

## Qualitative assessment of airborne ascospores over sugarcane (*Saccharum officinarum*) field

■ N.J.M. REDDY

### SUMMARY

Aerobiological investigation was carried out with the help of air sampler over sugarcane field to find out the concentration of air borne ascospores during rainy season from 1<sup>st</sup> June to 30<sup>th</sup> September 2010 and their relation with meteorological factors, disease incidence and growth stages of crop. Out of total airspora, 18 spore types of ascospores like *Chaetomium* (1.56 %), *Dydimosphaeria* (1.52 %), *Pleospora* (1.01%), *Pringsheimia* (0.93 %), *Sordaria* (0.15 %) were recorded frequently over sugarcane field. Influence of meteorological factors on incidence of ascospores was observed.

**Key Words :** Airspora, Ascospores, Sugarcane field

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Sugarcane is the most important commercial crop, it affected by over 30 diseases some of them widespread and cause severe losses in yield. The present paper deals with the composition of airborne ascospores over sugarcane field during the rainy season *i.e.* June to September 2010. It reveals the air spores of parasitic and saprophytic ascomycetes in and around the sugarcane field. The spore catches were obtained by air sampling with the help of Tilak continuous air sampler. The air sampler was installed in sugarcane field kept at a constant height of 1.5 meters from ground level. Though all types of fungal spores were encountered only ascospores have been discussed here.

The aerobiological investigation have been carried out with the help of Tilak continuous air sampler (Tilak and Kulkarni, 1970). This air sampler runs on 230 v current and the drum present inside the air sampler complete one rotation in 8 days. The air sampler was installed at a constant height of 1.5 meters above the ground level in the sugarcane field. The air sampling was carried out throughout the period of crop life

, starting from plantation to till harvesting but only rainy reason air spora data were taken in to consideration from 01/06/2010 to 30/09/2010. Slides were prepared and scanned as per the criteria used by earlier workers (Tilak and Srinivasulu, 1967). Identification of fungal spores were made on the basis of morphological characters, reference slides and available literature.

Present investigation revealing 18 ascospores are shown in Table 1.

High frequency of ascospores were encountered only when environment was favourable for their formation and release. Some of the ascospores like *Aphiorhyncostoma*, *Claviceps*, *Leptosphaeria*, *Pleospora* and *Sordaria* appeared in the air immediately after rainfall. The present investigations clearly shown that rain fall has its immediate impact on the spore release of ascomycetes as has been reported by earlier workers. Similar observations were made by Ingold (1965) and Meredith (1961). Some of the ascospores of *Didymosphaeria*, *Pleospora*, *Pringsheimia* and *Sporormia* were recorded in dry period of the season. It was observed that during this period they mainly occurred when relative humidity increased and temperature decreased means temperature which greatly effect the development of

### AUTHOR FOR CORRESPONDENCE

N.J.M. REDDY, P.G. Department of Botany, Shri Shivaji College, Kandhar, NANDED (M.S.) INDIA

**Email:** nallajaganreddy60@gmail.com

**Table 1 : Percentage contribution of each spore type of ascospores to the total airspora during rainy season**

Sr.No.	Name of the spore type	Percentage contribution
1.	<i>Apiorhyncostoma</i>	0.15 %
2.	<i>Bitrimonospora</i>	0.31%
3.	<i>Chaetomium</i>	1.56%
4.	<i>Claviceps</i>	0.89%
5.	<i>Didymosphaeria</i>	1.52%
6.	<i>Hypoxylon</i>	0.26%
7.	<i>Hysterium</i>	0.11%
8.	<i>Leptosphaeria</i>	0.31%
9.	<i>Masseria</i>	0.05%
10.	<i>Othia</i>	0.09%
11.	<i>Pleospora</i>	1.01%
12.	<i>Pringsheimia</i>	0.93%
13.	<i>Rosellina</i>	0.62%
14.	<i>Sordaria</i>	0.76%
15.	<i>Sporormia</i>	0.15%
16.	<i>Teichospora</i>	0.17%
17.	<i>Valsaria</i>	0.21%
18.	<i>Xylaria</i>	0.37%

reproductive structures. The maximum number of ascospores were found more during the night hours than day hours. The

catches with fairly high number of ascospores indicate the preceding rain fall. Besides, the rainfall other meteorological factors like a humidity, and temperature had a profound effect in determining the concentration and dispersal periodicities of the various spore types in air. The situation shows that humid condition and moderate temperature favours the formation and release of spores. Ramalingam (1966) also reported that the maximum spore catch was related to the high relative humidity. From the above results it is clear that there is a close relationship between ascospores concentration in the air, meteorological conditions and growth stages of the crop.

These present investigations would stimulate further investigation in fungal airspora over sugarcane field.

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