

Purdue University, Department of Entomology
Corn Rootworm Management Products Standard Efficacy Trial
Final Report
17 December 2013

TEST 1 of 2

Title: Corn Rootworm Management Products Standard Efficacy Trial;
Small Plot Assays

Location: Throckmorton-Purdue Agricultural Center, 8342 US231
South, Lafayette, IN 47909.

GPS coordinates: 40.300878, -86.898787

Cooperator: Christian Krupke, Department of Entomology, Purdue
University

Planting date: 17 May 2013

Base Hybrid; DKC62-95 RR2 A500

Row width: 30"

Planter Population: 27,700 kernels per acre

Soil Types: Mellott silt loam

Soil Properties:

CEC: 10.9	Mg lbs/ac 478
Organic matter; 1.9%	Ca Sat'n 66%
pH; 6.3	Mg Sat'n 18%
Lime index 69	K Sat'n 5%
P lbs/ac 73	Base Sat'n 89%
K lbs/ac 408	Ca/Mg 3.6
Ca lbs/ac 2,897	Mg/K 3.8

Texture: 39.2% sand, 40.8% silt, 20.0% clay

Tillage: 14 May 2013. Field cultivator

Conditions at planting air temp; 80F
 4" soil temp; 68F
 wind dir and spd; E 5-10 mph

Previous crop: corn (trap crop)

Previous year insecticide: none

Herbicides:

5/14 Lexar 3.5 qts, Lumax 3.0 qt
6/17 Capreno 3 oz, Buctril 6 oz, Choice WM 3 pt/100 gal,
COC 1 qt/100 gal

Fertilizers:

14 May, 28-0-0 UAN solution 164 lbs/a
 17 May, starter 12-12-12 113 lbs/a

Weather data: see Appendix I.

Methods:

Randomized complete block design, 4 replicates, single row plots x 100 ft, John Deere® Max-emerge® 7000 planter. Modified Noble® meters were used to apply granular insecticides. All applications were made at 3 mph. Plant population estimates were plants in 40 ft and converted to plants per acre. Seedling height estimates were the lengths of the longest extended leaf from the soil surface to the leaf tip (+/- 0.5 cm) for 10 consecutive plants/plot. Root injury was evaluated by digging, pressure washing, and rating (0-3 node injury scale) 5 random plants per plot. Plants were considered root-lodged when stalks at ground level were $\geq 45^\circ$ from vertical. Performance consistency was the frequency (non-transformed percentage) of individual root ratings that were less than the generally accepted economic injury level of 0.25 node lost. Yields were not estimated. Mean separation was by Ryan, Einot, Gabriel, Welsch MRT SAS where ANOVA $Pr > F$ was ≤ 0.05 .

Notes:

Timely and frequent rain enhanced plant emergence and growth. Moderately dry conditions occurred at mid-late season. Severe storms were infrequent. Western corn rootworm hatch commenced about 4 June, 18 days following planting. Rootworm population at the trial site continued to be low.

Results:

The test mean of 26,914 plants per acre was 97 percent of the planter population and indicated that germination/emergence was very good. No treatment differences ($p=0.05$) were observed for plants per acre and the range 25,700-27,878 was relatively small (Tables 1,2).

Plant height differences ($Pr > F=0.0025$) were confounded by hybrid. Two Mycogen hybrids (TRT 11, 12 and the base hybrid (DeKalb) had the tallest seedlings compared to the shortest Mycogen seedling (TRT 13). There were no treatment differences within hybrid type (Tables 3,4). Root injury was very low and no treatment differences were present ($P=0.05$, Tables 5,6). Rootworm larvae were not abundant. No root rating was ≥ 0.25 , therefore performance consistency was biased and 100 percent for all treatments (see Table 7). Root lodged plants were not observed when root damage was evaluated.

Table 1. Plants per acre; Rootworm Management Product Efficacy Assay. Throckmorton-Purdue Agricultural Center, Lafayette, IN.¹

Treatment	Oz Prod /1000 ft ²	Plants per Acre	
		Mean ³	SEM
01. Aztec 2.1G	6.7 oz TB	25,700.4 a	1,219.16
02. Aztec 2.1G	6.7 oz IF	27,442.8 a	470.50
03. Force 3G	4.0 oz TB	26,462.7 a	371.96
04. Force 3G	4.0 oz IF	27,551.7 a	544.50
05. Lorsban 15G	8.0 oz TB	26,680.5 a	650.37
06. Lorsban 15G	8.0 oz IF	26,353.8 a	764.89
07. Counter 20G	6.0 oz IF	27,225.0 a	417.06
08. SmartChoice 5G	5.0 oz IF	27,660.6 a	743.93
09. DKC62-95 1.250mg	ST	27,442.8 a	470.50
10. DKC62-95 0.500mg	ST	27,878.4 a	397.65
11. MYC20558 SS	PIP	26,027.1 a	449.01
12. MYC20579 RR		26,462.7 a	482.94
13. MYC29562 HXX	PIP	27,116.1 a	1,087.18
14. DKC62-95 0.250mg	ST	26,789.4 a	377.24

¹Planted, 17 May 2013; Sampled, 04 June 2013.

²TB=T-band, IF=in-furrow, ST=Clothianidin seed treatment, PIP=plant incorporated protectant.

³ANOVA PR>F=(0.5074).

Table 2. Plants per acre by replicate; Rootworm Management Product Efficacy Assay. Throckmorton-Purdue Agricultural Center, Lafayette, IN.¹

Treatment	Oz Prod /1000 ft ²	Plants per Acre			
		R1	R2	R3	R4
01. Aztec 2.1G	6.7 oz TB	27878.4	22215.6	26136.0	26571.6
02. Aztec 2.1G	6.7 oz IF	27878.4	26136.0	27442.8	28314.0
03. Force 3G	4.0 oz TB	26136.0	26571.6	25700.4	27442.8
04. Force 3G	4.0 oz IF	27007.2	29185.2	27007.2	27007.2
05. Lorsban 15G	8.0 oz TB	24829.2	27007.2	27878.4	27007.2
06. Lorsban 15G	8.0 oz IF	25264.8	27878.4	24829.2	27442.8
07. Counter 20G	6.0 oz IF	27442.8	26571.6	28314.0	26571.6
08. SmartChoice 5G	5.0 oz IF	29620.8	26136.0	27007.2	27878.4
09. DKC62-95 1.250mg	ST	28314.0	26136.0	27878.4	27442.8
10. DKC62-95 0.500mg	ST	27007.2	28314.0	27442.8	28749.6
11. MYC20558 SS	PIP	24829.2	26136.0	26136.0	27007.2
12. MYC20579 RR		25264.8	27442.8	27007.2	26136.0
13. MYC29562 HXX	PIP	27442.8	30056.4	25264.8	25700.4
14. DKC62-95 0.250mg	ST	26136.0	26136.0	27442.8	27442.8

¹Planted, 17 May 2013; Sampled, 04 June 2013.

²TB=T-band, IF=in-furrow, ST=Clothianidin seed treatment, PIP=plant incorporated protectant.

Table 3. Plant Height; Rootworm Management Product Efficacy Assay. Throckmorton-Purdue Agricultural Center, Lafayette, IN.¹

Treatment	Oz Prod /1000 ft ²	Extended Leaf Height	
		Mean ³	SEM
11. MYC20558 SS	PIP	24.10 a	0.446
12. MYC20579 RR		23.98 a	1.244
01. Aztec 2.1G	6.7 oz TB	23.40 ab	0.135
03. Force 3G	4.0 oz TB	23.24 ab	0.781
10. DKC62-95 0.500mg	ST	23.16 ab	0.671
08. SmartChoice 5G	5.0 oz IF	23.14 ab	0.803
04. Force 3G	4.0 oz IF	22.62 ab	0.399
07. Counter 20G	6.0 oz IF	21.94 ab	1.047
09. DKC62-95 1.250mg	ST	21.60 ab	0.682
14. DKC62-95 0.250mg	ST	21.60 ab	1.312
02. Aztec 2.1G	6.7 oz IF	21.59 ab	0.921
06. Lorsban 15G	8.0 oz IF	20.14 ab	0.543
05. Lorsban 15G	8.0 oz TB	19.99 ab	0.763
13. MYC29562 HXX	PIP	19.41 b	0.963

¹Planted, 17 May 2013; Sampled, 4 June 2013.

²TB=T-band, IF=in-furrow, ST=Clothianidin seed treatment, PIP=plant incorporated protectant.

³ANOVA PR>F=0.0025. Ryan-Einot-Gabriel-Welsch MRT. SAS.

Table 4. Plant Height by replication; Rootworm Management Product Efficacy Assay. Throckmorton-Purdue Agricultural Center, Lafayette, IN.¹

Treatment	Oz Prod /1000 ft ²	Extended Leaf Height (cm)			
		R1	R2	R3	R4
11. MYC20558 SS	PIP	24.80	22.79	24.45	24.35
12. MYC20579 RR		20.95	25.20	26.65	23.10
01. Aztec 2.1G	6.7 oz TB	23.30	23.80	23.30	23.20
03. Force 3G	4.0 oz TB	23.60	22.05	22.00	25.30
10. DKC62-95 0.500mg	ST	21.90	22.25	23.70	24.80
08. SmartChoice 5G	5.0 oz IF	25.05	22.25	21.45	23.80
04. Force 3G	4.0 oz IF	21.65	22.70	22.55	23.60
07. Counter 20G	6.0 oz IF	20.50	23.00	19.90	24.35
09. DKC62-95 1.250mg	ST	20.30	23.10	20.60	22.40
14. DKC62-95 0.250mg	ST	22.95	23.30	17.70	22.45
02. Aztec 2.1G	6.7 oz IF	18.85	22.15	22.60	22.75
06. Lorsban 15G	8.0 oz IF	20.95	18.75	21.05	19.80
05. Lorsban 15G	8.0 oz TB	18.65	20.70	21.80	18.80
13. MYC29562 HXX	PIP	20.80	19.75	20.50	16.60

¹Planted, 17 May 2013; Sampled, 4 June 2013.

²TB=T-band, IF=in-furrow, ST=Clothianidin seed treatment, PIP=plant incorporated protectant.

Table 5. Node injury ratings; Rootworm Management Product Efficacy Assay. Throckmorton-Purdue Ag Center, Lafayette, IN.¹

Treatment	Oz Prod /1000 ft ²	Node Injury (0-3 Scale)	
		Mean ³	SEM
01. Aztec 2.1G	6.7 oz TB	0.052 a	0.0111
02. Aztec 2.1G	6.7 oz IF	0.040 a	0.0082
03. Force 3G	4.0 oz TB	0.065 a	0.0144
04. Force 3G	4.0 oz IF	0.065 a	0.0171
05. Lorsban 15G	8.0 oz TB	0.078 a	0.0278
06. Lorsban 15G	8.0 oz IF	0.058 a	0.0256
07. Counter 20G	6.0 oz IF	0.055 a	0.0104
08. SmartChoice 5G	5.0 oz IF	0.045 a	0.0144
09. DKC62-95 1.250mg	ST	0.055 a	0.0065
10. DKC62-95 0.500mg	ST	0.038 a	0.0193
11. MYC20558 SS	PIP	0.030 a	0.0082
12. MYC20579 RR		0.058 a	0.0025
13. MYC29562 HXX	PIP	0.035 a	0.0050
14. DKC62-95 0.250mg	ST	0.078 a	0.0253

¹Planted, 17 May 2013; Sampled, 18 July 2013.

²TB=T-band, IF=in-furrow, ST=Clothianidin seed treatment, PIP=plant incorporated protectant.

³ANOVA PR>F=0.4058.

Table 6. Node injury ratings by replication. Rootworm Management Product Efficacy Assay. Throckmorton-Purdue Ag Center, Lafayette, IN.¹

Treatment	Oz Prod /1000 ft ²	Node Injury (0-3 Scale)			
		R1	R2	R3	R4
01. Aztec 2.1G	6.7 oz TB	0.06	0.02	0.06	0.07
02. Aztec 2.1G	6.7 oz IF	0.02	0.04	0.06	0.04
03. Force 3G	4.0 oz TB	0.04	0.09	0.09	0.04
04. Force 3G	4.0 oz IF	0.02	0.10	0.08	0.06
05. Lorsban 15G	8.0 oz TB	0.06	0.05	0.16	0.04
06. Lorsban 15G	8.0 oz IF	0.00	0.11	0.09	0.03
07. Counter 20G	6.0 oz IF	0.06	0.05	0.08	0.03
08. SmartChoice 5G	5.0 oz IF	0.05	0.04	0.08	0.01
09. DKC62-95 1.250mg	ST	0.05	0.06	0.07	0.04
10. DKC62-95 0.500mg	ST	0.00	0.04	0.09	0.02
11. MYC20558 SS	PIP	0.03	0.01	0.05	0.03
12. MYC20579 RR		0.06	0.06	0.06	0.05
13. MYC29562 HXX	PIP	0.03	0.03	0.05	0.03
14. DKC62-95 0.250mg	ST	0.09	0.02	0.06	0.14

¹Planted, 17 May 2013; Sampled, 18 July 2013.

²TB=T-band, IF=in-furrow, ST=Clothianidin seed treatment, PIP=plant incorporated protectant.

Table 7. Individual root ratings. Rootworm Management Product Efficacy Assay 2013. Throckmorton-Purdue Agricultural Center, Lafayette, IN¹.

Rep 1 Node injury ratings by root.

No.	Treatment	Oz Prod /1000 ft	Root Injury				
			N1	N2	N3	N4	N5
01.	Aztec 2.1G	6.7 oz TB	0.20	0.00	0.05	0.00	0.05
02.	Aztec 2.1G	6.7 oz IF	0.00	0.00	0.00	0.00	0.10
03.	Force 3G	4.0 oz TB	0.00	0.00	0.05	0.05	0.10
04.	Force 3G	4.0 oz IF	0.00	0.00	0.05	0.05	0.00
05.	Lorsban 15G	8.0 oz TB	0.10	0.00	0.10	0.00	0.10
06.	Lorsban 15G	8.0 oz IF	0.00	0.00	0.00	0.00	0.00
07.	Counter 20G	6.0 oz IF	0.00	0.00	0.10	0.15	0.05
08.	SmartChoice 5G	5.0 oz IF	0.10	0.00	0.05	0.10	0.00
09.	DKC62-95 1.250mg	ST	0.10	0.05	0.00	0.05	0.05
10.	DKC62-95 0.500mg	ST	0.00	0.00	0.00	0.00	0.00
11.	MYC20558 SS	PIP	0.05	0.05	0.05	0.00	0.00
12.	MYC20579 RR		0.20	0.10	0.00	0.00	0.00
13.	MYC29562 HXX	PIP	0.00	0.05	0.05	0.05	0.00
14.	DKC62-95 0.250mg	ST	0.00	0.05	0.10	0.20	0.10

Table 7, continued.

Rep 2 Node injury ratings by root.

No.	Treatment	Oz Prod /1000 ft	Root Injury				
			N1	N2	N3	N4	N5
01.	Aztec 2.1G	6.7 oz TB	0.05	0.00	0.00	0.00	0.05
02.	Aztec 2.1G	6.7 oz IF	0.10	0.10	0.00	0.00	0.00
03.	Force 3G	4.0 oz TB	0.15	0.20	0.05	0.05	0.00
04.	Force 3G	4.0 oz IF	0.10	0.10	0.10	0.15	0.05
05.	Lorsban 15G	8.0 oz TB	0.05	0.15	0.00	0.00	0.05
06.	Lorsban 15G	8.0 oz IF	0.20	0.05	0.15	0.10	0.05
07.	Counter 20G	6.0 oz IF	0.05	0.00	0.00	0.00	0.20
08.	SmartChoice 5G	5.0 oz IF	0.10	0.05	0.00	0.05	0.00
09.	DKC62-95 1.250mg	ST	0.10	0.05	0.00	0.05	0.10
10.	DKC62-95 0.500mg	ST	0.20	0.00	0.00	0.00	0.00
11.	MYC20558 SS	PIP	0.00	0.00	0.00	0.00	0.05
12.	MYC20579 RR		0.00	0.05	0.05	0.00	0.20
13.	MYC29562 HXX	PIP	0.00	0.05	0.05	0.00	0.05
14.	DKC62-95 0.250mg	ST	0.05	0.05	0.00	0.00	0.00

Table 7, continued.
Rep 3 Node injury ratings by root.

No.	Treatment	Oz Prod /1000 ft	Root Injury				
			N1	N2	N3	N4	N5
01.	Aztec 2.1G	6.7 oz TB	0.05	0.05	0.05	0.05	0.10
02.	Aztec 2.1G	6.7 oz IF	0.10	0.10	0.05	0.00	0.05
03.	Force 3G	4.0 oz TB	0.15	0.05	0.10	0.10	0.05
04.	Force 3G	4.0 oz IF	0.10	0.10	0.05	0.05	0.10
05.	Lorsban 15G	8.0 oz TB	0.20	0.20	0.20	0.10	0.10
06.	Lorsban 15G	8.0 oz IF	0.15	0.10	0.10	0.05	0.05
07.	Counter 20G	6.0 oz IF	0.10	0.10	0.10	0.00	0.10
08.	SmartChoice 5G	5.0 oz IF	0.15	0.10	0.05	0.05	0.05
09.	DKC62-95 1.250mg	ST	0.10	0.05	0.05	0.05	0.10
10.	DKC62-95 0.500mg	ST	0.10	0.05	0.10	0.10	0.10
11.	MYC20558 SS	PIP	0.10	0.05	0.05	0.00	0.05
12.	MYC20579 RR		0.00	0.05	0.10	0.05	0.10
13.	MYC29562 HXX	PIP	0.05	0.10	0.00	0.05	0.05
14.	DKC62-95 0.250mg	ST	0.00	0.05	0.05	0.10	0.10

Table 7, continued.
Rep 4 Node injury ratings by root.

No.	Treatment	Oz Prod /1000 ft	Root Injury				
			N1	N2	N3	N4	N5
01.	Aztec 2.1G	6.7 oz TB	0.05	0.10	0.05	0.05	0.10
02.	Aztec 2.1G	6.7 oz IF	0.00	0.00	0.10	0.05	0.05
03.	Force 3G	4.0 oz TB	0.05	0.05	0.10	0.00	0.00
04.	Force 3G	4.0 oz IF	0.10	0.00	0.05	0.10	0.05
05.	Lorsban 15G	8.0 oz TB	0.05	0.00	0.10	0.00	0.05
06.	Lorsban 15G	8.0 oz IF	0.05	0.00	0.05	0.00	0.05
07.	Counter 20G	6.0 oz IF	0.05	0.00	0.05	0.05	0.00
08.	SmartChoice 5G	5.0 oz IF	0.00	0.00	0.05	0.00	0.00
09.	DKC62-95 1.250mg	ST	0.00	0.10	0.05	0.05	0.00
10.	DKC62-95 0.500mg	ST	0.05	0.05	0.00	0.00	0.00
11.	MYC20558 SS	PIP	0.00	0.00	0.05	0.10	0.00
12.	MYC20579 RR		0.05	0.00	0.05	0.10	0.05
13.	MYC29562 HXX	PIP	0.00	0.05	0.05	0.05	0.00
14.	DKC62-95 0.250mg	ST	0.20	0.15	0.15	0.10	0.10

Table 8. Root-lodged (goose-necked) plants per 17.4 ft. Rootworm Management Product Efficacy Assay. Throckmorton-Purdue Ag Center, Lafayette, IN.¹

Treatment, Place ²	OzProd /1000 ft	Root-Lodged Plants				
		R1	R2	R3	R4	Avg
01. Aztec 2.1G	6.7 oz TB	0.0	0.0	0.0	0.0	0.0
02. Aztec 2.1G	6.7 oz IF	0.0	0.0	0.0	0.0	0.0
03. Force 3G	4.0 oz TB	0.0	0.0	0.0	0.0	0.0
04. Force 3G	4.0 oz IF	0.0	0.0	0.0	0.0	0.0
05. Lorsban 15G	8.0 oz TB	0.0	0.0	0.0	0.0	0.0
06. Lorsban 15G	8.0 oz IF	0.0	0.0	0.0	0.0	0.0
07. Counter 20G	6.0 oz IF	0.0	0.0	0.0	0.0	0.0
08. SmartChoice 5G	5.0 oz IF	0.0	0.0	0.0	0.0	0.0
09. DKC62-95 1.250mg	ST	0.0	0.0	0.0	0.0	0.0
10. DKC62-95 0.500mg	ST	0.0	0.0	0.0	0.0	0.0
11. MYC20558 SS	PIP	0.0	0.0	0.0	0.0	0.0
12. MYC20579 RR		0.0	0.0	0.0	0.0	0.0
13. MYC29562 HXX	PIP	0.0	0.0	0.0	0.0	0.0
14. DKC62-95 0.250mg	ST	0.0	0.0	0.0	0.0	0.0

¹Planted, 17 May 2013; Sampled, 18 July 2013.

²TB=T-band, IF=in-furrow, ST=Clothianidin seed treatment, PIP=plant incorporated protectant.

TEST 2 of 2

Title: Corn Rootworm Management Products Standard Efficacy Trial;
Small Plot Assays

Location: Pinney-Purdue Agricultural Center, 11402 South County
Line Road, Wanatah, IN 46390

GPS coordinates: 41.447525, -086.941897

Cooperator: Christian Krupke, Department of Entomology, Purdue
University

Planting date: 14 May 2013

Base Hybrid; DKC62-95 RR2 A500

Row width: 30"

Planter Population: 27,700 kernels per acre

Soil Type: Sebewa sandy clay loam

Soil Properties:

CEC: 15.5	Mg lbs/ac 1234
Organic matter; 3.1%	Ca Sat'n 63%
pH; 6.7	Mg Sat'n 33%
Lime index 70	K Sat'n 5%
P lbs/ac 80	Base Sat'n 100%
K lbs/ac 541	Ca/Mg 1.9
Ca lbs/ac 3889	Mg/K 7.4

Texture: 48.8% sand, 21.1% silt, 30.0% clay

Tillage: chisel disk

Conditions at planting: air temp; 80°F
2" soil temp; 65°F
wind dir and spd; WNW 10 mph

Previous crop: corn (trap crop)

Previous year insecticide: none

Herbicides:

Balance Flexx, 3.0 oz/a; Harness Extra, 2.4 qt/a

Fertilizers:

14 May 2013, 12-12-12 113 lbs/a starter
June 2013 28-0-0 UAN solution, 150 units/a, side dress.

Weather data: see Appendix II.

Methods:

Randomized complete block design, 4 replicates, single row plots x 100 ft, John Deere® Max-emerge® 7000 planter. Modified Noble® meters were used to apply granular insecticides. All applications were made at 3 mph. Plant population estimates were plants in 40 ft and converted to plants per acre. Seedling height estimates were the lengths of the longest extended leaf from the soil surface to the leaf tip (+/- 0.5 cm) for 10 consecutive plants/plot. Root injury was evaluated by digging, pressure washing, and rating (0-3 node injury scale) 5 plants per plot. Performance consistency was the frequency (non-transformed percentage) of individual root ratings that were less than the generally accepted economic injury level of 0.25 node lost. Plants were considered root-lodged when stalks at ground level were $\geq 45^\circ$ from vertical. Yields were not estimated. Mean separation was by Ryan, Einot, Gabriel, Welsch MRT SAS where ANOVA $Pr>F$ was ≤ 0.05 . Yields were not estimated.

Notes:

Planting was slightly late relative to ideal date. This northwest Indiana location received timely rains and excellent growing conditions for most of the season. Excessively high temperatures occurred at mid July. Western corn rootworm, *Diabrotica virgifera* was the predominant species at this site and numbers were slightly higher than anecdotally observed in recent years.

Results: The plants per acre average of 27,746 was approximately 100 percent of the planter population of 27,700. This indicated excellent germination and emergence conditions. There were no treatment differences ($p=0.05$) for plants per acre (Tables 9,10). At site 1 discussed above, plant height was confounded with hybrid. At site 2, the Mycogen SS (TRT 11) again tended to be taller than the other Mycogen hybrids and the DeKalb hybrid. The DeKalb hybrid treated with SmartChoice (TRT 8) was shorter than the Mycogen SmartStax hybrid (TRT 11, $P=0.05$, Tables 11,12). The DeKalb hybrids with low rate seed treatments (TRTs 5,6,10,14) and untreated Mycogen hybrid (TRT 12) had the greatest amount of root damage ($P=0.05$). The Mycogen hybrids with rootworm resistance traits had the lowest amount of damage (Tables 13,14). The frequency of root damage where the ratings were ≤ 0.25 (non-transformed data) was least for the Mycogen hybrid that did not have rootworm resistance traits ($P=0.05$, Tables 15,16). Root lodged plants were not observed during root damage ratings (Table 18).

Table 9. Plants per acre; Rootworm Management Product Efficacy Assay. Pinney-Purdue Agricultural Center, Wanatah, IN.¹

Treatment	Oz Prod /1000 ft ²	Plants per Acre	
		Mean ³	SEM
01. Aztec 2.1G	6.7 oz TB	28,422.9 a	449.01
02. Aztec 2.1G	6.7 oz IF	27,769.5 a	782.77
03. Force 3G	4.0 oz TB	28,749.6 a	470.50
04. Force 3G	4.0 oz IF	28,314.0 a	562.36
05. Lorsban 15G	8.0 oz TB	27,660.6 a	377.24
06. Lorsban 15G	8.0 oz IF	25,591.5 a	1404.49
07. Counter 20G	6.0 oz IF	27,333.9 a	650.37
08. SmartChoice 5G	5.0 oz IF	27,769.5 a	482.94
09. DKC62-95 1.250mg	ST	27,878.4 a	251.49
10. DKC62-95 0.500mg	ST	27,442.8 a	688.74
11. MYC20558 SS	PIP	27,225.0 a	377.24
12. MYC20579 RR		27,878.4 a	435.60
13. MYC29562 HXX	PIP	27,660.6 a	805.17
14. DKC62-95 0.250mg	ST	28,749.6 a	616.03

¹Planted, 14 May 2013; Sampled, 10 June 2013.

²TB=T-band, IF=in-furrow, ST=Clothianidin seed treatment, PIP=plant incorporated protectant.

³ANOVA PR>F=0.1786.

Table 10. Plants per acre counts by replicate; Rootworm Management Product Efficacy Assay. Pinney-Purdue Agricultural Center, Wanatah, IN.¹

Treatment	Oz Prod /1000 ft ²	Plants per Acre			
		R1	R2	R3	R4
01. Aztec 2.1G	6.7 oz TB	27442.8	28314.0	29620.8	28314.0
02. Aztec 2.1G	6.7 oz IF	30056.4	27007.2	27442.8	26571.6
03. Force 3G	4.0 oz TB	28314.0	30056.4	28749.6	27878.4
04. Force 3G	4.0 oz IF	27878.4	27007.2	28749.6	29620.8
05. Lorsban 15G	8.0 oz TB	27007.2	27007.2	28314.0	28314.0
06. Lorsban 15G	8.0 oz IF	24393.6	22215.6	27442.8	28314.0
07. Counter 20G	6.0 oz IF	28749.6	27007.2	27878.4	25700.4
08. SmartChoice 5G	5.0 oz IF	27442.8	28314.0	26571.6	28749.6
09. DKC62-95 1.250mg	ST	28314.0	28314.0	27442.8	27442.8
10. DKC62-95 0.500mg	ST	29185.2	26136.0	26571.6	27878.4
11. MYC20558 SS	PIP	27007.2	26571.6	27007.2	28314.0
12. MYC20579 RR		27442.8	27442.8	27442.8	29185.2
13. MYC29562 HXX	PIP	27878.4	25700.4	27442.8	29620.8
14. DKC62-95 0.250mg	ST	27878.4	30492.0	27878.4	28749.6

¹Planted, 14 May 2013; Sampled, 11 June 2013.

²TB=T-band, IF=in-furrow, ST=Clothianidin seed treatment, PIP=plant incorporated protectant.

Table 11. Plant Height by replication; Rootworm Management Product Efficacy Assay. Pinney-Purdue Agricultural Center, Wanatah, IN.¹

Treatment	Oz Prod /1000 ft ²	Extended Leaf Height cm	
		Mean ³	SEM
11. MYC20558 SS	PIP	38.02 a	1.157
03. Force 3G	4.0 oz TB	35.87 ab	1.697
10. DKC62-95 0.500mg	ST	34.99 ab	2.124
12. MYC20579 RR		34.70 ab	1.347
07. Counter 20G	6.0 oz IF	34.62 ab	0.774
06. Lorsban 15G	8.0 oz IF	34.51 ab	1.148
01. Aztec 2.1G	6.7 oz TB	34.19 ab	0.567
02. Aztec 2.1G	6.7 oz IF	33.32 ab	1.814
04. Force 3G	4.0 oz IF	33.31 ab	1.121
05. Lorsban 15G	8.0 oz TB	33.29 ab	0.980
14. DKC62-95 0.250mg	ST	32.19 ab	1.985
13. MYC29562 HXX	PIP	30.94 ab	1.767
09. DKC62-95 1.250mg	ST	30.54 ab	1.622
08. SmartChoice 5G	5.0 oz IF	30.26 b	2.026

¹Planted, 14 May 2013; Sampled, 11 June 2013.

²TB=T-band, IF=in-furrow, ST=Clothianidin seed treatment, PIP=plant incorporated protectant.

³ANOVA PR>F=0.0435. Ryan-Einot-Gabriel-Welsch MRT a=0.05.

Table 12. Plant Height by replication. Rootworm Management Product Efficacy Assay. Pinney-Purdue Agricultural Center, Wanatah, IN.¹

Treatment	Oz Prod /1000 ft ²	Extended Leaf Height			
		R1	R2	R3	R4
11. MYC20558 SS	PIP	37.55	40.30	39.25	35.00
03. Force 3G	4.0 oz TB	40.85	34.30	35.05	33.30
10. DKC62-95 0.500mg	ST	28.85	37.00	38.45	35.65
12. MYC20579 RR		31.70	37.40	33.20	36.50
07. Counter 20G	6.0 oz IF	34.75	32.40	35.75	35.60
06. Lorsban 15G	8.0 oz IF	35.15	37.20	34.00	31.70
01. Aztec 2.1G	6.7 oz TB	32.75	33.85	34.85	35.30
02. Aztec 2.1G	6.7 oz IF	31.90	36.35	36.20	28.85
04. Force 3G	4.0 oz IF	33.45	36.25	32.70	30.85
05. Lorsban 15G	8.0 oz TB	31.30	32.05	34.25	35.55
14. DKC62-95 0.250mg	ST	36.00	30.60	34.80	27.35
13. MYC29562 HXX	PIP	34.20	26.60	29.55	33.40
09. DKC62-95 1.250mg	ST	31.75	25.75	32.95	31.70
08. SmartChoice 5G	5.0 oz IF	32.15	30.35	33.95	24.60

¹Planted, 14 May 2013; Sampled, 11 June 2013.

²TB=T-band, IF=in-furrow, ST=Clothianidin seed treatment, PIP=plant incorporated protectant.

Table 13. Node injury ratings. Rootworm Management Product Efficacy Assay. Pinney-Purdue Agricultural Center, Wanatah, IN.¹

Treatment	Oz Prod /1000 ft ²	Node Injury (0-3 Scale)	
		Mean ³	SEM
11. MYC20558 SS	PIP	0.072 a	0.0063
13. MYC29562 HXX	PIP	0.102 a	0.0165
01. Aztec 2.1G	6.7 oz TB	0.112 a	0.0075
02. Aztec 2.1G	6.7 oz IF	0.112 a	0.0197
03. Force 3G	4.0 oz TB	0.118 a	0.0160
08. SmartChoice 5G	5.0 oz IF	0.128 a	0.0138
07. Counter 20G	6.0 oz IF	0.130 a	0.0071
04. Force 3G	4.0 oz IF	0.225 a	0.0669
09. DKC62-95 1.250mg	ST	0.242 a	0.0666
05. Lorsban 15G	8.0 oz TB	0.302 ab	0.0618
10. DKC62-95 0.500mg	ST	0.322 ab	0.0789
06. Lorsban 15G	8.0 oz IF	0.380 ab	0.1123
14. DKC62-95 0.250mg	ST	0.432 ab	0.1273
12. MYC20579 RR		0.742 b	0.2859

¹Planted, 14 May 2013; Sampled, 23 July 2013.

²TB=T-band, IF=in-furrow, ST=Clothianidin seed treatment, PIP=plant incorporated protectant.

³ANOVA PR>F=(0.0007).

Table 14. Node injury ratings by replication. Rootworm Management Product Efficacy Assay. Pinney-Purdue Agricultural Center, Wanatah, IN.¹

Treatment	Oz Prod /1000 ft ²	Node Injury (0-3 Scale)			
		R1	R2	R3	R4
11. MYC20558 SS	PIP	0.06	0.07	0.07	0.09
13. MYC29562 HXX	PIP	0.15	0.10	0.08	0.08
01. Aztec 2.1G	6.7 oz TB	0.12	0.12	0.12	0.09
02. Aztec 2.1G	6.7 oz IF	0.16	0.08	0.08	0.13
03. Force 3G	4.0 oz TB	0.09	0.09	0.14	0.15
08. SmartChoice 5G	5.0 oz IF	0.14	0.16	0.11	0.10
07. Counter 20G	6.0 oz IF	0.15	0.13	0.12	0.12
04. Force 3G	4.0 oz IF	0.16	0.40	0.25	0.09
09. DKC62-95 1.250mg	ST	0.11	0.18	0.26	0.42
05. Lorsban 15G	8.0 oz TB	0.15	0.26	0.37	0.43
10. DKC62-95 0.500mg	ST	0.09	0.43	0.36	0.41
06. Lorsban 15G	8.0 oz IF	0.13	0.51	0.26	0.62
14. DKC62-95 0.250mg	ST	0.73	0.17	0.28	0.55
12. MYC20579 RR		0.31	0.22	1.40	1.04

¹Planted, 14 May 2013; Sampled, 23 July 2013.

²TB=T-band, IF=in-furrow, ST=Clothianidin seed treatment, PIP=plant incorporated protectant.

Table 15. Percentage consistency of performance, node injury ratings, non-transformed. Rootworm Management Product Efficacy Assay. Pinney-Purdue Agricultural Center, Wanatah, IN.¹

Treatment	Oz Prod /1000 ft ²	% Consistency (rating ≤ 0.25)	
		Mean ³	SEM
01. Aztec 2.1G	6.7 oz TB	100 a	0.000
02. Aztec 2.1G	6.7 oz IF	100 a	0.000
03. Force 3G	4.0 oz TB	100 a	0.000
07. Counter 20G	6.0 oz IF	100 a	0.000
08. SmartChoice 5G	5.0 oz IF	100 a	0.000
11. MYC20558 SS	PIP	100 a	0.000
13. MYC29562 HXX	PIP	100 a	0.000
04. Force 3G	4.0 oz IF	85 ab	9.574
09. DKC62-95 1.250mg	ST	80 ab	14.142
05. Lorsban 15G	8.0 oz TB	75 ab	9.574
06. Lorsban 15G	8.0 oz IF	65 ab	15.000
10. DKC62-95 0.500mg	ST	60 ab	14.142
14. DKC62-95 0.250mg	ST	60 ab	18.257
12. MYC20579 RR		45 b	20.616

¹Planted, 14 May 2013; Sampled, 23 July 2013.

²TB=T-band, IF=in-furrow, ST=Clothianidin seed treatment, PIP=plant incorporated protectant.

³ANOVA PR>F=(0.0006). Ryan-Einot-Gabriel-Welsch MRT. Raw percentage, non-transformed.

Table 16. Percentage consistency of performance, node injury ratings by replication. Rootworm Management Product Efficacy Assay. Pinney-Purdue Agricultural Center, Wanatah, IN.¹

Treatment	Oz Prod /1000 ft ²	% Consistency (rating ≤ 0.25)			
		R1	R2	R3	R4
01. Aztec 2.1G	6.7 oz TB	100	100	100	100
02. Aztec 2.1G	6.7 oz IF	100	100	100	100
03. Force 3G	4.0 oz TB	100	100	100	100
07. Counter 20G	6.0 oz IF	100	100	100	100
08. SmartChoice 5G	5.0 oz IF	100	100	100	100
11. MYC20558 SS	PIP	100	100	100	100
13. MYC29562 HXX	PIP	100	100	100	100
04. Force 3G	4.0 oz IF	100	60	80	100
09. DKC62-95 1.250mg	ST	100	100	80	40
05. Lorsban 15G	8.0 oz TB	100	80	60	60
06. Lorsban 15G	8.0 oz IF	100	40	80	40
10. DKC62-95 0.500mg	ST	100	40	60	40
14. DKC62-95 0.250mg	ST	40	100	80	20
12. MYC20579 RR		80	80	0	20

¹Planted, 14 May 2013; Sampled, 23 July 2013.

²TB=T-band, IF=in-furrow, ST=Clothianidin seed treatment, PIP=plant incorporated protectant.

Table 17. Individual root ratings. Rootworm Management Product Efficacy Assay 2013. Pinney-Purdue Agricultural Center, Wanatah, IN¹.

Rep 1. Node injury ratings by root.

No.	Treatment	Oz Prod /1000 ft	Root Injury				
			N1	N2	N3	N4	N5
01.	Aztec 2.1G	6.7 oz TB	0.10	0.15	0.10	0.10	0.15
02.	Aztec 2.1G	6.7 oz IF	0.10	0.20	0.15	0.25	0.10
03.	Force 3G	4.0 oz TB	0.05	0.15	0.10	0.10	0.05
04.	Force 3G	4.0 oz IF	0.20	0.10	0.25	0.15	0.10
05.	Lorsban 15G	8.0 oz TB	0.25	0.10	0.15	0.15	0.10
06.	Lorsban 15G	8.0 oz IF	0.10	0.10	0.20	0.15	0.10
07.	Counter 20G	6.0 oz IF	0.15	0.10	0.20	0.20	0.10
08.	SmartChoice 5G	5.0 oz IF	0.15	0.20	0.10	0.10	0.15
09.	DKC62-95 1.250mg	ST	0.20	0.10	0.10	0.10	0.05
10.	DKC62-95 0.500mg	ST	0.15	0.10	0.05	0.05	0.10
11.	MYC20558 SS	PIP	0.10	0.10	0.00	0.05	0.05
12.	MYC20579 RR		0.25	0.20	0.10	0.25	0.75
13.	MYC29562 HXX	PIP	0.05	0.15	0.25	0.15	0.15
14.	DKC62-95 0.250mg	ST	0.75	2.00	0.15	0.50	0.25

Table 17 continued.

Rep 2. Node injury ratings by root.

No.	Treatment	Oz Prod /1000 ft	Root Injury				
			N1	N2	N3	N4	N5
01.	Aztec 2.1G	6.7 oz TB	0.10	0.20	0.05	0.10	0.15
02.	Aztec 2.1G	6.7 oz IF	0.05	0.10	0.05	0.10	0.10
03.	Force 3G	4.0 oz TB	0.10	0.05	0.00	0.10	0.20
04.	Force 3G	4.0 oz IF	0.75	0.50	0.25	0.25	0.25
05.	Lorsban 15G	8.0 oz TB	0.10	0.25	0.20	0.50	0.25
06.	Lorsban 15G	8.0 oz IF	0.15	0.75	0.75	0.15	0.75
07.	Counter 20G	6.0 oz IF	0.10	0.20	0.10	0.10	0.15
08.	SmartChoice 5G	5.0 oz IF	0.20	0.15	0.15	0.10	0.20
09.	DKC62-95 1.250mg	ST	0.25	0.20	0.15	0.10	0.20
10.	DKC62-95 0.500mg	ST	0.50	0.25	0.75	0.50	0.15
11.	MYC20558 SS	PIP	0.10	0.05	0.05	0.05	0.10
12.	MYC20579 RR		0.15	0.50	0.20	0.15	0.10
13.	MYC29562 HXX	PIP	0.10	0.10	0.15	0.10	0.05
14.	DKC62-95 0.250mg	ST	0.10	0.15	0.20	0.20	0.20

Table 17 continued.

Rep 3. Node injury ratings by root.

No.	Treatment	Oz Prod /1000 ft	Root Injury				
			N1	N2	N3	N4	N5
01.	Aztec 2.1G	6.7 oz TB	0.10	0.05	0.10	0.10	0.25
02.	Aztec 2.1G	6.7 oz IF	0.10	0.05	0.10	0.05	0.10
03.	Force 3G	4.0 oz TB	0.10	0.20	0.10	0.10	0.20
04.	Force 3G	4.0 oz IF	0.25	0.20	0.50	0.15	0.15
05.	Lorsban 15G	8.0 oz TB	0.10	0.25	0.50	0.25	0.75
06.	Lorsban 15G	8.0 oz IF	0.15	0.50	0.25	0.20	0.20
07.	Counter 20G	6.0 oz IF	0.10	0.10	0.10	0.15	0.15
08.	SmartChoice 5G	5.0 oz IF	0.10	0.10	0.10	0.10	0.15
09.	DKC62-95 1.250mg	ST	0.20	0.25	0.20	0.50	0.15
10.	DKC62-95 0.500mg	ST	0.25	0.50	0.10	0.20	0.75
11.	MYC20558 SS	PIP	0.10	0.00	0.05	0.10	0.10
12.	MYC20579 RR		2.50	0.75	0.50	2.50	0.75
13.	MYC29562 HXX	PIP	0.10	0.10	0.10	0.05	0.05
14.	DKC62-95 0.250mg	ST	0.25	0.50	0.25	0.20	0.20

Table 17 continued.

Rep 4. Node injury ratings by root.

No.	Treatment	Oz Prod /1000 ft	Root Injury				
			N1	N2	N3	N4	N5
01.	Aztec 2.1G	6.7 oz TB	0.05	0.05	0.10	0.15	0.10
02.	Aztec 2.1G	6.7 oz IF	0.10	0.10	0.15	0.20	0.10
03.	Force 3G	4.0 oz TB	0.10	0.25	0.10	0.10	0.20
04.	Force 3G	4.0 oz IF	0.10	0.15	0.00	0.10	0.10
05.	Lorsban 15G	8.0 oz TB	0.15	1.00	0.25	0.50	0.25
06.	Lorsban 15G	8.0 oz IF	0.75	1.50	0.50	0.15	0.20
07.	Counter 20G	6.0 oz IF	0.10	0.10	0.05	0.25	0.10
08.	SmartChoice 5G	5.0 oz IF	0.10	0.10	0.05	0.05	0.20
09.	DKC62-95 1.250mg	ST	0.10	0.75	0.25	0.50	0.50
10.	DKC62-95 0.500mg	ST	0.75	0.50	0.20	0.10	0.50
11.	MYC20558 SS	PIP	0.05	0.10	0.15	0.10	0.05
12.	MYC20579 RR		2.25	1.00	0.20	0.50	1.25
13.	MYC29562 HXX	PIP	0.10	0.10	0.10	0.05	0.05
14.	DKC62-95 0.250mg	ST	0.50	0.25	0.75	0.75	0.50

Table 18. Root-lodged (goose-necked) plants per 17.4 ft. Rootworm Management Product Efficacy Assay. Pinney-Purdue Ag Center, Wanatah, IN.¹

Treatment, Place ²	Oz Prod /1000 ft	Root-Lodged Plants				
		R1	R2	R3	R4	Avg
01. Aztec 2.1G	6.7 oz TB	0.0	0.0	0.0	0.0	0.0
02. Aztec 2.1G	6.7 oz IF	0.0	0.0	0.0	0.0	0.0
03. Force 3G	4.0 oz TB	0.0	0.0	0.0	0.0	0.0
04. Force 3G	4.0 oz IF	0.0	0.0	0.0	0.0	0.0
05. Lorsban 15G	8.0 oz TB	0.0	0.0	0.0	0.0	0.0
06. Lorsban 15G	8.0 oz IF	0.0	0.0	0.0	0.0	0.0
07. Counter 20G	6.0 oz IF	0.0	0.0	0.0	0.0	0.0
08. SmartChoice 5G	5.0 oz IF	0.0	0.0	0.0	0.0	0.0
09. DKC62-95 1.250mg	ST	0.0	0.0	0.0	0.0	0.0
10. DKC62-95 0.500mg	ST	0.0	0.0	0.0	0.0	0.0
11. MYC20558 SS	PIP	0.0	0.0	0.0	0.0	0.0
12. MYC20579 RR		0.0	0.0	0.0	0.0	0.0
13. MYC29562 HXX	PIP	0.0	0.0	0.0	0.0	0.0
14. DKC62-95 0.250mg	ST	0.0	0.0	0.0	0.0	0.0

¹Planted, 14 May 2013; Sampled, 23 July 2013.

²TB=T-band, IF=in-furrow, ST=Clothianidin seed treatment, PIP=plant incorporated protectant.

Appendix I. Weather Observations 2013

Table A1. Throckmorton-Purdue Agricultural Center, Lafayette, IN.

Precipitation observed at 8:00 am.

Temperatures observed at 11:59 pm.

May 2013

Date	Precip (inch)	Max Air (°F)	Min Air (°F)	Soil Bare°F	Soil Grass°F
04/30	nd	82	55	63	59
05/01	0.00	83	58	66	62
05/02	0.00	81	55	66	63
05/03	0.00	74	49	62	61
05/04	0.01	70	53	62	61
05/05	0.00	65	53	60	59
05/06	0.00	71	55	61	59
05/07	0.00	78	56	65	61
05/08	0.00	80	53	66	62
05/09	0.00	77	56	63	62
05/10	0.43	68	44	61	61
05/11	0.00	65	43	56	59
05/12	0.00	57	37	53	57
05/13	0.00	66	35	56	56
05/14	0.00	85	52	62	60
05/15	0.00	87	69	68	64
05/16	0.00	84	64	68	65
05/17	0.01	84	62	67	66
05/18	0.02	81	60	66	66
05/19	0.00	88	61	68	68
05/20	0.00	87	71	70	70
05/21	0.00	87	63	69	70
05/22	0.09	78	62	68	69
05/23	0.00	66	42	62	65
05/24	0.01	67	36	60	62
05/25	0.00	61	40	58	60
05/26	0.00	67	46	59	60
05/27	0.47	78	57	61	62
05/28	0.40	81	63	65	65
05/29	0.01	85	69	69	69
05/30	0.00	86	70	70	70
05/31	0.00	77	64	69	70

Appendix I. Weather Observations 2012

Table A2. Throckmorton-Purdue Agricultural Center, Lafayette, IN.
 Precipitation observed at 8:00 am.
 Temperatures observed at 11:59 pm.

June 2012

Date	Precip (inch)	Max Air (°F)	Min Air (°F)	Soil Bare°F	Soil Grass°F
06/01	0.31	74	61	69	69
06/02	0.81	68	53	65	67
06/03	0.00	68	47	65	67
06/04	0.00	74	50	65	67
06/05	0.00	80	55	67	69
06/06	0.00	78	60	68	70
06/07	0.00	72	58	66	68
06/08	0.00	80	54	67	68
06/09	0.00	83	65	68	69
06/10	0.10	79	64	69	71
06/11	0.11	85	63	71	72
06/12	0.00	91	71	74	74
06/13	0.00	76	60	72	74
06/14	0.44	80	54	71	73
06/15	0.00	82	62	71	72
06/16	0.00	80	67	71	72
06/17	0.01	88	67	74	75
06/18	0.00	84	nd	nd	75
06/19	0.00	81	61	73	75
06/20	0.00	87	64	74	75
06/21	0.00	89	66	75	76
06/22	0.02	86	66	74	75
06/23	0.04	85	65	75	75
06/24	0.00	86	68	76	76
06/25	0.03	90	68	76	77
06/26	0.08	82	67	75	76
06/27	0.09	89	69	77	77
06/28	0.00	84	65	75	76
06/29	0.13	73	62	72	73
06/30	0.06	75	63	78	73

nd=no data

Appendix I. Weather Observations 2012

Table A3. Throckmorton-Purdue Agricultural Center, Lafayette, IN.
 Precipitation observed at 8:00 am.
 Temperatures observed at 11:59 pm.

July 2012

Date	Precip (inch)	Max Air (°F)	Min Air (°F)	Soil Bare°F	Soil Grass°F
07/01	0.00	75	63	71	72
07/01	0.01	76	64	71	71
07/02	0.07	72	61	69	70
07/03	0.01	77	62	71	72
07/04	0.00	78	55	71	71
07/05	0.00	83	64	74	74
07/06	0.00	74	66	73	73
07/07	0.52	83	64	74	74
07/08	0.00	86	69	76	75
07/09	0.00	89	74	78	77
07/10	0.00	84	67	77	77
07/11	0.28	79	60	74	75
07/12	0.00	81	54	74	74
07/13	0.00	83	58	75	75
07/14	0.00	90	66	79	78
07/15	0.00	89	72	81	80
07/16	0.00	93	68	83	81
07/17	0.00	92	68	84	82
07/18	0.00	93	71	86	83
07/19	0.00	91	73	85	83
07/20	0.00	83	69	81	80
07/21	0.11	84	65	80	79
07/22	0.00	84	67	79	78
07/23	0.92	83	61	79	78
07/24	0.01	74	54	75	75
07/25	0.00	79	52	75	74
07/26	0.00	78	56	74	74
07/27	0.00	74	53	75	74
07/28	0.00	73	49	71	70
07/29	0.00	78	50	73	71
07/30	0.00	72	56	71	70
07/31	0.05	77	64	72	71

Appendix I. Weather Observations 2012

Table A4. Throckmorton-Purdue Agricultural Center, Lafayette, IN.
 Precipitation observed at 8:00 am.
 Temperatures observed at 11:59 pm.

August 2012

Date	Precip (inch)	Max Air (°F)	Min Air (°F)	Soil Bare°F	Soil Grass°F
08/01	0.23	80	57	74	72
08/02	0.00	82	56	72	72
08/03	0.10	82	58	76	74
08/04	0.38	82	53	74	74
08/05	0.00	80	57	74	73
08/06	0.00	82	66	74	74
08/07	0.00	84	68	77	75
08/08	0.00	75	69	75	74
08/09	0.67	82	62	77	75
08/10	0.00	83	64	78	77
08/11	0.00	83	59	77	76
08/12	0.00	84	62	78	76
08/13	0.00	73	54	75	75
08/14	0.00	70	48	71	71
08/15	0.00	74	47	72	70
08/16	0.00	77	56	74	71
08/17	0.00	80	57	75	71
08/18	0.00	84	57	77	72
08/19	0.00	85	58	78	74
08/20	0.00	87	61	80	75
08/21	0.00	87	63	82	76
08/22	0.00	78	65	77	75
08/23	0.06	83	62	76	74
08/24	0.00	84	56	77	73
08/25	0.00	87	61	79	74
08/26	0.00	89	61	80	75
08/27	0.00	90	69	82	77
08/28	0.00	91	72	83	78
08/29	0.00	90	71	85	79
08/30	0.00	92	67	84	79
08/31	0.18	nd	nd	nd	nd

Appendix II. Weather Observations 2012

Table A5. Pinney-Purdue Agricultural Center, Wanatah, IN.
 Precipitation observed at 8:00 am.
 Temperatures observed at 11:59 pm.

May 2012

Date	Precip (inch)	Max Air (°F)	Min Air (°F)	Soil Bare°F	Soil Grass°F
05/01	0.00	83	54	74	62
05/02	0.00	66	40	71	61
05/03	0.00	66	40	63	57
05/04	0.07	73	53	70	59
05/05	0.00	73	49	72	60
05/06	0.00	76	47	73	60
05/07	0.00	75	44	76	60
05/08	0.00	78	48	79	62
05/09	0.00	79	47	74	61
05/10	0.42	61	40	62	59
05/11	0.02	61	37	59	55
05/12	T	53	33	61	54
05/13	0.00	64	33	70	55
05/14	0.00	88	50	79	59
05/15	0.00	82	58	84	64
05/16	T	85	49	88	64
05/17	0.00	79	55	76	63
05/18	0.29	78	56	80	65
05/19	0.00	85	58	84	67
05/20	0.00	88	69	84	69
05/21	0.56	81	62	79	69
05/22	T	73	61	74	69
05/23	0.21	61	39	66	64
05/24	0.02	53	38	67	60
05/25	0.00	60	35	62	58
05/26	0.00	69	41	66	59
05/27	0.31	62	52	62	60
05/28	0.67	79	60	71	63
05/29	0.60	83	62	77	67
05/30	T	84	68	76	69
05/31	0.34	nd	nd	nd	nd

T=trace amount

Appendix II. Weather Observations 2012

Table A6. Pinney-Purdue Agricultural Center, Wanatah, IN.
 Precipitation observed at 8:00 am.
 Temperatures observed at 11:59 pm.

June 2012

Date	Precip (inch)	Max Air (°F)	Min Air (°F)	Soil Bare°F	Soil Grass°F
06/01	0.16	76	61	75	69
06/02	0.10	64	43	66	66
06/03	0.02	65	39	74	64
06/04	0.00	73	43	74	65
06/05	0.00	77	55	82	67
06/06	0.00	70	52	74	67
06/07	T	69	51	81	67
06/08	0.00	76	49	83	68
06/09	0.00	82	58	82	69
06/10	2.56	76	59	76	69
06/11	0.07	84	58	83	72
06/12	0.13	91	64	80	72
06/13	1.22	69	55	76	72
06/14	0.00	76	53	80	71
06/15	0.02	72	57	72	70
06/16	0.21	81	66	80	72
06/17	0.00	85	63	82	74
06/18	0.00	74	58	81	74
06/19	0.00	78	54	86	73
06/20	0.00	84	56	88	74
06/21	0.00	nd	40	85	73
06/22	2.05	83	67	83	73
06/23	0.00	85	64	84	76
06/24	0.00	83	65	82	75
06/25	0.35	87	66	83	75
06/26	2.43	80	64	80	74
06/27	0.15	87	64	87	77
06/28	T	81	63	85	78
06/29	0.03	74	62	77	74
06/30	0.01	75	63	78	73

nd=no data

T=trace amount

Appendix II. Weather Observations 2012

Table A7. Pinney-Purdue Agricultural Center, Wanatah, IN.
 Precipitation observed at 8:00 am.
 Temperatures observed at 11:59 pm.

July 2012

Date	Precip (inch)	Max Air (°F)	Min Air (°F)	Soil Bare°F	Soil Grass°F
07/01	0.00	76	56	82	73
07/02	0.06	64	58	68	70
07/03	0.80	75	60	75	70
07/04	0.05	77	54	78	71
07/05	0.00	82	57	84	74
07/06	0.00	82	66	79	75
07/07	0.29	84	66	83	76
07/08	0.00	84	68	80	76
07/09	0.29	84	71	82	77
07/10	0.17	80	59	83	77
07/11	0.63	78	55	82	76
07/12	0.00	82	53	86	76
07/13	0.00	84	55	88	77
07/14	0.00	89	64	93	79
07/15	0.00	90	69	98	81
07/16	0.00	90	69	100	82
07/17	0.00	91	69	101	83
07/18	0.00	91	71	102	83
07/19	0.00	93	74	100	83
07/20	0.00	86	66	103	83
07/21	0.00	87	64	98	82
07/22	0.08	86	67	98	81
07/23	0.00	80	60	91	80
07/24	0.00	72	49	92	76
07/25	0.00	80	49	94	76
07/26	0.00	76	57	82	75
07/27	0.03	71	54	82	74
07/28	T	70	48	78	71
07/29	0.03	75	50	88	71
07/30	0.00	74	50	79	71
07/31	0.03	71	60	73	71

T=trace amount

Appendix II. Weather Observations 2012

Table A8. Pinney-Purdue Agricultural Center, Wanatah, IN.
 Precipitation observed at 8:00 am.
 Temperatures observed at 11:59 pm.

August 2012

Date	Precip (inch)	Max Air (°F)	Min Air (°F)	Soil Bare°F	Soil Grass°F
08/01	0.03	80	55	90	72
08/02	0.10	84	55	79	71
08/03	1.66	77	56	82	74
08/04	0.00	75	54	81	73
08/05	0.00	74	55	75	72
08/06	0.02	81	63	81	72
08/07	0.00	85	64	84	74
08/08	1.33	77	62	80	74
08/09	0.00	82	58	84	75
08/10	0.00	80	58	84	76
08/11	0.00	81	55	87	76
08/12	0.00	83	62	77	76
08/13	0.44	69	51	71	74
08/14	0.00	70	46	67	71
08/15	0.00	75	46	68	70
08/16	0.00	77	55	72	72
08/17	0.00	77	51	72	72
08/18	0.00	83	52	74	72
08/19	0.00	85	54	76	73
08/20	0.00	85	58	77	74
08/21	0.00	87	60	79	75
08/22	0.72	72	63	73	74
08/23	0.02	81	58	74	74
08/24	0.00	82	53	72	73
08/25	0.00	86	55	74	73
08/26	0.00	87	61	75	74
08/27	0.00	91	70	78	76
08/28	0.00	80	69	78	76
08/29	0.00	87	65	79	77
08/30	0.00	92	62	79	77
08/31	0.08	nd	nd	nd	nd