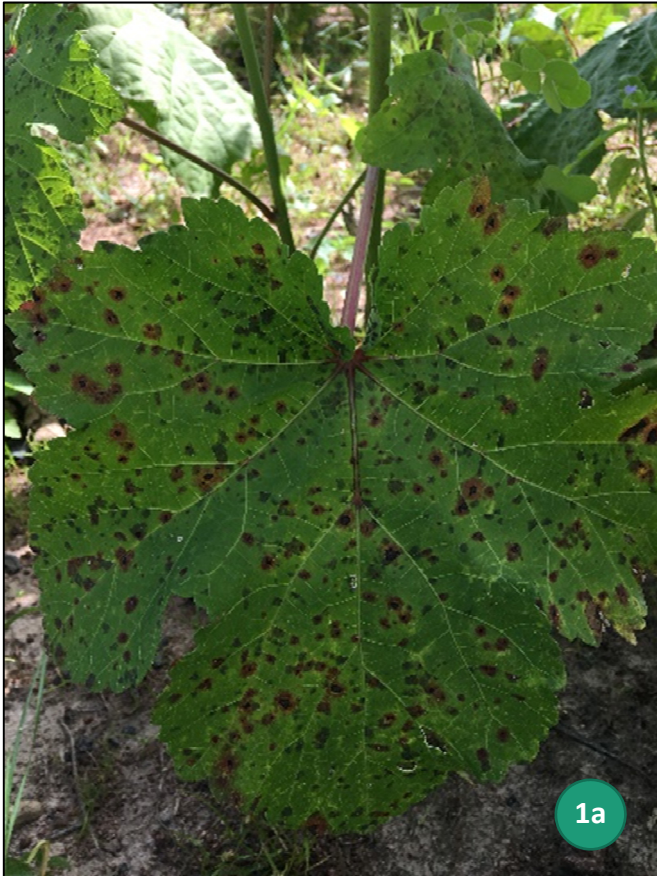


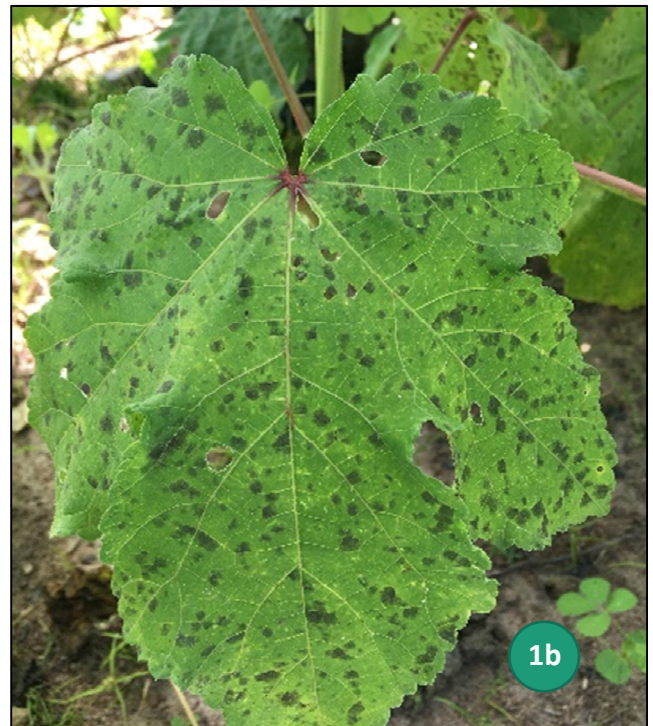


CERCOSPORA LEAF SPOT OF OKRA (*Abelmoschus esculentus*)



WHAT IS CERCOSPORA LEAF SPOT?

Cercospora leaf spot (CLS) is a major disease of okra (*Abelmoschus esculentus* L., synonym *Hibiscus esculentus* L.). It damages the leaves and reduces okra yield. Two species of *Cercospora* (*C. malayensis* and *C. abelmoschi*) cause the disease. CLS has been reported in tropical and sub-tropical countries of Asia, and is commonly present in western Africa wherever okra is cultivated, especially during the warm rainy season (Kumar et al. 2010; Farrag 2011).



WHAT ARE THE SYMPTOMS?

Cercospora leaf spot symptoms on okra vary depending on the *Cercospora* species and the age of infection. Infection by *C. malayensis* usually starts with small brown irregular spots surrounded by red or pink coloration (Figure 1a), whereas sooty black angular spots are the first sign of infection by *C. abelmoschi* (Figure 1b & 1c). Generally, symptoms first appear on the lower, older leaves and progress with newer lesions appearing on the younger, upper leaves. As the disease advances, the leaf spots enlarge and eventually merge to cover the entire leaf, which then turns necrotic and often rolls as it dries, but remains attached to the stem.



Figure 1. Symptoms of Cercospora leaf spot of okra: a) symptoms on upper surface of the leaf caused by *C. malayensis*; b) symptoms on upper surface of the leaf caused by *C. abelmoschi*; and c) underside of the leaf due to *C. abelmoschi*.

HOW DOES CLS SPREAD?

Rainfall and high humidity favor infection, disease development, and sporulation of the pathogens on the okra leaves. Rain splash or overhead irrigation (sprinkler) creates a conducive microclimate for the pathogen to multiply in the field and favorable conditions for conidia (spores) to move from plant to plant. Wind spreads the conidia from one field to another. Infected okra seedlings and movement of people and animals also spread the disease within the field and over longer distances.

CONTROL METHODS

Protective control measures applied early are generally more effective than trying to manage the disease after it has become established in the crop. *Cercospora* has a long latent period, so symptoms appear only several days after infection. An intensive, integrated approach is necessary to effectively control the disease in okra.

REFERENCES

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Best practices for control of CLS

Plant tolerant cultivars: Okra cultivars vary in resistance or susceptibility to *Cercospora* leaf spot; growers should avoid planting susceptible cultivars in high disease pressure areas and should select more tolerant cultivars.

Planting density: Planting okra with closer spacing and higher density creates a humid microclimate in which the pathogen multiplies quickly. Planting at lower density increases air flow through the crop and reduces the rate of conidia production and dispersal through the crop.

Sanitation: The pathogen can overwinter on infected leaves, debris and weeds. It is important to remove and destroy diseased fallen leaves and, if possible, infected leaves still attached to the plant. The field and surrounding area should be kept free of weeds (*Malvaceae*) that act as an alternative host to the *Cercospora* pathogen.

Irrigation method: Wet and warm conditions around the canopy of okra create an ideal environment for disease development, and water splash from rain or overhead sprinklers spreads disease spores between plants. It is best to irrigate using soaker hoses, drip irrigation, or furrows.

Crop rotation: Rotation with non-host crops including onion and other vegetables will help reduce pathogen pressure in the field, as the pathogen can only overwinter and survive on okra (and other host) plant debris in the field for a season or two.

Chemical control: Regular application of different fungicides (as recommended by crop protection professionals) starting about one month after planting can help control CLS. However, fungicides are costly and potentially hazardous to the farmer, the environment and consumers. Rational use of fungicides as part of an integrated pest management package is recommended.