

CORN ROOTWORM LARVAL CONTROL, 2008

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Trials were established to evaluate corn hybrids with the rootworm *Bt* gene against corn rootworm larvae as compared to corn hybrids without the rootworm *Bt* gene (isoline) for root rating and yield. Corn was planted with a two-row John Deere 7000 Max-Emerge planter on 1 May at the OARDC Western Agricultural Research Station near South Charleston and on 28 May with a White 8401 planter at the OARDC Northwest Agricultural Research Station near Hoytville. The trials were planted in an area that was planted to field corn in mid June 2007 (trap crop). The isoline hybrids were planted with and without a granular soil insecticide. The plots were four rows (30 inch spacing) by 50 ft long at the Western and four rows by 80 ft long at the Northwest. All of the hybrid pairs were arranged in a RCBD with four replicates per plot. All of the seed had been treated with fungicides and the seed treatment insecticide Poncho 250 were commercially applied to the seed before planting.

The hybrid comparisons at the Western were:

- Trial 1. Dekalb DKC61-69 (VT3) versus Dekalb DKC61-72 (RR2)
- Trial 2. Dekalb DKC61-19 (VT3) versus Dekalb DKC61-22 (RR2)
- Trial 3. Mycogen 2M750 HxXTRA (RR2) versus Mycogen 2M744 (RR2)
- Trial 4. Pioneer 32B83 HxXTRA/RR2 versus Pioneer 32B80/RR2
- Trial 5. Pioneer 35F44 HxXTRA/RR2 versus Pioneer 35F37/RR2
- Trial 6. Pioneer 33W84 HxXTRA/RR2 versus Pioneer 33W80/RR2
- Trial 7. Seed Consultants SC 11AQ07 versus Seed Consultants SC 1107
- Trial 8. Seed Consultants SC 11VTT16 versus Seed Consultants SC 11C16
- Trial 9. Seed Consultants SC 11HXX38 versus Seed Consultants SC 1138.

The hybrid comparisons at the Northwest were:

- Trial 10. Dekalb DKC61-69 (VT3) versus Dekalb DKC61-72 (RR2)
- Trial 11. Pioneer 33W84 HxXTRA/RR2 versus Pioneer 33W80/RR2
- Trial 12. Seed Consultants SC 11AQ07 versus Seed Consultants SC 1107

Each pair of hybrids was evaluated as a separate trial both in the field and statistically.

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 determined by machine harvesting the two center rows of each plot and converting the grain weights to bushels per acre at 15% moisture.

Results:

Western:

The transgenic hybrids and the treated isoline had significantly less root injury as compared to the untreated isoline in five of the pairs of hybrids. The transgenic hybrid had a significantly better yield in only one pair of hybrids tested.

Northwest:

The transgenic hybrids had significantly less root injury as compared to the untreated isoline in all trials. The transgenic hybrid had a significantly better yield in only two of the three pairs of hybrids tested.

Trial 1.

Hybrids	Treatment	Insecticide Rate	Placement	Mean Root Rating 0-3 Scale	Yield bu/A
Dekalb DKC61-69 (VT3)	Poncho 250	0.25 mg ai/seed	Seed	0.13 a	211.6 a
Dekalb DKC61-72 (RR2)	Poncho 250 + Force 3G	0.25 mg ai/seed + 4 oz/1000 row ft	Seed + T-band	0.10 a	207.1 a
Dekalb DKC61-72 (RR2)	Poncho 250	0.25 mg ai/seed	Seed	1.64 b	198.8 a

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

Trial 2.

Hybrids	Treatment	Insecticide Rate	Placement	Mean Root Rating 0-3 Scale	Yield bu/A
Dekalb DKC61-19 (VT3)	Poncho 250	0.25 mg ai/seed	Seed	0.05 a	198.8 a
Dekalb DKC61-22 (RR2)	Poncho 250 + Force 3G	0.25 mg ai/seed + 4 oz/1000 row ft	Seed + T-band	0.26 a	198.4 a
Dekalb DKC61-22 (RR2)	Poncho 250	0.25 mg ai/seed	Seed	0.86 a	182.0 a

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

Trial 3.

Hybrids	Treatment	Insecticide Rate	Placement	Mean Root Rating 0-3 Scale	Yield bu/A
Mycogen 2M750 HxXTRA RR2	Poncho 250	0.25 mg ai/seed	Seed	0.02 a	205.6 a
Mycogen 2M744 (RR2)	Poncho 250 + Lorsban 15G	0.25 mg ai/seed + 8 oz/1000 row ft	Seed + T-band	0.08 a	209.3 a
Mycogen 2M744 (RR2)	Poncho 250	0.25 mg ai/seed	Seed	0.63 b	216.5 a

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

Trial 4.

Hybrids	Treatment	Insecticide Rate	Placement	Mean Root Rating 0-3 Scale	Yield bu/A
Pioneer 32B83 HxXTRA/RR2	Poncho 250	0.25 mg ai/seed	Seed	0.03 a	191.2 a
Pioneer 32B80/RR2	Poncho 250 + Force 3G	0.25 mg ai/seed + 4 oz/1000 row ft	Seed + T-band	0.09 a	193.7 a
Pioneer 32B80/RR2	Poncho 250	0.25 mg ai/seed	Seed	0.31 a	206.0 a

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

Trial 5.

Hybrids	Treatment	Insecticide Rate	Placement	Mean Root Rating 0-3 Scale	Yield bu/A
Pioneer 35F44 HxXTRA/RR2	Poncho 250	0.25 mg ai/seed	Seed	0.02 a	207.2 a
Pioneer 35F37/RR2	Poncho 250 + Force 3G	0.25 mg ai/seed + 4 oz/1000 row ft	Seed + T-band	0.07 a	202.8 a
Pioneer 35F37/RR2	Poncho 250	0.25 mg ai/seed	Seed	0.92 b	207.9 a

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

Trial 6.

Hybrids	Treatment	Insecticide Rate	Placement	Mean Root Rating 0-3 Scale	Yield bu/A
Pioneer 33W84 HxXTRA/RR2	Poncho 250	0.25 mg ai/seed	Seed	0.04 a	215.2 a
Pioneer 33W80/RR2	Poncho 250 + Force 3G	0.25 mg ai/seed + 4 oz/1000 row ft	Seed + T-band	0.08 a	216.7 a
Pioneer 33W80/RR2	Poncho 250	0.25 mg ai/seed	Seed	0.46 a	207.5 a

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

Trial 7.

Hybrids	Treatment	Insecticide Rate	Placement	Mean Root Rating 0-3 Scale	Yield bu/A
Seed Consultants SC 11AQ07	Poncho 250	0.25 mg ai/seed	Seed	0.16 a	218.1 a
Seed Consultants SC 1107	Poncho 250 + Force 3G	0.25 mg ai/seed + 4 oz/1000 row ft	Seed + T-band	0.10 a	200.8 a
Seed Consultants SC 1107	Poncho 250	0.25 mg ai/seed	Seed	1.09 b	200.0 a

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

Trial 8.

Hybrids	Treatment	Insecticide Rate	Placement	Mean Root Rating 0-3 Scale	Yield bu/A
Seed Consultants SC 11VTT16	Poncho 250	0.25 mg ai/seed	Seed	0.05 a	208.1 a
Seed Consultants SC 11C16	Poncho 250 + Force 3G	0.25 mg ai/seed + 4 oz/1000 row ft	Seed + T-band	0.13 a	207.0 a
Seed Consultants SC 11C16	Poncho 250	0.25 mg ai/seed	Seed	0.91 b	192.8 b

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

Trial 9.

Hybrids	Treatment	Insecticide Rate	Placement	Mean Root Rating 0-3 Scale	Yield bu/A
Seed Consultants SC 11HXX38	Poncho 250	0.25 mg ai/seed	Seed	0.05 a	193.0 a
Seed Consultants SC 1138	Poncho 250 + Force 3G	0.25 mg ai/seed + 4 oz/1000 row ft	Seed + T-band	0.12 a	208.7 a
Seed Consultants SC 1138	Poncho 250	0.25 mg ai/seed	Seed	1.44 b	185.2 a

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

Trial 10.

Hybrids	Treatment	Insecticide Rate	Placement	Mean Root Rating 0-3 Scale	Yield bu/A
Dekalb DKC61-69 (VT3)	Poncho 250	0.25 mg ai/seed	Seed	0.03 a	98.7 a
Dekalb DKC61-72 (RR2)	Poncho 250	0.25 mg ai/seed	Seed	0.72 a	94.6 a

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

Trial 11.

Hybrids	Treatment	Insecticide Rate	Placement	Mean Root Rating 0-3 Scale	Yield bu/A
Pioneer 33W84 HxXTRA/RR2	Poncho 250	0.25 mg ai/seed	Seed	0.03 a	118.6 a
Pioneer 33W80/RR2	Poncho 250	0.25 mg ai/seed	Seed	0.91 a	89.9 b

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

Trial 12.

Hybrids	Treatment	Insecticide Rate	Placement	Mean Root Rating 0-3 Scale	Yield bu/A
Seed Consultants SC 11AQ07	Poncho 250	0.25 mg ai/seed	Seed	0.07 a	104.9 a
Seed Consultants SC 1107	Poncho 250	0.25 mg ai/seed	Seed	0.80 a	88.8 b

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