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**CORN:** *Zea mays* L. ‘DeKalb DKC62-95’, ‘DeKalb DKC62-97RIB’, ‘Pioneer P1395AM1’, and ‘NK N68B-3111’

**EVALUATION OF CORN ROOTWORM TRAITED AND REFUGE HYBRIDS IN  
COMBINATION WITH AZTEC 4.67G INSECTICIDE AT PLANTING FOR CONTROL  
OF LARVAL CORN ROOTWORM, 2015**

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

Single corn rootworm (CRW) traited and refuge hybrids in combination with Aztec 4.67G insecticide at planting were evaluated for effectiveness of larval CRW control near Clay Center, NE during 2015. Trial site was late-planted corn and pumpkins (insecticide free) during 2014. Experimental design was a RCB with four replicates. Plot size was 4 rows x ~70 ft length with 30-inch row spacing. Soil type was a Crete silt loam. 'DeKalb DKC62-95' (contains Roundup Ready 2 herbicide trait [refuge hybrid]), 'DeKalb DKC62-97RIB' (contains 90% GENVT3PRIB traited seed and 10% refuge seed), 'Pioneer P1395AM1' (contains 90% Herculex XTRA traited seed and 10% Herculex I traited seed), and 'NK N68B-3111' (contains 100% AgriSure Viptera and AgriSure 3000GT traited seed) corn hybrids were planted on 01 May with a 4-row Kinze plot planter with finger pickup seed units. Aztec 4.67G was applied IF via the SmartBox application system. Initial CRW egg hatch was first documented on 08 Jun. Plant populations were evaluated on 10 Jun. The total number of plants per plot was recorded and converted to plants per acre (PPA). Initial adult CRW emergence was witnessed on 10 Jul. The total number of root lodged plants per plot due to larval CRW feeding was recorded on 21 Jul and 16 Sept and converted to percentage of lodged plants. Larval feeding damage was evaluated on 31 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). Percent consistency performance levels were calculated by determining the percentage of rated roots in each plot with an Iowa 0-3 scale root injury rating <

or = to 0.25. Plots were machine harvested on 12 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 (01 May) to larval feeding damage evaluation (31 Jul), rainfall totaled 17.29 inches and overhead irrigation, 2.78 inches. Mean root injury ratings for the untreated, refuge corn hybrid averaged 1.64. All treatments significantly enhanced grain yield and percent consistency performance levels at root evaluation compared to the untreated refuge hybrid. Furthermore, all treatments significantly reduced root lodging at root evaluation, root damage, and late season root lodging. However, the untreated GENVT3PRIB traited seed had significantly greater root damage and lower percent consistency performance levels compared to the other untreated, traited CRW hybrid treatments. This research was supported by industry gifts of pesticide and research funding.

Treatment (CRW Trait)	Formulation <sup>a</sup>	Rate-amt form /1000 row ft	Place-ment	Yield <sup>b</sup> (bu/acre)	Late Season % Root Lodging <sup>b</sup>	Root Injury Rating <sup>b</sup>	% Consistency Iowa 0-3 Scale $\leq 0.25^{b,c}$	% Root Lodging at Root Dig <sup>b</sup>	PPA <sup>b</sup>
DKC62-97RIB (GENVT3PRIB)	Aztec 4.67G	3 oz	IF	269.1 a	0.4 a	0.26 ab	80 ab	0.0 a	34,410 a
DKC62-95	Aztec 4.67G	3 oz	IF	264.0 a	3.5 a	0.38 bc	60 bc	0.2 a	33,973 a
DKC62-97RIB (GENVT3PRIB)	---	---	---	263.1 a	10.2 a	0.58 c	45 c	0.4 a	35,325 a
P1395AM1 (Herculex XTRA)	Aztec 4.67G	3 oz	IF	259.8 a	1.5 a	0.10 a	100 a	0.0 a	32,023 b
P1395AM1 (Herculex XTRA)	---	---	---	256.1 a	5.1 a	0.27 ab	80 ab	0.0 a	33,690 ab
N68B-3111 (AgriSure 3000GT)	---	---	---	254.5 a	1.0 a	0.29 ab	80 ab	0.0 a	34,571 a
N68B-3111 (AgriSure 3000GT)	Aztec 4.67G	3 oz	IF	250.4 a	0.0 a	0.15 ab	95 a	0.0 a	34,600 a
DKC62-95	---	---	---	227.8 b	47.5 b	1.64 d	5 d	18.9 b	34,178 a

P 0.0055 <0.0001 <0.0001 <0.0001 0.0005 0.0273

<sup>a</sup>Granular insecticide applied with the SmartBox application system.

<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>Averages were converted by the angular transformation of percentages to degrees, before MIXED, original percentages are reported.

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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 Blvd. Los Angeles, CA 90023