

Studies on the mycoflora associated with the leaves of some plants

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Abstract

About twenty four diseased plants were collected from around Aurangabad city of Maharashtra State. The mycoflora on the leaf surfaces was observed by various methods such as direct observation on stained leaf, leaf wash method, spore fall method, leaf print method. About fifteen genera of different pathogenic fungi have been recorded. Potato dextrose agar media was used for growing the fungi. The some fungi which recorded are *Alternaria* spp., *Aspergillus niger*, *Aspergillus flavus*, *Cladosporium* spp., *Fusarium* spp., *Helminthosporium* spp., *Phytophthora* spp., *Pythium* spp., *Phyllactinia* spp., *Uncinulla* spp., *Urosystis* spp., *Uromyces* spp., etc. The maximum infection is by *Fusarium* spp. and *Alternaria* spp. to 13 plant species. The pathogen *Fusarium* spp. and *Alternaria* spp. are found causing disease both on same host on up to 9 different plant species.

Keywords: Mycoflora, leaf surface, pathogen, fungi

INTRODUCTION

Phylospere –(Last -1955) introduced term phyllospere to denote the leaf surface of the plants. He further advocated that phyllosphere region is similar to rhizosphere in that it is also nutritionally rich, microhabitat and provide suitable (host) substrate for the colonization and multiplication of micro-organism. The report of the intensive investigations on leaf surface mycoflora has been reported by Last and Deighton (1965).

The existence of active mycelium in the phyllosphere is a fundamental and much-discussed question (Kerling, 1958; Last & Deighton, 1965; Dickinson, 1965; 1967; Fokkema, 1968). The results of this work, as well as photographs previously published (Diem, 1970), confirm the presence on green leaves and in natural conditions of a living mycoflora (Warnock 1973).

So, many important plants like some of horticultural plants (*Abelmoscus esculantus*), Garden plants (*Jasminum officinales*, *Rosa demascanā*), Wild plants (*Xanthium strumarium*, *Cassia torā*), Medicinally very important plants (*Azadiracta indica*, *Wthania somnifera*) are studied for there phylospere. Because it is the best way to affect plant with pathogen.

MATERIAL AND METHODS

The leaves of about twenty four plants were collected from the Dr. Babasaheb Ambedkar Marathwada University and Government institute of Science campus, Aurangabad. The plant materials (leaves, flowers) were identified using the Flora of Marathwada (Naik, 1998) at Department of Botany, Government institute of Science,

Caves Road, Aurangabad (M.S.).

Mycoflora of these different twenty four plants are grown on potato dextrose agar medium in Petri plate and observed under microscope. For study of mycoflora different methods are used like, i) direct observation on stained leaf ii) leaf wash method iii) spore fall method iv) leaf print method. (Last, 1955; Ruinen, 1961; Daft & Leben, 1966; Dickinson, 1967; Rusch & Leben, 1968).

RESULTS AND DISCUSSIONS

About twenty four important diseased plants were observed (Table 1). The microscopic examination of the phyllosphere gave valuable information on the distribution and sequence of the natural mycoflora of the leaf surface. Different results were obtained by the direct observation on stained leaf, leaf washing method, spore fall method and leaf print method have been noted (Table 2). The some important fungi which recorded are *Alternaria* spp., *Aspergillus niger*, *Aspergillus flavus*, *Cladosporium* spp., *Fusarium* spp., *Helminthosporium* spp., *Phytophthora* spp., *Pythium* spp., *Phyllactinia* spp., *Uncinulla* spp., *Urosystis* spp., *Uromyces* spp., etc.

By different observation of leaves, the data indicates that the maximum infection is by *Fusarium* spp. and *Alternaria* spp. to 13 plant species (Table 3, 4) while *Curvularia* spp. and *Cladospora* spp. have infect to 8 and 7 plant spp. respectively. The minimum infections causes by *Pythium* spp, *Collatotricum* spp., *Phyllactinia* spp., *Urocystis* spp., *Uromyces* spp., *Cercospora* spp. *Penicillium* spp. and *Uncinulla* spp. to one plant species (Table 3). The pathogen *Fusarium* spp. and *Alternaria* spp. are found causing disease both on same host on up to 9 different plant species (Table 5).

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Table 1: Plants Studied for the Phyllosphere

Sr. No.	Name of the Plant	Sr. No.	Name of the Plant
1.	<i>Abesmoschus esculantus</i>	13.	<i>Euphorbia hirta</i>
2.	<i>Acacia leucophloea</i>	14.	<i>Jasminum officinale</i>
3.	<i>Achyranthus aspera</i> Linn.	15.	<i>Lantana camara</i>
4.	<i>Ailanthus excelsa</i>	16.	<i>Launaea procumbens</i>
5.	<i>Azadiracta indica</i> A. Huss.	17.	<i>Leea macrophylla</i>
6.	<i>Balanites aegyptiaca</i>	18.	<i>Matrynia annua</i>
7.	<i>Boerhavia repens</i>	19.	<i>Rosa damascene</i>
8.	<i>Butea monosperma</i>	20.	<i>Solanum virginianum</i>
9.	<i>Calatrispis procera</i>	21.	<i>Tectona grandis</i>
10.	<i>Cassia tora</i>	22.	<i>Tinospora cordifolia</i>
11.	<i>Cyamopsis tetragonoloba</i>	23.	<i>Withania Somnifera</i>
12.	<i>Dalbergia sissoo</i>	24.	<i>Xanthium strumarium</i>

Table 2: Mycoflora associated with the leaves of some plants.

Methods used for Study Phyllospere			
Direct Observation on Stained Leaf	Leaf Wash Method	Spore Fall Method	Leaf Print Method
<i>Alternaria</i> spp.	<i>Alternaria</i> spp.	<i>Alternaria</i> spp.	<i>Alternaria</i> spp.
<i>Cercospora</i> spp.	<i>Aspergillus</i> spp.	<i>Aspergillus</i> spp.	<i>Aspergillus</i> spp.
<i>Curvularia</i> spp.	<i>Cladospora</i> spp.	<i>Cladospora</i> spp.	<i>Cladospora</i> spp.
<i>Helminthospore</i> spp	<i>Curvularia</i> spp.	<i>Collatotricum</i> spp.	<i>Curvularia</i> spp.
<i>Phyllactinia</i> spp.	<i>Fussarium</i> spp.	<i>Curvularia</i> spp.	<i>Helminthospore</i> spp
<i>Uncinulla</i> spp.	<i>Helminthospore</i> spp	<i>Fussarium</i> spp.	<i>Penicillium</i> spp.
<i>Urocystis</i> spp.	<i>Pythium</i> spp.	<i>Helminthospore</i> spp	<i>Phytophthora</i> spp.
<i>Uromyces</i> spp.		<i>Pythium</i> spp.	<i>Pythium</i> spp.

Table 3: Total Frequency of Fungi Found in Phyllospere Study

Sr. No.	Name of the Fungi spp.	Out of 24 Medicinal plants
1.	<i>Fussarium</i> spp.	13
2.	<i>Alternaria</i> spp.	13
3.	<i>Curvularia</i> spp.	8
4.	<i>Cladospora</i> spp.	7
5.	<i>Aspergillus</i> spp.	5
6.	<i>Phytophthora</i> spp.	3
7.	<i>Helminthospore</i> spp	2
8.	<i>Pythium</i> spp	1
9.	<i>Collatotricum</i> spp.	1
10.	<i>Phyllactinia</i> spp.	1
11.	<i>Urocystis</i> spp.	1
12.	<i>Uromyces</i> spp.	1
13.	<i>Cercospora</i> spp.	1
14.	<i>Penicillium</i> spp.	1
15.	<i>Uncinulla</i> spp.	1

Table 4: Fungal spp. causing disease to following plants

<i>Alternaria</i> spp.		<i>Fusarium</i> spp.	
Sr. No.	Name of the Plant	Sr. No.	Name of the Plant
1.	<i>Abesmoschus esculantus</i>	1.	<i>Abesmoschus esculantus</i>
2.	<i>Acacia leucophloea</i>	2.	<i>Acacia leucophloea</i>
3.	<i>Ailanthus excelsa</i>	3.	<i>Ailanthus excelsa</i>
4.	<i>Azadiracta indica</i> A. Huss.	4.	<i>Balanites aegyptiaca</i>
5.	<i>Balanites aegyptiaca</i>	5.	<i>Boerhavia repens</i>
6.	<i>Boerhavia repens</i>	6.	<i>Butea monosperma</i>
7.	<i>Cassia tora</i>	7.	<i>Calatrispis procera</i>
8.	<i>Matrynia annua</i>	8.	<i>Cyamopsis tetragonoloba</i>
9.	<i>Lantana camara</i>	9.	<i>Lantana camara</i>
10.	<i>Launaea procumbens</i>	10.	<i>Launaea procumbens</i>
11.	<i>Leea macrophylla</i>	11.	<i>Solanum virginianum</i>
12.	<i>Withania Somnifera</i>	12.	<i>Withania Somnifera</i>
13.	<i>Xanthium strumarium</i>	13.	<i>Xanthium strumarium</i>

Table V: *Alternaria* spp. and *Fusarium* spp. causing disease both on same host

Sr. No.	Name of the Plant
1.	<i>Abesmoschus esculantus</i>
2.	<i>Acacia leucophloea</i>
3.	<i>Ailanthus excelsa</i>
4.	<i>Balanites aegyptiaca</i>
5.	<i>Boerhavia repens</i>
6.	<i>Lantana camara</i>
7.	<i>Launaea procumbens</i>
8.	<i>Withania Somnifera</i>
9.	<i>Xanthium strumarium</i>

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