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**CORN:** *Zea mays* L. ‘Pioneer P1395AM1’, ‘DeKalb DKC63-07RIB’ and ‘DeKalb DKC63-35RIB’

**EVALUATION OF ROOTWORM TRAITED AND REFUGE CORN HYBRIDS IN  
COMBINATION WITH SOIL INSECTICIDES AT PLANTING FOR LARVAL CORN  
ROOTWORM CONTROL, 2014**

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

Rootworm traited and refuge corn hybrids in combination with soil insecticides were evaluated for effectiveness of larval CRW control near Clay Center, NE during 2014. Trial site was late-planted corn and pumpkins (insecticide free) during 2013. Experimental design was a RCB with four replicates. Plot size was 4 rows x 150 ft length with 30-inch row spacing. Soil type was a Crete silt loam. ‘Pioneer P1395AM1’ (contains AM1 [Herculex RW and Herculex I] insect and herbicide traits), ‘DeKalb DKC63-07RIB’ (contains GENVT3PRIB insect and herbicide traits) and ‘DeKalb DKC63-35RIB’ (contains GENVT2PRIB insect and herbicide traits) corn hybrids were planted on 05 May with a 2-row JD 7100 Maximerge planter with finger pickup seed units. A northeast wind @ 11-14 mph occurred at planting. Granular insecticides were applied IF via the SmartBox application system. Plant populations were evaluated on 10 Jun. The total number of plants per plot was recorded and converted to plants per acre (PPA). Initial CRW egg hatch was first documented on 04 Jun. A high wind (northwest @ 82 mph) event occurred on 14 Jun resulting in plant breakage. The total number of broken plants in the center two rows of each plot was recorded on 17 Jun and converted to broken PPA. Larval feeding damage was evaluated on 25 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 root lodged plants per plot due to larval CRW feeding was recorded on 16 Sept and converted to lodged PPA. Another significant weather event occurred on 01 Oct. Nickel to ping pong ball-sized hail defoliated corn

plants and caused kernels to be dislodged from the ears. Plots were machine harvested on 17 Oct. Percent moisture and lbs of grain were recorded and corrected to 56 lbs/bu @ 15.5% moisture to evaluate yield levels. Data were analyzed by PROC MIXED with mean separation using differences of least square means ( $P = 0.05$ ).

From planting (05 May) to larval feeding damage evaluation (25 Jul), rainfall totaled 11.75 inches and overhead irrigation, 1.40 inches. Mean root injury ratings (Iowa 0-3 Scale) for the untreated GENVT2PRIB insect trait averaged 1.10. AM1 and GENVT3PRIB rootworm traits with and without planting-time soil insecticides and GENVT2PRIB insect traits with a soil applied insecticide statistically enhanced root injury protection compared to the untreated GENVT2PRIB insect trait. Furthermore, the untreated GENVT2PRIB plots also had significantly more root lodging than all the other treatments evaluated. This research was supported by industry gifts of pesticide and research funding.

Treatment <sup>a</sup> / Formulation	Rate-amt form /1000 row ft	Place- ment	Yield <sup>c</sup> (bu/acre)	Root Injury Rating <sup>b</sup>	Lodged Plants/Acre <sup>b</sup>	Plant/Acre Following Wind Event <sup>b</sup>	Broken Plants/Acre <sup>b</sup>	Early Plants/Acre <sup>c</sup>
AM1 + SmartChoice 5G	5 oz	IF	263.3	0.11 a	0 a	33,802 a	872 a	34,674
GENVT2PRIB + Aztec 4.67G	3 oz	IF	258.0	0.46 b	291 a	32,683 a	3,285 bc	35,968
AM1	-----	---	257.6	0.18 a	261 a	34,036 a	1,106 a	35,142
GENVT3PRIB	-----	---	252.4	0.24 a	15 a	31,010 b	2,982 b	33,992
GENVT3PRIB + Aztec 4.67G	3 oz	IF	244.6	0.12 a	0 a	29,694 b	4,191 c	33,885
GENVT2PRIB	-----	---	248.3	1.10 c	4,565 b	33,119 a	1,904 a	35,024

P 0.1711 <0.0001 <0.0001 <0.0001 <0.0001 0.1181

<sup>a</sup>Granular insecticides were applied via the SmartBox application system at planting.

<sup>b</sup>Means in column followed by the same lower case letter are not statistically different using the differences of least square means (MIXED; p|t|>0.05).

<sup>c</sup>Means in column are not statistically different using the differences of least square means (MIXED; p|t|>0.05).

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<b>Brand Name</b>	<b>Formulation</b>	<b>Common Name</b>	<b>Composition</b>	<b>Manufacturer</b>
Aztec	4.67G	tebupirimphos and cyfluthrin	( <i>RS</i> )-[ <i>O</i> -(2- <i>tert</i> -butylpyrimidin-5-yl) <i>O</i> -ethyl <i>O</i> -isopropyl phosphorothioate] AND ( <i>RS</i> )- $\alpha$ -cyano-4-fluoro-3-phenoxybenzyl (1 <i>RS</i> ,3 <i>RS</i> ;1 <i>RS</i> ,3 <i>SR</i> )-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate	Amvac 4100 E. Washington Boul. Los Angeles, CA 90023
SmartChoice	5G	chlorethoxyfos and bifenthrin	O,O-diethyl ( <i>RS</i> )-O-(1,2,2,2-tetrachloroethyl) phosphorothioate AND 2-methylbiphenyl-3-ylmethyl (1 <i>RS</i> ,3 <i>RS</i> )-3-[( <i>Z</i> )-	Amvac 4100 E. Washington Boul. Los Angeles, CA 90023

			2-chloro-3,3,3-trifluoroprop-1-enyl]-2,2-dimethylcyclopropanecarboxylate or 2-methylbiphenyl-3-ylmethyl (1RS)-cis-3-[(Z)-2-chloro-3,3,3-trifluoroprop-1-enyl]-2,2-dimethylcyclopropanecarboxylate	
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