

# INSECTICIDE EFFICACY TRIAL FOR THRIPS CONTROL IN DRY BULB ONIONS

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## Introduction

Controlling thrips (onion and western flower) is becoming increasingly difficult for commercial onion growers in the Treasure Valley. One of the problems is resistance to some of the commonly used insecticides (Fig. 1). The objective of this trial was to screen registered and nonregistered insecticides to find those that have potential for use in thrips insecticide control programs. **Many of these products are not registered for use in onions and growers should always read the insecticide label to ensure a product is registered.**

## Materials and Methods

A 2 acre field, soil type Owyhee silt loam, was planted with the onion variety 'Vaquero' (Nunhems, Parma, ID) on March 24, 2006. The onions were planted as two double rows on a 44-inch bed. The double rows were spaced 2 inches apart at the seeding rate of 137,000 seeds/acre. Lorsban 15G<sup>®</sup> was applied in a 6-inch band over each row at planting at a rate of 3.7 oz/1,000 ft of row for onion maggot control. Planting conditions were less than ideal, with the onions planted under high soil moisture, leading to soil compaction and low water infiltration during the growing season. Water was applied by furrow irrigation.

Treatments were made using a CO<sub>2</sub>-pressurized plot sprayer with four nozzles spaced 19 inches apart. It was set to apply 36.8 gal/acre, with water as the carrier. A silicone surfactant was added to all treatments except the dolomite dust, and Carzol<sup>®</sup>, Lorsban, acephate, and Thiodan<sup>®</sup> were buffered to pH 6.0. Treatments were applied on a weekly basis beginning on June 9. Thrips counts were also made on a weekly basis by visually counting the total number of thrips on 15 plants in each plot. The treatments are listed in Table 1.

## Results and Discussion

There were significant differences between treatments during all weeks except the July 25 and August 2 evaluations (Table 2). The season totals for each treatment are shown in Figure 2. The most effective products tested were acephate, Carzol, Thiodan,

Success<sup>®</sup>, and AgriMek. Only Success is currently registered, although Carzol had a Section 18 (U.S. Environmental Protection Agency) emergency label in 2006. AgriMek is a new chemistry for onion thrips control and may fit into a good management program if it becomes registered. The grower standard consisted of Warrior<sup>®</sup> in combination with either Lannate, MSR<sup>®</sup>, or Diazinon<sup>®</sup>.

Table 1. Insecticide treatments evaluated in the onion thrips efficacy trial, Malheur Experiment Station, Oregon State University, Ontario, OR, 2006.

Treatment	Rates
Delta Gold & Interlock	2.4 oz + 4.0 oz
Delta Gold & Preference	2.4 oz + 2.0 pt/100 gal
Carzol	12.0 oz
BotaniGard	2.0 qt
Success	10.0 oz
Success alternated weekly w/ BotaniGard	10.0 oz – 2.0 qt
Success & Vegetable Oil	10.0 oz + 40 oz/100gal
BotaniGard and Prev Am	2.0 qt + 12 oz/100 gal
Lorsban (initial application) Growers Standard	1.0 qt
Warrior & Penncap M (rotated weekly)	3.84 oz + 1.0 qt
Warrior & Lannate	3.84 oz + 3.0 pt
Acephate	1.33 lb
Grower Standard	
UTC	
Aloe Vera	1.0 oz
AgriMek	16.0 oz
Thiodan	1.0 qt
Dolomite	20.0 lb

Table 2 a-b. Weekly average thrips populations for various insecticide treatments by month, Malheur Experiment Station, Oregon State University, Ontario, OR, 2006.

Treatment	8 Jun	13 Jun	15 Jun	21 Jun	27 Jun
Delta Gold + Interface	25.9	29.8	30.1	35.6	72.8
Delta Gold + Preference	32.4	35.1	27.7	37.4	71.3
Carzol	29.8	16.0	18.6	16.0	42.9
BotaniGard	28.0	31.9	29.0	51.4	65.5
Success	30.1	25.9	20.5	24	46.3
Success alt BotaniGard	27.7	28.4	26.9	29.6	61.2
Success + Vegetable oil	23.7	18.9	19.0	20.6	47.7
Prev Am + BotaniGard	26.4	25.8	32.8	42.9	66.4
Lorsban + Standard	29.2	32.6	26.3	26.1	66.5
Acephate	14.6	17.6	13.1	7.7	21.2
Grower standard	27.4	27.2	23.3	34.1	49.2
Untreated check	26.5	38.9	29.6	40.1	59.3
Aloe Vera	35.9	32.9	31.4	37.1	41.6
AgriMek	21.0	19.1	23.9	20.1	43.1
Thiodan	29.1	32.8	22.1	17.6	16.4
Dolomite	30.8	31.4	28.4	27.6	41.8
LSD (0.05)	10.0	9.1	7.3	9.0	23.5

Table 2b.

Treatment	3 Jul	6 Jul	13 Jul	21 Jul	25 Jul	2 Aug	Season average
Delta Gold + Interface	31.4	23.5	26.1	26.2	15.3	11.9	29.8
Delta Gold + Preference	32.2	30.4	23.1	11.8	11.4	10.4	29.4
Carzol	16.9	11.6	13.7	11.5	12.9	9.3	18.1
BotaniGard	30.1	25.1	20.5	13.9	15.9	10.4	29.2
Success	17.7	11.7	14.5	10.0	12.7	11.0	20.4
Success alt BotaniGard	16.7	17.5	14.1	9.5	13.4	11.8	23.3
Success + Vegetable oil	19.9	11.0	15.0	8.6	13.6	11.1	19.0
Prev Am + BotaniGard	30.8	28.3	18.1	11.7	13.2	11.0	27.9
Lorsban + Standard	26.3	16.8	14.6	9.9	12.1	12.1	24.8
Acephate	18.6	9.1	16.2	10.2	13.5	12.9	14.1
Grower standard	26.3	19.1	22.4	14.0	12.1	12.4	24.3
Untreated check	21.3	25.6	21.3	12.3	13.9	13.3	27.4
Aloe Vera	27.5	26.3	16.8	12.3	13.4	11.0	26.0
AgriMek	20.8	15.2	15.1	9.9	13.8	11.3	19.4
Thiodan	16.7	11.7	11.0	9.6	11.4	12.7	17.4
Dolomite	21.4	26.9	18.1	10.4	11.8	11.0	23.6
LSD (0.05)	8.8	6.3	5.4	3.8	NS	NS	3.5

Several biological insecticides were tried to determine if they would be effective including BotaniGard (Bt), aloe vera extract, and dolomite clay. None of the products gave acceptable thrips control under field conditions.

Lorsban applied early, and then a grower standard applied for the rest of the season, were no better than the grower standard. Neither program was very effective.

The synthetic pyrethroid Delta Gold™ had no effect on thrips control. This ineffectiveness is probably not related to Delta Gold, but to all synthetic pyrethroid insecticides. **Based on this trial, plus other experiences, it is recommended that growers not use synthetic pyrethroids in their spray programs for a period of 1-3 years unless they have been performing well on their farm. Keeping the synthetic pyrethroids out of the spray program for a few years may allow the nonresistant thrips population to rebuild and give some measure of control in future years.**

### Conclusions

Synthetic pyrethroid insecticides are ineffective. The soft insecticides BotaniGard®, aloe vera, and dolomite clay were not effective.

Several insecticides not yet registered for use on onions were effective, including Carzol, acephate, endosulfan, and AgriMek. Success was also effective.

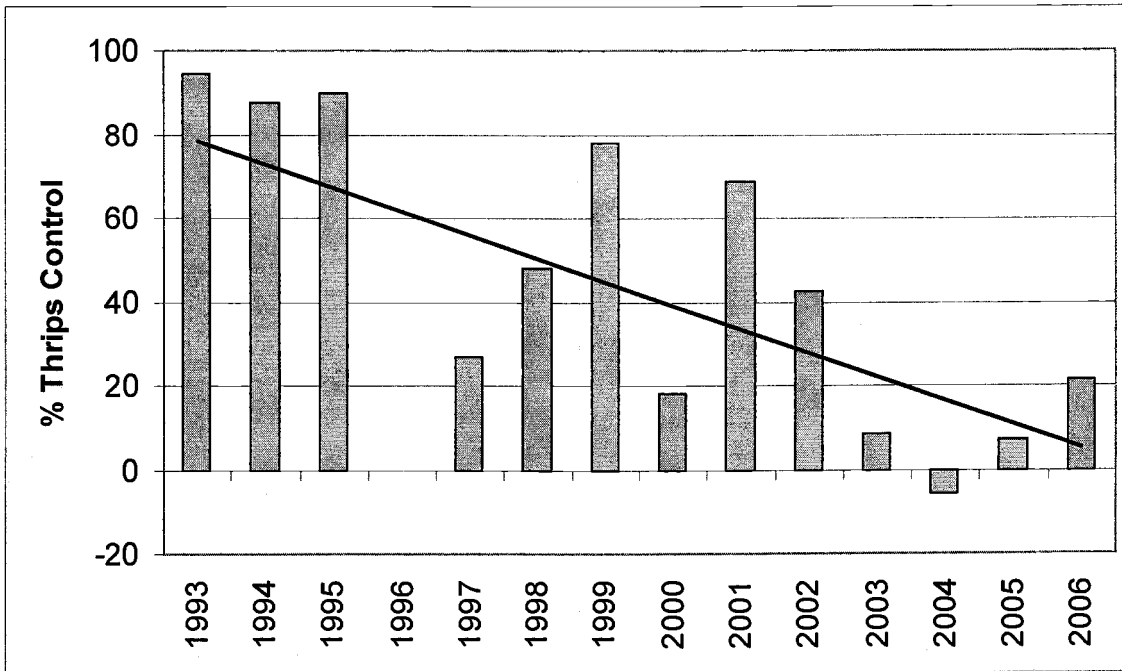


Figure 1. Percent thrips control in onions with a synthetic pyrethroid 7 days after treatment, Malheur Experiment Station, Oregon State University, Ontario, OR, 2006.

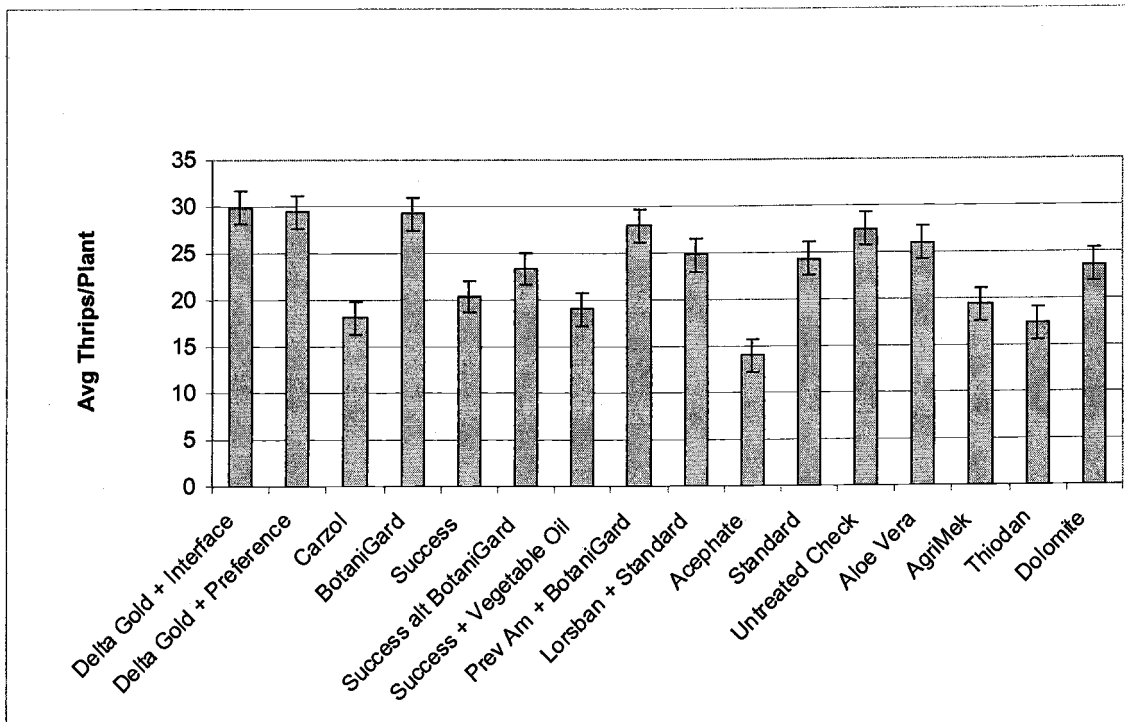


Figure 2. Season-long thrips populations with different insecticide treatments in onions, Malheur Experiment Station, Oregon State University, Ontario, OR, 2006.