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ECOLOGICAL SURVEY OF BLUE GREEN ALGAE IN DIFFERENT HABITATS OF JALGAON DISTRICT, MAHARASHTRA, INDIA

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Extensive work on the blue green algae occuring in four different habitats was done during 1984–1987, from a number of places in Jalgaon, district Maharasthra. A total of 130 taxa from cultivated fields, 86 from fresh water habitat, 45 from thermal spring and 11 taxa from air have been recorded. An attempt has been made to corelate certain physical and chemical properties of the soils and water with their algal composition. The number of heterocystous forms is found to be less than the non-heterocystous ones.

Keywords : Blue green algae; Habitat; Ecology; Heterocysts,

Although a few attempts have been made in the past to study the algal flora from Jalgaon district, Maharashtra, there appears to be no record as far as the distribution of blue green algae in different habitats is concerned. The present communication deals with the ecological survey of blue green algae in four different habitats viz. cultivated fields, fresh water, hot water and air in Jalgaon district, which lies between 21°–1' North latitude and 75°–35' East longitude with a total area of 7141.68 Square Kilometers. It forms an upland basin of the Deccan table land. The climate is generally dry except in monsoon. The summer winds are generally light in the morning and become strengthen during afternoon. The relative humidity varies from 21% in summer to 96% in monsoon. The soil is alluvial brownish black having the pH ranging between 7 5–8.5. As such it favours the growth of banana and sugar cane plants. Both the crops need regular and heavy irrigation. So it was thought to study the blue greens from these crop fields.

Satpuda ranges are spread throughout the North border of Jalgaon district. It is made up of seven parallel hilly ranges spreading East to West, representing dry deciduous type of forest and covered over by teak.

A number of rivers and streams have been originated from these ranges. As such it forms a good locality for fresh water habitat. Thermal spring of Unapdeo at the base of these ranges is one of the hottest springs in Maharashtra. It constitutes a simple type of constant temperature aquatic ecosystem. The spring bed covered with floats of blue green algae for most of the time. Bhusawal is one of the largest Railway junction in India. As such the air round Bhusawal city is highly polluted with smoke. So it was thought to collect the algal spores present in such polluted atmosphere.

Six localities namely Korpawali, Sangvi, Chinawal, Yawal, Bamnod and Nimbhora were selected for the study of blue green algae from the cultivated fieds. Fresh water algae were collected from another three localities viz. Haripura, Pal and Langada Amba from Satpuda ranges. Hot water spring at Unapdeo constituted the third habitat; while air borne algae were collected from three different spots in Bhusawal city at different heights.

The algal collections were made from January, 1984 to December, 1987 from the localities cited and were preserved in 4% formaldehyde. Soil samples from cultivated fields were regularly collected and cultured in the laboratory in De's (1935) and Allen and Arnon's (1955) enrichment cultured medium. Air borne algae were collected in cultured petridishes exposed to atmosphere at three sites namely Yawal bridge—North to Bhusawal, Science College terrace–South to Bhusawal and a five storied building in the centre of Bhusawal city.

Identification of different taxa was done with the help of monograph

Table 1. Showing the number of taxa recorded from the four different habitats.

Families Habitat	Crop field soils	Fresh waters	Hot water spring	Atmosphere (Air)
Chroococcaceae	20	14	12	05
Oscillatoriaceae	58	34	25	04
Nostocaceae	32	24	08	02
Scytonemataceae	—	06	—	—
Rivulariaceae	20	08	—	—
.....	.....	.....	.....	.....
Total	130	86	45	11

by Desikachary (1959). Some recent publications available were also consulted (Kamat, 1963; Pandey and Mitra, 1963; Prasad and Mehrotra, 1976; Prasad *et al.*, 1977 and Tiwari, 1979).

During the present survey a total of 130 blue green algal taxa have been recorded from crop field soils, 86 from fresh water habitats, 45 from thermal spring and 11 taxa from the atmosphere (Table 1). Majority of the species recorded belong to Nostocales in which the members of Oscillatoriaceae form a major group followed by the members of Nostocaceae. The diversity of blue green algal taxa is more in the cultures of crop field soils. Blue green total algal flora at high attitude in the Satpuda ranges shows the predominance of non-heterocystous forms than the heterocystous ones. The results obtained in the present study agree well with those obtained by Kottawar *et al* (1985) except the total number of taxa recorded.

The number of algal taxa recorded from the fresh water habitat also agrees with the account given by Barhate and Tarar (1983) and Bhoge and Ragothaman (1986) .The difference being more forms of Nostocaceae and Rivulariaceae have been recorded during the present study. It might be due to high altitude of localities selected. In hot water environment the results obtained are similar with those of Thomas and Gonzalves (1965) and Vasishta (1968), in having predominance of member of Oscillatoriaceae over others. Maximum algal taxa have been recorded between 40°C- 50°C temperature. It is seen that the water is alkaline with pH between 7-9 and so luxurient algal growth was observed.

From atmosphere six algal forms were appeared in petridishes exposed at the height of the three meters, four taxa at the height of six meters, while only one taxa was observed at the height of fifteen meters. In all the different habitats, the percentage of non-heterocystous blue green algae is found to be more than the heterocystous ones.

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