

**2006 CORN ROOTWORM EFFICACY AND YIELD TRIAL  
YIELDGARD ROOTWORM COMPARISON TO SOIL INSECTICIDES/SEED  
TREATMENTS<sup>1</sup>**

Final Report

University of Nebraska  
Agricultural Research and Development Center  
Mead, Nebraska

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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.

Background information pertaining to the experiment conducted at the ARDC, near Mead, Nebraska during 2006.

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## Agronomic

Hybrids: DKC 60-13, DKC 60-17, DKC 60-18  
Row Spacing: 30 inches  
Planting Date: 20 April 2006  
Planter: Kinze model 2100, 4 row cone  
Planting Depth: 2 inches  
Application Equipment: Granular insecticide  
Planting: planter mounted cone-belt system  
Liquid insecticide  
Planter mounted CO<sub>2</sub> pressurized sprayer  
Field Preparation: 10 March 2006 - chopped and disked, 18 April 2006 -  
disked  
Herbicides Applied: 28 April 2006: Cintch ATZ, 2.6 qt/A, pre emerge  
5 June 2006: 1.0 oz/A SPIRIT  
Fertilizer Applied: 150 lb. N/A applied as NH<sub>3</sub>, 13 April 2006  
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

Insecticide History: Insecticide free: 1999, 2001, 2003, 2005  
Multiclass soil insecticide trials: 1998, 2000, 2002, 2004

## 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 27-29 May 2006 (predominantly western corn rootworm).

Root Evaluation: 0-3 root rating scale (Oleson et al. 2005) was used to evaluate larval corn rootworm damage in each treatment. Ten roots per replication were evaluated in each treatment.

Root Evaluation Date: 20 July 2006

### Experimental Design

Design: Randomized complete block design  
Replicated four times (except DKC 60-13 treatment:  
only 3 replications)  
Four-row treatments

Row Length: 60 feet

Statistical Analysis: Root ratings, final stand, lodging, yields: Used SAS  
Mixed Procedure; Protected LSD test was used for mean  
separation ( $P \leq 0.05$ ).

### Environmental

#### Conditions at planting:

Air temperature:	18°C
Wind speed:	15 mph at 5 ft height
Wind direction:	N - NW
Soil temperature 2" depth:	19°C
Soil temperature surface:	23°C
Soil moisture, 0-3" depth:	not recorded
% cloud cover:	60 % cloud cover
% relative humidity:	not recorded
Residue on surface:	40% of soil surface covered with crop residue; soil moist, some clods on surface

### Rainfall

April	01	0.24 inches
	02	0.40
	06	0.91
	07	0.01
	15	0.12
	24	0.30
	25	0.23

28 1.45  
29 0.30  
April 30 0.17  
Total **4.13**

May 02 0.03 inches  
03 0.06  
08 0.35  
11 0.01  
23 0.64  
26 0.04  
May 27 0.06  
Total **1.19**

June 04 0.32 inches  
16 0.60  
17 0.90  
24 0.34  
25 0.10  
Total **1.94**

July 02 0.16 inches  
08 0.42  
10 0.40  
13 1.65  
21 0.62  
Total **3.25**

Aug 01 0.13 inches  
02 0.02  
05 0.21  
06 0.72  
07 0.50  
08 2.16  
10 0.13  
16 0.77  
17 0.11  
18 0.19  
27 0.34  
28 0.01  
Total **5.29**

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Irrigation (through August 2006):

Sprinkler irrigation was applied as needed throughout the season.

June	01	1.00 inches	August	04	1.50 inches
	15	1.00			
	30	2.00			
July	07	1.00 inches			
	26	1.25			

Table 1. 2006 Corn Rootworm Soil Insecticide / Neonicotinoid  
Seed Treatment Efficacy and Yield Experiment

University of Nebraska Agricultural Research and Development Center, near Mead, NE

Root Damage Rating, Final Stand, Percentage Lodging  $\pm$  SE

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<b>Treatment</b>	<b>Treatment Rate<sup>1</sup></b>	<b>Mean Root Rating<sup>2</sup> 0 - 3 Scale</b>	<b>Final<sup>3</sup> Stand</b>	<b>Percentage<sup>4</sup> Lodging</b>
MON 863 DKC 60-13 plus Poncho Cry 3Bb1 (YieldGard Rootworm)	Clothianidin 0.25 mg ai/seed, ST	0.04 $\pm$ 0.01 a	149.3 $\pm$ 8.2 a	0.0 $\pm$ 0.0a
DKC 60-18 plus Poncho 250 Cry3Bb1, Cry1Ab (YieldGard Plus)	Clothianidin 0.25 mg ai/seed	0.05 $\pm$ 0.01a	142.5 $\pm$ 1.7 a	2.2 $\pm$ 1.4a

Isoline DKC 60-17 plus Poncho 1250 and Aztec 2.1G	Clothianidin 1.25 mg ai/seed, ST Aztec: 0.141 oz ai/ 1000 row-ft, TB	0.18 ± 0.03 a	146.8 ± 4.0 a	0.0 ± 0.0 a
Isoline DKC 60-17 plus Poncho 250 and Aztec 2.1G	Clothianidin 0.25 mg ai/seed, ST Aztec: 0.141 oz ai/ 1000 row-ft, TB	0.24 ± 0.03 a	147.3 ± 2.7 a	0.0 ± 0.0 a
Isoline DKC 60-17 plus Aztec 2.1G	Aztec: 0.141oz ai / 1000 row-ft, TB	0.38 ± 0.14 ab	145.5 ± 3.1 a	1.8 ± 1.1 a
Isoline DKC 60-17 plus Poncho 1250	Clothianidin 1.25 mg ai/seed, ST	0.71 ± 0.22 bc	142.0 ± 6.0 a	2.9 ± 1.7 a
Isoline DKC 60-17 plus Cruiser 5 FS	Thiamethoxam 1.25 mg ai/seed, ST	0.86 ± 0.28 c	142.3 ± 3.3 a	13.2 ± 13.2 a
Isoline DKC 60-17 plus Poncho 250	Clothianidin 0.25 mg ai/seed, ST	1.27 ± 0.14 d	141.8 ± 3.4 a	7.7 ± 2.6 a
Isoline DKC 60-17		1.39 ± 0.09 d	152.5 ± 1.3 a	8.3 ± 3.8 a

Planting date: 20 April 2006; Plot size: four rows x 60 ft per treatment per replication, 4 replications; means within columns followed by the same letter are not significantly different ( $P > 0.05$ , Fishers Protected LSD Test).

<sup>1</sup> ST=seed treatment, TB=T-band (7 inch band placed over open seed furrow)

<sup>2</sup> Root evaluation date: 20 July 2006, rated 10 roots from two outside rows per treatment per replication using 0-3 node injury scale (Oleson et al. 2005)

<sup>3</sup> Final stand = number of plants per 100 ft harvested in two center rows of each plot, stands recorded during October 2006 during harvest

<sup>4</sup> Percentage lodging = proportion of final stand leaning >45 degree angle x 100

Table 2. 2006 Corn Rootworm Soil Insecticide / Neonicotinoid  
Seed Treatment Efficacy and Yield Experiment

University of Nebraska Agricultural Research and Development Center, near Mead, NE

Mean Root Damage Rating and Yield  $\pm$  SE

<b>Treatment</b>	<b>Treatment Rate <sup>1</sup></b>	<b>Mean Root Rating <sup>2</sup> (0 - 3 scale)</b>	<b>Bulk Yield <sup>3</sup> (bushels per acre)</b>
MON 863 DKC 60-13 plus Poncho Cry 3Bb1 (YieldGard Rootworm)	Clothianidin 0.25 mg ai/seed, ST	0.04 $\pm$ 0.01 a	193.3 $\pm$ 5.4 a
DKC 60-18 plus Poncho 250 Cry3Bb1, Cry1Ab (YieldGard Plus)	Clothianidin 0.25 mg ai/seed	0.05 $\pm$ 0.01a	196.5 $\pm$ 4.9a
Isoline DKC 60-17 plus Poncho 1250 and Aztec 2.1G	Clothianidin 1.25 mg ai/seed, ST Aztec: 0.141 oz ai/ 1000 row-ft, TB	0.18 $\pm$ 0.03 a	178.2 $\pm$ 13.9 a
Isoline DKC 60-17 plus Poncho 250 and Aztec 2.1G	Clothianidin 0.25 mg ai/seed, ST Aztec: 0.141 oz ai/ 1000 row-ft, TB	0.24 $\pm$ 0.03 a	191.8 $\pm$ 4.7 a
Isoline DKC 60-17 plus Aztec 2.1G	Aztec: 0.141oz ai / 1000 row-ft, TB	0.38 $\pm$ 0.14 ab	192.3 $\pm$ 8.9 a
Isoline DKC 60-17 plus Poncho 1250	Clothianidin 1.25 mg ai/seed, ST	0.71 $\pm$ 0.22 bc	183.2 $\pm$ 4.2 a
Isoline DKC 60-17 plus Cruiser 5 FS	Thiamethoxam 1.25 mg ai/seed, ST	0.86 $\pm$ 0.28 c	179.5 $\pm$ 12.7 a
Isoline DKC 60-17 plus Poncho 250	Clothianidin 0.25 mg ai/seed, ST	1.27 $\pm$ 0.14 d	171.1 $\pm$ 4.8 a
Isoline DKC 60-17		1.39 $\pm$ 0.09 d	180.0 $\pm$ 7.5 a

Planting date: 20 April 2006; Plot size: four rows x 60 ft per treatment per replication, 4 replications; means within columns followed by the same letter are not significantly different ( $P > 0.05$ , Fishers Protected LSD Test).

<sup>1</sup> ST=seed treatment, TB=T-band (7 inch band placed over open seed furrow)

<sup>2</sup> Root evaluation date: 20 July 2006, rated 10 roots from two outside rows per treatment per replication using 0-3 node injury scale (Oleson et al. 2005)

<sup>3</sup> Bulk yields: hand harvested and shelled middle 50 ft of the two inside rows / plot during October 2006, presented as bushels of corn @ 15.5% moisture