Seed&Field

Technical Report

Evaluation of insecticides for the control of onion thrips (*Thrips tabaci*) within a commercial planting of the onion cv. "SFS/Seminis PLK" during the 2024-25 season in Pukekawa, New Zealand.

March 2025 S. Slack & R. Cox

Summary

A trial was established within a commercial onion crop of the cv. "Seminis/SFS PLK" at Pukekawa, New Zealand during the 2024-25 growing season to assess various insecticides for their efficacy against onion thrips (*Thrips tabaci*). The results indicate that Movento 150OD is effective for the control of onion thrips at a 320ml/ha rate, although it does not currently have a label registration for use in onions. Uphold also demonstrated good efficacy against onion thrips in this trial. Solvigo, Confidor, Recoil, and Benevia all demonstrated significant reductions in juvenile thrip populations compared to the untreated control following the first application. At later assessments these treatments showed a non-significant trend toward reduced juvenile thrip populations.

Method

Experimental site and application details

An experimental site was established within a commercial brown onion crop of the cv. "Seminis/SFS PLK" at Pukekawa, New Zealand. The commercial crop was planted on the 15th of August 2024 and no insecticides were applied to the experimental area before the trial began. The experimental design was a randomised complete block design with four treatment replicates. A total of nine treatments were included in the experiment (including an untreated control) (Table 1). Plots were one bed (1.72m) wide and 7m in length. Treatments were applied using a CO2 powered plot sprayer using 11002 AITTJ60 teejet nozzles spaced at 30cm. The sprayer was calibrated to apply a water volume equivalent to 400L/Ha. Duwett surfactant was added at a rate equivalent to 100mL/100L, and fungicides were added to control fungal disease as required, and in keeping with standard commercial practice.

Applications (Table 2) commenced approximately 30 days before harvest, with the experimental area having thrip populations well above commercial thresholds at the commencement of spray applications. Applications were made targeting an approximately seven-day spray interval, with treatments 1-8 receiving four back-to-back applications (applications A, B, C, and D), treatment 9 received two applications at application dates A and B. Thrip numbers were assessed weekly, with the first assessment taking place at the first insecticide application, with following assessments conducted on the day of insecticide applications. The final assessment following the fourth insecticide application was unable to be conducted due to the crop maturing earlier than expected.

25 plants per plot were assessed, with plants being randomly selected from with the centre 6 rows (of 8) within the bed. Numbers of both adult and nymph thrips were recorded.

Statistical analysis

Data were analysed using a 95% confidence interval. Analyses of variance (ANOVA) were computed using the statistical software ARM. Treatment means were separated using Duncans new multiple range test. As the LSD is computed using transformed data, comparisons of means should rely on the letters of separation, rather than the LSD value.

Table 1: Insecticide treatment details

Trt	Product name	Active ingredient	Rate/ Ha	Application code
1	Untreated	-	-	-
2	Solvigo	Abamectin (35g/L) + Thiamethoxam (72g/L)	750ml/ha	ABCD
3	Confidor	Imidacloprid (350g/L)	225ml/ha	ABCD
4	Karate Zeon	Lambda-Cyhalothrin (250g/L)	40ml/ha	ABCD
5	Recoil	Fipronil (200g/L)	200ml/ha	ABCD
6	Benevia	Cyantraniliprole (100g/L)	500ml/ha	ABCD
7	Uphold	Spinetoram (120g/L)	500ml/ha	ABCD
8	E-codaoleo K	Potassium solution of fatty acids	2000ml/ha	ABCD
9	Movento 150OD	Spirotetramat (150g/L)	320ml/ha	AB

Table 2: Application and assessment details

Date	Application	Growth Stage	Event
20/12/2024	A	Bulb formation	First assessment, first trial application
28/12/2024	B	Bulb formation	Second assessment, second trial application
05/01/2025	C	50% topfall	Third assessment, third trial application
13/01/2025	D	100% topfall	Final assessment, fourth trial application

Results

The effect of the various insecticides on thrips populations is presented in table 3, with data presented as mean number of thrips per plant.

At the date of the first assessment (20 Dec), before the commencement of insecticide applications, there was no significant difference between any of the treatments, indicating that the distribution of the thrips was relatively uniform throughout the experimental area.

At assessment two, 8 days post application A, treatment 9 had a juvenile thrip population significantly lower than all other treatments. Treatments 2, 3, 5, 6, and 7 all had juvenile thrip populations that were significantly lower than both the untreated control (treatment 1), and treatment 8. Treatments 4 and 8 did not differ significantly from the untreated control.

At assessment three, 8 days post application B, treatment 9 had a juvenile thrip population that was significantly lower than treatments 1, 3, 4, 5, and 8. Treatment 9 had an adult thrip population that was significantly higher than treatments 4, 5, 6, 7, and 8. Treatment 7 had a juvenile thrip population that was significantly lower than treatments 1, and 8. Treatments 2, 3, 4, 5, 6 and 8 had juvenile thrip populations that were not significantly lower than the untreated control.

At assessment four, 8 days post application C, treatment 9 had a juvenile thrip population that was significantly lower than all other treatments. Treatment 9 also had an adult thrip population that was significantly higher than all other treatments. Treatment 7 had a juvenile thrip population that was significantly lower than treatments 1, 3

and 8. All other treatments did not differ significantly from the untreated control for juvenile or adult thrip populations.

Table 3: Effect of various insecticides on adult and nymph onion thrip (*Thrips tabaci*) populations within a commercial planting of the onion cv. Seminis/SFS PLK during the 2024-25 growing season in Pukekawa, New Zealand.

Trt	20 Dec		28 Dec		5 Jan		13 Jan	
	Adult	Nymph	Adult	Nymph	Adult	Nymph	Adult	Nymph
1	4.7-	36.3-	0.4-	26.6 a	0.5 ab	34.2 ab	1.5 bc	29.7 a
2	3.5-	34.7-	0.2-	18.1 b	0.5 ab	16.0 bcd	1.4 bc	15.6 ab
3	3.5-	33.3-	0.2-	17.1 b	0.6 ab	16.9 bc	1.5 bc	25.7 a
4	4.8-	37.6-	0.3-	20.8 ab	0.2 b	19.2 bc	1.2 bc	17.6 ab
5	3.3-	34.3-	0.3-	18.1 b	0.3 b	17.7 bc	0.6 c	18.8 ab
6	4.6-	35.1-	0.3-	17.4 b	0.2 b	14.5 bcd	1.4 bc	16.1 ab
7	3.7-	40.8-	0.3-	15.1 bc	0.4 b	8.9 cd	0.8 c	7.1 b
8	3.4-	39.8-	0.2-	26.2 a	0.3 b	40.0 a	4.2 b	34.8 a
9	3.6-	32.6-	1.2	9.7 c	1.1 a	3.6 d	7.7 a	1.6 c
LSD p=0.05	1.64-1.67	9.61-10.02	0.22	5.48-7.40	0.48-0.62	11.60-19.09	2.87	3.23-19.93
SD	1.66*t*	0.08*t*	0.15	0.53*t*	0.10*t*	8.23*t*	1.97	0.24*t*
CV	14.62*t*	4.96*t*	55.75	12.08*t*	63.72*t*	33.01*t*	87.39	20.2*t*
Replicate F	0.055	0.260	1.594	5.854	3.388	5.768	2.871	4.282
Replicate Prob(F)	0.9824	0.8536	0.2208	0.0038	0.0344	0.0041	0.0574	0.0148
Treatment F	1.170	0.710	0.924	5.440	2.333	4.325	5.518	8.365
Treatment Prob (F)	0.3563	0.6804	0.5085	0.0006	0.0518	0.0025	0.0005	0.0001

*means followed by the same letter do not differ significantly (p=0.05, Duncans New MRT)

t= mean descriptions are reported in transformed data units, and are not de-transformed

^ calculated from residual

Appendix:

Appendix i -Weather data

Date	December			January		
	Max (°C)	Min (°C)	Rainfall (mm)	Max (°C)	Min (°C)	Rainfall (mm)
1	20.8	15.5	0.2	21.1	15.2	0
2	24.9	15.4	0	21.4	12.7	0
3	23.8	14.4	0	21.3	13.3	9
4	22.4	14.8	0	19.9	12.6	2
5	22.1	14.2	0.8	19.7	10.4	0.2
6	20.8	14.8	0	20.1	11.6	0
7	19.8	13.3	0	21.3	13.9	0
8	23.5	16.6	1.2	20.5	13	0
9	22.5	14.8	9.6	24.1	13.8	0
10	20.3	10.6	0	22.9	12.2	0
11	23.8	15.3	9.6	22.7	14	0
12	21.5	16.3	5	21.9	9.6	0
13	21.5	14.1	0	19.6	12.3	0
14	25.3	15.3	0	21.6	13.8	0
15	26.9	16.6	1.8	23.2	11.8	0
16	18.5	14.6	9.4	25.3	16.1	0
17	23	9.6	0	23.9	13.7	0
18	23.2	13.1	0	24.2	15.4	0
19	24.6	15.7	0	24.6	16.8	0.4
20	23.1	15.3	2.4	21.9	16.3	0.2
21	23.5	15.7	1.6	18.9	16.5	5.2
22	23.4	14.4	6.2	24.8	17.6	0
23	22	16.2	0	23.6	15.4	0
24	22.8	12.2	0	24.5	16.4	0
25	22.6	15.5	9	26.3	18.8	7
26	21.5	16.9	1	22.4	16.8	5.6
27	23.3	12.1	0	20.9	11.9	0
28	20.9	15.3	0	23.4	15.1	0
29	23.1	14.1	0	23.3	15.5	0
30	22.6	14.6	3	23.4	16.9	0
31	19.6	13.3	1.2	25.9	16.3	0

Appendix ii- Photograph 1- Experimental area