Ohio Sweet Corn Insecticide Trial 2014

Preliminary report 10/6/2014
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Sweet corn hybrid: 'Garrison'

Planting date: 7 July 2014

Sprays were applied by a "HiBoy"-style Spider sprayer, 27.8 gallons per acre at 50 PSI, with ConeJet-18 nozzles on drop pipes directed at the ear zone in the center two rows per plot.

Rates:

Warrior II 2.08CS (lambda-cyhalothrin), 1.92 fl o/A
Blackhawk 36WG (spinosad), 3.2 oz/A + NIS 0.25%
Asana XL 0.66EC (esfenvalerate), 5.8 fl oz/A
Radiant 1SC (spinetoram), 6 fl oz/A + NIS 0.25%
IKI-3106 50SL (cyclaniliprole), 11 oz/A and 16.4 oz/A
Hero 1.24EC (bifenthrin + zeta-cypermethrin), 6.4 fl oz/A + NIS 0.25%
Lannate LV 2.4WSL (methomyl), 24 fl oz/A

Treatments:

Treatment	spray 1	spray 2	spray 3	spray 4	spray 5	spray 6	spray 7
1: pyrethroid	Warrior II*	Warrior	Warrior	Warrior*	Warrior*	Warrior	Warrior
2: Blackhawk	Asana* + Blackhawk*	Blackhawk	Blackhawk	Hero	Hero	Lannate	Lannate
3: Radiant	Asana* + Radiant*	Radiant	Radiant	Hero	Hero	Lannate	Lannate
4: IKI low (11 oz/A)	IKI-3106	IKI-3106	IKI-3106	IKI-3106*	IKI-3106*	IKI-3106	IKI-3106
5: IKI high (16.4 oz/A)	IKI-3106	IKI-3106	IKI-3106	IKI-3106*	IKI-3106*	IKI-3106	IKI-3106
6: untreated	none	none	none	none	none	none	none

* Applications in sprays 1, 4, and 5 that are marked by * mistakenly had 20% more water in the tank than intended, thus the insecticides were applied at a rate 17% less than intended.

RESULTS

Evaluation of insect damage to sweet corn ears at harvest on 9/26/2014, S. Charleston, Ohio.

Treatment	% of husked ears with no worm damage	% of husked ears with worm-damaged kernels[a,b]	% of ears with no worm damage to kernels but worm damage on husks, silks, or shanks[a,b]
Radiant	19.5	80.5 BC	0.0 B
Blackhawk	15.0	82.5 BC	2.5 B
Warrior	7.5	82.5 C	10.0 A
IKI-3106 11 oz	2.5	97.5 AB	0.0 B
IKI-3106 16.4 oz	0.0	97.5 AB	2.5 B
Untreated control	0.0	100.0 A	0.0 B
ANOVA treatment effect	*P = 0.0561*	*P = 0.0431*	*P=0.0415*

[a] Within each column, means followed by same letter are not significantly different (*P*>0.05); mean separations by LSD.

[d] Values shown are actual percentages but ANOVA based on transformed values.

Evaluation of insect damage to sweet corn kernels at harvest on 9/26/2014, S. Charleston, Ohio.

Treatment	Number of damaged kernels per ear[a]			
	Tip third of ear	Middle third of ear	Butt third of ear	Total
Radiant	16 BC	0.0 B	0.3 B	17 B
Blackhawk	15 BC	1.3 AB	0.5 B	16 B
Warrior	11 C	0.6 B	0.3 B	12 B
IKI-3106 11 oz	21 B	0.0 B	0.0 B	21 B
IKI-3106 16.4 oz	17 BC	0.1 B	0.1 B	17 B
Untreated control	34 A	2.7 A	2.2 A	39 A
ANOVA treatment effect	*P=0.0024*	*P = 0.0203*	*P = 0.0521*	*P=0.0013*

[a] Within each column, means followed by same letter are not significantly different (*P*>0.05); mean separations by LSD.

Evaluation of insect damage to sweet corn kernels at harvest on 9/26/2014, S. Charleston, Ohio.

Treatment	Length of damage (cm)[a]		
	From tip end	From butt end	Total
Radiant	2.1 B	0.05 B	2.1 B
Blackhawk	2.0 B	0.48 B	2.4 B
Warrior	2.5 B	0.02 B	2.5 B
IKI-3106 11 oz	2.6 B	0.10 B	2.6 B
IKI-3106 16.4 oz	2.5 B	0.02 B	2.5 B
Untreated control	4.8 A	1.25 A	6.1 A
ANOVA treatment effect	*P=0.0004*	*P=0.0018*	*P<0.0001*

[a] Within each column, means followed by same letter are not significantly different (*P*>0.05); mean separations by LSD.

Evaluation of insect larvae in sweet corn ears at harvest on 9/26/2014, S. Charleston, Ohio.

Treatment	Number of larvae per ear						
	Corn earworm[a]				European corn borer	Fall army-worm	Total[a]
	Small	Medium	Large	Total			
Radiant	0.00 C	0.02	0.4 B	0.4 C	0.05 B	0	0.4 C
Blackhawk	0.02 C	0.15	0.4 B	0.6 C	0.00 B	0	0.6 C
Warrior	0.02 C	0.08	0.4 B	0.5 C	0.10 B	0	0.6 C
IKI-3106 11 oz	0.18 B	0.32	0.9 A	1.4 B	0.08 B	0	1.5 B
IKI-3106 16.4 oz	0.10 BC	0.42	0.7 A	1.2 B	0.00 B	0	1.2 B
Untreated control	0.40 A	0.65	0.8 A	1.8 A	0.92 A	0	2.8 A
ANOVA treatment effect	*P<0.0001*	*P = 0.0009*	*P=0.0002*	*P<0.0001*	*P<0.0001*	-	*P<0.0001*

[a] Within each column, means followed by same letter are not significantly different (*P*>0.05); mean separations by LSD.

Insects other than caterpillars in ears .

Treatment	Number of ears with corn leaf aphid during early silk (9/7/2014)	Number of ears with corn leaf aphid At harvest (9/26/2014)
Radiant	0 B	0.02 C
Blackhawk	0 B	0.15 BC
Warrior	0 B	0.08 C
IKI-3106 11 oz	0 B	0.28 AB
IKI-3106 16.4 oz	0.05 A	0.32 A
Untreated control	0 B	0.05 C
ANOVA treatment effect	*P=0.0450*	*P=0.0019*

[a] Within each column, means followed by same letter are not significantly different (*P*>0.05); mean separations by LSD.

Silk clipping damage on 9/7/2014, after the first two insecticide sprays; S. Charleston, Ohio.

Treatment	Insecticide applied by time of evaluation	% of silk clipped[a,b]	Rating of silk clipping (scale 0 to 4)[c]	Number of beetles per ear[a]					Number of predators per ear[a]	
				Western corn rootworm	Northern corn rootworm	Southern corn rootworm	Japanese beetle	total	*Orius*	Lady beetles
Radiant	Radiant twice, Asana once	8.1% B	0.3 B	0.1 C	0.02	0	0.02	0.10 BC	0.3	0
Blackhawk	Blackhawk twice, Asana once	11.9% AB	0.5 A	0.1 BC	0.02	0	0	0.10 BC	0.3	0
Warrior	Warrior, twice	9.4% B	0.4 B	0.0 C	0.02	0	0	0.02 C	0.4	0
IKI-3106 11 oz	IKI-3106 11 oz, twice	11.2% AB	0.4 B	0.2 BC	0.02	0	0	0.2 BC	0.5	0.02
IKI-3106 16.4 oz	IKI-3106 16.4 oz, twice	6.9% B	0.3 B	0.2 B	0	0	0	0.2 B	0.4	0.05
Untreated control	(none)	18.8% A	0.8 A	0.6 A	0	0.02	0	0.6 A	0.3	0.05
ANOVA treatment effect		*0.0344*	*0.0097*	*<0.0001*	*0.7716*	*0.4509*	*0.4509*	*0.0003*	*0.7028*	*0.4971*

[a] Within each column, means followed by same letter are not significantly different (*P*>0.05); mean separations by LSD.

[b] Values shown are actual percentages but ANOVA based on transformed values.

[c] Silk clipping rating: 0 = none, 1 = light (25%), 2 = moderate (50%), 3 = heavy (75%), 4 = extreme (100%).

Pheromone trap catches in sweet corn trial, S. Charleston, Ohio, 2014.

Date	Number of moths			Notes
	Corn earworm	European corn borer	Fall armyworm	
15-Jul	0	0	5	
18-Jul	0	0	4	
21-Jul	0	0	8	
25-Jul	0	0	7	
28-Jul	0	0	2	
31-Jul	0	0	1	
14-Aug	0	1	5	
19-Aug	6	0	1	
26-Aug	8	0	13	
29-Aug	7	0	-	
2-Sep	17	0	-	Spray 1 on 9/4
5-Sep	14	0	36	Spray 2 on 9/7
10-Sep	25	0	0	Spray 3 on 9/10
13-Sep	44	0	0	Spray 4 on 9/13
16-Sep	10	0	0	Spray 5 on 9/16
19-Sep	0	0	0	Spray 6 on 9/19
22-Sep	2	0	0	Spray 7 on 9/22
				Harvest on 9/26