**Verticillium Wilt and Compost Amendments**

Margaret Lloyd and Tom Gordon

Department of Plant Pathology, University of California, Davis

*Verticillium dahliae* is the cause of Verticillium wilt, a disease that affects strawberries and many other plant species, including annual vegetables, fruit trees, nut trees and fiber crops, as well as weeds and native plants in California. Once a susceptible plant is infected, *V. dahliae* can produce large numbers of survival structures (called microsclerotia) (Vallad and Subbarao, 2008), which can survive in the soil for more than 14 years (Wilhelm, 1955). In addition, *V. dahliae* can colonize the roots of many crops that are not susceptible to disease and may show no symptoms (Lloyd and Gordon, 2011). This provides another means by which the fungus can produce survival structures. *Verticillium dahliae* is easily spread between fields with soil on farming equipment. It can also be introduced with seed (Wu and Subbarao, 2014) or infected transplants. Owing to the ease of dispersal, a wide host range and production of long-lived survival structures, *V. dahliae* is resident in agricultural soils throughout the state. Whether or not Verticillium wilt occurs in a particular situation is determined by the susceptibility of the crop variety being grown and the abundance of inoculum in soil. Consequently, the absence of disease does not mean the pathogen is not present. In fact, it is likely that *V. dahliae* occurs at some level in most fields in coastal California. Good management practices aim to keep the inoculum level below a damaging threshold (Gordon and Subbarao, 2007).

Many growers use compost amendments to improve the physical and chemical properties of soil. Compost can also enhance the activity of microorganisms that are inhibitory to plant pathogenic fungi (Mazzola, 2004). However, compost made from crop residue may include plants that were infected with *V. dahliae*, and because microsclerotia can survive in animal guts (Markakis, 2014), manure may be contaminated as well. Proper composting is required to ensure that no viable microsclerotia remain in the final product. The California Composting Council and CalRecycle have established regulations that require materials reach 55 °C (131°F) or higher for 15 days or longer with a minimum of five turnings of the windrow during this time (Cal Recycle, Title 14, Chapter 3.1), which should be sufficient to kill *V. dahliae* microsclerotia in manure or crop residue (Baker, 1957). All state permitted composting facilities are visited monthly by the local enforcement authority (LEA) to ensure compliance with these regulations. Consequently, if your supplier is operating under a state permit, the compost you purchase is unlikely to be a source of inoculum of *V. dahliae*, and it would not be advisable to forego the benefits of compost amendments out of concern that this will increase the risk of damage from Verticillium wilt.

One can find or check for a permitted site by searching on this directory:

<http://www.calrecycle.ca.gov/SWFacilities/Directory/Search.aspx>

Under "regulatory status", select "permitted".

REFERENCES

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