

## **An investigation of the soil mycoflora in sugarcane field of Dharmapuri District, Tamilnadu**

**R. Mahalingam, R. Bharathidasan, V. Ambikapathy and A. Panneerselvam**

*PG and Research Dept. of Botany and Microbiology, A.V.V.M. Sri Pushpam College  
(Autonomous), Poondi, Thanjavur (Dt), Tamil Nadu, India*

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### **ABSTRACT**

*Soil is a complex ecosystem, delimited by physicochemical parameters that hold enormous number of living organisms. This study deals with the monthly variations in soil fungal population of traditional sugarcane field in Dharmapuri District, Tamilnadu viz Dharmapuri and Pennagaram. About 76 different species belonging to Phycomycetes, Ascomycetes and deuteromycetes were isolated by using PDA medium and identified by using standard manual. The dominant species were Aspergillus chevalieri, A.niger, A.flavus followed by Ceratocystis paradoxa, Bipolaris oryzae, Botrytis cinera, Trichoderma glaucum, Penicillium citrinum and P.chrysogenum from the sugarcane field soils of Dharmapuri in various months whereas, in Pennagaram soils was dominant species were A.niger, Ceratocystis paradoxa followed by A.flavus, Fusarium oxysporum, Gliocladium virens, Penicillium citrinum T.viride and Torula allii respectively. Total fungal organisms in two station were 43 species belong to 17 genera were screened from Dharmapuri station and 40 species belong to 15 genera were from Pennagaram station.*

**Key words :** Sugarcane field, Biodiversity, Fungal population, physico-chemical parameters, Phycomycetes.

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### **INTRODUCTION**

Microbes are the least unstated mechanism of soil by both agronomists and soil practitioners. On the farm several soil organisms offer benefits to crop growing in an ecosystem. The soil microbes decompose the plant and animal residues entering the soil and convert them into soil organic matter, which influences on soil physical, chemical and biological properties and on creating a complimentary medium for biological reactions and life support in the soil environment, enhanced site-specific diversity typically results in higher levels of below ground microbial diversity and production [8].

Large quantities of readily decomposable organic matter are added to agricultural soils every year as crop residus or animal wastes and have a significant outcome on soil microbial population. The plant species growing on the soil also equally influence the population and species composition of the soil fungi [5].

Microfungi play a focal role in nutrient cycling by regulating soil biological activity [2]. However, the rate at which organic matter is decomposed by the microbes is interrelated to the chemical composition of the substrate as well as environmental conditions. They have been a number of studies on the distribution of soil microfungi in agricultural field. Some studies dealt with the influence of plant community [3] and others attempted to examine monthly trends [6].

### **MATERIALS AND METHODS**

#### **Collection of Soil Samples**

About 24 soil samples were collected from the two station, viz. Dharmapuri and Pennagaram in Dharmapuri District, Tamilnadu. The soil samples were collected for a period of 12 months in sugarcane field.

**Sampling Schedule**

Soil sample was collected in each sampling station on monthly intervals for a period of one year from April 2009 to March 2010. The climate was monsoonic and the parameters are normal condition.

**Analysis**

The mechanical and chemical analysis of the soils were made with the help of Lamotte's soil testing outfit, nitrogen and organic, etc., were estimated as outlined [9].

**ISOLATION OF SOIL MYCOFLORA****Dilution Plating Method**

Dilution techniques described by Warcup (1950) was used to isolate the fungi from soil sample weighing 1g was diluted in 10 ml of distilled water. One ml of the diluted sample was poured and spread on petriplates containing sterilized PDA Medium (Extract from 250g of potato (boiled and filtered), dextrose 20g, agar 15g and distilled water 1000 ml pH 7.0) in replicates. The inoculated plates were incubated in a room temperature for 3 days. One percent streptomycin solution was added to the medium before pouring into petriplates for preventing bacterial growth.

**Observation**

The colony growth on PDA plates with different morphology were counted separately. A portion of the growing edge of the colony was picked up with the help of a pair of needles and mounted on a clean slide with lactophenol cotton blue stain. The slide was gently heated in a spirit lamp so as to facilitate the staining and remove air bubbles, if any. The excess stain was removed with the help of tissue paper and then the cover slip was sealed with transparent nail polish. The slide was observed under a compound microscope.

Microphotography of the individual fungal species was also taken using Nikon microscope, Japan.

**Identification**

Colony colour and morphology were observed besides hyphal structure, spore size, shape and spore bearing structures. They were compared with the standard manual of [1, 4, 10, 12, 13] for identification of the fungi.

**Presentation of Data**

Number of species is referred as species diversity, population density expressed in terms of colony forming unit (CFU) per gram of soil with dilution factors.

In order to assess the dominance of individual species and percentage contribution as follows.

$$\% \text{ contribution} = \frac{\text{No. of colonies of fungus in a sample}}{\text{Total number of colonies of all the species in a sample}} \times 100$$

**RESULTS AND DISCUSSION****Fungal diversity in sugarcane soils**

Altogether 12 soil samples from 2 different stations representing the entire Dharmapuri District were examined for fungal diversity. The study resulted the presence of 78 species of fungi in all of them 3 species belonging to two genera were Ascomycetes, Phycomycetes and the remaining 78 species belonging to 34 genera were assignable to Deuteromycetes.

**Station wise species Diversity**

Altogether 43 species belong to 17 genera (2 Phycomycetes, and 41 Deuteromycetes) were identified from Dharmapuri and 40 species belong to 15 genera (2 Phycomycetes, 38 Deuteromycetes) were identified from Pennagaram.

**Species composition**

Among the fungi, 17 genera recorded, the genus *Aspergillus* was considered by more in fungal diversity states followed by *Trichoderma* (5 species) *Fusarium* [4] and *Penicillium* [10]. All other genera were represented one species each (Table 1).

**Species diversity**

Altogether 78 species and 34 genera (5 phycomycetes, 3 Ascomycetes and 70 Deuteromycetes) were identified from Dharmapuri and Pennagaram station.

Table -1

**Ascomycetes :**

1. *Chaetomium* sp. kunze and schmit
2. *Neurospora crassa* Shear and Dodge
3. *Nigrospora sphaerica* (Saccard) mason

**Deuteromycetes :**

1. *Alternaria alternata*
2. *Aspergillus awamori* Kawachi
3. *A.chevalieri* Thom and Church
4. *A.clavatus* Desmazieres
5. *A.conicus* Blochwitz
6. *A.flavipes* Bainier and Sartory
7. *A.flavus* Link
8. *A.fumigatus* Fresenius
9. *A.funiculosus* G.Smith
10. *A.granulosis* Raper and Thom
11. *A.humicola* Chaudhuri
12. *A.luchuensis* Inui
13. *A.nidulans* Winter
14. *A.niger* Van Tieghem
15. *A.ochraceous* Wilhelm
16. *A.oryzae* (Ahlburgin Korschelt) Cohn
17. *A.repens* (Corda) de Bary
18. *A.ruber* Thomand Church
19. *A.rugulosus* Thom and Raper
20. *A.sulphureus* (Fresenius) Thom and Church
21. *A.sydowi* (Bainier and Sartory) Thom and Church
22. *A.tamaraii* Kita
23. *A.terreus* Thom
24. *A.ustus* Thom and Church
25. *A.versicolor* Thom and Raper
26. *A.wentii* wehmer
27. *Bipolaris oryzae*
28. *Botrytis cinerea* Person
29. *Ceratocystis paradoxa* (Dade) C.Moreau
30. *Colletotrichum falcatum* went
31. *Curvularia geniculata* (Tracy and Earle) Boedijn
32. *C.lunata* (Walker) Boedijn
33. *C.senegalensis* (Speg) Subram
34. *Dimeriella sacchari*
35. *Fusarium moniliforme* Sheldon var.minus wollenweber
36. *F.oxysporum* schlechendahl

**Phycomycetes :**

1. *Absidia glauca* Hagen
2. *Mucor zygospora*
3. *Rhizopus nigricans* Ehrenberg
4. *R. stolanifer*
5. *Thamnidium elegans* Link
37. *F.semitectum* Berkeley and Ravenel
38. *F.solani* (Martius) Appel and Wollenweber
39. *Geotrichum candidum* Link
40. *Gliocladium virens*
41. *Gliocladiopsis sagariensis* Saksena
42. *Gloeocercospora sorgh*
43. *Helminthosporium* sp. Link
44. *Helminthosporium oryzae* Breda de Hoan
45. *Humicola* sp. Corda
46. *Hyalopus ater* Corda
47. *Masoniella* sp. G.Smith
48. *Marasmiellus sacchari*
49. *Penicillium chrysogenum* Thom
50. *P.citrinum* Thom
51. *P.candidum*
52. *P.janthinellum* Biourge
53. *P.javanicum* van Beyma
54. *P.japonicum*
55. *P.lanosum* Westling
56. *P.notatum* Westling
57. *P.purpurogenum* Stoll
58. *P.purpurescens* Sopp
59. *P.turbatum* Westling
60. *Pythium* sp. Pringsheim
61. *Sclerospora* sp.
62. *Setosphaeria rostrata* K.J.Leonard
63. *Torula allii* (Harz) Saccardo
64. *Trichoderma glaucum* Abbott
65. *T.harzianum* Rifai
66. *T.lignorum* (Tode) Harz
67. *T.viride* AA.Gams
68. *Trichodochium* sp. H.Sydow
69. *Ustilago scitaminea*
70. *Veticillium* sp. Nees

**Total number of colonies, mean density (CFU/g) and percentage contribution of fungi during different monthly variation from Dharmapuri**

S. No.	Name of the Fungi	April 2009 to March 2010																								Total no. of Colonies	% contribution
		April		May		June		July		August		Sep.		Oct.		Nov.		Dec.		Jan		Feb.		March			
		TNC	MD	TNC	MD	TNC	MD	TNC	MD	TNC	MD	TNC	MD	TNC	MD	TNC	MD	TNC	MD	TNC	MD	TNC	MD	TNC	MD		
1.	<i>Absidia glauca</i>	3	1.00	2	0.67	0	0.00	5	1.67	0	0.00	0	0.00	0	0.00	4	1.33	5	1.67	0	0.00	0	0.00	0	0.00	19	2.41
2.	<i>Aspergillus chevalieri</i>	4	1.33	0	0.00	0	0.00	0	0.00	5	1.67	3	1.00	0	0.00	3	1.00	0	0.00	0	0.00	0	0.00	5	1.67	20	2.53
3.	<i>A.conicus</i>	0	0.00	3	1.00	3	1.00	0	0.00	0	0.00	0	0.00	5	1.67	0	0.00	0	0.00	3	1.00	2	0.67	0	0.00	16	2.03
4.	<i>A.flavipes</i>	2	0.67	4	1.33	0	0.00	0	0.00	3	1.00	0	0.00	0	0.00	2	0.67	0	0.00	3	1.00	5	1.67	0	0.00	19	2.41
5.	<i>A.fumigatus</i>	0	0.00	7	2.33	0	0.00	0	0.00	2	0.67	5	1.67	0	0.00	0	0.00	0	0.00	0	0.00	3	1.00	2	0.67	19	2.41
6.	<i>A.granulosus</i>	3	1.00	0	0.00	0	0.00	3	1.00	0	0.00	2	0.67	3	1.00	0	0.00	4	1.33	0	0.00	0	0.00	3	1.00	18	2.28
7.	<i>A.luchuensis</i>	2	0.67	0	0.00	3	1.00	0	0.00	0	0.00	0	0.00	6	2.00	7	2.33	3	1.00	0	0.00	0	0.00	0	0.00	21	2.66
8.	<i>A.niger</i>	5	1.67	3	1.00	0	0.00	5	1.67	0	0.00	0	0.00	2	0.67	3	1.00	0	0.00	5	1.67	0	0.00	4	1.33	27	3.43
9.	<i>A.oryzae</i>	0	0.00	0	0.00	4	1.33	2	0.67	0	0.00	3	1.00	0	0.00	0	0.00	2	0.67	0	0.00	3	1.00	0	0.00	14	1.78
10.	<i>A.rugulosus</i>	0	0.00	2	0.67	2	0.67	0	0.00	3	1.00	0	0.00	0	0.00	4	1.33	3	1.00	0	0.00	0	0.00	0	0.00	14	1.78
11.	<i>A.tamari</i>	0	0.00	0	0.00	6	2.00	0	0.00	2	0.67	7	2.33	0	0.00	0	0.00	5	1.67	3	1.00	7	2.33	0	0.00	30	3.81
12.	<i>A.terreus</i>	3	1.00	0	0.00	0	0.00	4	1.33	0	0.00	2	0.67	0	0.00	3	1.00	0	0.00	0	0.00	3	1.00	2	0.67	17	2.16
13.	<i>A.ustus</i>	0	0.00	3	1.00	0	0.00	0	0.00	5	1.67	0	0.00	4	1.33	2	0.67	0	0.00	3	1.00	0	0.00	3	1.00	20	2.53
14.	<i>A.versicolor</i>	2	0.67	4	1.33	0	0.00	0	0.00	0	0.00	0	0.00	3	1.00	5	1.67	0	0.00	2	0.67	0	0.00	0	0.00	16	2.03
15.	<i>Bipolaris oryzae</i>	3	1.00	0	0.00	0	0.00	0	0.00	3	1.00	0	0.00	2	0.67	0	0.00	0	0.00	0	0.00	5	1.67	0	0.00	13	1.65
16.	<i>Ceratocystis paradoxa</i>	0	0.00	5	1.67	3	1.00	2	0.67	6	2.00	0	0.00	0	0.00	3	1.00	5	1.67	0	0.00	0	0.00	4	1.33	28	3.55
17.	<i>Chaetomium sp.</i>	2	0.67	0	0.00	0	0.00	0	0.00	2	0.67	0	0.00	7	2.33	0	0.00	0	0.00	3	1.00	0	0.00	3	1.00	17	2.16
18.	<i>Curvularia geniculata</i>	0	0.00	3	1.00	0	0.00	0	0.00	4	1.33	0	0.00	3	1.00	0	0.00	4	1.33	4	1.33	2	0.67	0	0.00	20	2.53
19.	<i>Curvularia lunata</i>	0	0.00	0	0.00	3	1.00	0	0.00	0	0.00	5	1.67	0	0.00	0	0.00	2	0.67	2	0.67	3	1.00	0	0.00	15	1.90
20.	<i>Dimeriella sacchari</i>	4	1.33	0	0.00	2	0.67	0	0.00	0	0.00	0	0.00	3	1.00	0	0.00	0	0.00	0	0.00	5	1.67	0	0.00	14	1.78
21.	<i>Fusarium moniliforme</i>	3	1.00	0	0.00	5	1.67	0	0.00	3	1.00	0	0.00	0	0.00	0	0.00	5	1.67	3	1.00	0	0.00	3	1.00	22	2.79
22.	<i>Fusarium semitectum</i>	0	0.00	4	1.33	0	0.00	0	0.00	0	0.00	3	1.00	4	1.33	0	0.00	7	2.33	0	0.00	0	0.00	2	0.67	20	2.53
23.	<i>Geotrichum candidum</i>	0	0.00	2	0.67	3	1.00	0	0.00	4	1.33	0	0.00	0	0.00	0	0.00	0	0.00	5	1.67	0	0.00	0	0.00	14	1.78
24.	<i>Gliocladium virens</i>	5	1.67	3	1.00	0	0.00	3	1.00	0	0.00	0	0.00	5	1.67	3	1.00	0	0.00	0	0.00	0	0.00	5	1.67	24	3.04
25.	<i>Gliocladiopsis sagariensis</i>	0	0.00	0	0.00	4	1.33	2	0.67	0	0.00	3	1.00	3	1.00	0	0.00	0	0.00	0	0.00	3	1.00	0	0.00	15	1.90
26.	<i>Helminthosporium oryzae</i>	4	1.33	0	0.00	3	1.00	0	0.00	3	1.00	2	0.67	0	0.00	0	0.00	5	1.67	0	0.00	0	0.00	2	0.67	19	2.41
27.	<i>Humicola sp.</i>	0	0.00	0	0.00	0	0.00	4	1.33	2	0.67	0	0.00	0	0.00	2	0.67	0	0.00	0	0.00	0	0.00	3	1.00	11	1.40
28.	<i>Hyalopus ater</i>	0	0.00	0	0.00	5	1.67	0	0.00	0	0.00	4	1.33	3	1.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	12	1.52
29.	<i>Masoniella sp.</i>	0	0.00	3	1.00	2	0.67	0	0.00	0	0.00	2	0.67	0	0.00	4	1.33	0	0.00	0	0.00	3	1.00	0	0.00	14	1.78
30.	<i>Mucor zygospora</i>	0	0.00	0	0.00	0	0.00	5	1.67	3	1.00	0	0.00	3	1.00	2	0.67	0	0.00	0	0.00	0	0.00	0	0.00	13	1.65
31.	<i>Neurospora crassa</i>	0	0.00	4	1.33	3	1.00	0	0.00	0	0.00	0	0.00	2	0.67	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	9	1.14
32.	<i>Penicillium chrysogenum</i>	4	1.33	2	0.67	0	0.00	0	0.00	5	1.67	0	0.00	5	1.67	7	2.33	3	1.00	0	0.00	0	0.00	0	0.00	26	3.30
33.	<i>Penicillium candidum</i>	3	1.00	0	0.00	5	1.67	0	0.00	0	0.00	7	2.33	0	0.00	2	0.67	0	0.00	5	1.67	0	0.00	4	1.33	26	3.30
34.	<i>P.janthinellum</i>	6	2.00	0	0.00	3	1.00	0	0.00	0	0.00	3	1.00	0	0.00	3	1.00	4	1.33	0	0.00	5	1.67	2	0.67	26	3.30
35.	<i>P.javanicum</i>	0	0.00	5	1.67	0	0.00	3	1.00	0	0.00	2	0.67	0	0.00	0	0.00	2	0.67	6	2.00	0	0.00	0	0.00	18	2.28
36.	<i>P.lanosum</i>	3	1.00	3	1.00	0	0.00	0	0.00	6	2.00	3	1.00	0	0.00	4	1.33	0	0.00	3	1.00	0	0.00	3	1.00	25	3.17
37.	<i>P.purpurensens</i>	0	0.00	4	1.33	3	1.00	0	0.00	0	0.00	0	0.00	0	0.00	5	1.67	2	0.67	5	1.67	0	0.00	5	1.67	24	3.05
38.	<i>Pythium sp.</i>	0	0.00	0	0.00	2	0.67	0	0.00	4	1.33	0	0.00	3	1.00	0	0.00	0	0.00	4	1.33	3	1.00	0	0.00	16	2.03
39.	<i>Rhizopus stolonifer</i>	0	0.00	0	0.00	3	1.00	0	0.00	3	1.00	0	0.00	2	0.67	0	0.00	0	0.00	3	1.00	0	0.00	0	0.00	11	1.40
40.	<i>Setosphaeria rostrata</i>	3	1.00	0	0.00	4	1.33	2	0.67	0	0.00	0	0.00	4	1.33	0	0.00	0	0.00	2	0.67	0	0.00	4	1.33	19	2.41
41.	<i>Thamnidium elegans</i>	2	0.67	0	0.00	0	0.00	0	0.00	5	1.67	3	1.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	10	1.27
42.	<i>Trichoderma glaucum</i>	0	0.00	3	1.00	4	1.33	0	0.00	0	0.00	0	0.00	3	1.00	4	1.33	0	0.00	3	1.00	2	0.67	0	0.00	19	2.41
43.	<i>Trichodochium sp.</i>	4	1.33	2	0.67	0	0.00	0	0.00	4	1.33	0	0.00	0	0.00	3	1.00	0	0.00	5	1.67	0	0.00	0	0.00	18	2.28
	Total	70	23.34	71	23.67	75	25.01	40	13.35	77	25.68	59	19.68	80	26.68	72	24.00	64	21.35	67	22.35	54	18.02	59	19.68	788	

TNC – Total Number of colonies, MD – Mean Density.



**Total number of colonies, mean density (CFU/g) and percentage contribution of fungi during different monthly variation from Pennagaram**

S. No.	Name of the Fungi	April 2009 to March 2010																								Total no. of Colonies	% contribution
		April		May		June		July		August		Sep.		Oct.		Nov.		Dec.		Jan		Feb.		March			
		TNC	MD	TNC	MD	TNC	MD	TNC	MD	TNC	MD	TNC	MD	TNC	MD	TNC	MD	TNC	MD	TNC	MD	TNC	MD	TNC	MD		
1.	<i>Alternaria alternata</i>	3	1.00	2	0.67	0	0.00	0	0.00	4	1.33	0	0.00	3	1.00	5	1.67	2	0.67	0	0.00	0	0.00	0	0.00	19	2.55
2.	<i>Aspergillus awamori</i>	5	1.67	0	0.00	0	0.00	3	1.00	0	0.00	2	0.67	0	0.00	3	1.00	4	1.33	3	1.00	0	0.00	2	0.67	22	2.95
3.	<i>A.Clavatus</i>	0	0.00	0	0.00	0	0.00	5	1.67	2	0.67	3	1.00	0	0.00	4	1.33	0	0.00	0	0.00	5	1.67	0	0.00	19	2.55
4.	<i>A.flavus</i>	2	0.67	3	1.00	3	1.00	0	0.00	4	1.33	0	0.00	0	0.00	0	0.00	5	1.67	0	0.00	3	1.00	2	0.67	22	2.95
5.	<i>A.funiculosus</i>	0	0.00	4	1.33	0	0.00	3	1.00	5	1.67	0	0.00	2	0.67	0	0.00	0	0.00	0	0.00	5	1.67	0	0.00	19	2.55
6.	<i>A.humicola</i>	3	1.00	0	0.00	0	0.00	0	0.00	0	0.00	2	0.67	0	0.00	5	1.67	0	0.00	4	1.33	3	1.00	2	0.67	19	2.55
7.	<i>A.nidulans</i>	0	0.00	7	2.33	2	0.67	0	0.00	0	0.00	3	1.00	0	0.00	0	0.00	6	2.00	3	1.00	0	0.00	5	1.67	26	3.49
8.	<i>A.niger</i>	5	1.67	0	0.00	0	0.00	4	1.33	3	1.00	0	0.00	5	1.67	2	0.67	0	0.00	0	0.0	4	1.33	3	1.00	26	3.49
9.	<i>A.ochraceous</i>	0	0.00	0	0.00	0	0.00	5	1.67	0	0.00	3	1.00	4	1.33	0	0.00	0	0.00	2	0.67	0	0.00	0	0.00	14	1.88
10.	<i>A.repen</i>	0	0.00	3	1.00	2	0.67	0	0.00	0	0.00	2	0.67	0	0.00	3	1.00	5	1.67	0	0.00	0	0.00	0	0.00	15	2.01
11.	<i>A.ruber</i>	0	0.00	0	0.00	5	1.67	3	1.00	2	0.67	0	0.00	0	0.00	0	0.00	0	0.00	3	1.00	0	0.00	0	0.00	13	1.74
12.	<i>A.sulphureus</i>	4	1.33	0	0.00	0	0.00	5	1.67	0	0.00	3	1.00	0	0.00	0	0.00	0	0.00	0	0.00	4	1.33	3	1.00	19	2.55
13.	<i>A.sydowi</i>	3	1.00	0	0.00	0	0.00	0	0.00	2	0.67	0	0.00	5	1.67	2	0.67	0	0.00	3	1.00	0	0.00	4	1.33	19	2.55
14.	<i>A.wentii</i>	6	2.00	3	1.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	3	1.00	2	0.67	0	0.00	4	1.33	0	0.00	18	2.41
15.	<i>Botrytis cinera</i>	0	0.00	2	0.67	3	1.00	0	0.00	0	0.00	0	0.00	4	1.33	0	0.00	3	1.00	0	0.00	0	0.00	0	0.00	12	1.61
16.	<i>Ceratocystis paradoxa</i>	5	1.67	0	0.00	0	0.00	3	1.00	3	1.00	0	0.00	4	1.33	0	0.00	0	0.00	4	1.33	3	1.00	2	0.67	24	3.22
17.	<i>Colletotrichum Falcatum</i>	0	0.00	0	0.00	4	1.33	0	0.00	3	1.00	5	1.67	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	12	1.61
18.	<i>Curvularia lunata</i>	4	1.33	3	1.00	0	0.00	0	0.00	0	0.00	0	0.00	7	2.33	2	0.67	0	0.00	0	0.00	0	0.00	3	1.00	19	2.55
19.	<i>Curvularia senegalensis</i>	2	0.67	0	0.00	0	0.00	3	1.00	0	0.00	2	0.67	3	1.00	0	0.00	0	0.00	3	1.00	0	0.00	0	0.00	13	1.74
20.	<i>Fusarium oxysporium</i>	0	0.00	0	0.00	3	1.00	0	0.00	0	0.00	0	0.00	0	0.00	0	0.00	5	1.67	0	0.00	4	1.33	7	2.33	19	2.55
21.	<i>Fusarium solani</i>	5	1.67	3	1.00	0	0.00	0	0.00	4	1.33	3	1.00	0	0.00	3	1.00	0	0.00	4	1.33	3	1.00	0	0.00	25	3.35
22.	<i>Gliocladium virens</i>	3	1.00	0	0.00	0	0.00	5	1.67	0	0.00	0	0.00	3	1.00	2	0.67	6	2.00	2	0.67	0	0.00	4	1.33	25	3.35
23.	<i>Gloeocercospora sorgh</i>	0	0.00	0	0.00	0	0.00	3	1.00	0	0.00	2	0.67	4	1.33	0	0.00	3	1.00	4	1.33	0	0.00	0	0.00	16	2.14
24.	<i>Helminthosporium sp.</i>	4	1.67	3	1.00	0	0.00	2	0.67	0	0.00	0	0.00	0	0.00	5	1.67	0	0.00	0	0.00	4	1.33	6	2.00	24	3.22
25.	<i>Mucor zygospora</i>	0	0.00	2	0.67	0	0.00	0	0.00	3	1.00	5	1.67	0	0.00	0	0.00	4	1.33	0	0.00	0	0.00	0	0.00	14	1.88
26.	<i>Nigrospora sphaerica</i>	3	1.00	0	0.00	0	0.00	4	1.33	0	0.00	3	1.00	2	0.67	0	0.00	0	0.00	3	1.00	0	0.00	2	0.67	17	2.28
27.	<i>Penicillium citrinum</i>	5	1.67	0	0.00	0	0.00	6	2.00	3	1.00	0	0.00	0	0.00	2	0.67	0	0.00	0	0.00	4	1.33	3	1.00	23	3.08
28.	<i>P. japonicum</i>	2	0.67	0	0.00	3	1.00	0	0.00	0	0.00	0	0.00	5	1.67	0	0.00	3	1.00	0	0.00	4	1.33	3	1.00	20	2.68
29.	<i>P.purpurogenum</i>	0	0.00	6	2.00	2	0.67	0	0.00	0	0.00	0	0.00	3	1.00	2	0.67	0	0.00	5	1.67	0	0.00	0	0.00	18	2.41
30.	<i>P.turbatum</i>	3	1.00	3	1.00	0	0.00	2	0.67	0	0.00	4	1.33	0	0.00	0	0.00	0	0.00	3	1.00	2	0.67	0	0.00	17	2.28
31.	<i>Rhizopus nigricans</i>	0	0.00	2	0.67	0	0.00	3	1.00	0	0.00	3	1.00	0	0.00	4	1.33	3	1.00	0	0.00	0	0.00	0	0.00	15	2.01
32.	<i>Rhizopus stolanifer</i>	0	0.00	0	0.00	4	1.33	0	0.00	3	1.00	0	0.00	0	0.00	0	0.00	0	0.00	2	0.67	0	0.00	0	0.00	9	1.21
33.	<i>Sclerospora sp.</i>	0	0.00	0	0.00	0	0.00	4	1.33	0	0.00	3	1.00	3	1.00	0	0.00	0	0.00	0	0.00	0	0.00	4	1.33	14	1.88
34.	<i>Setospharia rostrata</i>	4	1.33	0	0.00	5	1.67	3	1.00	2	0.67	0	0.00	0	0.00	3	1.00	0	0.00	0	0.00	2	0.67	5	1.67	24	3.22
35.	<i>Torula allii</i>	0	0.00	3	1.00	0	0.00	2	0.67	0	0.00	0	0.00	0	0.00	0	0.00	3	1.00	3	1.00	0	0.00	0	0.00	11	1.47
36.	<i>Trichoderma harzianum</i>	3	1.00	4	1.33	0	0.00	0	0.00	5	1.33	3	1.00	0	0.00	5	1.67	0	0.00	0	0.00	4	1.33	2	0.67	26	3.49
37.	<i>T.lignorum</i>	2	0.67	0	0.00	4	1.33	5	1.67	0	0.00	2	0.67	6	2.00	0	0.00	0	0.00	3	1.00	0	0.00	0	0.00	22	2.99
38.	<i>T.viride</i>	0	0.00	5	1.67	3	1.00	3	1.00	4	1.33	5	1.67	0	0.00	0	0.00	2	0.67	0	0.00	7	2.33	0	0.00	29	3.89
39.	<i>Ustilago scitaminea</i>	0	0.00	3	1.00	0	0.00	0	0.00	3	1.00	0	0.00	0	0.00	3	1.00	0	0.00	0	0.00	0	0.00	3	1.00	12	1.61
40.	<i>Verticillium sp.</i>	4	1.33	0	0.00	0	0.00	3	1.00	0	0.00	0	0.00	3	1.00	0	0.00	0	0.00	4	1.33	0	0.00	2	0.67	16	2.14
		80	27.02	61	20.34	43	14.34	79	26.35	55	18.00	58	19.36	66	22.00	58	19.36	56	18.68	58	19.33	65	21.65	67	22.35	746	

TNC – Total Number of Colonies, MD – Mean Density.

## Percentage frequency and frequency class of fungal diversity recorded at different station (n=12)

S. No.	Name of the fungi	Dharmapuri			Pennagaram		
		No. of monthly in which the fungus occurred	Percentage frequency	Frequency class	No. of monthly in which the fungus occurred	Percentage frequency	Frequency class
1.	<i>Absidia glauca</i>	5	41.6	0	-	-	-
2.	<i>Alternaria alternata</i>	-	-	-	6	50.0	0
3.	<i>Aspergillus awamori</i>	-	-	-	7	58.3	F
4.	<i>A. Chevalieri</i>	5	41.6	0	-	-	-
5.	<i>A. clavatus</i>	-	-	-	5	41.6	0
6.	<i>A. conicus</i>	5	41.6	0	-	-	-
7.	<i>A. flavipes</i>	6	50.0	0	-	-	-
8.	<i>A. flavus</i>	-	-	-	7	58.3	F
9.	<i>A. fumigatus</i>	5	41.6	0	-	-	-
10.	<i>A. funiculosus</i>	-	-	-	5	41.6	0
11.	<i>A. granulosis</i>	6	50.0	0	-	-	-
12.	<i>A. humicola</i>	-	-	-	6	50.0	0
13.	<i>A. luchuensis</i>	5	41.6	0	-	-	-
14.	<i>A. nidulans</i>	-	-	-	6	50.0	0
15.	<i>A. niger</i>	7	58.3	F	7	58.3	F
16.	<i>A. ochraceous</i>	-	-	-	4	33.3	0
17.	<i>A. oryzae</i>	5	41.6	0	-	-	-
18.	<i>A. repens</i>	-	-	-	5	41.6	0
19.	<i>A. ruber</i>	-	-	-	4	33.3	0
20.	<i>A. rugulosus</i>	5	41.6	0	-	-	-
21.	<i>A. sulphureus</i>	-	-	-	5	41.6	0
22.	<i>A. sydowi</i>	-	-	-	6	50.0	0
23.	<i>A. tamarit</i>	6	50.0	0	-	-	-
24.	<i>A. terreus</i>	6	50.0	0	-	-	-
25.	<i>A. ustus</i>	6	50.0	0	-	-	-
26.	<i>A. versicolor</i>	5	41.6	0	-	-	-
27.	<i>A. wentii</i>	-	-	-	5	41.6	0
28.	<i>Bipolaris oryzae</i>	4	33.3	0	-	-	-
29.	<i>Botrytis cinerea</i>	-	-	-	4	33.3	0
30.	<i>Ceratocystis paradoxa</i>	7	58.3	F	7	58.3	F
31.	<i>Chaetomium sp.</i>	5	41.6	0	-	-	-
32.	<i>Colletotrichum falcatum</i>	-	-	-	3	25.0	R
33.	<i>Curvularia geniculata</i>	6	50.0	0	-	-	-
34.	<i>Curvularia lunata</i>	5	41.6	0	5	41.6	0
35.	<i>Curvularia senegalensis</i>	-	-	-	5	41.6	0
36.	<i>Dimeriella sacchari</i>	4	33.3	0	-	-	-
37.	<i>Fusarium moniliforme</i>	6	50.0	0	-	-	-
38.	<i>Fusarium oxysporum</i>	-	-	-	4	33.3	0
39.	<i>Fusarium semitectum</i>	5	41.6	0	-	-	-
40.	<i>Fusarium solani</i>	-	-	-	7	58.3	F
41.	<i>Geotrichum candidum</i>	4	33.3	0	-	-	-
42.	<i>Gliocladium virens</i>	6	50.0	0	7	58.3	F
43.	<i>Gliocladiopsis sagariensis</i>	5	41.6	0	-	-	-
44.	<i>Gleocercospora sorgh</i>	-	-	-	5	41.6	0
45.	<i>Helminthosporium sp.</i>	-	-	-	6	50.0	0
46.	<i>Helminthosporium oryzae</i>	6	50.0	0	-	-	-
47.	<i>Humicola sp.</i>	4	33.3	0	-	-	-
48.	<i>Hyalopus ater</i>	3	25.0	R	-	-	-
49.	<i>Masoniella sp.</i>	5	41.6	0	-	-	-
50.	<i>Marasmiellus sacchari</i>	-	-	-	-	-	-
51.	<i>Mucor zygospora</i>	4	33.3	0	4	33.3	0
52.	<i>Neurospora crassa</i>	3	25.0	R	-	-	-
53.	<i>Nigrospora sphaerica</i>	-	-	-	6	50.0	0
54.	<i>Penicillium chrysogenum</i>	6	50.0	0	-	-	-
55.	<i>P. citrinum</i>	-	-	-	6	50.0	0
56.	<i>P. candidum</i>	6	50.0	0	-	-	-
57.	<i>P. janthinellum</i>	7	58.3	F	-	-	-
58.	<i>P. javanicum</i>	5	41.6	0	-	-	-
59.	<i>P. japonicum</i>	-	-	-	6	50.0	0
60.	<i>P. lanosum</i>	7	58.3	F	-	-	-
61.	<i>P. notatum</i>	-	-	-	-	-	-
62.	<i>P. purpurogenum</i>	-	-	-	5	41.6	0
63.	<i>P. purpurescens</i>	6	50.0	0	-	-	-
64.	<i>P. turbatum</i>	-	-	-	6	50.0	0
65.	<i>Pythium sp.</i>	5	41.6	0	-	-	-
66.	<i>Rhizopus nigricans</i>	-	-	-	5	41.6	0
67.	<i>Rhizopus stolonifer</i>	4	33.3	0	3	25.0	R
68.	<i>Sclerospora sp.</i>	-	-	-	4	33.3	0
69.	<i>Setosphaeria rostrata</i>	6	50.0	0	7	58.3	F
70.	<i>Thamnidium elegans</i>	3	25.0	R	-	-	-
71.	<i>Torula allii</i>	-	-	-	4	33.3	0
72.	<i>Trichoderma glaucum</i>	6	50.0	0	-	-	-
73.	<i>T. harzianum</i>	-	-	-	7	58.3	F
74.	<i>T. lignorum</i>	-	-	-	6	50.0	0
75.	<i>T. viride</i>	-	-	-	7	58.3	F
76.	<i>Trichodochium sp.</i>	5	41.6	0	-	-	-
77.	<i>Ustilago scitaminea</i>	-	-	-	4	33.3	0
78.	<i>Verticillium sp.</i>	-	-	-	5	41.6	0

R – Rare (0-25%); O-Occasional (26-50%); F -Frequent (51.75%)

In the Present investigation was conducted to findout the fungal diversity in two different stations such as Dharmapuri and Pennagaram. Totally 78 species isolated belonging to 34 genera from the soil of sugarcane field. Number of Deuteromycetes were representing by 70 species and the remaining 3 species belongs to Phycomycetes. The dominat species were *Aspergillus niger* A.flavus, and A.oryzae followed by *Ceratocystis paradoxa*, *Botrytis cinera*, *Trichoderma viride*, *T.harzianum*, *Gliocladium virens*, *Penicillium chrysogenum*, *P.citrinum*, *Fusarium soloni*, *F. moniliforme*, *Geotrichum candidum* and *Trichodochium* from the sugarcane field soils of Dharmapuri whereas in Pennagarm soils the dominat species were *Alternaria alternata*, *Aspergillus awamori*, *A.clavatus*, *Fusarium oxysporum*, *Gloeocercospora sorgh*, *Gliocladium virens*, *Penicillium japonicum*, *P.turbatum* and *T. lignorum* respectively.

Evidently [7] reported that 45 soil samples were collected from 8 different station along the entire Tamilnadu coast and examined by dilution plating method to assess the fungal diversity and their population density. Totally 24 fungal species representing 12 genera were recorded. *Aspergillus* was represented by more numbers (9 species) followed by *Penicillium* (3species) *Fusarium* and *Monodictys* (2 species each).

Recently [11] studied the seasonal and depthwise variation of soil fungal population in Thanjavur district, Tamilnadu viz., Nadur, Orathandau, Punnainallur and Tholkappiyar square. Totally 30 different species belonging to Ascomycetes and Phycomycetes were isolated using PDA medium. The dominant species were *Aspergillus niger* and *Cunninghamella* sp. followed by *Trichoderma viride*. During rainy season maximum fungal count was recorded in sub soil layer.

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