

## EVALUATION OF SOIL APPLIED AND SEED TREATMENT INSECTICIDES AND YIELDGARD® CORN ROOTWORM TECHNOLOGY FOR CONTROL OF CORN ROOTWORM LARVAE, 2005.

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Three trials were established in 2005 to evaluate a YieldGard® Rootworm Hybrid (Dekalb DKC60-05 RR2/YGRW) and its isoline (Dekalb DKC59-08) (treated and untreated with insecticides) for their efficacy against corn rootworm larvae. Two trials were conducted at the Western Agricultural Research Station near South Charleston, OH and one trial was conducted at the Northwest Agricultural Research Station near Hoytville, OH.

Trial 1. The plots were planted at the Western in an area that was in field corn in 2004. The insecticides were applied at planting on 5 May to two rows (30 inch spacing) by 145 ft long plots arranged in a RCBD with four replicates per plot. All of the insecticide treatments were applied to the corn hybrid Dekalb DKC59-08. Five granular insecticides (Aztec 2.1G, Defcon 2.1G, Force 3G, Fortress 2.5G and Lorsban 15G) were applied either in-furrow (IF) or T-banded (TB) with a modified Noble applicator that was calibrated to deliver the desired rate. Two granular insecticides (Aztec 4.67G and Fortress 5G) were placed IF with a SmartBox metering system calibrated to deliver the desired rate. The liquid insecticides Capture 2EC and Lorsban 4E were applied as a TB with a CO<sub>2</sub> sprayer using a TeeJet 80067 nozzle calibrated to deliver 5 gal/ace. The seed treatment insecticides, Cruiser 5FS and Poncho 1250, were commercially applied to the seed before planting.

Trial 2. These plots were planted at the Western in an area that was planted to field corn in early June, 2004. The insecticides were applied at planting on 10 May to two rows (30 inch spacing) by 70 ft long plots arranged in a RCBD with four replicates per plot. All of the insecticide treatments were applied to the corn hybrid Dekalb DKC59-08. Five granular insecticides (Aztec 2.1G, Defcon 2.1G, Force 3G, Fortress 2.5G and Lorsban 15G) were applied either in-furrow (IF) or T-banded (TB) with a modified Noble applicator that was calibrated to deliver the desired rate. Two granular insecticides (Aztec 4.67G and Fortress 5G) were placed IF with a SmartBox metering system calibrated to deliver the desired rate. The liquid insecticides Capture 2EC and Lorsban 4E were applied as a TB with a CO<sub>2</sub> calibrated sprayer using a TeeJet 800067 nozzle calibrated to deliver 5 gal/ace. The seed treatment insecticides, Cruiser 5FS and Poncho 1250, were commercially applied to the seed before planting.

Trial 3. These plots were planted at the Northwest in an area that was in field corn in 2004. The insecticides were applied at planting on 28 April to four rows (30 inch spacing) by 80 ft long plots arranged in a RCBD with four replicates per plot. All of the insecticide treatments were applied to the corn hybrid Dekalb DKC59-08. The granular insecticide Force 3G was applied in a T-band (TB) with a modified Noble applicator that was calibrated to deliver the desired rate. The seed treatment insecticides, Cruiser 5FS and Poncho 1250, were commercially applied to the seed before planting.

Rootworm feeding injury was evaluated in all trials by randomly digging 5 roots per replicate for each treatment. Roots were washed, examined for corn rootworm larval feeding injury and rated in accordance with the 0-3 Node Injury Scale. Yields were obtained by machine harvesting the plots.

### **Results:**

Results from trial 1 are shown in Table 1. There was no significant difference in stand among any of the treatments or the untreated check. The rootworm injury was very light with the untreated check having a root rating of 0.24. All of the treatments had significantly lower root rating as compared to the untreated check. Yields were based on 3 replications because of severe stalk breakage in replication 1. There were significant differences in yield among the treatments.

Results from trial 2 are shown in Table 2. There was no significant difference in stand among any of the treatments or the untreated check. The rootworm injury in this trial was slightly higher than in trial 1 but was still low with

pressure in the untreated check having a rating of 0.47. There were significant differences in yield among the treatments and between some treatments and the untreated check.

Results from trial 3 are shown in Table 3. There were significant differences in stand among the treatments. Rootworm injury was very low in this trial with the untreated check having a root rating of 0.08. There were no significant differences in yield among the treatments.

**Table 1. Evaluation of a YGRW Hybrid, Seed Applied and Granular & Liquid Insecticides for Corn Rootworm Control, OARDC Western Agricultural Research Station, 2005.**

Treatment	Rate	Placement <sup>a</sup>	Plants/100 Row Feet	Node-Injury Scale	Yield <sup>b</sup> (bu/A)
Aztec 2.1G	6.7 oz/1000 row ft	TB-NB	156.50 a	0.08 ab	124.9 cd
Aztec 4.67G	3 oz/1000 row ft	IF-SB	155.75 a	0.09 ab	125.8 cd
Capture 2EC	0.37 fl oz/1000 row ft	TB-NZ	157.50 a	0.13 b	138.4 abcd
Cruiser 5FS	1.25 mg ai/seed	Seed	159.50 a	0.13 b	136.9 abcd
Defcon 2.1G	6.7 oz/1000 row ft	TB-NB	159.75 a	0.08 ab	139.2 abc
Defcon 2.1G	6.7 oz/1000 row ft	IF-NB	152.75 a	0.09 ab	130.3 bcd
Force 3G	4 oz/1000 row ft	TB-NB	158.50 a	0.09 ab	142.2 abc
Fortress 2.5G	7.3 oz/1000 row ft	IF-NB	158.00 a	0.08 ab	146.2 a
Fortress 5G	3.7 oz/1000 row ft	IF-SB	163.00 a	0.07 ab	130.1 bcd
Lorsban 15G	8 oz/1000 row ft	TB-NB	157.75 a	0.09 ab	124.7 d
Lorsban 4E	2.4 fl oz/1000 row ft	TB-NZ	161.00 a	0.12 ab	142.3 ab
Poncho 1250	1.25 mg ai/seed	Seed	163.25 a	0.11 ab	142.7 ab
YGRW			159.50 a	0.06 a	129.1 bcd
Untreated			157.25 a	0.24 c	134.4 abcd

Means in a column followed by the same letter are not significantly different ( $P = 0.05$ ).

<sup>a</sup> TB-NB, T-band through Noble unit; IF-NB, In-furrow through Noble unit; TB-SB, T-band through SmartBox; IF-SB, In-furrow through SmartBox; TB-NZ, T-band through Nozzle.

<sup>b</sup> Yield based on three replications per treatment because of severe stalk breakage in replication 1.

**Table 2. Evaluation of a YGRW Hybrid, Seed Applied and Granular & Liquid Insecticides for Corn Rootworm Control, OARDC Western Agricultural Research Station, 2005.**

Treatment	Rate	Placement <sup>a</sup>	Plants/50 Row Feet	Node-Injury Scale	Yield (bu/A)
Aztec 2.1G	6.7 oz/1000 row ft	TB-NB	84.00 a	0.08 a	142.4 bcd
Aztec 4.67G	3 oz/1000 row ft	IF-SB	80.00 a	0.08 a	146.6 bcd
Capture 2EC	0.37 fl oz/1000 row ft	TB-NZ	78.75 a	0.10 a	139.2 cd
Cruiser 5FS	1.25 mg ai/seed	Seed	80.75 a	0.11 a	151.1 bc
Defcon 2.1G	6.7 oz/1000 row ft	TB-NB	80.25 a	0.09 a	145.0 bcd
Defcon 2.1G	6.7 oz/1000 row ft	IF-NB	82.50 a	0.11 a	144.9 bcd
Force 3G	4 oz/1000 row ft	TB-NB	81.00 a	0.09 a	146.8 bcd
Fortress 2.5G	7.3 oz/1000 row ft	IF-NB	80.75 a	0.07 a	144.9 bcd
Fortress 5G	3.7 oz/1000 row ft	IF-SB	80.00 a	0.07 a	154.5 ab
Lorsban 15G	8 oz/1000 row ft	TB-NB	80.00 a	0.08 a	147.8 bc
Lorsban 4E	2.4 fl oz/1000 row ft	TB-NZ	78.75 a	0.06 a	148.6 bc
Poncho 1250	1.25 mg ai/seed	Seed	79.50 a	0.08 a	143.5 bcd
YGRW			80.75 a	0.04 a	166.3 a
Untreated			78.75 a	0.47 b	132.2 d

Means in a column followed by the same letter are not significantly different ( $P = 0.05$ ).

<sup>a</sup> TB-NB, T-band through Noble unit; IF-NB, In-furrow through Noble unit; TB-SB, T-band through SmartBox; IF-SB, In-furrow through SmartBox; TB-NZ, T-band through Nozzle.

**Table 3. Evaluation of a YGRW Hybrid, Seed Applied and a Granular Insecticide for Corn Rootworm Control, OARDC Northwest Agricultural Research Station, 2005.**

Treatment	Rate	Placement <sup>a</sup>	Plants/50 Row Feet	Node-Injury Scale	Yield (bu/Acre)
Cruiser 5FS	1.25 mg ai/seed	Seed	78.75 bc	0.04	157.1 a
Force 3G	4 oz/1000 row ft	TB-NB	83.75 a	0.05	158.3 a
Poncho 1250	1.25 mg ai/seed	Seed	80.25 ab	0.06	157.0 a
YGRW			75.75 bc	0.05	165.3 a
Untreated			75.25 c	0.08	158.8 a

Means in a column followed by the same letter are not significantly different ( $P = 0.05$ ).

<sup>a</sup> TB NB = T-band through Noble unit