

Atmospheric concentration of hyphal fragments and insect parts over bajra (*Pennisetum typhoids* stapf.) fields at Ahmedpur, Maharashtra

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SUMMARY

Aerobiological investigations were carried out over the bajra (*Pennisetum typhoids* stapf.) fields at Ahmedpur for two *khariif* seasons of year 2005 and 2006. Air sampling was carried out by using Tilak air sampler. Different types of hyphal fragments like short, long branched, un branched, coloured, hyaline were encountered throughout the period of investigations in both the seasons. Their percentage contribution to the total airspora was 4.11% and 2.14% in first and second seasons, respectively. Their maximum concentration in first and second *khariif* seasons was recorded as 12404/m³ and 11438/m³ of air in the months of September 2005 and August 2006, respectively. During the present study, insect scales, insect wings, insect skeleton, insect mouth parts and complete insects were trapped and all of them were considered under separate group "insect scales". The percentage contribution of insect parts to the total airspora was 3.01% and 2.92% in first and second seasons, respectively. Their maximum concentration (9702/m³ and 16898/m³ of air) was recorded in the months of September 2005 and August 2006, respectively.

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Air is one of the most important ingredients like soil and water of the environment. The biologically important pollutant of the atmosphere includes pollen, fungal spores, algal filaments etc. In addition to these the hyphal fragments and insect parts are frequently found in the atmosphere over the bajra fields.

Bajra (*Pennisetum typhoids* Stapf. and Hubb.) is most important millet grown in India. It is extensively cultivated in Marathwada region of Maharashtra state and most of the farmers are depended on the *khariif* crop season. It is mainly used as staple food. Not only the grain is valuable as stock feed but also the entire plant is important as fodder crop. In the World India is one of the leading countries for production of bajra.

Like many other crops bajra is also subjected to attack by various types of plant diseases, which cause extensive damage by reducing the grain production quality as well. The present paper deals with the occurrence and seasonal variations of hyphal fragments and insect parts in two seasons over bajra fields at Ahmedpur Distt. Latur (M.S.).

MATERIALS AND METHODS

The aerobiological investigation was carried out by operating a continuous 'Tilak air sampler' (Tilak and Kulkarni, 1970) in the Bajra fields for a period of two seasons, I (From 05/07/

2005 to 09/10/2005) and II (from 20/06/2006 to 22/09/2006) at Ahmedpur.

Air sampler was installed in the bajra fields with its orifice kept at a constant height at 1.5 meters above the ground level at Ahmedpur. Slide preparation and scanning was done for estimating air borne components and their percentage contribution per day as per the criteria given by Tilak and Srinivasulu (1967). During the period of investigations, meteorological data such as temperature, relative humidity and rainfall were maintained. The identification of spore types and other components were made with the help of standard literature by (Tilak, 1980) and Nair *et al.*, 1986).

RESULTS AND DISCUSSION

Different types of hyphal fragments like short, long, branched, unbranched, coloured, hyaline were encountered throughout the period of investigations in both the seasons. Mostly dematiaceous hyphae were recorded whether they were long or short. Maximum numbers of the hyphal fragments were thick walled and broken throughout the investigations (Table 1).

Hyphal fragments were encountered during the daytime. Their percentage contribution to the total airspora was 4.11% and 2.14% in first and second seasons, respectively.

Key words :

Insects scales,
Khariif, Bajra,
Airspora, Hyphal
fragments.

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Table 1 :

	I SEASON			II SEASON		
	%Contribution	Max. Conc.	Mini. Conc.	%Contribution	Max. Conc.	Mini. Conc.
Hyphal Fragment	4.11%	12404/m ³	406/m ³	2.14%	11438/m ³	798/m ³
Insect Parts	3.01%	9702/m ³	252/m ³	2.92%	16898/m ³	1344/m ³

Their maximum concentration in first and second *kharif* seasons was recorded as 12404/m³ and 11438/m³ of air in the months of September 2005 and August 2006 and minimum 406/m³ and 798/m³ of air in the months of October 2005 and June 2006, respectively.

Hyphal fragments were abundantly found on dry, hot and windy days. Dry and hot climate made their contact loose with the substratum while wind currents liberated them in the atmosphere and transported them from one place to other place.

Pady and Kramer (1960) and Pady and Gregory (1963) reported that some hyphal fragments are viable and form colonies and counts of hyphal fragments should be included in studies of air borne fungal population. Tilak and Bhalke (1981) reported the occurrence of the hyphal fragments in air in Aurangabad. Gopan (2004) reported 2.72% to 3.34% contribution to the total airspora over bajra fields at Beed.

During the present study, insect scales, insect wings, insect skeleton, insect mouth parts and complete insects were trapped and all of them were considered under separate group "insect scales". They were reported in the all around throughout the period of investigation.

Their contribution to the total airspora was 3.01% and 2.92% in first and second seasons, respectively. Their maximum concentration (9702/m³ and 16898/m³ of air) was recorded in the months of September 2005 and August 2006 and minimum (252/m³ and 1344/m³ of air) in the months of October 2005 and June 2006 during first and second seasons, respectively.

The high incidence of insect parts in the air was closely associated with moderate relative humidity and high wind velocity.

Jain and Datta (1990) reported that insects and insect parts were abundant during the months of November and January and merged in December and April. Bagwan (2001) reported 5.81% contribution of insect parts over airspora study of vegetable market at Udgir. Such types of observations were also recorded by Pande (2006) over bajra fields.

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