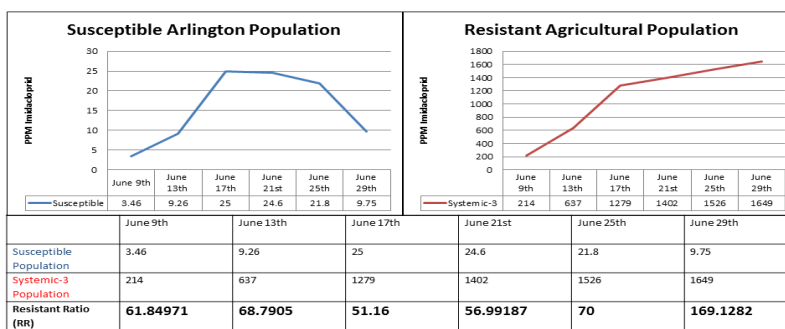


2015 Hancock Agricultural Experiment Station Field Day; Potato and Vegetable Insect Research

Russell L. Groves, Scott A. Chapman, Linda Crubaugh, Emily Duerr, Ben Bradford, Katherine Prince, Chris Bloomingdale, Justin Clements, Christina Stiff, Marissa Stiff, Rebecca Starckenburg, Christine Stewart, Jeff Meyer.

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 K17)

At-plant systemic programs:

Treatments	Active Ingredient	Application Rates	Application Dates
1 Platinum Blackhawk (rescue) Besiege (2nd gen) Besiege (2nd gen)	thiamethoxam	75 SC	2.67 fl oz/a
	spinosyns	36 WG	3.3 oz wt/a
	chlorantraniliprole + lambda-cyhalothrin	1.25 ZC	9 fl oz/a
	chlorantraniliprole + lambda-cyhalothrin	1.25 ZC	7.5 fl oz/a
2 Belay Blackhawk (rescue) Agri-Mek (2nd gen) Agri-Mek (2nd gen)	clothianadin	2.13 SC	10 fl oz/a
	spinosyns	36 WG	3.3 oz wt/a
	abamectin	0.7 SC	3.5 fl oz/a
	abamectin	0.7 SC	3.0 fl oz/a
3 Belay Blackhawk (rescue) Assail (2nd gen) Assail (2nd gen)	clothianadin	2.13 SC	12 fl oz/a
	spinosyns	36 WG	3.3 oz wt/a
	acetamiprid	30 SG	4.0 oz wt/a
	acetamiprid	30 SG	3.0 oz wt/a
4 Verimark Blackhawk (rescue) Actara (2nd gen) Actara (2nd gen)	cyazypyr (aka. cyantraniliprole)	20 SC	10.0 fl oz/a
	spinosyns	36 WG	3.3 oz wt/a
	thiamethoxam	25 WDG	3.0 oz wt/a
	thiamethoxam	25 WDG	2.5 oz wt/a
5 Verimark Blackhawk (rescue) Radiant (2nd gen) Radiant (2nd gen)	cyazypyr (aka. cyantraniliprole)	20 SC	13.5 fl oz/a
	spinosyns	36 WG	3.3 oz wt/a
	spinetoram	1 SC	8 fl oz/a
	spinetoram	1 SC	6 fl oz/a
6 AdmirePro Blackhawk (rescue) IKI 3106 (2nd gen) IKI 3106 (2nd gen)	imidacloprid	4.6 SC	8.7 fl oz/a
	spinosyns	36 WG	3.3 oz wt/a
	cyclaniliprole	50 SL	16 fl oz/a
	cyclaniliprole	50 SL	13 fl oz/a

Foliar insecticide programs:

7 Rimon Rimon Exirel (2nd gen) Exirel (2nd gen)	novaluron	0.83 EC	12 fl oz/a
	novaluron	0.83 EC	12 fl oz/a
	cyazypyr (aka. cyantraniliprole)	10 SE	13.5 fl oz/a
	cyazypyr (aka. cyantraniliprole)	10 SE	10 fl oz/a
8 IKI 3106 IKI 3106 Assail (2nd gen) Assail (2nd gen)	cyclaniliprole	50 SL	16 fl oz/a
	cyclaniliprole	50 SL	13 fl oz/a
	acetamiprid	30 SG	4.0 oz wt/a
	acetamiprid	30 SG	3.0 oz wt/a
9 Agri-Mek Agri-Mek Besiege (2nd gen) Besiege (2nd gen)	abamectin	0.7 SC	3.5 fl oz/a
	abamectin	0.7 SC	3.0 fl oz/a
	chlorantraniliprole + lambda-cyhalothrin	1.25 ZC	9 fl oz/a
	chlorantraniliprole + lambda-cyhalothrin	1.25 ZC	7.5 fl oz/a
10 Blackhawk Blackhawk Exirel (2nd gen) Exirel (2nd gen)	spinosyns	36 WG	3.3 oz wt/a
	spinosyns	36 WG	2.5 oz wt/a
	cyazypyr (aka. cyantraniliprole)	10 SE	5 fl oz/a
	cyazypyr (aka. cyantraniliprole)	10 SE	5 fl oz/a
11 Radiant Radiant Assail (2nd gen) Assail (2nd gen)	spinetoram	1 SC	8 fl oz/a
	spinetoram	1 SC	6 fl oz/a
	acetamiprid	30 SG	4.0 oz wt/a
	acetamiprid	30 SG	3.0 oz wt/a
12 Athena Athena Coragen (2nd gen) Coragen (2nd gen)	abamectin + bifenthrin	0.87 EC	17 fl oz/a
	abamectin + bifenthrin	0.87 EC	14 fl oz/a
	rynaxypyr	1.67 SC	5.0 fl oz/a
	rynaxypyr	1.67 SC	4.5 fl oz/a

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 28 & 31)^{1,2}.

Treatment Number	Product and Application Frequency	Formulation Concentrate	Application Rate
1	Untreated		
2	Imidan (1st and 2nd appls)	70% W	1.33lb/a
3	Imidan (1st appl) Blackhawk(2nd appl)	70% W 36%AW/W WG	1.33lb/a 3.3oz wt/a
4	Blackhawk(1st appl) Imidan (2nd appl)	36%AW/W WG 70% W	3.3oz wt/a 1.33lb/a
5	Blackhawk(1st appl) Blackhawk(2nd appl)	36%AW/W WG 36%AW/W WG	3.3oz wt/a 3.0oz wt/a
6	Athena (1st and 2nd appls)	0.87LB/GAL EC	17fl oz/a
7	Gladiator (1st and 2nd appls)	0.25LB/GAL EC	19fl oz/a
8	Brigadier (1st appl) Brigadier (2nd appl)	2LB/GAL SC 2LB/GAL SC	6.14fl oz/a 5.0fl oz/a
9	Brigadier (1st appl) Athena (2nd appl)	2LB/GAL SC 0.87LB/GAL EC	6.14fl oz/a 17fl oz/a
10	IKI 3106 (1st and 2nd appls)	50GA/L SL	16.4fl oz/a
11	IKI 3106 (1st and 2nd appls)	50GA/L SL	11.0fl oz/a
12	Rimon (1 appl only)	0.83LB/GAL EC	12.0fl oz/a
13	Rimon (1st appl) Rimon (2nd appl) Rimon (3rd appl)	0.83LB/GAL EC 0.83LB/GAL EC 0.83LB/GAL EC	9.0fl oz/a 8.0fl oz/a 7.0fl oz/a
14	Exp(1st and 3rd appls)		
15	Exp (1st and 3rd appls)		
16	Exp (1st and 3rd appls)		
17	Exp (1 appl only)		
18	Exp (1st and 2nd appls)		
19	Exp (1st appl) Exp (3rd appl)		

Treatment Number	Product and Application Frequency	Formulation Concentrate	Application Rate
20	Exirel (1st and 2nd appls) NIS	0.83LB/GAL 100%	OD SL 13.5fl oz/a 0.1% v/v
21	Agri-Mek (1st and 2nd appls) NIS	0.7LB/GAL 100%	SC SL 2.77fl oz/a 0.1% v/v
22	Exp (1st and 2nd appls) NIS		
23	Exp (1st and 2nd appls) NIS		
24	Besiege (1st and 2nd appls) NIS	1.252LB/GAL 100%	ZC SL 8.9fl oz/a 0.1% v/v
25	Grandevo (1st and 2nd appls)	70%AW/W WG	3.0lb/a
26	Venerate (1st and 2nd appls)	94.46%AW/W SL	8qt/a
27	Blackhawk(1st and 2nd appls) APSA-80	36%AW/W WG 100%	WG L 3.3oz wt/a 0.2% v/v
28	Blackhawk(1st and 2nd appls) EXP 10942-34-A	36%AW/W WG 100%	WG L 3.3oz wt/a 0.2% v/v
29	Agri-Mek (1st and 2nd appls) APSA-80	0.15LB/GAL EC 100%	EC L 14fl oz/a 0.2% v/v
30	Agri-Mek (1st and 2nd appls) EXP 10942-34-A	0.15LB/GAL EC 100%	EC L 14fl oz/a 0.2% v/v
31	Exp (1st and 2nd appls) MSO Novodor	100% 100%	SL L 0.125% v/v 2qt/a
32	Exp (1st and 2nd appls) MSO Novodor	100% 100%	SL L 0.125% v/v 2qt/a
33	Exp (1st and 2nd appls) MSO Novodor	100% 100%	EP L 0.125% v/v 2qt/a
34	Trident (1st and 2nd appls)	100%	L 3.0qt/a
35	Trident (1st and 2nd appls)	100%	L 6.0qt/a
36	Belay (1st and 2nd appls)	2.13LB/GAL SC	3.0fl oz/a
37	Untreated Check		

III. Systemic Insecticide Evaluations for the Control of Colorado Potato Beetle, (Hancock Agricultural Experiment Station, Hancock, WI Fields E 28).

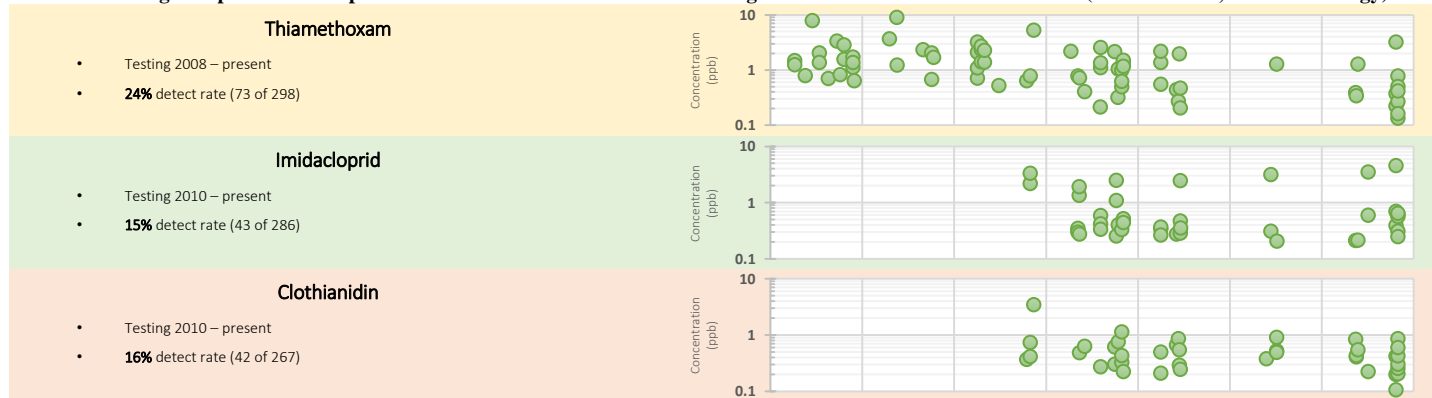
At-plant, systemic seed treatment programs:

Treatments	Active Ingredient	Formulation	Application Rate
1	UTC	Untreated control	
2	Verimark	cyazypyr (aka. cyantraniliprole)	2 SC 0.62 fl oz/cwt
3	AdmirePro	imidacloprid	4.6 FS 0.35 fl oz/cwt
4	Cruiser	thiamethoxam	5 FS 0.16 fl oz/cwt
5	Belay	clothianadin	2.13 SC 0.6 fl oz/cwt

At-plant, systemic in-furrow programs:

Treatments	Active Ingredient	Formulation	Application Rate
7	Platinum	thiamethoxam	75 SG 2.67 oz/ac
8	Verimark	cyazypyr (aka. cyantraniliprole)	2 SC 13.5 fl oz/ac
9	Sivanto	flupyradifurone	1.67 SL 28 fl oz/ac
10	Belay	clothianadin	2.13 SC 12 fl oz/ac

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



VI. 2015, Additional Vegetable Insect Research.

- I. Landscape factors that influence the colonization risk of the Colorado potato beetle (A.S. Huseth, NCSU, Entomology);
- II. Current season management of Potato Virus Y (PVY) in seed potato production (Stephanie Plaster, CES UWEX);
- III. Landscape patterns of Potato virus Y (PVY) incidence in Wisconsin seed production regions (Amy Charkowski, Alex Crockford, Wisconsin Seed Certification).
- V. Performance of novel genetic solutions for the control of Colorado Potato Beetle;

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

