



Cochliobolus zeae sp. nov., the teleomorph of *Bipolaris zeae*

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Abstract. Leaf spot of kikuyu grass (*Pennisetum clandestinum* Hochst) caused by *Bipolaris zeae* Siv. was first described in Taiwan. The teleomorph of *B. zeae* is produced for the first time under laboratory conditions. It is assigned to the genus *Cochliobolus* Drechs and described as a new species, *C. zeae*.

Key words: Anamorph; *Cochliobolus zeae*; *Bipolaris zeae*; Teleomorph.

A severe leaf spot on kikuyu grass (*Pennisetum clandestinum* Hochst) was observed at Ch'ing Ching Agricultural Farm in Nantou County, located in the central part of Taiwan, 1700 m above sea level. The infected leaves were brought back to laboratory, washed and incubated in a moist chamber. Abundant conidia of a species of *Bipolaris* Shoemaker were observed on lesions 48 h after incubation at 25°C under a 14 h light photoperiod. A single conidial isolation was also made; and after purification, the fungus was grown on 2 × 2 cm autoclaved corn leaf sections placed on Sach's medium in a 6 cm Petri plate. Six days after incubation at 25°C under a 14 h photoperiod, the corn leaf sections were covered with conidiophores and conidia. Pieces of epidermis with conidiophores and conidia were stripped, mounted in lactophenol, and examined under light microscope.

On V8 juice agar, 5 days after incubation at 25°C under a 14 h light photoperiod, colonies effuse, olivaceous in central area, up to 4 cm in diam. Conidiophores solitary, flexuous, geniculated, septate, 80-105 × 4.5-6.5 μm. Conidia obclavate to fusiform, brown to golden brown when mature, 8-11 disto-septate, end cells often cut off by a thick dark septum (Fig. 1, C), 54-75 × 13-16 μm and mostly straight, 90-127 × 13-15 μm and slightly curved on corn leaf section, smooth; hilum truncate. Based on the characteristics of the conidia this fungus was identified as *Bipolaris zeae* Sivanesan (1985), reported as a new plant path-

ogenic fungus for Taiwan (Chang, 1988).

Randomly paired cultures were also grown on corn leaf sections placed on Sach's medium inside a 6 cm Petri plate. They were incubated at 25°C under 14 h photoperiod to obtain the teleomorphic state of the fungus. This is because the majority of *Bipolaris* species are known to be heterothallic (Sivanesan, 1987). Four days after mating, a few ascomatal initials were observed around one side of culture. Two weeks after mating, ascomata filled with pseudoparaphyses and a few immature clavate-shaped asci with no ascospores were observed. After 3 to 4 weeks, ascomata were filled with mature asci among pseudoparaphyses. This teleomorph of *B. zeae* belongs to the genus *Cochliobolus* Drechs. and is described as a new species of *Cochliobolus*.

Cochliobolus zeae Chang sp. nov.

Anamorph: *Bipolaris zeae* Sivan., *Trans. Br. mycol. Soc.* 84: 418, 1985.

Ascomata nigra, ellipsoideo-globosa, ostiolata, 390-510 alta 340-440 μm diametro, rostrum ostiolarium definitum, subconicum, usque ad paraboloidium, longitudine, ad apicem saepe massa cellularis hyalinis tectum; locus massa pseudoparaphysium hyalinarum filamentosarum et ascorum impletus; asci cylindrico-clavati, recti vel subcurvati, sessiles vel bevi pedicellati, 150-210 × 18-20 μm; ascosporae 4-8 in helice stricta circinati, filiformes vel flagelliformes, hyalinae, 6-10 septatae, 240-270 × 6.5-8.0 μm.

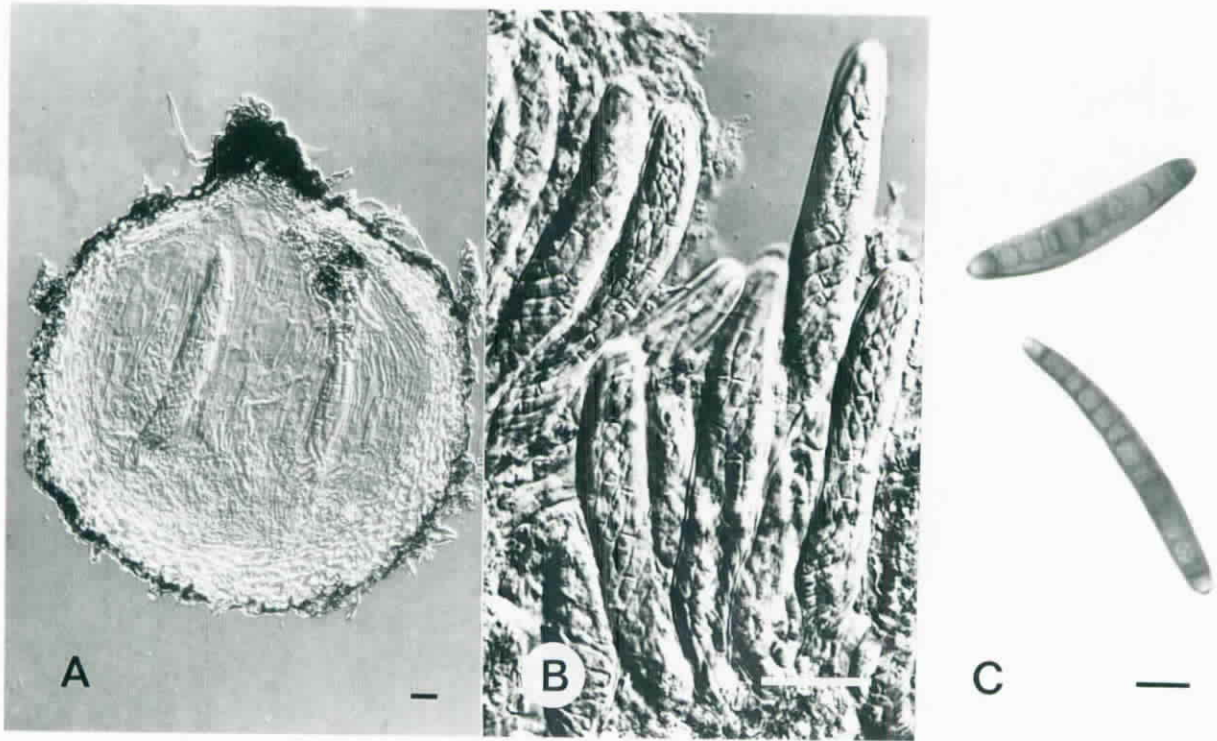


Fig. 1. *Cochliobolus zeae*. A, Longitudinal section of pseudothecium; B, Asci filled with ascospores; C, Conidia. Scale bar 20 μm .

In foliis vivis *Pennisetum clandestinum* Hochst, Ch'ing-ching, Nantou Hsien, 14 Aug. 1987, H. S. Chang, ASIB-02, holotypus.

The isotype IMI 350958 is deposited at the International Mycological Institute (IMI). Dried specimens have also been deposited at IMI. Isolates ASIB-021 and ASIB 0210 which mated to produce ascomata were deposited at the Mycological Laboratory, Institute of Botany, Academia Sinica, Taipei, Taiwan, R. O. C.

Ascomata globose, black, with a well-defined ostiolar beak, 390-510 μm high and 340-440 μm wide (Fig. 1, A). Asci thin-walled, cylindrical to broadly clavate, sessile or with short pedicel, 150-210 \times 18-20 μm (Fig. 1, B). Ascospores 4-8, helically packed in ascus, filiform, hyaline, 6-10 septate, 260 \times 6.5-8.00 μm . Pseudoparaphyses, hyaline, filiform, septate.

The ascomata developed sparsely and were only scattered around one side of mating culture. It took 3 to 4 weeks for ascomata to mature. Asci contained 4 to 8 ascospores. Asci with 8 ascospores were also fre-

quently observed in this fungus. Mature pseudothecia were frequently broken up. Similar to the other species of *Cochliobolus*, ascospores disintegrated inside asci and served no biological function as dispersal agent or survival structure.

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Cochliobolus zeae sp. nov. 克育草葉斑病菌
Bipolaris zeae Siv. 之有性世代

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本文報告 *Bipolaris zeae* Siv. 菌引起之克育草葉斑病，本菌是台灣之新記錄種，其有性世代則是首次發現，命名為 *Cochliobolus zeae*, *Cochliobolus* 屬之一新種。