

# 2004 Onion Thrips Insecticide Trial



An evaluation of labeled and currently unlabeled insecticides was conducted on onion thrips, *Thrips tabaci*, in a red onion (cv 'Flare') field at the Jerry Hines Farm, located on California Mesa, southwest of Delta CO. Ten materials and/or combinations and an untreated control were tested. These were chosen by project sponsors, and after consultation with Dr. Howard Schwartz, Department of Bioagricultural Science and Pest Management, Colorado State University.

## Insecticide treatments:

Table 1. Insecticide treatments and rates.

Agri Mek 0.15EC*	10 oz/a
Proclaim 5SG*	3.2 oz/a
Actara 25WG*	4 oz/a
Denim 0.16 EC*	7.5 oz/a
Actigard 50WG	0.75 oz/a
Warrior (CS)	3.84 oz/a
Lannate L	2 pt/a
Provado 1.6F*	3.75 oz/a
Provado 1.6F* + Actigard	3.75 oz/a + 0.75 oz/a
Success	6 oz/a
Untreated	

\* These insecticides are not currently labeled for use on onions

All sprays applied with hand held CO<sub>2</sub> pressured boom sprayer calibrated to apply 38 gal/A. Spray dates, weather conditions, and surfactants used are displayed in Table 2. Plot size was 10 ft (4- 30" beds, with two seed rows per bed) by 25 ft.

Plots were sampled on 6 dates (June 3, 10, 17, 23, 30, July 8). Five onions from the center of each plot were randomly selected and thrips extracted in Berlese funnels. Thrips were counted under a dissecting microscope with adult and immature thrips tallied separately.

Table 2. Spray dates, weather, and spray additives.

June 1	75°, clear/calm	no surfactant
June 8	80°, clear/ calm	Nu Film 0.5 pt/100 gal
June 22	80°, clear/calm	Nu Film 2 pt/100 gal
June 29	85°, overcast/calm	Activator 90 2 pt/100 gal

Iris yellow spot virus (IYSV) infection rate was estimated by evaluating symptoms on 100 plants in each plot on two dates (Aug 9 & Aug 23). The plots were hand-topped and harvested on 8 October. The middle two beds of each plot were harvested, onions sorted by size (Colossal and Jumbo only), counted and weighed. Percent colossal and average bulb size, in pounds, was calculated for each size class.

Analysis of variance was conducted using MSTAT-C. Thrips count data was  $(x+0.5)^{1/2}$  transformed prior to analysis. Actual means are displayed; mean separations were calculated using the transformed data.

## Results:

Statistical differences in onion thrips counts among treatments occurred on five of the six sample dates. Thrips counts were consistently lowest in plots treated with Lannate, which was the only insecticide that had fewer thrips than the untreated control on all sample dates in which statistical differences existed. Three materials (Proclaim, Denim and Success) had thrips counts which were less than the untreated control on three of the five sample dates on which statistical differences were present. Agri-mek, Actara, Warrior, and Provado had significantly lower thrips counts on two of the five sample dates.

Plots treated with Lannate had numerically greater percent colossals, and larger average colossal and overall bulb weight, than other treatments, although only the average colossal weight was statistically significant. Proclaim, Actara and Denim treated plots had average colossal size which was not statistically different than those in Lannate treated plots. Differences between treatments in IYSV infection rate were not significant, but rates in untreated plots were numerically much greater than in any other treatment. The amount of virus present increased between the two August sample dates.

Table 3. Harvest data from onion trial. An irregular stand within the field made overall yield values meaningless, so average bulb size was calculated.

	% colossal	Avg bulb (lb)		
		Jumbo	Colossal	All
Agri Mek	49.8	0.96	1.54 bcde	1.18
Proclaim	44.8	0.91	1.59 ab	1.13
Actara	29.7	0.96	1.58 abc	1.09
Denim	41.0	0.96	1.56 abcd	1.14
Actigard	36.4	0.96	1.50 de	1.11
Warrior	30.3	0.92	1.47 e	1.03
Lannate L	54.8	0.94	1.63 a	1.23
Provado	42.0	0.92	1.52 bcde	1.11
Provado/ Actigard	33.8	0.94	1.55 bcde	1.09
Success	38.9	0.95	1.50 cde	1.11
Untreated	36.9	0.95	1.51 cde	1.11

#### Discussion:

Lannate was the only insecticide tested that showed consistent control of onion thrips. The percent control calculated for Lannate was more than 20% better than the next best material.

Perhaps the most important information from this trial is the demonstration of the importance of early season thrips control. The final application of insecticides during this trial was on June 29, at which time bulb initiation was just beginning. The entire field was treated uniformly with insecticides in July and August, but the differential early season treatments were apparent with the greater size of colossal onions in the Lannate treatments. IYSV symptoms were much greater in the untreated plots implying that early season insecticide applications had impact on virus transmission well before symptoms appeared in the field.

Given the difficulty in controlling onion thrips, it is important to use insecticides as early in the season as thrips can be found in the field. Resistance management is a critical concern with only one effective labeled insecticide at this point in time. It is essential to identify and obtain labeling for another non-carbamate insecticide to use in conjunction with Lannate to prevent onion thrips from becoming resistant. The appearance of IYSV in the area has only intensified this concern.

Table 4. Results from immature thrips sampling on six dates. Percent control was calculated by dividing thrips count within a treatment by that of the untreated control, averaged over all sample dates. Means within a column followed by the same letter are not significantly different.(LSD; column 2,4,6  $P=0.05$ , column 1,5  $P=0.10$ )

	Thrips larvae per plant						% Control	IYSV	
	3 Jun	6 Jun	17 Jun	23 Jun	30 Jun	8 Jul		8/9	8/23
Agri Mek 0.15EC*	0.75 abc	12.65 bc	18.65	12.25 a	35.95 ab	35.45 abc	55.5	8.3	19.0
Proclaim 5SG*	2.25 d	12.70 bcd	25.25	12.30 a	22.45 ab	23.15 ab	48.3	9.0	26.0
Actara 25WG*	1.80 cd	14.30 bcd	19.90	16.05 a	33.40 ab	44.90 abc	41.5	13.0	24.3
Denim 0.16 EC*	1.70 bcd	12.00 b	17.10	10.25 a	42.35 ab	31.30 abc	49.8	13.7	27.3
Actigard 50WG	2.10 d	21.35 bcd	29.10	19.13 a	115.55 bc	41.55 abc	22.3	9.0	24.7
Warrior (CS)	1.90 cd	23.70 d	28.95	19.10 a	71.20 ab	43.55 bcd	25.7	9.7	22.7
Lannate L	0.35 a	4.45 a	10.30	11.10 a	23.15 ab	10.65 a	77.5	4.7	16.7
Provado 1.6F*	0.60 ab	17.30 bcd	19.40	19.60 a	32.60 ab	43.90 abc	48.0	3.0	7.3
Provado 1.6F + Actigard 50 WG*	2.20 d	17.70 bcd	25.85	21.50 ab	43.35 ab	95.80 d	26.3	5.7	15.7
Success	1.05 abcd	15.00 bcd	22.90	11.60 a	14.60 a	25.85 ab	53.3	6.3	17.3
Untreated	1.50 bcd	23.35 cd	35.60	31.80 b	164.75 c	70.95 cd		28.7	52.0
	0.0679	0.0104	ns	0.0289	0.1033	0.0287		ns	ns