

# Seasonal Variation of Water Mycoflora of Maharaja Band Pond, Raipur, Chhattisgarh (India)

Fareha Uzma<sup>\*</sup>, K Sharma<sup>\*\*</sup> and Riti Thapar Kapoor<sup>\*\*\*</sup>

<sup>\*</sup>Research Scholar MATS University Raipur

<sup>\*\*</sup> Govt Arts & Commerce Girls College Raipur

<sup>\*\*\*</sup> Amity University Noida

## ABSTRACT

Seasonal variation affects aeromycoflora and water mycoflora of a particular area. Effect of season on occurrence and distribution of fungi around the pond was also observed. Metrological conditions play a very significant role in the fungal diversity. Distribution and occurrence of fresh water varies according to location, season of the year and condition of the surrounding atmosphere, temperature, relative humidity and rainfall. The climate is divided into three seasons viz Rainy season (July to October), winter season (November to February) and summer season (March to June). In the survey of water mycoflora, 50 fungal species (706 fungal colonies) belonging to 30 fungal genera was isolated from the water of Maharajaband pond. During the winter season 258 fungal colonies, in summer season 206 fungal colonies and in the rainy season 242 fungal colonies were observed.

## INTRODUCTION

Water is essential to life, but many people do not have access to clean and safe drinking water and many die of waterborne microbial infections. Fungi are a diverse group of organisms belonging to the kingdom Eumycota. Mycological studies and physico-chemical parameters are an important criterion for evaluating the suitability of water for various purposes. In the study of Khanna et al (2013), they tried to assess the fungal species richness and physico-chemical status of fish pond in Paniyala in Haridwar district of Uttarakhand to predict the state of this pond. Biodiversity and seasonal fluctuation in aquatic fungi at different depths in pond water of Bilaspur city was studied by Dwivedi et al (2012). During present course of investigation eighteen different water bodies (Ponds / Ditches) were selected in Bilaspur region of Chhattisgarh. Shaista Parveen et al (2011) stated, water bodies play an important role in the

stabilization of any civilization. Raipur city is capital of Chhattisgarh state, situated in the fertile plains of Mahanadi River. For the study Maharajaband pond of Raipur city was selected.

## METHODOLOGY

Water samples from the pond was collected in sterilized bottles and brought to the laboratory. Water samples were inoculated in petri plates containing PDA medium (200g peeled potato; 20g dextrose; 20g agar; pH 5.6) by spread plate method with three replications. Work was done in pre sterilized laminar flow. The plates were incubated at  $26 \pm 1^\circ\text{C}$  for 4-6 days. After incubation period, fungal colonies were isolated, counted and identified with the help of literature and was finally identified by the authorized and authentic authority. Non- sporulating strains were grouped as mycelia sterilia according to similarities in colony morphology (Taylor *et al.* 1999). Pure culture of identified fungi was maintained on agar slants.

## RESULT

Seasonal variations in the diversity of fungal species can be easily seen in the Maharajaband pond. During the winter season 258 fungal colonies were isolated from the water sample of Maharajaband pond. Out of 258 colonies fungal species, 3 fungal species (9 fungal colonies) belongs to 2 fungal genera of Zygomycotina, 3 fungal species (8 fungal colonies) belongs to 3 fungal genera of Ascomycotina, 28 fungal species (239 fungal colonies) belongs to 14 fungal genera of Anamorphic fungi, 2 fungal species (2 fungal colonies) belongs to 1 fungal genera of Mycelia Sterilia were isolated.

During summer season 206 fungal colonies were found. Out of 206 colonies, 4 fungal species (12 fungal colonies) belongs to 3 fungal genera of Zygomycotina, 4 fungal species (8 fungal colonies) belongs to 4 fungal genera of Ascomycotina, 34 fungal species (180 fungal colonies) belongs to 18 fungal genera of Anamorphic fungi, 2 fungal species (6 fungal colonies) belongs to 1 fungal genera of Mycelia Sterilia.

During rainy season 242 colonies was found. Out of 242 fungal colonies, 3 fungal species (16 fungal colonies) belongs to 2 fungal genera of Zygomycotina, 3 fungal species (5 fungal colonies) belongs to 3 fungal genera of Ascomycotina, 29 fungal species (215 fungal colonies) belongs to 17 fungal genera of Anamorphic fungi, 2 fungal species (6 fungal colonies) belongs to 1 fungal genera of Mycelia Sterilia were isolated. Tilak and Kulkarni (1972) have reported that maximum numbers of fungal species are recorded during winter season, Moderate in rainy season while minimum number of fungal species recorded in summer season. Similar result also made Tripathi (1987) and Kulshrestha and Chauhan (2001). De Hoog *et al.* (2000), and Nikaeen, (2008) are described that many species of genus *Aspergillus* are found in water.

## REFERENCE

- De Hoog, G. S; Guarru, J., Gene, J; and Figueras, M. J; 2000, “Atlas of Clinical fungi. Centraalbureau voor Schimmel cultures, Mycopathologia, Utrecht”, The Netherlands, pp 159-160.
- Dwivedi Richa, Naureen S. Khan and D. K. Shrivastava (2012), Diversity and seasonal variation of aquatic fungi from bilaspur region of Chhattisgarh Journal of Experimental Sciences 3(6):34-43.
- Khanna, D. R.; Rajni Rana; Fouzia Ishaq 2013, Mycological and physico-chemical study of a fish pond in Paniyala in Haridwar district of Uttarakhand. Environment Conservation Journal 2013 Vol. 14 No. 3 pp. 79-83.
- Kulshrestha, A; and Chauhan, S. V. S; 2001 “Aeromycoflora of some hospitals of Agra city”, Indian J. Aerobiology, 14 (1&2), pp 33-35.
- Nikaeen, M; and Mirhendi, H; 2008, “Department of Environmental Health Engineering, Faculty of Health, Isfahan. Inactivation of *Aspergillus flavus* Spores in Water by Ultraviolet Irradiation”, *World Applied Sciences Journal*, 4(4), pp 594-595.
- Shaista Parveen, S. Lanjewar, K. Sharma, U. Kutti (2011) Isolation of fungi from the surface water of river Journal of Experimental Sciences 2011, 2(10): 58-59

- Tripathi ,R. N; 1972, “Fungal airspora inside the central library of Gorakhpur University”, Water, air and soil pollution 34, pp 125-134.
- Taylor, J. E; Hyde, K. D; Jones, E. B. G; 1999, “Endophytic fungi associated with the temperate palm *Trachycarpus fortunei* within and outside its natural geographic range”, *New Phytologist*, 142, pp 335–346.
- Tilak, S. T; and Kulkarni, R. L; 1972, “Microbial contents of air inside and outside the caves at Aurangabad”, *Curr. Sci.* 23, pp 850-851.
- Tiwari, K. L; Sahu, K; and Jadhav , S. K; 1995 “Aeromycoflora at Green House of Botanical garden of Science college”, *Ad. Plant Sci.*, 18 (1), pp 46-51.

**TABLE - 1: ISOLATED FUNGI FROM WATER OF MAHARAJA BAND POND OF RAIPUR, CHHATTISGARH**

S.NO.	NAME OF FUNGI	SUMMER SEASON					WINTER SEASON					RAINY SEASON				
		MAR	APR	MAY	JUNE	Total	NOV	DEC	JAN	FEB	Total	JULY	AUG	SEP	OCT	Total
1.	<b>ZYGOMYCOTINA</b> <i>Absidia Corymbifera</i>	-	-	1	1	2	1	1	1	-	3	0	1	1	1	3
2.	<i>Choanephora cucurbitarum</i>	-	-	1	2	3	-	-	-	-	-	-	-	-	-	-
3.	<i>Rhizopus oryzae</i>	-	1	1	1	3	-	-	1	2	3	1	-	1	2	4
4.	<i>Rhizopus nigricans</i>	1	2	1	1	4	1	1	1	-	3	2	2	2	3	9
5.	<b>ASCOMYCOTINA</b> <i>Ascotricha chartarum</i>	1	1	-	-	2	-	-	1	1	2	-	-	-	1	1
6.	<i>Chaetomium globosum</i>	1	1	-	-	2	-	-	-	-	-	-	-	-	-	2
7.	<i>Emericella nidulans</i>	-	2	-	1	3	1	-	1	1	3	-	-	-	2	2
8.	<i>Thielavia terricola</i>	-	-	1	-	1	1	1	-	1	3	-	-	-	-	-

S.NO.	NAME OF FUNGI	SUMMER SEASON					WINTER SEASON					RAINY SEASON				
		MAR	APR	MAY	JUNE	Total	NOV	DEC	JAN	FEB	Total	JULY	AUG	SEP	OCT	Total
9.	<b>ANAMORPHIC FUNGI</b> <i>Acremonium stictum</i>	-	-	-	-	-	1	2	-	-	3	-	1	1	-	2
10.	<i>Alternaria alternate</i>	2	1	-	-	3	1	1	-	-	2	-	-	2	-	2
11.	<i>Arthrinum pheospermum</i>	-	-	-	-	-	1	-	-	1	-	1	-	-	1	
12.	<i>Aspergillus flavus</i>	8	2	2	5	17	12	8	3	10	33	25	15	10	6	56
13.	<i>Aspergillus fumigatus</i>	8	5	-	-	13	5	8	10	15	38	6	5	5	10	26
14.	<i>Aspergillus japonicas</i>	1	1	-	-	2	-	1	1	-	2	1	-	2	4	7
15.	<i>Aspergillus luchensis</i>	4	2	-	1	7	5	6	5	15	31	5	1	-	-	6
16.	<i>Aspergillus niger</i>	10	5	15	3	33	30	21	13	12	76	30	10	20	12	72
17.	<i>Aspergillus nidulans</i>	2	1	-	-	3	-	-	1	3	-	-	-	-	-	
18.	<i>Aspergillus terreus</i>	3	2	1	-	6	4	4	2	1	11	6	2	-	1	9
19.	<i>Aspergillus ustus</i>	-	-	1	1	2	-	-	-	1	1	-	-	-	-	-
20.	<i>Cladosporium cladosporioides</i>	6	7	1	3	18	20	2	-	-	22	-	-	-	-	-
21.	<i>Cladosporium sphaerospermum</i>	1	3	10	7	21	1	-	-	-	1	-	-	-	-	-
22.	<i>Colletotrichum gloeosporioides</i>	-	-	1	1	2	-	-	-	-	-	-	-	1	-	1
23.	<i>Curvularia lunata</i>	1	1	-	1	3	-	-	-	-	-	1	-	-	-	1
24.	<i>Curvularia oryzae</i>	-	1	-	-	1	-	-	-	-	-	-	-	1	-	1
25.	<i>Drechslera hevalianthesis</i>	-	-	-	-	-	-	-	1	-	1	-	1	-	-	1

S.NO.	NAME OF FUNGI	SUMMER SEASON					WINTER SEASON					RAINY SEASON				
		MAR	APR	MAY	JUNE	Total	NOV	DEC	JAN	FEB	Total	JULY	AUG	SEP	OCT	Total
26.	<i>Fusarium oxysporum</i>	-	-	4	5	9	2	-	-	-	2	1	-	2	2	5
27.	<i>Fusarium pallidoroseum</i>	1	-	-	-	1	1	-	-	-	1	-	2	-	-	2
28.	<i>Fusarium solani</i>	-	-	-	-	-	-	1	1	-	2	-	-	-	-	-
29.	<i>Humicola grisea</i>	-	1	-	-	1	-	-	1	-	1	-	-	-	-	-
30.	<i>Memnoniella echinata</i>	1	-	-	-	1	1	-	-	-	1	-	1	-	-	1
31.	<i>Monilia sp.</i>	-	-	-	-	-	1	-	-	-	1	-	-	-	1	1
32.	<i>Myrothecium verrucaria</i>	-	2	1	-	3	1	-	-	-	1	-	-	1	2	3
33.	<i>Nigrospora oryzae</i>	3	-	-	1	4	-	-	-	-	-	-	-	-	3	3
34.	<i>Nigrospora sphaerica</i>	1	-	-	-	1	-	-	-	-	-	-	-	-	1	1
35.	<i>Paecilomyces varioti</i>	1	1	1	-	3	1	-	-	-	1	-	-	1	-	1
36.	<i>Penicillium chrysogenum</i>	-	-	-	-	-	-	-	-	-	-	1	1	-	-	2
37.	<i>Penicillium frequentans</i>	1	2	1	-	4	1	-	-	-	1	1	-	1	-	2
38.	<i>Penicillium multicolor</i>	1	-	-	-	1	-	-	-	-	-	2	-	-	-	2
39.	<i>Penicillium notatum</i>	-	1	2	2	5	1	1	1	-	3	2	1	-	-	3
40.	<i>Periconia sacchari</i>	1	-	-	-	1	-	-	-	-	-	-	-	-	-	-
41.	<i>Pestalotiopsis versicolor</i>	-	-	1	-	1	-	-	-	-	-	-	1	-	-	1
42.	<i>Phoma epicoccina</i>	2	-	-	-	2	1	-	-	-	1	2	-	1	-	3

S.NO.	NAME OF FUNGI	SUMMER SEASON					WINTER SEASON					RAINY SEASON				
		MAR	APR	MAY	JUNE	Total	NOV	DEC	JAN	FEB	Total	JULY	AUG	SEP	OCT	Total
43.	<i>Phoma glomerata</i>	2	-	1	-	3	1	-	-	-	1	-	-	-	-	-
44.	<i>Phoma sorghina</i>	-	-	-	2	2	-	-	-	-	-	-	-	-	1	1
45.	<i>Pithomyces chartarum</i>	1	-	2	-	4	-	-	-	-	-	-	-	-	-	-
46.	<i>Trichoderma atroviride</i>	-	1	-	-	1	-	-	-	-	-	-	-	-	-	-
47.	<i>Trichoderma viride</i>	-	1	-	-	1	-	-	-	-	-	1	-	-	-	1
48.	<i>Trichothecium roseum</i>	-	-	1	-	1	-	-	-	-	-	-	-	-	-	-
49.	<b>MYCELIA STERILIA</b> Mycelia sterilia (White)	1	-	1	2	4	-	1	-	-	1	1	-	1	1	3
50.	Mycelia sterilia (Ash)	-	1	1	-	2	1	-	-	-	1	1	-	1	1	3
	<b>TOTAL FUNGAL COLONIES</b>	65	49	52	40	206	96	59	43	60	258	89	45	54	54	242