Seed&Field

Technical Report

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

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Summary

A trial was established within a commercial onion crop of the cv. "KiwiGold" at Pukekohe 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 rate of 560ml/ha. Movento 150OD does not currently have a label registration for use in onions. The other insecticide options trialled here were moderately effective against thrips, although there was variability in performance across assessment timings.

Method

Experimental site and application details

An experimental site was established within a commercial brown onion crop of the cv. "KiwiGold" at Pukekohe, New Zealand. The commercial crop was planted on the 10th of June 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 five 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 2, 3, and 5 receiving four back-to-back applications (applications A, B, C, and D), treatment 4 received two applications at applications 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, a 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	E-codaoleo K	Potassium solution of fatty acids	2000ml/ha	ABCD
3	JMS Stylet Oil	Mineral oil (971 ml/L)		ABCD
4	Movento 150OD	Spirotetramat (150g/L)	560ml/ha	AB
5	Uphold	Spinetoram (120g/L)	500ml/ha	ABCD

Table 2: Application and assessment details

Date	Application	Growth Stage	Event
19/11/2024	A		First assessment, first trial application
27/11/2024	B		Second assessment, second trial application
04/12/2024	C		Third assessment, third trial application
11/12/2024	D		Forth assessment, forth trial application
17/12/2024	-		Firth assessment

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 (18 Nov), 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, treatments 4 had a juvenile thrip population that was significantly lower than that of treatment 3, the remainder of the treatments did not differ significantly from each other.

At assessment three, treatment 4 had a juvenile thrip population that was significantly lower than that of the other four treatments in the experiment. Treatments 2, 3, and 5 all had juvenile thrip populations that were significantly lower than the untreated control. Treatment 3 had an adult thrip population that was significantly lower than treatments 1, 4, and 5.

At assessment four, treatment 4 had a juvenile thrip population that was significantly lower than all other treatments. Treatment 3 had a juvenile thrip population that was significantly lower than treatments 1, 2, and 5. Treatments 2 and 5 had juvenile thrip populations that were significantly lower than the untreated control.

At the final assessment, only treatment 4 had a juvenile onion thrip population that was significantly lower than the untreated control. Treatment 4 had an adult thrip population that was significantly higher than all other treatments in the trial.

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 ELK during the 2024-25 growing season in Pukekohe, New Zealand.

Trt	18 Nov		25 Nov		3 Dec		10 Dec		17 Dec	
	Adult	Nymph	Adult	Nymph	Adult	Nymph	Adult	Nymph	Adult	Nymph
1	0.3-	38.9-	1.0-	23.8ab	1.0a	32.3a	1.1-	22.1a	0.9c	23.3a
2	0.2-	39.4-	0.8-	20.7ab	0.8ab	16.3b	1.8-	13.0b	1.3bc	27.1a
3	0.5-	36.5-	1.1-	27.7a	0.5b	20.7b	1.0-	7.4c	1.0c	27.2a
4	0.1-	35.2-	0.9-	16.1b	1.2a	6.3c	2.5-	0.0d	2.4a	0.2b
5	0.2-	39.2-	1.0-	19.6ab	1.2a	21.1b	1.9-	13.1b	1.8b	17.7a
LSD p=0.05	0.40	2.64	0.70	9.51	0.46	5.98	1.56-1.61	0.52-7.69	0.61	12.63
SD	0.25	1.65	0.45	6.17	0.30	3.88	0.17*t*	0.11*t*	0.40	8.20
CV	92.25	4.31	47.0	28.59	32.35	20.09	40.88*t*	12.42*t*	26.9	42.99
Replicate F	2.170	1.123	2.548	0.984	0.233	0.364	1.114	1.856	2.765	0.055
Replicate Prob(F)	0.1613	0.3901	0.1049	0.4328	0.8713	0.7802	0.3817	0.1909	0.0878	0.9824
Treatment F	1.474	2.178	0.288	2.027	3.681	23.331	1.431	84.908	10.503	7.523
Treatment Prob (F)	0.2860	0.1604	0.8801	0.1545	0.0353	0.0001	0.2830	0.0001	0.0007	0.0028

*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	17	12.3	0	19.9	15.1	0.6
2	18.5	9.7	1.8	22.8	14.4	0
3	14.8	8.3	0	23	14.8	0
4	15.8	8.6	0	21.8	14.9	0
5	15.9	11.9	0	21.8	13.8	0.6
6	19.9	13.1	0	19.8	14.4	0
7	20.3	12.8	0	18.9	12.9	0
8	21.6	12.9	0	22.5	16	2.6
9	21.6	15.1	0	21.1	14	9.6
10	19.8	13	12.8	18.8	11.8	0
11	17.3	11.5	0	22.4	16.3	3.4
12	21.1	12.1	0	20.7	15.5	8.8
13	19.6	14.8	1	20.4	14.6	0
14	19.2	16.5	8.2	24.1	15.3	0
15	18.4	13.1	37.8	26.3	16.9	0.8
16	16.3	9.5	0	18.6	15.1	5.8
17	18.8	9	0	22.9	9.6	0
18	17.9	8.8	0	21.9	14.1	0
19	19.9	11.1	0	24.4	14.4	0
20	18.3	12.4	1.4	23.1	15.1	7.6
21	16.3	8.9	4.8	22.3	14.3	12.8
22	16.9	12.3	0	22.3	13.9	17.2
23	15.2	12.1	0	20.4	15.8	0
24	17.9	10.6	0	21.6	12.4	0
25	17.9	13.8	0	21.4	14.9	7.4
26	17	13.3	0	21	16.1	0.8
27	18.9	14.6	0	22.2	12.6	0
28	19.6	14.4	0	20.3	15	0
29	20.9	16.3	3.4	21.9	15.4	0
30	18.8	14.4	16.2	21.5	13.8	6.8
31				18.2	13.1	2.4