

Note

Mycoleptodiscus terrestris from black pepper roots in the Dominican Republic

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Mycoleptodiscus terrestris from black pepper roots in the Dominican Republic is described together with some notes and photomicrographs.

Key Words—hyphomycetes; identification; taxonomy; Tuberculariaceae; Tuberculariales.

Five identical isolates from black pepper, *Piper nigrum* L., roots at Sierra Prieta, the Dominican Republic formed yellowish creamy sporodochia with conidia bearing two filiform appendages in fresh cultures within 10 d after inoculation (Watanabe et al., 1996). Conidia were hyaline, aseptate or 1-septate (Figs. 13–16), with two filiform appendages from both ends laterally. In further cultural works, irregular-shaped black sclerotia or stroma were formed abundantly on agar cultures, but sporulation was observed very rarely.

After detailed examination of spore masses removed from sporodochia (Figs. 1–3), initial cells, branched conidiophores, enlarged cells at the apex (Figs. 6–9), and radiate-palisade layer (Fig. 4) of the fruiting structures of the genus *Mycoleptodiscus* (McVey and Gerdemann, 1960) were observed. Conidia appeared to be derived from phialides (Figs. 5, 10–13) developed apically on a thin palisade layer. Difficulty inducing sporulation in *Mycoleptodiscus* species was noted by Alcorn in 1994.

The genus *Mycoleptodiscus* is characterized by superficial sporodochial conidiomata, constituted mostly of thick-walled radiate stroma with dark brown conidiogenous cells, one cell layer thick, and a prominent circular aperture in the upper wall, and hyaline, cylindrical to falcate, 0–2-septate conidia bearing an apical and sometimes a basal cellular unbranched appendage, or sometimes lacking appendages (Ostazeski, 1967; Sutton, 1973; Sutton and Alcorn, 1990).

Although conidiogenous cells of this fungus are phialosporic and very rarely appeared to be blastosporic, and it resembles *Hyphodiscosia* with blastosporous “Discosia”-like conidia, saucer-shaped stromata are very characteristic, and thus it is identified as belonging to the genus *Mycoleptodiscus*.

The genus *Hyphodiscosia* Lodha & Chandra Reddy

(1974) is characterized by “Discosia”-like conidia on denticles projecting over the irregularly swollen apices or polyblastic conidiogenous cells of simple conidiophores, which result from close sympodial proliferations (Holubová-Jechová and Borowska, 1981; Lodha and Chandra Reddy, 1974; Melnik and Sutton, 1981; Watanabe, 1992).

Of the 15 species in the genus *Mycoleptodiscus*, including three new species recently added by Alcorn in 1994, the isolates from black pepper roots were close to *M. terrestris* (Alcorn, 1994; Gerdemann, 1953; Ostazeski, 1967; Sutton and Alcorn, 1990; Watanabe et al., 1996) on the basis of conidial and appressorium morphology and dimension, although conidia of this fungus were commonly aseptate, and occasionally 1-septate.

There are few reports on this fungus, and thus it is redescribed as follows with some notes.

Mycoleptodiscus terrestris (Gerd.) Ostazeski, Mycologia 59: 970. 1967. Figs. 1–20

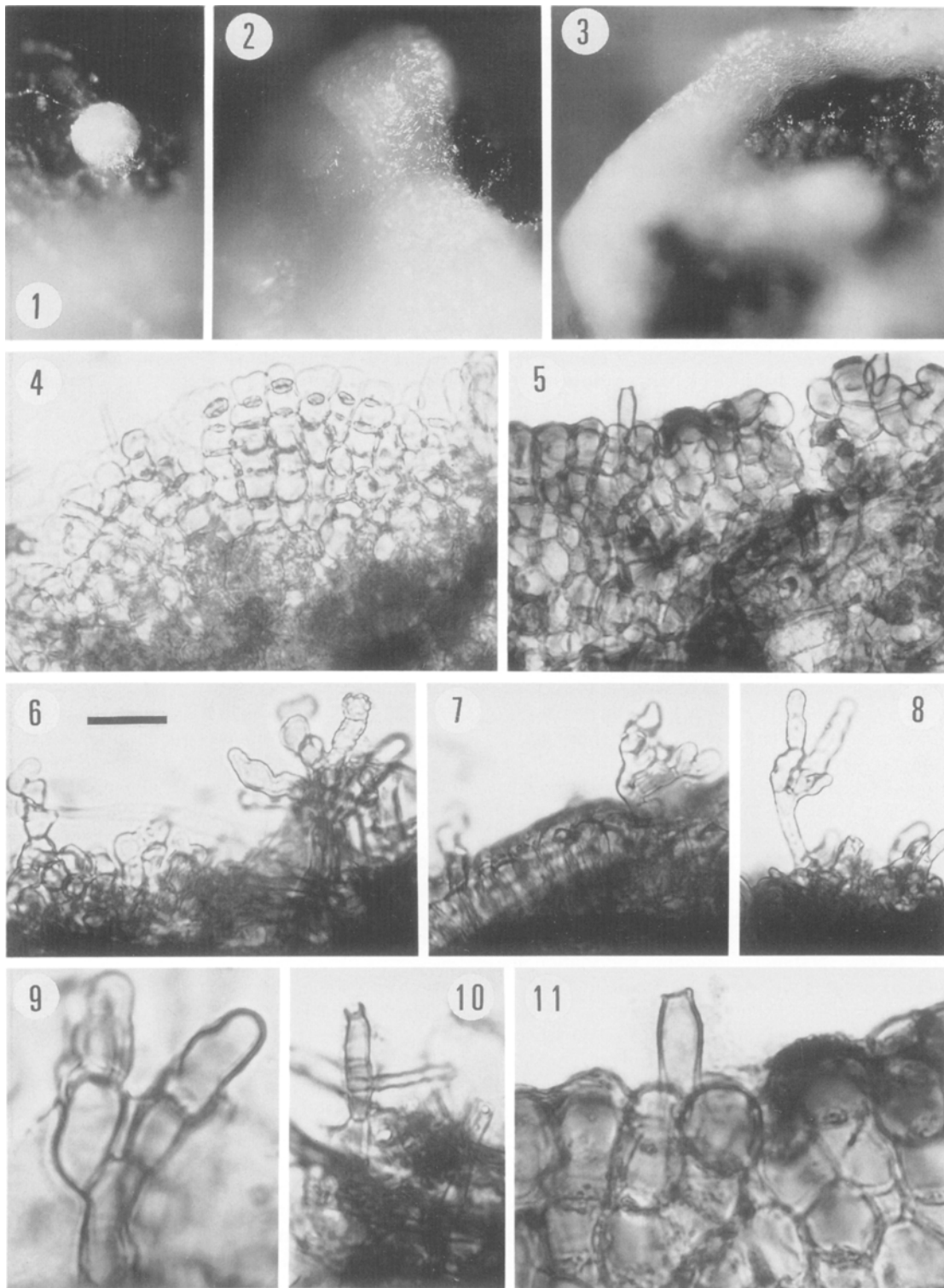
≡ *Leptodiscus terrestris* Gerdemann, Mycologia 45: 552–553. 1953.

Colony diam on potato-dextrose agar (PDA) after incubation for 5 d at 22 or 25°C, 59–60 mm. Colonies on PDA dark gray or homogeneous, velvety, reverse dark blue to black.

Sporodochia superficial, yellowish cream-colored, up to 1,100 µm, composed of cells radially arranged, and branched or simple conidiophores. Conidiophores 32.5–62.5 µm tall. Conidiogenous cells phialidic or blastosporic, mostly branched, occasionally simple, subhyaline to pale brown, septate, bearing conidia sympodially. Conidia hyaline, mostly boat-shaped, or cylindrical with rounded tips, one side more sharpened than the other, aseptate or 1-septate, straight or very rarely curved,

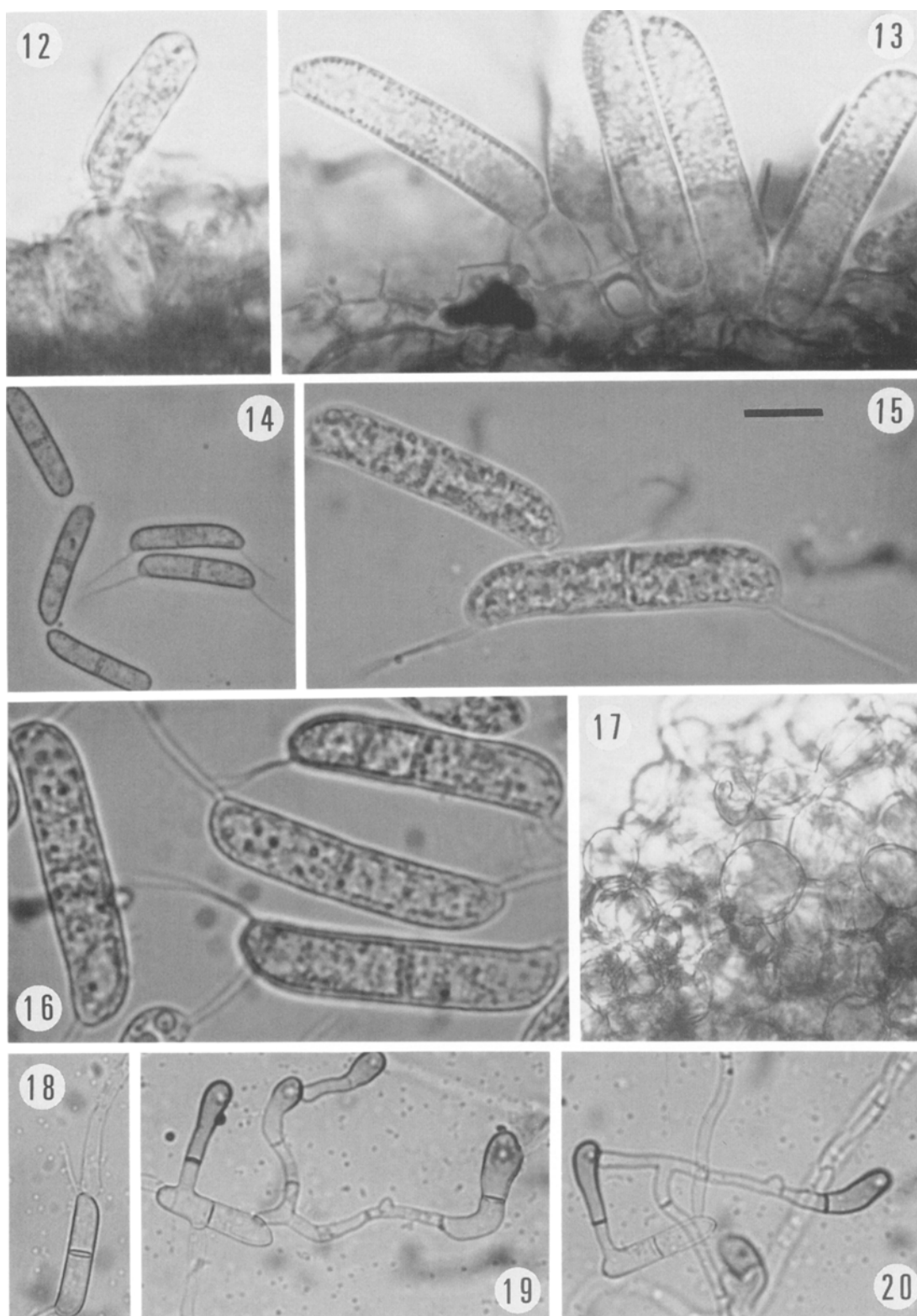
25–32.5 (–33.8) × (4.8–) 5–6.3 μm, bearing two filiform appendages at both ends laterally in one side, but often lacking appendages. Appendages 3.7–15 × 0.1–0.2

(–0.3) μm. Sclerotia black spherical, subspherical, fusiform, irregular in shape, often elongated, or aggregated embedded, up to 2 mm in diam, tissues composed of



Figs. 1–11. *Mycoleptodiscus terrestris*.

1–3. Young (1) and mature (2, 3) sporodochia. 4. Part of a saucer-shaped stroma. 5, 10, 11. Stroma with extruded phialide (11. Close-up of Fig. 5). 6–9. Branches developed from the initial cell in a stroma. Note enlarged apical cells. Scale bar in Fig. 6: Figs. 1–3=100 μm; 4–8, 10=20 μm; 9, 11=10 μm.



Figs. 12–20. *Mycoleptodiscus terrestris*.

12, 13. Young (12) and mature (13) conidia attached to the sporogenous cells by short stalks. 14, 15. Conidia. Note 1-septate (14–16) and aseptate conidia (16). 17. Spherical component cells of sclerotia. 18–20. Germination of conidia on wetted slides 5 d after treatment at 25°C. Note formation of appressoria on elongated germ tubes. Scale bar in Fig. 15: Figs. 12, 13, 15, 16=10 μm ; 14, 17–20=20 μm .

hyphae with subspherical thick-walled cells (6.5–20 μm in diam each) (Fig. 17). Appressoria subhyaline or pale brown, clavate or cylindrical, straight or bent, aseptate or 1-septate, single or in a short chain, commonly with a single pore, 16–30.2 \times 5.4–8.7 μm (Figs. 19, 20).

Habitat. From Black pepper roots, Sierra Prieta, the Dominican Republic.

Material examined. Cultures from black pepper roots, Sierra Prieta, the Dominican Republic, 29 May 1996, T. Watanabe, Juan de D. Moya, José L. González and A. Matsuda, SP 22 deposited at American Type Culture Collection (ATCC 200587), and at Centro Nordeste de Desarrollo Tecnológico Agropecuario (CENDETECA), San Francisco de Macoris, the Dominican Republic.

The fungus grew in the range of 7 to 37°C with the optimum temperature of 22°C. After germination, germ tubes elongated from conidia (Fig. 18), and often formed appressoria (Figs. 19, 20) at their apexes within 5 d after treatment. The appressoria are characteristically clavate or cylindrical as described by Alcorn in 1994.

This fungus was reported as one of the most virulent and most commonly isolated fungi from various leguminous plants including red clover in the USA (Gerdemann, 1954; Ostazeski, 1967), but isolation from black pepper roots from the Dominican Republic may be interesting to note, and further work on its pathogenicity is now in progress.

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