

# CONCENTRATION OF ASCOSPORE OVER TOMATO FIELD

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## ABSTRACT

The aerobiological investigation was carried out by using continuous Tilak air sampler over Tomato field during rabbi season (1<sup>st</sup> November 2015 to 15<sup>th</sup> January 2016). In this investigation in all 57 types were recorded of which 51 were fungal spore types and remaining 06 constituted other biological forms. Ascomycetes group contributed 12 spore types and the total number of ascospores were recorded during the season 15094 spores/ m<sup>3</sup> of air. Maximum number of ascospores were recorded during the season in the month of November 2.62% / m<sup>3</sup> of air and minimum in the month of December 0.98%/m<sup>3</sup> of air. It becomes very clear that the ascospores occur and increased in the concentration after the onset of rain or high humid concentration.

**Key words- Rabbi season, Tilak air sampler, Ascospore.**

## INTRODUCTION

Air is the mixture of various gases, water vapour and solid suspended particles. The organisms in air come from different sources i.e. soil, organic wastes, dead and decaying substrata and infected hosts. Vegetables are next to cereals in importance to human beings as food and also play very important role in the human diet. There is greater demand for vegetable from urban population than from rural population hence most of the vegetables required are grown in areas closer to the town and cities. The vegetables are easily attacked by pests and diseases therefore more attention needs to be given to the diseases of vegetable crops in the field at harvest, in storage and in market places for developing suitable control measure Bagwan<sup>1</sup>(2001).

In present investigation air sampling was carried out for rabbi season (1<sup>st</sup> November 2015 to 15<sup>th</sup> January 2016) over Tomato (*Lycopersicon esculentum* Mills) field at Udgir Dist. Latur (MS). Tomato is one of the important vegetable and adds colour and flavours to the foods. Tomato seeds contain 24% oil and this is extracted from the pulp. It has also medicinal value. Ascospore increased in number after the onset of rain or high humid concentration and infect Tomato crop therefore the present study deals with the air spora analysis of pathogenic and non pathogenic fungal spores over Tomato field and this investigation would be used further in establishing disease forecasting system for the prevention avoidance and treatment of Tomato diseases.

## MATERIALS AND METHODS

The air sampling was carried out for rabbi seasons from 1<sup>st</sup> November 2015 to 15<sup>th</sup> January 2016 by operating Tilak air sampler. The sampler was kept at constant height of 4 feet in Tomato field and running on an electric power. The exposed tape was divided into 16 equal parts each part representing the spore catch of alternate day and night. Glycerine jelly used as amounting media. The scanning of slides containing air borne catches was done regularly. The identification and confirmation of spore types was made by referring standard literature and books of the authors Tilak<sup>2</sup> (1989), Barnett and Hunter<sup>3</sup>(1972), Mukadam<sup>4</sup>(1997), Dube<sup>5</sup>(1978).

## RESULT AND DISCUSSION

In the investigation of Tomato field in all 57 types were recorded of which 51 were fungal spore types and remaining 06 constituted other biological forms which included hyphal fragments, insect parts, pollen grains, protozoan cysts and unclassified group. Out of 57 air borne components 01 belongs to Phycomycetes, 12 to Ascomycetes, 04 to Basidiomycetes, 34 to Deuteromycetes and 06 other types.

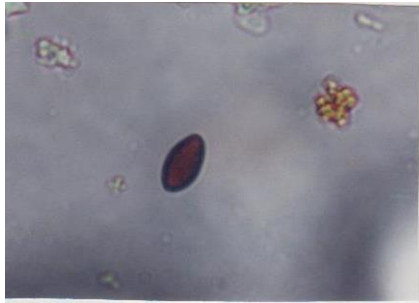
During present investigation the spore types belonging to Deuteromycetes group having highest percentage contribution 80.18% to the total air spora followed by other types 13.43%, Ascomycetes 4.66%, Basidiomycetes 1.71% and Phycomycetes 0.02% over Tomato field.

The group Ascomycetes contributed 12 spore types Table I and ranked third in the order of dominance. Table II. The presence of many ascospore types in the air spora revealed the abundance of parasitic and saprophytic forms in and around the field. The ascospores occur and increased in the concentration after the onset of rain or high humid condition. The Ascospore type Bitrimonospora, Leptosphaeria, Pleospora and Sordaria (Plate I & II) appeared in the air very commonly at high humid conditions. Similar observation was made by Ingold<sup>6</sup>(1965) and concluded that little rainfall leads to abundant release of ascospores. Total number of ascospores observed during the season 15094 spores/m<sup>3</sup> of air. Maximum number of ascospores were recorded during the season in the month of November 2.62%/m<sup>3</sup> of air and minimum in the month of December 0.98%/m<sup>3</sup> of air. The ascospore types were collected only when the environment was favourable for their formation and release. Most of the ascospores showed their maxima in the rainy period and their number were found to be dependant on the occurrence and amount of rainfall rather than on the vegetation in the area. In case of Leptosphaeria it was observed that spores occurred normally during the night hour and their presence was continued during the wet period. Rees<sup>7</sup>(1964), Kulkarni<sup>8</sup>(1971), Pande<sup>9</sup>(1974), Lakhe<sup>10</sup>(1980) and Nagpurne<sup>11</sup>(1993) recorded similar observation about the release of ascospore.

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Chaetomium

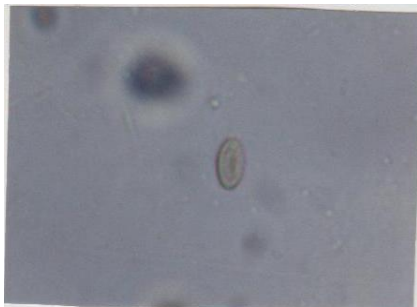
Plate I



Didymosphaeria



Lophiostoma



Erysiphae



Leptosphaeria



Plate II



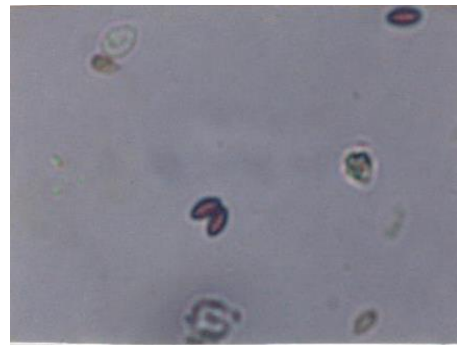
Pleospora



Sporormia



Sordaria



Xylaria



**Table I**

**Incidence of different spore types and their percentage contribution to the total air spora over Tomato field during the season.**

No.Sr.	Spore type	% contribution to the total airspora
1	Bitrimonospora	0.03
2	Chaetomium	0.48
3	Didymosphaeria	1.35
4	Erysiphae	0.03
5	Hypoxyton	0.004
6	Leptosphaeria	0.02
7	Lophiostoma	0.17
8	Pleospora	0.13
9	Pringshemia	0.20
10	Sporormia	0.16
11	Sordaria	2.07
12	Xylaria	0.06

**Table II**

**Concentration and percentage contribution of spore group during the period of investigation of Tomato field**

<b>Sr. No.</b>	<b>Spore Group</b>	<b>Total spora</b>	<b>Percentage</b>
<b>1</b>	<b>Phycomycetes</b>	<b>98</b>	<b>0.02</b>
<b>2</b>	<b>Ascomycetes</b>	<b>15094</b>	<b>4.66</b>
<b>3</b>	<b>Basidiomycetes</b>	<b>5614</b>	<b>1.71</b>
<b>4</b>	<b>Deuteromycetes</b>	<b>254316</b>	<b>80.18</b>
<b>5</b>	<b>Other group</b>	<b>42910</b>	<b>13.43</b>