CORYNESPORA LEAF SPOT, A DISEASE OF FLORIDA PAPAYAS

ROBERT A. CONOVER
IFAS, Agricultural Research and Education Center,
University of Florida,
18905 SW 280 St., Homestead, FL 33031

Abstract. Corynespora cassiicola causes primarily a leaf spot of papayas in Florida but may be found occasionally on petals and major branches of male inflorescences. Individual leaf spots are small and inconspicuous, but may become numerous enough to cause premature defoliation, reduction in yield and possibly in fruit quality. The disease can be controlled by application of maneb and mancozeb and is not a serious disease when fungicides are used regularly.

Corynespora leaf spot of papayas is a widespread disease that probably occurs throughout the Tropics, since it has been reported from the U. S. Virgin Islands (3), Hawaii (6, 7) Philippines (8), India (1) and Uganda (5). Its presence in Florida has not been described in print although the Cercospora leaf spot listed as occurring on papaya by Wehlburg et al. (9) is probably the same disease. The disease is inconspicuous in early stages because individual lesions are small, but several hundred can occur on one leaf resulting in premature defoliation severe enough to reduce yields and possibly fruit quality. This paper presents a description of the disease and suggestions for controlling it.

There is some confusion in the literature regarding the proper name of the causal organism. The disease apparently was described first by Stevens and Celino in 1932 on papayas from the Philippines (8) who listed Helminthosporium caricae Syd. as the causal organism. They also noted Mycosphaerella caricae Syd., was present with the Helminthosporium in about 5% of the lesions; however, they regarded the association as accidental. I have not observed this association although Wehlburg et al. (6) list M. caricae Syd. as occurring on papayas in Florida but do not indicate the nature of the disease. Hansford, as cited in Chupp (5), named the causal organism of a similar leaf spot in Uganda as Cercospora caricae. According to Wei (10) the Helminthosporium and Cercospora reported previously were actually a species of Corynespora and that the valid name was C. caricae Berk. & Curt. Wei. Bird et al. (3), reporting on a similar disease on papayas in St. Croix, sent cultures of the causal organism to M. B. Ellis (Commonwealth Mycological Institute, Kew, Great Britian) for identification. Ellis identified the fungus as C. cassiicola (Berk & Curt.) Wei. The fungus that occurs in Florida is readily identified as a Corynespora according to Barnett’s Key on the identification of Imperfect Fungi (2). Thus, the preponderance of evidence indicates that the fungus is Corynespora cassiicola.

The symptoms of the leaf spots described by the various authors mentioned above agree rather closely with each other and with the symptoms of leaf spot we have in Florida but some reports indicate that the causal fungus also attacks the fruit. Neither Hansford, as cited in Chupp (5), nor Bird et al. (3), nor Stevens and Celino (5) made any reference to a fruit spot or rot. Murakishi et al. (7) and Hine et al. (6) state that the black spot disease in Hawaii, caused by Cercospora papaya Hansford, produces black crater-like spots on the fruit which does very little damage to the fruit other than detracting from its appearance. Agarwal and Gupta refer to Corynespora cassiicola as a . . . pathogen observed to be quite virulent on papaya fruits at Jabalpur . . . , India (1). Further work is needed to determine if the black spot disease in Hawaii and India is a different disease from that occurring in Florida and the West Indies, or if the fruit rot phase results from differences in the pathogen, host or environment.

Symptoms of the Disease

In Florida Corynespora cassiicola is found primarily on foliage, although lesions occasionally occur on petals and


Robert A. Conover
IFAS, Agricultural Research and Education Center,
University of Florida,
18905 SW 280 St., Homestead, FL 33031

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2. ———. 1976. A program for development of papayas tolerant to PRV-tolerant papayas with good horticultural characteristics can be developed although much time and effort must be spent in overcoming the problems that have become apparent.

Symptoms of the Disease

In Florida Corynespora cassiicola is found primarily on foliage, although lesions occasionally occur on petals and

larger branches of male inflorescences. It has not been ob-
served on stems, fruit or fruit stalks.

New infections on leaves are first seen as a faint yellow
spot which soon develops a tiny necrotic speck in the center.
Developing lesions may be tan or light brown in color.
Mature lesions are subcircular to irregular in shape and
range from 1 to 2 mm in size. Viewed from the upper sur-
face lesions are grayish to a dirty white in color and are
usually not cracked. The necrotic area is sharply depressed
giving the impression of a very narrow brown ring around
the necrotic area separating it from living tissue. The lesion
is ringed by a yellow area usually 4 to 8 mm wide the outer
edge of which gradually fades into the green color of the leaf,
(Fig. 1).

Leaf spots appear somewhat different from the underside
of the leaf. The necrotic tissue generally has a tannish color.
The yellowed area around the lesion is not visible by re-
lected light but is readily apparent by transmitted light.
The necrotic area is only very slightly or not at all depressed
and is surrounded by a very narrow light reddish-brown
border. A small water soaked spot is the first evidence of in-
festation on the undersides of the leaf; this spot is not ap-
parent by transmitted light. Young lesions also develop a
pinpoint necrotic area before it is visible from the upper
surface.

Lesions on petioles and major branches of the male in-
Florescence are quite similar in size and appearance. They
usually are 1 to 2 mm wide and range up to 20 mm long
with the long axis paralleling the petiole and flower stalks.
Lesions appear as slits or small cracks and are sharply de-
pressed at the margins. On petioles and flower stalks that are
light to dark purple, the necrotic area is bordered by a 1 to 2
mm zone that is green. On green petioled types, this area
usually has a watersoaked appearance. Sporulation of C.
cassiicola in the necrotic areas is similar to that on the under-
side of the leaf.

Control of the Disease

Corynespora leaf spot is readily controlled by fungicides
and the disease is not important in plantings where a
regular program of fungicidal application is followed.
Murakishi et al. (7) and Hine et al. (6) report that the
black spot disease is controlled experimentally by ziram,
maneb, copper and captan. Bird et al. (3) state that man-
cozeb “... gives satisfactory control if applied every week or
10 days at the rate of 1¼ pounds per 50 gallons of water.”
During the past two summers I have brought established
epidemics under control with weekly applications of man-
cozeb. Of the fungicides listed above only maneb and man-
cozeb are registered for use on papaya.

Several hundred accessions of papayas have been grown
during the past 2 years at the Agricultural Research and
Education Center at Homestead in a program designed to
develop cultivars which are tolerant to the distortion ring-
spot virus (4). These include accessions from every con-
tinent and most countries in the Tropics where papayas are
grown. None have shown any indication of resistance to
Corynespora cassiicola.

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Fig. 1. Corynespora leaf spot of papaya.

C. cassiicola sporulates on both upper and lower surfaces
of the lesions but sporulation is more profuse on the lower
surface. Dark reddish-brown to black conidiophores and
conidia are readily visible with a 10X hand lens.

Leaf spots are most abundant on the lower, older leaves
or on the leaves of small plants or branches growing in the
shade of large plants. The number of lesions decreases
towards the top of the plant, but, when inoculum is ab-
dant, lesions also occur on leaves that are still expanding.
When lesions are numerous older leaves especially become
bright yellow and abscise prematurely. The tissue around
the lesion remains light green in sharp contrast to the bright
yellow color of the leaves. Lesions do not usually expand as
the leaf becomes senescent.

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