



AN AEROMYCOLOGICAL SURVEY OVER GROUNDNUT FIELD

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ABSTRACT

An extramural survey of airborne microbial components was conducted over the groundnut field (*Arachis hypogaea* L. var. SB-13) at Peravurani, Thanjavur District. In order to assess the disease incidence to the crop by pathogenic spore types. Over a period of six months survey, a total number of fungal spores encountered were 15 belonging to Phycomycetes, Basidiomycetes and Deuteromycetes. The major species were *Aspergillus fumigatus*, *Aspergillus niger*, *Aspergillus oryzae*, *Cladosporium* spp. and *Penicillium* spp. The airborne spores of *Cercospora personata*, *Cercosporidium* sp., *Puccinia* spp. and *Alternaria* spp. were found to be pathogenic causing huge losses to the groundnut.

INTRODUCTION

Arachis hypogaea is an important oil seed crop belonging to leguminous family. Ground nut plant is easily affected by Tikka disease, caused by *Cercospora personata* and *Cercospora arachidicola*. It is also affected by rust disease caused by *Alternaria alternata* and *Leptosphaevulina crassiacca*. Along with this, various other types of fungi were also reported.

The present paper deals with the survey of various types of fungi over the groundnut field.

MATERIALS AND METHODS

Tilak's continuous volumetric air sampler was employed in for collection of fungal spores in the present study (Tilak & Kulkarni 1970). Survey of fungi was carried out by operating Rotorod air sampler weekly (between 8.30 a.m. and 9.30 a.m.) for the period of September 2002 to January 2003. Simultaneously petri plates containing PDA medium as substrate were exposed at sampling locations once in a month for 10 minutes in order to collect cultivable fungus.

RESULTS AND DISCUSSION

Fifteen types of fungal spores belonging to three different classes were reported (Table 1). Dominant types of fungal spores and their percent contribution over the groundnut field are given in Table 2 and Fig. 1.

The spores of *Alternaria* spp. contributed significantly to the total airspora by contributing 5.09%. Concentration of these spores was continuous throughout the investigation. Their maximum incidence was seen in the month of November 2002. The highest spore catch was observed on 21st December 2002.

The spores of *Cercosporidium* spp. contributed 0.33% to the total airspora over the crop field. Prevalence of this species and disease incidence was found to be more. The spores of *Puccinia* spp. were 0.41%. But the frequency of occurrence of *Myrothecium* spp. spores was irregular. Their total concentration was observed to be 355/m³ of air by contributing to the total airspora in the crop field.

Table 1: Occurrence of various fungal spores over the groundnut field.

	Class	Name
I.	Phycomycetes	<i>Rhizopus oryzae</i> <i>Rhizopus nigricans</i> <i>Mucor racemosus</i>
II.	Ascomycetes	<i>Xylaria</i> spp. <i>Hypoxyton</i> spp. <i>Chaetomium globosum</i>
III.	Deuteromycetes	<i>Aspergillus fumigatus</i> <i>Aspergillus niger</i> <i>Aspergillus flavus</i> <i>Alternaria alternata</i> <i>Penicillium sclerotium</i> <i>Puccinia</i> spp. <i>Cercosporidium</i> sp. <i>Cercospora arachidicola</i> <i>Cercospora personata</i>

Tilak (1988), Mullaiah (1989) and Aher et al. (2002) have clearly brought out the close relationship between the spore load of pathogen in air, growth stages of the crop, meteorological factors and disease incidence. The weather parameters were favourable for the initiation of the disease, but the crop variety grown in the field (*Arachis hypogaea* L. var. SB-13) was found to be highly resistant for disease incidence during the periods when the crop was growing in the fields and, therefore, the crop was found quite healthy during this investigation period.

Table 2: Percentage contribution of aeromycological flora over the groundnut field.

Spore type	Spore concentration m ³ of air	Percentage contribution
<i>Puccinia</i> spp.	308	0.41%
<i>Alternaria</i> spp.	955	5.09%
<i>Cercosporidium</i> spp.	278	0.33%
<i>Myrothecium</i> spp.	395	0.58%

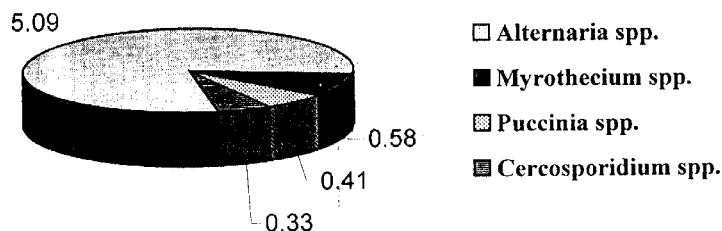


Fig. 1: Percentage contribution of fungal flora over the groundnut field.

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