

Research Progress and Impact

# Working to Eradicate Bovine TB from Michigan

## Summary of Research Accomplishments

- Developed and tested an improved vaccine to prevent bovine TB in mice.
- Discovered that the bacterium that causes bovine TB can survive for several months in the environment.
- Identified other diseases and vaccines that can affect the results of bovine TB tests.
- Are configuring a version of the bovine TB risk assessment model that can be taken directly to farms to estimate the risks and costs of various TB prevention programs.

Greg Kohuth/MSU



MAES epidemiologist and veterinarian John Kaneene has found that Johne's disease can affect the reliability of blood tests for bovine TB.

Greg Kohuth/MSU



MAES scientists have improved a vaccine to prevent bovine TB in mice, which shows promise for developing a vaccine for deer or cattle that doesn't interfere with current TB testing methods.

## Research for your future.

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

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*All USDA project reports are peer-reviewed.*

## Working to Eradicate Bovine TB from Michigan

The Michigan Agricultural Experiment Station (MAES) continues to make progress in research on bovine tuberculosis (bovine TB), caused by the *Mycobacterium bovis* bacterium. MAES researchers, in conjunction with state and federal agencies, are working to eradicate this disease, which has cost the state tens of millions of dollars during the past decade.

### SUMMARY OF RESEARCH ACCOMPLISHMENTS

**Developed and tested an improved vaccine to prevent bovine TB in mice.** This improved vaccine reduced the numbers of lesions and deaths in vaccinated mice compared with unvaccinated mice, which is promising for developing a vaccine for deer or cattle that doesn't interfere with current TB testing methods.

**Discovered that the bacterium that causes bovine TB can survive for several months in the environment.** MAES researchers discovered that *M. bovis* can survive for 6 to 10 weeks in the environment in cool weather. This information can help the state control bovine TB on farms and in wildlife.

**Identified other diseases and vaccines that can affect the results of bovine TB tests.** MAES researchers found that Johne's disease (a chronic gastrointestinal disease of cattle caused by *Mycobacterium avium* subspecies *paratuberculosis*) does not affect the reliability of skin tests for *M. bovis* in cattle but does affect the reliability of the whole-blood gamma interferon test for *M. bovis*. This can now be taken into consideration when cattle from

Kurt Stepnitz/MSU



Bovine TB has cost Michigan tens of millions of dollars during the past 10 years.

herds affected with Johne's disease are tested for bovine TB. MAES scientists also found that vaccinating cattle for leptospirosis had no effect on skin tests or blood tests for *M. bovis*, but a respiratory virus vaccine affected the reliability of the whole-blood gamma interferon test. Knowing the vaccination status of cows undergoing blood tests for TB will be critical for proper interpretation of the test results.

**Are configuring a version of the bovine TB risk assessment model that can be taken directly to farms to estimate the risks and costs of various TB prevention programs.** The farm-based risk assessment model is constantly updated with new information from newly infected cattle herds. The goal is to develop a computer program based on the risk assessment model that can incorporate information about the farm's location, facilities and management practices. The program will then compute estimates of risk for the farm. Producers and researchers can suggest specific changes to reduce risk, and the program will estimate the costs of implementing the changes. This program will be a valuable tool for farmers who want to reduce their future risk of TB by improving their farm management practices.

### Research for your future.

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