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HYPHOMYCETES FROM SOILS OF NEWASA IN AHMEDNAGAR DISTRICT (MAHARASHTRA)

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Twelve species of hyphomycetes collected from the agriculture and forest soils of Newasa taluka are reported for the first time. Of these, six species viz., *Cephaliophora irregularis, Oidiodendron rhodogenum, Scytalidium thermophilum, Taeniolella muricata, Trichocladium asperum* and *Tritirachium roseum* are new to Maharashtra. Eight species were isolated from agriculture soils and four from forest soils.

Keywords : Agricultural soil; Hyphomycetes; Forest soil.

Hyphomycetes form a major component of the soil mycoflora[1-3]. They are found worldwide in diversified habitats viz; soil, water, litter, herbivore dung, plant and animal parts [4]. The climatic conditions and geographical regions have an important role in the diversity and distribution of these fungi in India.The occurrence, distribution and seasonal variation of hyphomycetes is influenced by the physical, chemical and biological factors of soils[5]. A number of hyphomycetes from forest[6-9] and grassland soils[10-11], agriculture soils[12] and from variety of soils[4] have been studied. About 6000 species of hyphomycetes have been reported from India[4].

The occurrence and distribution of hyphomycetes flora from hither to unexplored agricultural and forest soils of Newasa Taluka in Ahmednagar district of Maharashtra is reported in this paper.

The soil samples upto 15 cms deep were collected in sterile plastic bags and brought to the laboratory during December, 2008. The soil samples were inoculated on Potato Dextrose Agar (PDA) and Czapek's Dox Agar (CDA) culture medium by serial dilution technique[13], and incubated for the growth of fungi. After seven days, the colony characters were noted and a bit of colony was mounted in lactophenol to study the microscopic characters. Species were identified with the help of manuals[3, 14 - 19].

1. Cephaliophora irregularis Thaxter

Colonies pink to reddish, conidiophores clavate upto 80-120 µm long, 6-8 µm thick near the base, conidiogenous cell swollen 2-65 µm X 14-33 µm. Conidia variable in shape, pyriform, rarely lobed, colourless to pale brown, 1 septate 18-42 µm long and 12.5-38 µm thick in the broadest part, hilum protuberant,1-3.3µm wide.The characters of the present collection are similar to the original description of the species. However, the conidiophores are slightly larger and conidia smaller.This species is collected from the agricultural soil in Gopalpur village and is a new report in Maharashtra.

2.Cladosporium oxysporium Berk. & Curt.

Colonies effuse, grey or grayish brown, conidiophores macronematous, straight or slightly flexuous, nodes distinct, pale or mid pale brown, smooth upto 450-500 µm long and 3.3-5 µm thick. Conidia arising from terminal swellings which later becomes intercalary, in simple or branched chains, smooth 3.5 - 35 µm X 3.3- 6 µm.Collected from the agricultural soils of Newasa area.

3.Curvularia brachyspora Boedijn.

Colonies effuse, brown, grey or black, mycelium cottony or velvety, immersed. Conidiophore 200 µm long and 6-10 µm thick. Conidia solitary, simple often curved, ellipsoidal or obovoid with 3 transverse septa, middle two cells brown, end cells pale, smooth 22-30 X 9-12.5 µm. Kore and Bhide[20] reported it as a pathogen causing leaf spot of rose. Collected from agricultural soils of Deogad village.

4.Graphium putredinis (Corda) Hughes.

Synnemata olivaceous, brown or reddish brown upto 1 mm long, 45 µm thick at the base, tapering towards upwards. Individual threads 1-2 µm thick,annellides cylindrical or subulate, 10-30 X 1-2.5 µm. Conidia ellipsoidal to cuneiform, pale or olivaceous brown, smooth 5-9 µm X 3-3.3 µm. The conidia are slightly smaller in

size.Collected from agricultural soils of Ustal village.

5.Oidiodendron rhodogenum Robak

Colonies variable in colour, grey, greenish or brown. Conidiophore upto 150 µm long, 2.5 - 3.3 µm thick, brown, branched. Conidia ellipsoidal or subspherical , minutely verrucose, 2-3.3 X 1.5 - 2.5 µm. The conidiophores and conidia are slightly smaller in size.Collected from the forest soils of Nagapur area. This species is being reported first time from Maharashtra.

6.Scytalidium thermophilum (Cooney & Emerson) Austiwick.

Colonies effuse, grey to black. Hyphae hyaline to brown, 2.5-4 µm thick with pale to dark brown swollen cells. Conidia dark brown, smooth, mostly spherical or subspherical 9.3 to 13.5 µm in diameter. Conidia sometimes oblong or ellipsoidal 8-16 µm X 6.3 -10 µm. The characters of present collection is similar except for the smaller conidia to the original description of species. Isolated from the forest soil of Nagapur area and is a new record to Maharashtra.

7. Stachybotrys nephrospora Hansf.

Conidiophore hyaline and smooth except near the apex where they are often dark grey and verrucose, upto 125 µm long and 3.3-4 µm thick. Phalides 7-12 µm long and 3-6 µm thick in the broadest part. Conidia reniform, black, smooth or verrucose, 6-12 µm X 3.3-6.3µm. The conidiophores are larger in size.Isolated from the agricultural soils of Sonai area.

8. Taeniolella muricata (Ellis & Everch.) Hughes.

Colonies effuse, dark brown. Conidiophores brown, 3.3-6 µm thick. Conidia mid to dark reddish brown. Verruculose 3- 20 septate, 20-120 µm X 6-9 µm. Conidia are larger than the original description for species. Isolated from the Nagapur area forest soil. This is a new record to Maharashtra.

9.Torula herbarum (Pers.) Link.

Colonies variable in size, black, velvety. Conidiophores 2.5 - 6.3 µm thick. Conidia straight, cylindrical, rounded at the base, pale brown, verruculose, 2-13 (mostly 4-5) septate, constricted at the septa, 25-85(30) X 4.5 -10 (7) µm. Conidia are larger in size.Collected from the forest soil of Nagapur.

10. Trichurus spiralis

Synnemata upto 3mm high, 8-8.5µm thick, often expanded to the head. Individual threads 2.5-3 µm thick, apices setiform, branches coiled or spirally twisted, pale to mid brown upto 145-150µm long, 2.5 - 3.3 µm thick. Annelides 5-8.5 µm long. Conidia mostly 4-6 µm X 2.5 - 3.3 µm. Conidia are larger. Collected from the agricultural soils of Nimbhari village.

11. Trichocladium asperum Harz.

Conidiophores 2.5-3 µm thick. Conidia acrogenous, 1-septate, obovoid or ellipsoidal, narrowed to truncate base, dark brown, verrucose, 12-33 µm long and 8.5 - 12 µm thick in the broadest part. Isolated from the agricultural soils of Tamaswadi area. Conidia are slightly larger. This is an addition to the hyphomycetes flora of Maharashtra.

12. Tritirachium roseum Limber.

Colonies effuse, grey or brown, hairy. Conidiophores macronematous, mononematous, erect, septate, branches into primary and secondary branchlets, smooth, pale brown, 550 - 900 µm long and 2.5 - 6.6 µm thick at the base, 2.5-3.3 µm thick at the apex. Conidiogenous cell sympodial, 5-7 in a vertical, terminal or lateral, polyblastic, becoming narrower towards the apex. Conidia globose to ellipsoidal, hyaline, smooth, thin walled 2.5 -3 µm X 1-2.5 µm. The conidiophores and conidia are slightly larger than the original description for species. Isolated from agricultural soils of Tamaswadi village. This is a new report from Maharashtra.

Table 1. Hyphomycetes from soils.

S. No.	Name of the species	Agriculture Soil	Forest Soil
1.	**Cephaliophora irregularis* Thaxter	+	-
2.	*Cladosporium oxysporium* Berk. & Curt.	+	+
3.	*Curvularia brachyspora* Boedijn.	+	-
4.	*Graphium putredinis* (Corda) Hughes.	+	-
5.	**Oidiodendron rhodogenum* Robak	-	+
6.	**Scytalidium thermophilum* (Cooney & Emerson) Austiwick	-	+
7.	*Stachybotrys nephrospora* Hansf.	+	-
8.	**Taeniolella muricata* (Ellis & Everch.) Hughes.	-	+
9.	*Torula herbarum* (Pers.) Link.	-	+
10.	*Trichurus spiralis*	+	-
11.	**Trichocladium asperum* Harz.	+	-
12	**Tritirachium roseum* Limber.	+	-

+ = Isolated – = Not isolated * = New records.

A total of twelve species of hyphomycetes were isolated from the agricultural as well as forest soils of Newasa region. Of these six are being reported for the first time from Maharshtra state. More number of species found in agriculture soils (Table 1) may be due to the aeration and accumulation of crop debris. Only *Cladosporium oxysporium* was found in both soils.

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