

Indoor Aeromycoflora of Rice Mill Tilda in Summer Season

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Abstract: Fungi in indoor air are responsible for causing adverse health effects. Exposure to fungi has been reported to cause irritations, allergies, toxic effects and aspergillosis. In present investigation, gravity petriplates method used for aeromycological survey of Rice Mill Tilda in summer season. The survey conducted for a period of one year from June-2010 to May-2011 (Twice a month for a year). During summer season 47 fungal species (213 fungal colonies) belonging to 25 fungal genera were found. Unknown fungi was absent during this season. It was also reported that fungal species like *Aspergillus niger*, *Aspergillus fumigatus*, *Aspergillus japonicas*, *Cladosporium* was more prominently occurs in all types of environment.

Key Words: *Aspergillus*, Meteorological Parameters, Relative humidity, Rice mill

I. Introduction

Aerobiological studies have received much attention recently because of applications in the field of allergy, dispersal of pathogens and allied aspects of microbiology. Since fungal spores constitutes the major component of the air-born spore-flora, hence the study of aero mycology is highly significant. Some spores of the fungi are responsible for allergy, since the spores are inhaled and deposited on sensitive mucosa. Many allergic human diseases such as asthma, rhinitis and a range of cardio-respiratory diseases are attributed to inhalation of airborne fungal spores and pollen grains. Air is most vital component of an environment without which nobody can survive. India and other developing countries have experienced a progressive degradation in air quality due to industrialization, urbanization, lack of awareness, number of motor vehicles, use of fuels with poor environmental performance, badly maintained poor roads and ineffective environmental regulations.

II. Material & Methods

For study of aeromycoflora over the plants, 5 petriplates containing PDA (potato ,dextrose, agar) media were used. The petriplates were exposed over Rice Mill area (Photo plate-1) for 5-10 minutes, then this petriplates were brought in to the laboratory and incubated at 28±10C for 5 to 7 days. After incubation period, number of colonies was counted, and identification done with the help of available literature and finally identified from authentic authority like : National centre of fungal taxonomy Delhi. For ecological studies, at the end of the incubation period percentage frequency and percentage contribution of isolated fungal flora was calculated (Jadhav et al., 1994, Sharma 2001, Saluja 2005, Lall 2008).

For ecological studies, at the end of the incubation period percentage frequency and percentage contribution of isolated fungal flora was calculated (Sharma 2001) with the help of the following formula:

$$\text{Percentage frequency} = \frac{\text{Number of observation in which a species appeared}}{\text{Total number of observations}} \times 100$$

$$\text{Percentage contribution} = \frac{\text{Total No. of colonies of a species in all observations taken together}}{\text{Total number of colonies of all species}} \times 100$$

III. Result & Discussion

During the investigation period total 47 fungal species (213 fungal colonies) belonging to 25 fungal genera were found. Out of 47 fungal species, 4 fungal species (6 fungal colonies) belongs to 4 fungal genera of Zygomycotina, 4 fungal species (8 fungal colonies) belongs to 3 fungal genera of Ascomycotina, 37 fungal species (193 fungal colonies) belongs to 17 fungal genera of Anamorphic fungi, 2 fungal species (6 fungal colonies) belongs to 1 fungal genera of Mycelia Sterilia. Unknown fungi was absent during this season.

3.1 Monthly Variation :

During the month of March a total of 20 fungal species (98 fungal colonies) belonging to 12 fungal genera were isolated. Out of 20 fungal species, 1 fungal species (1 fungal colony) belongs to 1 fungal genera of Zygomycotina, 2 fungal species (5 fungal colonies) belongs to 2 fungal genera of Ascomycotina, 16 fungal species (89 fungal colonies) belongs to 8 fungal genera of Anamorphic fungi, 1 species of (3 fungal colonies) belongs to 1 fungal genera of mycelia sterilia.

In the month of April a total of 14 fungal species (38 fungal colonies) belonging to 11 fungal genera were isolated. Out of which 1 fungal species (1 fungal colony) belongs to 1 fungal genera of Zygomycotina, 1 fungal species (1 fungal colony) 1 fungal genera of Ascomycotina, 11 fungal species (34 fungal colonies) belongs to 8 fungal genera of Anamorphic fungi, 1 species of (2 fungal colonies) belongs to 1 fungal genera of Mycelia sterilia.

In the month of May a total of 16 fungal species (25 fungal colonies) belonging to 11 fungal genera were isolated. In this month 1 fungal species (1 fungal colony) belongs to 1 fungal genera of Zygomycotina, 1 fungal species (2 fungal colonies) 1 fungal genera of Ascomycotina, 13 fungal species (21 fungal colonies) belongs to 8 fungal genera of Anamorphic fungi, 1 species of (1 fungal colony) belongs to 1 fungal genera of Mycelia sterilia.

In the month of June a total of 21 fungal species (52 fungal colonies) belonging to 14 fungal genera were isolated. In this month 3 fungal species (3 fungal colonies) belongs to 3 fungal genera of Zygomycotina, 18 fungal species (49 fungal colonies) belongs to 11 fungal genera of Anamorphic fungi.

Table- A: Monthly Variation In The Fungal Colonies Isolated From Indoor Aeromycoflora Of Site

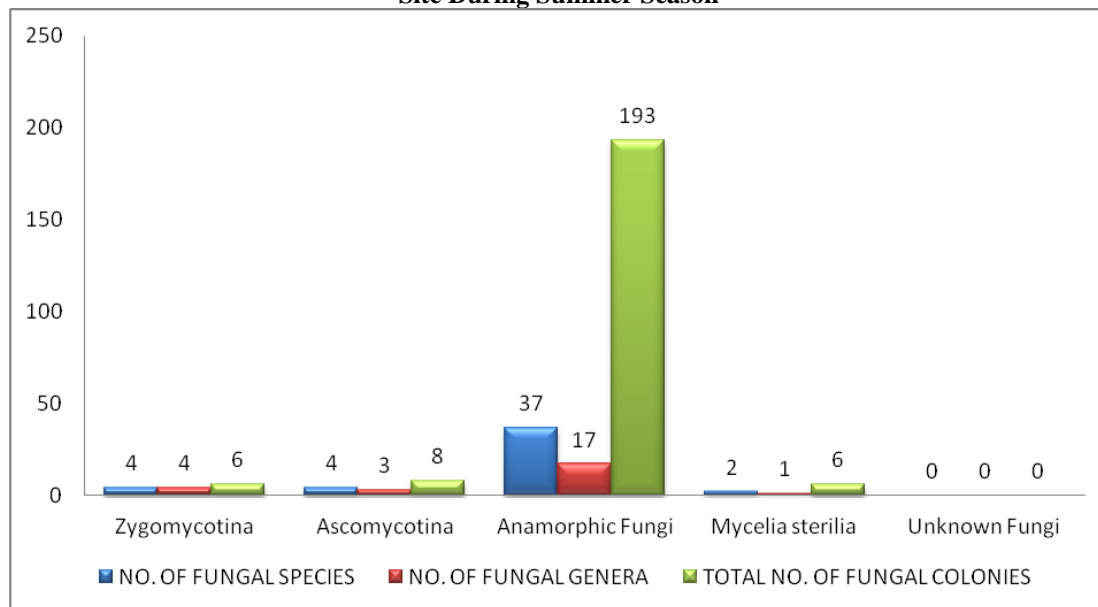
S. NO.	NAME OF FUNGAL GROUPS	SUMMER SEASON			
		Mar	Apr	May	Jun
1.	Zygomycotina	1	1	1	3
2.	Ascomycotina	5	1	2	-
3.	Anamorphic Fungi	89	34	21	49
4.	Mycelia sterilia	3	2	1	-
5.	Unknown Fungi	-	-	-	-
GRAND TOTAL		98	38	25	52

Table-B : Monthly Variation In The Fungal Species And Fungal Genera Isolated From Indoor Aeromycoflora Of Site

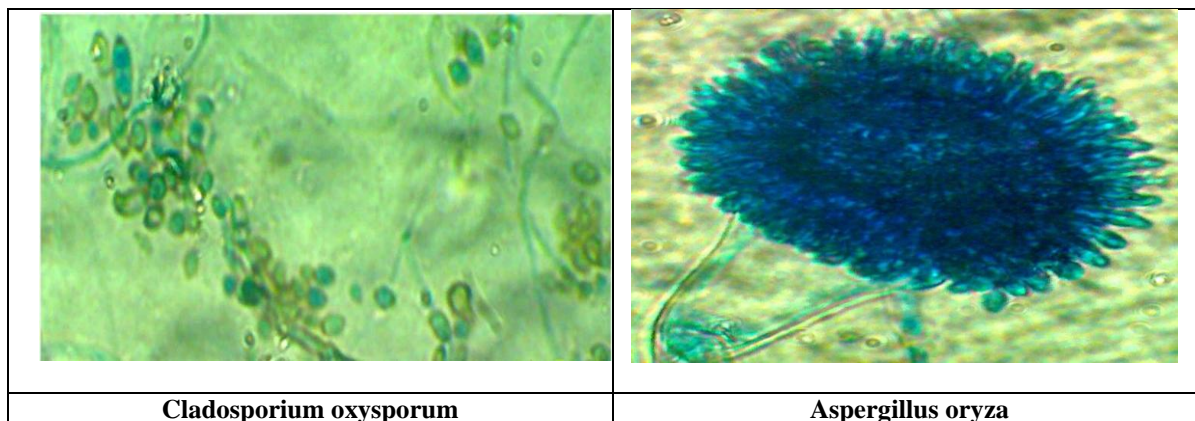
S. NO.	NAME OF FUNGAL GROUPS	SUMMER SEASON							
		Mar		Apr		May		Jun	
		S	G	S	G	S	G	S	G
1.	Zygomycotina	1	1	1	1	1	1	3	3
2.	Ascomycotina	2	2	1	1	1	1	-	-
3.	Anamorphic Fungi	16	8	11	8	13	8	18	11
4.	Mycelia sterilia	1	1	1	1	1	1	-	-
5.	Unknown Fungi	-	-	-	-	-	-	-	-
GRAND TOTAL		20	12	14	11	16	11	21	14

*S=Species, G=Genera

Graph : Seasonal Variation Of Indoor Aeromycoflora Of Site During Summer Season



Isolated fungi :



IV. Conclusion

The present study reveals the presence of diverse mycoflora in rice mill. The aerobiological studies are mainly concerned with the interrelationships between the biological components in the atmosphere, sources of biological components, their release in the atmosphere, their deposition and impact on health of plants and animals including human beings. Airborne infections and the resulting diseases threaten the lives and productivity of plants. Airborne diseases still pose a challenge to mankind.

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