

## Background information pertaining to corn rootworm experiments conducted at UNL South Central Ag Laboratory, Clay Center, NE during 2005.

---

### Agronomic

Hybrids:	NC+ 5413R, (Roundup Ready), Trts #1 & #2, #4 thru #14) and NC+ 5414RD, (Roundup Ready, YieldGard™ Rootworm Corn), Trt #3 <b>IMPORTANT NOTE:</b> these hybrids are from two different seed lots and hence differ in seed size and shape.
Row Spacing:	30 inches
Row Orientation:	North-South
Planting Date:	25 April 2005
Planter:	2-row 7100 JD Maximerge with finger pickup units
Planting Depth:	2 inches
Application Equipment:	<u>Seed Treatments:</u> <ul style="list-style-type: none"><li>• Commercially treated seed: (Trt #2, #3, #4, #7, #8, #9, #12 and #13).</li></ul> <u>Granular Insecticides:</u> <ul style="list-style-type: none"><li>• Standard insecticide boxes: (Trt #5, #6, #7, #8 and #10).</li><li>• SmartBox™ application system: (Trt #12 and #13).</li></ul> <u>Liquid Insecticides:</u> <p>CO<sub>2</sub> pressurized sprayer mounted on planter; Treatments applied in 5 GPA solution either via:</p> <ul style="list-style-type: none"><li>• Microtubes positioned between the tru-v disc openers (Trt #1 and #2).</li><li>• 7 inch t-band over the open seed furrow and in front of the press wheels (Trt #11).</li></ul>
Previous Crop:	Late planted corn
Soil Information:	Crete silt loam
Herbicides Applied:	Harness Xtra 5.6L @ 2.5 qt/acre, Roundup WeatherMax @ 22 oz/acre and AMS @ 17 lbs/100 gal solution in 14 GPA water on 03 May 2005. Roundup WeatherMax @ 22 oz/acre and AMS @ 17 lbs/100 gal solution in 26 GPA water on June 15, 2005.

Fertilizer Applied: 200 lbs N/acre on 04 April 2005

### **Data Collection:**

Plant Population: The total number of plants per plot were recorded on 20 May 2005. Overall mean number of plants per acre:  $\pm$  SEM: 27,147  $\pm$  929.

Plant Vigor: Individual plants were recorded as exhibiting plant vigor if they were similar in size (or greater) and appearance when compared to the overall average of the plants within the trial area. The total number of plants per plot exhibiting plant vigor were recorded on 20 May 2005 and divided into the total number of plants per plot to calculate percentage plant vigor.

Extended Leaf Height: Extended leaf heights were recorded in inches on 20 randomly selected plants per plot on 20 June 2005.

Total No. of Dead Plant Evaluations: The total number of dead plants per plot due to corn rootworm larvae feeding damage were recorded on 01 July 2005.

### **Entomological Data:**

Species present: Predominantly western corn rootworm, *Diabrotica virgifera virgifera* LeConte, and a few northern corn rootworm, *D. barberi* Smith and Lawrence.

CRW egg hatch: First observed on 26 May 2005.

Root Evaluation: Iowa 0-3 and 1-6 root damage scales were used to evaluate larval corn rootworm in each treatment per replication. Five randomly selected plants were dug from each plot.

Root Evaluation Date: 13 July 2005

### **Experimental Design**

Design: Randomized Complete Block  
Replicated four times

Plot Size: 1 row x 144 feet

Statistical Analyses: Standard GLM procedures, Fisher's protected LSD was used for mean separation where statistical differences ( $P \leq 0.05$ ) occurred.

### **Environmental**

#### **Conditions at planting:**

Wind direction and speed: NNW @ 15-30 mph, 30+ gusts; all granular insecticides were placed in furrow due to wind speed.

Soil temperature @ 4": 50° F @ 4:30 PM

Soil surface condition: Excellent-moist - high humidity; sprinkled during planting

Subsoil moisture: Excellent

**Record of Rainfall:** (April 10 - August 22)

<b><u>Date</u></b>	<b><u>Amount (Inches)</u></b>	<b><u>Month</u></b>	<b><u>Total (Inches)</u></b>
April 10	1.10	April	1.40
April 22	0.30	May	1.35
May 12	1.35	June	1.90
June 1	0.10	July	2.85
June 3	0.65	August	<u>1.85</u>
June 9	0.40	<b><i>Total</i></b>	<b>9.35</b>
June 21	0.75		
July 8	0.80		
July 18	0.30		
July 26	1.75		
August 18	1.50		
August 22	<u>0.35</u>		
<b><i>Total</i></b>	<b>9.35</b>		

**Seasonal Record of Irrigation:**

<b><u>Date</u></b>	<b><u>Amount (Inches)</u></b>
June 27	0.75
July 5	1.49
July 13	1.50
July 19	1.19
August 3	1.18
August 10	1.52
August 16	<u>1.50</u>
<b><i>Total</i></b>	<b>9.13</b>

## 2005 Corn Rootworm Trial conducted at Clay Center, NE

Trt#	Product(s) <sup>2</sup>	Recommended Rate(s)	Placement	Avg. Root Injury Ratings 0-3 Scale <sup>1</sup> (13 July)	Avg. Root Injury Ratings 1-6 Scale <sup>1</sup> (13 July)
6	<b>Aztec 2.1G</b>	<b>6.7 oz/1000 row ft</b>	<b>In furrow</b>	<b>0.10 a</b>	<b>2.25 a</b>
1	Regent 4SC	4.16 oz/acre	Microtube	0.11 a	2.45 a
3	<b>YieldGard™ Rootworm Corn + Poncho 250</b>	----- <b>0.25 mg ai/seed</b>	<b>Transgenic seed</b> <b>Seed trt</b>	<b>0.11 a</b>	<b>2.45 a</b>
7	Aztec 2.1G + Poncho 250	6.7 oz/1000 row ft 0.25 mg ai/seed	In furrow Seed trt	0.12 a	2.45 a
12	<b>Aztec 4.67G + Poncho 250</b>	<b>3 oz/1000 row ft</b> <b>0.25 mg ai/seed</b>	<b>In furrow</b> <b>Seed trt</b>	<b>0.12 a</b>	<b>2.55 ab</b>
2	Regent 4SC Poncho 250	3.25 oz/acre 0.25 mg ai/seed	Microtube Seed trt	0.13 a	2.49 a
13	<b>Force 3G + Poncho 250</b>	<b>4 oz/1000 row ft</b> <b>0.25 mg ai/seed</b>	<b>In furrow</b> <b>Seed trt</b>	<b>0.17 a</b>	<b>2.45 a</b>
8	Aztec 2.1G Poncho 1250	6.7 oz/1000 row ft 1.25 mg ai/seed	In furrow Seed trt	0.18 a	2.60 ab
9	<b>Cruiser 5FS</b>	<b>1.25 mg ai/seed</b>	<b>Seed trt</b>	<b>0.18 a</b>	<b>2.70 abc</b>
5	Force 3G	4 oz/1000 row ft	In furrow	0.21 a	2.65 ab
4	<b>Poncho 1250</b>	<b>1.25 mg ai/seed</b>	<b>Seed trt</b>	<b>0.23 a</b>	<b>2.70 abc</b>
10	Lorsban 15G	8 oz/1000 row ft	In furrow	0.30 a	3.00 bc
11	<b>Lorsban 4E</b>	<b>2.4 oz/1000 row ft</b>	<b>T-band</b>	<b>0.65 b</b>	<b>3.20 c</b>
14	Untreated check	-----	-----	1.49 c	4.15 d
<b>LSD(0.05)</b>				<b>0.35</b>	<b>0.51</b>
<b>Treatment Probability</b>				<b>&lt;0.0001</b>	<b>&lt;0.0001</b>

<sup>1</sup>Means in column followed by the same lowercase letter are not statistically different using Fisher's protected LSD( $\alpha = 0.05$ ).

<sup>2</sup>Treatments #1 and #2 were applied in a 5 GPA water solution via microtubes. The YieldGard™ Rootworm corn hybrid planted in treatment #3 possesses the cry3Bb1 gene encoding a Coleopteran-specific insecticidal protein from *Bacillus thuringiensis kumamotoensis*. Treatment #11 was applied in a 5 GPA water solution via t-band application. All seed treatments were commercially applied. Insecticide treatments #12 and #13 were applied via the SmartBox™ application system, remaining granular insecticides were applied with standard insecticide boxes.

## 2005 Corn Rootworm Trial conducted at Clay Center, NE

Trt#	Product <sup>2</sup>	Recommended Rate	Placement	Plants Per Acre <sub>1</sub> (20 May)	Avg. % Plant Vigor <sup>1</sup> (20 May)	Total No. Of Dead Plants <sup>3</sup> (01 July)
<b>3</b>	<b>YieldGard™ Rootworm Corn + Poncho 250</b>	----- <b>0.25 mg ai/seed</b>	<b>Transgenic seed Seed trt</b>	<b>30,250 a</b>	<b>93.4 a</b>	<b>0.25</b>
1	Regent 4SC	4.16 oz/acre	Microtube	27,981 b	84.8 bcdef	0.75
<b>5</b>	<b>Force 3G</b>	<b>4 oz/1000 row ft</b>	<b>In furrow</b>	<b>27,921 b</b>	<b>87.7 bc</b>	<b>1.00</b>
11	Lorsban 4E	2.4 oz/1000 row ft	T-band	27,346 bcd	87.0 bcd	1.00
<b>6</b>	<b>Aztec 2.1G</b>	<b>6.7 oz/1000 row ft</b>	<b>In furrow</b>	<b>27,255 bcde</b>	<b>85.7 bcde</b>	<b>1.75</b>
4	Poncho 1250	1.25 mg ai/seed	Seed trt	27,013 bcde	84.9 bcdef	0.00
<b>7</b>	<b>Aztec 2.1G + Poncho 250</b>	<b>6.7 oz/1000 row ft 0.25 mg ai/seed</b>	<b>In furrow Seed trt</b>	<b>26,771 bcde</b>	<b>86.1 bcde</b>	<b>0.25</b>
8	Aztec 2.1G Poncho 1250	6.7 oz/1000 row ft 1.25 mg ai/seed	In furrow Seed trt	26,590 cde	84.0 cdef	0.25
<b>2</b>	<b>Regent 4SC Poncho 250</b>	<b>3.25 oz/acre 0.25 mg ai/seed</b>	<b>Microtube Seed trt</b>	<b>26,439 de</b>	<b>83.3 def</b>	<b>0.25</b>
13	Force 3G + Poncho 250	4 oz/1000 row ft 0.25 mg ai/seed	In furrow Seed trt	26,408 de	84.2 bcdef	0.25
<b>12</b>	<b>Aztec 4.67G + Poncho 250</b>	<b>3 oz/1000 row ft 0.25 mg ai/seed</b>	<b>In furrow Seed trt</b>	<b>26,227 de</b>	<b>82.5 ef</b>	<b>0.25</b>
10	Lorsban 15G	8 oz/1000 row ft	In furrow	26,136 de	81.3 f	0.50
<b>9</b>	<b>Cruiser 5FS</b>	<b>1.25 mg ai/seed</b>	<b>Seed trt</b>	<b>25,955 e</b>	<b>83.6 def</b>	<b>0.00</b>
14	Untreated check	-----	-----	27,770 bc	88.0 b	2.00
<b>LSD(0.05) Treatment Probability</b>				<b>1,329 &lt;0.0001</b>	<b>3.9 &lt;0.0001</b>	<b>NS 0.1682</b>

<sup>1</sup>Means in column followed by the same lowercase letter are not statistically different using Fisher's protected LSD( $\alpha = 0.05$ ).

<sup>2</sup>Treatments #1 and #2 were applied in a 5 GPA water solution via microtubes. The YieldGard™ Rootworm corn hybrid planted in treatment #3 possesses the cry3Bb1 gene encoding a Coleopteran-specific insecticidal protein from *Bacillus thuringiensis kumamotoensis*. Treatment #11 was applied in a 5 GPA water solution via t-band application. All seed treatments were commercially applied. Insecticide treatments #12 and #13 were applied via the SmartBox™ application system, remaining granular insecticides were applied with standard insecticide boxes.

<sup>3</sup>Means in column are not statistically different using Fisher's protected LSD( $\alpha = 0.05$ ).

## 2005 Corn Rootworm Trial conducted at Clay Center, NE

Trt#	Product <sup>2</sup>	Recommended Rate	Placement	Avg. Extended Leaf Height <sup>1</sup> (inches) 20 June
3	<b>YieldGard™ Rootworm Corn + Poncho 250</b>	----- <b>0.25 mg ai/seed</b>	<b>Transgenic seed Seed trt</b>	<b>39.83 a</b>
5	Force 3G	4 oz/1000 row ft	In furrow	38.03 ab
13	<b>Force 3G + Poncho 250</b>	<b>4 oz/1000 row ft 0.25 mg ai/seed</b>	<b>In furrow Seed trt</b>	<b>37.10 bc</b>
7	Aztec 2.1G + Poncho 250	6.7 oz/1000 row ft 0.25 mg ai/seed	In furrow Seed trt	36.98 bc
9	<b>Cruiser 5FS</b>	<b>1.25 mg ai/seed</b>	<b>Seed trt</b>	<b>36.28 bc</b>
12	Aztec 4.67G + Poncho 250	3 oz/1000 row ft 0.25 mg ai/seed	In furrow Seed trt	35.95 bc
2	<b>Regent 4SC Poncho 250</b>	<b>3.25 oz/acre 0.25 mg ai/seed</b>	<b>Microtube Seed trt</b>	<b>35.73 bc</b>
4	Poncho 1250	1.25 mg ai/seed	Seed trt	35.65 bc
6	<b>Aztec 2.1G</b>	<b>6.7 oz/1000 row ft</b>	<b>In furrow</b>	<b>35.55 bc</b>
1	Regent 4SC	4.16 oz/acre	Microtube	35.40 c
11	<b>Lorsban 4E</b>	<b>2.4 oz/1000 row ft</b>	<b>T-band</b>	<b>35.28 c</b>
8	Aztec 2.1G Poncho 1250	6.7 oz/1000 row ft 1.25 mg ai/seed	In furrow Seed trt	35.15 c
10	<b>Lorsban 15G</b>	<b>8 oz/1000 row ft</b>	<b>In furrow</b>	<b>34.90 c</b>
14	Untreated check	-----	-----	35.95 bc
<b>LSD(0.05) Treatment Probability</b>				<b>2.54 0.0252</b>

<sup>1</sup>Means in column followed by the same lowercase letter are not statistically different using Fisher's protected LSD( $\alpha = 0.05$ ).

<sup>2</sup>Treatments #1 and #2 were applied in a 5 GPA water solution via microtubes. The YieldGard™ Rootworm corn hybrid planted in treatment #3 possesses the cry3Bb1 gene encoding a Coleopteran-specific insecticidal protein from *Bacillus thuringiensis kumamotoensis*. Treatment #11 was applied in a 5 GPA water solution via t-band application. All seed treatments were commercially applied. Insecticide treatments #12 and #13 were applied via the SmartBox™ application system, remaining granular insecticides were applied with standard insecticide boxes.