Insect Management

Comparison of Nicotinoid Insecticides for Controlling Harlequin Bug on Collards, 2004

J.V. Edelson and C. Mackey

Harlequin bug (HB): *Murgantia histrionica* (Hahn)

Nicotinoid and reduced risk insecticides were evaluated for controlling HB on collards. Collard seeds were planted 16 Apr at the Wes Watkins AREC, Lane, OK. The experimental design was a RCB with eight treatments and five replicate blocks with plots on 6 ft row spacing and two rows of plants 10 inches apart in each plot, 20 ft long and with 15 ft alleys between plots. Plots were treated 21 May and 4 and 15 Jun an ATV mounted sprayer powered by CO2. The boom was 6 ft wide and was equipped with hollow cone nozzles. The boom had a single nozzle over the top and a 12 inch drop nozzle to each side of the row. It had an output of 40 gpa @ 45 psi. Surveys were conducted at 3 and 7 days after each application by visually examining 5 plants in each plot for insects and number of adult and nymph HB were recorded. Data were summarized and analyzed using ANOVA and treatment effects compared using a LSD test.

HB adults and nymphs were abundant throughout the test period and surpassed economic thresholds in untreated plots. Surveys conducted three and seven days after the third application of treatments indicated that total number of nymphs and adults were significantly reduced in plots treated with all insecticides with the exception of FL1785 and Fulfill. Treatments with Actara and Clutch reduced populations to less than one adult and nymph per plant at seven days after application.

Table 1.

		HB/5 plants			
Treatment	**Rate / acre**	**18 June**		**23 June**	
Assail	0.1 lb ai / acre	3.6	bc	14.4	bc
FL1785	0.088 lb ai / acre	18.4	ab	57.6	ab
Actara	4 oz / acre	2.2	c	0.2	c
Calypso	0.1 lb ai / acre	1.0	c	11.0	bc
Clutch	0.1 lb ai / acre	0.0	c	1.2	c
Provado	3.75 fl oz / acre	4.4	bc	9.4	bc
Fulfill	2.75 oz / acre	24.6	bc	91.6	a
Untreated		26.2	a	92.2	a

Mean values in a column followed by different letters are significantly different, LSD, P=0.1.

Comparison of Pyrethroid Insecticides for Controlling Harlequin Bug and Thrips on Collards, 2004

J.V. Edelson and C. Mackey

Harlequin bug (HB): Murgantia histrionica (Hahn)
Western flower thrips (WT): Frankliniella occidentalis

Pyrethroid and reduced risk insecticides were evaluated for controlling HB and WT on collards. Collard seeds were planted during 16 Apr at the Wes Watkins AREC, Lane, OK. The experimental design was a RCB with 13 treatments and five replicate blocks with plots on 6 ft row spacing and two rows of plants 10 inches apart in each plot, 20 ft long and with 15 ft alleys between plots. Plots were treated 21 May, 4, 15 and 29 Jun using a tractor-mounted sprayer with a single nozzle over the top of each row and nozzles on drops to each side of the row of plants. The sprayer was operated at 40 psi and delivered 20 gpa. Five plants per plot were visually inspected at three and seven DAT. Data were pooled across dates, summarized and analyzed as total number of HB nymphs and adults or WT for the entire season using ANOVA and treatment effects compared using a LSD test.

Harlequin bugs were abundant throughout the period of time that the trial was conducted. Thrips were not abundant. Pyrethroid insecticide treatments and Dinotefuran treatment reduced HB abundance in plots. Dinotefuran treatments resulted in less than one HB per five plants across the season. WT abundance was reduced in all plots treated with insecticides relative to the untreated plots. Treatment with the pyrethroid insecticides, Mustang, Capture, Warrior, Baythroid, Danitol and with Dinotefuran resulted in WT populations less than one per plant across the season.

Table 1.

Treatment	Rate / acre	HB/plant		WT/plant	
Mustang	0.025 lb ai / acre	5.8	cd	0.7	bcd
Capture	6.4 fl oz / acre	13.2	cd	0.3	cd
Warrior	3.84 fl oz / acre	2.6	d	0.1	d
Baythroid	2.8 fl oz / acre	4.1	d	0.1	d
Danitol	0.3 lb ai / acre	3.1	d	0.2	cd
Courier	0.38 lb ai / acre	26.5	bc	2.4	bc
Proclaim	4.8 oz / acre	35.1	ab	1.7	bcd
Intrepid	0.2 lb ai / acre	50.4	a	2.1	bcd
Dinotefuran	200 gram / acre	0.8	d	0.8	bcd
Novaluron	0.8 lb ai / acre	17.8	bcd	2.7	b
Knack	10 fl oz / acre	26.3	bc	1.4	bcd
Spintor	6 fl oz / acre	53.0	a	2.0	bcd
Untreatred		35.6	ab	5.3	a

Mean values in a column followed by different letters are significantly different, LSD, P=0.1.

Controlling Corn Earworm on Sweet Corn, 2004

J.V. Edelson and C. Mackey

Corn Earworm (CEW): Helicoverpa zea (Boddie)

Insecticides labeled for use in organic production systems were compared along with a synthetic pyrethroid insecticide for controlling CEW on sweet corn. Sweet corn was planted to a field at the Wes Watkins AREC, Lane, OK on 28 Apr. Rows were set at 36 inch intervals and seed planted at six inch intervals with a Monosem precision planter. The experimental design was a RCB with six treatments and six replicate blocks. Plots were four rows wide by 40 ft long. Insecticide treatment plots were sprayed on 25, 29 Jun and 2, 6, 9 and 13 Jul using a tractor mounted hydraulic sprayer. The sprayer had a 12 ft wide boom with 8 nozzles mounted to spray over the top of the plants. The sprayer output was 20 gpa at 45 psi. Ears were harvested 15 Jul by picking 25 mature ears from each plot. The ears were shucked and examined for larvae present and damage. The ears with damage were rated on a percent damaged scale of 0%, 1-25%, 26-50%, 51-75% or 76-100% damage. Data were summarized and analyzed using ANOVA and a LSD test to make comparisons among treatments.

Corn earworm populations were abundant. None of the treatments reduced earworm populations per ear in comparison to the untreated plots. All insecticide treatments with the exception of Take Down, resulted in reduced damage to the ear of corn in comparison to the untreated plots. Application of the synthetic pyrethroid Capture resulted in the least amount of damage to corn ears.

Table 1.

Treatment	Rate/acre	Larvae/ear		% damaged ear	
Capture	0.1 lb ai / acre	0.78	c	13.0	e
Aza-direct	10 fl oz / acre	0.99	b	22.2	b
Take Down	2% formulation	1.00	b	23.3	ab
Dipel DF	2 lbs actual / acre	1.23	a	19.0	c
Entrust	4.6 oz / acre	0.92	bc	16.5	d
untreated		0.84	bc	24.8	a

Numbers in a column are significantly different if not followed by the same letter, LSD, P=0.1.

Controlling Onion Thrips on Onion, 2004.

J.V. Edelson and C. Mackey

Onion thrips (OT): Thrips tabaci

Insecticides were evaluated for controlling OT on onions. Onion seeds were planted 19 May at the Wes Watkins AREC, Lane, OK. The experimental design was a RCB with 13 treatments and five replicate blocks with plots having two three ft rows and 15 ft alleys between plots. Plots were treated 9 Jul and 2 Aug using a tractor-mounted sprayer with a single nozzle over the top of each row and nozzles on drops to each side of the row of plants. The sprayer was operated at 45 psi and delivered 20 gpa. Five plants per plot were visually inspected on 12 Jul and 5 and 10 Aug. Data were analyzed as total number of OT larvae and adults using ANOVA and treatment effects compared using a LSD test.

OT were not abundant and the only date on which OT were abundant enough in untreated plots to evaluate populations was 5 Aug. Mean number of OT larvae and adults per plant were reduced by all treatments in comparison to the untreated plots. Ammo, Lannate, Capture, Actara, Dinotefuron and DF-968 treatments reduced abundance to less than one per plant.

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Table 1.

Treatment	Rate / acre	5 Aug	
Ammo	0.1 lb ai / acre	0.6	d
Lannate	1.0 lb ai / acre	0.8	d
Capture	0.1 lb ai / acre	0.3	d
Actara	0.06 lb ai / acre	0.9	d
Dinotefuron	200 gram / acre	0.6	d
Novaluron	0.08 lb ai / acre	1.3	cd
Knack	10 fl oz / acre	3.7	bc
Pyramite	13 oz / acre	3.6	bc
Spintor	6 fl oz / acre	1.3	cd
GF-968	16.2 gram ai / acre	0.9	d
Cinnacure	10 fl oz / 10 gal water	5.0	b
Untreated		8.8	a

Mean number of OT per plant in a column followed by different letters are significantly different, LSD, P=0.1.

Comparison of Nicotinoid Insecticides for Controlling Harlequin Bug and Thrips on Turnips, 2004

J.V. Edelson C. Mackey

Harlequin bug (HB): Murgantia histrionica (Hahn)
Western flower thrips (WT): Frankliniella occidentalis

Nicotinoid and reduced risk insecticides were evaluated for controlling HB and WT on turnips. Turnip seeds were planted during 16 Apr at the Wes Watkins AREC, Lane, OK. The experimental design was a RCB with 13 treatments and five replicate blocks with plots on 6 ft row spacing and two rows of plants 10 inches apart in each plot, 20 ft long and with 15 ft alleys between plots. Plots were treated 21 May and 4 Jun using a tractor-mounted sprayer with a single nozzle over the top of each row and nozzles on drops to each side of the row of plants. The sprayer was operated at 40 psi and delivered 20 gpa. Five plants per plot were visually inspected at three and seven DAT. Data were pooled across dates, summarized and analyzed as total number of HB nymphs and adults or WT for the entire season using ANOVA and treatment effects compared using a LSD test.

Harlequin bugs were abundant throughout the period of time that the trial was conducted. Thrips were not abundant. Treatment with FL1785, Calypso, Clutch and Provado resulted in significant reductions in numbers of WT in comparison to untreated plants. Treatments with all insecticides except Fulfill resulted in reductions of HB in comparison to untreated plots.

Table 1.

Treatment	Rate / acre	WT / plant		HB / plant	
Assail	0.1 lb ai / acre	1.9	ab	3.3	b
FL1785	0.088 lb ai / acre	0.5	b	6.2	b
Actara	4 oz / acre	1.7	ab	1.2	b
Calypso	0.1 lb ai / acre	0.6	b	3.9	b
Clutch	0.1 lb ai / acre	0.5	b	2.9	b
Provado	3.75 fl oz / acre	0.4	b	5.2	b
Fulfill	2.75 oz / acre	2.1	ab	14.8	a
Untreated		2.8	a	15.8	a

Mean values in a column followed by different letters are significantly different, LSD, P=0.1.

Comparison of Nicotinoid Insecticides for Controlling Harlequin Bug and Thrips on Turnips, 2004

J.V. Edelson and C. Mackey

Harlequin bug (HB): Murgantia histrionica (Hahn)
Western flower thrips (WT): Frankliniella occidentalis xxxxxx
Green peach aphid (GPA): Myzus persicae (Sulzer)

Nicotinoid and reduced risk insecticides were evaluated for controlling HB and WT on turnips. Turnip seeds were planted during 16 Apr at the Wes Watkins AREC, Lane, OK. The experimental design was a RCB with 13 treatments and five replicate blocks with plots on 6 ft row spacing and two rows of plants 10 inches apart in each plot, 20 ft long and with 15 ft alleys between plots. Plots were treated 21 May and 4 Jun using a tractor-mounted sprayer with a single nozzle over the top of each row and nozzles on drops to each side of the row of plants. The sprayer was operated at 40 psi and delivered 20 gpa. Five plants per plot were visually inspected at three and seven DAT. Data were pooled across dates, summarized and analyzed as total number of GPA, HB nymphs and adults or WT for the entire season using ANOVA and treatment effects compared using a LSD test.

Harlequin bugs were abundant throughout the period of time that the trial was conducted. Thrips and aphids were not abundant. All treatments resulted in reductions in GPA abundance with the exception of applications of Proclaim. The pyrethroid insecticides, Mustang, Capture, Warrior, Baythroid, Danitol and application of Dinotefuran reduced numbers of WT to one per plant or less. The pyrethroid insecticides and Dinotefuran provided the greatest reduction in abundance of HB.

Table 1.

Treatment	Rate / acre	GPA / Plant		WT / Plant		HB / Plant	
Mustang	0.025 lb ai / acre	0.6	bc	0.5	de	1.8	bc
Capture	6.4 fl oz / acre	0.5	bc	0.4	de	3.4	bc
Warrior	3.84 fl oz / acre	0.2	c	0.1	e	0.8	c
Baythroid	2.8 fl oz / acre	1.1	bc	0.1	e	1.6	bc
Danitol	0.3 lb ai / acre	0.9	bc	0.6	de	0.6	c
Courier	0.38 lb ai / acre	1.1	bc	4.8	abc	3.2	bc
Proclaim	4.8 oz / acre	1.9	ab	7.8	a	3.2	bc
Intrepid	0.2 lb ai / acre	1.1	bc	7.9	a	5.2	abc
Dinotefuran	200 gram / acre	1.1	bc	1.1	cde	0.6	c
Novaluron	0.8 lb ai / acre	1.5	bc	4.5	abcd	6.6	abc
Knack	10 fl oz / acre	0.3	bc	3.3	bcde	6.2	abc
Spintor	6 fl oz / acre	1.3	bc	2.3	bcde	9.0	ab
Untreatred		3.2	a	6.4	ab	12.6	a

Mean values in a column followed by different letters are significantly different, LSD, P=0.1.