Research Paper :

Air-borne spore population of *Puccinia penniseti* in relation to rust disease of bajra at Ahmedpur

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SUMMARY

Aerobiological investigations were carried out over the Bajra (*Pennisetum typhoids*) fields at Ahmedpur for *Kharif* season of year 2005. Air sampling was carried out by using Tilak air sampler. Bajra (*Pennisetum typhoids*) var.NBH-1035 shanti is an important cereal crop. It gets affected by variety of pathogens causing heavy loss in the yield and quality. The Aerobiological investigation was carried out to find out the concentration of *Puccinia penniseti* zimm. spores in the air and its relevance to the disease incidence, meteorological parameters and growth stages of the crop. The air sampling started from 5th July 2005 to 9th October 2005. The spores contributed 4.53% to the total airspora during investigation. Their maximum concentration ($15456/m^3$ of air) was recorded in the month of September 2005. The highest spore concentration ($532/m^3$ of air) was observed on 8th September. The first incidence of rust disease was observed on 17th September 2005. In that month, comparatively low temperature and high humidity was found to be favorable for causing disease incidence and development. This investigation would be of immense use in further supplement in establishing useful disease forecasting system for the prevention, avoidance and treatment of bajra diseases.

Key words :
Rust disease,
*Puccinia
penniseti*, Bajra,
Ahmedpur

Bajra is most important millet grown in India. It is mainly used as staple food. Bajra contains all the essential nutrients of food like energy, proteins, carbohydrates, fats, iron, calcium and vitamins. Not only is the grain valuable as a stock feed but also the entire plant is an important fodder crop.

India is one of the leading countries in the world for the production of bajra next to Jowar, Wheat and rice, it is important food and fodder crop of India. Bajra is grown in maximum districts of Maharashtra. In Latur district, total area of bajra cultivation is 9500 hectors.

Like many other crops, bajra is also subjected to various types of plant diseases, which cause extensive damage by reducing the grain production quality as well (Wilson *et al.,* 1996).

Fungal pathogens play a significant role in causing the disease and bringing in the losses in yields. The major fungal disease which causes extensive damage to bajra crop in India is Rust disease caused by *Puccinia penniseti* Zimm. It is one of the most serious disease of bajra causing considerable damage to the crop resulting heavy loss in quality and quantity of the grains.

During present investigations, more emphasis was given on fungal components of airspora over bajra crop fields in order to have confirmation and rigidity to the conclusion. This study deals particularly with the airspora analysis of pathogenic spore as rust spore over bajra fields and their concentration with reference to meteorological parameters and growth stages of crop.

MATERIALS AND METHODS

Airspora studies was carried out by keeping the Tilak air sampler (Tilak and Kulkarni, 1970) in the Bajra (*Pennisetum typhoids* staff and Hubb.) field (var.NBH-1035 Shanti) at village Tambatsangvi, 4 kms away from Ahmedpur Dist. Latur. Nearly 04-05 acres of land was under bajra cultivation in *Kharif* season. The air sampling was started from 5th July 2005 to 9th October 2005.

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,

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