

Emerald Ash Borer Control Options and New Insecticide Technologies for Grub Control

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After 5 years of testing insecticide treatments for emerald ash borer and just as many years of arborists using the most promising treatments under field conditions, we can make some good suggestions on how to protect individual ash trees. Many golf course superintendents have decided to save some of their more valuable ash trees. The proportion of ash trees being treated on golf courses varies from none to nearly all of them. For some golf courses it is easier to remove all the ash trees and plant new trees. Most golf courses would like to save at least a few of their more valuable trees.

In four different research tests we have found that imidacloprid (Merit) applied at the highest labeled rate around the base of ash trees as a soil drench or soil injection each year in May or early June gives excellent protection of small (< 12" dbh) trees. Larger ash trees (>12" dbh) require 2 years of treatments before providing a high level of control, and about 75% of heavily infested trees survive. For large ash trees in an area where emerald ash borer is already active, it is best to use an imidacloprid trunk injection and a basal soil injection the first year, followed by basal soil injections each year afterwards. Imidacloprid trunk injections each year in late May or early June have also given excellent control of emerald ash borer. There are several different types of injection equipment and products available. We have done the most extensive testing with the Arborjet injection system using imidacloprid as IMA-jet or as Merit Tree Injection and have obtained excellent results, even under very high pressure from emerald ash borer. Starting in 2008 with a state and local needs registration, or with a federal label in 2009, a new product containing emamectin benzoate will be available for trunk injections to protect trees from emerald ash borer. Research tests with emamectin benzoate gave an even higher level of protection than imidacloprid and lasted for at least 2 years.



Trunk injection of imidacloprid with the Tree IV injection system.

Several new neonicotinoid grub control products are now available to golf course superintendents. Like Merit they provide a very high level of grub control and must be applied when the grubs are small (before August 15th). Some of the new grub control products that we have tested include Arena (Tables 1 and 2), Allectus, Aloft (Table 3) and Meridian (Table 3).

Table 1. Japanese beetle grub test at Country Club of Jackson, 2004.

Treatment	Lbs ai/A	Application date	Grubs per 2.0 ft²
Arena 0.5 G	0.3	July 28	0.0
Arena 0.5 G	0.2	July 28	0.0
Arena 50 WDG	0.3	July 28	0.0
Merit 75	0.4	July 28	0.83
Water control	-	-	11.7
Control	-	-	16.3

Table 2. Japanese beetle and European chafer grub test at Country Club of Jackson, 2006

Product	Lbs ai/A	Date	Chemical	Grubs1
Merit 75	0.3	July 13	Imidacloprid	0*
Arena 50 WDG	0.25	May 8	Clothianidin	0*
Arena 50 WDG	0.34	July 13	Clothianidin	0*
Merit 75	0.3	May 8	Imidacloprid	0.33*
Arena 50 WDG	0.25	Sep 22	Clothianidin	6.83
Arena 50 WDG	0.25	Sep 27	Clothianidin	8.83
Untreated Check	-	-	-	8.39

Table 3. European chafer and Japanese beetle grub test at Country Club of Jackson, 2007.

Product	Rate (ai per acre)	Application Date	Grubs per 2 ft²	% Control
Aloft	14.2 oz	July 9	0	100
Merit	6.4 oz	July 9	0	100
Meridian	16.0 oz	July 9	0	100
Aloft	7.2 oz	April 24	0.17	88
Aloft	7.2 oz	July 9	0.17	88
Aloft	14.4 oz	Sep 24	0.17	88
Dylox G	130 lbs	Sep 24	0.17	88
Dylox G	87 lbs	Sep 24	0.67	75
Meridian	17.0 oz	Sep 24	0.83	70
Control A	-	-	1.39	0
Control B	-	-	3.33	0
Control C	-	-	2.75	0

The conclusions from these grub tests and similar tests by other entomologists are that Merit, Allectus, Arena, Aloft and Meridian all give excellent grub control when applied in late May, June, July or early August. Grub control with these products is less reliable when they are applied in late August or early September (70 – 80%), and they are not effective for grubs when applied after mid September. Mach II also gives excellent grub control when applied in June or July.



Grub test at Country Club of Jackson.