

# Treated vs. Untreated Soybeans

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## Problem Statement

- Dryland soybean yields in Central KS are highly variable.
- Full seed treatment including seed-applied insecticide costs around \$12 to \$13/unit.
- Bean leaf beetle is not a consistent pest.
- However, seed insecticide seems to improve vigor, stand establishment, and possibly yield even in the absence of insect pressure.
- Are stand and yield differences enough to justify additional cost of insecticide treated seed?

## Project Objectives

- Compare insecticide treated soybean seed to untreated.
- Evaluate stand establishment through stand counts.
- Note vigor and uniformity differences.
- Monitor insect pressure.
- Measure and evaluate yield.
- Perform study in both full-season and double crop environment.

## Treatments

- **Treatment 1 – CruiserMaxx<sup>®</sup>**
  - Includes Cruiser<sup>®</sup> seed treatment insecticide plus Maxim<sup>®</sup> and Apron XL<sup>®</sup> seed treatment fungicide.
  - Seed treatment was applied by seed company before shipment.
  - Liquid inoculant applied on farm.
- **Treatment 2 – Untreated**
  - Only treated with liquid inoculant.
- **Treatment 3 - ApronMaxx<sup>®</sup> only**
  - Maxim<sup>®</sup> and Apron XL seed treatment fungicide plus same inoculation.
  - Only included in 2007 study.

## Methodology

- Treatments randomized and replicated 3 times.
- Seeded no-till into milo stalks with JD 1890 Drill in 15" spacing.
- Stand counts taken at V5.
- Yield data collected both by weigh wagon and yield monitor.

## Field Layout

North

UT3 T3 T2 UT2 UT1 T1

Two 36' drill passes for each treatment  
(except UT2 in full-season test)

Harvested each entry separately and with the pass

## Seeding Time



## 2009 Full Season Results



## 2009 Full Season Results

Treatment	Rep	Plants/ac	Moisture	Test Weight	Yield (bu/ac)
Untreated	1	122467	14.7	56.0	51.8
Untreated	2	119683	14.9	56.5	53.5
Untreated	3	124137	15.0	57.0	58.4
CruiserMaxx	1	135827	14.7	56.0	56.9
CruiserMaxx	2	131930	14.9	56.0	58.2
CruiserMaxx	3	142506	14.9	56.5	60.8

## 2009 Full Season Results

Planted: May 21, 2009

Variety: NK S39-A3

Seeding Rate: 140,000 in 15" rows

Treatment	Population Plants/ac	Yield Bu/ac	Moisture %	Test Weight
Untreated	122096 b	54.3 b	14.9	56.5
CruiserMaxx	136754 a	58.6 a	14.8	56.2
<b>Average</b>	<b>129425</b>	<b>56.5</b>	<b>14.9</b>	<b>56.3</b>
<b>LSD (0.05)</b>	<b>8101</b>	<b>4.23</b>	<b>NS</b>	<b>NS</b>
<b>CV (%)</b>	<b>1.78</b>	<b>2.13</b>	<b>0.27</b>	<b>0.36</b>

## 2009 Full Season Results



## 2009 Double Crop Results

Treatment	Rep	Plants/ac	Moisture	Test Weight	Yield (bu/ac)
Untreated	1	122467	13.3	56.5	42.0
Untreated	2	135687	13.3	58.0	41.2
Untreated	3	124554	13.3	56.0	39.0
CruiserMaxx	1	130120	13.3	57.5	42.7
CruiserMaxx	2	140558	13.4	57.0	40.5
CruiserMaxx	3	125946	13.3	57.0	40.3

## 2009 Double Crop Results

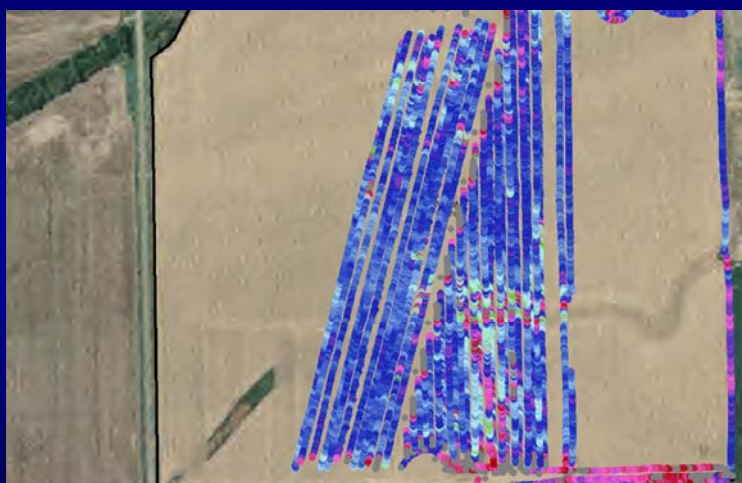
Planted: June 28, 2009

Variety: NK S41-M5

Seeding Rate: 155,000 in 15" rows

Treatment	Population Plants/ac	Yield Bu/ac	Moisture %	Test Weight
Untreated	127569	40.7	13.3	56.8
CruiserMaxx	132208	41.2	13.3	57.2
<b>Average</b>	<b>129889</b>	<b>40.9</b>	<b>13.3</b>	<b>57.0</b>
<b>LSD (0.05)</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>	<b>NS</b>
<b>CV (%)</b>	<b>1.71</b>	<b>1.78</b>	<b>0.31</b>	<b>1.43</b>

## 2009 Double Crop Results



## 2008 Study



## Untreated/ApronMaxx



## CruiserMaxx Treated



## 2008 Knopf Farm Results

Planted: May 24, 2008

Variety: NK S39-A3

Seeding Rate: 150,000 in 15" rows

Treatment	Population Plants/ac	Yield Bu/ac	Moisture %	Test Weight
Untreated	70743 b	64.0 ab	10.2	58.0
ApronMaxx	74686 b	61.6 b	10.1	58.5
CruiserMaxx	113189 a	65.5 a	10.3	58.3
<b>Average</b>	<b>86206</b>	<b>63.7</b>	<b>10.2</b>	<b>58.3</b>
<b>LSD (0.05)</b>	<b>23579</b>	<b>3.1</b>	<b>NS</b>	<b>NS</b>
<b>CV (%)</b>	<b>12.1</b>	<b>2.1</b>	<b>1.5</b>	<b>0.8</b>

## 2008 Short Farm Results

Planted: May 21, 2008

Variety: NK S39-A3

Seeding Rate: 151,077 in 30" rows

Treatment	Population Plants/ac	Yield Bu/ac	Moisture %	Test Weight
Untreated	122778 b	59.0 ab	11.4 b	55.3
ApronMaxx	125444 b	58.3 b	11.7 a	55.3
CruiserMaxx	139611 a	60.4 a	11.4 b	55.3
<b>Average</b>	<b>129278</b>	<b>59.2</b>	<b>11.5</b>	<b>55.3</b>
<b>LSD (0.05)</b>	<b>4868</b>	<b>1.9</b>	<b>0.22</b>	<b>NS</b>
<b>CV (%)</b>	<b>1.66</b>	<b>1.4</b>	<b>0.91</b>	<b>1.04</b>

## What did we gain?

- 2009
  - 14,658 plants? \$4.10/ac at \$42/unit
  - 97.7% vs. 87.2% stand establishment?
  - 4.3 bu/ac yield difference?
- 2008
  - 42,446 plants? \$11.88/ac @ \$42/unit
  - 75.5% vs. 47.2% stand establishment?
  - No yield difference.

## Conclusions/Questions

- Seed treatment insecticide produced significant stand establishment differences (although not on double crop).
- Yield response not predictable across years on our farm.
- Decision to invest seed treated insecticide is not a black and white decision in our area.
- Seeding 10,000 less seeds/ac = \$2.80/ac
- We saw a yield response in the year with less insect pressure?
- What happened to fungicide only treatment?

## What I Learned

- Planning has to be done well before planting.
- Even with planning, it's still difficult implement study in-field without mistakes.
- I need to learn more about collecting more accurate data with yield monitors and then extracting/cleaning that data.
- How critical is it for the yield monitor data to correlate with actual measured weights?

## Thank You

- KARA - the opportunity to learn and ask questions.
- Tom Maxwell
- Stu Duncan
  
- Questions/Feedback?