

Section V  
Soil Arthropods

**Control of Crane Fly Larvae in Peppermint with Chlorpyrifos**

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**Introduction**

Crane fly larvae can cause economic damage of turfgrass and other crops. The European crane fly, *Tipula paludosa*, and another introduced species, *T. oleracea*, have been identified in peppermint in Oregon. Another species, *Nephrotoma ferruginea*, has been collected from peppermint fields in the Boardman, Oregon area. In late August 2003, two peppermint fields were found to be heavily infested with what appeared to be *N. ferruginea*. Because this crane fly is potentially a new pest of peppermint, a study was conducted to evaluate the efficacy of chlorpyrifos (Lorsban 4E).

**Materials and Methods**

The experiment was set up in the fall of 2003 as a randomized block design with five replications. Treatments were as follows:

1. untreated check (water only)
2. 0.5 lb ai/acre Lorsban 4E
3. 1.0 lb ai/acre Lorsban 4E
4. 2.0 lb ai/acre Lorsban 4E

On October 21 and 22, each plot (4'x 6') was pre-irrigated with 2-4 gallons of water using a watering can. The appropriate amount of chlorpyrifos was then mixed in 1 gallon of water and evenly applied to the plot area with the watering can. The application was followed with 11 gallons of water or approximately 0.75" of water. On October 27, the entire field was irrigated with approximately 0.5" of water.

Evaluation of the experiment took place from October 29 to November 2 and consisted of taking two 1 ft<sup>2</sup> samples from each plot. Due to cold temperatures and windy conditions, remaining soil samples were placed in buckets on October 30 and taken indoors to be processed. The soil was



shaken off the rhizomes, sifted through a 0.25" mesh screen, and the number of crane fly larvae counted and recorded.

### Results and Discussion

All rates of Lorsban 4E significantly reduced the number of crane fly larvae compared to the untreated check (see table). Although there were no significant differences among the three chlorpyrifos treatments, there was a trend for better control with increasing application rate.

#### Results of efficacy trial evaluating three rates of chlorpyrifos (Lorsban 4E)

Treatment	Rate (lb ai/acre)	Mean Number of Crane Flies (larvae per sq ft)	
		Live	Dead
Untreated check	---	54.0 a	0
Lorsban 4E	0.5	10.9 b	0.7
Lorsban 4E	1.0	5.7 b	2.1
Lorsban 4E	2.0	3.8 b	2.3

Separation of means using Fisher's Protected Least Significant Difference ( $p=0.05$ ). Means with the same letter are not significantly different.

Sick and dead larvae were found while evaluating the experiment. Because it was difficult to distinguish between sick and live larvae, any larva that moved was categorized as alive. More larvae, however, appeared to be lethargic with higher rates of chlorpyrifos. The number of dead larvae increased with higher rates of chlorpyrifos (see table), suggesting that some control is lost with the 0.5 lb ai/acre rate of chlorpyrifos.