

Diversity and Seasonal Variation of Soil Fungi Isolated from Surrounding Area of Upper Lake, Bhopal Madhya Pradesh.

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Abstract

Diversity and seasonal variation of soil fungi isolated from surrounding area of Upper Lake were studied for a period of twenty four months by using baiting and plating technique. A total of 55 genera and 94 species were recorded from surrounding area of Upper Lake. Out of the total 64 and 56 fungi in the summer season, 54 and 38 in winter and 42 and 32 in rainy season recorded in the year 2008-09 to 2009-2010 respectively. A marked seasonal variation in mycoflora has been found. Fungi have been divided into Summer, Rainy and Winter types based on their occurrence. Seasonality in the fungal flora was also correlated with varying ecologic factor viz. tem. Rainfall and relative humidity. In the present investigation mycoflora recorded was not much differ from previously reported soil fungi in different habitat.

Keywords- Diversity / Seasonal variations/ Soil fungi /surrounding area of Upper Lake/Bhopal.

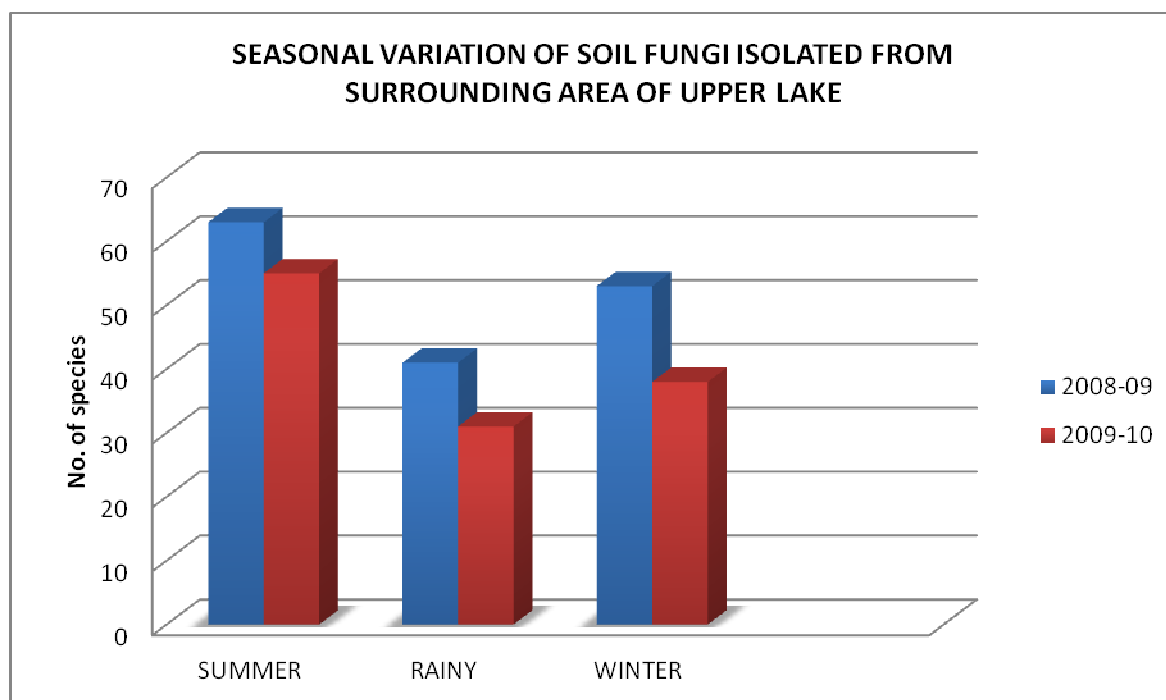
Introduction-Diversity is not evenly distributed rather it varies greatly across the globe as well as within regions. Seasonal variations affect the distribution of fungi of particular area. Number and types of fungal species change with the season, geographical location and the presence of local spore sources. The climate of Bhopal city is characterized by three seasons i.e. summer, rainy and winter. Diversity and distribution of soil fungi have been studied by several Mycologists in India. The importance of mycological studies of different habitat has been emphasized by Butler (1907), Saksena *et.al.* (1966), Manoharachary, 1988; Manoharachary and Madhusudan Rao, 1980, 83; Manoharachary and Murthy, 1981, Saravankumar and Kaviyarasan (2010), Rane and Gandhe (2006), Ramarao (1970) etc. They all reported many genera and species which are common to all soils and not different greatly from those recorded from other part of the world. There are no reports on soil fungi from Bhopal. Therefore an attempt has been made to study the Diversity and seasonal variation of soil fungi isolated from surrounding area of Upper Lake Bhopal.

Methodology- For biological analysis of soil, the samples were collected from surrounding areas of the lake at randomly in every month during the investigation period from October 2008 – September 2010. Soil samples were collected in first week of every month for two year. The soil samples are taken from a depth of 10-15 cm then soil are pooled and shaken directly into fresh polythene bags. The collected soil samples are kept in a cool place during transportation to the laboratory. Isolation was done by serial dilution plate technique (Waksman, 1916). Slides were prepared by taking fungal material on slide from Petri dish with the help of forceps or needle. Fungal material were stained with the help of cotton blue and lacto-phenol and finally mounted in lacto phenol. These fungal forms were identified up to species level with the help of monographs, manuals, relevant research papers and publication of same eminent scientist like Barnet and Hunter (1972), Cooker (1979), Ellis (1971, 1976), Sutton (1980), Vascant Rao *et.al.* (2004), Domesch *et.al.* (1980), Gilman (1959), Chowdhary *et. al.* (2000). Help regarding the identification of these fungi was also taken from various mycologist of the country.

Results- The soil fungal diversity around the Upper lake of Bhopal was analyzed by using different culture techniques. During the course of study from October 2008–September 2010 a total number of 94 soil fungi which belonged to 55 genera were isolated. These fungal floras belonged to various orders. (Tab.-1). The maximum 64 and 56 fungi recorded in summer season, moderate 54 and 38 in winter and minimum 42 and 32 in Rainy season during 2008-09 and 2009-10 respectively. (Fig-2).

Table-1 Classification based data of soil fungi from surrounding area of Upper Lake.

Group	Order	Genera	Species
Mastigomycotina	Saprolegniales	2	2
	Pernosporales	2	2
Zygomycotina	Mucorales	2	3
Ascomycotina	Sphaeriales	1	3
Deuteromycotina	Sphaeropsidales	5	6
	Melanconiales	2	2
	Moniliales	41	76
Total		55	94

**Fig-1 Seasonal variation of soil fungi isolated from surrounding area of Upper Lake.**

Discussion- During the course of study Deuteromycotina reported as dominant group. This observations have also been observed by several workers in their different study area from many parts of the world *i.e.* Ramarao, 1966; Saxena, 1966; Dayal and Gupta, 1967; Bagga, 1999; Ayse Dilek and Pekel, 2002; Bhatt, 2004; Koilraj *et.al.*, 2005; Manoharachary *et.al.*, 2005; Rane and Gandhe, 2006; Panda *et.al.*, 2009; Saravankumar and kaviyaran, 2010; Sharma, 2010; A total of 4 species were isolated from Mastigomycotina group and 3 to Ascomycotina and 3 to Zygomycotina. (Table.1). The perusal of fig-1 reveals that the maximum 64 and 56 fungi recorded in summer season, moderate 54 and 38 in winter and minimum 42 and 32 in Rainy season during 2008-09 and 2009-10 respectively. Present finding show similarity to the observation by Bhattacharyya and Jha (2010) they opined that higher soil fungal density occurred in summer and spring season and minimum in winter season from soil of Guwahati. According to Guleri *et.al.* (2010) maximum number 28, of fungal species were isolated during summer season and minimum 27, in winter season and 23 in Rainy season from soils of Dehradun.

Conclusion- Present investigation tends to the knowledge of soil fungal diversity with seasonal changes from surrounding area of Upper Lake, Bhopal. The fungal population is not homogeneous throughout the year and show seasonal variation. During present investigation period fungal population was vary from season to season and month to month. The occurrence of large variety of soil fungi were recorded from surrounding area of the lake. This indicates a dynamic and diverse fungal community of soil fungi isolated from surrounding area of Upper Lake. The majority of species identified is well adapted for survival in this environment.

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