

## “Prevalance of Deuteromycotina Spores in the Vegetable Market at Nashik”

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**Abstract :** *The aerobiological studies of various scientists in India have shown that the richness of fungal spores in the atmosphere is due to variety of climate and vegetation in different regions of India. It has been estimated that fungal spores contribute a major portion to the air-spora. Considering this the fungal air spora of vegetable market in Nashik was decided to investigate .The present studies will be carried out by operating Tilak air sampler in a vegetable market of Nashik. Investigation of fungal spore was done during the period of one year i.e. from 1<sup>st</sup> Dec. 2012 to 30<sup>th</sup> Nov. 2013. During the present investigation a total number of 32 biocomponents were recorded out of which 2 belong to Phycomycotina, 8 to Ascomycotina, 3 to Basidiomycotina, 15 to Deuteromycotina and 4 to other types. Deuteromycotina contributed the highest percentage followed by Basidiomycotina, Ascomycotina and Phycomycotina. Most of the dominant fungal spore types from the Deuteromycotina group recorded were Aspergillus, Cladosporium, Alternaria, Curvularia, Dreschlera, Nigrospora, Smut spore, Rust spore, Torula etc.*

**Keyword:** *Aerobiology, fungal spore, Tilak Air Sampler.*

### 1. INTRODUCTION:

The present investigation has shown the presence of bioparticles in the air and also the dominance of fungal spore around the Vegetable market, Nashik. It shows that fungal spore composition and concentration is affect by metrological parameter, which is responsible for the dispersal and distribution. The study of the airspora of the Vegetable market highlights the presence of pathogenic, potential pathogenic and allergic spore in the Vegetable market. Thus it is anticipated that such aerobiological investigation are essential and must be carried out continuously to study the different aspects of the viable pathogenic spores, potential pathogenic spores and aeroallergence present in different area. This type of investigation is also useful in providing an efficient forecasting system for agricultural crops.

### 2. LITERATURE REVIEW:

Recently many workers give their contribution relevant to this topic, Arsule C.S. and Pande B.N. (2011) reported these spore group at Newasa (M.S.). Ahire Y.R. (2012) reported these spore group over vegetable and fruit market at Pune. Jagtap J.D. and Suryawanshi N.S. (2016) reported these spore group over onion storage and field respectively at Nashik district (M.S.).

### 3. MATERIALS AND METHOD:

Aeromycological studies were decided to carry out in a vegetable market at Nashik during a period of Dec.2012-Nov2013 by using Tilak Air Sampler, which provides the data of components of airspora. Tilak air sampler was installed at a constant height of 3-4 feet from ground level in the vegetable market. After sampling slides were prepared and scanning of prepared slides was regularly done. The identification and description of spore types is essentially based on visual identifications by spore morphology, comparisons with reference slides. The slides were scanned under Binocular research microscope. The fungal spores and other components were identified by referring published literature (Tilak, 1989) and reference slide prepared. The counting of spores was done by using 'short transverse' method of Hirst (1954). The total exposed area was scanned under the microscope with 10X-45 X eyepiece objective combinations.

### 4. RESULT AND DISCUSSION:

During the period of investigation maximum spore load and spore types was represented by the class Deuteromycotina. Deuteromycotina was represented by of 15-spore types. This group contributed 73.15% to the total airspora and thus forms the largest contributor. Deuteromycotina was represented by Alternaria, Aspergillus, Cladosporium, Curvularia, Dictyosporium, Diplodia, Helminthosporium, Nigrospora, Papularia etc. These spores occurred throughout the period of investigation. These spores have been referred to "airspora dominant". Among the Deuteromycotina spore types Cladosporium contributed the maximum i.e. 19.16% to the total airspora.

*Aspergillus* was recorded throughout the investigation and contributed 3.76% to the total airspora. Maximum concentration 13.97% was recorded in August 2013 and minimum concentration 5.25% was recorded in October 2013. *Aspergillus* is important from the pathogenic point of view. According to Rippon (1924) about 8 species of *Aspergillus* have been authenticated as causes of this diseases complex viz. aspergillosis in cattle, birds and human being. Aspergillosis a primary respiratory and occasionally generalized infection caused by species of *Aspergillus* specially *A. fumigatus*. Aspergillosis is a granulomatous necrotic and cavitary diseases of lungs often with hematogenous spread to other organ.

Beside *Aspergillus* other fungal spore type viz. *Alternaria*, *Cladosporium*, *Curvularia*, *Helminthosporium* etc. reported belongings to Deuteromycetes are considered to be allergic.

*Cladosporium* is responsible for causing Chromomycosis. Chromomycosis is a localized chronic mycosis of skin and subcutaneous tissue (Edmonds et. al. 1979). Ridley (1957) isolated *Cladosporium carronii* from wood and produced an experimental lesion in a volunteer. *Cladosporium* are almost ubiquitous on decaying leaves and are often the most numerous spores in air sampler (Gregory 1963).

In the correlation study of meteorological parameters and prevalence of the different spore type of Deuteromycotina fungi, high humidity and moderate temperature helped in crossing the spore concentration and liberation and release of the spores in atmosphere of the Vegetable market.

## 5. ANALYSIS:

**Table -1-Variation in the percentage contribution of the different spore types to the total air spora**

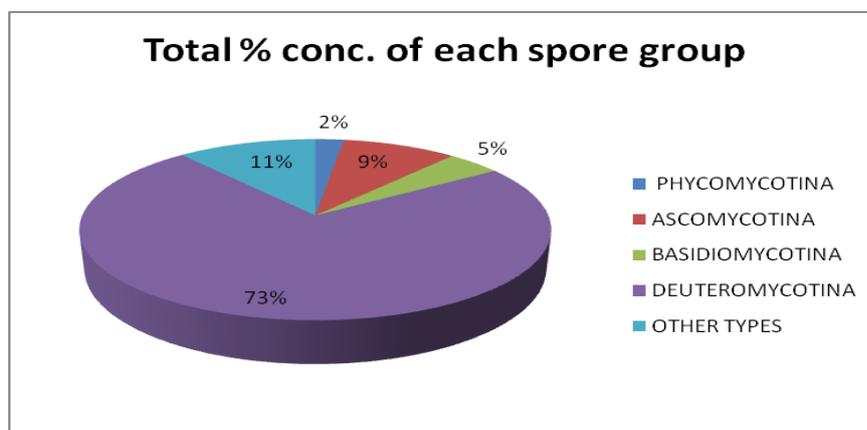
Name of the Spore	Percentage Contribution
<b>I] PHYCOMYCOTINA</b>	
1. <i>Cunninghamella</i> Matr.	0.50
2. <i>Rhizopus</i> Enrenb	1.78
<b>II] ASCOMYCOTINA</b>	
1. <i>Chaetomium</i>	3.20
2. <i>Hysterium</i> Tode ex.Grev	1.24
3. <i>Melanospora</i> Corda.	1.05
4. <i>Meliola</i>	0.22
5. <i>Rosellina</i> Ces.and de.Not.	0.30
6. <i>Pleospora</i>	2.68
7. <i>Teichospora</i>	0.22
8. <i>Xylaria</i>	0.21
<b>III] BASIDIOMYCOTINA</b>	
1. Smut spores	1.69
2. Rust spores	1.96
3. Uredospore	0.70
<b>IV] DEUTEROMYCOTINA</b>	
1. <i>Alternaria</i> Nees.	15.72
2. <i>Aspergillus</i> Mach ex.Fr.	3.76
3. <i>Cercospora</i>	3.27
4. <i>Cladosporium</i> Link.	19.16
5. <i>Curvularia</i> Boed.	2.91
6. <i>Dictyosporium</i>	0.61
7. <i>Diplodia</i> Fr.	2.94
8. <i>Drechslera</i> Ito.	2.23
9. <i>Fusarium</i>	0.96
10. <i>Helminthosporium</i> Link.	6.34
11. <i>Heterosporium</i>	0.27
12. <i>Nigrospora</i> Zimm.	11.30
13. <i>Papularia</i> Fr.	0.47
14. <i>Spegazzinia</i>	1.61
15. <i>Torula</i>	1.59
<b>V] OTHER TYPES</b>	
1. Hyphal Fragments	5.08
2. Insect scales	0.97

3.Pollen grains	4.49
4. Unidentified spores.	0.55
<b>Total</b>	<b>100</b>

**Table -2-Total percentage contribution of each spore group**

Name of the Spore	Total % contri.
I] PHYCOMYCOTINA	2.28
II] ASCOMYCOTINA	9.12
III] BASIDIOMYCOTINA	4.35
IV] DEUTEROMYCOTINA	73.15
V] OTHER TYPES	11.09
Total	100

**Graph-1-Total percentage contribution of each spore group**



## 6. CONCLUSION:

The present investigation has highlighted the Biodiversity of the airborne bioparticles present in the air of the Vegetable market. It also shows that the fungal spores are the major component. The waste matter, litter and vegetation seem to be the sources of the fungal spores and other bioparticles.

The investigation has also highlighted the presence of pathogenic, potential pathogenic and allergic bioparticles. Which have a close coordination with metrological parameters. Out of these *Alternaria*, *Aspergillus*, *Cladosporium*, *Rhizopus*, *Dictyosporium*, *Diplodia*, *Helminthosporium* etc. are frequently abundant in the outdoor air of Vegetable market. They are known as the allergens, which caused bronchial asthma, bronchial allergy, allergic rhinitis and other irritant diseases. Though these fungal spores and bioparticles have not shown immediate effect on the area but their presence have been confirmed through this investigation and may affect the susceptible persons in that area.

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