Stemphylium Leaf Spot: New Disease on Parsley

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Parsley is the familiar leafy plant in the Apiaceae that is grown both as a fresh market vegetable, herb, and garnish and as a dehydrated product for various culinary uses. California is the number one producer of parsley in the USA with approximately 2600 acres in 2010, representing approximately half of the country’s parsley. Monterey and Ventura counties together grow 49% of California’s parsley; in 2010 the value of parsley in these two counties was valued at $13.5 million. Because this is a leafy vegetable commodity, markets require that the foliage be of very high quality and have few defects.

From 2009 through 2011, unfamiliar foliar symptoms were observed on commercial parsley grown in Ventura County. Initial symptoms were leaf spots less than 1/4 inch in diameter, circular to oval in shape, and yellow in color. As disease progressed the spots enlarged slightly, retained the circular to oval shape, and turned tan to light brown in color with yellow borders. In some cases leaf spots exhibited a ring spot appearance due to alternating lighter and darker colored tissue. When the disease was severe the leaf spots grew together and the leaves became prematurely yellow and senescent, eventually drying up and resulting in leaf dieback. Fungal growth and structures were not observed in the spots. Leaf petioles were also diseased and had narrow, elongated, brown lesions. Spots occurred mostly, but not exclusively, on older foliage. When the parsley was harvested, the remaining lower older leaves still attached to the plants often exhibited the most severe symptoms; the disease also re-appeared on the subsequent re-growth following a harvest.

The cause of this leaf spot disease is the fungus Stemphylium vesicarium. This is the first time parsley has been documented to be a host to this fungus. S. vesicarium is known as a leaf pathogen of other crops such as garlic, leek, onion, asparagus, and alfalfa. Experiments indicated that S. vesicarium isolates from parsley could also cause small leaf spots on celery and carrot. Seed assays demonstrated that this pathogen can be found on parsley seed; therefore, initial disease outbreaks may be due to seedborne inoculum. Because all parsley is irrigated with overhead sprinkler systems, a low level of infested seed could result in problems due to the favorable environment resulting from high density parsley plantings and splashing irrigation water.

While Septoria late blight is typically the most destructive disease of parsley in California, the addition of Stemphylium leaf spot adds yet another challenge that California growers must deal with while producing large volumes of high quality, defect-free parsley. Presently Stemphylium leaf spot is not widespread and management practices are not yet required.

Stemphylium leaf spot is not the only new foliar problem that has been recently documented in the state. A new bacterial leaf spot disease caused by two different pathovars of Pseudomonas syringae (pvs. apii and coriandricola) was found in commercial fields (see Crop Notes issue May/June 2012). Growers and field personnel must now therefore distinguish between four foliar diseases of parsley. Powdery mildew can be readily identified because of the white, powdery mycelium on leaves. Septoria late blight is distinctive because of the spherical, brown to black fungal structures (pycnidia) that form in the angular leaf spots. Bacterial leaf spot causes angular,
tan to brown leaf spots that lack any mycelial growth or fungal structures. Stemphylium leaf spot also lacks fungal structures in the spots but is characterized by oval to round spots that often contain concentric rings of light and dark tissues.