

# ANALYSIS OF MYCOFLORA PRESENT IN AGRICULTURE COLLEGE LIBRARY OF NAGPUR

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*Abstract - Fungal spores in indoor air may come from outdoor by ventilation of they may originate within. when these spores set favourable conditions they proliferate on the book covers and cause the deterioration. The aerial survey of intramural fungal spores was carried in Agriculture college Library Nagpur for two years. The samples were collected at 15 days intervals with portable hi air sampler, simultaneously exposure petriplate method applied. Total 2930 colonies were recorded from feb. 2004 to Jan 2006 by exposure petriplate method. Total 1380 and 1350 colonies were trapped in first and second year of investigation respectively. Qualitatively 22 genera were identified. Dominant genera were Aspergillus, Cladosperium, penicillium, Curvalaria, Alternaria Chactomium, Cunninghamela, By air Sampler method. Total 16290 CFUS/M3 were trapped in two years of study. In 2004-05 total 8455 CFUs.M3 and in 2005-06 total 7835 CFUS/M3 were recorded. Comparatively in rainy season maximum incidence of fungal spore was observed followed by winter and summer season.*

**Keywords :- Myoflora, Library**

## **INTRODUCTION**

Fungal spores are always present in the atmosphere of library. Microbes in indoor air may come from the outdoor by ventilation or they may originate within. When there spores get favourable conditions they proliferate on the book covers and cause the deterioration. Biodeterioration of material is exaggerated in countries with a tropical humid climate, which favours the growth of mould on substrate. Fungal spores, always present in the great numbers in the air, are quite harmless until they find an environment in which the humidity is high, temperature warm, light subdued and nourishment abounds conditions which exist in the many Libraries.

## **Material and Methods**

The Agriculture College Library Nagpur was selected for analysis of mycoflora present in the intramural environment. The Agriculture College Library was established in 1906. Presently it has about 60,000 books arraigned in iron and wooden rocks. The aerial survey of intramural fungal spores was carried at Agriculture College Library Nagpur for two years from Feb. 2004 to Jan 2006. Samples were Collected at 15 days intervals with the help of Hi Air sampler mark II. Hi media laboratories, India. Rose Bengal Agar Strips were used in the Sampler and sampler was operated for five minutes. Fungal Concentration were expressed as a number of Colonies forming units per cubic meter air i.e. CFU/m<sup>3</sup> Simultaneously exposure Petriplate method containing C2apek's Dox Agar(CDA) fortified with strepto mycin, two times in a month. The petriplates were kept at five feet from the ground level. Petriplates and Rose bengal Ager strips were properly sealed, marked and incubated at room temperature. After 3-7 days Colonies were Observed, Counted and sub cultured for identification.

## **RESULTS AND DISCUSSION**

In the indoor environment of Agriculture courses Library Nagpur Total 2730 Colonies were recorded from feb. 2004 to Jan 2006. In the first year of investigation total 1380 Colonies and in second year 1350 colonies were trapped by exposure Petriplate method. In both year of investigation Maximum colony counts were recorded in month of July and minimum in month of may. (Table 1)

Qualitatively in this Library Total 22 genera were identified in two years of investigation out of which 17 genera belonged to deuteromycota followed by phycmycota (4 genera) and ascomycota (one genus)

Quantitatively *Aspergillus* was dominant with 29.34% Contribution to total airosporo followed by *cladosperium* 16.11% *Penicillium* 13.84%, *curvularia* 8.31% and *Alternaria* 5.64% other dominant genera were *chactomium*, *Cuuninshamella orechslera*, *Fusarium*, *Helminthosporium*, *Ruizopus Nigrospera*.

#### By Volumetric Air Sampler method

Total 16290 CFUs/m were recorded in the two years of investigation. In 2004-05 total 8455 CFUs/m<sup>3</sup> and in 2005-06 total 7835 CFUs/m<sup>3</sup> were recorded with Hi Air Sampler. In 2004-05 the maximum 970 CFUs/m<sup>3</sup> were recorded in August 2004 and minimum 395 CFUs/m<sup>3</sup> in the month of February 2004. In the second year of investigation maximum counts were 885 CFUs/m<sup>3</sup> in the month of August 2005 and least 400 CFUs/m<sup>3</sup> in the month of May 2005. (Table – 1)

Comparatively in rainy season the maximum incidence was there with 3270 CFUs/m<sup>3</sup> (38.67%) followed by winter 2895 CFUs/m<sup>3</sup> (34.24%) and summer 2290 CFUs/m<sup>3</sup> (27.08%) in the year 2004-05. In the second year of investigation in Agriculture College Library environment 3145 CFUs/m<sup>3</sup> (40.14%) were recorded in rainy season while in winter 2885 CFUs/m<sup>3</sup> (36.82%) and in summer minimum 1805 CFUs/m<sup>3</sup> (23.03%) were recorded. (Table – 2)

**Table-I:- Total Number of Colonies Recorded in Different Months of Investigation in Agriculture College Library Nagpur**

Months	Exposure Petriplate method Total No. Of Colonies		Air Sample method Total No. Of FUs/m <sup>3</sup>	
	2004-2005	2005-2006	2004-2005	2005-2006
Feb.	41	49	195	260
	40	46	200	240
March	40	44	385	245
	36	42	395	240
April	34	40	325	205
	37	39	345	215
May	37	32	240	210
	32	27	205	190
June	50	45	340	370
	76	68	360	415
July	78	84	440	385
	97	98	460	415
August	105	86	480	480
	76	73	490	405
Sept.	83	77	360	360
	55	58	340	315
Oct	66	65	380	410
	61	61	330	390
Nov.	62	63	360	485
	57	58	365	415
Dec.	57	55	345	355
	61	58	330	325
Jan	43	40	360	265
	56	42	425	240
<b>Total</b>	<b>1380</b>	<b>1350</b>	<b>8455</b>	<b>7835</b>
<b>Grand Total</b>	<b>2730</b>		<b>16290</b>	

**Table – 2:- Volumetric Air Sampling Season wise total fungal Colonies (CFU/m<sup>3</sup>) from Indoor air of Agriculture College Library Nagpur Feb 2004 to Jan 2006**

Month & Year	Season	Ave Mean Temp. °C		Avr. Mean R.H. %		Rainfall (mm)	CFUs/m <sup>3</sup>	%
		Max.	Min.	8.30 Hrs	17.30 Hrs			
Feb-May 2004	Summer	42.0	14.08	43.64	26.55	15	2290	27.08
June – Sept. 2004	Rainy	37.6	23.00	77.47	67.57	733.9	3270	38.67
Oct 2004 to Jan 2005	Winter	33.5	12.6	65.11	60.44	142.7	2895	34.24
<b>Total</b>						891.6	8455	
Feb-May 2005	Summer	43.4	16.1	41.99	24.91	33.7	1805	23.03
June ;:- Sept. 2005	Rainy	41.00	23.56	17.38	68.25	1019.8	3145	40.14
Oct – Jan 2005 to 2006	Winter	32.5	11.6	66.45	52.7	135.4	2885	36.82
<b>Total</b>						<b>1188.9</b>	<b>7835</b>	
<b>Grand Total For 2004 - 2006</b>								<b>16290</b>

**Table – 3:- Exposure Petriplate method Number of Colonies recorded in Library and their Percent Contribution to total aeromycoflora. Feb. 2004 to Jan. 2006**

S.N.	Genera	No.of Colonies			
		2004-05	2005-06	Total	%
1	Alternaria	75	79	154	5.64
2	Aspergillus	386	415	801	29.34
3	Cercospora	01	03	04	0.14
4	Chaetomium	47	34	81	2.96
5	Cladosporium	222	218	410	16.11
6	Cunninghamella	22	19	41	1.50
7	Curvularia	116	111	227	8.31
8	Drechslera	37	41	78	2.85
9	Fusarium	18	13	37	1.13
10	Helminthosporium	37	13	50	1.83
11	Mucor	15	12	27	0.98
12	Nigrospora	32	04	36	1.31
13	Paecilomyces	04	04	08	0.29
14	Penicillium	191	187	378	13.84
15	Pithomyces	11	16	27	0.98
16	Rhizoctina	01	02	03	1.10

<b>17</b>	<b>Rhizopus</b>	18	22	40	1.46
<b>18</b>	<b>Stemphyllum</b>	19	04	13	1.47
<b>19</b>	<b>Syncephalastrum</b>	02	07	09	0.32
<b>20</b>	<b>Torula</b>	11	08	19	0.69
<b>21</b>	<b>Trichoderma</b>	19	17	36	1.31
<b>22</b>	<b>Trichothecium</b>	04	-	04	0.14
<b>23</b>	<b>Sterile mycelia</b>	76	86	162	5.93
<b>24</b>	<b>Yeast</b>	26	35	61	2.23
	<b>Total</b>	<b>1380</b>	<b>1350</b>	<b>2730</b>	

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