

INSECT PARASITIC NEMATODES FOR CONTROL OF GRUBS IN TURFGRASS

Maria Davis and Dave Smitley
Department of Entomology

Experimental Plan

On May 19, 1987, nine 1.0 ft² plots were each seeded with 26 Japanese beetle grubs. These plots plus an additional set of nine plots not receiving grubs were treated with insect parasitic nematodes (Neoaplectana carpocapsue + Heterorhabditis HP-88) on May 20. A final set of nine control plots did not receive grubs or insect parasitic nematodes. The plots were distributed equally among irrigation block replications at the Hancock Turfgrass Research Center at Michigan State University. Irrigation treatments were daily irrigation, irrigation to 80% PAN, and no irrigation. Three replications of nine treatments (Table 1) were analyzed for change in the number of grubs per plot and differences in the number of plant parasitic nematodes.

Results

The number of grubs per square foot found in plots treated with insect parasitic nematodes was more reduced in irrigated blocks (6.7 or 2.7 per ft²) than in the no irrigation blocks (12.0 per ft²). Apparently the ability of the insect parasitic nematodes to locate the grubs, or their survival is considerably reduced in dry soil compared to moist soil. The results of this experiment suggest that the use of insect parasitic nematodes as a microbial insecticide for control of grubs in turfgrass is more practical for irrigated sites.

The number of plant parasitic stunt nematodes (Tylenchorhynchus) per plot was reduced in irrigated plots treated with insect parasitic nematodes (40-55 per 50 cc soil) compared to irrigated control plots (85-117 per 50 cc soil). The suppression of plant parasitic nematodes after application of insect parasitic nematodes has not been well researched. The results of this test should be confirmed by additional experiments.

TABLE 1. Survival of Japanese beetle grubs on plant parasitic nematodes in experimental plots four weeks after applying Heterorhabditis (HP-88) and Neoaplectana (NCA11) nematodes. Data in table are expressed as the mean of 3 replications per treatment.

Treatment	Initial number of grubs per ft ²	Final number of grubs per ft ²	Plant parasitic nematodes (stunt) per 50 cc soil
Daily irrigation + HP-88 NCA11	26	6.7	40
Daily irrigation + HP-88 NCA11	0	0	55
Daily irrigation control	0	0	117
80% PAN + HP-88 NCA11	26	2.7	47
80% PAN + HP-88 NCA11	0	0	38
80% PAN control	0	0	85
No irrigation + HP-88 NCA11	26	12.0	81
No irrigation + HP-88 NCA11	0	0	77
No irrigation control	0	0	39

MANAGEMENT OF BLACK TURFGRASS ATAENIUS ON MICHIGAN GOLF COURSES

Dave Smitley
Department of Entomology

Ataenius spretulus is a small black beetle which belongs to the family of beetles known as scarabs (*Scarabaeidae*). The Black Turfgrass *Ataenius* (BTA), occurs in at least 40 states, but few references to this insect as a pest of turfgrass are known. In 1932, larvae caused dead patches of grass on greens and fairways of a golf course in Minnesota. Similar damage occurred during 1969-71 on two golf courses in New York. Once aware of the insect, golf course superintendents in other states looked more closely at patches of weak or wilted annual bluegrass which they previously attributed to heat stress and other factors. Such examinations often led to discovery of BTA larvae or adults (H. Niemczyk, 1981). Since 1970, BTA has become a serious pest on golf course fairways in the Northern United States.