

**2001 CORN ROOTWORM SOIL INSECTICIDE EVALUATIONS  
 AGRICULTURAL RESEARCH AND DEVELOPMENT CENTER  
 MEAD, NEBRASKA**

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*Background Information -Agronomic*

**Hybrid:** Pioneer 33G26

**Row Spacing:** 30 inches

**Planting Date** 27 April 2001

**Planter:** Kinze model 2100, 4 row

**Planting Depth:** 2 inches

**Application Equipment:** Granular Insecticides  
 Planting: Planter mounted cone-belt system  
Liquid Insecticides  
 CO<sub>2</sub>planter-mounted CO<sub>2</sub> pressurized sprayer

**Field Preparation:** Spring 2001 - disked and harrowed

**Herbicides Applied:** 9 May 2001: Bicep II Magnum, 2.1 qt./A, pre-emerge  
 8 June 2001: 0.66 oz Accent, 4 oz Distinct/A

**Fertilizer Applied:** 150 lb. N/A applied as NH<sub>3</sub> April 2001

**Previous Crop:** Continuous corn (trap crop)

**Soil Information:**

**Type:** Silty clay loam

**Ph:** 6.4

**CEC:** 29.4

**% organic matter:** 2.8

**% clay:** 29.05

**% silt:** 66.67

**% sand:** 4.28

**Plant Population:** Overall mean number of plants/33.5'  $\pm$  SEM = 48.72  $\pm$  0.26

**Phytotoxicity:** There were no significant differences ( $P > 0.05$ ) among treatment stand count means or among number of abnormal plants/treatment at V2-3 growth stage (Hanway 1997).

**Insecticide History:** Insecticide free: 1989 - 1992, 1994 - 1996, 1998, 2000  
Multiclass soil insecticide trials: 1993, 1997, 1999

***Background Information - Entomology***

**Species Present:** Northern corn rootworm, *Diabrotica barberi* Smith and Lawrence, and western corn rootworm, *D. virgifera virgifera* LeConte. Initial rootworm egg hatch detected 28 May 2001 (predominantly western corn rootworm)

**Root Evaluation:** 1-6 (Hills and Peters, 1971) and 0 - 3 (J. Oleson, Iowa State University) root rating scales were used to evaluate larval corn rootworm damage in each treatment. Five roots were evaluated in each treatment and replication. (See [Nebguide G92-1108-A](#) and <http://www.ent.iastate.edu/pest/rootworm/nodeinjury/nodeinjury.html>)

for rating scale descriptions.)

**Root  
Evaluation**    **11 July 2001**  
**Date:**

### *Experimental Design*

**Design:**            **Randomized complete block design  
Replicated four times  
Single row treatments**

**Row Length:**    **33.5 feet**

**Statistical  
Analysis:**        **Plant Stands, Root Ratings: Standard ANOVA procedures; LSD  
test was used for mean separation where statistical differences (P  
less than or equal to 0.05) occurred.**

### *Environmental Conditions at Planting*

**Air Temperature:**        **26°C**

**Wind speed:**            **5mph at 5 ft. height**

**Wind direction:**        **S - SW**

**Soil temperature 2"  
depth:**                **22°C**

**Soil temperature  
surface:**                **25°C**

**Soil moisture, 0-3"  
depth:**                **21.7% water (gravimetric method)**

**% cloud cover:**        **clear, 0% cloud cover**

**% relative humidity:**    **not recorded**

**Residue on surface:**    **10 - 15% of soil surface covered with crop residue; soil**

very moist, somewhat cloddy

*Environmental Conditions: Aztec BD 2.1 applied at cultivation (7 June 01)*

<b>Air temperature:</b>	<b>28°C</b>
<b>Wind speed:</b>	<b>5 - 10 mph at 5 ft. height</b>
<b>Wind direction:</b>	<b>NE</b>
<b>Soil temperature 2" depth:</b>	<b>25°C</b>
<b>Soil temperature surface:</b>	<b>34°C</b>
<b>Soil moisture, 0-3" depth:</b>	<b>19.6% water (gravimetric method)</b>
<b>% cloud cover:</b>	<b>30% cloud cover</b>
<b>% relative humidity:</b>	<b>not recorded</b>
<b>Soil surface condition:</b>	<b>10 - 15% of soil surface covered with crop residue</b>

*Rainfall and Irrigation*

<b>April</b>	<b>3</b>	<b>0.16 inch</b>
	<b>5</b>	<b>0.04 inch</b>
	<b>6</b>	<b>0.04 inch</b>
	<b>10</b>	<b>0.51 inch</b>
	<b>11</b>	<b>0.79 inch</b>
	<b>20</b>	<b>0.04 inch</b>
	<b>21</b>	<b>0.12 inch</b>
	<b>22</b>	<b>0.59 inch</b>
	<b>30</b>	<b>0.04 inch</b>
<b>Total</b>		<b>2.33 inches</b>

<b>May</b>	<b>2</b>	<b>0.24 inch</b>	
	<b>3</b>	<b>1.50 inch</b>	
	<b>4</b>	<b>1.58 inch</b>	
	<b>5</b>	<b>1.02 inch</b>	
	<b>6</b>	<b>0.12 inch</b>	
	<b>12</b>	<b>0.04 inch</b>	
	<b>20</b>	<b>1.73 inch</b>	
	<b>25</b>	<b>0.04 inch</b>	
	<b>30</b>	<b>1.97 inch</b>	
	<b>31</b>	<b>0.12 inch</b>	
<b>Total</b>			<b>8.36 inches</b>

<b>June</b>	<b>1</b>	<b>0.04 inch</b>	
	<b>3</b>	<b>0.20 inch</b>	
	<b>4</b>	<b>0.16 inch</b>	
	<b>5</b>	<b>0.24 inch</b>	
	<b>10</b>	<b>0.08 inch</b>	
	<b>13</b>	<b>0.04 inch</b>	
	<b>14</b>	<b>0.67 inch</b>	
	<b>19</b>	<b>0.16 inch</b>	
	<b>20</b>	<b>0.04 inch</b>	
<b>Total</b>			<b>1.63 inches</b>

<b>July</b>	<b>3</b>	<b>0.59 inch</b>	
	<b>11</b>	<b>0.08 inch</b>	
	<b>19</b>	<b>0.08 inch</b>	
	<b>27</b>	<b>0.04 inch</b>	

**Total**                                **0.79 inches**

**August 14**    **0.12 inch**

**15**    **1.30 inch**

**24**    **0.95 inch**

**Total**                                **2.37**

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**Irrigation 2001:**

**Irrigation was applied periodically between planting and root damage evaluation.**

**June 27**    **0.5 inch**

**29**    **0.5 inch**

**July 2**    **1.0 inch**

**6**    **1.0 inch**

**13**    **1.0 inch**

**18**    **1.0 inch**

**23**    **1.0 inch**

**30**    **1.0 inch**

**August 3**    **1.0 inch**

***Experimental Formulations/Applications Evaluated - 2001***

<b><u>Compound</u></b>	<b><u>Company</u></b>
<b>Capture 1.15G</b>	<b>FMC</b>

***Root Damage Evaluation***

<b>Insecticide</b>	<b>Rate/Placement<sup>a</sup> oz ai/1000 ft.</b>	<b>Mean Root Damage Rating<sup>b</sup> (1-6 scale)    (0 - 3 scale)</b>
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Aztec 4.67G	0.14 I smartbox appl.	2.10 a	0.09 a
Aztec 4.67G	0.14 TB smartbox appl.	2.10 a	0.08 a
Force 3G	0.12 TB	2.10 a	0.10 a
Aztec BD 2.1G	0.141 I	2.15 a	0.10 a
Aztec BD 2.1G	0.141 C	2.30 ab	0.13 a
Regent 4SC	see footnote c	2.30 ab	0.16 ab
Force 3G	0.12 I	2.35 a-c	0.18 a-c
Aztec BD 2.1G	0.141 TB	2.40 a-c	0.21 a-d
Capture 2EC	see footnote d	2.40 a-c	0.19 a-c
Capture 2EC	see footnote e	2.45 a-c	0.24 a-d
Lorsban 15G	1.2 TB	2.45 a-c	0.23 a-d
Counter 20CR	1.2 TB	2.50 a-c	0.18 a-c
Regent 4SC	see footnote f	2.55 a-c	0.17 ab
Fortress 5G	0.15 I smartbox appl.	2.75 b-d	0.40 a-e
Capture 1.15G	0.09 TB	2.75 b-d	0.26 a-d
Fortress 5G	0.15 TB smartbox appl.	2.75 b-d	0.39 a-e
Counter 20CR	1.2 I	2.85 c-e	0.34 a-d
Lorsban 15G	1.2 I	2.85 c-e	0.48 b-f
Thimet 20G	1.2 TB	3.10 d-f	0.70 ef
Capture 1.15G	0.09 I	3.15 d-f	0.50 c-f
Untreated		3.30 ef	0.54 d-f
Untreated		3.50 f	0.77 f

<sup>a</sup> placement:

TB = T-band, 7-inch band placed over the open seed furrow

I = Placed in the open seed furrow

C = first cultivation application on 7 June 2001

<sup>b</sup>Root rating scales used: 1 - 6 scale (Hills and Peters 1971); 0 - 3 scale (J. Oleson, Iowa State University); Within columns, mean root rating values followed by the same letter are not significantly different from each other (Fisher's protected LSD test @ 0.05 significance level).

<sup>c</sup>Regent 4SC: rate: 0.13 lb ai/A; volume: 4 gallons 10-34-0 fertilizer/A through microtube into open seed furrow

<sup>d</sup>Capture 2EC: rate: 0.075 oz ai/1000'; volume: 5 gallon water/A, TB application.

<sup>e</sup>Capture 2EC: rate: 0.075 oz ai/1000'; volume: 2 gallon water/A through microtube into open seed furrow.

†Regent 4SC: rate: 0.13 lb ai/A; volume: 1 gallon water/A through microtube into open seed furrow.

