

(F)

CORN: *Zea mays* L. 'Pioneer 32T85', 'Pioneer 32T84'

**HERCULEX[®] BT TRANSGENIC HYBRIDS AND FORCE 3G INSECTICIDE AT
PLANTING FOR LARVAL CORN ROOTWORM CONTROL, 2008**

Terry A. DeVries

South Central Agricultural Laboratory

University of Nebraska-Lincoln

842 Road 313, P.O. Box 66

Clay Center, NE 68933

Phone: (402) 762-4405

Fax: (402) 762-4411

Email: tdevries1@unl.edu

Robert J. Wright

Department of Entomology

University of Nebraska-Lincoln

202 Plant Industry Bldg.

Lincoln NE 68583-0816

Email: rwright2@unl.edu

Western corn rootworm (WCR): *Diabrotica virgifera virgifera* LeConte

Northern corn rootworm (NCR): *Diabrotica barberi* Smith and Lawrence

Planting time soil insecticide and corn rootworm resistant corn trials were conducted near Clay Center, NE to evaluate their effectiveness for larval corn rootworm (CRW) control in field corn. Local population consists predominately of WCR (>95% of total). Trial site was late-planted corn (insecticide free) during 2007. Experimental design was a RCB with 4 replicates. Plot size was 4 rows x 147 ft length (N-S orientation) in 30-inch row spacing. Soil type was a Crete silt loam. Corn rootworm resistance corn hybrid, 'Pioneer 32T85' (HXX; contains Herculex[®] XTRA, LibertyLink[®] and Roundy Ready[®] 2 genes) and its isoline hybrid, 'Pioneer 32T84' (HX1; contains Herculex[®] I, LibertyLink[®] and Roundy Ready[®] 2 genes) were planted on 30 Apr 2008 with a 4-row JD 7300 Maximerge vacuum planter. These transgenic hybrids possess the same base genetics. A southeast wind @ 10-20 mph occurred at planting. Granular insecticides were applied via standard insecticide boxes in a 7-inch band over the open seed furrow and in front of the press wheels (TB). Plant populations were evaluated on 29 May. The total number of plants per plot was recorded and converted to plants per acre. CRW egg hatch was first observed on 02 Jun. Extended leaf heights (inches) of 20 randomly selected plants per plot were recorded on 16 Jun. The total number of lodged plants per plot was recorded on 09 Jul and converted to % root lodging. Larval feeding damage was evaluated on 14 Jul. Five randomly selected plants were dug from each plot, washed, and rated using the Iowa State 0-3 scale (0 = no feeding, 1 = one node of roots pruned to within 1.5 inches of the stalk, 2 = two nodes of roots pruned to within 1.5 inches of the stalk, 3 = 3 or more nodes of roots pruned to within 1.5 inches of the stalk). The total number of lodged plants per plot was also recorded on 25 Sept and converted to % root lodging. Plots were machine harvested on 05 Nov. Percent moisture and lbs

of grain were recorded and corrected to 56 lbs/bu @ 15% moisture. Data were analyzed by ANOVA with mean separation using differences of least square means ($P = 0.05$).

From planting (30 Apr) to larval feeding damage evaluation (14 Jul), precipitation totaled 11.57 inches. Larval rootworm densities were high, with mean root injury ratings in the HXI plots averaging 1.80. HXX and HXI + Force 3G treatments significantly reduced larval feeding damage and late season % root lodging compared to the HXI only treatment. In addition, HXX and HXI + Force 3G treatments performed statistically similar across all dependent variables evaluated in this trial.

Treatment ¹ / Formulation	Rate-amt form/ 1000 row ft	Placement ²	Plants/ Acre ⁴	Leaf Height ⁴	Early Season % Root Lodging ⁴	Root Injury Rating ³	Late Season % Root Lodging ³	Yield Bu/Acre ³
HXX	-----	----	29,517	32.8	0.1	0.17 a	0.0 a	229.5 ab
HXI + Force 3G	4 oz	TB	29,311	33.0	0.1	0.53 a	0.6 a	237.0 a
HXI	-----	----	29,591	33.7	1.5	1.80 b	34.6 b	220.4 b

P

0.7630

0.7133

0.1193

0.0004

<.0001

0.0225

¹HXX, 'Pioneer 32T85' corn hybrid containing Herculex[®] XTRA, LibertyLink[®] and Roundy Ready[®] 2 genetic traits; HXI, 'Pioneer 32T84' corn hybrid containing Herculex[®] I, LibertyLink[®] and Roundy Ready[®] 2 genetic traits.

²TB, granular insecticide applied in a 7-inch band over the open seed furrow and in front of the press wheels.

³Means in column with the same lowercase letter are not statistically different using the differences of least square means (MIXED; p|t|>0.05.

⁴Means in column are not statistically different using the differences of least square means (MIXED; p|t|>0.05.

(F)

CORN: *Zea mays* L. 'Pioneer 32T85', 'Pioneer 32T84'

**HERCULEX[®] BT TRANSGENIC HYBRIDS AND FORCE 3G INSECTICIDE AT
PLANTING FOR LARVAL CORN ROOTWORM CONTROL, 2008**

Terry A. DeVries

South Central Agricultural Laboratory

University of Nebraska-Lincoln

842 Road 313, P.O. Box 66

Clay Center, NE 68933

Phone: (402) 762-4405

Fax: (402) 762-4411

Email: tdevries1@unl.edu

Brand Name	Formulation	Common Name	Composition	Manufacturer
Force	3G	tefluthrin	2,3,5,6-tetrafluoro-4-methylbenzyl (1 <i>RS</i> ,3 <i>RS</i>)-3-[(<i>Z</i>)-2-chloro-3,3,3-trifluoroprop-1-enyl]-2,2-dimethylcyclopropanecarboxylate	Syngenta Crop Protection, Inc. P. O. Box 18300 Greensboro, NC 27409