

Stink bug insecticide efficacy results

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All Stink Bugs Identified During this Project were Consperse Stink Bug



Photos by E. Hannon 2014

Objectives:

- Overwintering site identification and evaluate seasonal population development
- Pheromone trap evaluation
- Insecticide comparisons and program evaluation

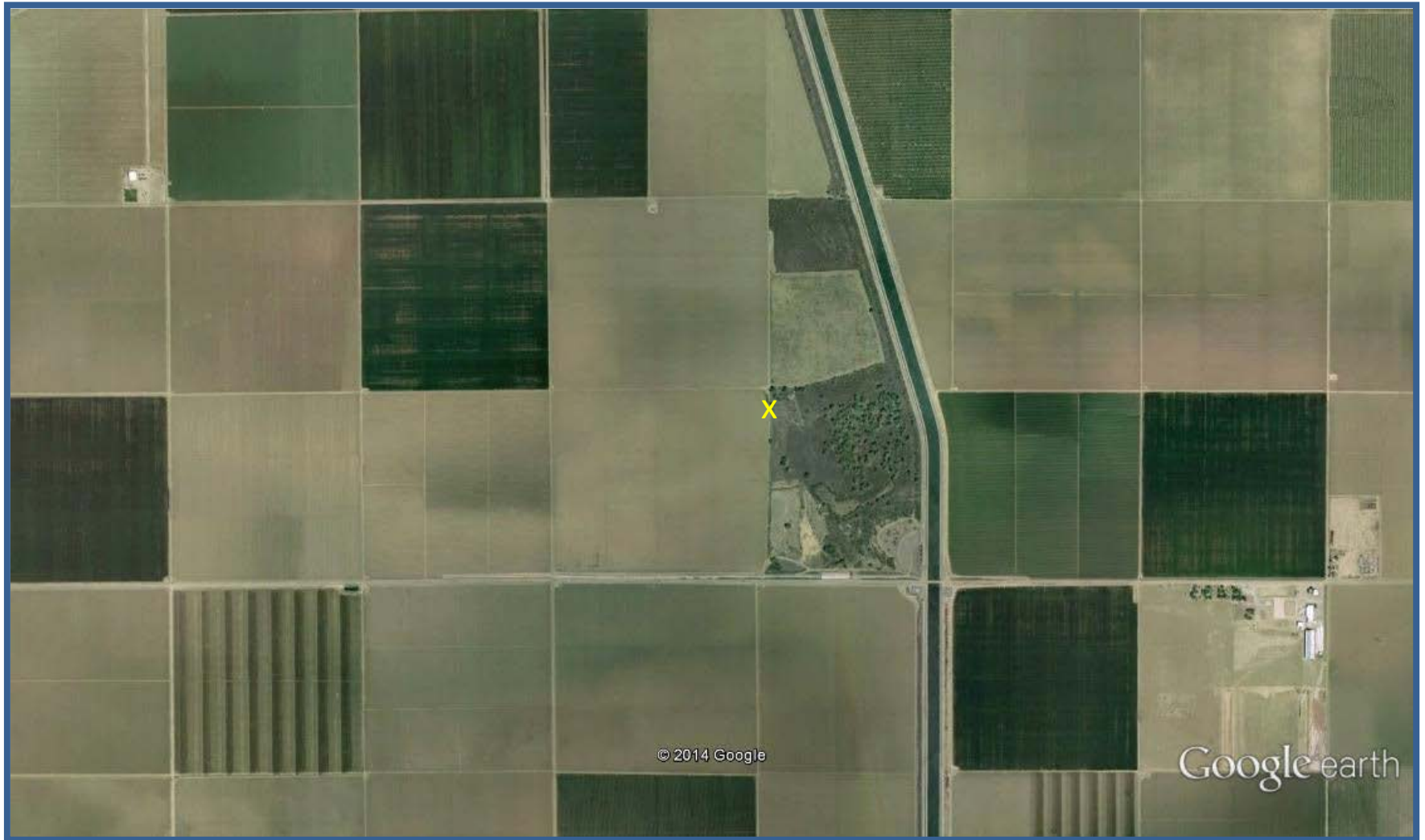
Firebaugh-Area



Five Points-Area



Huron-Area

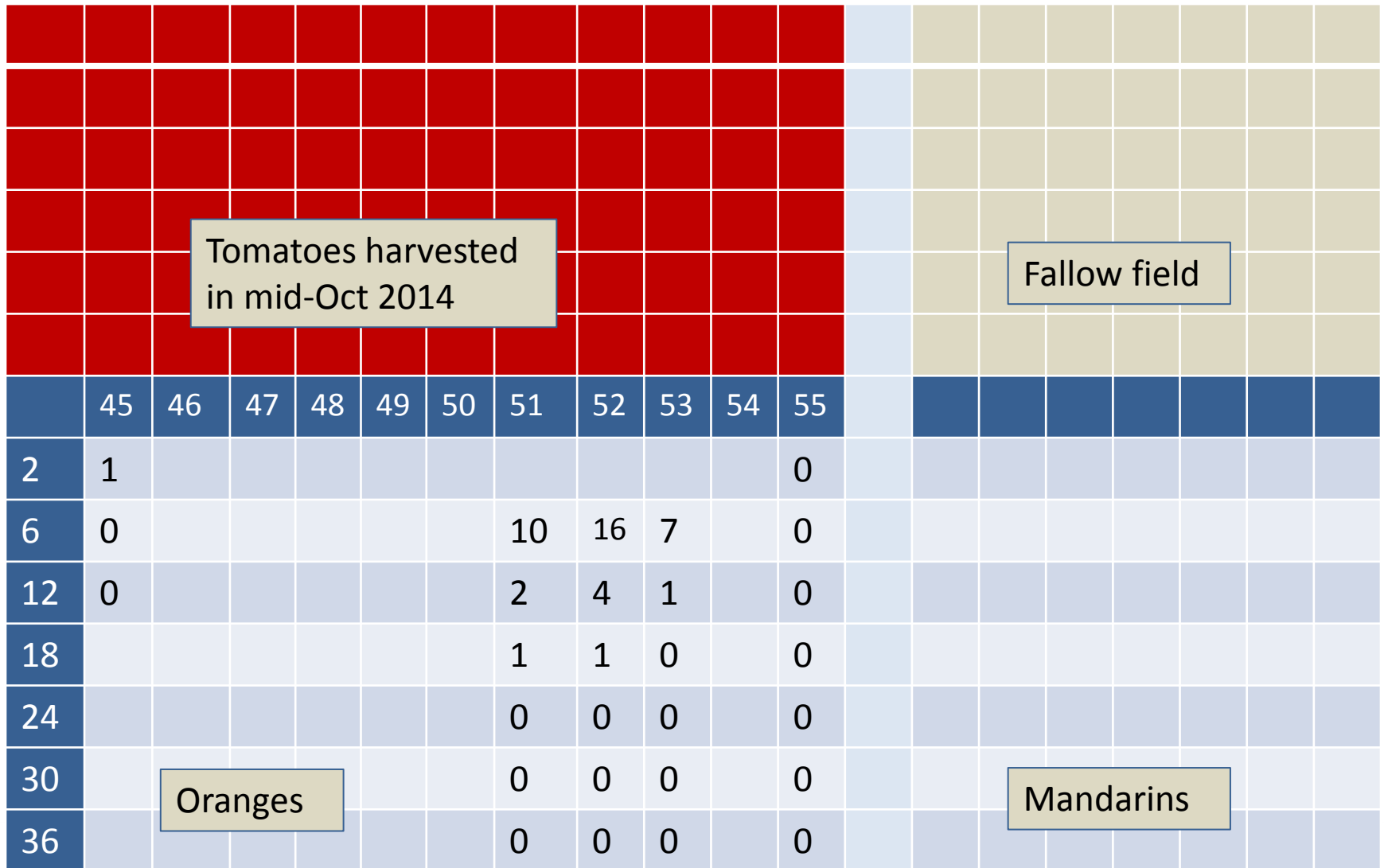


Stink Bug Detected in Leaf Litter

Fall 14



Overwintering site identified

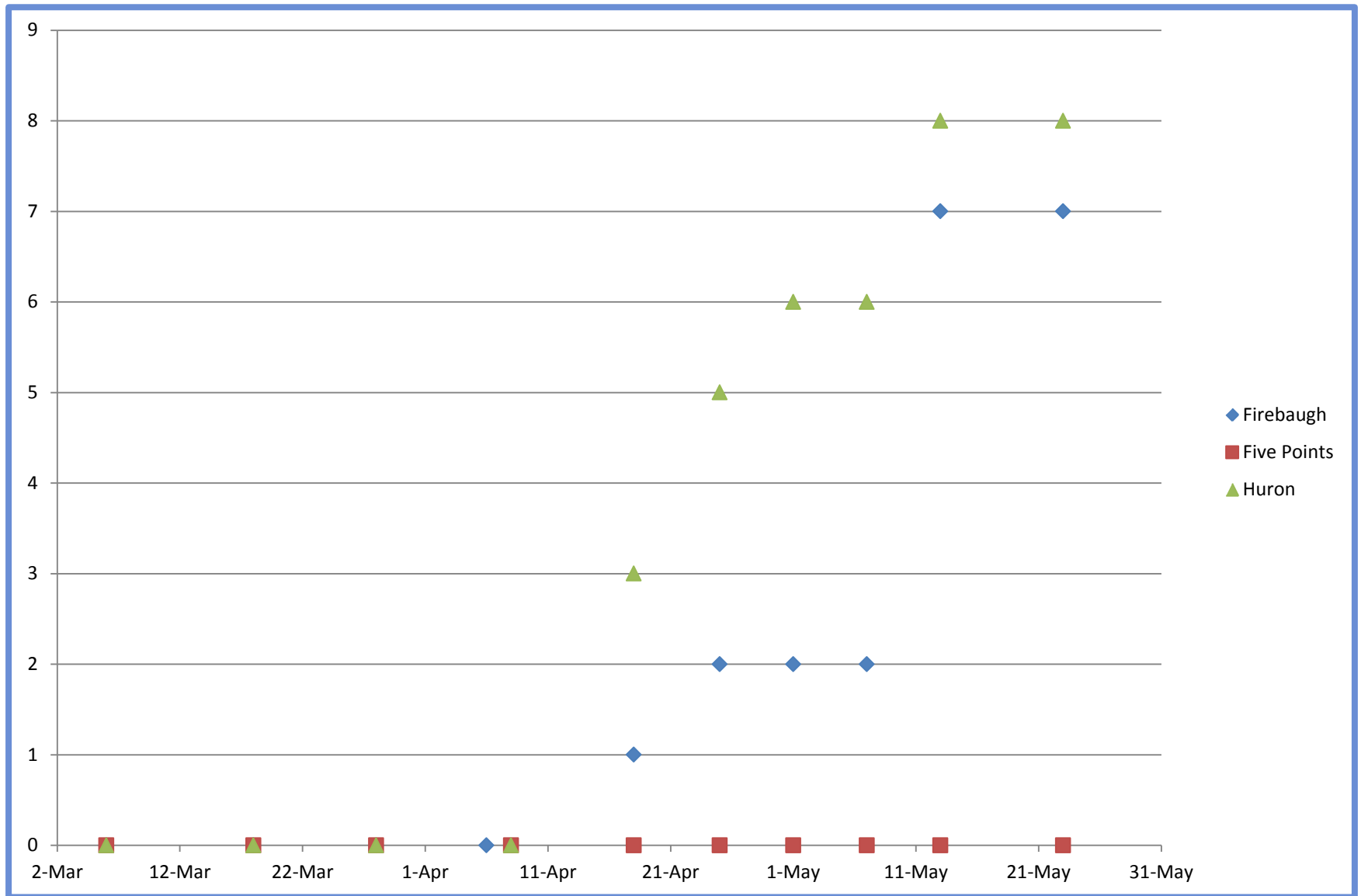


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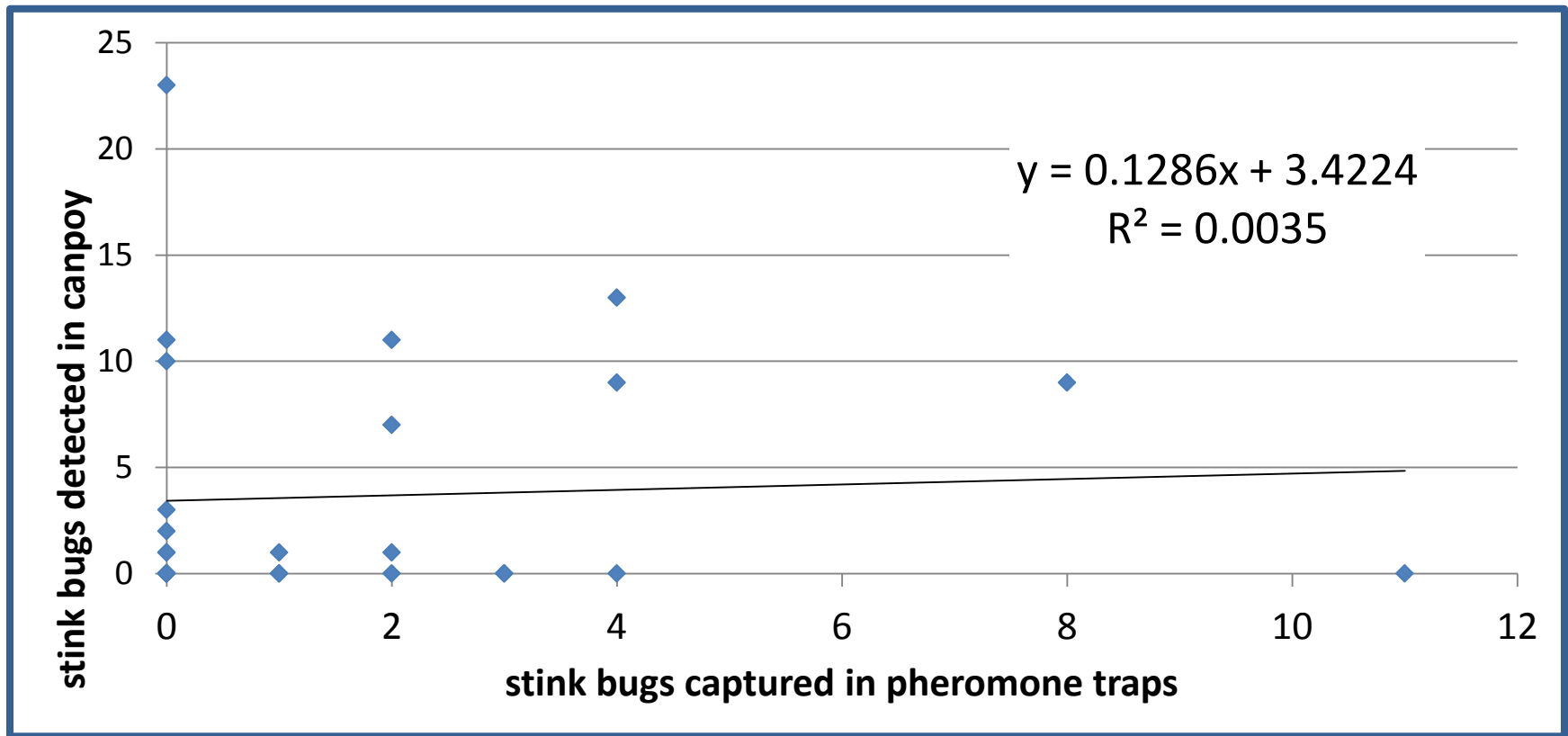


Sterling stink bug live trap

Trapping in High Risk Areas

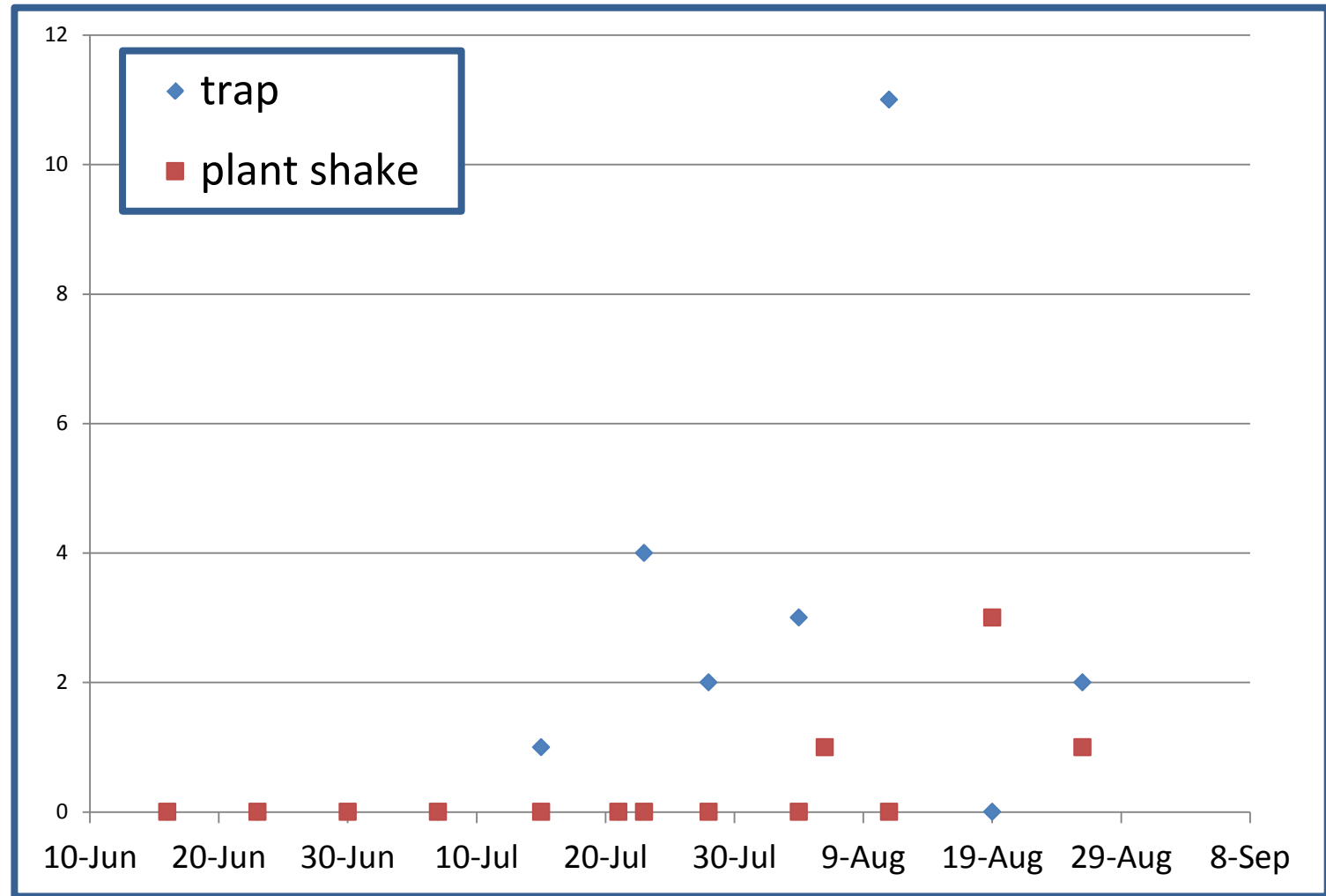


Trap/Canopy Stink Bug Detection



There was no apparent relationship between trap captures and canopy detection.

Trap/Canopy Detection at UC WSREC



Stink bugs were captured in traps before they were detected in the canopy, but later in population development, the captures in traps did not relate to the levels in the canopy.

Insecticide Trials (Efficacy and Programs)



		Fruit quality (%)				
Treatment	yield (t/a)	reds	greens	sunburn	rot	stink bug
Venom 70 SG 4 oz	39.24	60.83	12.44	10.01	9.99	6.72
Leverage 2.7 3.75 oz trap	40.82	73.46	5.31	4.25	9.52	7.47
Thionex 1 1/3 qts	45.80	74.35	6.54	4.34	5.33	9.41
Leverage 2.7 3.75 oz	40.84	55.88	10.09	9.83	13.86	10.34
Danitol 10.67 oz	37.40	66.04	9.84	4.92	8.49	10.71
Belay 4 oz + Warrior II 1.92 oz	41.80	69.46	5.76	5.36	7.36	12.05
Endigo CX 4.5 fl oz	37.22	59.62	15.77	4.45	7.29	12.87
Torac 21.0 fl oz	41.09	50.05	7.78	13.06	10.66	18.44
Warrior II 1.92 oz	37.00	60.67	8.72	5.73	6.41	18.48
Lannate SP 1 lb Assana 9.6 fl oz	47.52	58.43	14.55	2.46	6.00	18.56
Dibrom 8E 1.0 pts trap1	45.75	46.33	10.55	11.54	10.69	20.89
Endigo ZCX 4.5 fl oz	41.79	57.33	7.84	4.94	8.47	21.44
Dibrom 8E 1.0 pts	37.70	53.13	8.12	2.79	9.26	26.70
Dimethoate 1 pt	40.84	47.82	6.60	11.83	6.62	27.13
Untreated	38.91	52.84	7.02	7.46	7.30	25.38
LSD (P=0.05) ^s	8.440	15.935	7.305	8.425	6.346	12.357
CV (%)	14.33	18.89	56.04	85.95	52.37	52.64

Unless otherwise specified all applications were made on 8 and 29 Aug. Treatments followed by 'trap' were applied on 18 Jul after 1st capture. Assana was applied on 15 Aug in addition to the Lannate applications on 8 and 29 Aug, H5608 planted 21 May and harvested 15-17

Stink bug efficacy, yield and quality

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H5608 planted 21 May and harvested 15-17 Sep

Pre-Harvest Stink Bug Counts and Damage Evaluation



Stink bug efficacy, field evaluations

	Stink bug counts (per 4 ft)			Stink bug damage (0-10)		
Treatment	21-Aug	28-Aug	5-Sep	21-Aug	28-Aug	5-Sep
Venom 70 SG 4 oz	0.0	2.0	0.8	1.0	3.3	2.0
Leverage 2.7 3.75 oz trap	0.0	0.0	1.0	1.0	0.5	1.0
Thionex 1 1/3 qts	1.3	0.3	0.5	0.8	1.0	1.0
Leverage 2.7 3.75 oz	0.8	3.8	0.8	1.3	2.0	1.0
Danitol 10.67 oz	0.4	3.2	1.6	0.6	4.0	1.0
Belay 4 oz + Warrior II 1.92 oz ^v	1.5	0.5	1.3	1.5	1.5	1.0
Endigo CX 4.5 fl oz	0.5	3.0	3.3	1.0	2.0	2.0
Torac 21.0 fl oz	1.0	1.3	1.8	2.3	2.3	2.3
Warrior II 1.92 oz	0.8	1.3	1.0	1.5	1.5	1.0
Lannate SP 1 lb/Assana 9.6 fl oz	0.5	1.0	2.3	1.3	1.0	2.0
Dibrom 8E 1.0 pts trap	0.3	2.3	2.5	1.5	4.0	2.3
Endigo ZCX 4.5 fl oz	1.3	1.3	0.3	2.8	1.8	0.7
Dibrom 8E 1.0 pts	0.0	0.5	4.3	1.5	1.8	1.7
Dimethoate 1 pt	1.0	3.3	3.0	2.8	3.5	3.7
Untreated	1.3	0.5	4.0	4.5	2.8	3.3
LSD (P=0.05) ^t	NS ^s	3.05	3.23	1.93	2.24	1.39
CV (%)	149.46	133.74	120.69	80.74	71.74	55.45

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Venom 70 SG 4 oz	0.0	2.0	0.8	1.0	3.3	2.0
Leverage 2.7 3.75 oz trap	0.0	0.0	1.0	1.0	0.5	1.0
Thionex 1 1/3 qts	1.3	0.3	0.5	0.8	1.0	1.0
Leverage 2.7 3.75 oz	0.8	3.8	0.8	1.3	2.0	1.0
Danitol 10.67 oz	0.4	3.2	1.6	0.6	4.0	1.0
Belay 4 oz + Warrior II 1.92 oz ^v	1.5	0.5	1.3	1.5	1.5	1.0
Endigo CX 4.5 fl oz	0.5	3.0	3.3	1.0	2.0	2.0
Torac 21.0 fl oz	1.0	1.3	1.8	2.3	2.3	2.3
Warrior II 1.92 oz	0.8	1.3	1.0	1.5	1.5	1.0
Lannate SP 1 lb/Assana 9.6 fl oz	0.5	1.0	2.3	1.3	1.0	2.0
Dibrom 8E 1.0 pts trap	0.3	2.3	2.5	1.5	4.0	2.3
Endigo ZCX 4.5 fl oz	1.3	1.3	0.3	2.8	1.8	0.7
Dibrom 8E 1.0 pts	0.0	0.5	4.3	1.5	1.8	1.7
Dimethoate 1 pt	1.0	3.3	3.0	2.8	3.5	3.7
Untreated	1.3	0.5	4.0	4.5	2.8	3.3
LSD (P=0.05) ^t	NS ^s	3.05	3.23	1.93	2.24	1.39
CV (%)	149.46	133.74	120.69	80.74	71.74	55.45

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Stink Bug Programs: Yield and Quality

Treatment			Fruit character					
Injections into drip irrigation system buried to 10 in			Yield (tons/A)	red	grn	sun burn	rot	stink bug
Admire (17 Jul), Venom 6.0 oz (18 Aug)			36.5	49.4	9.44	3.32	4.52	33.33
Platinum75SG 3.7 oz (17 Jul), Venom 6.0 oz (18 Aug)			32.4	57.9	7.22	4.86	5.02	25.04
Untreated			37.8	53.3	9.89	2.41	2.91	36.08
Drip injection, LSD _{0.05}			NS	NS	NS	NS	NS	1.635
Foliar application								
17 Jul	7 Aug	27 Aug						
	Dibrom 8E 1.0 pts	Leverage 2.7 3.75 oz.	33.4	48.6	7.44	3.10	4.97	35.84
	Leverage 2.7 3.75 oz	Dimeth 4EL 1pt.	36.5	54.6	10.42	3.66	3.99	27.37
Leverage 2.7 3.75 oz			37.8	45.3	7.18	4.02	4.00	39.46
Untreated			34.6	49.4	10.35	3.33	3.64	33.26
Foliar application LSD _{0.05}			NS	NS	NS	NS	NS	NS
interaction			NS	NS	NS	NS	NS	NS
CV (%)			20.02	27.5	73.86	102.47	76.86	42.43

H5608 planted 21 May. Stink bug captured in traps 15 Jul; 1/3 plants on 5 Aug. Harvested 15-17 Sep

Stink Bug Program: In Field Evaluations

Treatment ^z			Stink bug densities ^y		Damage ^x	
Injections into drip irrigation system buried to 10 in			26 Aug	4 Sep	26 Aug	4 Sep
Admire (17 Jul), Venom 6.0 oz (18 Aug)			2.0	2.5	2.92	3.06
Platinum75SG 3.7 oz (17 Jul), Venom 6.0 oz (18 Aug)			4.0	1.8	2.08	2.81
Untreated			4.1	4.3	3.75	4.06
Drip injection, LSD _{0.05} ^w			NS ^v	1.41	NS	NS
Foliar treatments						
17 Jul	7 Aug	27 Aug				
	Dibrom 8E 1.0 pts	Leverage 2.7 3.75 oz.	3.2	3.1	2.08	3.50
	Leverage 2.7 3.75 oz	Dimeth 4EL 1pt.	4.8	1.7	0.67	2.33
Leverage 2.7 3.75 oz			3.5	3.8	2.75	3.58
Untreated			1.9	2.9	1.92	3.83
Foliar application LSD _{0.05}			NS	NS	NS	NS
interaction			NS	NS	NS	NS
CV (%)			90.67	116.02	67.36	44.70

Common name (example trade name)	Mode of action ¹	Selectivity ² (affected groups)	General predators ³	Parasites ³	Honey bees ⁴	Duration on natural enemies ⁵
oxamyl (Vydate)	1A	(insects, mites)	H	H	III	moderate
dimethoate	1B	(insects, mites)	H	H	I	long
esfenvalerate (Asana)	3A	(insect, mites)	M	H	I	moderate
beta-cyfluthrin (Baythroid)	3A	(insects, mites)	H	H	I	moderate
bifenthrin (Capture)	3A	(insects, mites)	H	H	I–III ⁹	long
lambda-cyhalothrin (Warrior)	3A	(plant bugs, beetles, caterpillars)	H	H	I	moderate
permethrin (Pounce,)	3A	(insects, mites)	H	H	I	long
fenpropathrin (Danitol)	3A	(insects, mites)	H	H	I	—
zeta-cypermethrin (Mustang Max)	3A	(insects, mites)	M	M	I	moderate
thiamethoxam, systemic (Plantinum)	4A	(sucking insects)	—	M	I	moderate
dinotefuran (Venom)	4A	(sucking insects)	L	—	—	—
acetamiprid (Assail)	4A	(sucking insects)	— ⁶	—	III	moderate
clothianidin (Belay)	4A	Lygus bugs, aphids	L	L	IV	short
imidacloprid, systemic (Admire Pro)	4A	(sucking insects)	L	—	II	—
imidacloprid, foliar	4A	(sucking insects)	—	H	II	short -mod
thiamethoxam, foliar (Actara)	4A	narrow (sucking insects)	M/H	M/H	I	moderate

Common name (example trade name)	Mode of action ¹	Selectivity ² (affected groups)	General predators ³	Parasites ³	Honey bees ⁴	Duration of impact to natural enemies ⁵
spinetoram (Radiant)	5	(caterpillars, thrips, whiteflies, aphids, scales, leafminers)	M ¹⁰	M/H	III	moderate ¹¹
emamectin benzoate (Proclaim)	6	(caterpillars)	—	—	III	—
Bacillus thuringiensis	11A	(caterpillars)	L	L	IV	short
abamectin (Agri-Mek)	6	(mites, leafminers)	L	M/H	II	moderate
pyriproxyfen (Knack)	7C	(aphids, whiteflies)	H ⁷	L	IV	short
pymetrozine (Fulfill)	9B	(aphids)	L	L	III	short
flonicamid (Beleaf)	9C	(plant bugs, fleahopper, aphids)	L	L	IV	short
novaluron (Rimon)	15	(caterpillars)	L	—	I	short
buprofezin (Courier)	16	(sucking insects, beetles)	H ⁷	L	IV	long
methoxyfenozide (Intrepid)	18	(caterpillars)	L	L	IV	none
indoxacarb (Avaunt)	22A	(caterpillars)	L	L	I	moderate
spiromesifen (Oberon)	23	(psyllids, mites, whiteflies)	—	—	—	—
spirotetramat (Movento)	23	(aphids, scale, psyllids, whiteflies)	L	L	—	short
chlorantraniliprole (Coragen)	28	(primarily caterpillars)	L	L/M	IV	short

Progress Toward Objectives

- Overwintering sites: Located in Fall 2014 singly or in groups up to 16 in leaf litter near late season tomatoes.
- Seasonal Development: Detection in pheromone-baited traps prior to detection in canopy.
- Insecticide comparisons: Other than Thionex all materials that performed better than the untreated control were neonicotinoids or pyrethroids.

Acknowledgements

- CTRI
- Peter Goodell: UC IPM Kearney Ag Center
- Frank Zalom : UC Davis Entomology
- Les Ehler : Retired UC Davis
- Managers and PCA's of large scale ag operations in Fresno-area
- West Side Research and Extension Center

Questions?

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Agriculture and Natural Resources

Cooperative Extension