

## Black Dot Root Rot of Eggplant Caused by *Colletotrichum coccodes*

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### *Colletotrichum coccodes*에 의한 가지 검은점뿌리썩음병(흑점근부병)

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**ABSTRACT:** Black dot root rot of eggplant was first found in vinyl-housed fields of Yeosu area in Korea in May, 1993. The causal fungus of the disease was identified as *Colletotrichum coccodes* (Wallr.) Hughes based on the morphological and cultural characteristics. Pathogenicity tests revealed that isolates of the fungus were responsible for the disease.

**KEYWORDS:** Black dot root rot, *Colletotrichum coccodes*, Eggplant

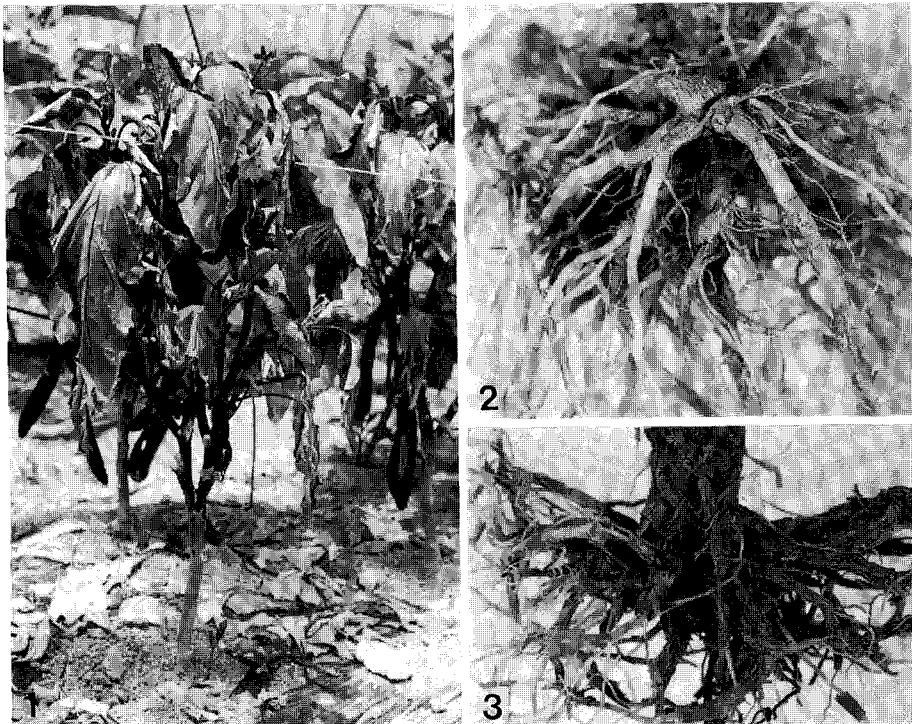
Black dot root rot of eggplant (*Solanum melongena* L.) occurred up to 20% in vinyl-housed fields of Yeosu area in Korea in May, 1993. The symptom was characterized by corky root rot. A lot of dotlike black sclerotia developed abundantly on infected roots, and the infected roots showed brown to dark brown discoloration. Diseased plants grew normally during the early growing stage but wilted gradually at the late growing stage. The symptoms observed in the field are shown in Figs. 1~3.

*Colletotrichum* sp. was consistently isolated from the root rot lesions of eggplants. All the isolates of the fungus were identified as *Colletotrichum coccodes* (Wallr.) Hughes according to the classification of previous workers (Hughes, 1958; Mordue, 1967). Colonies on potato dextrose agar (PDA) consist of abundant black sclerotia and sparse aerial mycelium (Fig. 4). Setae develop on an acervulus or a sclerotium (Fig. 5, A and B), which are 1~8 septate and measure  $32\sim 248 \times 4\sim 5$

$\mu\text{m}$  (average  $156.0 \times 4.5 \mu\text{m}$ ). Sclerotia produced on the roots are black, globose to irregular and measure  $160\sim 300 \times 100\sim 220 \mu\text{m}$ , and those in PDA culture are black, globose (Fig. 6) and measure  $96\sim 720 \mu\text{m}$  in diameter. Conidia are elongated fusiform, straight (Fig. 7) and measure  $12\sim 28 \times 3\sim 5 \mu\text{m}$  (average  $18 \times 4 \mu\text{m}$ ). Appressoria are ovate to elliptical or irregular, pale yellow to grayish brown (Fig. 8) and measure  $6\sim 14 \times 5\sim 10 \mu\text{m}$  (average  $9.6 \times 7.1 \mu\text{m}$ ). Optimum temperature for mycelial growth of the isolates was  $26\sim 28^\circ\text{C}$ , and minimum and maximum temperatures for that were  $3^\circ\text{C}$  and  $33^\circ\text{C}$ , respectively.

Two isolates of *C. coccodes* from diseased eggplant roots were used for pathogenicity tests. For preparation of inoculum, each isolate was cultured in SER medium (20 g sand, 8 g dry eggplant roots and 30 ml distilled water) in 250-ml-flasks at  $26\sim 28^\circ\text{C}$  for 30 days. Two cultivars of eggplant were cultivated in 1/5000-a wagner pots with sterile soil for 36 days in a greenhouse at  $18\sim 30^\circ\text{C}$  for inoculation experiments. For inoculation to eggplant roots, surface soil around the

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**Figs. 1-3.** Symptoms of black dot root rot of eggplant caused by *Colletotrichum coccodes* observed in the field. 1, wilt of diseased plants; 2, note dotlike black sclerotia on infected roots; 3, severely infected roots.

plant was dug by a depth of 2-3 cm, and 20 g of each inoculum was placed on the roots. The inoculated plant parts were covered with the original soil. The same quantity of SER medium was used for the control. The inoculated and control plants were cultivated in the greenhouse. Pathogenicity test was performed in three replicates. Symptoms were observed during cultivation of the inoculated plants, and disease rating was made 70 days after inoculation.

Black dot root rot occurred on the both cultivars of eggplant inoculated but did not on the control plants (Table 1). Symptoms induced by artificial inoculation were identical to those observed in the field, and *C. coccodes* was reisolated from all the infected roots. The cultivar Heukjinjujang was less susceptible than the cultivar Shinheuksanho.

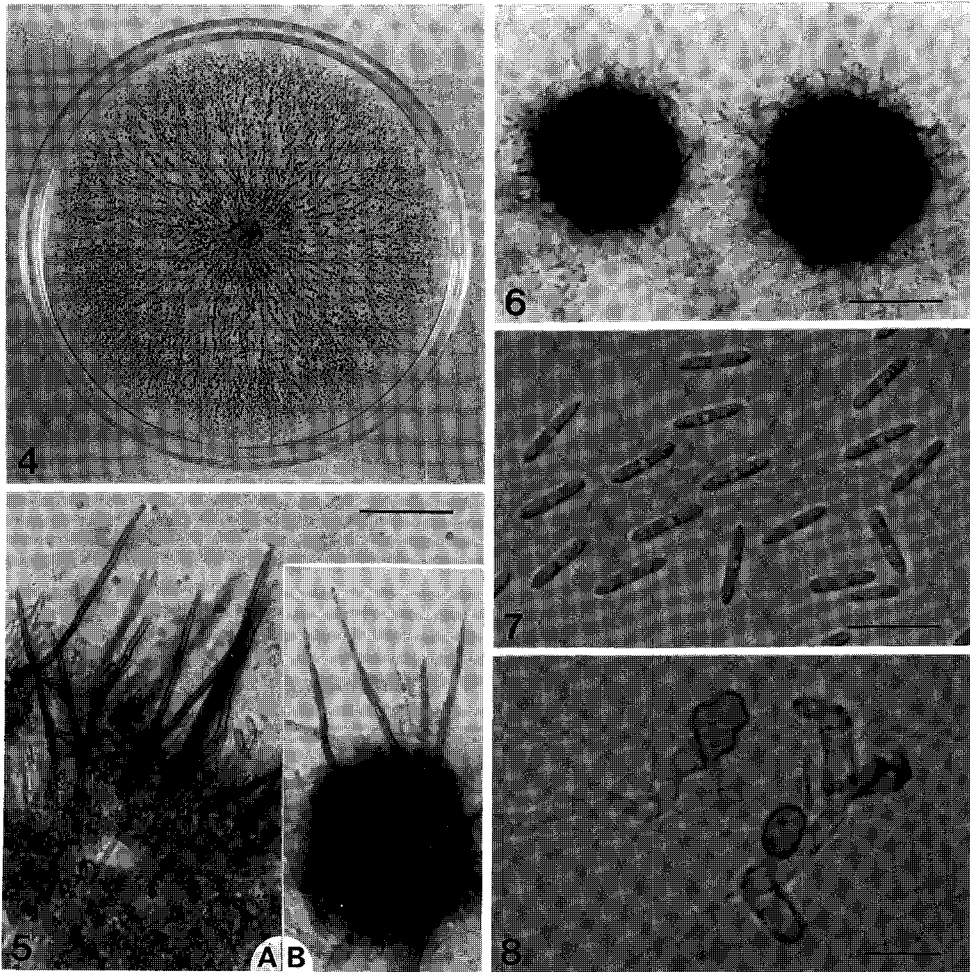
**Table 1.** Pathogenicity of *Colletotrichum coccodes* to two cultivars of eggplant by artificial inoculation

Isolate No.	Virulence of isolates on cultivars <sup>a</sup>	
	Heukjinjujang	Shinheuksanho
YJ-1	+	++
YJ-2	+	++
Control	-	-

<sup>a</sup>++, severe symptoms; +, weak symptoms; -, no symptom.

Further screening is required for selection of resistant cultivars of eggplant to the disease.

*C. coccodes* causes anthracnose of fruits, black dot root rot and brown rot of stems of Solanaceae (Farr *et al.*, 1989). It was reported that the fungus caused anthracnose of pepper seedlings in Korea (Oh *et al.*, 1988).



**Figs. 4-8.** Morphological features of *Colletotrichum coccodes* isolated from eggplant roots. 4, colonies cultured on PDA under fluorescent light at 26-28°C for 14 days; 5, setae developed on an acervulus(A) and a sclerotium(B) (scale bar=50  $\mu$ m); 6, sclerotia produced in PDA culture (scale bar=50  $\mu$ m); 7, conidia (scale bar=25  $\mu$ m); 8, appressoria (scale bar=10  $\mu$ m).

The present study first reveals that the fungus causes black dot root rot of eggplant in Korea. The disease was found only in Yeosu area. However, it is probable that the disease also occurs in other areas besides Yeosu. It needs further investigation of the disease occurrence on the solanaceous crops.

### 적 요

1993년 5월, 국내 여주지역의 비닐하우스포장에

서 가지검뿌리썩음병이 처음 발견되었다. 이 병의 병원 진균은 형태적 및 배양적 특성에 의해 *Colletotrichum coccodes* (Wallr.) Hughes로 동정되었다. 이 균의 균주들을 사용하여 병원성검정을 실시한 결과, 병원성이 확인되었다.

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