

Prevalence of Fungal Spore During Kharif Season Over the Groundnut Field from Ausa District Latur

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Abstract: In the present investigation spore catching was done by using Tilak's continuous air sampler and Petri Plate exposure Method. Air sampler is instrument used for sampling of air or air monitoring. Varieties of such samplers with variable efficiency are available and selected as per requirement and components of aerospora. In present investigation air monitoring over groundnut crop was carried out by Volumetric Continuous Tilak Air Sampler. It is being used extensively for qualitative and quantitative analysis of the microbial content over groundnut at Ausa, The present investigation deals with the diversity of fungal spores in Groundnut field. The aerobiological investigation carried out by using Tilak air sampler to determine the concentration of airspora over Groundnut field in Ausa region. The period of investigation was carried out from June 2018 to Oct 2018.

Keywords: Groundnut, Tilak air sampler, fungal spores

I. INTRODUCTION

The tikka leaf-spot (*Cercospora arachidicola* and *C. personatum*) and the collar- rot (*A. pulverulentum* and *Aspergillus niger*) are important diseases of groundnut. Rust (*Puccinia arachidis*) has been occurring in a serious form in recent years in certain groundnut growing areas (Smith, D.H., Pauer, G.D.C., and Shokes, F.M. 1992). In groundnut, fungi cause foliar diseases such as rust and early and late leaf spots. Seed rots and seedling diseases. Many soil inhabiting fungi infect and damage the seed and germinating seedlings of groundnut. They may be identified by fungal spores that give characteristic colorations to the seed, e.g. gray spores indicate *Rhizopus arrhizus*, black spores are *Aspergillus niger*, and green or blue spores are *Panicillium sp.* The fungus, *A.flavus*, produces aflatoxin which causes aflaroot of groundnut. The most commonly occurring foliar diseases of groundnut caused by fungi are rust (*Puccinia arachidia Speg.*) lateleaf spot (*Cercosporidium personatum*) recently renamed (*Phaeoisariopsis peraeonata Berk & Curt*), and early leaf spot (*Cercospora arachidicola Hori*). Rust and late leaf spot are important diseases in India and most of the semi-arid tropic (SAT) regions. Early leaf spot is an important disease in Africa, particularly in southern Africa Among the diseases, early blight, caused by the fungus *Alternaria solani*, is one of the most important and frequent diseases of the crop nation- and worldwide (Subrahmanyam and McDonald1983) The present investigation deals with the airspora over Groundnut field at Ausa region.

II. MATERIAL AND METHODS

The investigation was carried out by using Tilak Air Sampler. The Tilak air sampler is an electric device. It contains rotating drum on which cello tape of 1.5 cm Width is fixed and on its nonstick end petroleum jelly is applied. It was installed in the middle of Groundnut crop field at 1m height from June 2018 to Oct 2018 during Kharif season at Ausa region. The apparatus was fixed at such a place so it can operate continuously for 24 hours every week for entire study period. After air sampling the cello tape was removed and equally divided into sixteen 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 which is prepared in laboratory according to proportion as per aerobiology manual of Tilak S.T and covered with cover slip. Scanning was done regularly after slide preparation under 10 x 45 eye piece objective combination of binocular research microscope.

III. RESULT AND DISCUSSION

During the investigation LGN-123 Variety of Groundnut was under cultivation. The sampling was done from 6th June 2018 to 4th Oct 2018. In second Kharif season June 2018 to October 2018 the total catches were 59. The Deuteromycetes contributes as dominant group consisting 31 types fungal spore catches i.e. [62.14%] followed by Ascomycetes [17.34%] consisting 14 types of fungal spores and Zygomycetes consist 4 types of fungal spores [2.39%], Basidiomycetes 4 types of fungal spores [10.78%] Oomycetes 2 types of spores [0.65%] and other groups consist 4 types type of groups the contributed [6.67%] %. During investigation at Wagholi, the total spore concentration was 284310/m³. (Table 1 and Fig-1)

Table 1: Indicates the total airspora (m³ /of air) and % contribution of each spore group in two consecutive Kharif seasons over groundnut field at Wagholi and AUSA

Sr .No	Spore Group	Total airspora/m ³ (Kharif Second)	Percentage contribution %
1	Zygomycetes	6822	2.39
2	Ascomycetes	48929	17.34
3	Basidiomycetes	30728	10.78
4	Deuteromycetes	176958	62.14
5	Oomycetes	1860	0.65
6	Other Types	19013	6.67
	Total %	284310	100

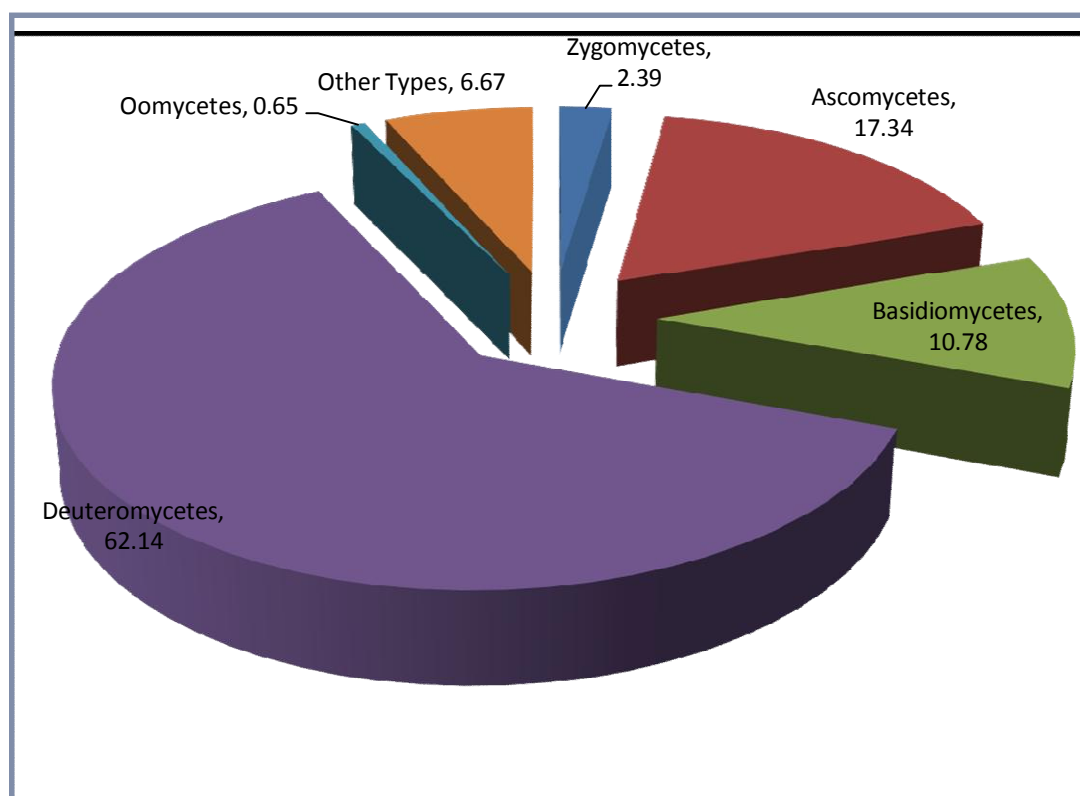


Fig-1

Deuteromycetes-This group was recorded with the highest number of spore types, i.e. 31 in season. Their spore count was relatively higher than other groups. *Cladosporium* in the present investigation it was trapped throughout the period of investigation and it is one of the common and dominating components of airspora. Its dispersal is slow and some mechanical activities are responsible for its dispersal. Gregory (1961) found that mist over mechanism play major role in the conidial dispersion of *Cladosporium* and other types such as *Alternaria*, *Helmithosporium*, *Curvularia*, and *Nigrospora* mainly depend on wet and dry seasons. Similar result found by Patil (1985) noted it under day spora with



one peak at 16 hrs and subsidiary peak at 12 hrs. Mahajan (1995) recorded two peaks at 12 hours and 16 hours. Cholke (2007) recorded its peak at 14 to 16 hrs and subsidiary peak at 10 to 12 hrs indicating day spore pattern. In Kharif season dominance of Basidiospore during October can be correlated to the dry spell immediately followed after the heavy rainfall. A moderate relative humidity and average temperature might be responsible for the outbreak of Basidiospore. The release and spread of Basidiospore mostly depends on short dry spells. Occurrence of rust spores, during the period of investigation was continuous. However, there was a record of moderate incidence of rust disease on crop. High percentage of relative humidity and moderately low temperature are found to be congenial in increasing the concentration of these spores in atmosphere. These findings are in accordance with Tilak (1982).

IV. CONCLUSION

It was noticed that the groundnut cultivation in Marathwada region received a setback due to various diseases of common occurrence such as (*Puccinia arachidis*) has been occurring in a serious form in recent years in certain groundnut growing areas. In groundnut, fungi cause foliar diseases such as rust and early and late leaf spots. Due to this factor present investigation has been taken for two consecutive years from Latur district to study the entire microbial population over groundnut field and to find out correlation between occurrence of air-spore components, especially pathogenic fungal spores and disease incidence. During the present investigation the special importance was given to plant pathogens, which occurred in the atmosphere. A special attention was given to detect the source of the plant pathogenic fungal spores, their dispersion in the air, deposition over the plant surface and ultimate influence on the host.

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