



Monsoon Fungal Airspora over Banana (*Musa paradisiaca L.*) Field at Nanded

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ABSTRACT

This paper constitutes the occurrence of various types of pathogenic and saprophytic fungi during monsoon. The airspora over the banana (*Musa paradisiaca L.*) was continuously studied for a year (June 2010 – July 2011) but only monsoon airspora was undertaken in present investigation. Air sampling was carried out daily with the helping of Tilak air sampler. The airspora was with predominant spore types were of *cladosporium* (28.91%), *Alternaria* (4.06%), *curvularia* (6.47%), *Torula* (2.37%), *Aspergillus* (1.07%) contributed highest percentage to the total airspora. The main aim of these experiment is to find out the, their concentration and disease incidence in relation to the meteorological parameters and growth stages of the crop. Daily record of temperature, relative humidity and rainfall maintained throughout the period of investigation.

Keyword: Banan crop, airspora, monsoon season.

INTRODUCTION

In India and across the globe the banana (*Musa Paradisiaca. L*) is one of the most fascinating and important among horticultural crops. Its origin is south East Asia. It is the fourth most valuable food, and most exported agricultural commodities. Its worldwide totals about 2.5 billion annually. It is staple food fulfilling energy demand of large population of the world. It has major dietary essential components like carbohydrates, fibre, vitamins A, B6 and C, sugars, potassium, phosphorous, and calcium. Considering to its nutritive value it could be considered as a poor man's apple because of cheaper than other fruits in the country.

Area under cultivation of Banana in India is 3839-9038 hectares. Maharashtra is one of the major states cultivation banana i.e. 56432 hectares next to Tamilnadu. India contributes (13.42%) in the world production. The banana plants and fruits are subjected to variety of pre harvest and post-harvest diseases initiated by fungi and causing heavy losses to the banana growers in the form of yield as well as quality of the fruits.

Among all the diseases so far reported in India and elsewhere the leaf spots caused by *cordana musae* (Zimm) Hohel, leaf spot (Sigatoka) caused by *Mycosphaerella musicola* (cercospora musae), fruit rot (Rhizopus, nigricans), (Deightoniella torulose) (syed), Black tip rot (Botrydiplodia theobromae), fruit rot (verticillium sp.), pink mold rot (*Trichothecium roseum*) fungal deterioration of banana fruit (*Fusarium moniliformae*), etc. are important. The damage range varies with the banana variety and the prevailing climatic conditions.

METHODOLOGY

The present studies were continuously carries out for one year (from 1st Jun 2010 to 30 Sept. 2011). Air sampling was done with the help of Tilak air sampler with its orifice kept at height about one and half meters

above the ground level in the field of Banana at Nanded. Regular trips were made to observe the disease in the field and collected disease material to the laboratory for microscopic observation. The air sampling was for one year. But only monsoon period airspora over the banana was taken in to consider and presented here. Slides were prepared and scanned as per criteria given by earlier workers observations were made by scanning the slides for estimating the contribution of airspora components and their percentage contribution. Spore types were identified by morphological characters, reference slides, and available literature etc.

RESULTS AND DISCUSSION

The present investigation have revealed 58 types of which, 53 belong to fungal spores while five other types like hyphal fragments, insect parts, pollen,

Table 1: Percentage contribution of the different spore types to the total airspora during monsoon period (1st June 2010 to 30th Sept. 2010)

Sr. no.	Spore type	%	Sr. no.	Spore type	%
	Phycomycetes		10	<i>Cordana</i>	1.02
1	<i>Albugo</i>	0.32	11	<i>Curvularia</i>	6.47
2	<i>Cunninghamella</i>	0.29	12	<i>Dendryphion</i>	0.37
3	<i>Rhizopus</i>	0.47	13	<i>Diplodia</i>	2.08
	Ascomycetes		14	<i>Epicoccum</i>	2.71
1	<i>Claviceps</i>	0.5	15	<i>Fusarium</i>	3.06
2	<i>Chaetomium</i>	1.02	16	<i>Helminthosporium</i>	4.11
3	<i>Didymosphaeria</i>	0.79	17	<i>Heterosporium</i>	2.03
4	<i>Hypoxylon</i>	1.35	18	<i>Humicola</i>	2.39
5	<i>Hysterium</i>	1.76	19	<i>Lacellina</i>	2.07
6	<i>Leptosphaeria</i>	0.92	20	<i>Lacellinopsis</i>	1.08
7	<i>Masseria</i>	0.86	21	<i>Memnoniella</i>	0.89
8	<i>Parodiella</i>	0.77	22	<i>Nigrospora</i>	3.02
9	<i>Pleospora</i>	1.57	23	<i>Oidium</i>	0.45
10	<i>Rosellina</i>	1.32	24	<i>Papularia</i>	0.37
11	<i>Sordaria</i>	1.27	25	<i>Penicillium</i>	0.56
12	<i>Sporormia</i>	2.03	26	<i>Periconia</i>	1.72
	Basidiomycetes		27	<i>Pestalotia</i>	0.92
1	<i>Basidiospores</i>	3.06	28	<i>Pithomyces</i>	1.85
2	<i>Ganoderma</i>	1.01	29	<i>Pseudotorula</i>	1.90
3	<i>Rust spores</i>	2.70	30	<i>Spegazzinia</i>	1.20
4	<i>Smut spores</i>	2.86	31	<i>Tetraploa</i>	1.23
	Deuteromycetes		32	<i>Torula</i>	1.37
1	<i>Alternaria</i>	3.06	33	<i>Trichothecium</i>	1.96
2	<i>Ascochyta</i>	1.1	34	<i>Verticillium</i>	1.25
3	<i>Aspergillus</i>	2.70		Other Types	
4	<i>Beltrania</i>	2.86	1	<i>Hyphal Fragments</i>	3.19
5	<i>Bispora</i>		2	<i>Insect parts</i>	2.67
6	<i>Brachysporium</i>	0.27	3	<i>Pollengrain</i>	3.02
7	<i>Cercospora. musae</i>	2.35	4	<i>Protozoancyst</i>	1.07
8	<i>Cladosporium</i>	28.91	5	<i>Unclassifies Group</i>	1.94
9	<i>Colletotrichum</i>	3.01			

protozoancyst, and unclassified group. The class deuteromycetes contributed highest percentage (60.33%) to the total airspora followed by Ascomycetes (14.18%), other types (11.89%), Basidiomycetes (14.18%) and phycomycetes (1.08%).

Three members of phycomycetes were encountered during the period of present investigation with least concentration.

From the group Ascomycetes 12 spore types were recorded. The presence of many ascospores types in the airspora, shows the abundance of parasitic and saprophytic ascomycetes in and around the banana field. Maximum number of the ascospores showed their seasonal maxima in the rainy period and there number were found depended on the occurrence and amount of the rain fall rather than on vegetation in the area. The ascospores of the fungi like *Didymosphaeria*, *pleospora*, *pringsheimia* and *sporormia* were present in the day period of the season. It was observed that they mainly occurred when relative humidity increased and temperature decreased or some times because of the light or scattered showers.

Some of the ascospores occurred at night hours and confined to wet period similar observations were recorded by Rees (1964) and Kulkarni (1971) and Ingold (1965). The class basidiomycetes represented by 4 spore types to the total airspora. The highest contribution (28.91%) was made by *cladosporium* which has been always a dominant fungus everywhere in the

world. Along with *cladosporium*, *Alternaria* (4.06%), *Curvularia* (6.47%) *Nigrospora*(3.02%) and *Periconia*(1.72%) etc dominated the airspora and called as airspora dominants. These components were collected on various substances as samrophytes. The high incidence of members of deuteromycetes in air was due to their high sapro phytic ability of the various fungi *Botrydiploia*, *cordana*, *cercospora*, *helminthosporium* were responsible for initiating diseases of banana. However the disease incidence was not that much severe, though the spore types were encountered in the airspora. Pollen (3.02%) presence has shows its relation with the vegetation and total rainfall in the area Hamilton (1959) and Lacey (1962) reported influence of locality on pollen count.

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