ENTOMOLOGY RESEARCH UPDATE: LONG-TERM SOLUTIONS FOR JAPANESE BEETLE AND EUROPEAN CHAFER, AND MANAGEMENT OF ANTS ON GOLF COURSES

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I. Introducing pathogens of Japanese beetle into Michigan. Research supported by Michigan Turfgrass Foundation and Project GREEEN from 2000 to 2003 showed that milky disease and the Eugregarine parasite, *Stictospora villani* tended to be absent in new infestations of Japanese beetle in Michigan. Overall, they were much less abundant in Michigan than in Connecticut (Table 1). Another pathogen that may help suppress Japanese beetle in Connecticut, *Ovavesicula popilliae*, was completely absent in Michigan except for one location in Kalamazoo. Japanese beetle is not nearly as abundant in Connecticut now as it was 30 years ago. Based on these results, we are not attempting to distribute these pathogens throughout the state, including an effort in the Saginaw Valley Region, where we are collecting data to determine what effect these pathogens have on populations of Japanese beetle there.

Table 1. Incidence of three pathogens of Japanese beetle in Michigan and Connecticut

Pathogen	**% infection in Michigan**	**% infection in Connecticut**
Paenibacillus popilliae (milky disease)	0.9	3.7
Ovavesicula popilliae (Microsporidean)	0.2	24.0
Stictospora villani (Eugregarine)	34.0	50 - 100

At five locations (3 at Currie Golf Course, 1 at Brookwood Golf Course, and 1 at Crooked Creek Golf Course), we introduced Japanese beetle grubs infected with *Stictospora* and *Ovavesicula*. Before introducing the infected grubs, *Stictospora* was absent at 4 of 5 of these sites. At one site, 5% of the grubs were already infected with *Stictospora*. One year later, 11 to 58% of the grubs in the introduction plots were infected, while only 0 to 3% of the grubs in the control plots were infected (Table 2).

Table 2. Incidence of *Stictospora* one year after introducing infected grubs.

Golf course	Treatment	Number of grubs examined	%*Stictospora* infected
Currie #2	Introduction	30	27
	Control	30	0
Currie #5	Introduction	27	11
	Control	30	3
Currie #8	Introduction	18	22
	Control	20	0
Brookwood	Introduction	19	58
	Control	23	30
Crooked Creek	Introduction	30	53
	Control	25	0

II. Suppression of ant mounding on tees, greens and fairways. Dursban has been a standard product for ant suppression on golf courses for many years, but with new guidelines introduced by the Environmental Protection Agency for the use of organophosphate insecticides, we need some alternative products that suppress ant mounding. The apron area around a practice green at Wuskowhan Players Club was divided into 60 plot areas to test insecticides for ant suppression. All the plots except for the controls were sprayed on June 2, 2004. Ant mound data were collected weekly, for 5 weeks after treatment (Table 3). The first 4 products in Table 3, below Dursban, provided good suppression of ant mounding for 5 weeks, at a level similar to Dursban. In this test Scimitar worked as well as Dursban. Of interest to many golf course superintendents is how well Merit worked, since this product is often used for grub control. Merit reduced ant mounding by about 50% in this test. Because it persists for 6 months or longer in the soil and in grass plants, Merit may have a suppressive effect on ants for most of the growing season. In other tests, Merit did work as well for ants as it did this time.