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CORN: *Zea mays* L. 'DeKalb DKC60-69RIB'

EVALUATION OF LIQUID AND GRANULAR INSECTICIDE FORMULATIONS AT PLANTING FOR LARVAL CORN ROOTWORM CONTROL, 2017B

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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 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 69-72 ft length with 30-inch row spacing. Soil type was a Crete silt loam. 'DeKalb DKC60-69RIB' (contains GENVT2PRIB [Genuity VT Double Pro] insect and herbicide traits) corn hybrid was planted on 8 May with a 2-row JD 7100 Maximerge planter with finger pickup seed units. The corn hybrid received a seed-applied insecticide treatment of Poncho 250 (clothianidin @ 0.25 mg AI/kernel). Liquid insecticides were applied IF in 5 GPA water solution via compressed air system. Granular insecticides were applied IF via SmartBox application system. Initial WCR 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 22 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 5 Jul and converted to percentage root lodging. Larval feeding damage was evaluated on 12 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 18 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 (8 May) to larval feeding damage evaluation (12 Jul), rainfall totaled 6.99 inches and overhead irrigation, 2.56 inches. Mean root injury ratings for the untreated check averaged 1.39. Planting-time liquid and granular insecticide formulations significantly reduced % root lodging at root dig compared to the untreated check. Grain yield and root injury protection levels were not significantly enhanced with a planting-time insecticide application compared to the untreated check. This research was supported by industry gifts of pesticide and research funding.

Formulation	Rate-amt form/acre	Place-ment	Yield[d] (bu/acre)	Root Injury Rating[d]	% Root Lodging at Root Dig[c]	ELH[d]	PPA[d]
Capture LFR[a]	8.5 fl oz	IF	256.9	0.84	0.4 a	34.6	32,123
Force 3G[b]	5.5 lbs	IF	256.0	0.58	0.3 a	33.8	32,536
Force EVO[a]	10 fl oz	IF	250.2	0.66	0.2 a	33.6	31,827
Aztec 4.67G[b]	3.27 lbs	IF	247.6	0.64	0.3 a	33.5	32,412
Untreated Check	---------	--	243.6	1.39	3.0 b	34.4	31,980
		P	0.1123	0.0555	0.0029	0.9273	0.0893

[a]Liquid insecticide applied in 5 GPA water solution at planting.

[b]Granular insecticide applied with SmartBox application system at planting.

[c]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).

[d]Means 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
Aztec	4.67G	tebupirimphos AND cyfluthrin	(*RS*)-[*O*-(2-*tert*-butylpyrimidin-5-yl) *O*-ethyl *O*-isopropyl phosphorothioate] AND (*RS*)-α-cyano-4-fluoro-3-phenoxybenzyl (1*RS*,3*RS*;1*RS*,3*SR*)-3-(2,2-dichlorovinyl)-2,2-dimethylcyclopropanecarboxylate	Amvac 4100 E. Washington Blvd. Los Angeles, CA 90023
Capture	LFR	bifenthrin	2-methylbiphenyl-3-ylmethyl (1*RS*,3*RS*)-3-[(*Z*)-2-chloro-3,3,3-trifluoroprop-1-enyl]-2,2-dimethylcyclopropanecarboxylate	FMC Corporation 1735 Market Street Philadelphia, PA 19103
Force	3G	tefluthrin	2,3,5,6-tetrafluoro-4-methylbenzyl (1*RS*,3*RS*)-3-[(*Z*)-2-chloro-3,3,3-trifluoroprop-1-enyl]-2,2-dimethylcyclopropanecarboxylate	Syngenta Crop Protection, LLC P.O. Box 18300 Greensboro, NC 27419-8300
Force	EVO	tefluthrin	2,3,5,6-tetrafluoro-4-methylbenzyl (1*RS*,3*RS*)-3-[(*Z*)-2-chloro-3,3,3-trifluoroprop-1-enyl]-2,2-dimethylcyclopropanecarboxylate	