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Fungal Spores of Soybean field, Rajuri (N), Dist. Beed.

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ASTRACT

Fungal survey was carried out in the Soybean (Glycin max L.) field for a period of Kharip Seasons from 25nd June 2019 to 30th September 2019. For trapping the fungal spores. Tilak air sampler was used. During the investigation the aeromicroflora population includes large number of fungal spores, pollen grains, inscect parts etc. The result showed incidence of varieties of fungal spores in the environment. In this investigation 61 spores were identified during the period of survey. In the Kharip seasons the most dominant spores were *Cladosporiun* ***(14.28%)Al****ternaria* (11.37%), *Cercospora* (1.28%), *Curvularia* (7.32%), *Helminthosporium* (7.50%), *Periconia* (1.20%), *Rust* spores (5.98%), *Nigrospora* (4.97 %).

Key word : Soybean field, Tilak air sampler, fungal spores.

Introduction

The aerobiological studies are recent origin in India. In Maharashtra and Marathwada credit for developing the aerobiological research work goes to prof. Tilak S.T. Very few crops have been investigated so far. In Marathwada reagion, the climate is relatively moderate average rainfall is 650mm in monsoon. Temperature ranges from 20^0c to 38^0c, relative humidity varies from 30 to 70 % .For effective management of crop diseases, it is desirable to study the prevalence of air spora in this reagion. This is achieved by aerobiological study. Hence these observation could be helpful for the treatment of diseases (allergic as well as agriculture).

Crop diseases caused by airborne mycosporophytes constitute another important aspect of agriculture. Our agriculture crops, however continuously influence from various diseases, out of which fungal diseases are dominant in this region. In a study of airspora of Soybean fields, observed different types. Among them the *Alternaria*, *Cladosporium*, *Cercospora*, *Curvularia*, *Rust* spores,

Helminthosporium, Periconia, Nigrospora were dominant ones. In view of the above facts qualitative and quantitative airborne spores was worked out.

Material and Method

In the present study, Tilak Air sampler was implemented to find out the availability of casual microbes of blight and leaf spot diseases in the Soybean field of 10 acres of land area. Tilak air sampler is an electrically operated machine which runs on electric power supply of (AC 230 V) & provides a continuous air sampling data for eight days. Sampler was kept with its orifice at constant height of 1 meter above the ground in the Soybean field. The air was sampled at the rate of 5 liters for minute & the transparent cellophane tape was fixed on the drum, coated uniformly with white petroleum jelly as adhesive. These cellophane brought to the laboratory, slides were made and scanned. Fungal spores isolation was made from these slides over Soybean Field.

Scanning

Loaded tape on each slide was divided into six equal divisions by marking it over cover slip with a pointed ball pen. Each division representing two hours air sampling. Scanning of slides was carried out under the binocular research microscope using 10X X 45 x magnification, as per the procedure mentioned by (Tilak and Kulkarni, 1970). The identification of fungal spore type was made on the basis of size, shape septation of spores using standard keys and available authentic literature.

Statistical Analysis

The total spores counted per day. The counted spores were multiplied by conversion factor 14 of Tilak Air Sampler.

Result and Discussion

Total 61 spores of different fungal spores were noted in July month. The abundant spores observed in July 2019 month were *Alternaria* (4160), *Nigrospora* (1678), *Cercosoprs (496) Curvularia* (1464), *Smut spores (372), Cladosporium (5908), Helminthosporium* (1214), *Rust spore (702), Pithomyces* (134). The Figure below revealed dominant spores found in July 2019 month.

In the month of August 2019, total 58 different spores were observed. The abundant spores found in August 2019 were *Rust spore* (5592), *Alternaria (*4982), *Nigrospora* (2790), *Curvularia* (1978), *Smut spores* (1002), *Cladosporium (8876), Cercospora (710), Helminthosporium* (7704), *Heterosporium* (1620), *Pithomyces* (848),. The dominant spores types found in the month of August 2019 are shown in figure below. And most were *Alternaria, Nigrospora* and smut spores.

In most of aeromycological survey, *Cladosporium* was as one of the most abundant aerospora reported all over world (oliveira et al., 2007). The abundance of *Cladosporium* throughout the year may be attributed to the structural features of the spores such as small size and smooth wall which favors and facilitate the transport of airborne spores.

A variation in the temperature, humidity, rainfall and wind was noted during the investigation period. *Cladosporium* species lives as sporophyte or parasite on many kinds of plants. Dry spores produced in excessive quantities can be transported over wide areas and during rainy season its concentration was low (Ebner et al., 1989). During rainy seasons ascospores count were high even on some rainless days. This is because of high incidence of ascospores was taken as indication of possible time of spore liberation.

In European countries, *Alternaria* varies between 20,000-30000 spores/year (Oliveira et al., 2007) to more than 200,000, only exceeding the levels of 300000 spores quoted for the north–western Iberian Peninsula in some areas (Mediavilla et al., 1997). In several Italian cities, high quantities of *Cladosporium* and *Alternaria* are found from May to October, reaching their maximum levels in September (Zanca, 2003). However, in areas at lower latitudes where precipitation and humidity are limiting factors, but not temperature, the spores increase in the months before and after summer (Manoharachary et al., 2005).

The month wise percentage contribution of each spore group to the total airspora revealed Deuteromycotina as highest, followed by Basidiomycotina, Ascomycotina and lowest was Zygomycotina.

The diurnal periodicity studies shows that *Chaetomium* and *Basidiospores* belongs to night spora group. The peak observed between 22 to 24 hrs in case of *Chaetomium* and 18 to 20, 22 to 24 hrs peak in

case of Basidiospore. Patil (1985), while studying its circadian periodicity has showed that the *Chaetomium* was maximum at night. Hence, he was placed them " night spora" group. He was also reported 6.14 % basidiospores to be maximum in wet season. Thus, it belongs to "wet spora" group. Mishra and Kamal (1971) reported *Chaetomium globosum* during winter only.

CONCLUSION

Aerobiological studies are very important in relation to disease forecasting, so it must be carried out continuously year round in order to study transport of plant pathogenic spores type from place to place and their ultimate role in inciting plant diseases. Pathogenic spores like *Alternaria, Cladosporium, Cuvularia, Cercospora, Rust spore and Helminthosporium* were observed in sufficiently high concentrations which were responsible for deterioration in Soybean field etc.

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