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CORN: *Zea mays* L. ‘NK N68B-3122’, ‘NK N68B-3000GT’ and ‘NK N68B-GT’

**EVALUATION OF NEAR ISOLINE CORN ROOTWORM TRAITED AND REFUGE
CORN HYBRIDS IN COMBINATION WITH SOIL INSECTICIDES AT PLANTING
FOR LARVAL CORN ROOTWORM CONTROL, 2015**

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

Near isoline corn rootworm (CRW) traited and refuge corn hybrids in combination with soil insecticides 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. 'NK N68B-3122' (contains AgriSure 3122 insect and herbicide traits), 'NK N68B-3000GT' (contains AgriSure 3000GT insect and herbicide traits), and 'NK N68B-GT' (contains AgriSure GT herbicide traits) [refuge] corn hybrids were planted on 13 May 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 CO₂ pressurized 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 14 Sept and converted to percentage of lodged plants. Larval feeding damage was evaluated on 28 Jul. Six 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). Plots were machine harvested on 21 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 (13 May) to larval feeding damage evaluation (28 Jul), rainfall totaled 13.47 inches and overhead irrigation, 2.78 inches. Mean root injury ratings for the AgriSure GT [refuge] corn hybrid without soil insecticide averaged 0.38. AgriSure 3122 and AgriSure 3000GT treated corn hybrids with or without soil insecticides at planting significantly enhanced grain yields and also reduced root injury ratings compared to the untreated AgriSure GT [refuge] corn hybrid. This research was supported by industry gifts of pesticide and research funding.

Treatment/ Formulation ^a	Rate-amount form /1000 row ft	Place -ment	Yield ^b (bu/acre)	Late Season % Root Lodging ^b	Root Injury Rating ^b	PPA ^b
AgriSure 3000GT + Capture LFR ^a	0.46 fl oz	IF	248.1 a	0.2 a	0.09 a	30,035 ab
AgriSure 3000GT	---	---	246.6 a	0.0 a	0.09 a	30,844 a
AgriSure 3000GT + Force CS ^a	0.57 fl oz	IF	246.0 ab	0.0 a	0.08 a	30,598 ab
AgriSure 3122	---	---	236.7 bc	0.0 a	0.09 a	30,093 ab
AgriSure 3122 + Force CS ^a	0.57 fl oz	IF	235.3 c	0.0 a	0.08 a	29,583 bc
AgriSure GT	---	---	219.4 d	0.8 b	0.38 b	28,537 c

P 0.0002 0.0337 0.0003 0.0178

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

^bMeans 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).

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Brand Name	Formulation	Common Name	Composition	Manufacturer
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
Force	CS	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, North Carolina 27419-8300