

## Fall 2012 Leatherjacket Bio-control Trial

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The objective of this trial was to determine efficacy of two rates of entomopathogenic nematodes (EPN's) (a 50/50 mixture of *Steinernema feltiae* and *Heterorhabditis bacteriophora*) for the control of early instar European crane fly (*Tipula paludosa*) larvae (leatherjackets) on turf applied in the fall. Treatments are listed in Table 1.

**Table 1.** Treatments 2012

Treatment 1	Entomopathogenic nematodes (EPN's) (a 50/50 mixture of <i>Steinernema feltiae</i> and <i>Heterorhabditis bacteriophora</i> ) at 1 million ij (infective juveniles) per 100 m <sup>2</sup>
Treatment 2	Entomopathogenic nematodes (EPN's) (a 50/50 mixture of <i>Steinernema feltiae</i> and <i>Heterorhabditis bacteriophora</i> ) at 2 million ij (infective juveniles) per 100 m <sup>2</sup>
Treatment 3	Untreated Control (water + adjuvant)

The experimental design, plot size were the same as the 2009 trial. The 2012 treatments were applied on Nov. 7, 2012.

Leatherjackets were recovered by destructive harvest on Dec. 5, 2012 (4 weeks after treatment [4 WAT]) and on Jan. 2, 2013(8 WAT). Larval counts were determined from the untreated control of each of the six replications. Replicates 2, 3 and 4 had no larvae per four cup changer plugs, so those replicates were not included in the experiment. Larval counts were done only on Replicates 1, 5 and 6 (4 WAT and 8 WAT). Leatherjackets population densities

were reported as larvae per cup changer core and per m<sup>2</sup> and are reported in Table 2.

**Table 2.** Post-treatment larval counts taken on two dates in 2012 and 2013

Treatment	4 WAT (Dec. 5, 2012)		8 WAT (Jan. 2, 2013)	
	Larvae /core <sup>1</sup>	Larvae/m <sup>2</sup>	Larvae /core	Larvae/m <sup>2</sup>
Untreated Control	2.50 a	288.87 a	2.10 a	242.65 a
EPN's (1 million/10 0m <sup>2</sup> )	1.75 ab	202.21 ab	1.36 ab	157.15 ab
EPN's (2 million/10 0m <sup>2</sup> )	1.58 ab	182.57 ab	1.64 ab	189.50 ab

<sup>1</sup>Mean number of larvae per core. <sup>2</sup>Mean values from Fishers' protected LSD tests. Means with the same letters are not significantly different.

In 2012, the leatherjacket pressure in the experimental plots was lower than in 2011. Neither rate of the EPN mixtures gave significant control of leatherjackets.

The results presented in this report demonstrate the variable results obtained with entomopathogenic nematodes. They are living organisms that are subject to soil temperature, soil moisture and insect larval stage. More information on the variables listed above needs to be gathered to help develop best management practices for the use of entomopathogenic nematodes to control leatherjackets.

## **Acknowledgments**

Shahram Sharififar, Natural Insect Control, Stevensville, ON for supplying the nematode species and applying them to the research plots.