

SOIL FUNGI FROM ANDHRA PRADESH, INDIA

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Various soils viz. pond mud soil, forest soils, cultivated soils supporting different crop plants and rhizosphere soils of some crop plants from Andhra Pradesh were surveyed during 1964-2011 for microfungi. Altogether 348 fungal species have been isolated, identified and deposited. The data indicates that there is a hidden wealth of fungi in soil habitat. Among the fungi isolated hyphomycetous fungi have dominated the soils. Members of Basidiomycotina, Mastigomycotina (zoosporic fungi) and Zygomycotina were less frequent. Amongst the genera *Aspergillus* (38 species) and *Penicillium* (35 species) were predominant followed by *Chaetomium* (26 species) and *Trichoderma* (18 species).

Keywords: Fungi, forest soil, rhizosphere soil, species.

Soil being a complex ecosystem, is composed of multiple micro habitats and harbours almost all major taxonomic groups of fungi. Along with bacteria, actinomycetes and algae, fungi are primary decomposers; agents of biogeochemical transformation and recyclers of stored energy and nutrients of the organic matter already degraded by invertebrates and other microbes for plant growth. Moreover, the intrusive apical growth habit of fungi allows them to access efficiently the organic substrates; hence they play a major role as recyclers of biosphere. Even though the chemical composition of soil influences its fertility, it is greatly influenced by the qualitative and quantitative nature of microbes inhabiting it. Being natural scavengers, without them we would be surrounded by piles of detritus and dead plant matter. At one stage or the other all the geofungi are involved in the complex food chain through their interactions with soil fauna and other microbes: as food for various nematodes, mites, collembolans, and as parasites and predators of these and other soil fauna and microbes; as recyclers of waste products and other chemicals secreted and excreted by plant roots, animals and microbes; and as transformers and biodegraders of xenobiotics.

Most of the studies on soil fungi deal with quantification of fungi. Relatively few compilations of descriptions are available on geofungi or soilfungi (Gilman 1957, Domsch *et al.* 1980, 1993; Ramarao and Manoharachary 1990, Davet and Rouxel 2000, Watanabe 2002, Nagamani *et al.* 2006). Besides these the descriptive accounts of fungi isolated from various soils and other sources were included in monographs and

manuals by Raper and Thom (1949), Raper and Fennell (1965), Barron (1968), Ellis (1971, 1976), Subramanian (1971), Ainsworth *et al.* (1973), Barnett and Hunter (1998), Pitt (1979), Carmichael *et al.* (1980), Sutton (1980) and Arx (1980). Approximately 450 species are listed in the "Compendium of Soil Fungi" (Domsch *et al.* 1980). Barron (1968), Domsch and Gams (1972) and Domsch *et al.* (1980) have described soil fungi from temperate soils. The concepts of biodiversity, inventory and monitoring methods of saprobic soil fungi have been discussed by Bills *et al.* (2004).

The fungi that are reported from time to time from India from all the sources have been listed in various indexing books (Butler and Bisby 1960, Tilak and Rao 1968, Rangaswamy *et al.* 1970, Kamat *et al.* 1971, Tandon and Sudhir Chandra 1973, Mukerji and Juneja 1976, Bilgrami *et al.* 1979, 1981, 1991, Sarbhoy *et al.* 1975, 1980, 1986, 1996 and Jamaluddin *et al.* 2004). Soil fungi have been reported from Andhra Pradesh by Rao (1962, 1965) Manoharachary (1974, 1975, 1976a,b), Manoharachary and Bilollikar (1979), Manoharachary and Ramarao (1974a,b, 1975, 1978), Manoharachary and Reddy (1975), Manoharachary *et al.* (1975a,b, 1989), Madhusudan Rao and Manoharachary (1981), Khalis (1985), Ramarao (1962), Reddy and Manoharachary (1977), Vaidehi (1973) and Venugopal Rao *et al.* (1984). However, there is no consolidated account of these fungi associated with different soils. Therefore an attempt is made to provide the data on soil fungi from Andhra Pradesh, India.

MATERIALS AND METHODS

Topography and Climate of study area

Andhra Pradesh is one of the 28 states of India, situated on the country's southeastern coast (Fig. 1). It is India's fourth largest state by area and fifth largest by population. Its capital and largest city is Hyderabad. Andhra Pradesh lies between 12°41' and 22°N latitude and 77° and 84°40'E longitude, and is bordered by Maharashtra, Chhattisgarh and Orissa in the north, the Bay of Bengal in the east, Tamil Nadu to the south and Karnataka to the west.

Geographically, Andhra Pradesh is composed of most of the eastern half of the Deccan plateau and the plains to the east of the Eastern Ghats. Andhra

Pradesh is divided into three regions. The northern part of the plateau is the Telangana region and the southern part is known as Rayalaseema. These two regions are separated by the River Krishna. The third region is Coastal Andhra. The plains to the east of Eastern Ghats form the Eastern coastal plains. The Eastern Ghats are discontinuous and individual sections have local names. The Eastern Ghat region is home to dense tropical forests, while the vegetation becomes sparse as the Ghats give way to the Deccan Plateau, where shrub vegetation is more common. Most of the coastal plains are put to intense agricultural use. The west and southwest parts of Andhra Pradesh have semi-arid conditions.

The climate of Andhra Pradesh varies considerably, depending on the geographical region. Monsoons play a major role in determining the climate of the

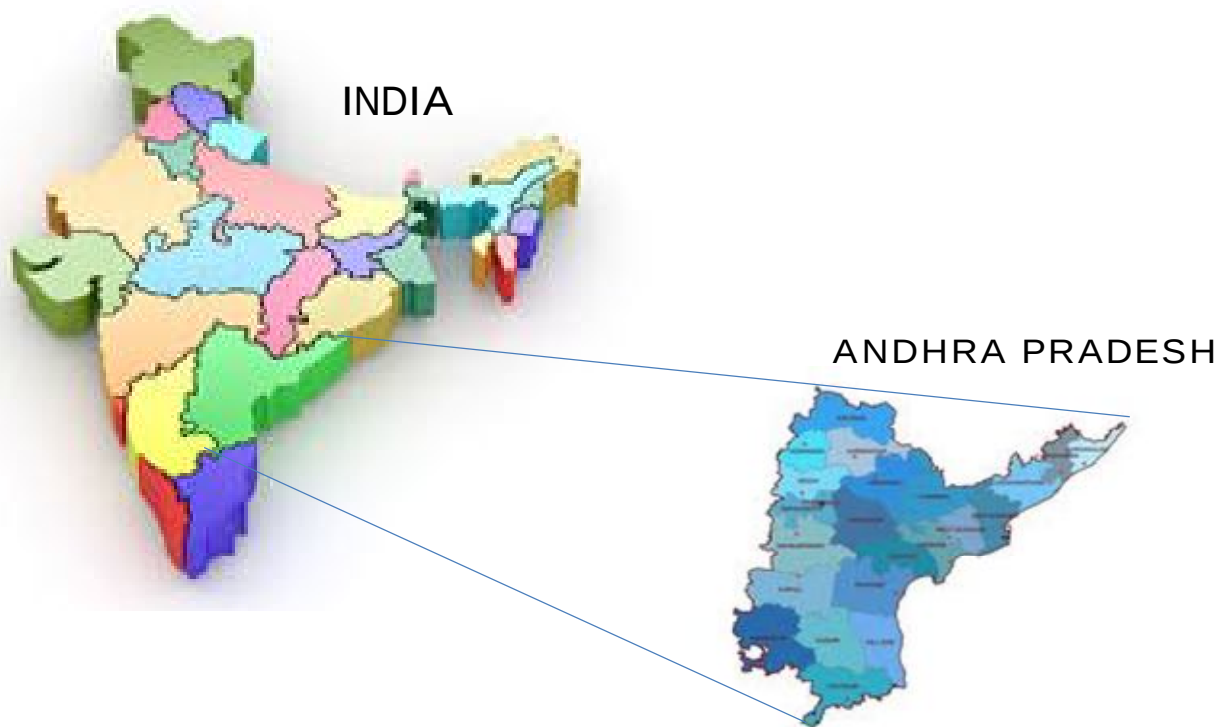


Figure1: Area Map of Fungal Samples Collected from Andhra Pradesh, India

state. Summers last from March to June. In the coastal plain, the summer temperatures are generally higher than the rest of the state, with temperature ranging between 20 °C and 41 °C. At certain places the temperature reaches as high as 45 degrees on a summer day. July to September is the seasons for tropical rains in Andhra Pradesh. The state receives heavy rainfall from Southwest Monsoon during these months. About one third of the total rainfall in Andhra Pradesh is brought by the Northeast Monsoon. October and November see low-pressure systems and tropical cyclones form in the Bay of Bengal which, along with the Northeast Monsoon, bring rains to the southern and coastal regions of the state. November, December, January, and February are the winter months in Andhra Pradesh. Since the state has a long coastal belt the winters are not very cold. The range of winter temperature is generally 12 °C to 30 °C.

Sample collection

Soil samples were collected (1-6 cm depth) with a surface sterilized (95% alcohol) trowel after scraping away an inch of surface soil into fresh polythene bags or sterile vials. In case of mud samples the marginal mud samples were taken with a sterilized spoon into fresh polythene bags. Around 8-10 samples were collected from soil/mud at random and made into a composite mixture. The collected samples were kept at a cool place under aseptic conditions and transported to the laboratory for assessment of soil fungi. The stones and debris were removed before the isolation. To get uniform results, ten replicate plates were prepared for each sample. Total number of samples collected from different parts of Andhra Pradesh being 390.

Isolation of fungi

The fungi from soils were isolated by employing Dilution plate method (Waksman 1916), Soil plate method (Warcup 1950), Immersion tube and immersion slide method (Chesters 1948), and Warcup's (1955) fungal hyphae isolation from soil. All these methods were employed in order to get a comprehensive representation of soil fungi. Potato Dextrose Agar (PDA) medium was used to isolate all the fungi. Czapek's Dox Agar medium was used to study *As-*

pergillus and *Penicillium* species. Oat Meal Agar Medium or Pentachloronitrobenzene (PCNB) Agar medium was employed for growing species of *Pythium* and others, 2% water Agar has been used to isolate species of *Fusarium*. Cultures were maintained on PDA at 10°C in the refrigerator besides maintaining them in mineral oil and silica gel.

Identification of fungi

The isolated fungi have been identified up to species level using the keys provided by Raper and Thom (1949), Gilman (1957), Raper and Fennell (1961), Barron (1968), Subramanian (1971), Ellis (1971,1976), Carmichael *et al.* (1980) and Nagamani *et al.* (2006). Relevant literature has been consulted whenever necessary.

RESULTS AND DISCUSSION

Overall 390 diversified samples from Andhra Pradesh were screened in our laboratory comprising of 97 of cultivated, garden soil; 90 of forests, scrub jungle soils; 77 samples of mud, pond mud, river bank and seashore soils; 75 of barren soils; 28 of rhizosphere soils; 20 of polluted soils; two of herbicide treated soils and one of poultry farm soil (Table 1). Altogether 348 fungal species representing 132 genera were recorded (Table 1). Amongst all the fungi isolated, 2 belonged to Basidiomycotina, 17 belonged to zoosporic fungi (Mastigomycotina), 25 to Zygomycotina, 73 to Ascomycotina and the remaining 231 are grouped under anamorphic fungi (Deuteromycotina) which are the asexual phases of Ascomycotina and Basidiomycotina (Fig. 2). The number of microfungi recorded from various soil substrates are depicted in Fig. 3.

Amongst the various fungi *Aspergillus* and *Penicillium* species were predominant followed by *Chaetomium* and *Trichoderma*. Many soil-borne and root-borne pathogenic fungi like *Colletotrichum* spp., *Fusarium* spp., *Athelia rolfsii* (= *Sclerotium rolfsii*), *Gibberella* spp., *Macrophomina phaseolina*, *Nectria* spp. were also encountered. 18 species representing the genus *Trichoderma*, a well known biocontrol

Table 1. List of soil fungi from Andhra Pradesh

Sl. No.	Fungal species	Substance	Year and Place of Collection	Collected by	Accession No.
1.	<i>Absidia cylindrospora</i> Hagem	Soil	2011, Hyderabad	Kunwar	OUFH 830
2.	<i>Absidia fusca</i> Linnemann	Pond mud	1983, Hyderabad	Manohar.	OUFHS 1
3.	<i>Absidia glauca</i> Hagem	Soil (spinach)	1995, Hyderabad	Padma	OUFHS 2
4.	<i>Absidia spinosa</i> Lenden.	Forest soil	1973, Vikarabad	Manohar.	OUFHS 4
5.	<i>Achlya debaryana</i> Humphrey	Pond mud	1979, Hyderabad	Manohar.	OUFHS 5
6.	<i>Achlya recurva</i> Cornu	Pond mud, soil	1981, Mahaboob-nagar	Madhusudan Rao	OUFHS 6
7.	<i>Acremonium chrysogenum</i> (Thirum. and Sukap.) Gams	Soil	2005, Mulugu	Kunwar	OUFH 574
8.	<i>Acremonium implicatum</i> (J.C. Gilman and E.V. Abbott) W. Gams	Soil	2004, Narsapur	Manohar.	OUFHS 7
9.	<i>Acremonium strictum</i> W. Gams	Cultivated soil	1984, Ananthagiri-hills	Manohar.	OUFHS 8
10.	<i>Acrophialophora fusispora</i> (S.B. Sak-sena) Samson	Soil (egg plant)	1977, Hyderabad	Manohar.	OUFHS 9
11.	<i>Actinocladium rhodosporum</i> Ehren-berg	Soil	2006, Mulugu	Kunwar	OUFH 575
12.	<i>Allomyces anomalus</i> R. Emers	Pond mud	1983, Karimnagar	Manohar.	OUFHS 10
13.	<i>Allomyces arbuscula</i> Butler, E.J. But-ler	Forest soil	1981, Maha-boobnagar	Madhusudan Rao	OUFHS 11
14.	<i>Alternaria alternata</i> (Fr.) Keissl	Soil (<i>Sesamum</i>)	1977, Hyderabad	Manohar.	OUFHS 12
15.	<i>Alternaria brassicicola</i> (Schwein.) Wiltshire	Rhizosphere soil (Cluster bean)	1978, Hyderabad	Manohar.	OUFHS 13
16.	<i>Alternaria humicola</i> Oudem	Pond mud	1976, Vikarabad	Manohar.	OUFHS 14
17.	<i>Alternaria radicina</i> Meier	Soil	2002, Vikarabad	Kunwar	OUFH 004
18.	<i>Alternaria tenuissima</i> (Kunze) Wilt-shire	Forest soil	1981, Mahaboob-nagar	Manohar.	OUFHS 15
19.	<i>Amorphotheca resinae</i> Pabery	Forest soil	1989, Mannanur	Manohar.	OUFHS 16
20.	<i>Arachniotus</i> sp.	Soil	2006, Papikonda	Nagaraju	OUFH 429
21.	<i>Ardhchandra selenoides</i> (de Hoog) Subram. and Sudha	Rhizosphere soil	2008, Vikarabad	Kunwar	OUFH 573
22.	<i>Arthrimum euphorbiae</i> Ellis	Soil	2006, Mothugudem	Kunwar	OUFH460
23.	<i>Arthrimum phaeospermum</i> (Corda) M.B.Ellis	Field soil (cabbage)	1970, Hyderabad	Padma	OUFHS 18
24.	<i>Arthrobotrys foliicola</i> Matsuchima	Soil	2008, Narsapur	Kunwar	OUFH 572
25.	<i>Ascochyta graminicola</i> Saccardo	Forest soil	1973, Vikarabad	Manohar.	OUFHS 19
26.	<i>Aspergillus aculeatus</i> Lizuka	Rhizosphere soil (<i>Sorghum</i> , cotton)	2001, Narsapur	Kunwar	OUFH 025
27.	<i>Aspergillus amstelodami</i> (Mangin) Thom and Church	Forest Soil	2004, Vikarabad	Manohar.	OUFHS 21
28.	<i>Aspergillus awamori</i> Nakaz	Soil (Tamarind)	2005, Hyderabad	Kunwar	OUFH 340
29.	<i>Aspergillus brunneouniseriatus</i> Singh and Bakshi	Forest soil	1989, Amrabad, Mannanur	Manohar.	OUFHS23
30.	<i>Aspergillus caespitosus</i> Raper and Thom	Mud soil	2000, Karimnagar	Shantha Devi	OUFHS 24
31.	<i>Aspergillus candidus</i> Link	Pond mud	1979, Nizamabad	Manohar.	OUFHS 25
32.	<i>Aspergillus clavatus</i> Desm.	Polluted pond mud	1993, Hyderabad	Narendra	OUFHS 27
33.	<i>Aspergillus deflectus</i> Fennell and Raper	Forest, wild, culti-vated soils	1974, Anantagiri hills	Manohar.	OUFHS 28

34.	<i>Aspergillus fischeri</i> var. <i>spinosus</i> Raper and Fennell	Pond mud	1983, Kakinada	Manohar.	OUFHS 30
35.	<i>Aspergillus flavipes</i> (Bainier and Sartory) Thom and Church	Forest, wild, cultivated soils	1974, Vikarabad	Manohar.	OUFHS 31
36.	<i>Aspergillus flavus</i> Link	Forest, wild, cultivated soils	1984, Anantagiri hills	Manohar.	OUFHS 32
37.	<i>Aspergillus flavus</i> var. <i>columnaris</i> Raper and Fennell	Soil	2001, Hyderabad	Manohar.	OUFHS 33
38.	<i>Aspergillus flavus</i> var. <i>oryzae</i> (Ahlb.) Kurtzman, Smiley, Robnett and Wicklow	Cultivated soil (castor)	1981, Hyderabad	Ramarao	OUFHS 34
39.	<i>Aspergillus fumigatus</i> Fresen.	Forest, wild, cultivated soils	1974, Anantagiri hills	Manohar.	OUFHS 35
40.	<i>Aspergillus funiculosus</i> Sm.	Soil (spinach)	1995, Medak	Padma	OUFHS 36
41.	<i>Aspergillus humicola</i> Chaudhuri and Sachar	Soil (spinach)	1995, Medak	Padma	OUFHS 37
42.	<i>Aspergillus japonicus</i> Saito	Forest, wild, cultivated soils	1984, Vikarabad	Manohar.	OUFHS 38
43.	<i>Aspergillus kanagawaensis</i> Nehia	Scrub jungle forest soil	1977, Vikarabad	Manohar.	OUFHS 39
44.	<i>Aspergillus nidulans</i> (Eidam) G. Wint.	Mud Soil	1996, Khammam	Manohar.	OUFHS 40
45.	<i>Aspergillus nidulans</i> var. <i>echinulatus</i> Fennell and Raper	Forest soil	2004, Narsapur	Manohar.	OUFHS 41
46.	<i>Aspergillus niger</i> Tiegh	Forest soil	1974, Anantagiri hills	Manohar.	OUFHS 42
47.	<i>Aspergillus nidulans</i> var. <i>latus</i> Thom and Raper	Soil	2001, Hyderabad	Kunwar	OUFH 009
48.	<i>Aspergillus ochraceus</i> Wilh.	Soil (spinach)	1995, Rangareddy distt.	Manohar.	OUFHS 44
49.	<i>Aspergillus niveus</i> Blochwitz	Soil	2002, Hyderabad	Kunwar	OUFH 049
50.	<i>Aspergillus parasiticus</i> Speare	Soil	2004, Hyderabad	Manohar.	OUFHS 45
51.	<i>Aspergillus repens</i> (Corda) Sacc.	Pond mud	1983, Hyderabad	Manohar.	OUFHS 46
52.	<i>Aspergillus restrictus</i> Sm.	Forest, wild, cultivated soils	1989, Amrabad	Manohar.	OUFHS 47
53.	<i>Aspergillus ruber</i> Thom and Church	Forest soil	2004, Vikarabad	Manohar.	OUFHS 48
54.	<i>Aspergillus rugulosus</i> Thom and Raper	Soil	2009, Bhadrachalam	Nagaraju	OUFH 646
55.	<i>Aspergillus stellatus</i> Curzi	Forest soil	1981, Mahaboobnagar	Manohar.	OUFHS 49
56.	<i>Aspergillus stellatus</i> Curzi var. <i>stellatus</i>	Soil	2001, Hyderabad	Kunwar	OUFH 024
57.	<i>Aspergillus sulphureus</i> Desm.	Mud soil	2003, Karimnagar	Shantha Devi	OUFHS 50
58.	<i>Aspergillus sydowi</i> (Bainier and Sartory) Thom and Church	Forest, wild, cultivated soils	1984, Anantagiri hills	Manohar.	OUFHS 51
59.	<i>Aspergillus tamarii</i> Kita	Forest soil	1989, Mannanur	Manohar.	OUFHS 52
60.	<i>Aspergillus terreus</i> Thom	Pond mud	1979, Vikarabad	Manohar.	OUFHS 53
61.	<i>Aspergillus unguis</i> (Weil and L. Gaudin	Forest, wild, cultivated soils	1974, Anantagiri hills, Vikarabad	Manohar.	OUFHS 54
62.	<i>Aspergillus ustus</i> (Bain.) Thom and Church	Forest, wild, cultivated soils	1984, Anantagiri hills	Manohar.	OUFHS 55
63.	<i>Aspergillus versicolor</i> (Vuill.) Tiraboschi	Forest, wild, cultivated soils	1984, Anantagiri hills, Vikarabad	Manohar.	OUFHS 56
64.	<i>Athelia rolfsii</i> (Curzi) Tu and Kimbr. (= <i>Sclerotium rolfsii</i>)	Field soil	2004, Hyderabad	Manohar.	OUFHS 57

65.	<i>Aureobasidium pullulans</i> (de Bary) Arnaud	Forest soil	1989, Amrabad	Manohar.	OUFHS 58
66.	<i>Bartalinia robillardoides</i> Tassi	Forest soils	1984, Vikarabad	Manohar.	OUFHS 59
67.	<i>Beltrania rhombica</i> Penz.	Wild soil	2002, Narsapur	Narsimha-charyulu	OUFHS 60
68.	<i>Beltrania santapau</i> Piroz. and S.D. Patil	Soil	2006, Narsapur	Kunwar	OUFH 535
69.	<i>Betraniella humicola</i> Ramarao	Soil	2008, Bayyaram	Kunwar	OUFH 569
70.	<i>Betraniella odinae</i> Subram.	Rhizosphere soil (<i>Vitis vinifera</i>)	1965, Hyderabad	Rafia Me-hdi	OUFHS 62
71.	<i>Bipolaris papendorffii</i> (Aa) Alcorn	Rhizosphere soil (peanut)	1978, Hyderabad	Ravindra-nath	OUFHS 63
72.	<i>Blakeslea trispora</i> Thaxt.	Forest soil	1981, Amrabad	Reddy	OUFHS 64
73.	<i>Bloxamia nilagirica</i> (Subam.) Nag Raj and W. B. Kendr.	Forest soil	1981, Mahaboob-nagar	Manohar.	OUFHS 65
74.	<i>Botryotrichum piluliferum</i> Sacc. and March.	Forest soil	1989, Mannanur	Manohar.	OUFHS 66
75.	<i>Byssoschlamys nivea</i> Westling	Forest soil	1984, Vikarabad	Manohar.	OUFHS 67
76.	<i>Candida albicans</i> (C.P. Robin) Berk-hout	Polluted pond mud	1993, Hyderabad	Narendra-babu	OUFHS 68
77.	<i>Cephaliophora irregularis</i> Thaxter	Forest soil	1981, Mahaboob-nagar	Manohar.	OUFHS 69
78.	<i>Cephalotrichum microsporum</i> (Sacc.) P.M. Kirk (= <i>Doratomyces microsporus</i>)	Soil (Spinach)	1995, Hyderabad	Padma	OUFHS70
79.	<i>Ceratocystis paradoxa</i> (Dade) C. Moreau (= <i>Thielaviopsis paradoxa</i>)	Forest, wild, cultivated soils	1984, Anantagiri hills	Manohar.	OUFHS 71
80.	<i>Chaetomella raphigera</i> Swift	Forest, wild, cultivated soils	1984, Anantagiri hills	Manohar.	OUFHS 72
81.	<i>Chaetomium abuense</i> Lodha	Soil	2004, Hyderabad	Kunwar	OUFH 237
82.	<i>Chaetomium amberpetense</i> Ramarao and Ram Reddy	Cultivated soil (castor)	1994, Hyderabad	Manohar.	OUFHS73
83.	<i>Chaetomium atrobrunneum</i> Udagawa and Takada	Forest soil	1994, Mahaboob-nagar	Manohar.	OUFHS 74
84.	<i>Chaetomium arcuatum</i> Rai and Tewari	Soil	2009, Vikarabad	Kunwar	OUFH 562
85.	<i>Chaetomium aureum</i> Chivers	Pond mud	1983, Hyderabad	Manohar.	OUFHS 75
86.	<i>Chaetomium bostrychodes</i> Zopf.	Soil	2001, Hyderabad	Kunwar	OUFH 017
87.	<i>Chaetomium ciliatum</i> Bonord	Soil	2001, Hyderabad	Kunwar	OUFH 018
88.	<i>Chaetomium convolutum</i> Chivers	Soil (coriander)	1994, Hyderabad	Manohar.	OUFHS 77
89.	<i>Chaetomium erraticum</i> Ames	Soil	2008, Mulugu	Kunwar	OUFH 565
90.	<i>Chaetomium funicola</i> Cooke	Polluted pond mud	1993, Hyderabad	Narendra Babu	OUFHS 78
91.	<i>Chaetomium fusisporale</i> Rai and Mukerji	Soil	2008, Mulugu	Kunwar	OUFH 568
92.	<i>Chaetomium globosum</i> Kunze	Paddy field soil	1979, Nanded, Nizamabad	Manohar.	OUFHS 79
93.	<i>Chaetomium gracile</i> Udagawa	Soil (<i>Sesamum</i>)	1977, Hyderabad	Manohar.	OUFHS 80
94.	<i>Chaetomium homopilatum</i> Omvik	Forest soil	1989, Mannanur	Manohar.	OUFHS 81
95.	<i>Chaetomium indicum</i> Corda	Polluted pond mud	1993, Hyderabad	Narendra-babu	OUFHS 82
96.	<i>Chaetomium mollicellum</i> L.M. Ames	Soil	1994, Guntur	Manohar.	OUFHS 83
97.	<i>Chaetomium nigricolor</i> L.M. Ames	Soil	1994, Amrabd	Manohar.	OUFHS 84

98.	<i>Chaetomium osmaniae</i> Rama Rao and Ram Reddy	Soil	1967, Hyderabad	Ramarao	OUFHS 85
99.	<i>Chaetomium pachypodioides</i> L.M. Ames	Forest soil	1994, Bhadrachalam	Manohar.	OUFHS 86
100.	<i>Chaetomium reflexum</i> Skolko and J. W. Groves	Forest soil	1994, Paloncha	Manohar.	OUFHS 87
101.	<i>Chaetomium salami</i> Rama Rao	Dune Soil	1985, Chirala Coast	Ramarao	OUFHS 88
102.	<i>Chaetomium spirale</i> Zopf.	Soil (spinach)	1995, Hyderabad	Padma	OUFHS 89
103.	<i>Chaetomium subterraneum</i> Swift and Povah	Rhizosphere soil (grape)	1965, Hyderabad	Rafai Mehdi	OUFHS 90
104.	<i>Chaetomium trilaterale</i> Chivers	Cultivated soil	1994, Warangal	Manohar.	OUFHS 91
105.	<i>Choanephora cucurbitarum</i> (Berk. and Ravenel) Thaxt.	Rhizosphere, soil (spinach)	1995, Hyderabad	Padma	OUFHS 92
106.	<i>Circinella muscae</i> (Sorokin) Berl. De Toni	Cultivated soil (castor)	1981, Hyderabad	Ramarao	OUFHS 93
107.	<i>Circinella simplex</i> Tiegh.	Silty, clay, loamy, cultivated soil	1979, Nanded, Nizamabad	Manohar.	OUFHS 94
108.	<i>Circinotrichum maculiforme</i> C.G. Nees ex Persoon	Soil	2008, Warangal	Kunwar	OUFH 584
109.	<i>Cladosporium cladosporioides</i> (Fresen.) de Vries	Forest, wild, cultivated soils	1984, Vikarabad	Manohar.	OUFHS 95
110.	<i>Cladosporium herbarum</i> (Pers.) Link	Rhizosphere soil (<i>Ocimum abscondens</i>)	1975, Hyderabad	Manohar.	OUFHS 96
111.	<i>Cladosporium macrocarpum</i> Preuss	Polluted pond mud	1993, Hyderabad	Narendra Babu	OUFHS 97
112.	<i>Cladosporium oxysporum</i> Berk. M.A. Curtis	Pond mud	1983, Hyderabad	Manohar.	OUFHS 98
113.	<i>Cladosporium sphaerospermum</i> Penz.	Rhizosphere soil (spinach)	1995, Hyderabad	Padma	OUFHS 99
114.	<i>Cladosporium spongiosum</i> Berk. and M.A. Curtis	Polluted pond mud	1993, Hyderabad	Narendra Babu	OUFHS 100
115.	<i>Cladosporium variabile</i> (Cooke) G.A. de vries	Polluted pond mud	1993, Hyderabad	Narendra Babu	OUFHS 101
116.	<i>Cochliobolus australiensis</i> (Tsuda and Ueyama) Alcorn (= <i>Drechslera australiensis</i>)	Forest, wild, cultivated soils	1984, Ananthagiri hills	Manohar.	OUFHS 102
117.	<i>Cochliobolus geniculatus</i> R. Nelson (= <i>Curvularia geniculata</i>)	Soil (cashewnuts)	1980, Hyderabad	Ramarao	OUFHS 103
118.	<i>Cochliobolus hawaiiensis</i> Alcorn (= <i>Drechslera hawaiiensis</i>)	Coastal soil	1969, Chirala	Lakshminarsimham	OUFHS 104
119.	<i>Cochliobolus lunatus</i> R.R. Nelson and Haasis (= <i>Curvularia lunata</i>)	Pond mud	1974, Hyderabad	Manohar.	OUFHS 105
120.	<i>Cochliobolus nodulosus</i> Luttr. (= <i>Helminthosporium nodulosum</i>)	Forest soil	1989, Amrabad, Mannanur	Manohar.	OUFHS 106
121.	<i>Cochliobolus spicifer</i> R.R. Nelson	Riverbed soil	1979, Gadwal	Manohar.	OUFHS 107
122.	<i>Cochliobolus tuberculatus</i> Sivan (= <i>Curvularia tuberculata</i>)	Rhizosphere soil (Castor)	1981, Gadwal	Ramarao	OUFHS 108
123.	<i>Colletotrichum capsici</i> (Syd.) E. J. Butler and Bisby	Rhizosphere, non-rhizo. soil (Castor)	1981, Hyderabad	Ramarao	OUFHS 109
124.	<i>Colletotrichum dematium</i> (Pers.) Goove	Soil (<i>Brassica</i>)	1981, Hyderabad	Ramarao	OUFHS 110

125.	<i>Coniochaeta boothii</i> (Manohar. and P.Rama Rao) Dania García, Stchigel and Guarro	Pond mud soil	1973, Vikarabad	Manohar.	OUFHS 111
126.	<i>Corynascus sepedonium</i> (C.W. Emmons) Arx	Soil	1964, Hyderabad	Ramarao	OUFHS 112
127.	<i>Coryneum terrophilum</i> (Goos and Morris) Sutton (=Murogenella terrophila)	Rhizosphere soil (paddy)	1967, Visakapatnam	Ramarao	OUFHS 113
128.	<i>Cunninghamella blakesleeana</i> Lender	Pond mud	1976, Hyderabad	Manohar.	OUFHS 114
129.	<i>Cunninghamella echinulata</i> (Thaxt.) Thaxt. ex Blakeslee	Cultivated soil	1976, Nanded	Manohar.	OUFHS 115
130.	<i>Curvularia brachyspora</i> Boedijin	Forest soil	1989, Amrabad	Manohar.	OUFHS 116
131.	<i>Curvularia clavata</i> B.L. Jain	Soil (spinach)	1995, Hyderabad	Padma	OUFHS 117
132.	<i>Curvularia lunata</i> var. <i>aeria</i> (Bat. J.A. Lima and C.T. Vasconc.) M. B. Ellis	Forest, wild, cultivated soils	1984, Ananthagiri hills	Manohar.	OUFHS 118
133.	<i>Curvularia prasadii</i> Mathur and Mathur	Soil (spinach)	1989, Hyderabad	Manohar.	OUFHS 119
134.	<i>Curvularia trifolii</i> (Kauffman) Boedijin	Forest, wild, cultivated soils	1984, Vikarabad	Manohar.	OUFHS 120
135.	<i>Cylindrocladium parvum</i> P.J. Anderson	Forest soil	1990, Kurnool	Kunwar	OUFH 126
136.	<i>Dendryphiella vinosa</i> (Berk. and M. A. Curtis) Reisinger	Soil (spinach)	1995, Hyderabad	Padma	OUFHS 122
137.	<i>Dictyoarthrinium sacchari</i> (J.A. Stev.) Damon	Pond mud soil	1974, Vikarabad	Manohar.	OUFHS 123
138.	<i>Didymosphaeria igniaria</i> Booth	Forest, wild, cultivated soils	1984, Vikarabad	Manohar.	OUFHS 124
139.	<i>Didymosphaeria sadasivanii</i> T.K.R. Reddy) Kowalski	Dryland soil	1979, Medak	Ramarao	OUFHS 125
140.	<i>Eleutherascus lectardii</i> (Nicot) Arx	Pond mud	1972, Vikarabad	Manohar.	OUFHS 126
141.	<i>Emericellopsis minima</i> Stolk	Forest, garden soil	1977, Khammam	Manohar.	OUFHS 128
142.	<i>Epicoccum nigrum</i> Link	Forest soil	1989, Amrabad	Manohar.	OUFHS 129
143.	<i>Eupenicillium brefeldianum</i> (B.O. Dodge) Stolk and D. B. Scott	Soil	1974, Mahaboobnagar	Manohar.	OUFHS 130
144.	<i>Eurotium chevalieri</i> Mangin	Soil (cashew nut)	1980, Hyderabad	Ramarao	OUFHS 132
145.	<i>Fennellia nivea</i> (B.J. Wiley and E.G. Simmons) Samson	Forest, wild, cultivated soils	1984, Anantagiri hills	Manohar.	OUFHS 133
146.	<i>Fusarium chlamydosporum</i> Willenw. and Reinking	Riverbank soil	1984, Gadwal	Manohar.	OUFHS 134
147.	<i>Fusarium incarnatum</i> (Desm.) Sacc.	Forest soil	1981, Mahaboobnagar	Madhusudan Rao	OUFHS 135
148.	<i>Fusarium javanicum</i> Koord.	Rhizosphere soil, soils (castor)	1981, Hyderabad	Ramarao	OUFHS 136
149.	<i>Fusarium lateritum</i> Nees	Soil	2004, Anantagiri	Kunwar	OUFH 243
150.	<i>Fusarium oxysporum</i> Schlecht	Forest, wild, cultivated soils	1984, Vikarabad	Manohar.	OUFHS 137
151.	<i>Fusarium poae</i> (Peck) Wollenw.	Rhizosphere, soil (castor)	1981, Hyderabad	Ramarao	OUFHS 138
152.	<i>Geosmithia lavendula</i> (Raper and Fennell) Pitt	Soil	2005, Hyderabad	Manohar.	OUFHS 140
153.	<i>Geosmithia putterillii</i> (Thom) Pitt	Soil	2008, Vikarabad	Kunwar	OUFH 582
154.	<i>Geotrichum candidum</i> Link	Polluted mud	1993, Karimnagar	Narendra Babu	OUFHS 141

155.	<i>Gibberella acuminata</i> Booth	Forest Soil	1983, Guntur	Manohar.	OUFHS 142
156.	<i>Gibberella avenacea</i> Cook	Polluted mud	1993, Karimnagar	Narendra Babu	OUFHS 143
157.	<i>Gibberella fujikuroi</i> (Sawada) Wollenw.	Rhizosphere soil, soils (cluster bean)	1978, Hyderabad	Manohar.	OUFHS 144
158.	<i>Gibberella indica</i> B.Rai and R.S. Upadhyay (= <i>Fusarium udum</i>)	Soil	2002, Warangal	Kunwar	OUFH 074
159.	<i>Gibberella intricans</i> Wollenw.	Pond mud	1979, Vikarabad	Manohar.	OUFHS 146
160.	<i>Gibberella pulicaris</i> (Fr.) Sacc.	Forest soil	1989, Mannanur	Manohar.	OUFHS 147
161.	<i>Gibberella zeae</i> (Schwein.) Petch	Herbicide treated soil	2003, Hyderabad	Sailaja	OUFHS 148
162.	<i>Gilmaniella humicola</i> G. L. Barron	Scrub jungle forest soil	1989, Mannanur	Manohar.	OUFHS 149
163.	<i>Gliocladium deliquescens</i> Sopp	Mud	2000, Karimnagar	Shantha Devi	OUFHS 150
164.	<i>Graphium penicillioides</i> Corda	Forest, wild, cultivated soils	1984, Ananthagiri hills	Manohar.	OUFHS 152
165.	<i>Graphium putredinis</i> (Corda) S. Hughes	Soil (spinach)	1995, Hyderabad	Padma	OUFHS 153
166.	<i>Graphium terricola</i> Manohar. Rag. Rao, Rehana and Rama Rao	Sea shore soil	1975, Bheemilipatnam	Manohar.	OUFHS 154
167.	<i>Gymnascella dankaliensis</i> (Castell) Currah	Cultivated soil (pearl millet), forest soil	1977, Gadwal, Mahaboobnagar	Manohar.	OUFHS 155
168.	<i>Haematonectria haematococca</i> (Berk. and Broome) Samuels and Rossman (= <i>Fusarium solani</i>)	Soil	2002, Khammam	Kunwar	OUFH 073
169.	<i>Hendersonia punithalingamii</i> Reddy and Manohar.	Forest soil	1989, Mannanur	Manohar.	OUFHS 156
170.	<i>Heterocephalum aurantiacum</i> Thaxt.	Soil	1984, East Godavari	Manohar.	OUFHS 157
171.	<i>Humicola fuscoatra</i> Traaen	Soil (cashew nut, castor)	1980, Hyderabad	Ramarao	OUFHS 158
172.	<i>Humicola grisea</i> Traaen	Riverbank, cultivated soils	1977, Gadwal	Reddy	OUFHS 159
173.	<i>Humicola nigriscens</i> Omvik	Polluted soil	1993, Hyderabad	Narendra-Babu	OUFHS 160
174.	<i>Hyphodiscosia jaipurensis</i> Lodha and K.R.C. Reddy	Soil	2010, Paloncha	Nagaraju	OUFH 690
175.	<i>Khuskia oryzae</i> H.J. Huds.	Deciduous forest soil	1981, Mannanur	Reddy	OUFHS 161
176.	<i>Lasiodiplodia theobromae</i> (Pat.) Griffiths and Maubl.	Forest soil	1977, Hyderabad	Manohar.	OUFHS 162
177.	<i>Lewia infectoria</i> (Fuckel) M. E. Barr and E.G. Simmons	Soil (spinach)	1995, Hyderabad	Padma	OUFHS 163
178.	<i>Lichtheimi corymbifera</i> (Cohn) Vuill. (<i>Absidia lichtheimi</i>)	Soil	2008, Hyderabad	Kunwar	OUFH 527
179.	<i>Macrophomina phaseolina</i> (Tassi) Goid.	Rhizosphere, soils (cluster bean)	1978, Hyderabad	Manohar.	OUFHS 164
180.	<i>Magnaporthe grisea</i> (T.T. Hebert) M.E. Barr	Soil	1968, Nellore	Tilak	OUFHS 165
181.	<i>Magnaporthe salvinii</i> (Catt.) R.A. Krause	Pond mud, sea shore soil	1983, Hyderabad Anapalli	Manohar.	OUFHS 166
182.	<i>Mariannaea elegans</i> var. <i>elegans</i> (Corda) Samson	Soil (spinach)	1995, Hyderabad	Padma	OUFHS 167

183.	<i>Memnoniella echinata</i> (Rivolta) Galloway	Pond mud	1983, Hyderabad	Manohar.	OUFHS 168
184.	<i>Microascus brevicaulis</i> S.P. Abbott	Forest soil	1981, Mahaboobnagar	Madhusudan Rao	OUFHS 169
185.	<i>Microdochium dimerum</i> (Penz.) Arx	Forest, wild, cultivated soil	1984, Vikarabad	Manohar.	OUFHS 170
186.	<i>Monatosporella rhizoidea</i> Vasant Rao and de Hoog	Soil	2008, Vikarabad	Kunwar	OUFH 576
187.	<i>Monodictys fluctuata</i> (Tandon and Bilgrami) M. B. Ellis	Pond mud	1979, Vikarabad	Manohar.	OUFHS 172
188.	<i>Monodictys putredinis</i> (Wall.) S. Hughes	Soil	2003, Hyderabad	Kunwar	OUFH 100
189.	<i>Mucor bacilliformis</i> Hesselt.	Soil (peanut)	1965, Tirupati	Manohar.	OUFHS 173
190.	<i>Mucor circinelloides</i> f. sp. <i>circinelloides</i> Tiegh.	Forest soil	2004, Narsapur	Manohar.	OUFHS 174
191.	<i>Mucor fragilis</i> Bainier	Forest soil	2004, Vikarabad	Manohar.	OUFHS 175
192.	<i>Mucor hiemalis</i> Wehmer	Soil (cluster bean)	1978, Hyderabad	Manohar.	OUFHS 176
193.	<i>Mucor hiemalis</i> f. sp. <i>silvaticus</i> (Hagem) Schipper	Soil (peanut)	1965, Tirupati	Rao	OUFHS 177
194.	<i>Mucor lausanensis</i> Lendn.	Forest soil	2004, Vikarabad	Manohar.	OUFHS 178
195.	<i>Mucor racemosus</i> Fresen.	Pond mud	1976, Hyderabad	Manohar.	OUFHS 180
196.	<i>Mucor varians</i> Povah	Riverbank soil	1977, Gadwal	Reddy	OUFHS 181
197.	<i>Myrothecium cinctum</i> (Corda) Sacc.	Cultivated soil	1980, Hyderabad	Manohar.	OUFHS 182
198.	<i>Myrothecium gramineum</i> Lib.	Soil (spinach)	1995, Hyderabad	Padma	OUFHS 183
199.	<i>Myrothecium leucotrichum</i> (Peck) M.C. Tulloch	Forest soil	1984, Vikarabad	Manohar.	OUFHS 184
200.	<i>Myrothecium roridum</i> Tode	Forest, cultivated soils	1984, Ananthagiri	Manohar.	OUFHS 185
201.	<i>Myrothecium verrucaria</i> (Alb. and Schwein.)	Rhizosphere soil (<i>Datura fastuosa</i>)	1975, Hyderabad	Manohar	OUFHS 186
202.	<i>Nannizzia gypsea</i> (Nann.) Stockdale	Soil (Poultry farm)	2001, Hyderabad	Sowjanya	OUFHS 187
203.	<i>Nectria hematococca</i> Berk. and Broome	Forest, wild, cultivated soils	1984, Hyderabad	Manohar.	OUFHS 188
204.	<i>Nectria humicola</i> Rama Rao	Mazie field soil	1969, Narsapur	Ramarao	OUFHS 189
205.	<i>Nemania serpens</i> var. <i>serpens</i> (Pers.) Gay	Riverbank soil	1983, Gadwal	Manohar.	OUFHS 190
206.	<i>Neocosmospora vasinfecta</i> E. F. Sm.	Paddy field soil	1977, Karimnagar	Manohar.	OUFHS 191
207.	<i>Neocosmospora vasinfecta</i> var. <i>africana</i> (Arx) P.F. Cannon and D. Hawksw.	Soil (grape)	1965, Hyderabad	Rafia Mehdi	OUFHS 192
208.	<i>Neosartorya glabra</i> (Fennell and Raper) Kozak	Forest soil	2004, Narsapur	Manohar.	OUFHS 193
209.	<i>Paecilomyces lilacinus</i> (Thom.) Samson	Pond mud	1983, Hyderabad	Manohar.	OUFHS 194
210.	<i>Paecilomyces variotii</i> Bainier	Soil (cashewnut)	1980, Hyderabad	Ramarao	OUFHS 195
211.	<i>Paraphoma fimeti</i> (Brunnaud) Gruyter, Aveskamp and Verkley (= <i>Phoma fimeti</i>)	Soil	2006, Hyderabad	Kunwar	OUFH 381
212.	<i>Penicillium adametzi</i> Zaleski	Soil	2004, Hyderabad	Manohar.	OUFHS 196

213.	<i>Penicillium aurantiogriseum</i> Dierckx	Polluted soil	1993, Hyderabad	Narendra Babu	OUFHS 197
214.	<i>Penicillium chrysogenum</i> Thom	Forest soil	1981, Mahaboobnagar	Madhusudan Rao	OUFHS 198
215.	<i>Penicillium citreonigrum</i> Dierckx	Forest soil	2002, Vikarabad	Narsimha-charyulu	OUFHS 199
216.	<i>Penicillium citrinum</i> Thom	Cultivated soil	1979, Nanded	Manohar.	OUFHS 200
217.	<i>Penicillium coeruleum</i> Sopp	Soil	2011, Vikarabad	Kunwar	OUFH 800
218.	<i>Penicillium commune</i> Thom	Forest, wild, cultivated soils	1984, Ananthagiri	Manohar.	OUFHS 201
219.	<i>Penicillium corylophyllum</i> Dierckx	Soil (cashew nut)	1980, Hyderabad	Ramarao	OUFHS 202
220.	<i>Penicillium decumbens</i> Thom	Soil (spinach)	1995, Hyderabad	Padma	OUFHS 203
221.	<i>Penicillium digitatum</i> (Pers. and Fr.) Sacc.	Mud soil	1996, Karimnagar	Alivelu-manga-mma	OUFHS 204
222.	<i>Penicillium duclauxii</i> Delacr.	Forest soil	2004, Narsapur	Manohar.	OUFHS 206
223.	<i>Penicillium funiculosum</i> Thom	Forest, wild, cultivated soils	1984, Ananthagiri	Manohar.	OUFHS 207
224.	<i>Penicillium glabrum</i> (Wehmer) Westling	Forest soil	2004, Narsapur	Manohar.	OUFHS 208
225.	<i>Penicillium herquei</i> Bainier and Satory	Rhizosphere, soil (spinach)	1995, Hyderabad	Padma	OUFHS 209
226.	<i>Penicillium humuli</i> J.F.H. Beyma	Rhizosphere soil	2010, Karimnagar	Kunwar	OUFH 696
227.	<i>Penicillium implicatum</i> Biourge	Mud	2000, Karimnagar	Shantha Devi	OUFHS 210
228.	<i>Penicillium islandicum</i> Sopp	Forest, wild, cultivated soils	1984, Vikarabad	Manohar.	OUFHS 211
229.	<i>Penicillium italicum</i> Stoll	Polluted soil	1993, Hyderabad	Narendra Babu	OUFHS 212
230.	<i>Penicillium lividum</i> Westling	Polluted soil	1993, Hyderabad	Narendra Babu	OUFHS 214
231.	<i>Penicillium miczynskii</i> K.M. Zaleski	Maize field soil	2002, Vikarabad	Narsimha-charyulu	OUFHS 216
232.	<i>Penicillium novae-zeelandiae</i> Beyma	Forest soil	2002, Vikarabad	Narsimha-charyulu	OUFHS 217
233.	<i>Penicillium olivicolor</i> Pitt	Soil (spinach)	1995, Hyderabad	Padma	OUFHS 218
234.	<i>Penicillium oxalicum</i> Currie and Thom	Rhizosphere and nonrhizo. soils (spinach)	1995, Hyderabad	Padma	OUFHS 219
235.	<i>Penicillium purpurogenum</i> Stoll	Seashore soil (<i>Casuarina</i>)	1996, Anakapalli	Chandra Mohan	OUFHS 220
236.	<i>Penicillium restrictum</i> Gilman and Abbott	Forest soil	1981, Mahaboobnagar	Madhusudan Rao	OUFHS 221
237.	<i>Penicillium roseopurpureum</i> Dierckx	Polluted soil	1993, Hyderabad	Narendra Babu	OUFHS 222
238.	<i>Penicillium rubrum</i> Stoll	Forest, wild, cultivated soils	1984, Ananthagiri	Manohar.	OUFHS 223
239.	<i>Penicillium rugulosum</i> Thom	Soil (spinach)	1995, Hyderabad	Padma	OUFHS 224
240.	<i>Penicillium simplicissimum</i> (Oudem.) Thom	Soil	1965, Tirupati	Rao	OUFHS 225
241.	<i>Penicillium spinulosum</i> Thom	Polluted soil	1993, Hyderabad	Narendra Babu	OUFHS 226
242.	<i>Penicillium thomii</i> Maire	Mud soil	2000, Karimnagar	Shantha Devi	OUFHS 227
243.	<i>Penicillium turbatum</i> Westling	Pond mud	1979, Vikarabad	Manohar.	OUFHS 228

244.	<i>Penicillium variabile</i> Wehmer	Rhizosphere and nonrhizo. soils (castor)	1981, Hyderabad	Ramarao	OUFHS 229
245.	<i>Penicillium vinaceum</i> Gilman and Abbott	Pond mud soil	1974, Hyderabad	Manohar.	OUFHS 230
246.	<i>Penicillium viridicatum</i> Westling	Forest soil	2004, Narsapur	Manohar.	OUFHS 231
247.	<i>Periconia atropurpurea</i> (Berk. M.A. Curtis) M.A Litv.	Pond mud	1977, Vikarabad	Manohar.	OUFHS 232
248.	<i>Periconia hispidula</i> (Pers.) E.W. Mason and M.B. Ellis	Forest soil	2004, Bhadrachalam	Manohar.	OUFHS 233
249.	<i>Periconia saraswatipurensis</i> Bilgrami	Pond mud	1974, Vikarabad	Manohar.	OUFHS 234
250.	<i>Pestalotiopsis glandicola</i> (Castagne) Steyaert	Rhizosphere soil (grape)	1964, Hyderabad	Ramarao	OUFHS 235
251.	<i>Pestalotiopsis mangiferae</i> (Henn.) Steyaert	Soil	1964, Hyderabad	Ramarao	OUFHS 236
252.	<i>Phaeoisariopsis pubescens</i> (Cooke and Ellis) M.B. Ellis	Polluted soil	1993, Hyderabad	Narendra Babu	OUFHS 237
253.	<i>Phoma eupyrena</i> Sacc.	Pond mud	1977, Gadwal	Reddy	OUFHS 238
254.	<i>Phoma fimeti</i> Brunaud	Pond mud soil	1975, Vikarabad	Manohar.	OUFHS 239
255.	<i>Phoma glomerata</i> (Corda) Wollenw. and Hochapfel	Soils (<i>Datura fastuosa</i>)	1979, Nanded	Manohar.	OUFHS 240
256.	<i>Phoma herbarum</i> Cooke	Fresh water tank mud	1996, Karimnagar	Alivelu-manga-mma	OUFHS 241
257.	<i>Phoma hibernica</i> Grimes, M. o' Connor and Cummins	Fresh water tank mud	1996, Karimnagar	Alivelu-manga-mma	OUFHS 242
258.	<i>Phoma humicola</i> J.C. Gilman and F.V. Abbott	Deciduous forest soil, garden soil	1975, Nanded	Manohar.	OUFHS 243
259.	<i>Phoma nebulosa</i> (Pers.) Berk.	Seashore soil (<i>Casuarina</i>)	1996, Anakapalli	Chandra Mohan	OUFHS 244
260.	<i>Phoma terricola</i> (=Pyrenochaeta decipens) Boerema	Pond mud soil	1974, Hyderabad	Manohar.	OUFHS 245
261.	<i>Phytophthora palmivora</i> (E.J. Butler) E.J. Butler	Field soil (<i>Colocasia</i>)	1980, Hyderabad	Satya Prasad	OUFHS 246
262.	<i>Pithomyces maydicus</i> (Sacc.) M.B. Ellis	Pond mud soil	1974, Hyderabad	Manohar.	OUFHS 247
263.	<i>Pithomyces sacchari</i> (Speg.) M.B. Ellis	Pond mud	2000, Karimnagar	Shantha Devi	OUFHS 248
264.	<i>Pithomyces terricola</i> (Manohar. and Ramarao) P.M. Kirk	Pond mud	1979, Vikarabad	Manohar.	OUFHS 249
265.	<i>Preussia funiculata</i> Fuckel (=Perisporium funiculatum)	Forest soil	1981, Mahaboobnagar	Madhusudan Rao	OUFHS 250
266.	<i>Pseudeurotium ovale</i> Stolk	Rhizosphere soil (grape)	1965, Hyderabad	Rafia Mehdi	OUFHS 251
267.	<i>Pseudocochliobolus eragrostidis</i> Tsuda and Ueyama (Anamorph <i>Curvularia eragrostidis</i>)	Forest soil	1989, Amrabad	Manohar.	OUFHS 252
268.	<i>Pseudocochliobolus pallescens</i> Tsuda and Ueyama (Anamorph <i>Curvularia pallescens</i>)	Forest, wild, cultivated soils	1984, Ananthagiri	Manohar.	OUFHS 253
269.	<i>Purpureocillium lilacinum</i> (Thom) Luangsa-ard, Houbraken, Hywel-Jones and Samson (=Paecilomyces lilacinus)	Soil	2005, Hyderabad	Kunwar	OUFH 280

270.	<i>Pythium acanthicum</i> Dechsler, J. Wash.	Scrub jungle soil	1975, Vikarabad	Manohar.	OUFHS 255
271.	<i>Pythium aphanidermatum</i> (Edson) Fitzp.	Pond mud	1976, Hyderabad	Manohar.	OUFHS 256
272.	<i>Pythium butleri</i> Subram.	Scrub jungle soil	1975, Vikarabad	Manohar.	OUFHS 257
273.	<i>Pythium carolinianum</i> Matthews	Pond mud	1983, Hyderabad	Manohar.	OUFHS 258
274.	<i>Pythium debaryanum</i> R. Hesse	Forest soils	1975, Vikarabad	Manohar.	OUFHS 259
275.	<i>Pythium echinulatum</i> Matthews	Forest soil, pond mud	1975, Vikarabad	Manohar.	OUFHS 260
276.	<i>Pythium elongatum</i> Mathews	Pond mud	1978, Hyderabad	Manohar.	OUFHS 261
277.	<i>Pythium mamillatum</i> Meurs	Deciduous forest soil	1975, Pakhal	Manohar.	OUFHS 262
278.	<i>Pythium middletoni</i> Sparow	Pond mud soil	1975, Vikarabad	Manohar.	OUFHS 263
279.	<i>Pythium myriotylum</i> Drechsler	Scrub jungle soil	1975, Vikarabad	Manohar.	OUFHS 264
280.	<i>Pythium spinosum</i> Sawada	River bank soil	1981, Gadwal	Reddy	OUFHS 265
281.	<i>Rhizomucor miehei</i> (Cooney and R. Emers.) Schipper (= <i>Mucor miehei</i>)	Soil	1984, Warangal	Veugopal Rao	OUFHS 266
282.	<i>Rhizomucor pusillus</i> (Lindt) Schipper (= <i>Mucor pusillus</i>)	Soils	1984, Warangal	Venugo-pal Rao	OUFHS 267
283.	<i>Rhizopus arrhizus</i> A. Fish. var. <i>arrhizus</i>	Rhizosphere soil (grape)	1965, Hyderabad	Rafia Mehdi	OUFHS 268
284.	<i>Rhizopus microsporus</i> var. <i>chinensis</i> (Saito) Schipper and Stalpers	Forest soil	2004, Vikarabad	Manohar.	OUFHS 269
285.	<i>Rhizopus stolonifer</i> var. <i>stolonifer</i> (Ehrenb.) Vuill.	Pond mud	1976, Vikarabad	Manohar.	OUFHS 270
286.	<i>Robillarda sessilis</i> (Sacc.) Sacc.	Pond mud soil	1974, Vikarabad	Manohar.	OUFHS 271
287.	<i>Robillarda suxenae</i> Manohar. and Rama Rao	Forest soil	1973, Vikarabad	Manohar.	OUFHS 272
288.	<i>Sagenomella diversispora</i> (van Beyma) W. Gams	Soil	2004, Hyderabad	Manohar.	OUFHS 273
289.	<i>Saprolegnia monoica</i> Pringsheim	Maize field soil	1964, Hyderabad	Ramarao	OUFHS 274
290.	<i>Scolecobasidium constrictum</i> E.V. Abbott	Soil (spinach)	1995, Hyderabad	Padma	OUFHS 275
291.	<i>Scolecobasidium humicola</i> G.L. Barron and L. V. Busch	Soil (spinach)	1995, Hyderabad	Padma	OUFHS 276
292.	<i>Scolecobasidium tshawytschae</i> (Doty and D.W. Slater) McGinnis and Ajello	Soil (spinach)	1995, Hyderabad	Padma	OUFHS 277
293.	<i>Scopulariopsis brumptii</i> Salv.-Duval	Rhizosphere soil (grape)	1965, Hyderabad	Rafia Mehdi	OUFHS 278
294.	<i>Setosphaeria rostrata</i> K.J. Leonard (= <i>Drechslera halodes</i>)	Forest, wild, cultivated soil	1984, Anantagiri hills	Manohar.	OUFHS 279
295.	<i>Sordaria fimicola</i> (Oberge ex. Desm.) Ces. and De Not.	Pond mud	1977, Vikarabad	Manohar.	OUFHS 280
296.	<i>Spegazzinia lobulata</i> Thrower	Pond mud	1974, Vikarabad	Manohar.	OUFHS 281
297.	<i>Sphaeronema allahabadensis</i> Chandra and Tandon	Uncultivated soil	1975, Hyderabad	Manohar.	OUFHS 282
298.	<i>Sphaeronema spinella</i> Kalchbrenner	Rhizosphere soil (grape)	1965, Hyderabad	Rafia Mehdi	OUFHS 283

299.	<i>Sporotrichum pruinosum</i> J.C. Gilman and E.V. Abbott (= <i>Chrysosporium pruinosum</i>)	Field soil (maize)	2004, Hyderabad	Manohar.	OUFHS 287
300.	<i>Stachybotrys atra</i> Corda	Soil (spinach)	1995, Hyderabad	Padma	OUFHS 288
301.	<i>Stachybotrys bisbyi</i> (Sriniv.) G.L. Barron	Forest soil	1981, Mahaboobnagar	Madhusudan Rao	OUFHS 289
302.	<i>Stachybotrys chartarum</i> (Ehrenb.) S. Hughes	Cultivated soil (castor)	1981, Hyderabad	Ramarao	OUFHS 290
303.	<i>Stachybotrys cylindrospora</i> C.N. Jensen	Soil	1974, Hyderabad	Manohar.	OUFHS 291
304.	<i>Stachybotrys parvispora</i> S. Hughes	Soil (spinach)	1995, Hyderabad	Padma	OUFHS 292
305.	<i>Stachybotrys pulchra</i> Speg.	Polluted soil	1993, Hyderabad	Narendra-Babu	OUFHS 293
306.	<i>Stachylidium bicolor</i> Link	Soil (spinach)	1995, Hyderabad	Padma	OUFHS 294
307.	<i>Stachylidium extorrea</i> var. <i>majus</i> Berl.	Rhizosphere soil	1988, Hyderabad	Mahmood	OUFHS 295
308.	<i>Staphylotrichum coccosporum</i> Meyer and Nicot	Soil	1965, Tirupati	Rao	OUFHS 296
309.	<i>Synephalastrum racemosum</i> Cohn ex. J. Schrot.	Cultivated soil	1979, Nanded	Manohar	OUFHS 297
310.	<i>Talaromyces funiculosus</i> (Thom) Samson, Yilmaz, frisvad and Seifert (= <i>Penicillium funiculosum</i>)	Soil	2010, Hyderabad	Kunwar	OUFH 688
311.	<i>Talaromyces luteus</i> (Zukal) C.R. Benjamin (Anamorph <i>Penicillium leuteum</i>)	Soil (castor)	1981, Hyderabad	Ramarao	OUFHS 298
312.	<i>Talaromyces trachyspermus</i> (Samson and Abdel-Fattah) Yaguchi	Forest soil	2004, Narsapur	Manohar.	OUFHS 299
313.	<i>Talaromyces varians</i> (G. Sm.) Samson, Yilmaz and Frisvad (= <i>Penicillium varians</i>)	Lemon rhizosphere soil	2006, Hyderabad	Kunwar	OUFH 398
314.	<i>Thanatephorus cucumeris</i> (A.B. Frank) Donk	Maize field soil	1969, Hyderabad	Laxminar-simhan	OUFHS 300
315.	<i>Thermoascus aurantiacus</i> Miehe	Soil	1984, Rampachodavaram	Venugo-pal Rao	OUFHS 301
316.	<i>Thermomyces lanuginosus</i> Tsikl.	Soil	1984, Vijayana-garam	Venugo-pal Rao	OUFHS 302
317.	<i>Thielavia terricola</i> (Gilman and Abbott) Emmons	Forest soil	1981, Amrabad	Madhusudan Rao	OUFHS 303
318.	<i>Torula caligans</i> (Batista and H.P. Upadhyay) M.B. Ellis	Soil	1974, Adilabad	Singh	OUFHS 304
319.	<i>Torula herbarum</i> (Pers.) Link	Soil (cluster bean)	1978, Hyderabad	Manohar.	OUFHS 305
320.	<i>Trichoderma asperellum</i> Samuels, Lieckfeldt, and Nirenberg	Herbicide treated soil	2003, Hyderabad	Sailaja	OUFH 071
321.	<i>Trichoderma atroviride</i> karst.	Polluted soils	2003, Hyderabad	Satyavani	OUFHS 307
322.	<i>Trichoderma aureoviride</i> Rifai	Forest soil	2002, Vikarabad	Narasimh-acharyulu	OUFHS 308
323.	<i>Trichoderma citrinoviride</i> Bisset	Forest soil	2002, Vikarabad	Narasimh-acharyulu	OUFHS 309
324.	<i>Trichoderma fasciculatum</i> Bisset	Soils (<i>Arachis hypogaeae</i>)	2004, Chittor	Srilakshmi	OUFHS 310

325.	<i>Trichoderma fertile</i> Bisset	Polluted soils, soils (<i>Arachis hypogaeae</i>)	2004, Chittor	Srilakshmi	OUFHS 311
326.	<i>Trichoderma hamatum</i> (Bonord.) Bainier	Soil	2002, Vikarabad	Kunwar	OUFH 059
327.	<i>Trichoderma harzianum</i> Rifai	Forest soil	2001, Chittor	Srilakshmi	OUFHS 312
328.	<i>Trichoderma konilangbra</i> Samuels, Petrini and Kubicek	Polluted soil	2003, Hyderabad	Satyavani	OUFH 187
329.	<i>Trichoderma koningii</i> Oudem	Forest soil	2001, Chittor	Srilakshmi	OUFHS 314
330.	<i>Trichoderma longibrachiatum</i> Rifai	Soil	2004, Perantala-palli, Papikondalu	Nagamani	OUFH 070
331.	<i>Trichoderma piluliferum</i> Webster and Rifai	Cultivated soil (pigeon pea)	2001, Hyderabad	Satyavani	OUFHS 316
332.	<i>Trichoderma polysporum</i> (Link and Pers.) Rifai	Soil	2004, West Godavari	Nagamani	OUFHS 317
333.	<i>Trichoderma pseudokoningii</i> Rifai	Soil	2004, Perantala-palli, Papikondalu	Nagamani	OUFH 069
334.	<i>Trichoderma reesei</i> E.G. Simmons	Polluted soil	2003, Hyderabad	Satyavani	OUFHS 319
335.	<i>Trichoderma strictipilis</i> Bissett	Polluted soil	2003, Hyderabad	Satyavani	OUFHS 320
336.	<i>Trichoderma virens</i> (Miller, Giddens and Foster) von Arx	Forest soil	2004, Vikarabad	Nagamani	OUFHS 321
337.	<i>Trichoderma viride</i> Pers. (= <i>Trichoderma lignorum</i>)	Soil (<i>Datura fastuosa</i>)	1975, Hyderabad	Manohar.	OUFHS 322
338.	<i>Trichothecium roseum</i> (Pers.) Link	Pond mud	1984, Hyderabad	Manohar.	OUFHS 323
339.	<i>Trichurus spiralis</i> Hasselbr.	Forest soil	2004, Narsapur	Manohar.	OUFHS 324
340.	<i>Trimmatostroma indicum</i> Manohar. Rag. Rao and Rama Rao	Soil (coffee)	1977, Ananthagiri	Manohar.	OUFHS 325
341.	<i>Tritirachium dependens</i> Limber	Soil	2004, Hyderabad	Manohar.	OUFHS 326
342.	<i>Tritirachium roseum</i> J.F.H. Beyma	Soil	1974, Hyderabad	Manohar.	OUFHS 327
343.	<i>Verticillium puniceum</i> Cooke and Ellis	Soil (spinach)	1995, Hyderabad	Padma	OUFHS 328
344.	<i>Verticillium terrestre</i> (Pers.) Sacc.	Rhizosphere soil (grape)	1965, Hyderabad	Rafia Mehdi	OUFHS 329
345.	<i>Westerdykella multispora</i> (Saito and Minoura ex. Cain) Cejp and Milko	Pond mud	1983, Hyderabad	Manohar.	OUFHS 330
346.	<i>Wojnowicia hirta</i> Sacc.	Forest soil	2004, Vikarabad	Manohar.	OUFHS 331
347.	<i>Zygorhynchus moelleri</i> Vuill.	Cultivated soil	1979, Nanded	Manohar.	OUFHS 332
348.	<i>Zygosporium masonii</i> Hughes	Forest soil	2005, Vikarabad	Kunwar	OUFH 282

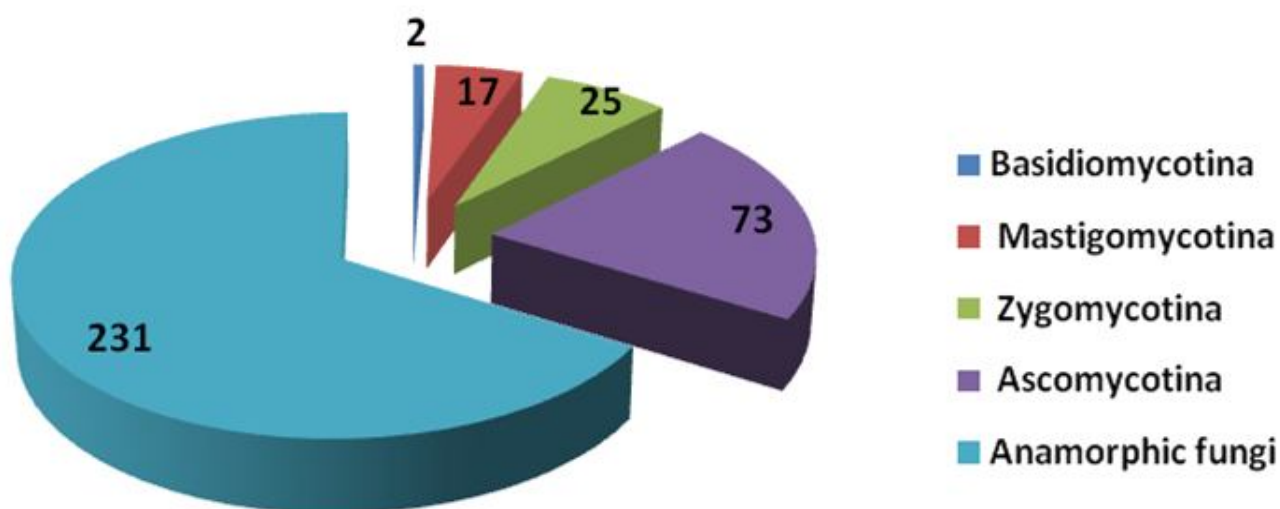


Figure 2. No. of fungi recorded from different fungal groups in Andhra Pradesh

agent were isolated. Several fungal species known for their industrial importance were also isolated.

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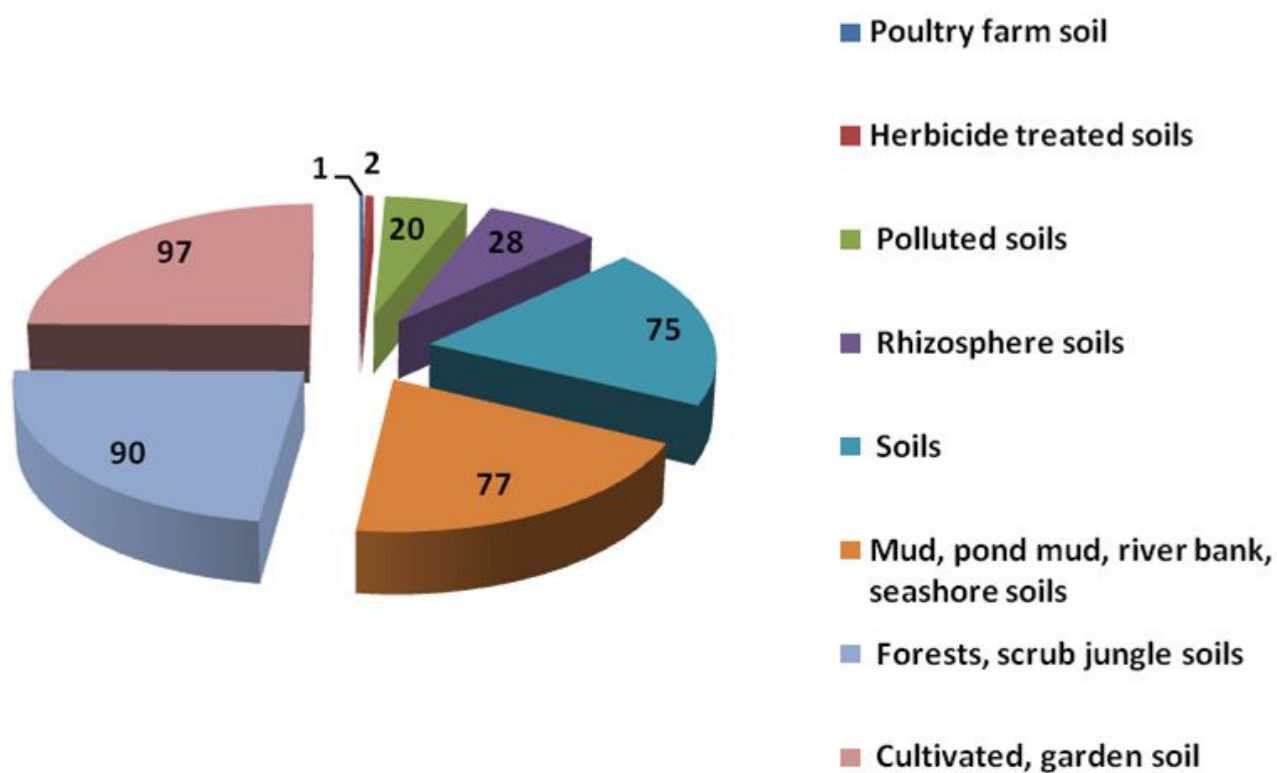


Figure 3. No of fungi recorded from various soil substrates of Andhra Pradesh

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