

## 2012 Antigo, WI Field Day; Potato and Vegetable Insect Research

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### I. Colorado Potato Beetle; Neonicotinoid Statewide Insensitivity Among 5 Populations (Fig. 1)<sup>1</sup>.

2012 Wisconsin Resistance Screen									
County	Grower	Population	n	Slope ± SEM	LD50 (95% CL)	$\chi^2$	df	RR <sup>††</sup>	
Langlade	A	1	400	1.92 (± 0.43)	0.55 (0.29 - 1.60)	28.9438	5	20	(18 - 21)
	B	2	400	1.17 (± 0.27)	1.27 (0.6 - 11.4)	13.6878	5	46	(37 - 54)
	C	3	400	1.56 (± 0.16)	0.35 (0.28 - 0.44)	7.4425	5	12	(11 - 13)
	D	4	400	1.81 (± 0.21)	0.50 (0.4 - 0.68)	7.2898	5	18	(17 - 19)
Columbia†	UW	AAES (2012)	600	3.13 (± 0.33)	0.03 (0.028 - 0.034)	14.11	6	-	-

<sup>1</sup> Special thanks to all cooperating growers and pest management practitioners for their assistance with the CPB insensitivity project (Mr. Randy Van Haren Pest Pros Inc., Plainfield, WI & Mr. Andy Merry, Antigo, WI, Mr. Anders Huseeth, Department of Entomology)

<sup>2</sup> Resistance ratio estimates calculated against a Arlington Agricultural Experiment Station reference control strain of Colorado potato beetle adults (LD<sub>50</sub> = 0.03).

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

Treatments	Active Ingredient	Application Rates	Application Number	Plot Numbers
<i>At-plant systemic programs:</i>				
1) Platinum <sup>®</sup> 75 SC Benevia 10 OD	thiamethoxam cyantraniliprole	2.67 fl oz / A 5.0 & 5.0 fl oz / A	1 (27 April 2012) 2 (TBD)	(101, 201, 301)
2) Belay <sup>®</sup> 2.13 SC Agri-Mek <sup>™</sup> 0.15 EC	clothianadin abamectin	12.0 fl oz / A 14 & 12 fl oz / A	1 (27 April 2012) 2 (TBD)	(102, 202, 302)
3) Verimark 20 SC Assail <sup>®</sup> 30SG	cyantraniliprole acetamiprid	10.0 fl oz / A 4.0 & 3.0 oz / A	1 (27 April 2012) 2 (TBD)	(103, 203, 303)
4) Verimark 20 SC Actara <sup>®</sup> 25WDG	cyantraniliprole thiamethoxam	13.5 fl oz / A 3.0 & 2.5 oz / A	1 (27 April 2012) 2 (TBD)	(104, 204, 304)
5) Syngenta EXP Radiant <sup>®</sup> SC	experimental spinetoram	8.0 oz / A 8.0 & 6.0 fl oz / A	1 (27 April 2012) 2 (TBD)	(105, 205, 305)
6) Syngenta EXP Agri-Mek <sup>™</sup> 0.7 SC	experimental abamectin	10 oz / A 3.5 & 2.75 fl oz / A	1 (27 April 2012) 2 (TBD)	(106, 206, 306)
<i>Foliar insecticide programs:</i>				
7) Rimon <sup>®</sup> 0.83 EC Benevia 10 OD	novaluron cyantraniliprole	10.0, 7.0 & 7.0 fl oz / A 5.0 & 5.0 fl oz / A	3 (8, 15, and 22 June 2012) 2 (TBD)	(107, 207, 307)
8) Coragen <sup>®</sup> 1.67 SC Actara <sup>®</sup> 25 SG	rynaxypyr thiamethoxam	5.0 & 3.5 fl oz / A 3.0 & 2.0 oz / A	2 (15 and 22 June 2012) 2 (TBD)	(108, 208, 308)
9) Agri-Mek <sup>™</sup> 0.15 EC Coragen <sup>®</sup> 1.67SC	abamectin rynaxypyr	14 & 12 fl oz / A 5.0 & 3.5 fl oz / A	2 (15 and 22 June 2012) 2 (TBD)	(109, 209, 309)
10) Blackhawk 36 WG Benevia 10 OD	spinosad cyantraniliprole	3.3 & 2.5 oz / A 5.0 & 5.0 fl oz / A	2 (15 and 22 June 2012) 2 (TBD)	(110, 210, 310)
11) Radiant <sup>®</sup> SC Voliam Xpress <sup>™</sup> 1.25SC	spinetoram chlorantraniliprole	8.0 & 6.0 fl oz / A 9.0 & 7.5 fl oz / A	2 (15 and 22 June 2012) 2 (TBD)	(111, 211, 311)
12) Athena <sup>®</sup> 0.87EC Admire Pro <sup>®</sup> 550SC	bifenthrin + avermectin imidacloprid	17.0 & 14.0 fl oz / A 1.3 & 1.3 fl oz / A	2 (15 and 22 June 2012) 2 (TBD)	(112, 212, 312)
13) Actara <sup>®</sup> 25WDG Voliam Xpress <sup>™</sup> 1.25SC	thiamethoxam chlorantraniliprole	3.0 & 1.5 oz / A 7.0 & 5.0 fl oz / A	2 (15 and 22 June 2012) 2 (TBD)	(113, 213, 313)
14) Belay <sup>®</sup> 2.13 SC Coragen <sup>®</sup> 1.67 SC	clothianadin rynaxypyr	3.0 & 2.5 fl oz / A 5.0 & 5.0 oz / A	2 (15 and 22 June 2012) 2 (TBD)	(114, 214, 314)
15) Valent EXP Belay <sup>®</sup> 2.13 SC	experimental clothianadin	4.3 & 4.0 fl oz / A 3.0 & 2.5 fl oz / A	2 (15 and 22 June 2012) 2 (TBD)	(115, 215, 315)



**III. Foliar Insecticide Evaluations for the Control of Colorado Potato Beetle, (Hancock Agricultural Experiment Station, Hancock, WI Fields C9)<sup>1</sup>**

Treatments	Active Ingredient	Application Rate	Plot Numbers	Treatments	Active Ingredient	Application Rate	Plot Numbers
1) UTC			(101, 201, 301, 401)	21) Endigo 2.06ZC	λ-cyhalothrin + thiamethox.	4.0 oz / A	(121, 221, 321, 421)
2) Valent EXP	experimental	3.57 oz / A	(102, 202, 302, 402)	22) Endigo 2.71ZC	λ-cyhalothrin + thiamethox.	3.9 oz / A	(122, 222, 322, 422)
3) Valent EXP	experimental	4.28 oz / A	(103, 203, 303, 403)	23) Warrior II 2.08SC	λ-cyhalothrin	1.92 oz / A	(123, 223, 323, 423)
4) Belay 2.13SC	clothianadin	3.0 oz / A	(104, 204, 304, 404)	24) Actara 25WDG	thiamethoxam	3.0 oz / A	(124, 224, 324, 424)
5) Valent EXP + Belay		3.57 & 3.0 oz / A	(105, 205, 305, 405)	25) Syngenta EXP	experimental	4.0 oz / A	(125, 225, 325, 425)
6) Valent EXP + Belay		4.28 & 3.0 oz / A	(106, 206, 306, 406)	26) Leverage 360	imidacloprid + cyfluthrin	2.8 oz / A	(126, 226, 326, 426)
7) Voliam Flexi	CTPR + thiamethoxam	5.0 oz / A	(107, 207, 307, 407)	27) Coragen 1.67SC	rynaxypyr	5.0 oz / A	(127, 227, 327, 427)
8) Coragen 1.67SC	rynaxypyr	4.5 oz / A	(108, 208, 308, 408)	28) Avaunt 30WG	indoxacarb	3.47 oz / A	(128, 228, 328, 428)
9) Athena 0.87EC	bifenthrin + abamectin	13.0 oz / A	(109, 209, 309, 409)	29) Avaunt 30WG	indoxacarb	5.87 oz / A	(129, 229, 329, 429)
10) Athena 0.87EC	bifenthrin + abamectin	17.0 oz / A	(110, 210, 310, 410)	30) Valent EXP	experimental	0.37 oz / A	(130, 230, 330, 430)
11) Brigadier 2SC	imidacloprid + bifenthrin	6.4 oz / A	(111, 211, 311, 411)	31) Valent EXP	experimental	0.73 oz / A	(131, 231, 331, 431)
12) Blackhawk 36WG	spinosad	2.5 oz / A	(112, 212, 312, 412)	32) Valent EXP	experimental	1.45 oz / A	(132, 232, 332, 432)
13) Blackhawk 36WG	spinosad	2.5 oz / A	(113, 213, 313, 413)	33) Valent EXP	experimental	0.37 oz / A	(133, 233, 333, 433)
14) Blackhawk 36WG	spinosad	3.3 oz / A	(114, 214, 314, 414)	34) Valent EXP	experimental	0.73 oz / A	(134, 234, 334, 434)
15) Provado 1.6F	imidacloprid	3.75 oz / A	(115, 215, 315, 415)	35) Valent EXP	experimental	1.45 oz / A	(135, 235, 335, 435)
16) Dupont EXP	experimental	3.47 oz / A	(116, 216, 316, 416)	36) Torac 4EC	tolfenpyrad	17 oz / A	(136, 236, 336, 436)
17) Dupont EXP	experimental	5.87 oz / A	(117, 217, 317, 417)	37) Torac 4EC	tolfenpyrad	21 oz / A	(137, 237, 337, 437)
18) Benevia	cyantraniliprole	5.1 oz / A	(118, 218, 318, 418)	38) Torac 4EC	tolfenpyrad	24 oz / A	(138, 238, 338, 438)
19) Benevia	cyantraniliprole	6.8 oz / A	(119, 219, 319, 419)	39) Rimon 0.83EC	novaluron	9.0, 8.0 & 7.0 oz / A	(139, 239, 339, 439)
20) UTC			(120, 220, 320, 420)	40) Rimon 0.83EC	novaluron	10.0 & 8.0 oz / A	(140, 240, 340, 440)

<sup>1</sup> Foliar insecticides applied with a 6' boom operating at 30 psi delivering 20.8 gpa through 3 flat-fan nozzles (8002VS-XR) spaced 18" apart. Two applications of each foliar insecticide applied 15 June and 22 June, 2012.

**IV. At-Plant, Systemic Insecticide Evaluations for the Control of Colorado Potato Beetle, (Hancock Agricultural Experiment Station, Hancock, WI Field C21-23)<sup>1</sup>**

Treatments	Active Ingredient	Application Rate	Plot Numbers	Treatments	Active Ingredient	Application Rate	Plot Numbers
1) UTC			(101, 201, 301, 401)	14) Syngenta EXP	experimental	0.31 & 0.26 fl oz / cwt	(114, 214, 314, 414)
2) Dupont EXP	experimental	0.47 fl oz / cwt	(102, 202, 302, 402)	15) Syngenta EXP	experimental	0.31 fl oz / cwt	(115, 215, 315, 415)
3) Dupont EXP	experimental	0.62 fl oz / cwt	(103, 203, 303, 403)	16) Syngenta EXP	experimental	0.31 & 0.08 fl oz / cwt	(116, 216, 316, 416)
4) Dupont EXP+ Cruiser exp. + thiamethox.		0.47 & 0.12 oz / cwt	(104, 204, 304, 404)	17) AdmirePro 4.6SC	imidacloprid	0.35 fl oz / cwt	(117, 217, 317, 417)
5) AdmirePro 4.6FS	imidacloprid	0.26 fl oz / cwt	(105, 205, 305, 405)	18) Syngenta EXP	experimental	6.5 oz / A	(118, 218, 318, 418)
6) AdmirePro 4.6FS	imidacloprid	0.35 fl oz / cwt	(106, 206, 306, 406)	19) Syngenta EXP	experimental	10.0 oz / A	(119, 219, 319, 419)
7) Cruiser 5FS	thiamethoxam	0.12 fl oz / cwt	(107, 207, 307, 407)	20) Platinum 75SG	thiamethoxam	1.68 oz / A	(120, 220, 320, 420)
8) Cruiser 5FS	thiamethoxam	0.16 fl oz / cwt	(108, 208, 308, 408)	21) Platinum 75SG	thiamethoxam	2.66 oz / A	(121, 221, 321, 421)
9) Belay 2.13SC	clothianadin	0.6 fl oz / cwt	(109, 209, 309, 409)	22) Dupont EXP	experimental	10.3 fl oz / A	(122, 222, 322, 422)
10) Syngenta EXP	experimental	0.08 fl oz / cwt	(110, 210, 310, 410)	23) Dupont EXP	experimental	13.5 fl oz / A	(123, 223, 323, 423)
11) Syngenta EXP	experimental	0.22 fl oz / cwt	(111, 211, 311, 411)	24) AdmirePro 4.6FS	imidacloprid	8.7 fl oz / A	(124, 224, 324, 424)
12) Syngenta EXP	experimental	0.22 & 0.15 fl oz / cwt	(112, 212, 312, 412)	25) Belay 2.13SC	clothianadin	12.0 fl oz / A	(125, 225, 325, 425)
13) Syngenta EXP	experimental	0.22 & 0.2 fl oz / cwt	(113, 213, 313, 413)				

<sup>1</sup> Seed treatments were applied using an overhead spray system at the Hancock Agricultural Research Station on cut, suberized seed pieces of Russet Burbank 24 h prior to planting. In-furrow insecticide applications were applied in a 4" band over cut, suberized seed pieces placed in an open furrow using a CO<sub>2</sub> pressurized, backpack sprayer delivering 11.1 gpa at 30.0 psi with a single hollow-cone nozzle (TXVS-6). Seed treatment applications were applied 25 April and in-furrow applications applied 26 April, 2012.

**VI. 2012, Additional Vegetable Insect Research.****I. Onion thrips (*Thrips tabaci*):**

- ❖ Controlling onion thrips using adjusted action thresholds and novel pest management products to meet resistance management guidelines and provide full-season control. Experiments performed in cooperation with Shiprock Farms, Freindship WI.

**II. European corn borer (*Ostrinia nubilalis*) and corn earworm (*Helicoverpa zea*) control in succulent snap bean:**

- ❖ Improved application techniques for the control of European corn borer in succulent snap bean. Investigating the influence of soil-applied, water-soluble anthranilic diamides for the control of ECB in snap beans. Experiments performed in cooperation with Del Monte Foods, Plover, WI.

**III. Aster leafhopper (*Macrostelus fascifrons*) Control in processing carrot:**

- ❖ Controlling aster leafhopper using novel seed treatment technologies to meet resistance management guidelines and provide full-season control. Experiments performed in cooperation with Paul Miller Farms, Hancock, WI.

**IV. Current season management of Potato Virus Y (PVY) in seed potato production:**

- ❖ Limiting the current season spread of PVY using novel foliar crop protectant technologies to meet certification requirements of the Wisconsin Certified Seed Potato Program. Experiments performed in cooperation with Langlade County Cooperative Extension, Antigo, WI.

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