ONION MAGGOT (*Delia antiqua*) CONTROL AND ONION THRIPS (*Thrips tabaci*) SUPPRESSION WITH NEW INSECTICIDES

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Introduction

Onion maggot (*Delia antiqua*) is an infrequent pest of bulb onions grown in the Treasure Valley region of Western Idaho and Eastern Oregon. Growers have used integrated pest management (IPM) practices for many years to bring the onion maggot populations down to very low levels. High levels of onion maggot devastated the onion crops of Treasure Valley in the 1950's before implementation of these controls. These IPM practices include disposing of onion culls so that they cannot harbor the insects, crop rotation, and volunteer onion control.

Even with these IPM practices, there are still isolated outbreaks of onion maggot. An infestation of onion maggot in seedling onions is very difficult to control and the stands can be severely reduced before the problem is controlled. Because of this, most growers in the Treasure Valley continue to apply insecticides at planting. This is costly to growers as well as wasteful. Scouting for insect out breaks does not appear practicable at this time because of the difficulty in controlling the pest. Researchers in the eastern United States have been looking at insecticides applied to the seed coat of pelleted seed with promising results. Seed-coat, incorporated insecticides offer the advantages of less active pesticide ingredients applied per acre, less farm worker exposure to these pesticides, and more efficient planting. The purpose of this study was to test new insecticides to determine if there was efficacy against the onion maggot. Onion thrips counts were made to see if there insecticides would give early season control.

Materials and Methods

The materials tested were Trigard (cyromazine) and TADS12253. Lorsban (chlorpyrifos) was used as the standard treatment and all treatments were compared to an untreated control.

Since attracting enough onion maggot population to a trial is nearly impossible in this region, fall wheat was plowed down just before planting to attract seed corn maggot (*Delia platura*), a close relative to the onion maggot and also an

occasional pest of seedling onions. The winter wheat was 14 in high at the time of plow-down. The seedbed was worked up on April 20 and the onions were planted on April 23. The seedbed was fluffy and soft to plant into because of the excessive organic matter that was incorporated.

The onion variety "Vision" was used for the trial. The plots were 25-ft long by 4-rows wide with a 2-ft walkway at the end of each plot. The trial had eight replications with eight different treatments. Trigard was applied to the pelleted seed coat by the Incotec Company at a rate recommended by Novartis. TADS12253 was applied at planting as an in-furrow drench with water as a carrier at a rate of 13.7 gal/acre. Lorsban was applied post plant on April 27 as an over-the-bed application with light incorporation by drag chains.

One hundred seeds per row of either Trigard treated pelleted seed or plain pelleted seed (same seed lot) was planted. Results were evaluated by counting stands and examining maggot damage in each plot. The two center rows of each plot were used for evaluation. Onion maggot evaluations were made on May 12, June 15, and June 28. Onion thrips evaluation to determine thrips suppression was made on June 30.

Results

The loose seedbed made germination erratic. Heavy maggot pressure made stand losses high.

Table 1. The effect of insecticides on seed corn maggot on seedling onions, Malheur Experiment Station, Oregon State University, Ontario, OR, 1998.

Treatment	Rate lb ai/acre	Application Method†	Stand count (healthy plants) 5/12	5/15	5/28
Trigard		SC	47.0	31.5	24.0
Trigard + TADS12253	.02	SC IFD	56.6	28.7	24.7
TADS12253	.01	IFD	46.0	31.7	22.9
Lorsban 15G + TADS12253	1.8 .02	SUR IFD	54.4	39.6	18.7
Lorsban 15G	1.8	SUR	64.2	55.0	18.9
Untreated Check			45.2	29.4	15.2
Trigard + Lorsban 15G TADS12253	1.8 .02	SC SUR IFD	64.8 39.6	49.1 25.2	21.5 22.2
LSD (0.05)			16.6	14.9	8.9

†SC = seed coat treated; IFD = in furrow drench; SUR = after planting surface applied

The Lorsban and Trigard plus Lorsban treatments had significantly higher stand counts than the untreated check at the May 12 and May 15 dates. By May 28 the effectiveness of the Lorsban treatments was gone (Fig. 1).

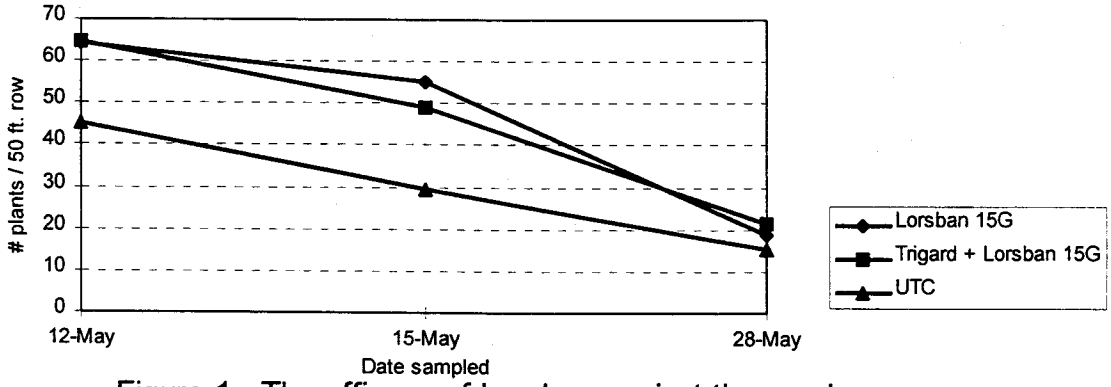

Figure 1. The efficacy of Lorsban against the seed corn maggot in onions. Ontario. 1998.

The Trigard + TADS12253 treatment was significantly better ($P \leq 0.05$) than the untreated check on May 28. There was a trend towards better maggot control with both Trigard and TADS12253 than with the other applications at the May 28 reading, but it was not significant at the 95 percent confidence level.

Onion thrips (*Thrips tabaci*) were counted on June 30 by counting the total number of thrips on ten plants per plot. Only the five single insecticide treatments were evaluated for suppression of thrips.

Table 2. Effect of at plant insecticides in suppressing onion thrips on June 30, Malheur Experiment Station, Oregon State University, Ontario, OR, 1998.

Treatment	Rate	Application Method†	Average Thrips/Plant
	lb ai/acre		
Triguard		SC	18.5
TADS12253	0.01	IFD	12.1
Lorsban 15G	1.8	SUR	18.1
Untreated Check			22.3
TADS12253	0.02	IFD	11.5
LSD (0.05)			5.8

†SC = seed coat treatment; IFD = in furrow drench; SUR = after planting surface applied.

The two rates of TADS12253 had significantly lower number of thrips populations than did the other treatments.

Conclusions

The trial could have been designed so that less organic matter was plowed down, thus making a better seed bed and reducing the seed corn maggot pressure. Lorsban was effective for at least 18 days but had lost its effectiveness before the onions were big enough to withstand maggot injury. Both Trigard and TADS12253 appeared to have some effectiveness at the four week evaluation. TADS12253 did give early thrips suppression and holds potential for delaying and reducing the number of foliar insecticide applications needed during the growing season.