Disease Notes

Diseases Caused by Fungi and Fungus-Like Organisms

First Report of *Macrophomina* Crown Rot Caused by *Macrophomina phaseolina* on Basil in the United States

S. T. Koike,[†] H. Stanghellini, and A. Burkhardt

TriCal Diagnostics, Gilroy, CA 95020

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In 2020, a commercial basil (*Ocimum basilicum*) field in Riverside County, California, showed symptoms of a soilborne disease. Affected plants were stunted, foliage wilted and dried up, and plants eventually died. Internal crown tissue was light to dark brown in color. Symptomatic plants were surface disinfested, and tissues from the necrotic crowns were placed on acidified (25% lactic acid) corn meal agar. Fungal isolates that had identical, dark gray colonies were consistently recovered. Isolates formed numerous sclerotia that were dark brown to black, irregularly shaped, and 65 to 180 µm long and 45 to 100 µm wide. Based on morphology, the isolates were identified as *Macrophomina phaseolina* (Mihail 1992). *Fusarium* and other basil pathogens were not recovered. Pathogenicity of two *M. phaseolina* isolates was tested in two ways. The tips of colonized round toothpicks were inserted below the soil line into the crowns of potted basil (cultivar Nufar) plants (Koike et al. 2016). Colonized sand/corn meal inoculum (0.5 g per plant) was placed on the crowns below the soil line of basil transplants before planting into pots (Koike et al. 2016). After 10 (toothpick) and 18 (sand/corn meal) days, inoculated plants began to wilt and collapse. Examination of the plants revealed a brown necrosis in the

crowns. Isolations from inoculated plants resulted in the consistent recovery of fungi that were confirmed to be *M. phaseolina*. Control basil plants were inoculated with sterile toothpicks or sterile sand/corn meal and did not develop any symptoms. To confirm identification of basil isolates, DNA was extracted from fungal tissue pre- and postinoculation and was amplified by PCR using the ITS1/ITS4 primers (White et al. 1990). The ITS loci from both the preinoculation isolate (MW181684) and the postinoculation isolate (MW181685) matched *M. phaseolina* isolate (MT183520.1) with 100% query cover and 100% identity with 513 and 544 bp matching *M. phaseolina*, respectively. Based on these morphological and molecular data, the isolates were confirmed as *M. phaseolina*. This appears to be the first confirmation of *M. phaseolina* causing a disease of basil in the United States. In this 6-ha field, disease incidence was less than 1%. Affected basil plants tended to occur in the section of the field having higher salt levels, indicating a possible factor of stress in disease epidemiology. In addition, other *Macrophomina* hosts in the Cucurbitaceae and Solanaceae are grown in this region. Diseased basil may contribute inoculum that could affect these other hosts; basil plantings could also be subject to inoculum built up by these other crops.

References:

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[†]Indicates the corresponding author.

E-mail: S. T. Koike; skoike@trical.com