New research contains solutions to common pear disease

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Diseases caused by a species of fungus called *Phytophthora syringae* are responsible for significant economic losses on a wide range of plants, including pear. In the Pacific Northwest region of the United States, disease occurs during the winter in nursery stock, especially on trees that are harvested and stored in coolers or in outdoor sawdust beds.

Recent field observations by growers suggest that increased nitrogen content in nursery trees resulting from foliar sprays with urea in the autumn increases tree susceptibility to infection by *Phytophthora syringae*. The results of new research suggest the relationship between tree susceptibility to *P. syringae* and tree nitrogen concentration may be specific to the form of nitrogen, delivery method, or timing of nitrogen applications.

Researchers from Oregon State University's Department of Horticulture and the USDA-Agricultural Research Service published a study in HortTechnology that contains new answers for nursery operators. The experiments investigated the effects of soil nitrogen (N) availability and spraying pear trees with combinations of urea, chelated copper ethylenediaminetetraacetic acid (CuEDTA), and phosphonate-containing fungicides on stem N concentration and susceptibility to infection by *P. syringae*.

Experimental results showed that spraying trees with urea in the autumn increased concentrations of nitrogen and amino acids in stems and had no significant effect on tree susceptibility when stems were inoculated

with *P. syringae* before or after urea sprays. Spraying with CuEDTA decreased stem nitrogen concentrations and had no significant influence on tree susceptibility to *P. syringae* when stems were inoculated before or after CuEDTA sprays, while spraying with fungicides containing fosetyl-aluminum in October or November decreased tree susceptibility to *P. syringae*. The effects of fungicides containing fosetyl-aluminum on susceptibility were similar regardless of whether trees were sprayed or not with urea or CuEDTA. According to the report, the results suggest that these fungicides can be used in combination with urea or CuEDTA sprays for reducing disease severity caused by *P. syringae* without impacting growers' objective of increasing tree N content with urea or enhancing early defoliation with CuEDTA.

The authors concluded that spraying trees with a combination of urea and CuEDTA with phosphonate- containing fungicides in early autumn can be of benefit for early harvesting and preventing the contamination and/or infection of *P. syringae* in the field or storage. "Spraying pear trees with a combination of urea and CuEDTA after terminal buds have set in early autumn can benefit nursery operators because the pathogen is less active in warm dry environments and the trees are better able to heal wounds caused by defoliation or chemical treatments", they noted.

More information: horttech.ashspublications.org/ … nt/abstract/20/2/331

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