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**CORN:** *Zea mays* L. 'DeKalb DKC62-95'

**EVALUATION OF LIQUID AND GRANULAR INSECTICIDE FORMULATIONS AT  
PLANTING FOR LARVAL CORN ROOTWORM CONTROL, 2015**

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

Liquid and granular insecticide formulations applied 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 ~72 ft length with 30-inch row spacing. Soil type was a Crete silt loam. 'DeKalb DKC62-95' (contains Roundup Ready 2 herbicide trait) corn hybrid was planted on 30 Apr with a 2-row JD 7100 Maximerge planter with finger pickup seed units. Liquid insecticides were applied IF in 5 GPA water solution via a CO<sub>2</sub> pressurized system. Granular insecticides were applied IF via the SmartBox application system. Initial CRW egg hatch was first documented on 08 Jun. Plant populations were evaluated on 09 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 20 Jul and 16 Sept and converted to percentage of lodged plants. Larval feeding damage was evaluated on 28 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  $\leq$  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 (30 Apr) to larval feeding damage evaluation (28 Jul), rainfall totaled 17.29 inches

and overhead irrigation, 2.78 inches. Mean root injury ratings for the untreated check averaged 1.73. Planting-time IF applications of AMV1118 and Aztec 4.67G did not significantly enhance grain yields compared to the untreated check. All liquid and granular insecticide formulations significantly enhanced root injury protection and reduced root lodging at root damage evaluation compared to the untreated check. With the exception of Aztec 4.67G, remaining treatments significantly reduced late season root lodging compared to the untreated check. This research was supported by industry gifts of pesticide and research funding.

Formulation	Rate-amt form /1000 row ft	Place-ment	Yield <sup>c</sup> (bu/acre)	Late Season % Root Lodging <sup>c</sup>	Root Injury Rating <sup>c</sup>	% Consistency Iowa 0-3 Scale $\leq 0.25^{d,e}$	% Root Lodging at Root Dig <sup>c</sup>	PPA <sup>d</sup>
AMV1091 <sup>a</sup>	0.44 fl oz	IF	244.2 a	16.2 a	0.56 a	40	2.2 a	34,213
Force CS <sup>a</sup>	0.46 fl oz	IF	237.1 ab	14.0 a	0.90 ab	25	0.0 a	35,038
SmartChoice 5G <sup>b</sup>	5 oz	IF	226.9 abc	29.2 a	0.78 ab	30	0.4 a	34,033
AMV1118 <sup>a</sup>	0.69 fl oz	IF	223.0 bcd	36.7 a	1.02 b	15	0.1 a	34,680
Aztec 4.67G <sup>b</sup>	3 oz	IF	208.9 d	72.1 b	0.91 ab	20	0.5 a	34,645
Untreated check	---	---	210.3 cd	81.1 b	1.73 c	5	16.1 b	34,826

P 0.0032 0.0005 0.0001 0.1342 0.0369 0.1135

<sup>a</sup>Liquid insecticide applied in a 5 GPA water solution at planting.

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

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

<sup>e</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 ( <i>1RS,3RS;1RS,3SR</i> )-3- (2,2-dichlorovinyl)-2,2- dimethylcyclopropanecarboxylate	Amvac 4100 E. Washington Blvd. Los Angeles, CA 90023
SmartChoice	5G	chlorethoxyfos AND bifenthrin	<i>O,O</i> -diethyl ( <i>RS</i> )- <i>O</i> -(1,2,2,2- tetrachloroethyl) phosphorothioate AND 2-methylbiphenyl-3-ylmethyl ( <i>1RS,3RS</i> )-3-[( <i>Z</i> )-2-chloro-3,3,3- trifluoroprop-1-enyl]-2,2- dimethylcyclopropanecarboxylate	Amvac 4100 E. Washington Blvd. Los Angeles, CA 90023
AMV1091	unknown	unknown	unknown	Amvac 4100 E. Washington Blvd. Los Angeles, CA 90023
AMV1118	unknown	unknown	unknown	Amvac 4100 E. Washington Blvd. Los Angeles, CA 90023
Force	CS	tefluthrin	2,3,5,6-tetrafluoro-4-methylbenzyl ( <i>1RS,3RS</i> )-3-[( <i>Z</i> )-2-chloro-3,3,3- trifluoroprop-1-enyl]-2,2- dimethylcyclopropanecarboxylate	Syngenta Crop Protection, LLC P.O. Box 18300 Greensboro, North Carolina 27419-8300