

2001 Insecticide Trials - Onion and Western Flower Thrips

Summary

Four trials evaluating insecticides against onion thrips on onions were conducted in 2001. Three were located at the Western Colorado Research Center at Fruita, and the fourth with a grower/cooperator near Delta. No materials gave consistent acceptable control, but Lannate LV (3 pt/A) performed better than other materials. Two insecticide trials were conducted on western flower thrips. One was in alfalfa at WCRC@Fruita and the other in pinto beans at WCRC@Orchard Mesa. Several pyrethroids and organophosphates reduced western flower thrips numbers, but no material gave complete control.

Introduction and Objectives

Screening of insecticides remains an important function of agricultural research. Pest response to insecticides changes, and as new chemistry becomes available it must be tested under local conditions to determine if they are effective.

Onion thrips, *Thrips tabaci*, are primary pests of onion production in western Colorado. They have become resistant to many organophosphate and pyrethroid insecticides. The objective of four insecticide trials on onions in 2001 was to evaluate a variety of labeled insecticides and those with potential to obtain onion labels for efficacy against onion thrips.

Western flower thrips, *Frankliniella occidentalis*, attack a wide variety of crops including, but not limited to alfalfa, beans, and onions. The objective of two trials in 2001 was to evaluate several insecticides for efficacy against western flower thrips.

Table 1. Insecticides evaluated in six 2001 trials. Bio=Biological, CA=Carbamate, CH=Chlorinated Hydrocarbon, NN=Neonicotinyl, OP=Organophosphate, PY=Pyrethroid

Insecticide/ Formulation	Class	Onion thrips				Western flower thrips	
		1	2	3	4	Alfalfa	Bean
Spintor 2SC	BIO		X	X			
Furadan 4F	CA		X				X
Lannate LV	CA	X	X	X			X
Sevin 50W	CA						X
Vydate L	CA		X	X	X		
Thiodan 3EC	CH				X	X	
Provado 1.6F	NN				X		
Trigard	NN				X		
Dimethoate 4E	OP				X	X	X
Guthion 50WP	OP	X	X				
MetaSystox-R	OP		X	X			X
Orthene 75S	OP				X	X	
Parathion 4E	OP		X				
Capture 2EC	PY						X
F70 0.8EW	PY	X		X		X	
Pounce 3.2 EC	PY		X				X
Warrior EC	PY	X	X	X			
Warrior T	PY		X				
Warrior ZT	PY	X					
Actara					X		

Crop: Onions

Target insect: Onion thrips, *Thrips tabaci*

Treatments in all trials were applied with a hand held CO₂ pressured sprayer calibrated to apply 15 gal/a finished spray material. Spreader sticker was added to all materials at a rate of 1.5 pt/100 gal. Plots were 15 ft in length by 3-30" beds. Five random plants were chosen from the center bed of the plot on each sample date and thrips counted in the field. All data that is displayed is the average of the five plants and four replications per treatment.

Smith Farms, Delta

Treatments were applied twice at 7 day interval (14 Jun, 2001, repeated on 21 Jun, 2001) to 'Teton' onions planted two rows per 30" bed. There were no statistical differences between treatments on the 7 and 21 DAT (days after treatment) sample dates, although the untreated control plots had apparent larger thrips counts than any of the treated plots. All treatments provided some level of control on the 13 DAT sample date, with Lannate LV, Vydate L and Warrior EC providing the best level of control.

Treatment	Rate (each application)	Thrips per plant		
		7 DAT ¹	13 DAT ²	21 DAT ³
Guthion 50 WP	1.5 lb/A	8.0	26.5 cd	48.5
Warrior EC	3.84 fl. oz./A	8.0	22.0 abc	34.0
Warrior ZT	3.84 fl. oz./A	12.0	38.2 d	39.5
Lannate LV	3 pt/A	6.5	8.9 a	36.8
Vydate L	2 pt/A	9.5	10.0 ab	33.4
F 0570 0.8 EW	0.025 lb a.i./A	10.0	24.5 bcd	39.0
Untreated		15.2	55.5 e	57.4

Treatments in the 13 DAT column followed by the same letter are not significantly different ($\alpha=0.05$; LSD=14.9)

¹ 7 days after initial application. Only one treatment had been applied at this sample date.

² 13 days after initial application, six days after second application.

³ 14 days after initial application, 14 days after second application. Western Colorado Research Center at Fruita

Trial #1. Treatments were applied on 12 June 2001 to 'Mira' onions planted two rows per 30" bed. There were no statistical differences between treatments on any of the three sample dates.

Treatment	Rate	Thrips per plant		
		3 DAT	7 DAT	14 DAT
Guthion 50 WP	1.5 lb/A	10.2	16.2	32.2
Spintor 2 SC	6 oz/A	6.2	21.8	37.2
Lannate LV	3 pt/A	11.8	11.5	25.2
MetaSystox-R	2 pt/A	8.0	23.2	53.5
Vydate L	2 pt/A	5.5	24.8	30.2
Furadan 4F	1 pt/A	12.5	21.2	49.2
Warrior T	3.84 fl oz/A	4.0	9.2	66.0
Warrior EC	3.84 fl oz/A	7.8	16.0	68.5
Parathion 4E	1 pt/A	6.2	28.0	54.5
Pounce 3.2 EC	12 fl oz/A	8.8	16.0	55.5
Untreated		15.0	33.0	54.5

Trial # 2. Treatments were applied on 12 July 2001 in 'Outrigger' onions. There were no statistical differences between treatments in the 7 DAT sample, but the two rates of F 0570 0.8EW performed worse than all other treatments including the untreated in the 14 DAT sample.

Treatment	Rate	Thrips per plant	
		7 DAT	14 DAT

F 570 0.8EW	0.025	1.5 a	8.75 a	10.25 a	5.0	5.50 a	10.2 a
F 570 0.8EW	0.017	2.0 a	10.25 a	12.25 a	7.0	10.50 ab	16.4 a
F 570 0.8EW	0.014	3.25 a	10.25 a	13.25 a	7.5	10.00 ab	12.4 a
Dimethoate 400	0.50	3.25 a	14.0 a	17.25 ab	5.75	7.75 ab	12.8 a
Thiodan 3EC	1.0	9.5 b	19.25 a	28.75 bc	8.5	39.75 c	44.8 b
Orthene 75S	1.0	2.0 a	9.5 a	11.50 a	11.5	14.75 abc	18.6 a
Untreated		5.0 ab	31.5 b	36.50 c	6.25	33.50 bc	37.1 b
LSD		4.6	12.1	13.7		27.2	10.2

Crop: Alfalfa

Location: Western Colorado Research Center at Fruita CO

Target insect: Western Flower Thrips, *Frankliniella occidentalis*

Application date: 19 Jul 2001

Plot design: RCB; four replications; 20 ft x 7.5 ft

Sprayer: CO₂ pressured, hand held; calibrated at 18 gal/a

Sampling: 5 random stems per plot; thrips extracted in Berlese funnels for 24h and thrips separated by adult and immature; 7 and 14 DAT

Discussion: All chemicals except Metasystox-R reduced the number of immature WFT at 7 DAT. The number of adult and total WFT was not significantly different among treatments at that sample date. There were significant reductions in the numbers of adult, immature and total WFT at 14 DAT, with the greatest control with Dimethoate, Furadan, and Lannate. The best compounds provided only about 50% control.

Insecticide	Rate	Thrips/5 stems							
		7 DAT				14 DAT			
	lb a.i./A	Adult	Immature	Total	% Control	Adult	Immature	Total	% Control
Dimethoate 4E	0.5	9.0	66.2 bc	75.2	38.8	11.2 ab	62.0 d	73.2 e	51.3
Furadan 4F	0.5	15.2	40.2 c	55.5	54.9	9.5 ab	68.2 d	77.8 e	48.2
Lannate LV	0.3	18.0	48.2 c	66.2	46.2	12.2 a	75.2 d	87.5 de	41.8
MetaSystox-R	0.375	8.2	88.0 ab	96.2	21.8	12.0 ab	80.5 cd	92.5 cde	38.4
Sevin 50W	1.5	16.2	63.8 bc	80.0	35.0	7.8 abcd	224.5 a	232.2 a	0.0
Capture 2EC	0.10	9.5	63.5 bc	73.0	40.7	7.2 bcd	138.0 bc	145.2 bcd	3.3
Pounce 3.2EC	0.10	12.8	46.0 c	58.8	52.2	6.2 cd	165.0 ab	171.2 ab	0.0
Untreated		14.2	108.8 a	123.0		4.5d	145.8 b	150.2 bc	
P-value		0.328	0.085	0.110		0.025	0.0001	0.0002	
LSD			38.32			4.87	60.81	61.98	