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CORN: *Zea mays* L. ‘Munson 7400VT2P’

**EVALUATION OF PLANTING TIME INSECTICIDE FORMULATIONS AND SEED
TREATMENTS FOR LARVAL CORN ROOTWORM CONTROL, 2017**

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

Planting-time insecticide formulations and seed treatments were evaluated for effectiveness of larval WCR control near Clay Center, NE during 2017. Trial site was late-planted corn and pumpkin (insecticide free) during 2016. Experimental design was a RCB with four replicates. Plot size was 4 rows x 68-76 ft length with 30-inch row spacing. Soil type was a Crete silt loam. ‘Munson 7400VT2P’ (contains GENVT2PRIB [Genuity VT Double Pro] insect and herbicide traits) corn hybrid was planted on 20 Apr with a 2-row JD 7100 Maximerge planter with finger pickup seed units. The corn hybrid either received a commercially seed-applied insecticide treatment (ST) of Poncho 500 (clothianidin @ 0.5 mg AI/kernel), Poncho 1250 (clothianidin @ 1.25 mg AI/kernel) or no insecticide ST at all. Liquid insecticides were applied IF in 5 GPA water solution via compressed air system. Granular insecticide formulations were applied IF via SmartBox application system. Initial CRW egg hatch was first documented on 31 May. Plant populations were evaluated on 1 Jun. The total number of plants in the center two rows of each plot was recorded and converted to plants per acre (PPA). Extended leaf height (ELH) of twenty randomly selected plants in the center two rows of each plot was recorded in inches on 20 Jun. Initial adult WCR emergence was witnessed on 28 Jun. The total number of root lodged plants in the center two rows of each plot due to larval WCR feeding was recorded on 30 Jun and converted to percentage root lodging. Larval feeding damage was evaluated on 11 Jul. Five randomly selected plants (three from row 1 and two from row 4) 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 center two rows of each plot 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. Data were analyzed by PROC MIXED with mean separation using differences of least square means ($P = 0.05$).

From planting (20 Apr) to larval feeding damage evaluation (11 Jul), rainfall totaled 9.42 inches and overhead irrigation, 2.56 inches. Mean root injury ratings (Iowa 0-3 Scale) for the untreated check averaged 2.62. With exception of Poncho 500 ST and Capture LFR, remaining insecticide treatments significantly reduced average root injury ratings and percentage root lodging compared to the untreated check. Furthermore, Capture LFR did not significantly enhance final grain yield levels compared to the untreated check. This research was supported by industry gifts of pesticide and research funding.

Formulation	Rate-amount form	Place -ment	Yield ^d (bu/acre)	Root Injury Rating ^d	% Root Lodging ^d	ELH ^e	PPA ^e
Poncho 1250 ^c	1.25 mg/seed	ST	222.8 a	1.83 b	49.6 bc	36.5	32,885
V-10395 ^a	12 fl oz/acre	IF	221.8 a	1.86 b	23.8 ab	37.6	32,292
V-10395 ^a	8 fl oz/acre	IF	214.2 ab	2.14 bc	27.3 ab	37.1	32,777
Force 3G ^b	5.5 lbs/acre	IF	208.9 ab	0.87 a	3.4 a	36.7	31,964
Aztec 4.67G ^b	3.27 lbs/acre	IF	208.8 ab	0.75 a	11.4 a	35.6	32,538
Poncho 500 ^c	0.5 mg/seed	ST	205.0 ab	2.57 cd	70.5 cd	36.6	32,373
Capture LFR ^a	16 fl oz/acre	IF	196.0 bc	2.19 bcd	78.7 d	36.3	32,265
Untreated Check	---	---	178.6 c	2.62 d	88.4 d	35.6	31,738

P 0.0145 <0.0001 <0.0001 0.2383 0.2859

^aLiquid insecticide applied in 5 GPA water solution at planting.

^bGranular insecticide applied with SmartBox application system at planting.

^cSeed-applied insecticide treatment.

^dMeans 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).

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

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Brand Name	Formulation	Common Name	Composition	Manufacturer
V-10395	unknown	unknown	unknown	Valent U.S.A. Corporation P.O. Box 8025 Walnut Creek CA 94596-8025
Capture	LFR	bifenthrin	2-methylbiphenyl-3-ylmethyl (1 <i>RS</i> ,3 <i>RS</i>)-3-[(<i>Z</i>)-2-chloro-3,3,3-trifluoroprop-1-enyl]-2,2-dimethylcyclopropanecarboxylate	FMC Corporation 1735 Market Street Philadelphia, PA 19103
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>)- α -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
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, LLC P.O. Box 18300 Greensboro, NC 27419-8300
Poncho	600	clothianidin	1-[(2-chloro-1,3-thiazol-5-yl)methyl]-3-methyl-2-nitroguanidine	Bayer CropScience LP P.O. Box 12014 2 T.W. Alexander Drive Research Triangle Park, NC 27709