Texas A&M AgriLife Extension

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Plant Pathology & Microbiology

http://sickcitrus.tamu.edu

Alternaria Brown Spot

Symptoms

Brown spot affects leaves, twigs and fruits. Round to oval brown spots are characteristic symptoms of this disease (Fig 1 & 2). Lesions are usually surrounded by a yellow halo, induced by a pathogen produced toxin (Fig. 1 & 2). On leaves, concentric black dots may develop in the center of mature lesions. Under favorable conditions spots enlarge; on occasion spots may follow the veins and appear eye-shaped (Fig. 1, bottom). Lesions are visible on both sides of the leaf (Fig. 1).
On fruits, lesions may vary in size (Fig. 2). Mature lesions have a corky appearance (Fig. 2, top). In older lesions the center may dislodge leaving tan colored pockmarks (Fig. 2, bottom right).

Fig. 1: Brown spot lesions on leaves of tangerine (Murcott). Photo: Myrian Rybak.

Fig. 2: Brown spot on tangerine fruits (Nova). Photo: Myrian Rybak.

Size of the lesion is determined by the cultivar; under favorable conditions severe infection may lead to defoliation, twig wilting and dieback, pockmarks, and fruitlet drop.

Causal agent

Brown spot is a fungal disease caused by *Alternaria alternata.* There are several pathotypes characterized by host specificity. The disease occurs on tangerines (Murcott, Ellendalle, Dancy and Dancy hybrids), rough lemon and Rangpur lime, all caused by different pathotypes. In Mexico, Mexican lime is affected by *Alternaria limícola*, a pathogen unique to Mexico.
Brown Spot does not affect oranges; grapefruit can develop spotting if next to a heavily infected grove.

Inoculum source and conditions

Alternaria alternata sporulates on leaf, twig or fruit spots, on the tree and on the ground. Sporulation is favored by wet conditions. Spores are dispersed by wind and water splash. On young leaves, symptoms first appear between 36 and 48 hours after infection. Fruits remain susceptible for up to 4 months after petal fall.

Control

Brown spot is very difficult to control. The most effective mean of control is the application of fungicides:

- Spray at spring flush, with a second application 7 to 14 days later (coper, Benomil o Carbendazim) to prevent sporulation. Canker treatments with coper and coper plus Mancozeb also protect the fruit against *Alternaria*.

Consider cultural practices to help reduce severity:

- Prune affected twigs to remove spores source and reduce fruit infection.
- Favor aeration by increasing plant spacing.
- Avoid overhead irrigation.
- Avoid excessive watering and nitrogen fertilization, for they induce exuberant growth and poor aeration.

References

- Akimitsu K., Peever TL, Timmer LW. 200. 3Molecular, ecological and evolutionary approaches to understanding Alternaria diseases of citrus. Mol Plant Pathol. 1;4(6):435-46.
- Canteros B. I. 2009. Guía para la Identificación y el Manejo de las Enfermedades Fúngicas y Bacterianas en Citrus 2009-2010. Programa de Fortalecimiento de la Citricultura Correntina (INTA, CFI, Pcia Corrientes, SENASA, Corp. Mercado Central Bs As). 1a edición, 94 pag. ISBN 978-987-05-6059-3.
- M.M. Dewdney and L.W. Timmer. 2012. Alternaria Brown Spot. University of Florida, IFAS Extension. https://edis.ifas.ufl.edu/topic_alternaria_in_citrus

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