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Atomospheric Concentraon of Curvularia *Spores* Over Sunflower Fields

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ABSTRACT: ***Present paper deals with the aerobiological investigation over Sunflower fields by using Volumetric continuous Tilak Air Sampler was employed for exploringfungal air spora over a Sunflower field at Kada, Tal.Ashti and Dist.Beed.1st July to 30th September 2002 for first Kharif season and from 5th July t30thSeptember 2003 for second Kharif season. The present paper deals with airborne concentration of Curvularia spores over sunflower fields. The concentration of airborne Curvularia spores was assessed and the roles of the metrological parameters over the spore concentration were discussed. The spore concentration was maximum (7840/m3and13734/m3of air) in the month of September 2002 and August 2003during first and second Kharif season respectively.***

Keywords: Aerobiology, *Curvularia*, Air Sampler, Sunflower field

1. Introduction

Aerobiology is an interdisciplinary science which deals with the study of biological component like pollen grains, fragments of fungal spores, hyphal fragments, bacteria, viruses, algae, lichens, minute insects & insect parts, protonzoancyst, etc. In the atmosphere a biotic particulates & gases affecting living organisms have been recently included in the concept of aerobiology. The aerobiological studies are mainly concern with interrelationship between the biological component in the atmosphere, source of biological component, their release in the atmosphere, their deposition & impact on health of plants & animals including human beings. Airborne infections & the resulting diseases threaten the lives & productivity of plants. Airborne diseases still pose a challenge to mankind.

The role of fungi in causing diseases to crop plants, man, domestic animal, in bringing deterioration of food grains in storage, valuable monuments has been subject of great interest for long time. Standing vegetation has a great influence of Aerospora of any place and it changes with changes in weather. Aerobiological survey conducted in various part of India revealed richness of Aerospora.

Sunflower (*Helianthus annus* L.) is one of the most important oil seed crops being grown all over the world. It is mainly grown for its oil, which is generally for culinary purposes in preparation of vanaspati and in manufacture of soaps and cosmetics .The sunflower oil is chemically a tri-glyceride. It contains 68% linolic acid, so it is especially recommended for patients having heart troubles. Sunflower seed cake or meal is a protein reach feed and is used as a concentrate for cattle, animals like pig, sheep, goat and poultry feed. Sunflower is native of North America. In Germany and Russia it is grown on large scale. Now a day's sunflower crop cultivation has become more popular among the farmers of Marathwada region. As considering survey of this crop that since last few years sunflower is subjected to various type of fungal diseases which may be soil borne, seed borne, airborne etc. The aim of present study was to find out the atmospheric concentration of *Curvularia* and its correlation with meteorological parameters. It was with the aim to find out the important airborne pathogens, their distribution and seasonal variation in the concentration these investigationswere undertaken, the prediction of airborne fungal disease could be attempted. If well in advance information of airspora of this crop is made timely available. In view of the above fact using by continuous Volumetric Tilak Air Sampler carried out an aero mycological survey over sunflower field for two Kharif season.

2. Material and Methods

In the present investigation an exploration of airborne spores of *Curvularia*(Tilak and Kulkarni 1970) was undertaken over the fields of sunflower field for two Kharif season. Tilak Air Sampler was installed at a constant height of 1.5 meters above the ground level at Kada Tal Ashti Dist Beed (M.S.) for two Kharif season i.e. 1stJuly to 30th September 2002 for first Kharif season and from 5th July t30thSeptember 2003 for second Kharif season . The air was sampled at the rate of 5litres/minutes which left traces of deposition over cellophane tape, affixed on the outer surface of drum. The slides were prepared every offer eight days. Before the scanning, the slides were marked with a ball pen point pen in the six equal parts, each parts,indicating the spore catch of two hours of sampling period. Area of 9600sq.micron of the total area of the trace obtained was scanned under 10Xx45X eye piece objective combination of binocular research microscope.. The transformation of spore was done which was based on visual characteristics of spore such as size, shapes. The metrological data was recorded during period of investigation.

3. Result and Discussion

Spores usually 3-4 septate,olivaceous brown, ellipsoid, typically curved or bent, one of central cells distinctly larger and darker than the terminal cells, terminal cell pale. Spores smooth or verrucose, 17-45x11-20 um.

Spores occurred continuously. The spores contributed 4.47% and 620% during first and second Kharif season respectively.

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The maximum monthly mean concentration (7840/$m^3$and 13734m^3) was recorded in the month of September 2002 and August 2003 during first and second Kharif season respectively. The maximum daily mean concentration (448/$m^3$and 1260m^3) was recorded on 25th September 2002 and 1st September 2003 first and second Kharif season respectively.

Patil (1985) showed that it belongs to day sporagroup exhibiting day time double pattern showing two peaks during day time. Some of the others reports of Pady (1957), Sreeramulu (1958).Kramer et al. (1959),Pathak and Pady (1965), Turner (1966)and Shukla (1971).Ress (1964) in Brisbanerecorded0.47% spores from the total airspora which were more frequent during day time. Tilak and srinivasulu (1967), Mishra and Kamal (1971), Kulkarni (1971), Pande (1976), Tilak and Bhalke (1978), Mane (1978), Verma (1979), Shastri (1981), Patil (1983).Bhagwan (1983), Patil (1985) Venugopalachari (1986), Ramakrishna Reddy (1987), Minhaj (1988), Meghraj (1989) and Kavishwar (1990) reported the incidence of the spores in air ay different places. Thube (1992), Goud (1993), Narsimha (1996), Shinde (1996), Thite (1998) and Pawar(1998), recorded these spores over different fields. Dhimdhime (1999), reported these spores from airspora at Aurangabad. Tuljapurkar (2000), Garje (20000, Mali (2002) and Banswadkar (2002) recorded these spores over different fields. Gopan (2004) and Pathare (2005) reported 5.33% spores over sunflower fields. *Curvularia*occurred predominantly in the environment.Curvularia species are commonly found as a parasite or saprophytes on different grasses present in this area. Most species of *Curvularia*are facultative pathogen of soil, plants.*Curvularia* is mostly parasitic and saprophytic forms, being liberated from infected wood stored in forest, lumber yards and sawmill compounds. Leaf blight in Bajra due to*Curvularia* was observed by Patil et al. (1966).As well as being a contaminant;*Curvularia* may cause infections in both humans and animals.

The climatic factors generally are responsible to influence the sporadic outbreak at certain disease, however during period of present investigation did not occur. Thus the regional climate not only determines the profitable growth of crop but also influences the dangerous of disease to which crops are proned, the relation between the development of disease and weather is the basis on which incidence and occurrence of diseases can be predicted. At matter of fact, plant disease forecasting is the natural corollary of plant disease epidemiology. Thus the atmospheric microbial population in relation to phytopathology has an ample scope for further investigations. Such studies would bring many useful results like disease forecasting which would ultimately help in projecting our crop.

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