

FLORISTIC STUDIES OF PYRENOAMYCETES AND LOCULOASCOMYCETES OF MOUNT ABU, RAJASTHAN

SWARN JEET KAUR

Department of Botany, University of Jodhpur, Jodhpur- 342001, India.

A systematic study of Ascomycetes particularly Pyrenomycetes and Loculoascomycetes on dead wood and twigs at Mount Abu, Rajasthan has been made.

Keywords : Pyrenomycetes; Loculoascomycetes; Systematic study; Host specificity.

Introduction

Mount Abu, the highest spot between the Nilgiris and the Himalayas is situated between 24° 31' to 24° 43' and 72° 38' to 72° 53' on the border of the arid region of the Western Rajasthan. The weather as well as the climate is dry for the greater part of the year but the temperature is always 10 to 12° lower than the neighbouring plains. The annual maximum temperature being 36° C and minimum 3° C. The annual rainfall is about 70 to 100 inches and the relative humidity reaches its maximum 99% in the months of July and August.

As far as systematic studies of fungi is concerned Chauhan (1979) and Chawla (1987) explored Hyphomycetes of Mount Abu, but only few studies are done on Ascomycetes, like Panwar (1974), Panwar *et al.* (1973) and Panwar *et al.* (1974) described some ascomycetes.

Materials and Methods

The infected dead twigs of various plants from different parts of Mount Abu were collected regularly for 2 years. For survey total area of Mount Abu was divided into 8 sites which

cover various vegetations, heights, temperature and humidity (Fig. 1). Microscopic observations were made in laboratory by squash mount method and microtome sections. All the materials are deposited at Mycology Lab., Botany Department, University of Jodhpur and numbered as JURL numbers. A part of material was sent to International Mycological Institute, Kew for identification and deposition.

Results and Discussion

The present study indicated that ratio of Pyrenomycetes to Loculoascomycetes is 5 : 7. The ratio of genera to species is 1.9 : 3. The maximum number of species i.e. six belongs to genus *Leptosphaeria*.

Maximum number of ascomycetes are reported from site 6 i.e. Gaumukh area and minimum from site 8 i.e. Orian Area (Table 1 and 2, Fig. 2). At Gaumukh wide range of height, temperature and Angiospermic vegetation is found which results in high frequency of habitisation of ascomycetes.

The present investigations have also indicated that most of the fungal forms

TABLE 1: SHOWING DISTRIBUTION OF PYRENOMYCETES AT VARIOUS SITES

S.No.	JUML Numbers	IMI Numbers	Name of Pyrenomycetes	COLLECTION SITES												
				1	2	3	4	5	6	7	8					
1.	488	192167	<i>Fracchiaca heterogenea</i> Sacc.						+						+	
2.	714		<i>Sphaerotricha fuliginea</i> (Schlecht.) Pollaci			+										
3.	479	192158	<i>Valsaria mundkurina</i> Muk. & Kapoor						+							
4.	389	189339	<i>V. bambusae</i> Kapoor & Gill	+												
5.	719		<i>Glomerella cingulata</i> (At.)			+										
6.	364	188031	<i>Coniochaeta pulveracea</i> (Ehm.) Munk.													
7.	395	189345	<i>Ceratopharia ervatamicola</i> Kar and Maity	+												
8.	461	192104	<i>C. bicellula</i> Panwar & Kaur													
9.	323	180043	<i>Valsa ceratophora</i> Tul.													
10.	558.	199218	<i>Diaporthe arctii</i> (Las.) Nils.			+										
11.	635	204342	<i>Cryptovalsa rabenhorsitii</i> (Nits.) Sacc.													
12.	368	188035	<i>Diatrypella citricola</i> Ell. & Ev.	+												
13.	373	188040	<i>Eutypa flavo-virensae</i> (pers. ex Fr.) Tul.													
14.	361	188028	<i>Eutypella rossidae</i> (B. & B.)	+												
15.	509	192188	<i>Quaternaria indica</i> Sri. & Sathe													
16.	495	192174	<i>Entosordaria spiralis</i> Muller													
17.	390	189340	<i>Apiospora montagnei</i> Sacc.													
18.	378	189328	<i>Oxydothis grisea</i> Penz. & Sacc.													
19.	521	197031	<i>Xylaria multiplex</i> (Kze.) Fr.													
20.	520	197030	<i>X. mellisii</i> (Cooke) Cooke													
21.	104	162202	<i>X. minuta</i> Panwar	+												
22.	366	188030	<i>Anthostomella spirilla</i> Panwar and Kaur													
23.	517	197027	<i>Rosellinia congesta</i> Hino. & Katumoto													
24.	355	188022	<i>Rosellinia rosarium</i> Niessl.													
25.	661	204367	<i>Hypoxyton rubiginosum</i> (Persoon ex Fries) Fries.													

Collection sites according to Fig. 1.

TABLE 2 : SHOWING DISTRIBUTION OF LOCULOASCOMYCETES AT VARIOUS SITES.

S.No.	JUML Number	IMI Number	Name of Loculoascomycetes	COLLECTION SITES									
				1	2	3	4	5	6	7	8		
26.	516	197026	<i>Leptosphaerulina lignicola</i> Panwar & Kaur			+	+						
27.	77	159631	<i>Botryosphaeria obtusa</i> (Sch.) Shoemaker				+						
28.	360	188027	<i>Didymosphaeria donacina</i> (N.) Sacc.	+									+
29.	373	188040	<i>D. obtusiscens</i> (B.&B.) Sacc.		+	+	+						
30.	392	189342	<i>D. mulleri</i> Muk. & Kapoor						+				
31.	566	199226	<i>D. fuitilis</i> (Berk & Br.) Rehm.		+	+	+						
32.	68	159622	<i>Trematosphaeria abuensis</i> Panwar & Purohit		+	+	+	+					
33.	513	197023	<i>T. aravilla</i> Panwar & Kaur		+	+	+						
34.	103	162206	<i>Massarina appendiculata</i> Panwar et al.	+	+	+	+	+					
35.	481	192160	<i>M. mucosa</i> Panwar and Kaur	+								+	
37.	571	199231	<i>M. corticola</i> (Fkl.) Holm.						+				36.
38.	248	170444	<i>Ophiobolus acuminatus</i> (sow.) Daby						+				
39.	362	188029	<i>O. compressus</i> Rehm.						+				
40.	669	204375	<i>O. herpotrichus</i> (Fr.) Sacc.						+			+	
41.	460	192139	<i>O. spirosporus</i> Ahmad						+				
42.	472	192151	<i>Herpotrichia schiedermayriana</i> Fockel			+	+						
43.	663	204369	<i>H. rhenana</i> Fockel										+
44.	555	197065	<i>Thaxteriopsis lignicola</i> Sivanesan, Panwar & Kaur								+		+
45.	357	188024	<i>Leptosphaeria abuensis</i> Panwar and Kaur			+	+	+	+		+		
46.	398	189342	<i>L. hyalina</i> Panwar and Kaur			+	+	+	+		+		

Contd...

Table 2 Contd.

S.No.	JUML Number	IMI Number	Name of Loculoascomycetes	COLLECTION SITES									
				1	2	3	4	5	6	7	8		
47.	514b	197024b	<i>L. isocellula</i> Panwar and Kaur										+
48.	497	192176	<i>L. rajasthanensis</i> Panwar and Kaur										+
49.	514a	197024a	<i>L. haemiites</i> (Roberge) Niessl.			+							+
50.	485	192164	<i>L. dotiolum</i> (Fr.) de Not			+		+					+
51.	469	192148	<i>Metasphaeria abuenensis</i> Panwar and Kaur										+
52.	572	191232	<i>Fenestella indica</i> Panwar and Kaur										+
53.	356	188023	<i>Teichospora obduscence</i> (Fr.) Fck.	+		+							+
54.	717		<i>Pleospora herbarum</i> var. <i>occidentalis</i> (Pers.) Rehm.	+		+							+
55.	515	197025	<i>P. bataanensis</i> Petrak.										+
56.	67		<i>Hysterium angustulatum</i> A1. Sch.										+
57.	678	192157	<i>Hysteroglyphium multiseptum</i> Panwar and Kaur										+
58.	367	188034	<i>Patellaria atrata</i> (Hedw.) Fr.			+							+
59.	311	188031	<i>Microthyrium eucalypticola</i> Speg	+		+							+
60.	397	189347	<i>Ellisiodothis smilacis</i> (de Not) Arr. & Muller										+

Collection sites according to Fig. 1.

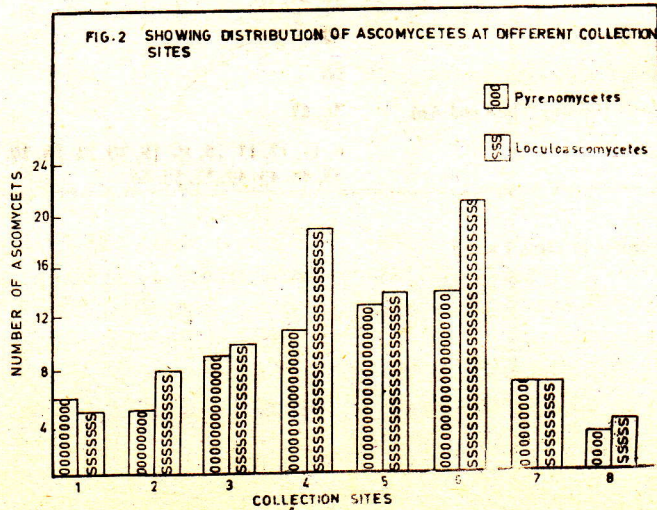
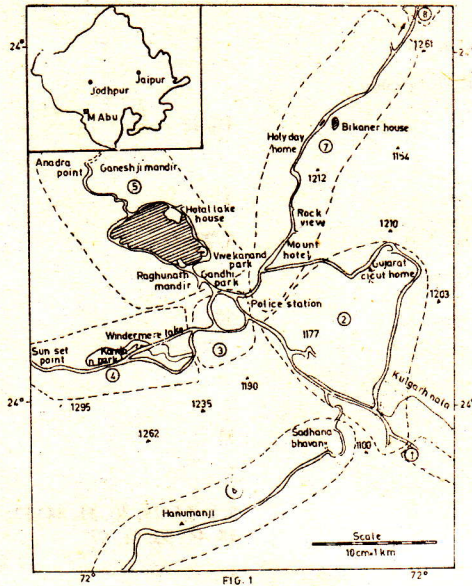
TABLE 3
SHOWING ANGIOSPERMS AND ASCOMYCETES HABITISING ON THEM.

S.No.	Name of host	Ascomycetes hosted
1.	<i>Agave americana</i> L.	27, 55
2.	<i>Artimissia nilgirica</i> Pamp.	-
3.	<i>Bambusa vulgaris</i> Schrad.	4, 17, 23,,25
4.	<i>Bauhinia variegata</i> L.	-
5.	<i>B. vulgaris</i> L.	-
6.	<i>Butea monosperma</i> (Lam.) Kutzet	-
7.	<i>Caesalpinia decapetala</i> (Roth.) Alston	-
8.	<i>Cassia tora</i> L.	10, 15
9.	<i>Dalbergia sissoo</i> Roxb.	-
10.	<i>Ervatamia divericata</i> L.	7
11.	<i>Eugenia jambolana</i> Lam.	3, 22, 58
12.	<i>Eucalyptus camaldulensis</i> Dehn.	-
13.	<i>E. sylvestris</i>	59
14.	<i>Euphorbia nerifolia</i> L.	-
15.	<i>Ficus benghalensis</i> L.	-
16.	<i>Grevillea robusta</i> Cunn.	15
17.	<i>Lagenaria vulgaris</i> Ser.	2
18.	<i>Lantana camara</i> L.	5, 8, 14, 28, 30, 31, 34, 35, 36, 40, 41, 42, 46, 47, 48, 49, 50, 51, 57
19.	<i>Mangifera indica</i> L.	1
20.	<i>Phoenix sylvestris</i> Roxb.	18, 21, 32
21.	<i>Rosa invocularata</i> R.	42
22.	<i>Smilax aspera</i> L.	60
23.	<i>Ziziphus nummularia</i> (Burm.) Wight and Arn.	56, 57
24.	Unidentified twigs	6, 11, 12, 13, 15, 16, 19, 20, 23, 26, 29, 33, 37, 38, 39, 44, 45, 49, 52, 53, 54

Ascomycetes number according to Table 1 and 2.

FIGURE 1. MAP OF MOUNT ABU SHOWING TOPOGRAPHY AND COLLECTION SITES:

1. Chhipaberi and way to Mount Abu;
2. Toll tax to Police station via Gujrat House;
3. Area covering Nursery, Pologround, Agriculture Nursery etc.;
4. Area covering Forest Rest House, Ashok Vatika, Kamla; Nehru Park, Windermere lake and way to sunse point;
5. Area around Nakhi lake up to Anadra Point;
6. Gaumukh Area;
7. Area from Bus stand to Delwara covering Quarter Guard Area; Natinal Police Academy etc.
8. Orian Area.



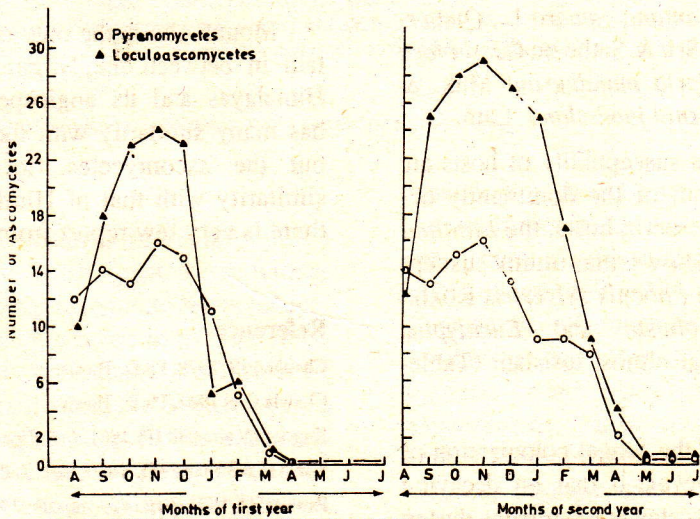


FIG. 3 SHOWING OCCURRENCE OF ASCOMYCETES DURING DIFFERENT MONTHS

have choice for a particular substratum. Many fungal forms which have been collected from different places and different climate show similarity in the choice of substratum as *Microthyrium eucalypticola* Speg. was collected on the dead twigs of *Eucalyptus* species by Stevens and Ryan (1939) and the same fungus has been observed on the same host from Mount Abu; *Pleospora batanensis* Petrak, *P. herbarum* Rab., *Ophiobolus herpotrichus* (Fr.) Sacc. and *Teichospora ob-*

ducens (Fr.) Fck. were collected from the Himalayas on *Agave americana* L., *Lantana camara* L., *Bromus ramosus* Huds. and *Dalbergia* sp. respectively by Wehmeyer (1963); Kar and Maity (1970) reported *Rosellinia congesta* H. & K. on Bamboo wood and *Ceratosphaeria ervatamicola* Kar and Maity on *Ervatamia* species from West Bengal, Tilak (1966) reported *Fracchiaria heterogenea* Sacc. on dead wood of *Mangifera indica* L. from Maharashtra, Kapoor and Gill

(1961) reported *Valsaria bambusae* Kapoor & Gill on Bamboo from Delhi; Sydow and Butler (1911) reported *Hypoxyton subiginosum* (Pers. ex.Fr.) from Bihar on Bamboo and Rose; all these species are reported on same hosts from Mount Abu. For some ascomycetes- additional host records are reported from Mount Abu like *Didymosphaeia mulleri* Mukerji & Kapoor on *Lantana camara* L., *Quaternaria indica* Sri. & Sathe on *Cassia tora* L. and *Valsaria mundkurina* Muk. & Kap. on *Eugenia jambolana* Lam.

As far as susceptibility of hosts are concerned, out of the dominantly occurring angiosperm hosts, the *Lantana camara* L. shows maximum susceptibility while *Phoenix sylvestris* Roxb., *Grevillea robusta* and *Eucalyptus* species appear almost resistant (Table-3).

Study of the fungal colonization of dead twigs revealed that on decaying wood ascomycetes predominates during winter season from August to April with maximum number from November to February. During these months dominance of Loculoascomycetes is much more than Pyrenomycetes (Fig.3). This study also confirms the pattern of succession of fungi as suggested by Sharma (1972) that on the above ground plant parts the primary colonies

in the terrestrial environment are typical leaf surface fungi, chiefly hyphomycetes which are followed by typical soil fungi and than by Pyrenomycetes. Chauhan (1979) reported maximum number of hyphomycetes from dead twigs during April to October from the same locality, and then ascomycetes appear in dominance.

Mount Abu is the only oldest mountain in between the Nilguries and the Himalayas and its angiospermic flora has many similarity with the Nilguries but the ascomycetes flora has no similarity with that of Himalayas and there is very few report from Nilguries.

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