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An impact of environmental parameters on atmospheric concentration of *Cladosporium* at Kada in district Beed

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SUMMARY

The incidence of C*ladosporium* Link ex Fr. was recorded separately during exploration of airborne microbes over bajra (*Pennisetum typhoides* (Burm. F.) Stapf. & Hubb.) fields for two crop seasons during the year 2000 and 2001 using continuous volumetric Tilak air sampler spore trap, in order to estimate an impact of weather conditions on atmospheric concentration of spores of *Cladosporium*. The daily weather record of parameters like temperature, relative humidity, wind velocity and rainfall was maintained. The significance of *Cladosporium* as aeroallergens is considered. The spores of *Cladosporium* Link ex Fr. were observed in the atmosphere round the year. This spore type was found to be the most dominant as compared to other spore types in order of their concentration. The spores of *Cladosporium* being universally dominant, during the present investigation, occurred in clumps. Reports from different centers from India and abroad about the occurrence of the spores showed that the spores occur during monsoon with high humidity and low temperature. The present paper deals with the relationship between incidence of *Cladosporium* spores and prevailing weather conditions.

Key words : Air sampler, Airborne microbes, *Cladosporium, Pennisetum typhoides*.

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

Some studies in this aspect of aerobiology have been conducted by Sreeramulu and Ramalingam 1966, Tilak and Ramchandra Rao 1988, Dubey et al. 1988, Aher and Pande 2004, Pande *et al.* 1994. Studies on airspora of outdoor atmosphere provides useful information regarding the dispersal of plant pathogens, allergens etc.

Bajara is an important food crop subjected to various fungal diseases. The present paper provides a critical account of impact of weather conditions on concentration of airborne *Cladosporium* spores over bajara field.

MATERIALS AND METHODS

In the present investigation, an exploration of airborne spores of *Cladosporium* was undertaken over the fields of bajra (*Pennisetum typhoides* (Burm.F.) Stapf. & Hubb.). Tilak's continuous volumetric spore trap was employed for the present study. The air sampler was operated over the bajra fields for two Kharif seasons at Kada Tal. Ashti, Dist. Beed (Maharashtra). The instrument was operated from 23rd June to 29th September, 2000 in the first Kharif season and 19th June to 22nd September 2001 in the second Kharif seasons .

The slides were scanned for estimating the total monthly and daily concentration of the spores of *Cladosporium*. During the period of investigations, the day to day meteorological data was also recorded.

RESULTS AND DISCUSSION

The spores of *Cladosporium* are one or two celled, variable in shape and size, ovoid to cylindrical or irregular, some typically lemon shaped, 4 – 24 x 2 –4.7 um with or without constriction at septum, conidia in cluster, dark sub hyaline to pale brown. These spores were found to be the most abundant spore type as compared to other airborne micro biota in order of their concentration and hence dominated aerial population.

The high incidence of *Cladosporium* in air was due to their capability of producing spores directly on hypha and copious fruiting ability with passive mechanism of spore liberation. Beside, the gentle wind current, natural or artificial mechanical disturbances force the spores of *Cladosporium* to liberate in the air in an enormous amount, as it was already suggested by Gregory (1961).

In the first crop season, the highest monthly concentration (49070/m^3 of air) was observed in the month of August 2000 when there was record of moderate range of temperature between 21.3 to 29.4^{0}C, 47.4 to 90.7% relative humidity, 4.6 Kms/hr wind velocity and 294.2 mm rainfall. In second season, the highest monthly concentration (36750/m^3 of air) was observed in the month of September 2001 when there was record of moderate range of temperature between 21.2 to 28.8^{0}C , 64 to 93 % relative humidity, 3.8 Km /hr wind velocity and 280.5mm rainfall

The day on which there was a record of rain and high wind velocity, the concentration of *Cladosporium* spores was found to be considerably reduced, which may be due to the washing effect. Nevertheless, during the first season, the highest spores catch (2800/m^3 of air) was recorded on

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