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

UNL – South Central Agricultural Laboratory
Terry A DeVries, University of Nebraska, South Central Ag Lab
Robert J Wright, Dept. Of Entomology, University of Nebraska-Lincoln, Lincoln NE 68583-0816, rwright2@unl.edu

Background information pertaining to above experiments conducted near Harvard, NE, 2017

AGRONOMIC:

Row Spacing: 30 inches
Row Orientation: North-South
Planting Date: April 19, 2017
Planter: 2-row JD 7100 Maximerge planter with finger pickup units
Hybrid (Traits): DeKalb DKC60-69RIB (VT2PRIB)
Planting Depth: 2½ inches
Target Seeding Rate: 35,700 seeds per acre
Previous Crop: Late planted corn and pumpkins

Soil Information: Soil type: Crete silt loam
Soil Drainage: Good
Soil Texture: % Sand: 15, % Silt: 56, % Clay: 29
Soil pH: 6.5
% Organic Matter: 3.0
Sum of Cations: 18.5 me/100g
Tillage type: Reduced, planted into established ridge/row.

Insecticide Applications:

Liquid Products-
Liquid formulations were directed into the open seed furrow in front of the press wheels via a 5 GPA rate of water solution at planting.

Granular Products-
Insecticide granules were applied via the SmartBox application system and directed into the open seed furrow in front of the press wheels.

Herbicides Applied:

Broadcasted:
Acuron @ 2.0 Qt/A and RoundUp PowerMax @ 40 fl oz/A on May 5, 2017.
RoundUp PowerMax @ 26 fl oz/A and Atrazine 4L @ 1.5 Qt/A on May 30, 2017.
RoundUp PowerMax @ 26 fl oz/A on June 12, 2017 to control volunteer corn.

Fertilizer Applied:
100 lbs 11-52-0 fertilizer broadcast on February 9, 2017.
200 lbs nitrogen/A applied in the form of anhydrous ammonia April 2017.
EXPERIMENTAL DESIGN:

Design: Randomized complete block; replicated four times

Plot Size: 4 rows x 67-78 ft length

ENVIRONMENTAL:

Conditions at planting:

Soil Temperature @ 4”: 59°F @ 1:30 PM

Wind direction and speed: SW @ 10-15 mph

Soil surface condition: Excellent

Subsoil moisture: Excellent to slightly moist

DATA COLLECTION:

Plant Populations: The total number of corn plants in the center two rows of each plot was recorded on June 1, 2017 and converted to plants per acre (PPA).

Extended Leaf Heights: The extended leaf height (inches) of twenty random plants from the center two rows in each plot was recorded on June 19, 2017.

Harvest Evaluations: Plots were machine harvested on October 20, 2017. Pounds of grain and % moisture levels were recorded and converted to bushels per acre at 56 lbs/bu and 15.5% moisture.

ENTOMOLOGICAL DATA:

Species present: Natural infestation of western corn rootworm, *Diabrotica virgifera virgifera* LeConte.


Days From Planting To: 42 days

Initial Rootworm Egg Hatch


Root Lodging & Dead Plant Evaluations: The total number of root lodged and dead plants due to larval corn rootworm feeding in the center two rows of each plot was recorded on June 30, 2017. No dead plants were recorded at time of evaluation.

Root Injury Ratings: Five plants per plot (3 from row 1 and 2 from row 4) were dug and rated using the Iowa 0-3 root injury rating scale on July 10, 2017.
## Apr. 1 - Sept. 30 Growing Season Rainfall & Irrigation
### SCAL HOBO Weather Station

(18.71 in. rain - 94% of normal and 8.69 in. irrigation)

<table>
<thead>
<tr>
<th>Month</th>
<th>2017 Rainfall</th>
<th>30-yr Norm</th>
<th>%Norm</th>
</tr>
</thead>
<tbody>
<tr>
<td>April</td>
<td>3.39</td>
<td>2.53</td>
<td>134</td>
</tr>
<tr>
<td>May</td>
<td>6.09</td>
<td>4.41</td>
<td>138</td>
</tr>
<tr>
<td>June</td>
<td>0.94</td>
<td>3.90</td>
<td>24</td>
</tr>
<tr>
<td>July</td>
<td>1.89</td>
<td>3.60</td>
<td>53</td>
</tr>
<tr>
<td>Aug</td>
<td>4.13</td>
<td>3.20</td>
<td>129</td>
</tr>
<tr>
<td>Sept</td>
<td>2.27</td>
<td>2.36</td>
<td>96</td>
</tr>
<tr>
<td>Total</td>
<td>18.71</td>
<td>20.00</td>
<td>93.6</td>
</tr>
</tbody>
</table>
EVALUATION OF LIQUID AND GRANULAR INSECTICIDE FORMULATIONS AT PLANTING FOR LARVAL CORN ROOTWORM CONTROL, 2017A

<table>
<thead>
<tr>
<th>Insecticide Product</th>
<th>Rate of Product (/1000 row ft)</th>
<th>Yield(^2) (bu/acre)</th>
<th>Iowa 0-3 Root Ratings(^1)</th>
<th>% Consistency Iowa 0-3 Scale (&lt;0.25)(^{1,3})</th>
<th>% Root Lodging(^1)</th>
<th>Extended Leaf Height(^2) (inches)</th>
<th>PPA(^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Index 2.8CS</td>
<td>0.72 fl oz</td>
<td>266.3</td>
<td>1.16 bc</td>
<td>30 a</td>
<td>2.5 a</td>
<td>39.1</td>
<td>34,699</td>
</tr>
<tr>
<td>Capture LFR</td>
<td>0.98 fl oz</td>
<td>258.3</td>
<td>1.28 c</td>
<td>25 ab</td>
<td>10.9 a</td>
<td>38.1</td>
<td>34,672</td>
</tr>
<tr>
<td>Force 10G</td>
<td>1.30 oz</td>
<td>257.7</td>
<td>0.68 ab</td>
<td>30 a</td>
<td>0.8 a</td>
<td>37.0</td>
<td>34,696</td>
</tr>
<tr>
<td>Force CS</td>
<td>0.50 fl oz</td>
<td>253.5</td>
<td>0.74 ab</td>
<td>20 ab</td>
<td>0.6 a</td>
<td>39.6</td>
<td>33,916</td>
</tr>
<tr>
<td>Aztec HC</td>
<td>1.50 oz</td>
<td>253.1</td>
<td>0.57 a</td>
<td>50 a</td>
<td>4.6 a</td>
<td>39.9</td>
<td>34,888</td>
</tr>
<tr>
<td>SmartChoice HC</td>
<td>1.70 oz</td>
<td>252.7</td>
<td>1.47 c</td>
<td>5 b</td>
<td>16.1 a</td>
<td>33.4</td>
<td>34,937</td>
</tr>
<tr>
<td>Untreated Check</td>
<td></td>
<td>247.7</td>
<td>2.00 d</td>
<td>5 b</td>
<td>53.1 b</td>
<td>37.1</td>
<td>34,621</td>
</tr>
</tbody>
</table>

Treatment Probability: 0.1106 \(\text{p<0.0001}\) 0.0911 \(\text{p=0.8258}\)

1 Means in column followed by the same lowercase letter are not statistically different using the differences of least square means (MIXED; \(p|t|>0.05\)).

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

3 Averages were converted by the angular transformation of percentages to degrees, before MIXED, original percentages are reported.