

# 2003 CORN ROOTWORM SOIL INSECTICIDE EVALUATION<sup>1</sup>

## Final Report

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<sup>1</sup> The data presented in this report are not to be released to the public without the written permission of the Department of Entomology, University of Nebraska, Lincoln, Nebraska.

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### ***Background Information - Agronomic***

Hybrid: Pioneer 33G26  
Row Spacing: 30 inches  
Planting Date: 28 April 2003  
Planter: Kinze model 2100, 4 row cone  
Planting Depth: 2 inches

Application Equipment:	<u>Granular insecticides</u> Planting: planter mounted cone-belt system or Smartbox system
	<u>Liquid insecticides</u> Planter mounted CO <sub>2</sub> pressurized sprayer
Field Preparation:	16 April 2003 - deep chiseled and disked 28 April 2003 - field cultivated
Herbicides Applied:	28 April 2003: Bicep II Magnum, 2.5 qt/A, pre emerge 9 April 2003: 4 oz Distinct and 0.67 oz Accent / A
Fertilizer Applied:	150 lb. N/A applied as NH <sub>3</sub> , 3 April 2003
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/ Phytotoxicity:	Hard rains after planting and crusting problems during germination resulted in a sub-optimal stand across treatments. A statistical analysis of stand counts among treatments was not conducted because of potential confounding effects of environment and treatment on stand. The overall mean number of plants/33.5' ± SEM = 34.4 ± 4.9.
Insecticide History:	Insecticide free: 1994 - 1996, 1998, 2000, 2002 Multiclass soil insecticide trials: 1993, 1997, 1999, 2001

### ***Background Information - Entomological***



- Species present: Northern corn rootworm, *Diabrotica barberi* Smith and Lawrence, and western corn rootworm, *D. virgifera virgifera* LeConte. Initial rootworm egg hatch occurred between 31 May - 2 June 2003 (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.
- Root Evaluation Date: 22 July 2003

### ***Background Information - Experimental Design***

- Design: Randomized complete block design  
Replicated four times  
Single row treatments
- Row Length: 33.5 feet
- Statistical Analysis: Root Ratings: Used SAS Mixed Procedure; Protected LSD test was used for mean separation (P less than or equal to 0.05)

### ***Background Information - Environmental***

- Conditions at planting:
- Air temperature: 24°C
  - Wind speed: 10 mph at 5 ft height
  - Wind direction: East
  - Soil temperature 2" depth: 19°C
  - Soil temperature surface: 29°C
  - Soil moisture, 0-3" depth: 15.3 % water (gravimetric method)
  - % cloud cover: clear, 0 % cloud cover
  - % relative humidity: not recorded

- Residue on surface: 40% of soil surface covered with crop residue; soil moist, somewhat cloddy

### ***Background Information - Rainfall and Irrigation***

April		May		June		July	
04	0.32 inch	04	2.05 inch	01	0.20 inch	31	0.20 inch
06	0.66 inch	05	0.08 inch	02	0.28 inch		
18	0.04 inch	06	0.32 inch	05	0.39 inch		
19	0.04 inch	08	1.06 inches	06	0.04 inch		
21	0.04 inch	10	0.20 inch	07	0.51 inch		
23	0.20 inch	22	0.04 inch	09	0.24 inch		
24	0.04 inch	24	0.20 inch	12	0.43 inch		
28	0.08 inches			18	1.38 inches		
29	0.95 inch			22	0.04 inch		
30	0.12 inch						
Total	<b>2.49 inches</b>	Total	<b>4.93 inches</b>	Total	<b>3.51 inches</b>	Total	<b>0.20 inches</b>

### Irrigation (through July 2003):

Sprinkler irrigation was applied periodically between planting and root damage evaluation.

July 3	2.5 inches
21	0.5 inches
25	2.0 inches

### ***Root Damage Evaluations***

Table 1. 2003 Corn Rootworm Soil Insecticide Experiment 1.  
University of Nebraska Agricultural Research and Development Center, near Mead, Ne



## Root Damage Evaluation

Insecticide	Rate/Placement <sup>a</sup>	Mean Root Damage Rating <sup>b</sup>	
		(1 - 6 scale)	(0 - 3 scale)
Regent 4 SC	see footnote c	2.30a	0.06a
Regent 4 SC	see footnote d	2.40ab	0.11a
Fortress 5G	0.22 I, smartbox appl.	2.50ab	0.09a
Aztec 4.67G	0.137 I, smartbox appl.	2.55ab	0.17a
Aztec 4.67G	0.137 TB, smartbox appl.	2.65ab	0.17a
Capture 2EC	see footnote e	2.65ab	0.17a
Capture 2EC	see footnote f	2.70ab	0.14a
Force 3G	0.12 TB	2.70ab	0.14a
Aztec 2.1G	0.141 TB	2.70ab	0.18a
Poncho 600	ST, 1.25 mg ai/seed	2.75ab	0.28ab
Fortress 5G	0.18 I, smartbox appl.	2.75ab	0.34ab
Thimet 20G	1.2 TB	2.75ab	0.31ab
Counter 20CR	1.2 TB	2.85abc	0.16a
Lorsban 15G	1.2 I	2.85abc	0.24a
Cruiser 5FS	ST, 1.25 mg ai/seed	2.95abc	0.48ab
Lorsban 15G	1.2 TB	3.05 bc	0.40ab
Untreated		3.55 cd	0.80 bc
Untreated		4.00 d	1.21 c

<sup>a</sup> placement:

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

I = placed in the open seed furrow;

ST = seed treatment

<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 4 SC: rate:0.13 lb ai/A; volume: 4 gallons water/A through microtube into open seed furrow.

<sup>d</sup> Regent 4 SC: rate:0.13 lb ai/A; volume: 1 gallon water/A, through microtube into open seed furrow.

<sup>e</sup> Capture 2EC: rate:0.0875 oz ai/1000': volume: 5 gallons water/A, TB application.

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