RES. BULL. PL. PROT. JAPAN No. 37 : 81~85 (2001)

Short Communication

Corynespora cassiicola isolated from papaya fruit imported from the Philippines*

Yoshinori KOBAYASHI, Takuya SAKODA, Etsuo KIMISHIMA and Yukio KARASAWA**

Research Division, Yokohama Plant Protection Station, 1-16-10, Shinyamashita, Naka-Ku, Yokohama, 231-0801, Japan.
**Kawasaki Branch, Yokohama Plant Protection Station, 12-3, Chidori-machi, Kawasaki-Ku, Kawasaki, 210-0865, Japan.

Abstract: Some decayed fruits of papaya (*Carica papaya* L.) imported from the Philippines were found in March 1999. A *Corynespora* species was isolated from the lesion of fruit. The isolated fungus was pathogenic to papaya fruits and leaves. Based on the morphological characteristics, the isolated fungus was identified as *Corynespora cassiicola* (Berk. & Curt.) Wei. This is the first report of *C. cassiicola* on papaya intercepted in plant quarantine in Japan.

Key Words: papaya, *Corynespora cassiicola*, plant quarantine, greasy spot

Symptoms

The lesions appeared on the surface of fruit. They were grayish white to grayish green, circular to elliptical spots with water-soaked margins, and 1 to 2 cm in diameter. Some lesions were covered with pale brown to pale olivaceous spore masses, and white to gray mycelia were formed at the center of the lesion (Plate I—1).

Pathogenicity of the isolate

Several isolates were obtained from the lesion on fruit by single spore isolation. One isolate (PP991) on potato dextrose agar (PDA; Difco) was chosen for pathogenicity test and morphological observations. The pathogenicity of the isolate was tested on harvested mature fruit, and stems and leaves of papaya seedlings using mycelial discs.

The mature fruit was wounded with cork borer (6 mm in diameter), and then mycelial discs were placed on the wound. The inoculated fruit was placed in moist plastic box for 48 hours at room temperature (25℃). Four days after inoculation, water-soaked spot appeared on the inoculated area, and then small colonies of the fungus were produced on these spots. Fourteen days after inoculation, the spots enlarged to about 2 cm in diameter and became grayish white to gray. Dense mycelial masses and conidia were observed on the spots (Plate I—2).

Stems of one-year-old seedlings were wounded with knife by peeling off about 1 cm lengh of epidermal tissue, then mycelial discs were placed on the wound and the inocu-

*An outline of this paper was presented at the Annual Meetings of the Kanto Branch of the Phytopathological Society of Japan, 2000.

lated area were covered with parafilm (American Can Co.). The inoculated seedlings were placed in a moist plastic box for 72 hours at room temperature (25℃). Five days after inoculation, the inoculated areas became grayish white and were slightly sunken. Leaves were fallen.

On leaves, conidial suspension was used as an inoculum. After 14 days' growth on PDA in an incubator at 25℃, conidia were collected by flooding with sterile distilled water containing 0.02% Tween 20 and sprayed onto healthy papaya leaves. The inoculated plants were placed in moist plastic box for 72 hours at room temperature and moved to a greenhouse. Two days after inoculation, water-soaked spot appeared on the leaves. One week after inoculation, the spots enlarged and became grayish white (Plate I—3). The inoculated fungus was reisolated from all diseased plants.

Pathogenicity was also tested on other plants. The isolate was pathogenic to cucumber (*Cucumis sativus* L.), pumpkin (*Cucurbita moschata* Duch.), watermelon (*Citrullus lanatus* (Thunb.) Matsum. & Nakai), tomato (*Lycopersicon esculentum* Mill.), and eggplant (*Solanum melongena* L.).

Morphology and identification of the isolate

Conidiophores were produced on the infected fruit and on PDA. On the infected fruit, conidiophores were singly or in clusters, several septate, pale brown to brown, smooth, with swellings at basal cells and no stromata were observed (Plate I—4,5). On PDA, conidiophores were singly or in clusters, 147～817 (av. 386.3) μm long and prolification of conidiophores were observed. Conidia were formed singly or in catenulate 2 to 6 at the apex of conidiophores, and connected by a hyaline isthmus, pale brown to olibaceous, obclavate to cylindrical, straight to curved, smooth, with 3 to 17 pseudosepta, variable in length 39.5～259×6.4～11.2 (av. 103.9×8.6) μm. Conspicuous dark hilum at the basal end of conidia were observed (Plate I—6).

Mycelial growth of the isolated fungus was examined on PDA at various temperatures. Colonies were formed at temperatures ranging from 10 to 35℃, with the optimal temperature was 25 to 30℃. No mycelial growth was recorded at 5℃. The colony on PDA was grayish white with aerial mycelia in surface and reddish brown in reverse (Plate I—7).

The fungus was regarded as a species of the genus *Corynespora* based on the morphological characteristics. The morphology of conidiophores and conidia of the isolate from papaya coincided with that of the reference *C. cassiicola* (Table 1). Therefore, the isolated fungus was identified as *Corynespora cassiicola* (Berk. & Curt.) Wei described by Ellis (1971) and Wei (1950).

According to Snowdon (1990) and Norse (1973), the disease of papaya caused by *C. cassiicola* is called greasy spot and is an important disease of papayas in the Caribbean region. In Japan, *C. cassiicola* has been recorded on soybean, melon, cucumber, perilla, east Indian lotus, tomato, saintpaulia and hortensia, but has not been recorded on papaya (The phytopathological society of Japan (2000)). This is the first report of *C. cassiicola* on papaya fruit intercepted in plant quarantine in Japan.

Table 1. Morphological comparison of *Corynespora* isolate from papaya with *C. cassiicola* previously reported.

Fungus	Conidia Length(㎛)	Number of Septa	Conidiophores Length(㎛)
PP991	39.5~259×6.4~11.2 (103.9×8.6)	3~17 (9.3)	147~817 (386.3)
C. cassiicola (MAFF237272[a])	37.7~216×5.4~13.6 (104.6×10.5)	3~18 (8.4)	131~774 (294.6)
C. cassicola (Ellis, 1971)	40~220×9~22	9~22	110~850

[a] Isolated from *Cucumis sativus*

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Explanation of plate

Plate— I

1. Symptoms of imported papaya fruit infected with *C. cassiicola*.
2. Symptoms of papaya fruit inoculated with *C. cassiicola*.
3. Symptoms of papaya leaves inoculated with *C. cassiicola*.

4,5 Conidiophores of *C. cassiicola* on inoculated papaya fruit.

6. Conidia and isthmus (arrow) of *C. cassiicola*.
7. Colonies of C.cassiicola on PDA. (Left : surface side, Right ; reverse side)


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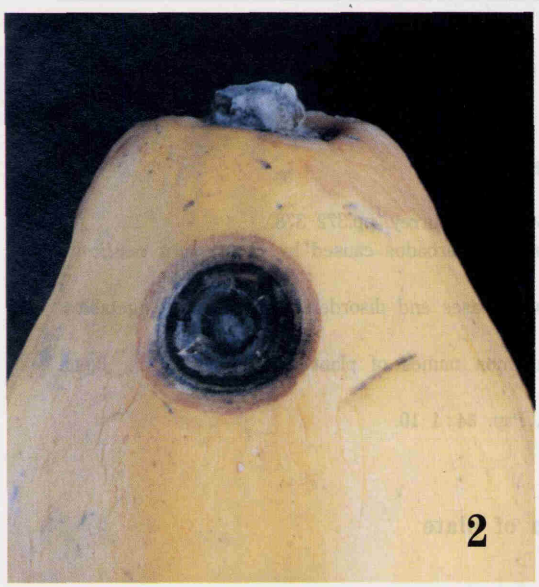
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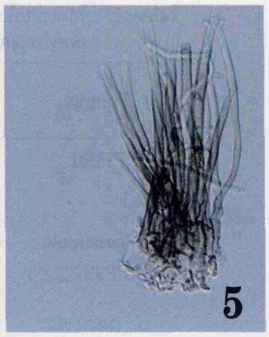
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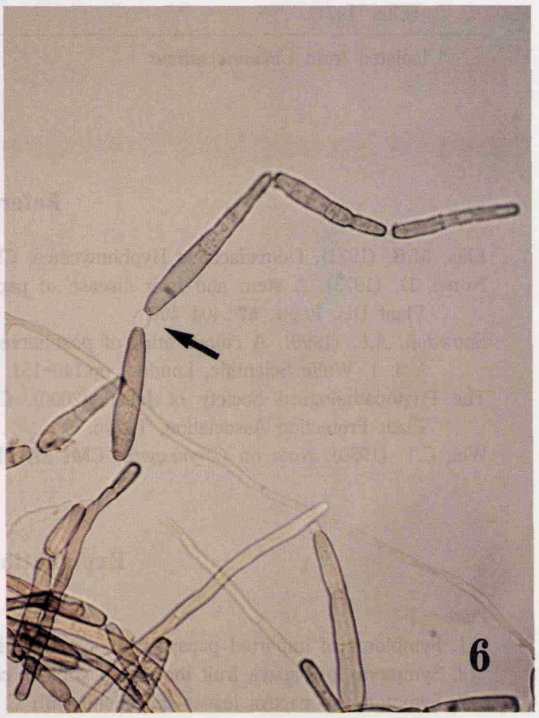
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和 文 摘 要

フィリピン産パパイヤ果実から分離された *Coryhespora cassiicola* について

小 林 慶 範・迫 田 琢 也
君 島 悦 夫・唐 沢 裕 雄**
横浜植物防疫所
**横浜植物防疫所川崎出張所

1999年3月,フィリピンから輸入されたパパイヤ果実に灰褐色～褐色，直径1～2cmの円形のくぼんだ病斑を生じているものが多数認められた。病斑部から得た分離菌は，接種試験によりパパイヤ果実に病徴を再現し，また葉及び茎にも病徴を生じた。本菌は，PDA培地上で良好に発育し，菌そうはベルベット状，灰褐色を呈した。分生子柄は，分岐せず,6～13本叢生し，淡褐色で長さ147～817 μm，幅6～10 μm，先端に分生子を形成した。分生子は，介在細胞により2～数個鎖生し，表面平滑，倒棍棒形～円筒形，淡褐色で長さ39.5～259 μm，幅6.4～11.2 μm，多細胞で3～17の横隔壁を有し，基部にはへそ(hilum)が顕著に認められた。PDA培地上では,10℃以上で生育し,25～30℃が適温であった。本菌は，トマト，キュウリ，カボチャにも病原性を示した。以上のことから，本菌を *Corynespora cassiicola* (Berk.& Curt.) Weiと同定した。本邦では，本菌によるパパイヤの病害は報告がないので，パパイヤ褐斑病(Greasy spot)と提案した。