

# **2005 CORN ROOTWORM SOIL INSECTICIDE EFFICACY EXPERIMENT<sup>1</sup>**

Final Report

University of Nebraska  
Agricultural Research and Development Center  
Mead, Nebraska

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Background information pertaining to the experiment conducted at the ARDC, near Mead, Nebraska during 2005.

[Background Information - Agronomic](#)

[Background Information - Entomology](#)

[Experimental Design](#)

[Environmental Conditions at Planting](#)

Agronomic

Hybrids:	DKC 60-15, DKC-12
Row Spacing:	30 inches
Planting Date:	3 May 2005
Planter:	Kinze model 2100, 4 row cone
Planting Depth:	2 inches
Application Equipment:	<u>Granular insecticides</u> Planting: planter mounted cone- belt system <u>Liquid insecticides</u> Planter mounted CO <sub>2</sub> pressurized sprayer
Field Preparation:	17 March 2005 - chopped and disked, 18 April 2005 - disked
Herbicides Applied:	4 May 2005: Harness Xtra, 2.0 qt/A, pre emerge 7 June 2005: 1.0 oz/A SPIRIT
Fertilizer Applied:	150 lb. N/A applied as NH <sub>3</sub> , 1 April 2005

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: There were no significant differences ( $P > 0.05$ ) among treatment stand count means at V3 growth stage (Hanway 1997). The overall mean number of plants/33.5'  $\pm$  SEM = 37.9  $\pm$  0.5.

Insecticide History: Insecticide free: 1998, 2000, 2002  
Multiclass soil insecticide trials: 1997, 1999, 2001, 2003

### 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 30-31 May 2005 (predominantly western corn rootworm).

Root Evaluation: 1 - 6 (Hills and Peters, 1971) and 0 - 3 root rating scales (Oleson et al. 2005) were used to evaluate larval corn rootworm damage in each treatment. Five roots per replication were evaluated in each treatment.

Root Evaluation Date: 14 July 2005

### Experimental Design

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

Row Length: 33.5 feet

Statistical Analysis: Root Ratings, Lodging, Stand Counts: Used SAS Mixed Procedure; Protected LSD test was used for mean separation (P # 0.05) .

### Environmental Conditions at planting:

Air temperature:	13.5EC
Wind speed:	5-10 mph at 5 ft height
Wind direction:	N - NW
Soil temperature 2" depth:	17EC
Soil temperature surface:	22EC
Soil moisture, 0-3" depth:	10.41% water (gravimetric method)
% cloud cover:	clear, 0 % cloud cover
% relative humidity:	not recorded
	Residue on surface:
	20% of soil surface covered with crop residue; soil moist, some clods on surface

### Rainfall

April	06	0.08 inch
	10	0.21

11 0.98  
12 0.57  
16 0.01  
18 0.25  
20 0.84  
21 0.10  
22 0.13

**Total 3.17**

May 10 0.22 inch  
11 0.86  
12 1.12  
18 0.05  
25 0.21  
26 0.01  
29 0.09  
31 0.65

**Total 3.21**

June 01 0.11 inches  
03 0.61  
04 0.63  
05 0.04  
09 0.68  
10 0.23  
11 0.06  
21 0.01  
25 0.04  
27 0.14  
29 0.01

**Total 2.56**

July 02 0.01 inches  
17 0.82  
18 0.02  
25 2.92

26 0.18

**Total 3.95**

Aug 10 0.34 inches  
12 0.01

13 0.01  
 17 0.01  
 26 0.28

Total      **0.65**

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Irrigation (through July 2005):

Sprinkler irrigation was applied as needed prior to root damage evaluation

July 01 1.75 inches  
 07 1.5  
 11 0.5  
 12 2.0  
 22 1.5

Table 1. 2005 Corn Rootworm Soil Insecticide Experiment 1.  
 University of Nebraska Agricultural Research and Development Center, near Mead, NE

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Root Damage and Lodging Evaluation

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Insecticide	Rate/Placement <sup>a</sup>	Mean Percentage <sup>b</sup> Lodged (+/- SE)	Mean Root Damage Rating <sup>c</sup> (1 - 6 Scale)	Mean Root Damage Rating <sup>c</sup> (0 - 3 Scale)
YieldGard Rootworm + Poncho 250		0.00 ± 0.00	2.20 a	0.06 a
Fortress 5G	0.20 I smartbox appl.	0.00 ± 0.00	2.60 ab	0.18 ab
Aztec 4.67G	0.14 TB smartbox appl.	0.00 ± 0.00	2.65 ab	0.14 ab
Counter 15G	1.2 TB	0.00 ± 0.00	2.65 ab	0.19 ab

Aztec 2.1G	0.141 TB	0.00 ± 0.00	2.70 b	0.18 ab
Regent 4 SC	see footnote d	0.00 ± 0.00	2.70 b	0.26 ab
Fortress 2.5G	0.20 I	3.13 ± 3.13	2.70 b	0.31 abc
Capture 2EC	see footnote f	0.00 ± 0.00	2.80 b	0.29 abc
Lorsban 4E	see footnote e	0.00 ± 0.00	2.85 bc	0.30 abc
Lorsban 15G	1.2 TB	3.03 ± 2.14	2.90 bc	0.30 abc
Force 3G	0.12 TB	0.00 ± 0.00	2.90 bc	0.30 abc
Poncho 1250	1.25 mg ai/seed	0.00 ± 0.00	2.90 bc	0.35 abc
Thimet 20G	1.2 TB	0.00 ± 0.00	3.05 bc	0.43 bc
Cruiser 5 FS	1.25 mg ai/seed	0.86 ± 0.86	3.30 c	0.63 c
Untreated (1)		18.04 ± 11.70	4.60 d	1.82 d
Untreated (2)		19.90 ± 12.68	4.95 d	2.10 d

<sup>a</sup> Rate presented as oz ai per 1000 row ft except where other units listed:

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> On 16 August 2005, there were no significant differences ( $P > 0.05$ ) in final stand count means; the final overall mean number of plants per 33.5 ft ± SEM = 32.7 ± 0.6. The mean percentage of final stands that were lodged are presented by treatment (lodged = plant leaning > 45E angle from vertical).

<sup>c</sup> Root rating scales used: 1 - 6 scale (Hills and Peters 1971); 0 - 3 scale (Oleson et al. 2005); 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>d</sup> Regent 4SC rate: 0.13 lb ai/A; volume: 5 gallons water/A through microtube into open seed furrow

<sup>e</sup> Lorsban 4E rate: 1.2 oz ai/1000 ft; volume: 5 gallons water/A, TB application

f Capture 2EC rate: 0.09 oz ai/1000 ft; volume: 5 gallons water/A, TB application