



REGULAR ARTICLE

## AIRSPORA OVER GROUNDNUT FIELDS AT KALAMB

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### SUMMARY

In the present investigation, a groundnut (*Arachis hypogea* L.) crop field was selected for the aerobiological study for two years. The systematic aerobiological survey was conducted by using volumetric Tilak air sampler (Tilak and Kulkarni – 1970) for a period of two rainy crop seasons and two summer crop seasons. In the present investigation, 71 airborne fungi were isolated and identified, of the 71 spore types, 41 spore types belong to Deuteromycetes, 17 to Ascomycetes, 4 to Basidiomycetes, 3 to Phycomycetes, and 6 to other types. The percentage contribution of each spore type to the total air spora of two seasons is calculated.

**Key words:** Airspora, *Arachis hypogea*, aerobiology, Tilak air sampler

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### 1. Introduction

Groundnut or peanut (*Arachis hypogea* L.) is an important oil seed crop in many tropical and warm temperate regions of the world. Oil seeds account for one ninth of the total agricultural production in India. Groundnut kernels contain upto 50% of non-drying oil and about 35% proteins. Shelled groundnuts are directly consumed as food and also used as an ingredient in several food preparations and confectionary.

Groundnut is subjected to various fungal, viral and pest diseases. The diseases are airborne and soilborne. Major airborne diseases are Tikka disease caused by *Cercospora arachidicola* Hori and *Cercosporidium personatum* (Berk and Curt.) Deighton, rust disease caused by *Puccinia arachidis* Speg. Other airborne minor diseases like leaf spots of *Leptosphaerulina crassica* (Sechet) Jackson and Bell, *Alternaria alternata* (Fr.) Keissler and *Myrothecium roridium* Rode ex Fr. are of the lesser importance at present.

Tikka disease is the common foliar disease of the groundnut and occurs in every groundnut growing country in the world. The rust disease was first reported in 1971 from Panjab (Chahel and chahan, 1971) and now it has been spread throughout the country. Woodroof (1933) studied the Tikka

disease. Shanta (1960) studied the role of environmental factors on Tikka disease incidence and survival of pathogens. Sulaiman and Agashe (1965) investigated effect of climatic factors on Tikka disease incidence.

However, during present investigation more emphasis has been laid on the fungal components of air spora. Such aerobiological investigations would be useful for obtaining an efficient forecasting system and preventing groundnut crop from the attack of disastrous airborne diseases.

### 2. Material and Methods

In the present investigation air monitoring survey was carried out by using volumetric Tilak air sampler (Tilak and Kulkarni, 1970).

Tilak air sampler was installed for operation in a two acre field of Groundnut at a height of 2 (two) feet above the ground level for air monitoring for four consecutive seasons.

Kalamb town is located in Osmanabad district of Maharashtra state in India. It is situated between the latitude 18°4'. North and 76°1', East longitude.

### 3. Results

In the present investigation, 71 total types of airborne components were trapped. Out of these, 3 belonged to Phycomycetes, 17 to Ascomycetes, 4 to Basidiomycetes, 41 to Deuteromycetes and 6 to other types.

So far as contribution of the fungal spores, group is concerned, the group Deuteromycetes (77.00%) stood first in order of dominance followed by the other types (10.13%), Basidiomycetes (7.34%), Ascomycetes (4.62%) and Phycomycetes (0.91%). The other types group significantly contributed to the total airspora with the airborne components like hyphal fragments, insect parts, pollen grains, protozoan cysts, *Parthenium* pollen and unclassified group of spores.

During this investigation along with parasitic fungi, saprophytic fungi, hyphal fragments, insect parts, pollen grains, protozoan cysts were also recorded. All these

types were kept as individual groups initiate further categorization into types. Phycomycetes showed lowest concentration in both rainy summer seasons.

The variation in the concentration of different components of air spora was studied in relation to the meteorological parameters.

From Table -I- it indicates that Deuteromycetes group is predominant in both summer seasons, followed by the other types, Basidiomycetes, Ascomycetes and Phycomycetes.

From Table -II- it is revealed that Deuteromycetes group stood first in order of dominance followed by the other types, Basidiomycetes, Ascomycetes and Phycomycetes.

From Table -III- It shows that Deuteromycetes group is predominant in summer as compared to rainy-season.

Table - I: Total airspora and percentage contribution of each spore group during the period of investigation (First summer season from 1<sup>st</sup> April 2006 to 30<sup>th</sup> July 2006 and second summer season from 1<sup>st</sup> March 2007 to 23<sup>rd</sup> June 2007)

Spore Group	Total Spora		Percentage		Average %
	Season I	Season II	Season I	Season II	
	Phycomycetes	33474	13846	00.74	
Ascomycetes	127960	66780	02.86	03.26	03.06
Basidiomycetes	286832	157430	06.38	07.64	07.01
Deuteromycetes	3697386	1541386	82.38	75.18	78.78
Other types	343084	271474	07.64	13.24	10.44
Total	4488736	2050916	100.00	100.00	100.00

Table - II: Total airspora and percentage contribution of each spore group during the period of investigation (First rainy season from 23<sup>rd</sup> August 2006 to 27<sup>th</sup> November 2006 and second Rainy season from 13<sup>th</sup> July 2007 to 6<sup>th</sup> November 2007)

Spore Group	Total Spora		Percentage		Average %
	Season I	Season II	Season I	Season II	
	Phycomycetes	30240	32956	00.78	
Ascomycetes	147574	196462	03.80	08.56	06.19
Basidiomycetes	266574	194992	06.88	08.50	07.68
Deuteromycetes	3107636	1610910	80.14	70.28	75.21
Other types	325920	257096	08.40	11.22	09.81
Total	3877944	2292416	100.00	100.00	100.00

Table - III: Total airspora and percentage contribution of each spore group during the period of investigation i.e. Two summer seasons- (First - 1/3/2006 to 30/07/2006 and Second- 1/3/2007 to 23/6/2007).and Two rainy seasons-( First - 23/8/2006 to 27/11/2006 and - Second- 13/09/2007 to 6/11/2007.)

Spore Group	Total Spora		Percentage		Average %
	Summer Season	Rainy Season	Summer Season	Rainy Season	
	Phycomycetes	47320	63196	00.71	
Ascomycetes	194740	344036	03.06	06.19	04.62
Basidiomycetes	444262	461566	07.01	07.68	07.34
Deuteromycetes	5238772	4718546	78.78	75.21	77.00
Other types	614558	583016	10.44	09.81	10.13
Total	6539652	6170360	100.00	100.00	100.00

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