

EVALUATION OF YIELDGARD ROOTWORM TECHNOLOGY AND INSECTICIDES FOR CONTROL OF CORN ROOTWORM LARVAE, 2006.

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A trial was established in 2006 to evaluate a YieldGard Rootworm Hybrid (Dekalb DKC61-68 (RR2/YGRW)) compared to its isoline (Dekalb DKC61-72 (RR2)) for their efficacy against corn rootworm larvae. The YGRW hybrid was treated with Poncho 250 for secondary pest control and the isoline was not treated with Poncho 250. The trial was conducted at the OARDC Western Agricultural Research Station near South Charleston, Ohio. Corn was planted with a two row John Deere 7000 MaxEmerge planter set to plant 30,200 seeds per acre.

The plots were planted in an area that had been planted to field corn in early June 2005. The insecticides were applied at planting on 28 April to two rows (30 inch spacing) by 90 ft long plots arranged in a RCBD with four replicates per plot. All of the insecticide treatments were applied to the corn hybrid Dekalb DKC61-72 and it was also the hybrid used for the untreated. Four granular insecticides (Aztec 2.1G, Defcon 2.1G, Force 3G and Saurus) 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 LFR and Lorsban 4E were applied as a TB with a CO₂ calibrated sprayer using a TeeJet 800067 nozzle calibrated to deliver 5 gal/ace. The liquid insecticide Regent 4SC was applied as an IF with a CO sprayer using a micro-tube calibrated to deliver 5 gal/acre. 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.

Results:

Results are shown in Table 1. The rootworm injury in this trial was very heavy with the untreated averaging 1.81. There were significant differences in root rating among the treatments and all of the treatments had significantly less root injury as compared to the check. Yields were determined by machine harvesting the two rows on 3 Nov and the weight per plot was converted to bushels per acre at 15% moisture. Percent lodging was based on the number of plants that were “goose-necked” or root lodged plants (plants leaning at a 45° or greater angle) per 50 plants from each of the two rows. All of the treatments had statistically less lodging as compared to the untreated. The YieldGard rootworm hybrid had statistical higher yields than the insecticide treated and untreated plots. There were statistical differences in yield among the treated plots.

Table 1. Evaluation of a YieldGard Rootworm Hybrid and Insecticides for Corn Rootworm Control, OARDC Western Agricultural Research Station, 2006.

Products ^a	Rate of Application	Placement ^b	Node-Injury Scale (0-3) ^c	% Consistency ^d	% Lodging ^e	Yield (bu/acre)
Aztec 2.1G	6.7 oz/1000 row ft	IF-NB	0.63 abcd	80	0.00 a	199.3 bcd
Aztec 2.1G	8 oz/1000 row ft	IF-NB	0.67 abcde	70	0.00 a	205.0 bcd
Aztec 4.67G	3 oz/1000 row ft	IF-SB	0.56 abcd	80	0.00 a	200.0 bcd
Capture LFR	0.49 fl oz/1000 row ft	TB-NZ	0.81 de	55	0.25 b	208.3 b
Cruiser 5FS	1.25 mg ai/seed	Seed	1.31 f	20	2.00 bc	206.0 bcd
Defcon 2.1G	6.7 oz/1000 row ft	TB-NB	0.37 abc	100	0.00 a	192.5 bcd
Defcon 2.1G	6.7 oz/1000 row ft	IF-NB	0.73 cde	65	0.00 a	193.8 bcd
Force 3G	4 oz/1000 row ft	TB-NB	0.38 abc	85	0.00 a	208.5 b
Fortress 5G	3.7 oz/1000 row ft	IF-SB	0.33 ab	85	0.00 a	200.6 bcd
Lorsban 4E	2.4 fl oz/1000 row ft	TB-NZ	0.71 bcde	55	3.50 c	198.7 bcd
Poncho 1250	1.25 mg ai/seed	Seed	1.03 ef	25	0.75 bc	206.4 bc
Regent 4SC	0.24 fl oz/1000 row ft	IF-MT	1.26 f	15	1.75 bc	190.0 bcd
Saurus	8 oz/1000 row ft	TB-NB	0.31 a		0.00 a	185.9 d
Saurus	8 oz/1000 row ft	IF-NB	0.78 cd		0.50 b	187.3 cd
Dekalb DKC61-68 (RR2/YGRW)		Transgenic Seed	0.46 abcd	75	0.00 a	229.9 a
Untreated			1.81 g	15	13.25 d	186.2 d

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

^a All of the insecticide products were applied to Dekalb DKC61-72 (RR2) and it was the hybrid used for the untreated.

^b 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, IF-MT, In-furrow through a micro-tube.

^c Root ratings based on 0-3 Node Injury Scale, where 0.00 = no damage to the root system, 1.00 = one node (or the equivalent of one node) removed from the root system, 2.00 = two nodes or the equivalent removed from the root system and 3.00 = three nodes or the equivalent removed from the root system.

^d Percent consistency is the percentage of roots have a rating < 1.0 on the 0-3 Node Injury Scale.

^e Percent lodging based on the number of plants that were "goose-necked" or root lodged plants (plants leaning at a 45° or greater angle) per 50 plants from each of the two rows.