CORN ROOTWORM LARVAL CONTROL WITH SOIL INSECTICIDES, 2008

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Two trials were established to evaluate liquids, granules and seed applied insecticides for their efficacy against corn rootworm larvae.

Trial 1 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 on 1 May. The trial was planted in an area that was to field corn in mid June 2007. The granular and liquid insecticides were applied at planting to four rows (30 inch spacing) by 50 ft long plots arranged in a RCBD with four replicates per plot. All of the insecticide treatments were applied to the corn hybrid Pioneer 34P87 (RR2) that had been treated with fungicides but not seed treatment insecticides. The check was planted with Pioneer 34P87 (RR2) that had been treated with fungicides and the seed treatment insecticide Poncho 250. Three granular insecticides (Aztec 2.1G, Force 3G and Lorsban 15G) were applied either in furrow (IF) or T-banded (TB) with a modified Noble^{TM} applicator that was calibrated to deliver the desired rate. Three granular insecticides (Counter 15G, Counter 20G and Fortress 5G) were applied in furrow (IF) with a SmartBox^{TM} metering system calibrated to deliver the desired rate. The liquid insecticides Capture LFR, Cobalt and Force CS were applied IF through a micro-tube with a CO_2 sprayer calibrated to deliver 5 gal/acre. The liquid insecticide Force CS was also applied as a TB with a CO_2 sprayer using a TeeJet^{TM} 80067 nozzle calibrated to deliver 5 gal/acre. The seed treatment insecticides Cruiser 1250 and Poncho 1250 were commercially applied to the seed before planting. Stand counts were attempted in this trial before harvest but because of the severe lodging in the plots caused by Hurricane Ike on 14 September it was impossible to get an accurate stand count.

Trial 2 was conducted at the OARDC Northwest Agricultural Research Station near Hoytville, OH. Corn was planted with a four row White 8401 planter set to plant 30,200 seeds per acre on 28 May. The trial was planted in an area that was planted to field corn in mid June 2007. The granular and liquid insecticides Aztec 2.1G, Capture LFR, Force CS and Force 3G were applied at planting. Plots were four rows (30 inch spacing) by 80 ft long plots arranged in a RCBD with four replicates per plot. The seed treatment insecticide Poncho 1250 was commercially applied to the seed before planting. All of the insecticide treatments were applied to Pioneer hybrid 34P87 (RR2) that had been treated with fungicides but not seed treatment insecticides. The check plots were planted with Pioneer hybrid 34P87 (RR2) that had been treated with fungicides and the seed treatment insecticide Poncho 250. 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. Stand was determined before harvest by counting the number of plants in 17’ 5” (1/1000 of an acre) from the two center rows of each plot. The number of plants root lodged in each 1/1000 of an acre was also counted.

Rootworm feeding injury was evaluated in all plots 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 determined by machine harvesting the two center rows of each plot and converting the grain weights to bushels per acre at 15% moisture. Data were analyzed with ANOVA and means separated using LSD at the 5% level.

Results are shown in tables 1 and 2. All of the insecticide treatments had significant less root injury as compared to the check in both trials. There was significantly more root lodging in the check as compared to the treated plots at the Northwest. There was no significant difference in yield in trial 1 but Force 3G had a significantly higher yield in trial 2.

Table 1. Trial 1. Evaluation of liquid, granules and seed applied insecticides for corn rootworm control, OARDC Western Station 2008.

Products	Rate	Placement[a]	Mean Root Rating 0-3 Node-Injury Scale	Yield bu/A
Aztec 2.1G	6.7 oz/1000 row ft	TB-NB	0.19 ab	204.5 a
Capture LFR	0.49 fl oz/1000 row ft	TB-NZ	0.34 bc	186.1 a
Cobalt	3 fl oz/1000 row ft	IF-MT	0.44 c	188.8 a
Counter 15G	8 oz/1000 row ft	IF-SB	0.15 ab	196.1a
Counter 20G	6 oz/1000 row ft	IF-SB	0.28 a-c	214.2 a
Cruiser 1250	1.25 mg ai/seed	Seed	0.46 c	180.3 a
Force CS	0.46 fl oz/1000 row ft	TB-NZ	0.35 bc	195.9 a
Force CS	0.46 fl oz/1000 row ft	IF-MT	0.29 a-c	195.3 a
Force 3G	4 oz/1000 row ft	TB-NB	0.09 a	212.0 a
Force 3G	4 oz/1000 row ft	IF-NB	0.36 bc	213.4 a
Fortress 5G	3.7 oz/1000 row ft	IF-SB	0.38 bc	185.9 a
Lorsban 15G	8 oz/1000 row ft	TB-NB	0.24 a-c	174.9 a
Poncho 1250	1.25 mg ai/seed	Seed	0.23 a-c	202.8 a
Check (Poncho)	0.25 mg ai/seed	Seed	1.70 d	179.9 a

Means in a column followed by the same letter are not significantly different using LSD (P = 0.05).
[a] TB-NB, T-band through a Noble™ unit; TB-SB, T-band through a SmartBox™; IF- SB, In furrow through a SmartBox™; TB-NZ, T-band through a Nozzle; IF-MT, In furrow through a micro-tube.

Table 2. Trial 2. Evaluation of liquid, granules and seed applied insecticides for corn rootworm control, OARDC Northwest Station 2008.

Products	Rate amt form	Placement	Root Rating 0-3 Scale	Stand (Plants/ Acre)	% Lodged[1]	Yield (bu/A)
Aztec 2.1G	6.7 oz/1000 row ft	T-band	0.08 a	29,250 a	0.5 a	97.8 b
Capture LFR	0.49 fl oz/1000 row ft	In furrow	0.21 a	31,250 a	2.3 a	97.3 b
Force 3G	4 oz/1000 row ft	T-band	0.10 a	30,250 a	0.4 a	110.6 a
Force CS	0.46 fl oz/1000 row ft	In furrow	0.10 a	29,000 a	2.2 a	96.7 b
Poncho 1250	1.25 mg ai/seed	Seed	0.11 a	29,875 a	3.1 a	98.1 b
Check (Poncho)	0.25 mg ai/seed	Seed	0.59 b	28,375 a	12.1 b	93.0 b

Means in a column followed by the same letter are not significantly different using LSD (P = 0.05).
[1] Percent lodging was determined by counting the number of root lodged plants per 1/000 of an acre and dividing by the number of plants in 1/1000 of an acre.