CORN: *Zea mays* L. ‘Golden Harvest H8969 3122’ and ‘Golden Harvest H8969 3111’

EVALUATION OF AGRISURE CORN ROOTWORM TRAITED CORN HYBRIDS IN COMBINATION WITH SOIL INSECTICIDES AT PLANTING FOR LARVAL CORN ROOTWORM CONTROL, 2013

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

Agrisure® corn rootworm (CRW) traited corn hybrids in combination with soil insecticides were evaluated for effectiveness of larval CRW control near Clay Center, NE during 2013. Trial site was late-planted corn and pumpkins (insecticide free) during 2012. Experimental design was a RCB with 4 replicates. Plot size was 2 rows x 70 ft length in 30-inch row spacing. Soil type was a Crete silt loam. ‘Golden Harvest H8969 3122’ (Agrisure 3122; contains 95% Agrisure CB/LL, Agrisure RW, Herculex I, and Herculex RW insect traited seed and 5% non-insect traited seed) and ‘Golden Harvest H8969 3111’ (Agrisure 3111; contains 100% Agrisure 3000GT and Agrisure Viptera insect traited seed) corn hybrids were planted on 7 May with a 2-row JD 7100 Maximerge planter with finger pickup seed units. Each hybrid received a seed-applied treatment of CruiserMaxx 250 (thiamethoxam @ 0.25 mg ai/kernel). A south wind @ 5-12 mph occurred at planting. Liquid insecticides were applied in-furrow (IF) in 5 GPA water solution via a CO₂ pressurized system. Plant populations were evaluated on 10 Jun. The total number of plants per plot was recorded and converted to plants per acre. Extended leaf height (ELH) of twenty plants per plot was recorded to the nearest half-inch on 18 Jun. Larval feeding damage was evaluated on 25 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). A significant weather event occurred on 01 Aug. A northeast wind of 65 mph was accompanied by pea to nickel-sized hail. The total number of lodged plants, and broken plants at or above and below the ear per plot was recorded on 7 Aug. Plots were machine harvested on 10 Oct. Percent moisture and lbs of grain was recorded and
corrected to 56 lbs/bu @ 15.5% moisture. Data were analyzed by PROC MIXED with mean separation using differences of least square means (P = 0.05).

From planting (7 May) to larval feeding damage evaluation (25 Jul), rainfall totaled 9.00 inches and overhead irrigation, 5.95 inches. Mean root injury ratings (Iowa 0-3 Scale) for the Agrisure 3122 traited corn hybrid without soil insecticide averaged 0.20. The application of Force CS to the Agrisure 3122 traited corn hybrid did not significantly reduce root injury ratings or enhance final grain yield levels. Mean root injury ratings (Iowa 0-3 Scale) for the Agrisure 3111 traited corn hybrid without soil insecticide averaged 0.47. The application of Capture LFR and Force CS to the Agrisure 3111 traited corn hybrid did not significantly reduce root injury protection or final grain yield levels. The weather event on 01 Aug severely negated final grain yield levels.

This research was supported by industry gifts of pesticide and research funding.
<table>
<thead>
<tr>
<th>Treatment Formulation</th>
<th>Rate-amt form /1000 row ft</th>
<th>Placement</th>
<th>Plants /Acre&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Extended Leaf Height&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Root Injury Rating&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Total No. of Lodged Plants&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Total No. of Broken Plants At or Above Ear&lt;sup&gt;b&lt;/sup&gt;</th>
<th>Total No. of Broken Plants Below Ear&lt;sup&gt;c&lt;/sup&gt;</th>
<th>Yield Bu/Acre&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agrisure 3122</td>
<td>30,139</td>
<td>30.139</td>
<td>29.5 b</td>
<td>0.20 ab</td>
<td>10.5 a</td>
<td>1.0 a</td>
<td>2.8</td>
<td>146.1 bc</td>
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<tr>
<td>Agrisure 3122 + Force CS</td>
<td>0.57 fl oz</td>
<td>IF</td>
<td>30,015</td>
<td>30.4 b</td>
<td>0.08 a</td>
<td>4.0 a</td>
<td>2.0 ab</td>
<td>1.5</td>
<td>144.7 c</td>
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<tr>
<td>Agrisure 3111</td>
<td>30,631</td>
<td>30.631</td>
<td>31.8 a</td>
<td>0.47 c</td>
<td>125.3 b</td>
<td>1.5 a</td>
<td>0.8</td>
<td>158.4 abc</td>
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<tr>
<td>Agrisure 3111 + Force CS</td>
<td>0.57 fl oz</td>
<td>IF</td>
<td>30,490</td>
<td>31.6 a</td>
<td>0.30 abc</td>
<td>47.5 a</td>
<td>6.3 c</td>
<td>0.3</td>
<td>160.1 abc</td>
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<tr>
<td>Agrisure 3111 + Capture LFR</td>
<td>0.46 fl oz</td>
<td>IF</td>
<td>30,546</td>
<td>31.7 a</td>
<td>0.41 bc</td>
<td>46.8 a</td>
<td>4.5 bc</td>
<td>0.5</td>
<td>166.2 a</td>
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</table>

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

<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>Means in column are not statistically different using the differences of least square means (MIXED; p|t|>0.05).
CORN: *Zea mays* L. ‘Golden Harvest H8969 3122’ and ‘Golden Harvest H8969 3111’

**EVALUATION OF AGRISURE CORN ROOTWORM TREATED CORN IN COMBINATION WITH SOIL INSECTICIDES AT PLANTING FOR LARVAL CORN ROOTWORM CONTROL, 2013**

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<table>
<thead>
<tr>
<th>Brand Name</th>
<th>Formulation</th>
<th>Common Name</th>
<th>Composition</th>
<th>Manufacturer</th>
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<tbody>
<tr>
<td>Capture</td>
<td>LFR</td>
<td>bifenthrin</td>
<td>2-methylbiphenyl-3-ylmethyl (1RS,3RS)-3-[(Z)-2-chloro-3,3,3-trifluoroprop-1-enyl]-2,2-dimethylcyclopropanecarboxylate</td>
<td>FMC 1735 Market Street Philadelphia, PA 19103</td>
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<tr>
<td>Force</td>
<td>CS</td>
<td>tefluthrin</td>
<td>2,3,5,6-tetrafluoro-4-methylbenzyl (1RS,3RS)-3-[(Z)-2-chloro-3,3,3-trifluoroprop-1-enyl]-2,2-dimethylcyclopropanecarboxylate</td>
<td>Syngenta Crop Protection, Inc. P. O. Box 18300 Greensboro, NC 27409</td>
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