Soil-crust Cyanobacteria from Alluvial Zone of District Birbhum, West Bengal: Relating Species Distribution with Soil Parameters

Shewli Bhattacharya, Jnanendra Rath, Sri Narayan Ojha* and Samit Ray

Department of Botany, Visva-Bharati,Santiniketan – 731 235, West Bengal, India,

**Computer Center, Visva-Bharati, Santiniketan, India*

ABSTRACT

Cyanobacteria are one of the most important components of biological soil-crusts that are formed by intimate association with cyanobacterial filaments and soil particles and form a coherent layer on the soil surface. The soil-crust cyanobacteria are important in developing the nutrient status of the soil especially in the arid and semi-arid region. They prevent soil-erosion, retain soil moisture, stabilize the soil and enhance growth of angiospermic plants by concentrating essential nutrients. Considering the importance of soil-crust, the present systematic investigation on soil-crust has been undertaken in alluvial zone of the district Birbhum, West Bengal. Soil samples were collected from barren lands or open areas in between the trees in forests. The soils are acidic to near neutral and showed large variation with regard to other soil properties. From the samples twenty one cyanobacterial species were isolated and identified. Results of relative abundance showed that *Lyngbya putealis*, *Calothrix elenkinii* and *Nostoc punctiforme* were the most predominant. A two dimensional plexus diagram showed interspecific association between isolated cyanobacteria. According to this diagram soil properties may be the main factors which were responsible for close and distant association between these cyanobacterial species. Canonical correspondence analysis (CCA) showed that the growth of cyanobacterial species was influenced mostly by soil pH, ammonium, available nitrogen, available iron and organic carbon respectively.

Key words: Cyanobacteria, soil-crust, distribution, correlation

Author for correspondence: Samit Ray, e-mail: ray_samit@rediffmail.com