

## A new species of *Neocosmospora* from Brazil

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During an investigation of rhizosphere fungi of primary forests and cultivated areas in the Brazilian Amazon a new species of *Neocosmospora* (Hypocreales, Ascomycetes) with spinose ascospores was isolated. The name *N. spinulosa* is proposed.

Keywords: anamorph–teleomorph connection, rhizosphere, taxonomy.

The genus *Neocosmospora* was established by E. F. Smith in 1899, with the type species *N. vasinfesta*. The genus, classified in the order Hypocreales (Ascomycetes) fam. Hypocreaceae, is characterized by the yellowish to reddish–brown, membranous wall of the ascomata, asci without apical differentiations and thick-walled, ornamented ascospores lacking germ pores. The species have mostly been isolated from soil or roots in tropical and subtropical regions. Most of the known anamorphs are *Acremonium* spp., but that of *N. endophytica* Polishook & al. (Polishook & al., 1991) belongs to *Penicillifer* van Emden.

The genus was revised by Cannon & Hawksworth (1984) who accepted five species and one variety, synonymizing *N. ornamentata* Freitas Barbosa (Freitas Barbosa, 1965) with *N. vasinfesta* E. F. Sm. var. *vasinfesta*. Two new species from Japan, *N. boninensis* Udagawa & al. and *N. arxii* Udagawa et al. were subsequently described by Udagawa & al. (1989), who also provided a key to all accepted species. A new endophytic species, *N. endophytica* Polishook & al. from the USA was described by Polishook & al. (1991). Other isolates of this species were recovered from fungi. *Pseudonectria diparietospora* J. H. Miller & al. has been transferred to *Neocosmospora* by Rossman & al. (1993). The ultrastructure of the ascospore wall of some species was studied by van Warmelo (1976).

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During a comparative study on microfungal populations in the rhizosphere of primary forest and cultivated areas in the Brazilian Amazon, a new species of *Neocosmospora* was encountered that shows striking characteristics of the ascomatal wall and the ascospores. The isolates were obtained by incubating washed soil particles on agar plates. One of the isolates originates from soil under a plantation of *Theobroma cacao* L., another from soil under pasture (*Brachiaria humidicola* (Rendle) Schweick.). Both sites are located on an Experimental Station of EMBRAPA (Brazilian Agricultural Research Company), about 200 miles southeast of Belém, state of Pará.

### Taxonomy

#### *Neocosmospora spinulosa* Pfenning sp. nov. – Figs. 1, 2.

Coloniae celeriter crescentes, hyalinae, mycelium aereum parcum. Perithecia post 7–10 dies numerosa, subglobosa, 180–300(–350)  $\mu\text{m}$  diam., collo 30–50  $\mu\text{m}$  longo praedita; hyalina, maturitate ascosporis transparentibus rubrobrunnea parentia; paries textura angulari, e compluribus stratis cellularum hyalinarum, 10–15  $\mu\text{m}$  diam., compositus; ostium periphysibus fere verticalibus vestitum. Asci 8-spori, cylindrici vel paulo clavati, 60–80 x 8–10  $\mu\text{m}$ , inoperculati, apice haud differentiato. Ascospores uniseriatae, late ellipsoideae, 7–8  $\mu\text{m}$  diam., conspicue spinosa, spinis ad 1.5  $\mu\text{m}$  longis, dilute pigmentatae, acervatae rubrobrunneae. Status anamorphosis *Acremonium* sp.

Holotypus siccus (et cultura viva) CBS 321.93.

**Colonies** spreading broadly on OA and CMA, reaching 50–60 mm in diameter in 10 d at 20 C. **Reverse** uncoloured. – **Mycelium** hyaline, submerged, with aerial mycelium, white, scanty. – **Perithecia** numerous, appearing after 7–10 days, superficial, subglobose, 180–300(–350)  $\mu\text{m}$  in diameter, with a neck 30–50  $\mu\text{m}$  long, hyaline, in age appearing reddish-brown due to the slightly pigmented ascospores. Ascomatal wall of textura angularis, consisting of various layers of hyaline cells, with cells 10–15  $\mu\text{m}$  in diameter. – **Ostiole** lined with almost vertical periphyses. – **Asci** 8-spored, inoperculate, without apical differentiation, cylindrical to slightly clavate, 60–80 x 8–10  $\mu\text{m}$ . – **Ascospores** uniseriate, broadly ellipsoidal, 7–8  $\mu\text{m}$  in diameter, with conspicuous spines up to 1.5  $\mu\text{m}$ , slightly pigmented, reddish-brown in mass.

**Anamorph.** – *Acremonium* sp. Forming white hyphal strands bearing simple, unbranched, slender phialides, up to 40–50  $\mu\text{m}$  long. Sporulation heavy, conidia cylindrical, with a truncate base, variable in size and shape, 9–18 x 3–5  $\mu\text{m}$ .

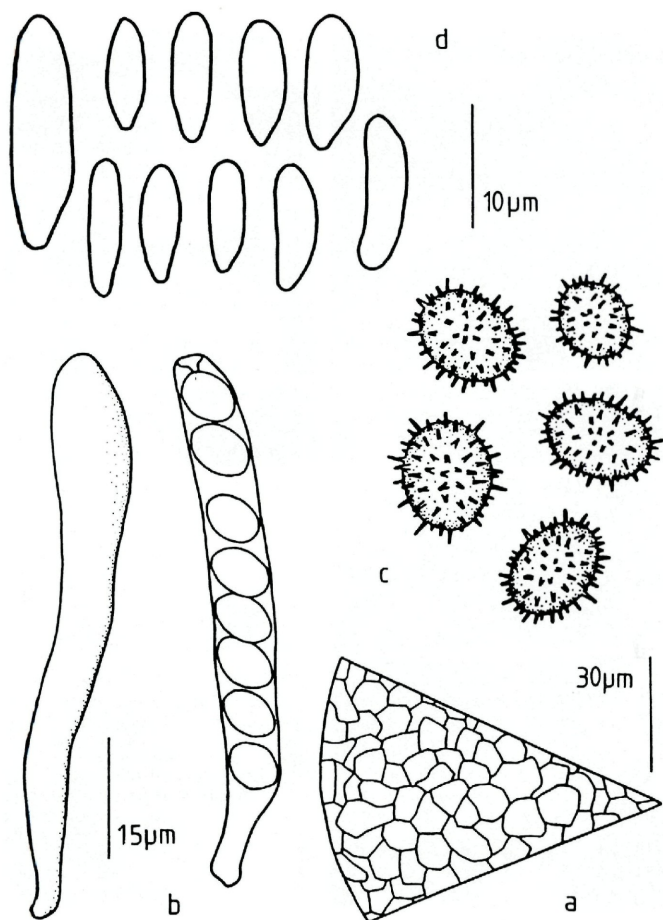


Fig. 1. - *Neocosmospora spinulosa*. - a. Ascoma wall. - b. Asci. - c. Ascospores. - d. Conidia of the *Acremonium* anamorph.

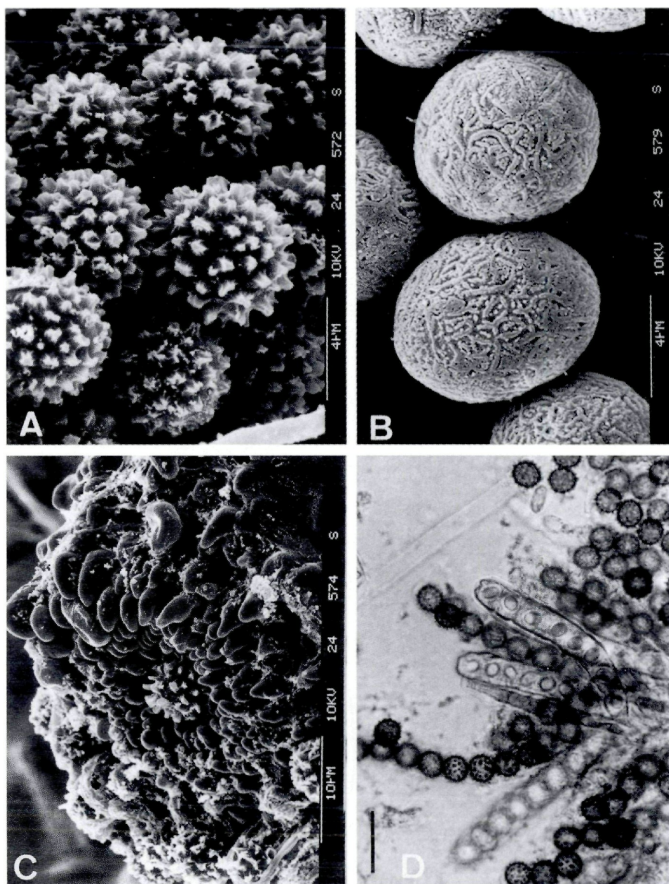


Fig. 2. – *Neocosmospora spinulosa*. – a. Ascospores. – *Neocosmospora vasinfesta* var. *africana* (CBS 882.85). b. Ascospores. – *N. spinulosa*. c. Ostiole with periphyses. – d. Asci and ascospores. – Scale bar = 15  $\mu$ m.

Specimen examined. – BRAZIL: State of Pará, Capitão Poço, L.P. 468 from soil under *Theobroma cacao* (CBS 321.93, Type strain), leg. L. Pfenning 05. 1989.

### Discussion

In the genus *Neocosmospora* ascospores are usually somewhat ornamented, but no species has so far been described with spinose ascospores and a completely hyaline wall of the ascomata. Nevertheless, there is no doubt on the generic classification of this fungus.

*Neocosmospora vasinfecta* is the only species so far known from Brazil, where it was frequently isolated from soil in Maranhão State, North Brazil (Upadhyay, 1967). The ascoma wall of this species is usually at least slightly pigmented, the asci and spores are larger, the surface of the spores never spinose.

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### References

- Cannon, P. F. & D. L. Hawksworth (1984). A revision of the genus *Neocosmospora* (Hypocreales). – Trans. Br. mycol. Soc. 82: 673–688.
- Freitas Barbosa, M. A. de (1965). A new species of *Neocosmospora*, found in stored peanut. – Garcia de Orta, Lisboa 13: 17–18.
- Polishook, J. D., G. F. Bills & A. Y. Rossman (1991). A new species of *Neocosmospora* with a *Penicillifer* anamorph. – Mycologia 83: 797–804.
- Rossman, A. Y., G. J. Samuels & R. Lowen (1993). *Leuconectria clusiae* gen. nov. and its anamorph *Gliocephalotrichum bulbilium* with notes on *Pseudonectria*. – Mycologia 85: 685–704.
- Smith, E. F. (1899). Wilt disease of cotton, watermelon and cowpea. – United States Department of Agriculture Bulletin 17: 1–53.
- Udagawa, S. I., Y. Horie & P. F. Cannon (1989). Two new species of *Neocosmospora* from Japan, with a key to the currently accepted species. – Sydowia 41: 349–359.
- Upadhyay, H. P. (1967). Soil fungi from North-East and North Brazil. VI. – Nova Hedwigia 13: 227–234.
- Warmelo, K. T. van (1970). Scanning electron microscopy of *Neocosmospora* ascospores. – Mycologia 68: 1181–1187.

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