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

UNL – South Central Agricultural Laboratory

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

AGRONOMIC:

Row Spacing: 30 inches
Row Orientation: North-South
Planting Date: April 20, 2017
Planter: 2-row JD 7100 Maximerge planter with finger pickup units
Hybrid (Traits): Munson 7400VT2P
Planting Depth: 2½ inches
Target Seeding Rate: 32,100 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.

Seed Treatments-

Seed-applied insecticides were applied commercially.

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 68-76 ft length

ENVIRONMENTAL:

Conditions at planting:
- Soil Temperature @ 4”: 52⁰ F @ 12PM
- Wind direction and speed: NE @ 7-10 mph
- Soil surface condition: Excellent
- Subsoil moisture: Excellent

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 20, 2017.

Harvest Evaluations: Plots were machine harvested on October 17, 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: 41 days
Initial Rootworm Egg Hatch


Root Lodging, Dead Plant, & Broken 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.

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 11, 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)

HOBO Weather Station

<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 PLANTING TIME INSECTICIDE FORMULATIONS AND SEED TREATMENTS FOR LARVAL CORN ROOTWORM CONTROL, 2017

<table>
<thead>
<tr>
<th>Insecticide Product</th>
<th>Rate of Product (/acre)</th>
<th>Rate of Poncho ST (mg/k)</th>
<th>Yield&lt;sup&gt;1&lt;/sup&gt; (bu/acre)</th>
<th>Iowa 0-3 Root Ratings&lt;sup&gt;1&lt;/sup&gt;</th>
<th>% Root Lodging&lt;sup&gt;1&lt;/sup&gt;</th>
<th>Total No. of Dead Plants&lt;sup&gt;2&lt;/sup&gt;</th>
<th>Extended Leaf Height&lt;sup&gt;2&lt;/sup&gt; (inches)</th>
<th>PPA&lt;sup&gt;2&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>--------</td>
<td>1.25</td>
<td>222.8 a</td>
<td>1.83 b</td>
<td>49.6 bc</td>
<td>0.3</td>
<td>36.5</td>
<td>32.885</td>
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</tr>
<tr>
<td>V-10395</td>
<td>12 fl oz</td>
<td>-----</td>
<td>221.8 a</td>
<td>1.86 b</td>
<td>23.8 ab</td>
<td>0.0</td>
<td>37.6</td>
<td>32.292</td>
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<tr>
<td>V-10395</td>
<td>8 fl oz</td>
<td>-----</td>
<td>214.2 ab</td>
<td>2.14 bc</td>
<td>27.3 ab</td>
<td>0.3</td>
<td>37.1</td>
<td>32.777</td>
</tr>
<tr>
<td>Force 3G</td>
<td>5 oz/1000 ft</td>
<td>-----</td>
<td>208.9 ab</td>
<td>0.87 a</td>
<td>3.4 a</td>
<td>0.0</td>
<td>36.7</td>
<td>31.964</td>
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<tr>
<td>Aztec 4.67G</td>
<td>3 oz/1000 ft</td>
<td>-----</td>
<td>208.8 ab</td>
<td>0.75 a</td>
<td>11.4 a</td>
<td>1.3</td>
<td>35.6</td>
<td>32.538</td>
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<td>Capture LFR</td>
<td>16 fl oz</td>
<td>-----</td>
<td>196.0 bc</td>
<td>2.19 bcd</td>
<td>78.7 d</td>
<td>0.3</td>
<td>36.3</td>
<td>32.265</td>
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<td>Untreated Check</td>
<td></td>
<td></td>
<td>178.6 c</td>
<td>2.62 d</td>
<td>88.4 d</td>
<td>0.8</td>
<td>35.6</td>
<td>31.738</td>
</tr>
</tbody>
</table>

| Treatment Probability | 0.0145 | <0.0001 | <0.0001 | 0.4149 | 0.2383 | 0.2859 |

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

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