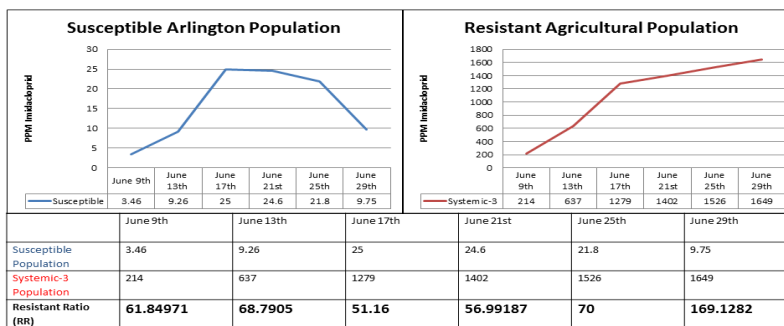


2016 Hancock Agricultural Experiment Station Field Day; Potato and Vegetable Insect Research

Russell L. Groves, Scott A. Chapman, Linda Crubaugh, Emily Duerr, Ben Bradford, Katherine Prince, Justin Clements, Tabatha Davis, Claire Rebman, Anthony Rittmeyer, Nick Sorensen.

I. Colorado Potato Beetle; Seasonal Changes in Neonicotinoid Resistance. (Justin Clements, UW-Env. Toxicology)¹.



¹ Special thanks to all cooperating growers and pest management practitioners for their assistance with the CPB insensitivity project.

² Resistance ratio estimates were calculated against a reference control strain (WI-1) of Colorado potato beetle adults from Arlington Agricultural Experiment Station.

³ LD₅₀ is represented as PPM imidacloprid in acetone

II. Full Season – Reduced-Risk, Colorado Potato Beetle Control, Large Plot Demonstration Trials (Hancock Agricultural Experiment Station, Field K25)

At-plant systemic programs:

Treatments	Active Ingredient	Application Rates	Application Dates
1	Platinum (1 st gen at plant)	thiamethoxam 75 SC	2.67 fl oz/a 19 Apr
	Besiege (2nd gen)	chlorantraniliprole + lambda-cyhalothrin 1.25 ZC	9 fl oz/a 11 July
	Besiege (2nd gen)	chlorantraniliprole + lambda-cyhalothrin 1.25 ZC	7.5 fl oz/a 18 July
2	Belay (1 st gen at plant)	clothianadin 2.13 SC	10 fl oz/a 19 Apr
	Agri-Mek (2nd gen)	abamectin 0.7 SC	3.5 fl oz/a 11 July
	Agri-Mek (2nd gen)	abamectin 0.7 SC	3.0 fl oz/a 18 July
3	Belay (1 st gen at plant)	clothianadin 2.13 SC	12 fl oz/a 24 Apr
	Assail (2nd gen)	acetamiprid 30 SG	4.0 oz wt/a 11 July
	Assail (2nd gen)	acetamiprid 30 SG	3.0 oz wt/a 18 July
4	Sivanto (1 st gen at plant)	flupyradifurone 1.67 SC	28 fl oz/a 19 Apr
	Entrust (rescue)	spinosyns 2 SC	10 fl oz/a 15 June, 22 June
	Actara (2nd gen)	thiamethoxam 25 WDG	3.0 oz wt/a 18 July
	Actara (2nd gen)	thiamethoxam 25 WDG	2.5 oz wt/a 25 July
5	Verimark (1 st gen at plant)	cyazypyr (aka. cyantraniliprole) 20 SC	13.5 fl oz/a 19 Apr
	Entrust (rescue)	spinosyns 2 SC	10 fl oz/a 22 June, 29 June
	Scorpion (2 nd gen)	dinotefuran 35 SL	2.75 fl oz/a 18 July
	Scorpion (2 nd gen)	dinotefuran 35 SL	2.5 fl oz/a 25 July
6	AdmirePro (1 st gen at plant)	imidacloprid 4.6 SC	8.7 fl oz/a 19 Apr
	Entrust (rescue)	spinosyns 2 SC	10 fl oz/a 22 June, 29 June
	IKI 3106 (2nd gen)	cyclaniliprole 50 SL	16 fl oz/a 18 July
	IKI 3106 (2nd gen)	cyclaniliprole 50 SL	13 fl oz/a 25 July

Foliar insecticide programs:

7	Rimon (1 st gen)	novaluron 0.83 EC	12 fl oz/a 15 June
	Rimon (1 st gen)	novaluron 0.83 EC	12 fl oz/a 22 June
	IKI 3106 (2nd gen)	cyclaniliprole 50 SL	16 fl oz/a 18 July
	IKI 3106 (2nd gen)	cyclaniliprole 50 SL	13 fl oz/a 25 July
8	Exirel (1 st gen)	cyazypyr (aka. cyantraniliprole) 10 SE	13.5 fl oz/a 15 June
	Exirel (1 st gen)	cyazypyr (aka. cyantraniliprole) 10 SE	10 fl oz/a 22 June
	Assail (2nd gen)	acetamiprid 30 SG	4.0 oz wt/a 18 July
	Assail (2nd gen)	acetamiprid 30 SG	3.0 oz wt/a 25 July
9	Agri-Mek (1 st gen)	abamectin 0.7 SC	3.5 fl oz/a 15 June
	Agri-Mek (1 st gen)	abamectin 0.7 SC	3.0 fl oz/a 22 June
	Besiege (2nd gen)	chlorantraniliprole + lambda-cyhalothrin 1.25 ZC	9 fl oz/a 18 July
	Besiege (2nd gen)	chlorantraniliprole + lambda-cyhalothrin 1.25 ZC	7.5 fl oz/a 25 July
10	Blackhawk (1 st gen)	spinosyns 36 WG	3.3 oz wt/a 15 June
	Blackhawk (1 st gen)	spinosyns 36 WG	2.5 oz wt/a 22 June
	Exirel (2nd gen)	cyazypyr (aka. cyantraniliprole) 10 SE	5 fl oz/a 18 July
	Exirel (2nd gen)	cyazypyr (aka. cyantraniliprole) 10 SE	5 fl oz/a 25 July
11	Sivanto Prime (1 st gen)	flupyradifurone 1.67 SL	14.0 fl oz/a 15 June
	Sivanto Prime (1 st gen)	flupyradifurone 1.67 SL	12.0 fl oz/a 22 June
	Entrust (rescue)	spinosyns 2 SC	10 fl oz/a 22 June, 29 June
	Assail (2nd gen)	acetamiprid 30 SG	4.0 oz wt/a 18 July
	Assail (2nd gen)	acetamiprid 30 SG	3.0 oz wt/a 25 July
12	Entrust (1 st gen)	spinosyns 2 SC	10 fl oz/a 15 June
	Entrust (1 st gen)	spinosyns 2 SC	10 fl oz/a 22 June
	Coragen (2nd gen)	rynaxypyr 1.67 SC	5.0 fl oz/a 18 July
	Coragen (2nd gen)	rynaxypyr 1.67 SC	4.5 fl oz/a 25 July

¹ Foliar insecticides applied with a 24' boom operating at 30 psi delivering 20.1 gpa through 12 flat-fan nozzles (8002VS-XR) spaced 18" apart. Applications of foliar insecticides timed to control 1st and 2nd generation Colorado potato beetle.



III. Foliar Insecticide Evaluations for the Control of Colorado Potato Beetle, (Hancock Agricultural Experiment Station, Hancock, WI Fields E 24 & 25)^{1,2}.

Treatment Number	Product and Application Frequency	Formulation Concentrate	Application Rate
1	Untreated		
2	Exirel (1st and 2nd appls)	0.83% SE	10.8fl oz/a
	NIS	100% SL	0.1%V/V
3	Agri-Mek (1st and 2nd appls)	0.7% SC	2.72fl oz/a
	NIS	100% SL	0.1%V/V
4	Exp.1 (1st and 2nd appls)	163.5% SC	5.5fl oz/a
	NIS	100% SL	0.1%V/V
5	Exp.1 (1st and 2nd appls)	163.5% SC	8.0fl oz/a
	NIS	100% SL	0.1%V/V
6	Exp.1 (1st and 2nd appls)	163.5% SC	10.0fl oz/a
	NIS	100% SL	0.1%V/V
7	Besiege (1st and 2nd appls)	1.252% ZC	9.0fl oz/a
	NIS	100% SL	0.1%V/V
8	Blackhawk (1st and 2nd appls)	36% WG	3.3oz wt/a
	NIS	100% SL	0.1%V/V
9	Blackhawk (1st and 2nd appls)	36% WG	3.0oz wt/a
	NIS	100% SL	0.1%V/V
10	Blackhawk (1st and 2nd appls)	36% WG	2.75oz wt/a
	NIS	100% SL	0.1%V/V
11	Exp.2 (1st and 2nd appls)	0.166% LC	16.9fl oz/a
	LI-700	100% SL	0.125%V/V
12	Exp.3 (1st and 2nd appls)	100% L	4qt/a
	LI-700	100% SL	0.125%V/V
13	Exp.2 (1st and 2nd appls)	0.166% LC	16.9fl oz/a
	LI-700	100% SL	0.125%V/V
	Exp.3 (1st and 2nd appls)	100% L	4q/a
14	Exp.2 (1st and 2nd appls)	0.166% LC	16.9fl oz/a
	LI-700	100% SL	0.125%V/V
	Exp.3 (1st and 2nd appls)	100% L	2q/a
15	Exp.3 (1st and 2nd appls)	100% L	6qt/a
	LI-700	100% SL	0.125%V/V
16	Exp.3 (1st and 2nd appls)	100% L	3qt/a
	LI-700	100% SL	0.125%V/V
17	Exp.3 (1st and 2nd appls)	100% L	1.5qt/a
	LI-700	100% SL	0.125%V/V
18	Gladiator (1st and 2nd appls)	0.25% EC	19fl oz/a
	NIS	100% SL	0.1%V/V
19	Athena (1st and 2nd appls)	0.87% EC	17fl oz/a
	NIS	100% SL	0.1%V/V

Treatment Number	Product and Application Frequency	Formulation Concentrate	Application Rate
20	IKI 3106 (1st and 2nd appls)	50% SL	16.4fl oz/a
	NIS	100% SL	0.1% v/v
21	IKI 3106 (1st and 2nd appls)	50% SL	11fl oz/a
	NIS	100% SL	0.1% v/v
22	Exp.-old (3 appls, 14 days)	2% L	16fl oz/a
23	Exp.-new (3 appls, 14 days)	2% L	16fl oz/a
24	Exp.-old (3 appls, 14 days)	2% L	12fl oz/a
25	Exp.-new (3 appls, 14 days)	2% L	12fl oz/a
26	Exp.-old (3 appls, 7 days)	2% L	16fl oz/a
27	Exp.-old (3 appls, 7 days)	2% L	12fl oz/a
28	Rimon (1 st appl)	0.83% EC	9fl oz/a
	Rimon (2 nd appl)	0.83% EC	8fl oz/a
	Rimon (2 nd appl)	0.83% EC	7fl oz/a
29	Grandevo (1 st , 2 nd , 3 rd appls)	70% WG	3lb/a
30	Venerate (1 st , 2 nd , 3 rd appls)	94.46SL	8qt/a
31	Untreated Check		
32	Belay	2.13% SC	3fl oz/a
	MSO	100% SL	0.125% v/v
33	Entrust	2% SC	10.0fl oz/a
34	Radiant	1% SC	8.0fl oz/a
35	Silvanto	1.67% SL	14.0fl oz/a
36	Coragen	1.67LB/GAL	5.0fl oz/a

III. Systemic Insecticide Evaluations for the Control of Colorado Potato Beetle, (Hancock Agricultural Experiment Station, Hancock, WI Fields E 27).

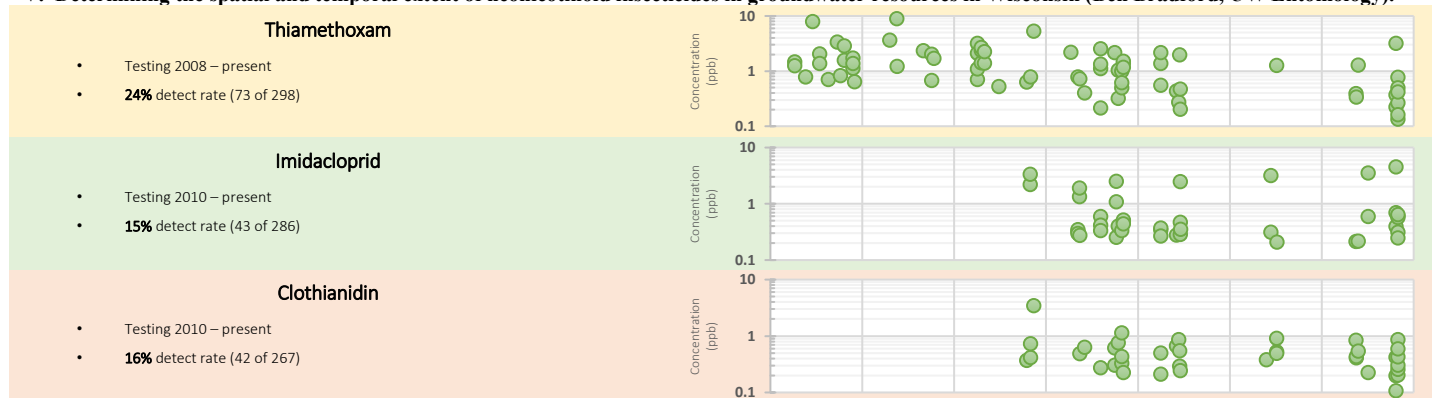
At-plant, systemic seed treatment programs:

Treatments	Active Ingredient	Formulation	Application Rate
1	UTC	Untreated control	
2	Exp 1	2 SC	0.62 fl oz/cwt
3	Exp 1	4.6 FS	0.35 fl oz/cwt
4	Exp 1/ Convoy	5 FS	0.16 fl oz/cwt
5	Exp 2	2.13 SC	0.6 fl oz/cwt
6	Exp 2/ Convoy		

At-plant, systemic in-furrow programs:

Treatments	Active Ingredient	Formulation	Application Rate
7	CruiserMaxx	thiamethoxam	3.58 SC
8	Platinum	thiamethoxam	75 SG
9	Verimark	cyazypyr (aka. cyantraniliprole)	1.67 SC
10	Verimark	cyazypyr (aka. cyantraniliprole)	1.67 SC
11	Sivanto	flupyradifurone	1.67 SL
12	Sivanto	flupyradifurone	1.67 SL

V. Determining the spatial and temporal extent of neonicotinoid insecticides in groundwater resources in Wisconsin (Ben Bradford, UW Entomology).



More information can be found at.....<http://labs.russell.wisc.edu/vegento/>