
AEROMYCOLOGICAL STUDIES OVER SUNFLOWER FIELD AT UDGIR REGION (M.S.)

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Abstract:

The present paper deals with aerobiological investigation carried out with continues Tilak air sampler aiming to determine the concentration of airspora over sunflower field in Udgir region. The period of investigation was carried out from July to October 2016. The incidence and percentage contribution of individual spores was recorded separately.

During present investigation total 32 fungal spore type and 3 other types were recorded. Occurrence of some of the dominant spore type in decreasing order are *Cercospora*(13.22%), *Aspergillus*(9.52%), *Alternaria*(7.34%), *Nigrospora*(7.34%), *Leptosphaeria*(7.16%), Rust spore(6.58%), *Cladosporium*(4.23%), *Claviceps*(4.23%), Smut spore(4.23%), *Fusarium*(3.29%), *Curvularia*(3.23%), *Bitrimonospora*(2.46%) and Basidiospore(2.46%). Out of these spores some are pathogenic to Sunflower (*Helianthus annus* L.) causes disease and are responsible for considerable losses in yield of sunflower crop. These studies are helpful to provide information towards disease forecasting system.

Introduction:

Aerobiology is a scientific and multidisciplinary approach focused on the transport of organisms and bio -components came into use since 1930 as a collective term for the studies of airborne fungal spores, pollen grains, hypal fragments, insect parts and other airborne microorganism. Aerobiological research in its various aspects thus has opened almost new vistas of investigations which for a rapid growth must be dealt with in co-coordinated manner involving Agriculturists, Plant Pathologist, Allergists, Entomologists and Metrologies from all institutes of country. The study of fungal spore is of great significant due to its role in the field of human allergy and plant diseases, Agrwal M.K.(1969).

The present investigation deals with the airspora over Sunflower field at Udgir region. Udgir is a taluka place in latur district is situated at 18.23'46"N and 77.07'03"E latitude. Average rainfall is 600to 800mm, relative humidity varies from 30 to 80% and temperature ranges from 24⁰ C to 39⁰ C this is usually during monsoon month from July to October 2016.

Our agricultural crops however continuously influences from various diseases out of which fungal diseases are dominant in this connection. Agriculture and allied sciences aim at maximum production and that needs matching of production technology with protection technology like other oilseed crop, sunflower crop was subjected to airborne fungal diseases, Pande(1976), Bhalke(1981), Patil(1985).

Sunflower (*Helianthus annus* L.)belongs to the family compositae.India is one of the largest producers of oilseed crop in the world. Oilseed occupy an important position in the Indian agricultural economy. Our country accounted for 4.77% (1250 thousand MT) of total world production of sunflower in 2004. Sunflower is subjected to various fungal, viral and pest diseases. The major diseases are airborne. Present investigation focused on airospora over sunflower crop and more stress has been given of fungal components of airospora.

Material and Methods:

The Aerobiological investigation was carried out by using Tilak Air Sampler (Tilak and Kulkarni 1970) was installed in the middle of sunflower crop field at 1m height from July to October 2013 during kharif season at Udgir region. The apparatus was operated continuously for 24 hours every week for entire study period. After air sampling the cellotape was removed and equally divided into equal segments each piece of the tape thus obtained represents air sampling for twelve hours, day and night respectively. Each segment was mounted on clean glass slide with glycerin jelly and covered with cover slip. Scanning was done regularly after slide preparation under 10 x 45 eye piece objective combination of binocular research microscope.

Result and Discussion:

The present investigation in relation to general airspora studies over sunflower field (*Helianthus annuus* L.) was carried out for kharif season from July to October 2016. Using Tilak air sampler in order to study the correlation between airborne microbial components, weather parameters, different growth stages of crop and their subsequent effect on disease incidence on the crop. In all total 32 fungal spore types and other types were recorded it include Fungal fragments, Insect parts, and Pollen grains. Table I shows the recorded spores classified under their respective groups, arranged in alphabetical order. Under each respective group along with their percentage contribution over the sunflower field.

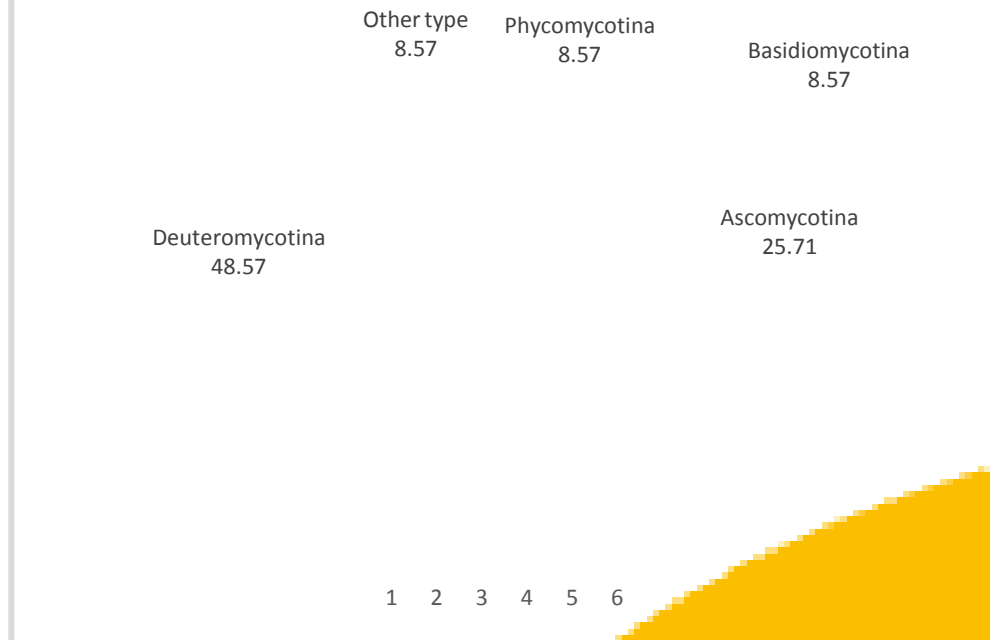
In present study 32 fungal spore type and other 3 type were recorded, out of which 3 belong to Phycomycotina, 3 to Basidiomycotina, 9 to Ascomycotina and 17 to Deuteromycotina. The group Deuteromycotina is the dominant group and represented by 48.57% of total airspora. The next dominant group is Ascomycotina which respresented by 25.71% of airspora. It is followed by Basidiomycotina 8.57%, Phycomycotina 8.57% and 8.57% belonging to other(mainly Hyphal fragments, Insect part and pollen grains). Occurrence of some of the dominant spore type in decreasing order are *Cercospora*(13.22%), *Aspergillus*(9.52%), *Alternaria*(7.34%), *Nigrospora*(7.34%), *Leptosphaeria*(7.16%), Rust spore(6.58%), *Cladosporium*(4.23%), *Claviceps*(4.23%), Smut spore(4.23%), *Fusarium*(3.29), *Curularia*(3.23%), *Bitrimonospora*(2.46%) and Basidiospore(2.46%). Similar observation were recorded by Rangaswami G. Mahadevan A.(2006), D.S. Jadhav et.al(2010), Mali N.S. and Gaikwad Y.B.(2011), Arsule and Pande(2012) and Manjusha Shinde and Minkshi Mahajan(2013).

It was observed that occurrence of spore is increased in humidity and moderate temperatures due to heavy rainfall have been found to increase spore load in atmosphere. Occurrence of spore in air was in correlation with unpredictable changes in weather parameters.

Total Occurrences of Spore Occurred During Kharif season (2016) over Sunflower crop

Sr.No.	Spore Type	Spore Total	% Contribution
1.	Phycomycotina		
	<i>Albugo</i>	250	1.46
	<i>Mucor</i>	150	0.88
	<i>Rhizopus</i>	370	2.17
2.	Basidiomycotina		
	Basidiospore	420	2.46
	Smut spore	720	4.23
	Rust spore	1120	6.58
3.	Ascomycotina		
	Ascospore	115	0.67
	<i>Bitrimonospora</i>	350	2.46
	<i>Claviceps</i>	450	4.23
	<i>Hypoxyton</i>	110	0.64
	<i>Hysterium</i>	221	1.29
	<i>Leptosphaeria</i>	1220	7.16
	<i>Pleospora</i>	520	3.05
	<i>Sordaria</i>	120	0.70
	<i>Sporormia</i>	90	0.52
4.	Deuteromycotina		
	<i>Alternaria</i>	1250	7.34
	<i>Aspergillus</i>	1620	9.52
	<i>Biospora</i>	350	2.05
	<i>Cercospora</i>	2250	13.22
	<i>Cladosporium</i>	720	4.23
	<i>Curvularia</i>	550	3.23
	<i>Diplodia</i>	255	1.49
	<i>Diplocladiella</i>	10	0.05
	<i>Fusariella</i>	105	0.61
	<i>Fusarium</i>	560	3.29
	<i>Haplosporella</i>	70	0.41
	<i>Helminthosporium</i>	270	1.58
	<i>Heterosporium</i>	240	1.53
	<i>Nigrospora</i>	1250	7.34
	<i>Pithomyces</i>	85	0.49
<i>Pseudotorula</i>	121	0.71	
<i>Spemospora</i>	90	0.52	
5.	Other Type		
	Hyphal fragment	470	2.76
	Insect part	420	2.46
	Pollen grains	450	2.64

Occurance of fungal spore and other
Aerobiocomponents during kharif (2016) season
over Sunflower field



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