

FUNGI ISOLATED FROM RHIZOSPHERE—III*

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In this brief paper are enumerated thirteen species of Mucorales which the writer had isolated during his studies on the rhizosphere microflora of pigeon pea [*Cajanus cajan* (L.) Millsp.] in relation to the wilt caused by *Fusarium udum* Butler. Of these *Mucor jansseni* Lendner, *Mucor spinescens* Lendner and *Cemansia reversa* van Tieghem and Le Monnier are reported for the first time from India.

7. *Rhizopus arrhizus* Fischer in Rabenhorst's *Kryptogamenflora*, 1892, 4, 161; Saccardo, *Syll. Fung.*, 1888, 7, 186; Mundkur, B. B., *Monogr. Coun. agric. Res. India*, 1938, 12, 11; Subramanian, C. V., *J. Madras Univ.*, 1952, 22 B, 208.
8. *Rhizopus nodosus* Namyslowski in *Bull. Acad. Sci., Carcovie*, 1910, B, 438; Saccardo, *Syll. Fung.*, 1888, 7, 212; Mundkur, B. B., *Monogr. Coun. agric. Res. India*, 1938, 12, 11; Subramanian, C. V. and Ramakrishnan, K., *J. Madras Univ.*, 1956, 26 B, 370.
9. *Absidia spinosa* Lendner in *Bull. Herb. Boissier*, 1907, 7, 250; Saccardo, *Syll. Fung.*, 1921, 21, 824; Subramanian, C. V. and Ramakrishnan, K., *J. Madras Univ.*, 1956, 26 B, 331.
10. *Mucor jansseni* Lendner in *Bull. Herb. Boissier*, 1905, 7, 238; Naumov, N. A., *Clés des Mucorinées*, 1939, 37; Gilman, J. C., *A Manual of Soil Fungi*, 1945, 29.

Cultures fast growing on potato dextrose and Czapek (Dox) agar with white, fluffy, cottony aerial mycelium turning gradually greyish-black with the abundant production of sporangia. Sporangiohores branched in an irregular cymose pattern with distinctly discernible longitudinal striations on the wall. These striations are very clear in dry mounts of the fungus. Sporangia varying in diameter from 25 to 85 μ . Columella spherical to oval with a distinct collarette at the base, measuring 13 to 34 μ by 10 to 27 μ , greyish in colour, sporangial wall fragile. Spores spherical, 3.2 to 5.2 μ in diameter, mostly 4.8 μ (Fig. 1).

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11. *Mucor racemosus* Fresenius in *Beiträge zur Mykologie*, Frankfurt, 1850, 12; Saccardo, *Syll. Fung.*, 1888, 7, 192; Butler, E. J. and Bisby, G. R., *Monogr. Coun. agric. Res. India*, 1931, 1, 8; Subramanian, C. V., *J. Madras Univ.*, 1952, 22 B, 208.

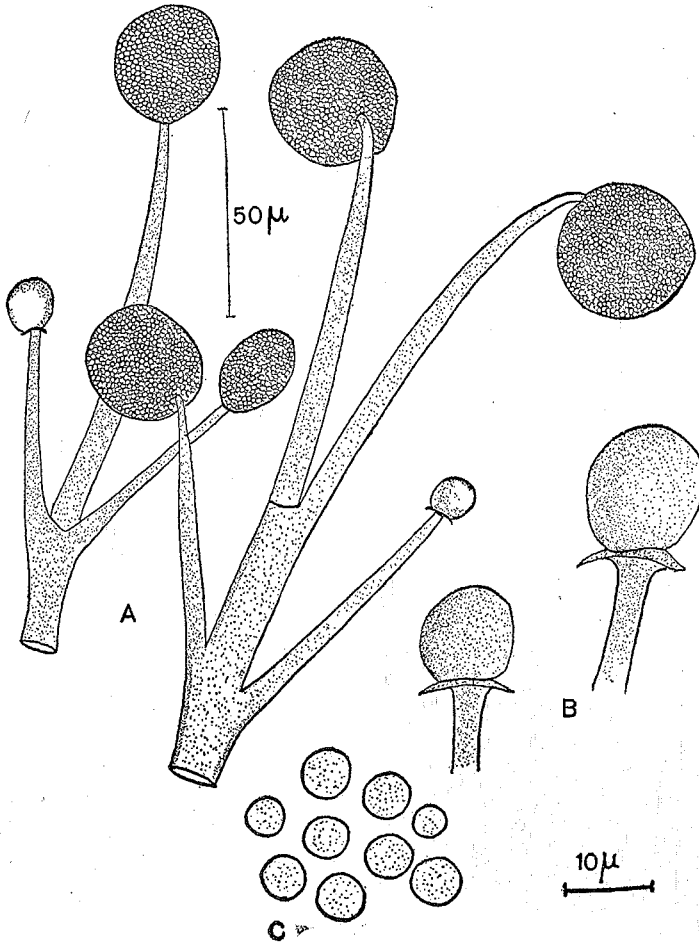


FIG. 1. *Mucor jansseni* Lendner

A. Sporangiophores and sporangia. B. Columellæ. C. Spores.

12. *Mucor spinescens* Lendner in *Bull. Herb. Boissier*, 1908, 8, 79; Graf, P. W., *Mycologia*, 1928, 20, 176; Naumov, N. A., *Clés des Mucorinées*, 1939, 39, as *Mucor plumbeus* Bonorden var. *spinescens* (Lendner) Naumov; Gilman, J. C., *A Manual of Soil Fungi*, 1945, 176.

Turf white in colour, turning gradually grey in centre of the colony first and later peripherally, up to 5 mm. in height, collapsing with the aging of the culture. Sporangiohores up to 2 mm. high and 6 to 10μ in width. Branching of the sporangiohores is in an irregular cymose pattern. Sporangiohores often somewhat constricted at the base of the sporangium and slightly incurved. Sporangia spherical, subspherical or globose, varying in diameter from 48 to 68μ , mostly hyaline, rarely subhyaline. Columella short, smooth, slightly conical, surmounted by a short, blunt or pointed process. Spores numerous, spherical to globose 6.4 to 8.0μ (mostly 7.2μ), hyaline to subhyaline (Fig. 2).

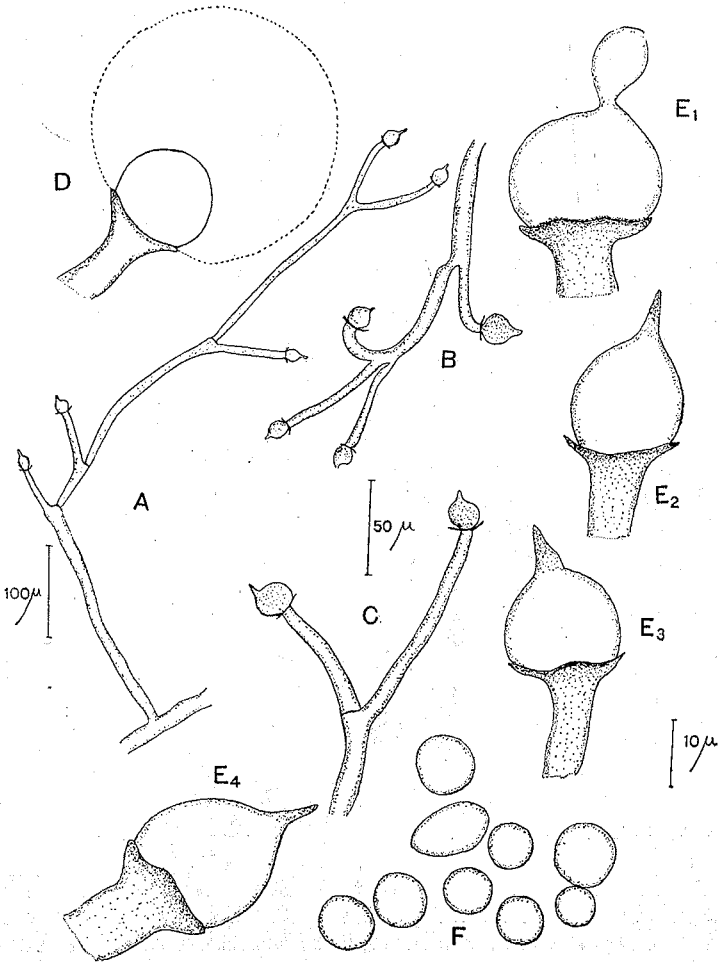


FIG. 2

FIG. 2. *Mucor spinescens* Lendner

A-C. Branched sporangiophores of an irregular racemose type. D. An atypical columella. E₁-E₄. Columellæ with spinescent projections. F. Sporangiospores.

13. *Circinella muscæ* (Sorokine) Berlese and de Toni in Saccardo, *Syll. Fung.*, 1888, **7**, 216; as *Circinella spinosa* van Tieghem and Le Monnier, Mundkur, B. B., in *Monogr. Coun. agric. Res. India*, 1938, **12**, 11; as *Circinella muscæ* (Sorokine) Berlese and de Toni, Subramanian, C. V. and Ramakrishnan, K., *J. Madras Univ.*, 1956, **26 B**, 342.
14. *Choanephora cucurbitarum* (Berk. and Rav.) Thaxter in *Rhodora*, 1903, **15**, 97-102; Saccardo, *Syll. Fung.*, 1905, **17**, 507; Butler, E. J. and Bisby, G. R., *Monogr. Coun. agric. Res. India*, 1931, **1**, 8.
15. *Cunninghamella echinulata* Thaxter in *Rhodora*, 1903, **5**, 508; Saccardo, *Syll. Fung.*, 1905, **17**, 508; Mundkur, B. B., *Monogr. Coun. agric. Res. India*, 1938, **12**, 10; Subramanian, C. V., *J. Madras Univ.*, 1952, **22 B**, 208.
16. *Cunninghamella bertholletia* Stadel in *Mykol. Zbl.*, 1912, **1**, 218-19; Ramakrishnan, K., *Proc. Indian Acad. Sci.*, 1955, **42 B**, 112; Subramanian, C. V. and Ramakrishnan, K., *J. Madras Univ.*, 1956, **26 B**, 344.
17. *Syncephalastrum racemosum* (Cohn) Schroeter in Cohn's *Kryptogamenflora von Schlesien*, 1889, 615; Saccardo, *Syll. Fung.*, 1888, **7**, 232; Ramakrishnan, K. and Subramanian, C. V., *J. Madras Univ.*, 1952, **22 B**, 46.
18. *Syncephalis cornu* van Tieghem and Le Monnier in *Ann. Sci. nat.*, 1873, **17**, 376; Saccardo, *Syll. Fung.*, **7**; Ramakrishnan, K., *Proc. Indian Acad. Sci.*, 1955, **42 B**, 112; Subramanian, C. V. and Ramakrishnan, K., *J. Madras Univ.*, 1956, **26 B**, 374.
19. *Cæmansia reversa* van Tieghem and Le Monnier in *Ann. Sci. nat.*, 1873, **17**, 392; Gilman, J. C., *A Manual of Soil Fungi*, 1945, 60; Farrow, W. M., *Mycologia*, 1954, **46**, 643.

Turf pale yellow, slow growing, substrate mycelium repent, branched and septate. Sporangia absent, conidiophores dichotomously branched bearing sporocladia; sporocladia somewhat inflated, septate, often tapering to 1 or 3 terminal cells and bearing phialides on the lower aspect. Sporocladia measuring 16 to 24 μ by 4 to 7 μ , phialides short, one-celled, ovoid to elongate, ellipsoid, measuring 2.4 to 3.2 μ by 1.6 to 2.4 μ , conidia borne at the end of the phialides, one-celled, hyaline, smooth-walled, elliptic to fusiform, 4.8 to 8.0 μ by 1.6 to 2.8 μ (Fig. 3). This form is comparatively rare in the rhizosphere and control soils. It was recorded only twice from rhizosphere.

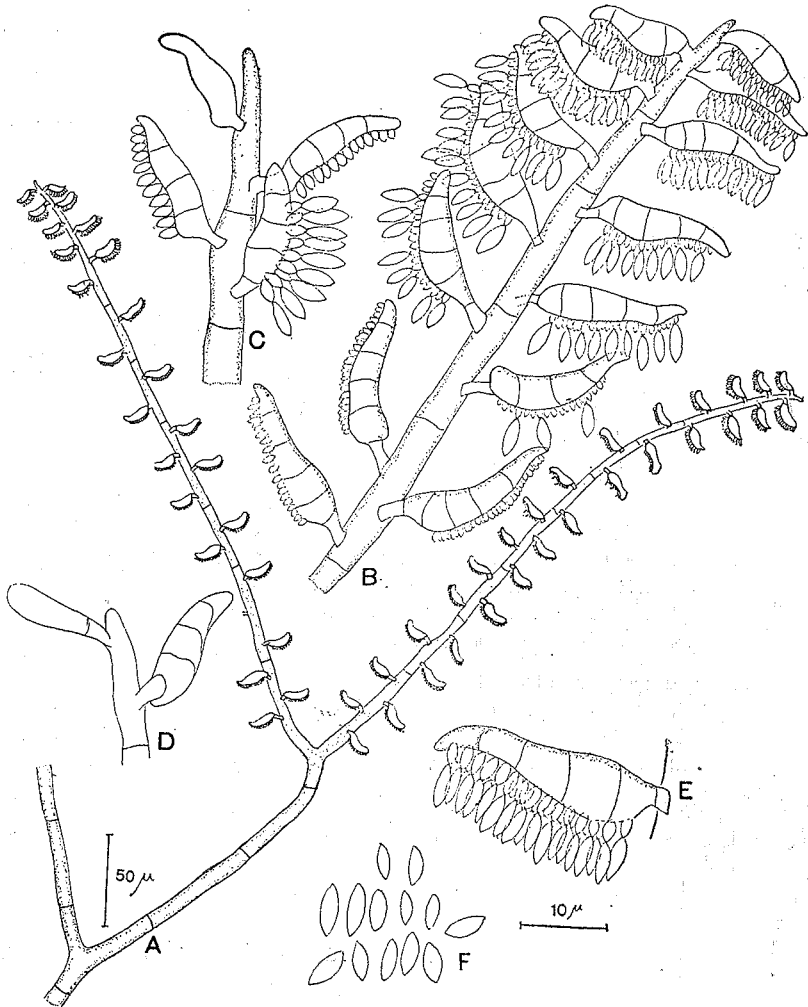


FIG. 3. *Cœmansia reversa* van Tieghem and Le Monnier

A. Dichotomously branched conidiophore. B-D. Enlarged fertile part of the conidiophore showing the sporocladia. E. Sporocladium bearing phialides and Conidia. F. Conidia.

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