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Foliicolous fungi: Earths Living Wealth from Shrawasti (Uttar Pradesh), India

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Abstract

During the survey of the North Tarai forests of Uttar Pradesh for Foliicolous Fungi during February, 2011 to October, 2013 in Bhinga Forest Range, Shrawasti Forest Division, Shrawasti (Uttar Pradesh, India) we came across one hundred fifteen fungal species representing forty six fungal genera inhabiting one hundred forty angiospermic host plants representing forty families. It was surprising to note and record that there are thirty nine novel fungal species and nineteen new host records.

Keywords: Foliicolous Fungi, Susceptible Hosts, Shrawasti, U.P.

Introduction

The leaves provide a very suitable habitat for the growth and development of fungal pathogen by providing ample surface area and nutrient supply. Such leaf inhabiting fungi are known as Foliicolous Fungi and the invaded area of the leaf appears as leaf spot or leaf lesion. Taxonomic studies of such fungal forms have been generally considered as only of academic interest but the taxonomic treatment of a fungal organism is the first requirement for any studies concerning its biology. Correct identification of a fungus absolutely free from ambiguities is vital for its employment in applied disciplines. In fact without being equipped for ascertaining the correct identity of a fungal pathogen all studies concerning its phyto pathological aspects would be misleading. The weed and forest plants serve as reservoirs of leaf spot pathogens which on getting opportunity may spread to agriculture and horticulture plants.

India is located to the north of an equator, lies between 8° 4' and 37° 6' north latitude and 68° 7' and 97° 25' east latitude, measures 3214 kilometers from south to north and 2933 km from east to west, the total land area being 32,87,263 square kilometers. India is the one of the twelve mega biodiversity countries of the world lying between tropic of Capricorn and tropic of Cancer, has two of the worlds eighteen biodiversity hot spots located in the Western Ghats and in the Eastern Himalayas. The Himalayas rise as a virtual wall beyond the snow line, above the alluvial plain lies the Tarai strip, a seasonally marshy zone of sand and clay soil. The Tarai region has higher rain fall than the plains, and downward rushing rivers originating from the Himalayas slow down and spread out in the flatter Tarai zone depositing fertile silt and reproductive means during the monsoon season and receding in the dry season. The Tarai, as a result has high water level and is characterized by moist subtropical conditions and a luxuriant turn over of green vegetation all the year around. The climatological and topographical conditions favor the luxuriant growth and development

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of foliicolous fungi. This North Tarai Region of U. P. is next only to Eastern and Western Ghats, as one of the hottest spots for biodiversity in general and the diversity of fungal organism inhabiting plant in particular offers an ideal opportunity for the morphotaxonomic exploration of the fungal organism in general and foliicolous fungi in particular. Keeping it in view the authors surveyed the North Tarai forests of Uttar Pradesh for Folliicolous Fungi during February, 2011 to October, 2013 in Bhinga Forest Range representing Shrawasti Forest Division, Shrawasti.

Materials and Method

During survey and collection, infected plant parts where noticed were collected carefully in the field and notes were made regarding their pathogenecity, nature of colonies, nature of infection, locality, attitude. Whenever the authors were out of station we collected samples where we noticed infection of interest and also incorporated in the list. For each collection a separate field number was given. Each infected plant parts was collected separately in polythene bags along with host twig (preferably with the reproductive parts) to facilitate the identity of corresponding hosts. These collections were pressed neatly and dried in between blotting papers. The host plants were identified by matching them with authentic herbarium material and also consulting the experts.

In the laboratory, Hosagouder and Kapoor, 1984¹ nail polish techniques were used to study the structural and morphological characters of fungi. Since the desired quality and quantity of nail polish is difficult to procure from the market, this problem is eased by preparing a xylene thermocol solution. Five ml or desired quantity of xylene poured in a container, very bright and clean thermocol cut into minute pieces, added to xylene, mixed thoroughly till getting it to a particular consistency and poured it into air tight bottle for the use. A drop of xylene – thermocol solution applied on the selected colonies, carefully thinned the help of a fine brush without disrupting the colonies.

The treated colonies along with their host plants kept in dust free chamber for half an hour. When the applied solution dried, a thin colorless “film” or flip was formed with the colonies firmly embedded in it. The flip was lifted up with a slight pressure on the upper side of the leaves and just below the colonies on an edge of the flip eased and subsequently the entire flip peeled-off by using the thumb nail finger of the left hand. In case of hard host plants, the flip was eased off with the help of a razor or scalpel. A drop of DPX was added on a clean slide and flip was spread properly on it. Care was taken to avoid air bubbles while mounting. One or two more drops of DPX were again added on the flip and clean cover glass brings out the excess DPX and it was removed after drying. These slides were labeled and placed in dust free chamber for one or two days for drying. Slides were prepared in cotton-blue lacto phenol mixture and were examined. Camera Lucida drawings were made and the morpho taxonomic determination of the taxa was done using available literature. The fungal taxa were identified using microscopic preparation. The fungal holotype specimen had been either deposited for allotment of accession number from HCIO or in process. The mycobank no. from the Fungal Database Nomenclature and Species Banks has also been procured for certain species and rest are under preparatory stage for the same.

Results and Discussion

The authors surveyed the diversified habitats of the North Central Tarai Forest of Uttar Pradesh for foliicolous fungi during February, 2011 to October, 2013 in Bhinga Forest Range representing Shrawasti Forest Division, Shrawasti. The foliicolous fungus with respective hosts and family is enumerated in Table 1.

Table 1 reveals that there are one hundred fifteen fungal species representing forty six fungal genera inhabiting one hundred forty angiospermic host plants representing forty families and two hosts are unidentified. Several hosts are being reported to be infected with several fungi. Few hosts have been found infected with two or three different fungus in the same leaf^{2,3}. All the fungal genera can be divided into nine categories viz. **Alternaria** represented by twenty fungal species where as **Cercospora** by nineteen species, **Drechslera** by seven species; **Meliola** by six; **Curvularia** and **Pestalotiopsis** by five, **Ascochyta** by four; **Colletotricum**, **Phoma** and **Tripospermum** by three species each; **Cladosporium**, **Phyllosticta**, **Pseudocercospora** and **Stenella** by two species each and all the rest fungal genera are represented by only one fungal species. Thus **Alternaria** and **Cercospora** are the most common genera severely affecting the hosts.

The forty families of angiospermic hosts can also be categorized into nine groups. Members of **Fabaceae** are most susceptible to be infected by eighteen fungal species followed by **Moraceae** by fifteen species; **Verbenaceae** by twelve; **Anacardiaceae**, **Apocynaceae** and **Rutaceae** by eight species each; **Mimosaceae** and **Myrtaceae** by five each; **Euphorbiaceae**, **Malvaceae** and **Rosaceae** by four each; **Bignoniaceae**, **Boraginaceae**, **Menispermaceae** and **Solanaceae** by three each; **Brassicaceae**, **Caricaceae**, **Cucurbitaceae**, **Ebenaceae**, **Lamiaceae**, **Lythraceae** and **Poaceae** with two fungal species each where as hosts of rest families are being infected by single fungal species each.

Among the entire susceptible host **Bauhinia variegata** is found to be the most susceptible which is being infected by six fungal species where as **Ficus benghalensis** by five; **Artocarpus heterophyllus** and **Glycosmis pentaphylla** by four each; **Carissa carandas** and **Indopiptadenia oudhensis** by three each.

The review of Literature 4-21 reveals that most of infections are new report from Bhinga Forest Range. Thirty nine fungal species are novel species. Eight novel fungal species had already been described and mycobank number had been obtained. Rest novel species are in process of latin diagnosis and obtaining mycobank number. Nineteen angiospermic hosts are new host record to Indian mycoflora from Bhinga Forest Range of Shrawasti Forest Division, Shrawasti (UP) India.

Conclusion

It is very much interesting to note the number of the novel species and new host records showing an alarming situation of the fungus on new hosts which is a challenging situation so far as the health of the plant and quality of their products is concerned which is being used by the human beings in their various ethno botanical uses.

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Table 1:List of Follicolous Fungi and their Host with family collected from Bhinga Forest Range, Shrawasti

S.No.	Name of the Fungus	Name of the Host	Family	Remark
	<u>Alternaria</u> Nees:			
01.	Alternaria artocarpi sp. nov. Kumar and Mall	Artocarpus heterophyllus Lamk.	Moraceae	
02.	A. banyan Mall and Kumar	Ficus benghalensis Linn.	Moraceae	MB-805889
03	A. calotropidis sp. nov. Kumar and Mall	Calotropis procera R. Br.	Asclepiadaceae	
04.	A. clerodendri sp. nov. Kumar and Mall	Clerodendrum viscosum Linn.	Verbenaceae	
05	A. crassa (Sacc.) Rands	Bauhinia variegata Linn.	Fabaceae	
06.	A. euginae sp. nov. Kumar and Mall	Eugenia jambolana Linn.	Myrtaceae	
07.	A. exotica sp. nov. Kumar and Mall	Murraya exotica Linn.	Rutaceae	
08.	A. glycosmidis sp. nov. Kumar and Mall	Glycosmis pentaphylla (Retz.) Correa.	Rutaceae	
09.	A. gossypae sp. nov. Kumar and Mall	Gossypium herbaceum Linn.	Malvaceae	
10.	A. karvachensis sp. nov. Kumar and Mall	Karvach		
11.	A. lantanae sp. nov. Kumar and Mall	Lantana indica Linn.	Verbenaceae	
12.	A. longipes (Ell. And Ev.) Manon	Litsea chinensis Lamb.	Lauraceae	
13.	A. mallotica sp. nov. Kumar and Mall	Mallotus philippinensis Muell.	Euphorbiaceae	
14.	A. prosopidis sp. nov. Kumar and Mall	Prosopis juliflora (Sw.) DC	Fabaceae	
15.	A. religiosae sp. nov. Kumar and Mall	Ficus religiosa Linn.	Moraceae	
16.	A. tuenis Nees.	Anthocephalus cadamba (Roxb.) Bosser	Rubiaceae	New Host
17.		Bauhinia variegata Linn.	Fabaceae	New Host
18.		Indopiptadenia oudhensis (Brandis) Brenan.	Mimosaceae	New Host
19.		Mangifera indica Linn.	Anacardiaceae	
20.		Menispermum cordifolia Willd.	Menispermaceae	New Host
21.		Tecoma stans (L.) Juss	Bignoniaceae	New Host
22.		Vaijanti	-	
23.	A. tenuissima (Nees ex Fr.) Wiltshire	Artocarpus heterophyllus Lamk.	Moraceae	New Host
24.		Dolichos lablab Linn.	Papilionaceae	
25		Lilium candidum Linn.	Liliaceae	
26.		Mangifera indica Linn.	Anacardiaceae	
27.	A. thevetiae sp. nov. Kumar and Mall	Thevetia neriifolia Linn.	Apocynaceae	
28.	A. vulgaris sp. nov. Kumar and Mall	Berberis vulgaris Linn.	Berberidaceae	

29.	Alternaria sp.	Diospyros montana Roxb.	Ebenaceae	New Host
30.		Phaseolus coccinius Linn.	Fabaceae	
31.		Rosa indica Linn.	Rosaceae	New Host
	Appendiculella Hohn.:			
32.	Appendiculella calostroma esm. (D) Hohn.	Mallotus philippinsis Muel.	Euphorbiaceae	New Host
	Ascochyta Lib.:			
33.	Ascochyta caricae Pat.	Carica papaya Linn.	Caricaceae	
34.	A. hypophilla Sharma	Nyctathus arbor-tristis Linn.	Oleaceae	
35.	A. mangiferae Batista	Mangifera indica Linn.	Anacardiaceae	
36.	A. petrakii Sharma	Kigelia africana (Lam.) Benth.	Bignoniaceae	
	Aspergillus Mich. ex Fr.:			
37.	Aspergillus terreus Thom.	Mangifera indica Linn.	Anacardiaceae	
	Asterina Lev.:			
38.	Asterina benghalensis Mall and Kumar	Ficus benghalensis Linn.	Moraceae	MB-805890
	Atractillina Dearness and Bartholomew:			
39.	Atractillina parasitica (Wint) Deightona Pirozynski	Tenospora malbarica Miers.	Menispermaceae	
	Botryosphaeria Ces. and de Not.:			
40.	Botryosphaeria ribis Grosse and Duggar	Capparis zeylanica Linn.	Capparaceae	
	Botryotricum Sacc. and March.:			
41.	Botryotricum clerodendrii sp. nov. Kumar and Mall	Clerodendrum viscosum Linn.	Verbenaceae	
	Cercospora Fres.:			
42.	Cercospora atromarginalis Atk.	Solanum nigrum Linn.	Solanaceae	
43.	C. cannae Kar and Ray	Canna indica Linn	Cannaceae	
44.	C. capsici Heald and Wolf.	Capsicum annum. Linn	Solanaceae	
45.		Mangifera indica Linn.	Anacardiaceae	
46.	C. celosiae Gupta and Sinha	Celosia argentina Linn.	Amaranthaceae	
47.	C. clerodndri Miyak	Clerodendrum viscosum Linn.	Verbenaceae	
48.	C. colocasiae (Hoehn.) Chupp.	Colocasia esculenta L. (Sshott.)	Araceae	
49.	C. canessens Ell. and Mart.	Phaseolus coccineus Linn.	Fabaceae	
50.	C. crassa Sacc.	Bauhinia variegata Linn.	Fabaceae	
51.	C. fici Heald and Wolf.	Ficus benghalensis Linn.	Moraceae	
52.		Ficus religiosa Linn.	Moraceae	
53.	C. granti Ranola	Punica granatum Linn.	Lythraceae	
54.	C. ichnocarpia Kar and Mandal	Ichnocarpus frutescence (L.) R. Br.	Apocynaceae	
55.	C. ipomoeae Wint	Ipomea carnea Linn.	Convolvulaceae	

56.	<i>C. mangiferae</i> Munjal, Lall and Chona	<i>Mangifera indica</i> Linn.	Anacardiaceae	
57.	<i>C. menispermae</i> Ellis and Holway	<i>Menispermum cordifolia</i> Willd.	Menispermaceae	
58.	<i>C. nasurtii</i> Posserini	<i>Nasturtium officinale</i> W T Aiton	Brassicaceae	MB-805212
59.	<i>C. phlomidicola</i> Mall	<i>Clerodendrum phlomidis</i> Linn.	Verbenaceae	MB-805205
60.	<i>C. premnae</i> Mall	<i>Premna mucronata</i> Linn.	Verbenaceae	MB-805198
61.	<i>C. rajendrella</i> Mall & Kumar	<i>Alstonia scholaris</i> R. Br.	Apocynaceae	
62.	<i>C. volkemeriae</i> Speg.	<i>Clerodendrum infortunatum</i> Linn.	Verbenaceae	
	<u><i>Cercosporidium</i> Earle:</u>			
63.	<i>Cercosporidium dalbergicola</i> T. S. and K. Ramak.	<i>Ficus religiosa</i> Linn.	Moraceae	New Host
	<u><i>Cercinotrichum</i> Nees:</u>			
64.	<i>Cercinotrichum poonense</i> Pirozynski and Patil	<i>Dalbergia sisso</i> Roxb.	Fabaceae	
	<u><i>Cladosporium</i> Link.:</u>			
65.	<i>Cladosporium sphaerospermum</i> Penz.	<i>Saraca indica</i> Linn.	Fabaceae	
66.	<i>C. tenuissimum</i> Cke.	<i>Psidium guajava</i> Linn.	Myrtaceae	
	<u><i>Colletotricum</i> Corda.:</u>			
67.	<i>Colletotricum capsici</i> (Sydow) Butler and Bisby	<i>Adhatoda vasica</i> Nees	Acanthaceae	
68.	<i>C. gloeosporidis</i> Penz.	<i>Citrus medica</i> Linn.	Rutaceae	
69.	<i>Colletotricum</i> sp. Corda	<i>Bixa orellana</i> Linn.	Bixaceae	
	<u><i>Corynespora</i> Giissow.:</u>			
70.	<i>Corynespora cassiicola</i> (Berk and Curt) Wei.	<i>Bombax cieba</i> Linn.	Malvaceae	
71.		<i>Ocimum sanctum</i> Linn.	Lamiaceae	
72.		<i>Salvia officinalis</i> Linn.	Lamiaceae	
73.		<i>Saraca indica</i> Linn.	Fabaceae	
74.		<i>Tectona grandis</i> Linn.	Verbenaceae	
	<u><i>Curvularia</i> Boedijn.:</u>			
75.	<i>Curvularia carandus</i> sp. nov. Kumar & Mall	<i>Carrisa carandus</i> Linn.	Apocynaceae	
76.	<i>C. coccinae</i> sp. nov. Kumar & Mall	<i>Coccinia cordifolia</i> Linn.	Cucurbitaceae	
77.	<i>C. lunata</i> (Walker) Boedijn.	<i>Brassica compesris</i> Linn.	Brassicaceae	
78.		<i>Citrus medica</i> Linn.	Rutaceae	
79.	<i>C. trifolii</i> var. <i>gladioli</i> Parmelu & Luttrell	<i>Gladiolus communis</i> Linn.	Iridaceae	
80.	<i>Curvularia</i> sp. Boedijn	<i>Bauhinia variegata</i> Linn.	Fabaceae	
81.		<i>Coccinia indica</i> Wight & Arn.	Cucurbitaceae	New Host
	<u><i>Dactylosporium</i> Harz.:</u>			
82.	<i>Dactylosporium diospyricola</i> sp. nov. Kumar & Mall	<i>Diospyros montana</i> Roxb.	Ebenaceae	
	<u><i>Domingoella</i> Sarbhoy & Saikia:</u>			
83.	<i>Domingoella indopiptadiana</i> . Mall & Kumar	<i>Indopiptadenia oudhensis</i> (Brandis)	Mimosaceae	MB-805214

		Brenan.		
	<u>Drechslera Ito.:</u>			
84.	Drechslera citricola sp. nov. Kumar & Mall	Citrus lemon Linn.	Rutaceae	
85.	D. fici Mall and Kumar	Ficus benghalensis Linn.	Moraceae	MB-805891
86.	D. heleotropiumae sp. nov. Kumar & Mall	Heleotropium indicum Linn.	Boraginaceae	
87.	D. juliflorae sp. nov. Kumar & Mall	Prosopis juliflora (Sw.) Dc.	Mimosaceae	
88.	D. kigelae sp. nov. Kumar & Mall	Kigelia africana (Lam.) Benth.	Bignoniaceae	
89.	D. specifera (Bain) Arx.	Dalbergia sisso Roxb.	Fabaceae	
90.	Drechslera sp. Ito.	Acacia arabica Willd.	Fabaceae	New Host
91.		Bauhinia variegata Linn.	Fabaceae	
92.		Cordia dichotoma G. Forst.	Boraginaceae	
	<u>Elisnoe Racib.:</u>			
93.	Elisnoe faweeti Bitane & Jenk.	Citrus lemon Linn.	Rutaceae	
	<u>Fomes (Fr.) Kickx.:</u>			
94.	Fomes senex Nees & Mount	Prunus persica Linn	Rosaceae	
	<u>Glomerulla Schrenk. & Spauld:</u>			
95.	Glomerulla cingulata (Stonem) Spauld & Shrenk.	Clerodendrum infortunatum Linn.	Verbenaceae	
96.		Mallotus philippensis Muell. Arg.	Euphorbiaceae	
	<u>Hypoxyylon Bull ex Fr.:</u>			
97.	Hypoxyylon nectrides Speg.	Tamarindus indica Linn.	Fabaceae	
	<u>Macrophomina Petrak:</u>			
98.	Macrophomina Phaseoli (Maubl.) Ashby	Carica papaya Linn.	Caricaceae	
	<u>Meliola Fr.:</u>			
99.	Meliola fragilis	Mangifera indica Linn.	Anacardiaceae	
100.	M. kamettiae Hosag. & Riju.	Gossypium herbaceum Linn.	Malvaceae	New Host
101.	M. mangiferae Earle	Mangifera indica Linn.	Anacardiaceae	
102.	M. marmelosis sp. nov. Kumar & Mall	Agel marmelos Linn. Correa.	Rutaceae	
103.	M. neriifolae sp. nov. Kumar & Mall	Thevetia neriifolia Linn.	Apocynaceae	
104.	M. prosopidis sp. nov. Kumar & Mall	Prosopis juliflora (Sw.) Dc.	Mimosaceae	
	<u>Microxyphium Auct.:</u>			
105.	Microxyphium fagi (Per) Hughes	Tectona grandis Linn.	Verbenaceae	
	<u>Mierodiplodae</u>			
106.	Mierodiplodae ilicheti Sacc.	Prunus persica Linn.	Rosaceae	
	<u>Murogenella Goos & Morris:</u>			
107.	Murogenella eucaliti Sutton & Sharma	Eucalyptus globules Linn.	Myrtaceae	

	<u>Mycosphaerella Johanson:</u>			
108.	Mycosphaerella rosigena (Ell. et Eveh.) Lind.ex Syn.	Rosa indica Linn.	Rosaceae	
	<u>Periconia Tode ex Schw.:</u>			
109.	Periconia byssoides Pers. Ex. Metat.	Capsicum annum Linn.	Solanaceae	New Host
110.		Saccharum spontaneum Linn.	Poaceae	
	<u>Pestalotiopsis Steyaert:</u>			
111.	Pestalotiopsis adusta (Ell. & Ev.) Stey.	Cassia fistulosa Linn.	Fabaceae	
112.	P. glandicola (Cast.) Stey.	Eucalyptus lanceolatus Linn.	Myrtaceae	
113.	P. oudhensis Mall & Kumar	Indoptadenia oudhensis (Brandis) Brenan.	Mimosaceae	MB- 805213
114.		Karvach		
115.		Punica granatum Linn.	Lytheraceae	New Host
116.	P. palmarum (Cke.) Stey.	Mallotus philippensis Muell. Arg.	Euphorbiaceae	
117.	Pestalotiopsis sp. Steyaert	Unidentified Host	-	
	<u>Pheoramularia</u>			
118.	Pheoramularia cordiae Kumar & Kamal	Cordia dichotoma G. Forst.	Boraginaceae	
	<u>Phoma Desm.:</u>			
119.	Phoma balliensis Srivastava	Borassus flabellifer Linn.	Arecaceae	
120.	P. psidii D. Hem.	Psidium gujava Linn.	Myrtaceae	
121.	Phoma sorghina Sacc.	Aloe vera Linn. Burn. F.	Xanthorrhoeaceae	
	<u>Phomopsis Sacc.:</u>			
122.	Phomopsis variosporium Sacc.	Tectona grandis Linn.	Verbenaceae	
	<u>Phyllosticta Pers. ex Desm.:</u>			
123.	Phyllosticta ficicola Pat.	Ficus religiosa Linn.	Moraceae	
124.	P. inermis Pandotra & Ganguli	Clerodendron inerme Linn. Gaertn.	Verbenaceae	
	<u>Pleospora Rabenh ex Ces. & de Not.:</u>		∴	
125.	Pleospora bauhiniae sp. nov. Kumar & Mall	Bauhinia variegata Linn.	Fabaceae	
	<u>Podosporium Bon.:</u>			
126.	Podosporium furcatum Sharma & Pawar	Ficus religiosa Linn.	Moraceae	
	<u>Pseudocercospora Speg.:</u>			
127.	Pseudocercospora artocarpi (HP. Seed) Deighton	Artocarpus heterophyllus Lamk.	Moraceae	
128.	P. vitis (Lev.) Speg.	Vitis unguiculata (L.) Walp.		
	<u>Pseudocercosporella Deighton:</u>			
129.	Pseudocercosporella mulderi Tyagi	Lindenbergia indica Linn. (Kuntze)	Lindenbergiaceae	
	<u>Sarcinella Sacc.:</u>			
130.	Sarcinella glycosmidis sp. nov. Kumar & Mall	Glycosmis pentaphylla (Retz.) Correa.	Rutaceae	

	<u>Spermosporella</u> Deighton:			
131.	Spermosporella pulvinata Diet & Piroz	Ichnocarpus frutescens (Linn.) R.Br.	Apocynaceae	
	<u>Staphylotricum</u> Meyer & Nicot.:			
132.	Staphylotricum coccosporum Meyer & Nicot	Carissa congesta Weight	Apocynaceae	New Host
	<u>Stenella</u> Syd.:			
133.	Stenella ficine Kamal, Kumar & Rai	Ficus benghalensis Linn.	Moraceae	
134.	S. cassiae Abbasi & Shukla	Cassia fistulosa Linn.	Fabaceae	New Host
	<u>Stegnosporium</u> Corda:			
135.	Stegnosporium artocarpii sp. nov. Kumar & Mall	Artocarpus heterophyllus Lamk.	Moraceae	
	<u>Taxosporium</u>			
136.	Taxosporium bambusicola sp. nov. Kumar & Mall	Bambusa arundinacea Retz.	Poaceae	
	<u>Thermomyces</u> Tsiklins Kaya:			
137.	Thermomyces lanuginosus Tsiklinsky	Dalbergia sisso Roxb.	Fabaceae	New Host
	<u>Tripospermum</u> Speg.:			
138.	Tripospermum benghalensis sp. nov. Kumar & Mall	Ficus benghalensis Linn.	Moraceae	
139.	T. carissae sp. nov. Kumar & Mall	Carissa carandus Linn.	Apocynaceae	
140.	T. myrti (Lind.) Hughes	Bombax ceiba Linn.	Malvaceae	New Host