, soil analysis.**

INTRODUCTION

Soil algae are important group of alga which are found in rhizosphere as well as non-rhizosphere soil. Algae play a vital role in maintaining soil health and supporting plant growth. Algae grow more abundantly on physiologically active soil. Sugarcane is major crop growing in Pune district including Indapur taluka. Present work deals with study of soil algae found in Sugarcane crop fields of Indapur taluka area located in Pune district of Maharashtra. To study algal flora of sugarcane crop field, algal samples from moist places of field were collected at regular intervals from July to November 2024

MATERIAL AND METHODS

A Sugarcane field located in Indapur tehsil area of Pune district, Maharashtra has been selected for collection of algal samples. Algal samples which are grown on moist soil of Sugarcane field were collected from July 2024 to December 2024.Collected algal samples were brought to the laboratory for observation and identification. Sun dried soil collected from same sugarcane field were examined for their algal components by Petri plate culture method. 1 gm of crushed and sieved soil poured and spread uniformly into Petri plates containing agarized Bold's basal medium (Bold 1942). Nutrient medium was poured into the plates at the time of keeping those for incubation and replenished frequently. Petri plates were incubatedtube lights having 1000 to 1500 lux capacity in algal culture chamber. Petri plates were checked for algal colony growth. After sufficient growth, algal colonies were picked up for identification. Collected and cultured algal samples were observed under microscope.

RESULTS AND DISCUSSION

A total of 35 species of 21 genera were identified of these 7 species under 6 genera belonged to Chlorophyceae, 6 species under 5 genera to Bacillariophyceae and 22 species under 10 genera to Cyanophyceae (Table 1). Cyanophycean algae dominated algal flora of Sugarcane field soil. Algal taxa which were found dominant present study were, *Oscillatoria obscura, Gloeocystis major, Chlorococcum humicola, Chlorella vulgaris, Navicula clavata, Aphanothece nidulans, Aphanothece saxicola, Gloeocystis gigas Phormidium bohneri Microcoleus acutissimus, Microcoleus lacustris and Plectonema gracillimum*.

Table 1: Algal flora of maize field soil.

Chlorophyceae

Gloeocystis gigas, Gloeocystis major, Tetraspora lamellosa, Chlorococum humicola,,Chlorella vulgaris, Scenedesmus caudricauda, Spirogyra subsalsa
Bacillariophyceae *Fragilaria brevistriata, Navicula clavata, Navicula cupsidata, Pinnularia sp., Cymbella aspera, Nitzschia intermedia.*
Cyanophyceae *Oscillotoria acuta, Oscillotoria animalis, Oscillotoria obscura, Oscillatoria subbrevis Chroococcus turgidus, Gloeocapsa rupestris, Gloeothece palea, Aphanothece nidulans, Aphanothece saxicola, Spirulina subtilissima,Phormidium abronema, Phromidium angustissium, Phormidium bohneri, Phormidium beseri, Phormidium jenkelianum, Phormidium molle, Lyngbya birgei, Lyngbya magnifica, Microcoleus acutissimus, microcoleus lacustris, Microcoleus sociatus, Plectonema gracillimum.*

Table 2 Physicochemical Analysis of Sugarcane field Soil.

Sr. No.	Parameter	Observation	Fertility Status
1.	PH	7.39	Moderate
2.	Electrical Conductivity	1.30	High
3.	Organic carbon %	0.18	Medium
4.	Available Nitrogen (Kg/hectare)	126	Low
5.	Available Phosphorus (Kg/hectare)	10.35	Low
6.	Available Potassium (Kg/hectare)	604	High

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