

Scientific Notes

## Neocosmospora Foot Rot of Peanut in Taiwan

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The peanut plant, *Arachis hypogaea* L., is a self-pollinating, annual, herbaceous legume (5). It is estimated that over 86,000 ha was grown in this island and approximately 75% of the crop was planted in central and southern Taiwan (1). In fall of 1991, a yellowing symptom of peanut plants was found at Yuanchang (元長) and Szehu (四湖) in Yunlin County (雲林). Diseased plants showed stunting and lightly yellowing of lower leaves. Primary root surface became browning and necrotic with conspicuous black discoloration in the basal portions of the stem (Fig. 1). Plants also showed premature senescence and defoliation. A fungus identified as *Neocosmospora vasinfecta* var. *africana* E. F. Sm. (anamorph: *Acremonium* sp.) (2) was consistently isolated from diseased portions on 2% water agar (WA) as well as on potato dextrose agar (PDA) with 300 ppm streptomycin sulfate (PDA<sup>+</sup>). Numerous orange-brown to red perithecia developed around diseased tissues on WA (Fig. 2) and PDA<sup>+</sup> after 6–7 days at 24–28 C. Hyphal tips or single ascospores were taken from individual colonies on WA and transferred to PDA slants for pathogenicity tests. Pathogenicity of the fungus was determined on the susceptible peanut cultivar Tainan no. 11. A spore suspension of the fungus was prepared by scraping spores from 4-wk-old PDA cultures. Seeds of peanut were sterilized with 1% sodium hypochlorite for 3 min and incubated for germination in the moist chamber at 26 C. Germinating seeds of 7-day-old were soaked with a spore suspension (10<sup>6</sup> spores/ml) of the fungus or with distilled water only as a control. After air drying for 1 hr, 6 seeds treated were planted in soil which had been disinfested with hot air (60 C, 30 min) in a plastic flat (63 × 22 × 18 cm). Four replications of each treatment were conducted in the greenhouse. Typical diseased symptoms were observed in all inoculated plants after 4 wk at 26–32 C, but not in noninoculated

plants. The fungus was reisolated from diseased tissues of inoculated plants. Koch's postulates were completed which indicated that the tested fungus was the causal agent. The pathogen produced perithecia abundantly on PDA (Fig. 3). Perithecia, orange-brown to red, globose, 308–462 μm tall, 270–350 μm diam., ostiolar neck 39–116 μm long, 39–58 μm diam.. Asci unitunicate, cylindrical, thin-walled, 92.4–130.9 × 7.7–15.4 μm, without discernable apical structure, 8-spored (Fig. 4). Ascospores, uniseriate, buff to salmon pink in mass, pale yellow individually, globose to ellipsoidal, 11.6–15.4 × 7.7–13.0 μm. Ascospores have walls with cerebriform ornamentation seen under Scanning electron microscope (SEM) (Fig. 5) and show almost smooth under light microscope. Many of the early reports of the pathogenicity of *N. vasinfecta* are now discredited, the crop diseases being caused by the unrelated *Fusarium vasinfectum* Atk., which Smith (6) erroneously regarded as an anamorph of the *Neocosmospora*. However, modern studies, e.g. Udagawa (7), Kern, Naef-Rath and Défago (3), Phillips (4), have established *N. vasinfecta* as a pathogen causing stem- and root-rots of Leguminosae. In Taiwan, this is the first report to confirm the occurrence of *Neocosmospora* foot rot of peanut caused by *N. vasinfecta* var. *africana*.

Key words: Peanut, *Neocosmospora* foot rot, *Neocosmospora vasinfecta* var. *africana*, new record of peanut disease.

### LITERATURE CITED

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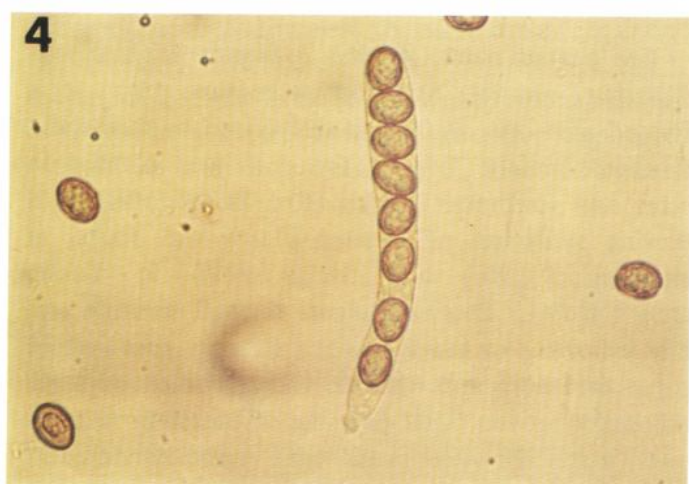
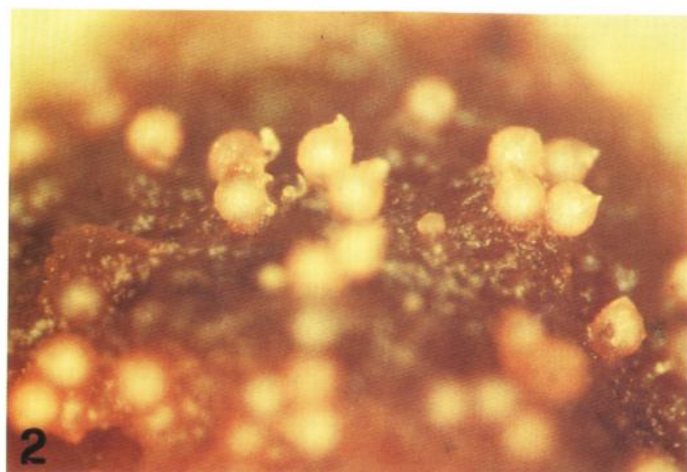


Fig. 1. Black necrotic symptoms (arrowed) on primary roots and basal stem portions of peanut plants inoculated with *Neocosmospora vasinfecta* var. *africana* (left), healthy plant (right).

Fig. 2. Numerous orange-brown perithecia around a diseased tissue on 2% water agar.

Fig. 3. *N. vasinfecta* var. *africana* formed orange-brown to red perithecia abundantly on PDA slants.

Fig. 4. An ascus and ascospores of *N. vasinfecta* var. *africana*.

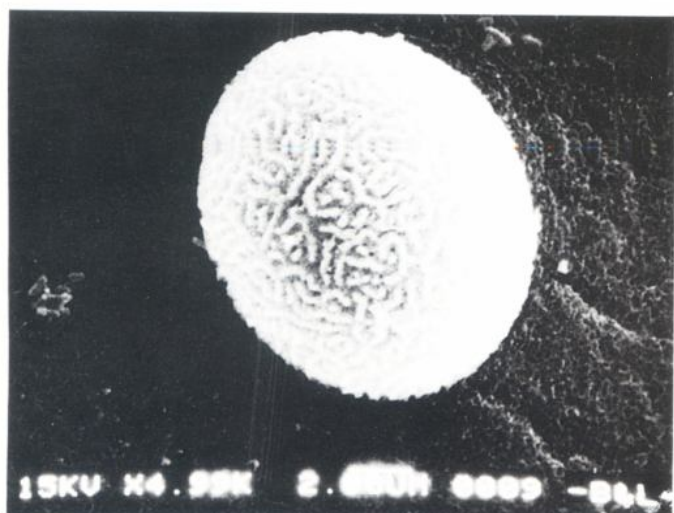


Fig. 5. An ascospore of *Neocosmospora vasinfecta* var. *africana* showing the wall with cerebriform ornamentation under SEM ( $\times 5000$ ).

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## 摘 要

黃振文<sup>1</sup>、陳世雄<sup>2</sup>、鍾文全<sup>1</sup>。1992。台灣落花生基腐病。植病會刊 1:203-205。(1. 台中市 國立中興大學植病系。 2. 台中市 國立中興大學農藝系)

民國八十年秋天，在雲林縣元長鄉與四湖鄉兩地發現落花生基腐病的發生。受害植株的主要病徵是主根與莖基部表皮明顯出現黑褐色壞疽的症狀；同時，罹病株有矮化、葉片轉黃及提早落葉的現象。利用水瓊脂培養基分離罹病組織上的可疑病原菌，並按柯霍氏法則逐步測定各菌的病原性後，證明落花生基腐病的病原菌是 *Neocosmospora vasinfecta* var. *africana*。本文係首次描述與記載本省落花生基腐病 (*Neocosmospora* foot rot) 的病徵與病原菌的形態特性。

關鍵字：落花生、落花生基腐病、*Neocosmospora vasinfecta* var. *africana*、新病害。