

Survey and collaboration on Japanese Beetle pathogen research

Vera Krischik, Extension Specialist, UMN Entomology, 612.625.7044, krisc001@umn.edu; Michael Angstman, Researcher, UMN Entomology, angst046@umn.edu

Hello MN Golf Courses, MN Public Gardens, and Arboretums,

The Krischik lab is conducting research on Japanese beetle (JB) management with a native, soil inhabiting pathogen, *Ovavesicula popilliae*. We know the pathogen can be found in Stillwater and the UMN St. Paul campus. We are trying to locate other places that the fungus might be present. Eventually, we will release the pathogen at volunteer sites. Funds from an LCCMR state grant have been provided to research the effects of this fungus on JB in MN. The University of Minnesota, Entomology Department, is collaborating with Michigan State University, where the fungus has been studied for 10 years and was released in five states, including Arkansas, Colorado, Kansas, Kentucky, and Michigan. In Michigan, at 6 years post-inoculation, JB grub numbers dropped by 30%.

We are Looking for Cooperators

Our team is looking for collaborators that will allow us to set up Japanese beetle traps on their property to determine if *Ovavesicula popilliae* is present. Every 2 weeks, JB traps would be set up and removed after 24 hours from July thru September.

Please fill out this [short survey](#) so we can learn more about Japanese beetle issues in MN. Also, whether you are interested in being a cooperator with us. We will call you if you want to join us. We are cooperating with the MGCSA on this research.

Background

Japanese beetle (JB) is an economic pest of turf and landscape plants. Adults damage plant leaves and flowers, while grubs feed on and kill grassroots. It is estimated that the US spends more than \$460 million a year managing JB populations, and another \$156 million replacing and renovating damaged turf and plants. JB is targeted most successfully at the grub stage (Table 1).



From left to right: Japanese beetle adults feeding on a rose; different growth stages of JB grubs (Whitney Cranshaw, bugwood.org), and typical life cycle of JB in Minnesota (UMN).

Table 1. Recommended insecticides to control Japanese beetle grubs. Additional JB information can be found on our [website](#).

Common name	Trade name	Target	Class	Comments
imidacloprid	Merit, Menards Grub Control	grubs	neonicotinyl	Low toxicity to mammals. High toxicity to all bees.
clothianidin	Arena	grubs	neonicotinyl	Low toxicity to mammals. High toxicity to all bees.
chlorantraniliprole	GrubEx, Acelepryn	grubs	diamide	Conserves adult predators and bees. Environmentally friendly. Available to consumers and professionals.
trichlorfon	Dylox	grubs	organophosphate	High toxicity to birds, fish. Do not use within 100 yards of water. Available for homeowner use. Not effective in pH 8 water.
<i>Bacillus thuringiensis galleriae</i>	grubGONE!G	grubs	bacteria	Better than Milky spore, Japademic Doom, not effective
<i>Heterorhabditis bacteriophora</i>		grubs	nematodes	Water before and daily after application.

Biocontrol Insects Released to Manage Japanese Beetles

There are two biocontrol agents of Japanese beetle (Winsome Fly, *Isocheta aldrichi*, and a parasitoid, *Tiphia vernalis*), that were released in the 1990s by MDA, but the fly and wasp do not manage JB.

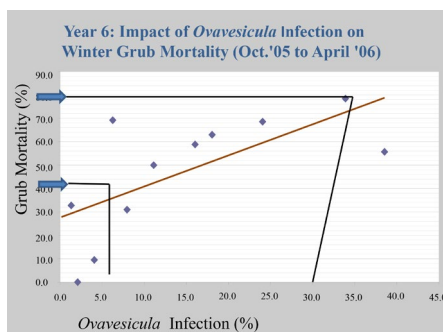


Winsome fly (*Isocheta aldrichi*) adult on left (Joshua P. Basham, [bugguide.net](#)). *Isocheta aldrichi* eggs on JB adult (Whitney Cranshaw, [bugwood.org](#)). Larvae will hatch and feed on and kill the adult. Winsome flies were released by MDA in 1998.

Tiphia vernalis adult wasp (left), and a larva on a JB grub (Dave Shetlar, Ohio State University). This parasitoid lays an egg on JB grubs. Larvae will hatch and feed and kill the JB grub. *Tiphia vernalis* were released by MDA in 1998.



JB grubs ground up with *O. popilliae* and added to soil in Colorado.



Source: David Smitley, MSU



Japanese Beetle trap (UMN)