INSECTICIDE TOXICITY DATA FROM VIRGINIA & RESEARCH IN 2011

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Host plant sampling - 2011

Green bean dip bioassays

- Insecticidal solution based on 100 gal / acre water output.
- Filter paper + one green bean were:
  - dipped in solution for 5 seconds.
  - Dried ½ hr under a fume hood.
  - Placed in a 9-cm Petri dish.
- 5 adults or 2nd to 3rd instars per dish.
- 4 Petri dishes per treatment for a total of 20 insects per bout.
- Mortality at 24, 48, and 72 hrs

Intoxication

- Insects were considered "intoxicated" or "down" if they could not right themselves.

2011 BMSB % Mortality – Pyrethroids Only

Insecticide	Product	Product Rate /Acre	# times tested	Average % Mortality (72 hr)	
				Nymphs (3rd instars)	Adults
Beta-Cyfluthrin	Baythroid XL	2.8 fl. oz	4	100	95
Bifenthrin	Bifenture 2EC	6.4 fl. oz	3	-	96
Bifenthrin	Bifenture 10DF	12.8 oz	6	100	94
Bifenthrin	Capture LFR	6.8 fl. oz	2	-	100
Cypermethrin	Up-Cyde 2.5 EC	5 fl. oz	3	100	60
Etofenprox	Trebon 280 g/l EC	8 fl. oz	2	100	95
Esfenvalerate	Asana XL	9 fl. oz	2	50	30
Fenpropathrin	Danitol 2.4EC	16 fl. oz	1	100	-
λ-cyhalothrin	Lambda-cy	3.84 fl. oz	3	79	49
λ-cyhalothrin	Warrior II	2.5 fl. oz	4	100	93
Permethrin	Permethrin 3.2EC	8 fl. oz	1	95	-
Permethrin	Perm-up 3.2 EC	8 fl. oz	4	95	100

2011 BMSB % Mortality – Combo Products

Insecticides	Product	Product Rate /Acre	# times tested	Average % Mortality (72 hr)	
				Nymphs (3rd instars)	Adults
beta cyfluthrin + Imidacloprid	Leverage 360	2.8 fl. oz	1	-	96
Bifenthrin + imidacloprid	Brigadier	9.85 fl. oz	1	-	100
Bifenthrin + acetamiprid	Bifenture 2EC + Assail 30SG	6.4 fl. oz + 4 oz	2	100	100
λ-cyhalothrin + Thiamethoxam	Endigo ZC	5.5 fl. oz	3	100	98

2011 BMSB % Mortality – Nicotinoids

Insecticide	Product	Product Rate/Acre	# times tested	Average % Mortality (72 hr)	
				Nymphs (3rd instars)	Adults
Acetamiprid	Assail 30SG	4 oz	4	70	49
Acetamiprid	Assail 70 WP	1.7 oz	4	100	33
Clothianidin	Belay	4 fl. oz	1	100	-
Dinotefuran	Scorpion 3.24	7.7 fl. oz	3	98	95
Dinotefuran	Venom 70SG	5.5 oz	2	68	100
Imidacloprid	Provado + NIS	8 fl. oz	3	50	26
Thiacloprid	Calypso + NIS	8 fl. oz	4	50	45
Thiamethoxam	Actara 50WG	5.5 oz	3	100	81

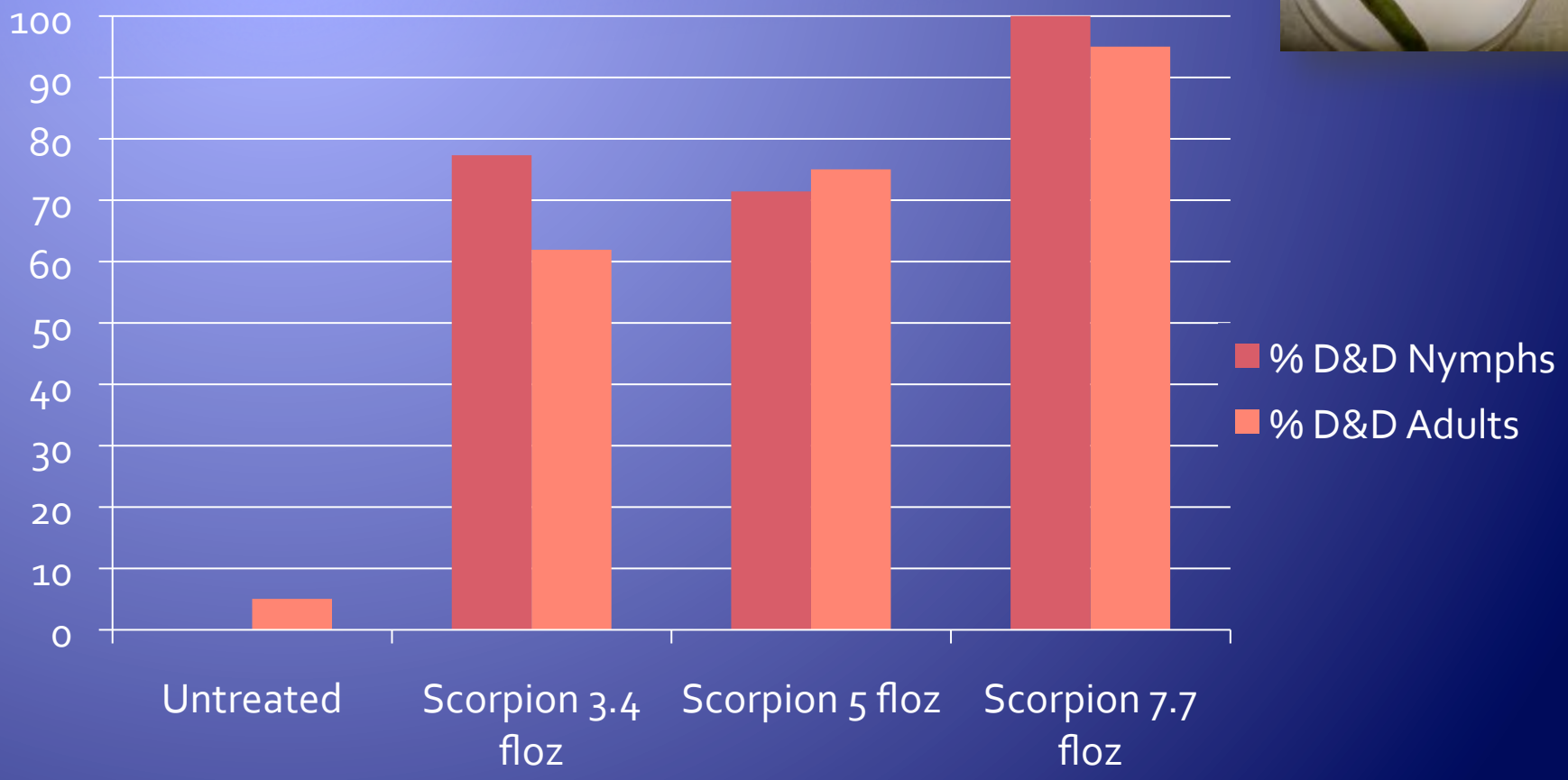
2011 BMSB % Mortality – Other Chemistries

Insecticide	Product	Product Rate/Acre	# times tested	Average % Mortality (72 hr)	
				Nymphs (3rd instars)	Adults
Acephate	Acephate 97UP	16 oz	4	100	34
Acephate	Orthene 97	16 oz	2	100	40
Carbaryl	Sevin XLR Plus	48 fl. oz	2	-	38
Endosulfan	Thionex 3EC	42.6 fl. oz	1	100	-
Flubendiamide	Belt SC	5 fl. oz	3	70	0
Methomyl	Lannate LV	40 fl. oz	3	-	75
Oxamyl	Vydate L	48 fl. oz	3	-	37

SCORPION™ 35SL Insecticide

(Dinotefuran)

Mortality after 72hr exposure to dipped green bean



Tomato whole-plant greenhouse bioassays

- MicroTom tomatoes in pots in the greenhouse
- Mesh bag with 5 bugs per plant after treatments
- 4 reps/trt
- Able to assess systemic products as drenches

Tomato whole-plant greenhouse bioassays – Adult BMSB

Treatment	% DEAD 3 DAT	% DEAD & INTOX 3 DAT
UTC	35	35
Scorpion (5 floz foliar)	50	100
Scorpion (7 floz foliar)	80	95
Scorpion (9 floz foliar)	90	100
Scorpion (12 floz foliar)	90	100
Scorpion (16 floz foliar)	95	100
Scorpion (10.5 floz soil)	65	100
Baythroid XL (2.8 floz)	50	55

Concentration was based on 30 gal of spray / acre
All treatments also received 0.25% v/v Wetcit.

Tomato whole-plant greenhouse bioassays – 48 hr after application (nymphs)

Insecticide	Product Rate /Acre	ml of product/ 500 ml	72 hr mortality		# feeding punctures on tomatoes after 72 hrs
			% Dead	% Dead and down	
Control	-	-	85.0	85.0	18
Scorpion 35SL	5.0 fl. oz	0.65	100.0	100.0	6
Scorpion 35SL	7.0 fl. oz	0.91	95.0	95.0	3
Scorpion 35SL	9.0 fl. oz	1.17	100.0	100.0	7
Scorpion 35SL	12.0 fl. oz	1.56	95.0	95.0	11
Scorpion 35SL	16.0 fl. oz	2.08	100.0	100.0	0
Scorpion 35SL (soil)	10.5 fl. oz (drench)	1.37	95.0	100.0	5
Bifenture 10DF	3.84 oz	0.50	100.0	100.0	20

24 hr mortality and feeding injury of BMSB nymphs on dipped whole cherry tomatoes

Cherry tomato dip bioassay – 24 hr after application (nymphs)

Insecticide	Product Rate /Acre	ml of product/ 500 ml	24 hr mortality		# feeding punctures on tomatoes 24 hrs
			% Dead	% Dead and down	
Control	-	-	15.0	15.0	10
Scorpion 35SL	5.0 fl. oz	0.65	80.0	85.0	0
Scorpion 35SL	7.0 fl. oz	0.91	65.0	80.0	0
Scorpion 35SL	9.0 fl. oz	1.17	75.0	95.0	0
Scorpion 35SL	12.0 fl. oz	1.56	90.0	90.0	0
Scorpion 35SL	16.0 fl. oz	2.08	90.0	95.0	0
Scorpion 35SL (soil)	10.5 fl. oz (drench)	1.37	85.0	90.0	0
Bifenture 10DF	3.84 oz	0.50	95.0	100.0	0

Rimon & Dimilin Bioassays

- Novaluron and diflubenzuron bioassays
- MOA: Inhibitors of chitin biosynthesis, type o
- BMSB egg mortality from topical application
- Nymphal mortality & molting from dipped bean
- Effects on adults and reproduction via ingestion

Rimon & Dimilin Bioassays – Egg mortality

- NTC: untreated food and water
- Dimlin 2L @ 16 fl. oz/Acre (1.25 mL/L)
- Rimon 0.83 @ 50 fl. oz/Acre (3.91 mL/L)

Treatment	% of eggs hatching after treatment		
	Trial 1	Trial 2	Trial 3
Water	78.6	89.0	45.5
Dimilin	69.6	60.7	69.6
Rimon	79.2	86.9	76.4

Rimon & Dimilin Bioassays – Nymphal mortality (dipped beans & carrot; 2nd instars)

Trial 1

Treatment	# nymphs	# molting	# dying	% mortality
Water	39	19	19	48.7
Dimilin	43	0	41	95.3
Rimon	40	0	40	100.0

Trial 2

Treatment	# nymphs	# molting	# dying	% mortality
Water	41	12	30	73.1
Dimilin	40	3	39	97.5
Rimon	40	2	40	100.0

Rimon & Dimilin : Adult Bioassays

- New adults fed exclusively on dipped beans and carrot and treated water wick
- Preliminary data show no effect on egg viability from exposed females
- Rimon (novaluron) is causing adult mortality

Field efficacy trials with peppers

- Field insecticide trials on bell peppers at Virginia Tech Kentland Research Farm
- 208 plots of peppers have been planted to evaluate 48 different insecticide treatments

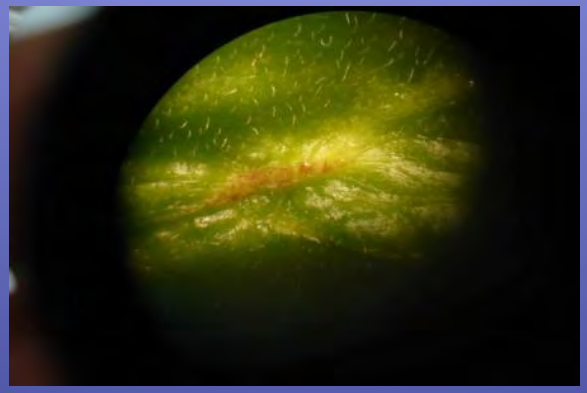
Damage potential in cotton

- The bug probably has not encountered cotton yet in the U.S.
- Virginia will probably be the first state to assess this pest potential.










Okra images courtesy of Barbara Leach

Damage potential in cotton