

## Research Progress and Impact

# Guarding Michigan Fruit and Nut Trees Against Root Rot

### Summary of Research Accomplishments

- Developed molecular and genetic tools to distinguish between various *Armillaria* species.
- Mapped the location of various *Armillaria* species throughout Michigan by surveying orchards and forests in 12 counties.
- Learned how the *Armillaria* fungus moves into and through orchards.
- Developed the first lab test for *Armillaria* resistance and pathogenicity.
- Continued to evaluate new biological controls for the fungus.

Kurt Stepnitz/MSU



Ray Hammerschmidt, MAES scientist and chairperson of the Department of Plant Pathology, helped to develop the first lab test for *Armillaria* resistance and pathogenicity.

Ray Hammerschmidt/MSU



The root rot fungus threatens Michigan's \$65 million per year cherry industry.

## Research for your future.

For questions about this or other MAES publications, contact Val Osowski (osowskiv@msu.edu; 517-355-0123).

109 Agriculture Hall  
Michigan State University  
East Lansing, MI 48824-1039

*All USDA project reports are peer-reviewed.*

## Research Progress and Impact

## Guarding Michigan Fruit and Nut Trees Against Root Rot

Researchers at the Michigan Agricultural Experiment Station (MAES) are working to find long-term and sustainable solutions to *Armillaria* root rot, a soil-borne fungal disease that threatens Michigan's \$65 million per year cherry industry. The scientists' goals are to develop rot-resistant cherry rootstocks and to create management tools that growers can use to control *Armillaria*.

### SUMMARY OF RESEARCH ACCOMPLISHMENTS

**Developed molecular and genetic tools to distinguish between various *Armillaria* species.**

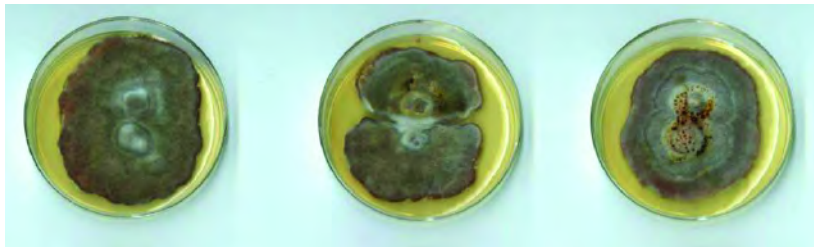
These tools will help determine the prevalence of the pathogen in new or established orchards.

Biochemical studies of pathogenic and non-pathogenic *Armillaria* species are providing information on the genetic differences between the two types.

**Mapped the location of various *Armillaria* species throughout Michigan by surveying orchards and forests in 12 counties.** *Armillaria ostoyae* was the only pathogenic species found in northwestern Michigan; *A. mellea* and other species were found in the southwestern and west central parts of the state. Knowing which species are present and their relative virulence can help farmers make planting decisions.

**Learned how the *Armillaria* fungus moves into and through orchards.** By studying forested areas next to cherry orchards, MAES researchers are learning which

Ray Hammerschmidt/MSU



In the lab, MAES scientists culture the root rot fungus to develop tools to distinguish between various species of the fungus.

species of the pathogen are native to these areas. This information will help with long-term disease management, as well as determining the risks that may come from

converting forested land to orchards.

**Developed the first lab test for *Armillaria* resistance and pathogenicity.** This test may speed up screening for resistance and pathogen virulence. Traditional tests take up to 1 year to offer results.

**Continued to evaluate new biological controls for the fungus.** MAES researchers have found that *Actinomyces*, a type of soil bacterium, appears effectively to stop the growth of *Armillaria*. *Actinomyces* also thrives in low quality soils. By controlling the pest fungus with naturally occurring bacteria, MAES scientists hope to provide a long-term means of control and protect rootstocks planted in *Armillaria*-infected soil.

### Research for your future.

[www.maes.msu.edu](http://www.maes.msu.edu)