

Table 1. Survival of European chafer grubs in replicated field plots of 10 different turf types maintained with daily irrigation and a standard fertility program. Above ground visual ratings for control plots with no grubs and for plots with grubs were made in late April, 2004. The visual rating goes from 0 (no visible damage) to 10 (100% dead turf). Turf roots were washed and weighed in late April at the end of the experiment.

Grass Type	Survival		+European	Control	+European
	European Chafer Larvae	Control Visual Rating	Chafer Larvae Visual Rating	Root Weights (g)	Chafer Larvae Root Weights (g)
Tall Fescue KY31	4.5 a	0.1	5.0	110.1	14.66
Tall Fescue Bonsai	5.6 ab	0.1	5.3	113.6	17.95
Tall Fescue Falcon	5.8 ab	0.0	4.1	80.7	22.04
Ryegrass Palmer III	7.7 bc	0.1	5.1	156.4	14.71
Ryegrass Premier	6.2 bc	0.2	6.0	88.4	16.84
Ryegrass Affinity	6.8 bc	0.1	4.4	146.1	27.41
Ky Bluegrass Brilliant	9.0 c	0.1	2.8	190.1	96.72
Ky Bluegrass Midnite	7.2 bc	0.8	5.1	195.1	59.91
Ky BluegrassChampaign	7.0 bc	0.2	2.2	187.3	55.83
Fine Fescue Dawson	7.2 bc	0.1	3.4	132.5	33.46
<u>Means for all Cultivars</u>					
Tall Fescue	5.3 a	0.0	4.8	101.5	18.2
Ryegrass	6.9 b	0.1	5.2	130.3	19.7
Ky Bluegrass	7.2 b	0.4	3.4	190.8	70.8
Fine Fescue	7.7 b	0.1	3.4	132.5	33.5

### Ant Mounding on Golf Course Fairways, 2004

An irrigated bentgrass section of the ninth fairway at McQuire's Resort in Cadillac, MI was divided into sixty 12 ft X 12 ft plots with a 3 ft buffer between plots. Plots were blocked based on precounts taken on 6/17/04 by counting the number of active ant mounds. The treatments were applied on 6/17/04 with a CO<sub>2</sub> powered R&D backpack boom sprayer at 175 gal finished spray/acre at 50 psi with four 8008. Plots were evaluated on 17 Jun, 23 Jun, 1 Jul, 14 Jul and 20 Jul, by counting active ant mounds in each plot.

The chemical treatments reduced ant mounding 23-39% one week after application although statistical analysis indicated no significance. Two weeks after application all of the chemical treatments were lower than the Control treatment and the Scimitar and Dursban treatments were significantly different from the Control. At 3 weeks postspray only the Dursban treatment was significantly different from the Control. Throughout the final 2 sample periods,

the chemical treatments were consistently lower than the Control treatment although none of the chemical treatments were statistically significantly different from the Control treatment.

	Ant Mounds per 144 ft <sup>2</sup>					
	6/17/04	6/23/04	7/1/04	7/7/2004	7/14/04	7/20/04
Control	55.7 a	63.0 a	61.2. c	50.2 b	69.2 a	70.5 a
DeltaGard T&O 0.6 fl oz/1000ft <sup>2</sup>	67.7 a	48.3 a	51.5 bc	41.7 b	38.3 a	38.7 a
Tempo SC Ultra 0.27 fl oz/1000ft <sup>2</sup>	57.5 a	44.8 a	50.2 abc	39.7 b	60.3 a	57.0 a
Scimitar GC 0.23 fl oz/1000ft <sup>2</sup>	61.7 a	38.3 a	34.8 ab	25.7 ab	38.3 a	35.7 a
Dursban Pro 2 qt/A	64.0 a	45.8 a	34.2 a	21.3 a	35.0 a	58.3 a

Means followed by the same letter are not significantly different (P<0.05 ANOVA/Fisher's Protected LSD). Data were transformed using log<sub>10</sub> (X+1) prior to ANOVA. Untransformed data are presented.

	% Control (compared with the control treatment)					
	6/17/04	6/23/04	7/1/04	7/7/2004	7/14/04	7/20/04
Control	0.0	0.0	0.0	0.0	0.0	0.0
DeltaGard T&O 0.6 fl oz/1000ft <sup>2</sup>	0.0	23.3	15.8	16.9	44.7	45.1
Tempo SC Ultra 0.27 fl oz/1000ft <sup>2</sup>	0.0	28.9	18.0	20.9	12.9	19.1
Scimitar GC 0.23 fl oz/1000ft <sup>2</sup>	0.0	39.2	43.1	48.8	44.7	49.4
Dursban Pro 2 qt/A	0.0	27.3	44.1	57.6	49.4	17.3

### Japanese Beetle Grub Control in a Golf Course Rough, 2004

An area of non-irrigated rough at The Country Club of Jackson in Jackson County, MI was used for this test. The 4 ft x 4 ft plots were separated by a 2 ft-wide buffer strip. The area in which the test was conducted has been infested with European chafer grubs for more than 12 years and Japanese beetle for the last 10 years. The treatments were all replicated 6 times and were blocked from one end of the plot to the other. Plots were established on 16 Jul. Treatments were applied on one of the following dates: 16 Jul, 28 Jul or 27 Aug. Liquid treatments were applied at 50 psi through a single nozzle hand-held R & D Sprayers<sup>®</sup> CO<sub>2</sub> sprayer with an 8003 nozzle at a rate of 175 gal/acre of finished spray. Granular treatments were applied with a hand held "shaker". Treatments were made between 9:30 AM and 1:00 PM. All plots treated on a particular day were watered with 1/4" of irrigation after each set of applications. Replications 1-3 were sampled on 27 Sep and replications 4-6 were sampled on 6 Oct by digging 2 ft<sup>2</sup> from each plot. The first several hundred grubs were ID'd under a dissecting microscope to determine what species they were. The ratio was 80% European chafer, 19% Japanese beetle and less than 1% northern masked chafer.

July and August of 2004 were relatively wet and cool for Michigan. Therefore, Japanese beetle emerged over a longer period of time than normal and optimum conditions for oviposition and development for Japanese beetle existed through the summer. European chafer does better during dry years. All grub counts per 2 ft<sup>2</sup> were log transformed prior to a 2-way ANOVA. All of the chemical treatments gave a minimum of at least 47% control from the untreated control