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**MONSANTO LEARNING CENTER**  
**AT SCOTT, MISSISSIPPI**  
**2016 DEMONSTRATION REPORTS**





Dear Learning Center Visitor,

Hello from the Monsanto Learning Center at Scott, Mississippi. I want to thank you for your patronage during 2016. The 2016 growing season was "typical" in that it offered surprises beyond what we were expecting.

The most notable surprises were due to heavy and prolonged rainfall - as much as 20 inches of rain fell during corn planting followed by 18-20 consecutive days of rain during late July and early August. Despite the weather adversity, we captured usable data in corn, cotton and soybeans. Some of the data collected helped answer some of the weather-related questions we were getting.

Thanks to good agronomic decision making, strong genetics and technology-based tools, our Learning Center maintained yield potential during 2016.

The information that follows in this document is a compilation of the work done at Scott during 2016. This work included the evaluation of agronomic practices across soybean, corn, and cotton production systems.

Our goal at the Monsanto Learning Center is to provide information and guidance to help you use our products and technology to improve yield potential, thus providing your farm with stability, success and profit opportunity.

If our staff can help you in any way, please call or email me personally at 662-742-4282 or [jay.s.mahaffey@monsanto.com](mailto:jay.s.mahaffey@monsanto.com).

Good luck to all for 2016!!!

Thanks,

**Jay Mahaffey**



**SCAN OR CLICK TO VISIT OUR WEBSITE:**

<http://www.monsanto.com/products/pages/scott-learning-center.aspx>

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## Large Plot and New Product Evaluation

2016 Learning Center Demo Report  
Monsanto Learning Center at Scott, MS



### STUDY GUIDELINES

- Multiple Asgrow<sup>®</sup> brand soybean products were planted in 7.5-inch x 38-inch twin rows on April 18, 2016, using a Monosem<sup>®</sup> planter.
- Fertilizer was applied as needed.
- Soybeans were desiccated as needed and harvested over about three weeks in September 2016.



## RESULTS & DISCUSSION

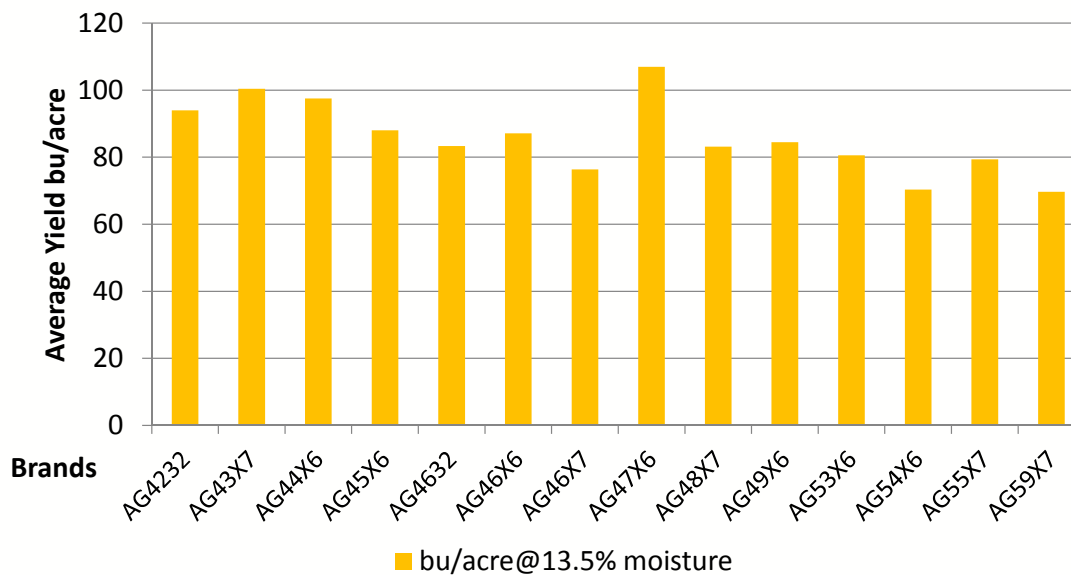


Figure 1. Average yield of multiple soybean brand products planted in 7.5-inch x 38-inch rows.

Large Plot and New Product Evaluations



## TAKE AWAYS

- As in cotton, some decrease in yield was observed in the later varieties due to late season disease.
- The Roundup Ready<sup>®</sup> 2 Xtend soybean products that were tested had at least as high yield potential when compared to the standards.
- AG47X6 had exceptionally high potential at Scott, MS during 2016. We are still investigating the potential causes.

Large Plot and New Product Evaluations



## TAKE AWAYS

- High yields were obtained with products spanning a large relative maturity range.
- Several early maturity group (MG) 4 products yielded at or above the level of most mid to late MG 4 products, showing value of earlier MG 4 products in the early planting system.

Large Plot and New Product Evaluations



## STUDY GUIDELINES

- Multiple DEKALB<sup>®</sup> brand corn products were planted in 38-inch single rows, using Precision Planting<sup>®</sup> vSet<sup>®</sup> Select planters and DeltaForce<sup>®</sup> down pressure, on March 26, 2016.
- Seed were planted at a rate of 37,500 kernels/acre.
- Nitrogen was applied at a rate of 240 lbs/acre as a 28% liquid.

Large Plot and New Product Evaluations



## STUDY GUIDELINES

- Little lodging occurred.
- Corn was harvested on September 1, 2016.

Large Plot and New Product Evaluations



## RESULTS & DISCUSSION

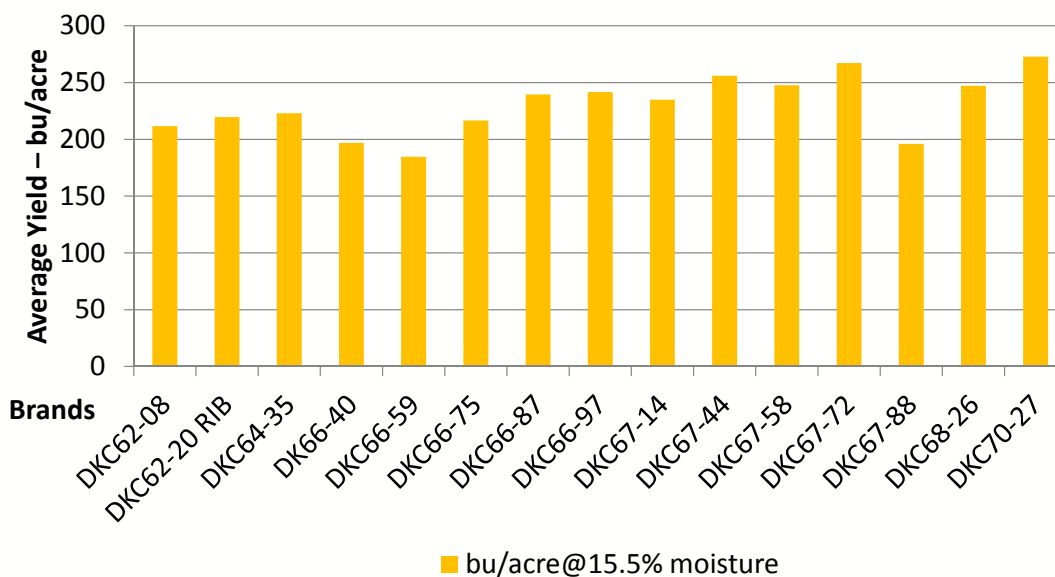


Figure 2. Average yield of multiple DEKALB® brand corn products planted in 38-inch rows.

Large Plot and New Product Evaluations



## TAKE AWAYS

- Results should be carefully interpreted.
- Not all corn products should be planted at these populations.

Large Plot and New Product Evaluations



## STUDY GUIDELINES

- Multiple Deltapine<sup>®</sup> cotton varieties were planted in 38-inch rows on May 11, 2016.
- Seeding rate was 41,000 seeds/acre.
- 28% nitrogen was sidedressed at a rate of 120 lbs/acre.
- A total of 48 oz/acre of PIX<sup>®</sup> was applied in three applications of 16 oz/acre each (June 13, June 22, and June 29).

Large Plot and New Product Evaluations





# STUDY GUIDELINES

- Pest control (primarily for lygus) was applied as needed.

Large Plot and New Product Evaluations



# RESULTS & DISCUSSION

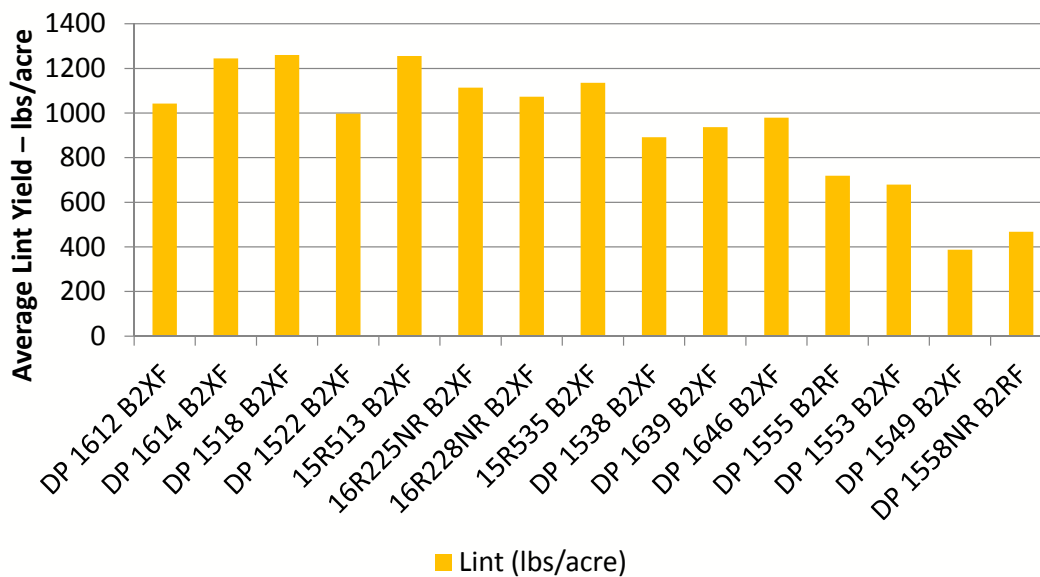


Figure 2. Average yield of multiple cotton products planted in 38-inch rows.

Large Plot and New Product Evaluations



## TAKE AWAYS

- Due to mid-season rainfall, significant defoliation occurred from disease (primarily target spot).
- Later-maturing cotton varieties were particularly penalized by these factors.
- Fruit shed was also significant during the mid-season, due to disease, cloud cover, and carbohydrate demand.

Large Plot and New Product Evaluations



## TAKE AWAYS

- Yield potential remained relatively high for most varieties even with these negative factors during the growing season.

Large Plot and New Product Evaluations



## LEGAL STATEMENTS

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## Response of 4 Asgrow<sup>®</sup> Brand Soybean Products to Common Planting Errors

2016 Learning Center Demo Report  
Monsanto Learning Center at Scott, MS



### BACKGROUND

- Growers often express concern about planting mistakes that they have made.
  - Mechanical failures may not be apparent until seedlings emerge.
- This study will aid decision making when considering replanting soybean fields.
- This study also provides more yield results from new Roundup Ready 2 Xtend<sup>®</sup> soybean products for midsouth production systems.



## STUDY GUIDELINES

- A soybean demonstration trial was conducted in cooperation with Mississippi State at the Monsanto Learning Center near Scott, MS to determine:
  - Yield response in soybean stands with missing rows and either one or two unplanted twins in an individual row.
  - How well soybean plants compensate for missing rows.
  - When replanting or filling in, a missing part of the stand should be considered.

Response of 4 Asgrow® Brand Soybean Products to Common Planting Errors



## STUDY GUIDELINES

- 4 Asgrow® Brands were used.
  - AG42X6
  - AG47X6
  - AG49X6
  - AG54X6
- Trial was planted on May 6, 2016 and harvested on September 10, 2016.
- All field work was completed per local standard

Response of 4 Asgrow® Brand Soybean Products to Common Planting Errors



## STUDY GUIDELINES

- 4 treatments were included:
  - 4-row check plot planted at 150,000 plants/acre
  - 4-row plot with one row missing (Figure 1)
    - Peas planted in the missing row and killed out after emergence
    - Planting population of 112,500 plants/acre
  - 4-row plot with one missing twin of the eight in a 4-row pass
    - Peas planted in the missing row and killed out after emergence
    - Planting population of 131,250 plants/acre
  - 4-row plot with two separated twins in the pass (Figure 2)
    - Peas planted in the missing rows and killed out after emergence
    - Planting population of 112,500 plants/acre.

Response of 4 Asgrow® Brand Soybean Products to Common Planting Errors



## RESULTS & DISCUSSION



Figure 1. Treatment with one row missing.

Response of 4 Asgrow® Brand Soybean Products to Common Planting Errors



# RESULTS & DISCUSSION



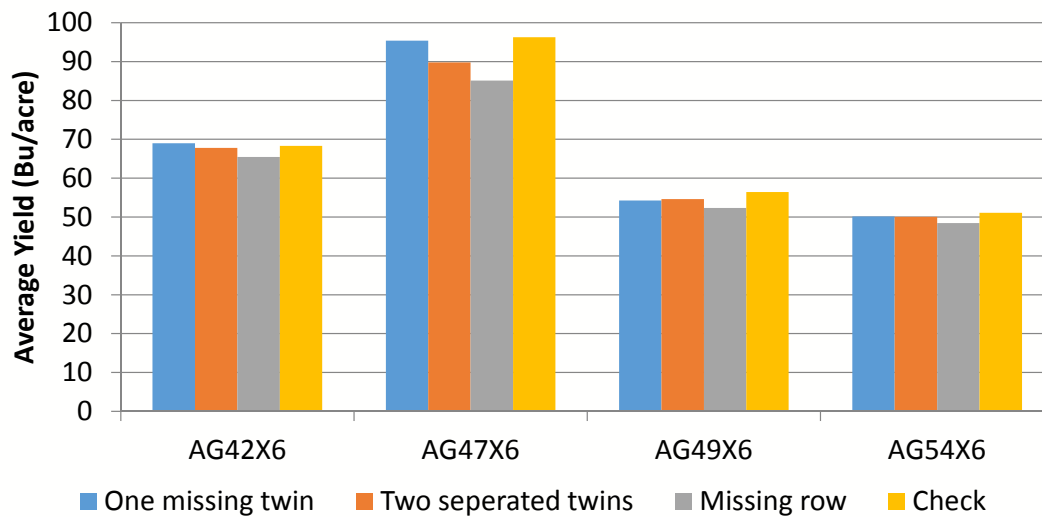
Figure 2. Treatment with missing pair of twin rows.

Response of 4 Asgrow® Brand Soybean Products to Common Planting Errors



# RESULTS & DISCUSSION

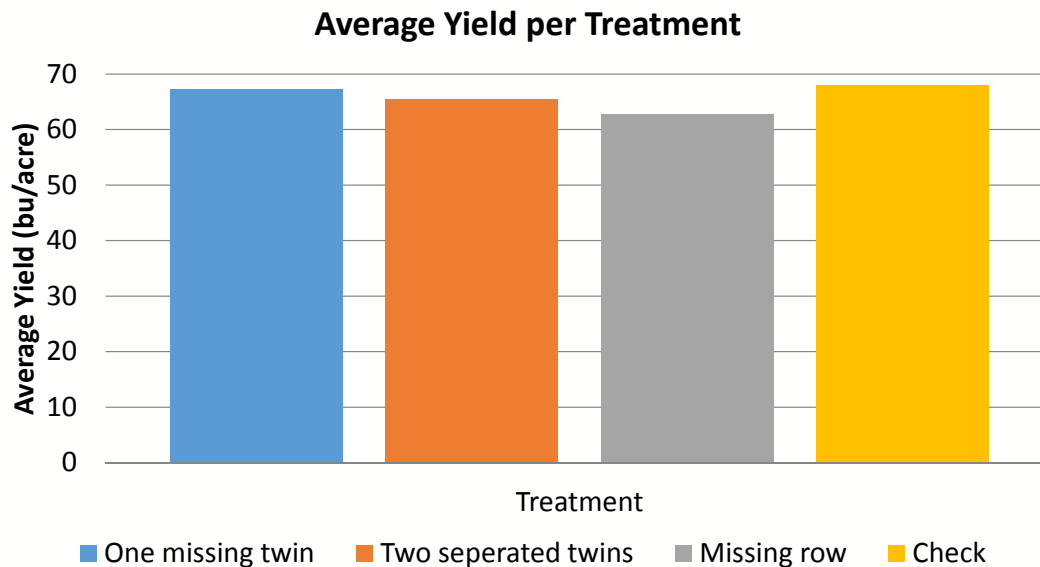
## Yield Response of Asgrow® Brands to Treatments



Response of 4 Asgrow® Brand Soybean Products to Common Planting Errors



## RESULTS & DISCUSSION



Response of 4 Asgrow® Brand Soybean Products to Common Planting Errors



## TAKE AWAYS

- The Roundup Ready 2 Xtend® soybean products used demonstrated excellent yield potential (Table 1).
- In the environment tested, the data from this demonstration indicates that soybean plants have a tremendous ability to compensate for reduced populations and little effect was observed from the missing rows (Table 2).
- The treatment with the entire missing row had numerically lower yields than other treatments (Table 2).

Response of 4 Asgrow® Brand Soybean Products to Common Planting Errors





## TAKE AWAYS

- Results from this demonstration study indicated that many fields with these issues can be kept rather than replanted.
- Reductions in population did not greatly impact yield in a negative way.
- Weed control in unplanted areas would be important to consider. Growers may need to invest in a more aggressive residual weed management program to keep skips clean.

Response of 4 Asgrow® Brand Soybean Products to Common Planting Errors



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**ALWAYS READ AND FOLLOW DIRECTIONS FOR USE ON PESTICIDE LABELING. IT IS A VIOLATION OF FEDERAL AND STATE LAW** to use any pesticide product other than in accordance with its labeling. NOT ALL formulations of dicamba or glyphosate are approved for in-crop use with **Roundup Ready 2 Xtend® soybeans**. ONLY USE FORMULATIONS THAT ARE SPECIFICALLY LABELED FOR SUCH USES AND APPROVED FOR SUCH USE IN THE STATE OF APPLICATION. May not be approved in all states. Contact the U.S. EPA and your state pesticide regulatory agency with any questions about the approval status of dicamba herbicide products for in-crop use with Roundup Ready 2 Xtend® soybeans.

**Roundup Ready 2 Xtend® soybeans** contains genes that confer tolerance to glyphosate and dicamba. Glyphosate will kill crops that are not tolerant to glyphosate. Dicamba will kill crops that are not tolerant to dicamba. Contact your Monsanto dealer or refer to Monsanto's Technology Use Guide for recommended weed control programs.

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Response of 4 Asgrow® Brand Soybean Products to Common Planting Errors



# RESPONSE OF ASGROW® SOYBEAN PRODUCTS TO FLOOD IRRIGATION

2016 Learning Center Demo Report  
Monsanto Learning Center at Scott, MS



## BACKGROUND

- In the Midsouth, many soybean growers use flood irrigation in flat planted systems because:
  - Flood irrigation is compatible with rice production.
  - Flood irrigating is easier than row watering.
- A difference in soybean product response to flood irrigation has been observed in the past
- A demonstration was established to evaluate the tolerance of new Asgrow® soybean products to flood irrigation regimes of different lengths.
- A second evaluation was to supply data to the adaption of new soybean products for systems in the Midsouth.



## STUDY GUIDELINES

- Soybean products were planted in 38-inch twin rows on April 26, 2016 at 150,000 seeds/acre.
- Irrigation was applied three times:
  - June 27, 2016
  - July 17, 2016
  - August 1, 2016
- Flood irrigation water was held on each soybean product for either 24 and 72 hours.
- Untreated check plots were rainfed.

Response of Asgrow® Soybean Products to Flood Irrigation



## STUDY GUIDELINES

- Soybean products with different relative maturities were ready for harvest on different dates.
  - Harvesting took place over a 2 to 3 week period.
- Soybean product yield was calculated and compared by flood irrigation timing (24 and 72 hours).
- Plots were conducted on clay loam soil with corn as the previous crop. All agronomics were per local standards.

Response of Asgrow® Soybean Products to Flood Irrigation



## RESULTS & DISCUSSION

- The 72-hour flood plots yield reduced from 18-41% versus the untreated check.
- Some yield differences were observed in soybean product tolerance to flooding.
- When averaged across soybean products, a 72-hour flood reduced yield by about 20 bu/acre with the range being 10-33 bu/acre.

Response of Asgrow® Soybean Products to Flood Irrigation



## RESULTS & DISCUSSION

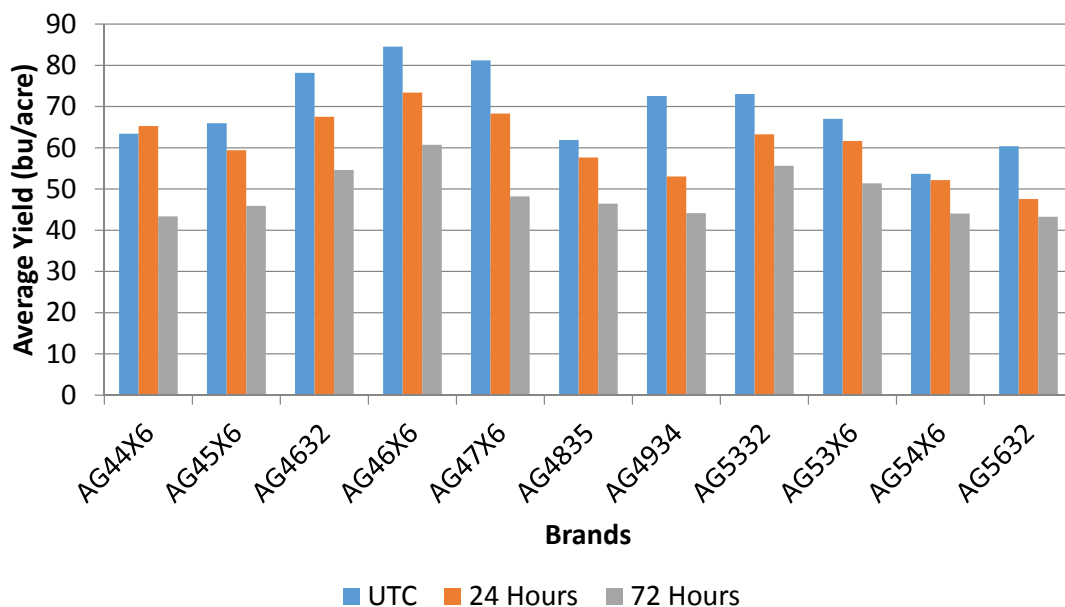


Figure 1. Soybean product average yield response to flood irrigation timing and untreated check (UTC).

Response of Asgrow® Soybean Products to Flood Irrigation



# RESULTS & DISCUSSION

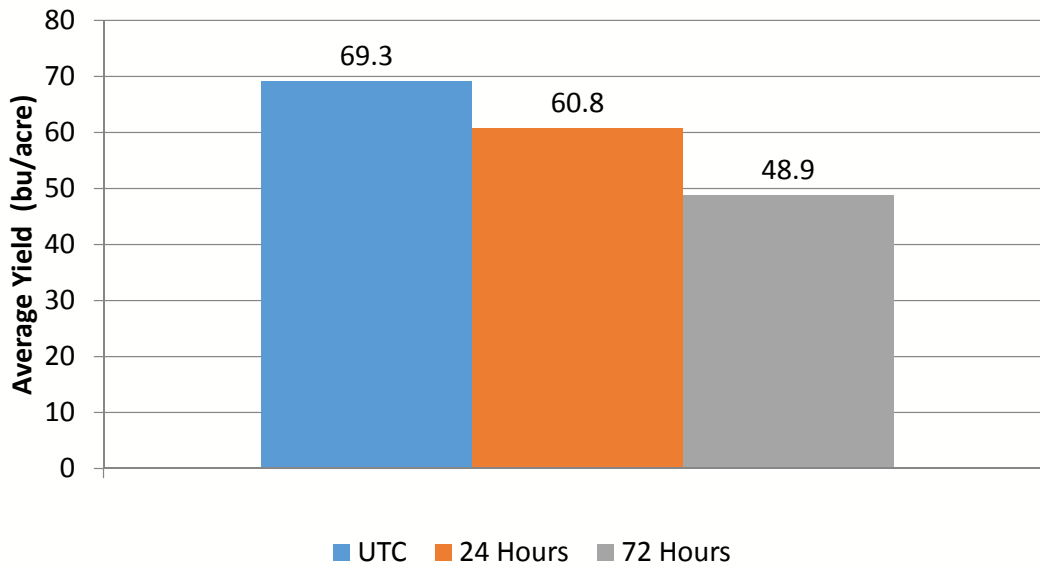


Figure 2. Average yield response of soybean products to flood irrigation timing and untreated check (UTC).

Response of Asgrow® Soybean Products to Flood Irrigation



# RESULTS & DISCUSSION

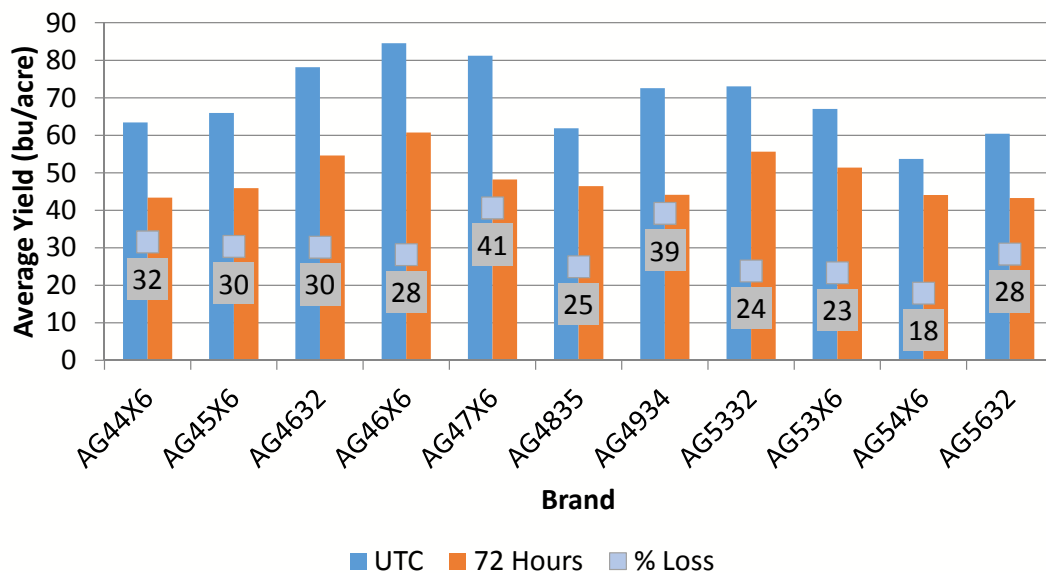


Figure 3. Soybean product average yield response to 72-hour flood irrigation and percent yield loss.

Response of Asgrow® Soybean Products to Flood Irrigation



## RESULTS & DISCUSSION

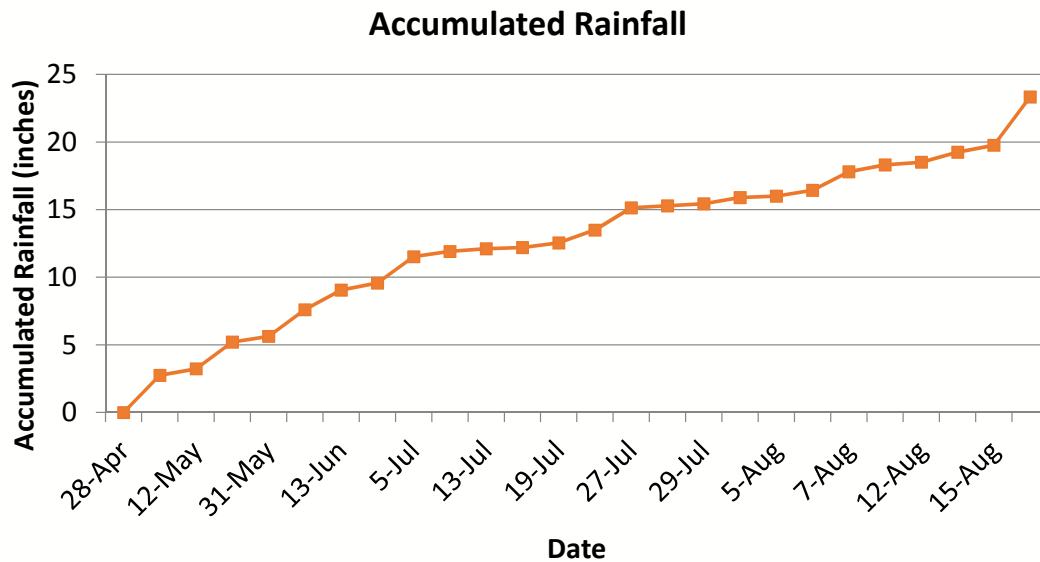


Figure 4. Accumulated rainfall 2016, for Scott, MS.

Response of Asgrow® Soybean Products to Flood Irrigation



## TAKE AWAYS

- In fields prone to flooding, careful attention should be given to soybean product selection.
- Even in fields that utilize flood irrigations, growers should make efforts to establish drainage to remove water in a timely manner.

Response of Asgrow® Soybean Products to Flood Irrigation



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# RESPONSE OF ASGROW® SOYBEAN PRODUCTS TO PLANTING DATE

2016 Learning Center Demo Report  
Monsanto Learning Center at Scott, MS



## BACKGROUND

- A demonstration was established to evaluate the yield potential response of new Asgrow® soybean products to different planting dates.
- This demonstration was designed to provide information about Asgrow soybean products with different maturities to help growers in the Midsouth with the following questions:
  - What soybean maturity group should I plant?
  - What soybean product should I plant?
  - When should I plant my soybean seed?
- The demonstration was also designed to provide local information about new Roundup Ready 2 Xtend® soybean products.





## BACKGROUND

- The objective of this demonstration was to evaluate the yield potential of soybean products with maturity groups (MG) that ranged from MG 00 to MG 7.9 planted on three different planting dates, early, mid, and late.
- This demonstration also allowed for the evaluation of past and current production systems.

Response of Asgrow® Soybean Products to Planting Date



## BACKGROUND

- Until the early 1990s, most soybeans in the Midsouth were planted very late (during June and July), and were later maturities (MG 6 and MG 7).
- The current typical production system in the Midsouth consists of MG 4 and MG 5 soybean products planted on dates ranging from late March to early July, with MG 4 and MG 5 soybeans planted in mid-April having the highest yield potential.

Response of Asgrow® Soybean Products to Planting Date



## BACKGROUND

- As planting dates are delayed, growers may start to consider planting very early maturity soybeans late in the season.
- This demonstration addressed planting very early maturity soybeans at early, mid, and late planting dates.

Response of Asgrow® Soybean Products to Planting Date



## STUDY GUIDELINES

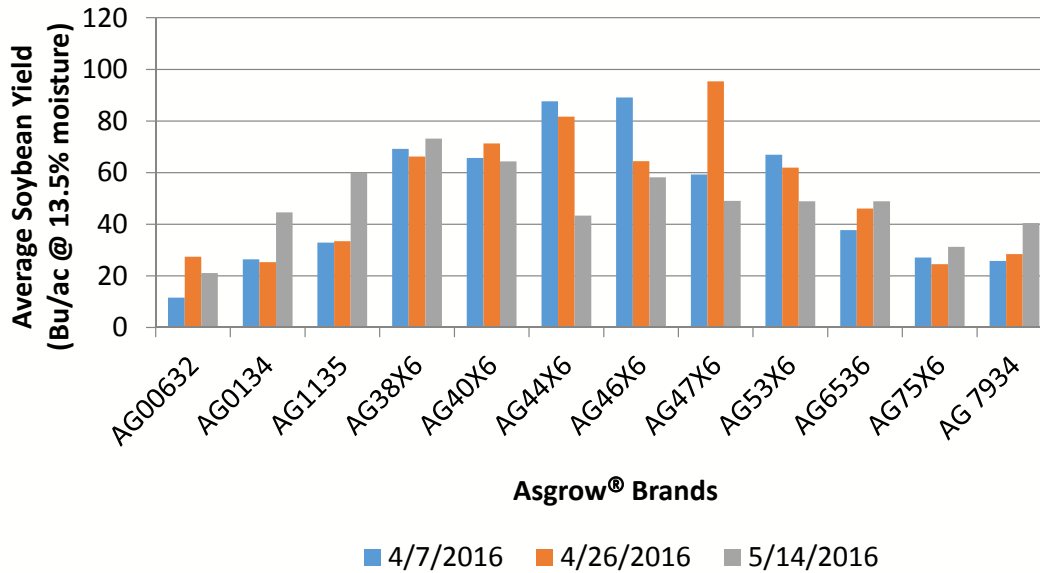
- 12 Asgrow® soybean products were planted with the following conditions:
  - Soil Type: Silt Loam
  - Previous Crop: Soybean
  - Tillage: Conventional
  - Row Spacing: Twin rows (7.5-inch x 38-inch)
  - Planting Rate: 140,000 seeds/acre
  - Yield Goal: 100 bu/acre
- Each product was planted on three different planting dates: April 7, 2016, April 26, 2016, and May 14, 2016.
- All other agronomic practices were standard for local conditions.
- Plots were harvested when ready and corrected to 13.5% moisture.

Response of Asgrow® Soybean Products to Planting Date



# RESULTS & DISCUSSION

## Response of Asgrow® Soybean Products to Planting Date

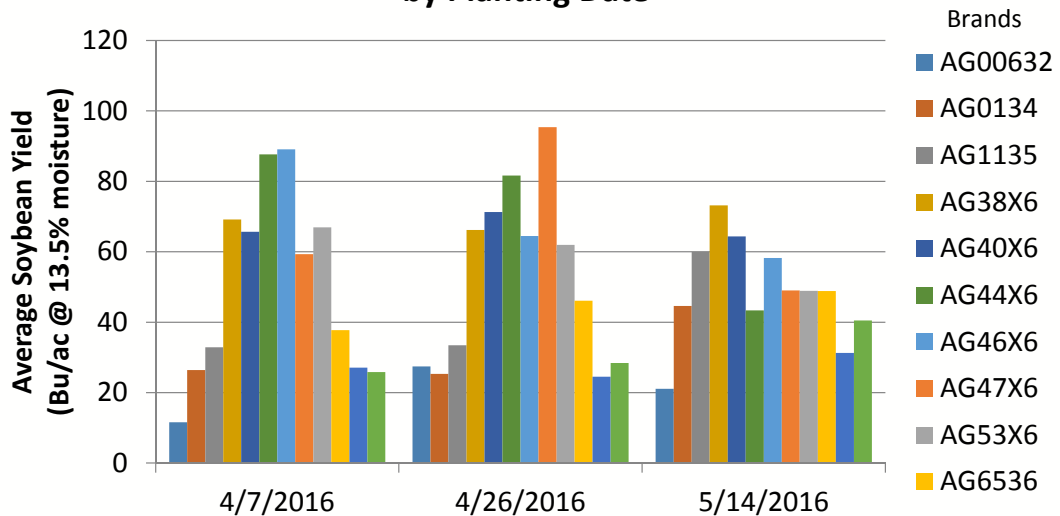


Response of Asgrow® Soybean Products to Planting Date



# RESULTS & DISCUSSION

## Response of Asgrow® Soybean Products to Planting Date by Planting Date

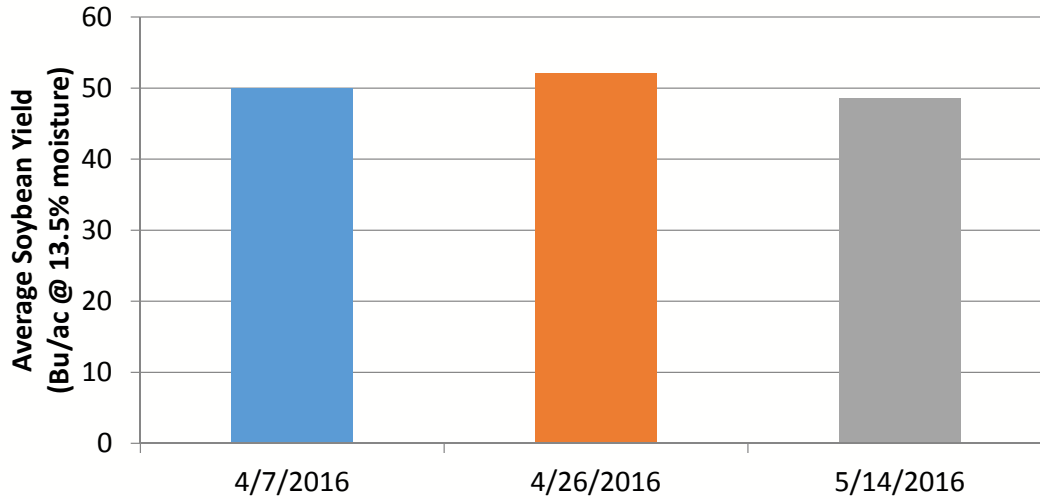


Response of Asgrow® Soybean Products to Planting Date



# RESULTS & DISCUSSION

## Response of Asgrow® Soybean Products to Planting Date Across Soybean Products

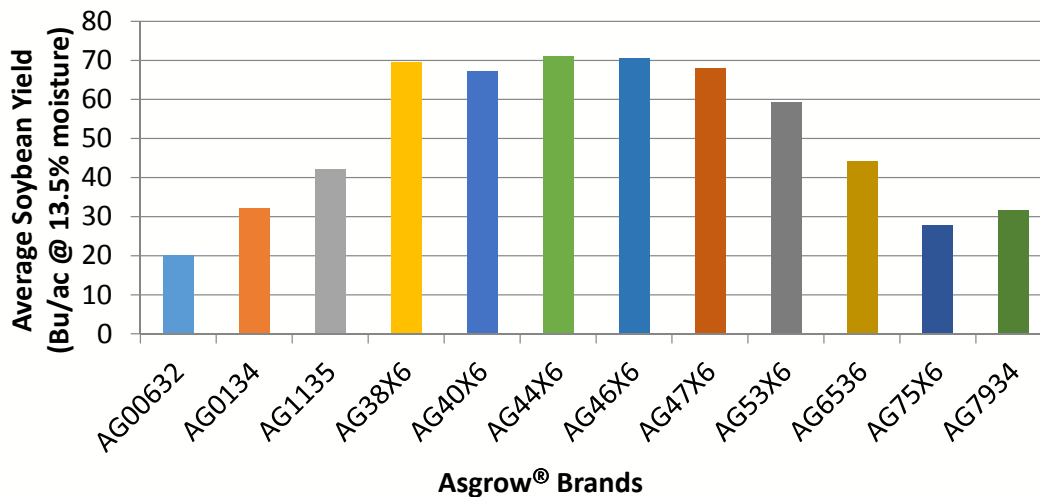


Response of Asgrow® Soybean Products to Planting Date



# RESULTS & DISCUSSION

## Response of Asgrow® Soybean Products to Planting Date Across Dates



Response of Asgrow® Soybean Products to Planting Date



## RESULTS & DISCUSSION

- MG 00 through MG 1.1 soybean products planted on the early and mid dates had a maximum yield potential of around 30 bu/ac.
- The MG 1.1 soybean products planted on the later date had a small increase in yield potential, but this result should be considered with caution as it is radically different from the typical production system in the Midsouth.
- Early maturity soybean products can bloom prematurely in the Midsouth, which can lead to a short growing season and the inability to attain optimal yield potential.

Response of Asgrow® Soybean Products to Planting Date



## RESULTS & DISCUSSION

- MG 6 and MG 7 soybean products planted on the early or mid dates produced lower yields than when planted later.
- The later planting date most closely represents practices prior to the early 1990s in the Midsouth.
- When planted earlier, these soybean products tend to develop too much vegetation prior to blooming, which can lead to a reduction in yield potential. If the same soybean products are planted later, they tend to be shorter and have a higher yield potential.
- Planting MG 6 and MG 7 soybean products later in the season can double the yield potential when compared to early and mid planting dates.

Response of Asgrow® Soybean Products to Planting Date



## RESULTS & DISCUSSION

- But... this increase in yield potential with a later planting date cannot compete with MG 4 and MG 5 soybean products planted during the early and mid planting dates.
- The increase in yield potential with MG 4 and MG 5 soybean products lead to a shift to current production practices.
- Planting MG 4 and MG 5 soybean products earlier in the growing season also allows the crop to be harvested earlier in the season.

Response of Asgrow® Soybean Products to Planting Date



## RESULTS & DISCUSSION

- Mid MG 4 soybean products planted on the early and mid planting dates had the highest yield potential in this demonstration.
- The Roundup Ready 2 Xtend® soybean products had very good yield potential and should be good options for growers in the Midsouth.

Response of Asgrow® Soybean Products to Planting Date



## TAKE AWAYS

- Growers should be careful when selecting soybean products and base selections on local adaptation, expected planting date, and production system.
- Very early maturity group soybeans should not be planted in the Midsouth and are generally not good options for local production practices.
- Yield potential can triple when earlier soybean products (MG 4 and MG 5) are planted earlier compared to the past production practice of planting MG 6 and MG 7 soybean products late in the season.
- The Roundup Ready 2 Xtend® soybean products appear to have high yield potential when placed and managed properly.

Response of Asgrow® Soybean Products to Planting Date



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Response of Asgrow® Soybean Products to Planting Date



## RESPONSE OF SOYBEAN TO POPULATION AND ROW CONFIGURATION

2016 Learning Center Demo Report  
Monsanto Learning Center at Scott, MS



- Many farmers are interested in reducing soybean populations for seed-cost savings.
- The Midsouth has a variety of cropping systems that include several row configurations. A study was established to evaluate the response of soybean yield to population in different row configurations.





## STUDY GUIDELINES

- Study was conducted in Scott, MS on silt loam soil with 65 bu/acre soybean yield potential.
- AG47X6 brand soybean seed was planted at various rates from 100,000 to 200,000 seeds/acre on May 6, 2016
  - into a conventionally tilled field that was previously corn.
- Emergence was typical – near 75%.

Response of Soybean to Population and Row Configuration



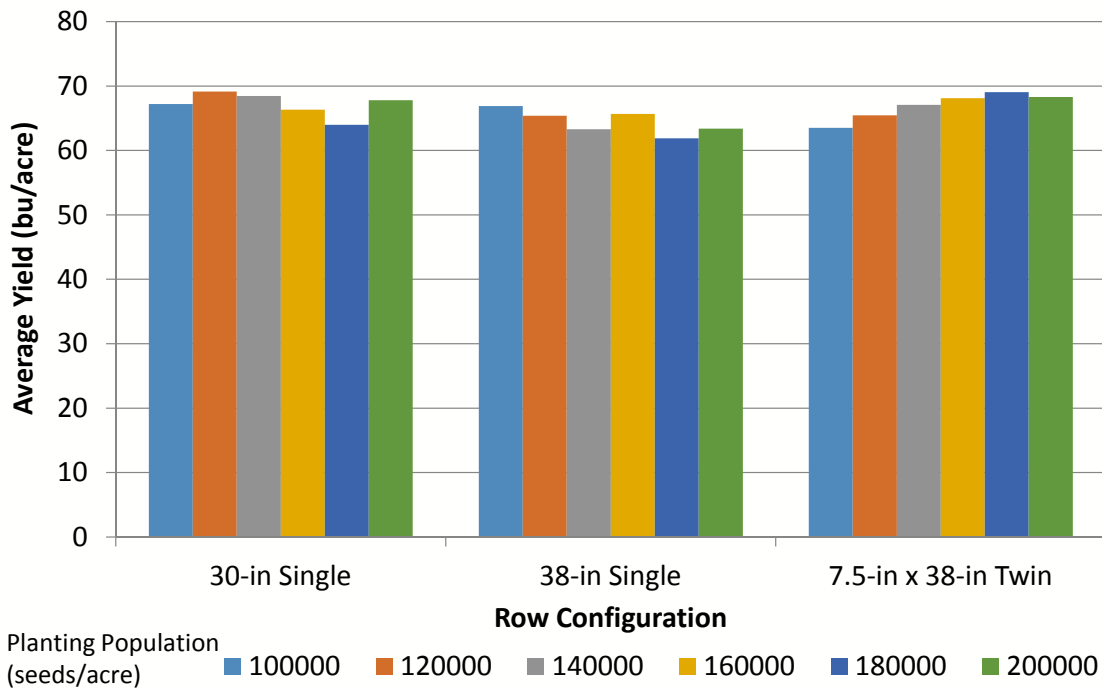
## STUDY GUIDELINES

- All agronomic practices were per local standard.
- Study was replicated and conducted in cooperation with Mississippi State University.
- Crop was harvested September 10, 2016.

Response of Soybean to Population and Row Configuration



# RESULTS & DISCUSSION

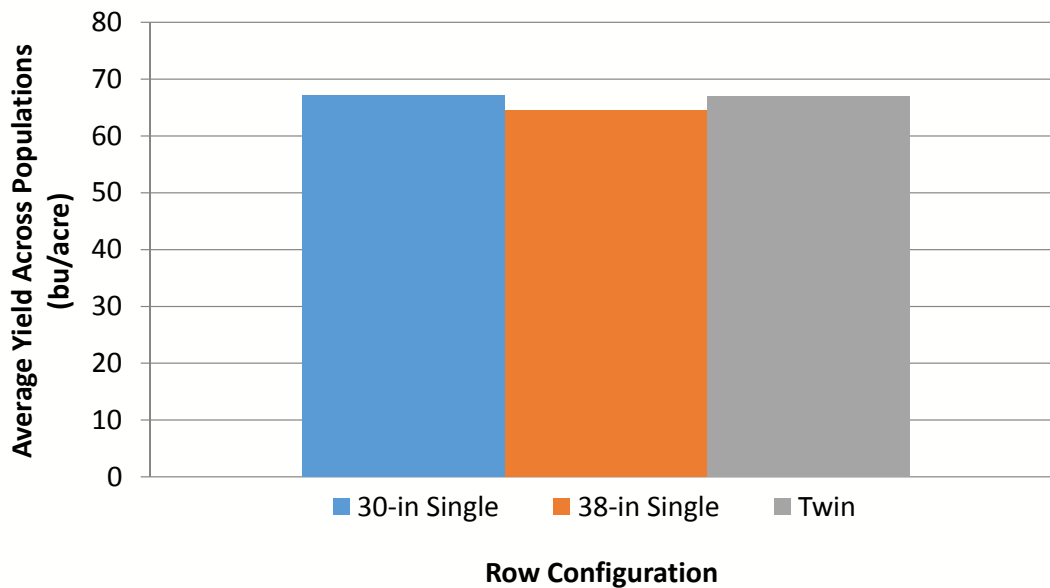


Response of Soybean to Population and Row Configuration



# RESULTS & DISCUSSION

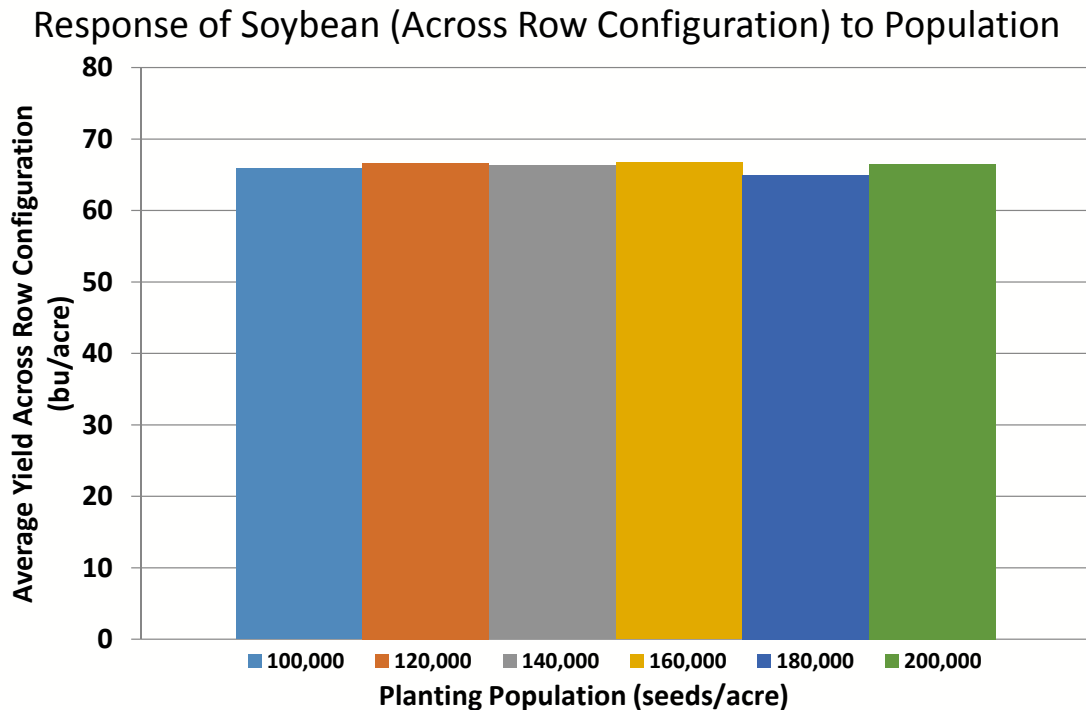
Response of Soybean (Across Populations) to Population and Row Configuration



Response of Soybean to Population and Row Configuration



## RESULTS & DISCUSSION



Response of Soybean to Population and Row Configuration



## RESULTS & DISCUSSION

- Differences between treatments were subtle but meaningful.
- Row spacings were similar in yield response.
- When evaluating the appropriate population to plant for a row configuration, consider these trends:
  - Population increase did not correlate well with average yield increase for the 30-inch row treatment.
  - Some potential for inferior drainage exists in the 30-inch row plots, which may explain why the response was different than the 38-inch and twin row configurations.

Response of Soybean to Population and Row Configuration



## RESULTS & DISCUSSION

- Yield tended to be indirectly related to increasing plant population for the single 38-inch row configuration.
  - This may be due to the fact that plants in a 38-inch single row system tend to be taller with greater potential to lodge.
- In the twin row 38-inch configuration, yield tended to be directly related with increased plant populations. Yield increased with increased plant populations.
  - Optimal yield potential was near 150,000 plants/acre.
  - This system offers the trade-offs between drainage vs. 30-inch and row spacing vs. the 38-inch single row system.

Response of Soybean to Population and Row Configuration



## TAKE AWAYS

- In both the 30-inch and 38-inch single systems, population can be decreased vs. historical standards. This is typical of the commercial experience.
- Farmers that plant soybean in 30-inch row configurations should establish adequate drainage.
- Populations should be maintained near 150,000 plants/acre to help maximize yield potential in the 38-inch twin row systems.

Response of Soybean to Population and Row Configuration



## LEGAL STATEMENTS

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# THE EFFECT OF LATE EMERGENCE ON CORN EAR SIZE AND YIELD

2016 Learning Center Demo Report  
Monsanto Learning Center at Scott, MS



## BACKGROUND

- Corn planting was difficult due to an extreme rainfall event in spring 2016.
  - Arkansas, Louisiana, and Mississippi growers reported extreme rainfall.
    - 10-28 inches during planting (mid March), and 3-6 inches (10-14 days later) during emergence and/or replanting.
  - For surviving fields and replanted fields the rainfall led to an extended corn emergence period.



## STUDY GUIDELINES

- An experiment was established to evaluate the impact of late emergence on corn yield potential.
  - Corn plants within a field were selected and flagged as normal emerging or late emerging.
    - 46 pairs were flagged.
    - Corn was planted on March 29, 2016.
  - Ears were harvested, individually shelled, and weighed.

The Effect of Late Emergence on Corn Ear Size and Yield



## STUDY GUIDELINES



Figure 1. Late emerging corn plant flagged for evaluation.  
Monsanto Learning Center at Scott, MS 2016.

The Effect of Late Emergence on Corn Ear Size and Yield



## RESULTS & DISCUSSION

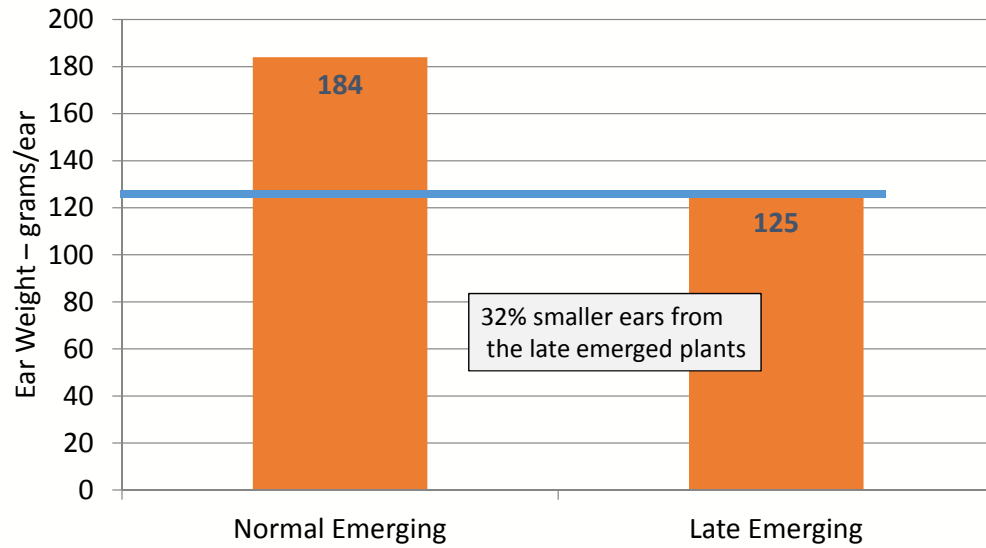


Figure 2. Emergence timing effect on ear size.

The Effect of Late Emergence on Corn Ear Size and Yield



## RESULTS & DISCUSSION

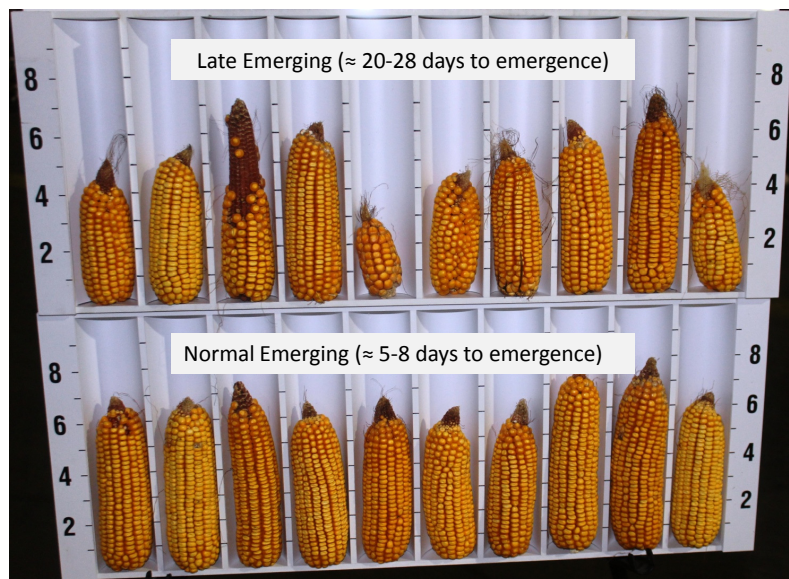


Figure 3. Ears from late emerging (top) and normal emerging (bottom) corn plants, paired comparisons. Monsanto Learning Center at Scott, MS 2016.

The Effect of Late Emergence on Corn Ear Size and Yield





## TAKE AWAYS

- Corn ears on late emerging plants pollinated, but were smaller than corn ears on normal emerging plants.
  - The difference in size may be related to two factors:
    - 1) Interplant competition from normal emerging plants.
    - 2) Difference in pollination synchrony between the normal emerging and late emerging plants.
- These data indicate that having a large number of late emerging plants could be a factor in deciding to replant when poor emergence conditions occur.
- When making replant decisions, evaluate each field for uniformity and quality of plants present.

The Effect of Late Emergence on Corn Ear Size and Yield



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The Effect of Late Emergence on Corn Ear Size and Yield



# Evaluation of DEKALB® Corn Products Planted in Different Row Configurations

2016 Learning Center Demo Report  
Monsanto Learning Center at Scott, MS



## BACKGROUND

- A demonstration was established to compare the yield potential of DEKALB® brand corn products planted at different populations across both twin rows and single rows.
- The objective was to provide growers with information about how DEKALB® brand corn products perform when planted at different populations in both single and twin rows.



## BACKGROUND

- Four DEKALB® brand corn products were planted on April 5, 2016.
- Each product was planted in conventionally-tilled fields at populations of 30,000, 35,000, 40,000, and 45,000 seeds per acre in both 7.5-inch twin rows and in 38-inch rows.
- A total of 240 pounds of nitrogen was applied per acre.
- All other agronomic practices were standard and appropriate for the area.
- Corn was harvested on September 10, 2016.

Evaluation of DEKALB® Corn Products Planted in Different Row Configurations



## RESULTS & DISCUSSION

- Emergence averaged 95% across the trial.
- Little difference in average yield was observed between single- and twin-row plantings.
- It is not likely that the extra cost of field preparation required for twin-row planting would be recovered from the small increase in yield observed in the twin-row plantings.
- Corn products responded similarly to both planting systems and to populations within those systems.

Evaluation of DEKALB® Corn Products Planted in Different Row Configurations



## RESULTS & DISCUSSION

- DKC64-69 brand did not respond favorably to higher population, likely due to lodging.
- The other tested corn products all responded favorable to increasing populations. These products may offer a reduced risk of lodging compared to traditional corn products.

Evaluation of DEKALB® Corn Products Planted in Different Row Configurations



## RESULTS & DISCUSSION

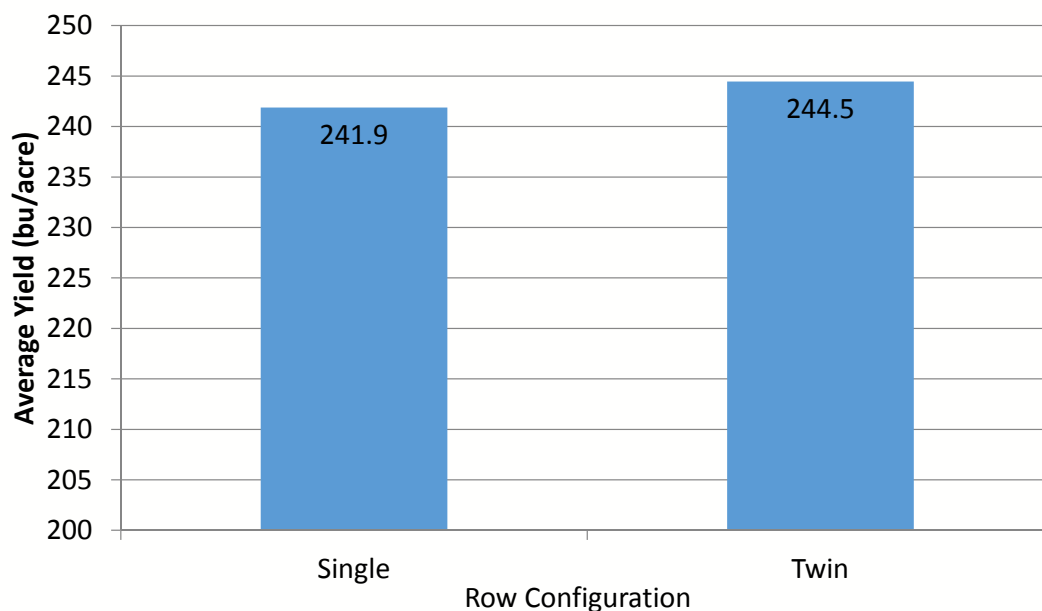


Figure 1. Row configuration yield evaluations across corn products and populations.

Evaluation of DEKALB® Corn Products Planted in Different Row Configurations



## RESULTS & DISCUSSION

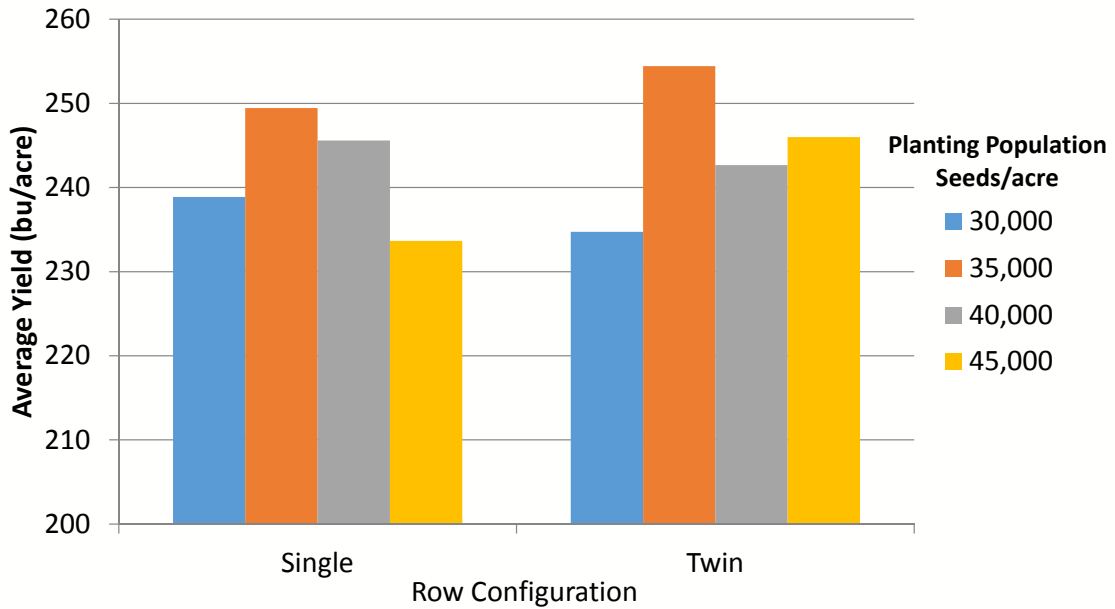


Figure 2. Row configuration population evaluations across corn products.

Evaluation of DEKALB® Corn Products Planted in Different Row Configurations



## RESULTS & DISCUSSION

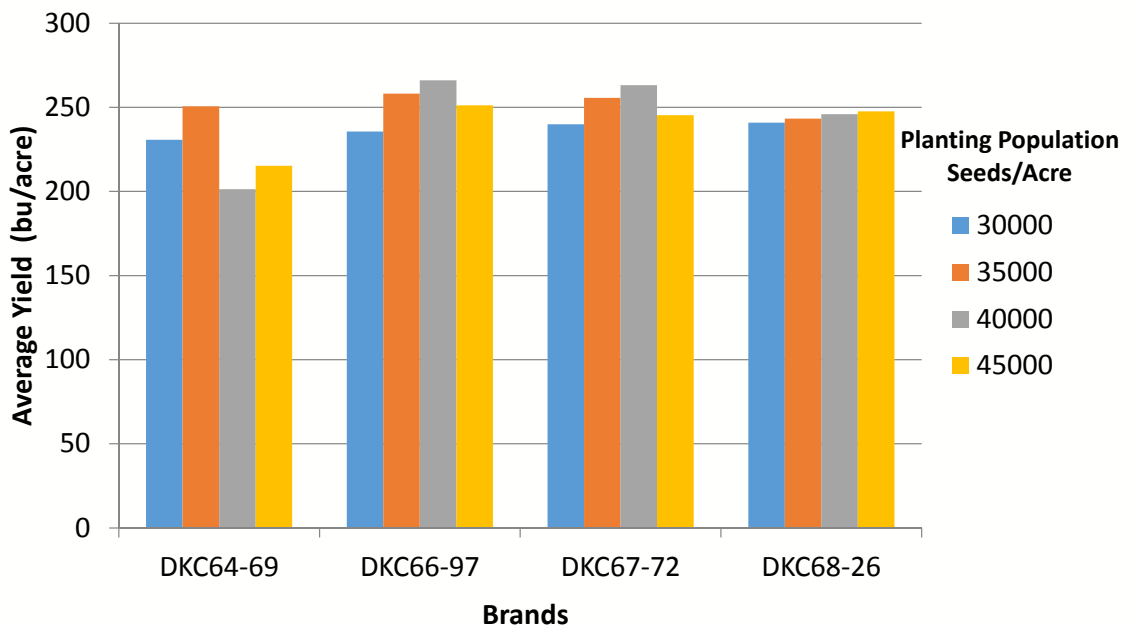


Figure 3. Corn product by population evaluation across row configurations.

Evaluation of DEKALB® Corn Products Planted in Different Row Configurations



## RESULTS & DISCUSSION

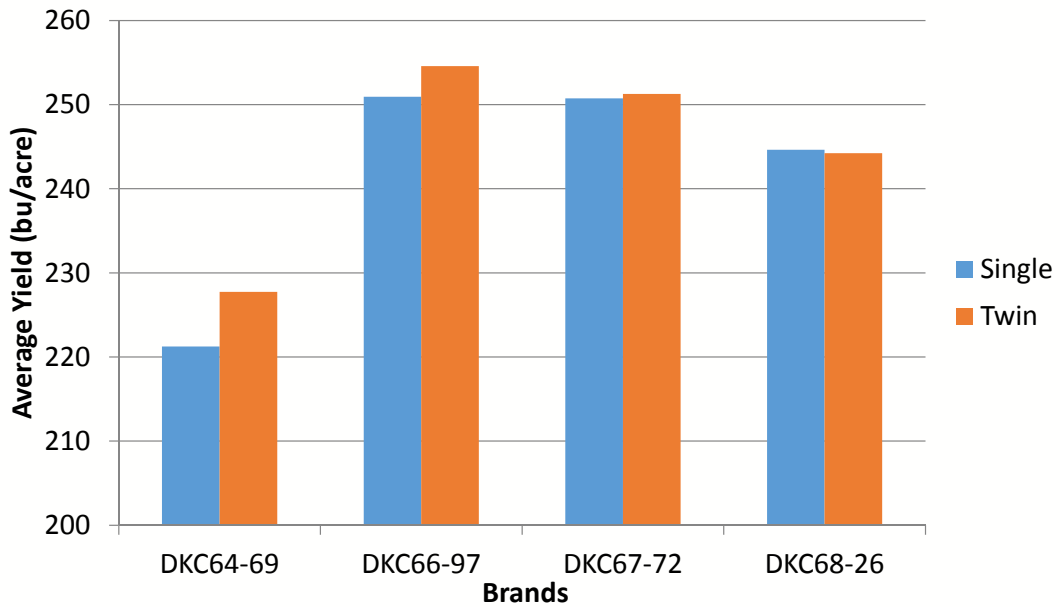


Figure 4. Corn product by row configuration evaluation across populations.

Evaluation of DEKALB® Corn Products Planted in Different Row Configurations



## RESULTS & DISCUSSION

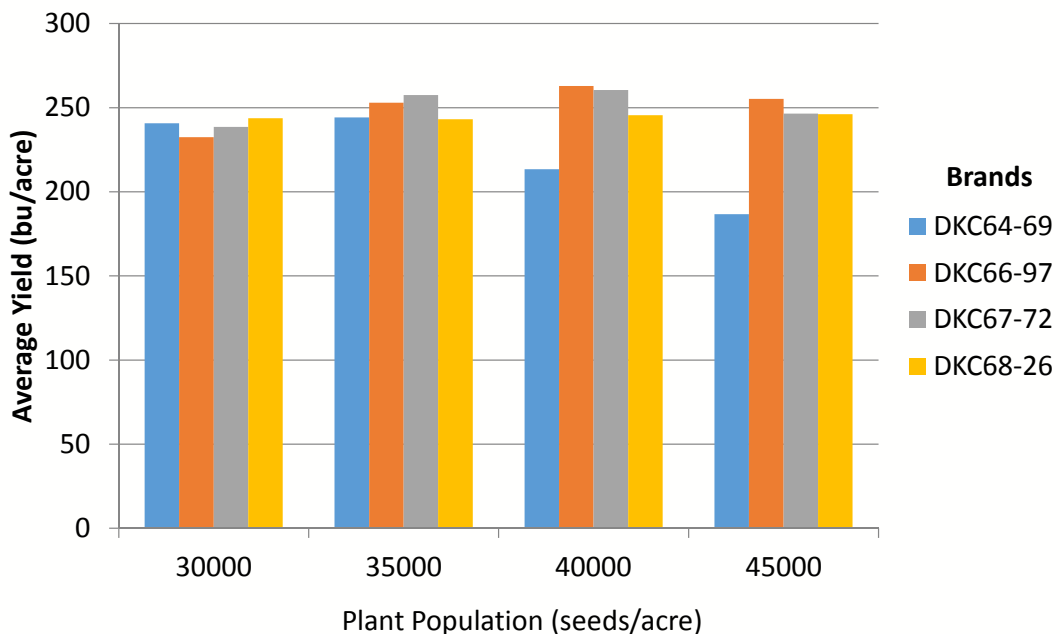


Figure 5. Corn product evaluations in single rows.

Evaluation of DEKALB® Corn Products Planted in Different Row Configurations



# RESULTS & DISCUSSION

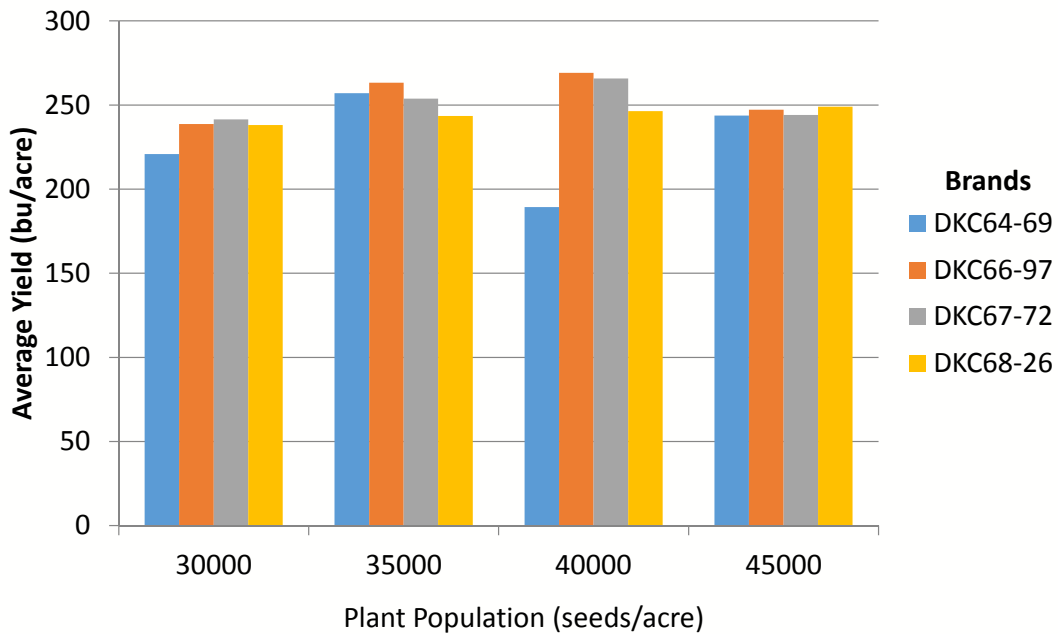


Figure 6. Corn product evaluations in twin rows.

Evaluation of DEKALB® Corn Products Planted in Different Row Configurations



# RESULTS & DISCUSSION

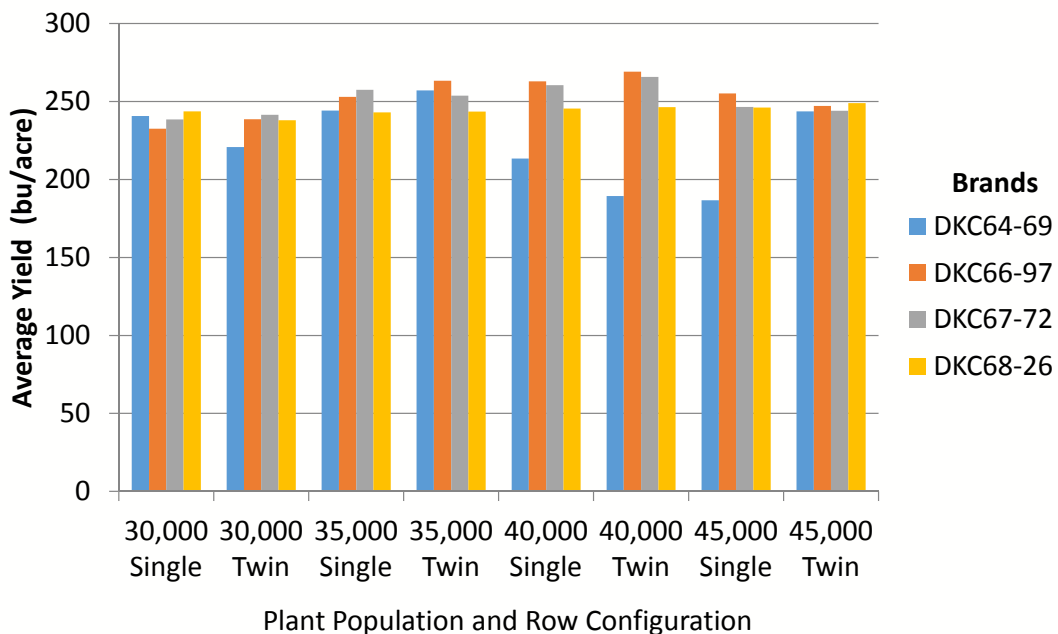


Figure 7. Corn product evaluations by row configuration by population.

Evaluation of DEKALB® Corn Products Planted in Different Row Configurations



## TAKE AWAYS

- Farmers should use corn product specific information to help determine the ideal planting population for each field condition and row configuration.
- This demonstration showed little interaction between corn product, row configuration, and population.
- While a twin-row system may have some potential to increase yield, farmers should also consider the extra time and cost involved in planting in a twin-row system.

Evaluation of DEKALB® Corn Products Planted in Different Row Configurations



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# Evaluations of the “FLEX” Characteristics of Three DEKALB® Brand Corn Products

2016 Learning Center Demo Report  
Monsanto Learning Center at Scott, MS



## BACKGROUND

- **Study Background:**
  - Corn products can vary in their ability to develop larger ears when population is reduced.
  - The ability to flex can allow products to compensate for lower populations and can influence replant decisions.
  - The ability to compensate can be a factor in determining seeding rates for various corn products.



## BACKGROUND

- **Research Objectives:**
  - Primary goal of the demonstration was to generate information about several decision making components, including the compensatory ability of corn.
    - Compensation in corn may occur through ear size (girth and length) and the development of multiple ears/plant.

Evaluations of the "FLEX" Characteristics of Three DEKALB® Brand Corn Products



## STUDY GUIDELINES

- **Research Site Details**
  - Location: Monsanto Learning Center at Scott, MS
  - Agronomic Practices: Local standards
  - Soil Type: Commerce silt loam
  - Previous Crop: Soybean
  - Tillage Type: Conventional
  - Planting Date: April 4, 2016
  - Three DEKALB® corn brands were planted: DKC66-97, DKC67-72, and DKC68-26
  - Harvest Date: September 13, 2016
  - Location Yield Potential: 240 bu/acre
  - Seeding Rates: 12,000 to 51,000 seeds/acre in increments of 3,000 seeds/acre. Results assume 95%+ stand establishment.
  - Harvesting: Machine harvested for yield. Ears manually harvested from 10 row feet in each plot and shelled to measure ear weights for each population and product combination.

Evaluations of the "FLEX" Characteristics of Three DEKALB® Brand Corn Products



## STUDY GUIDELINES

- Research Questions
  - What is the inherent ability of DEKALB® brand corn products to compensate for lower than optimal stands caused by non-ideal weather conditions or environmental factors?

Evaluations of the "FLEX" Characteristics of Three DEKALB® Brand Corn Products



## STUDY GUIDELINES

- Research Questions
  - How does compensation occur?
    - What is the relationship of ear size to population and is it different across products or when do ears reach maximum size as population decreases?
    - Can the ability to produce multiple ears/plant compensate for thin stands?
    - Replant
      - What effect should the standing population have on replant decisions?
      - When is replanting justified and what is the potential effect if the original stand is accepted?

Evaluations of the "FLEX" Characteristics of Three DEKALB® Brand Corn Products



## RESULTS & DISCUSSION

### ■ Harvested Yield Results

– Yield potential began to drop for each of the 3 corn products at different seeding rates, demonstrating the “flex” difference in the products.

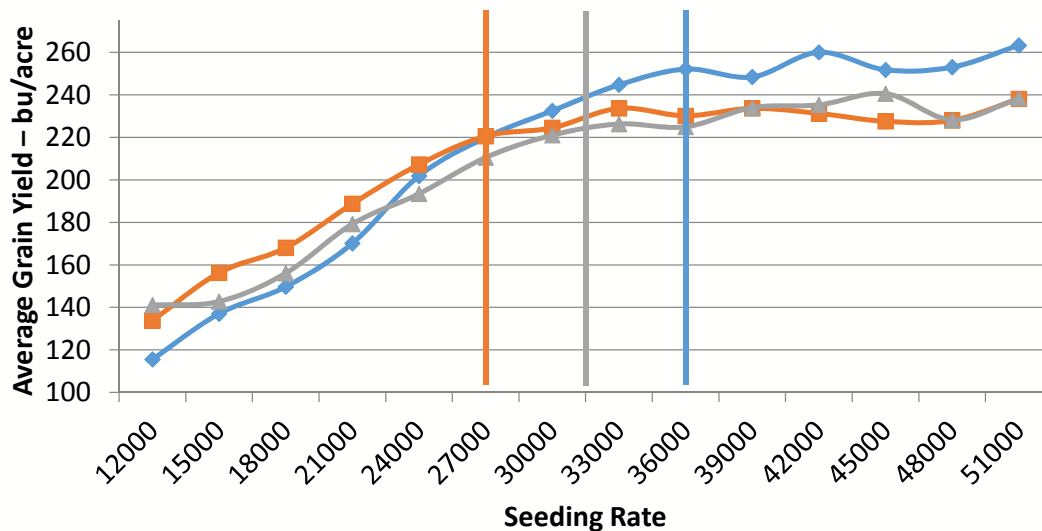
- DEKALB® DKC66-97 brand began dropping around the planting rate of 37,000 seeds/acre.
- DEKALB® DKC67-72 brand began dropping around the planting rate of 33,000 seeds/acre.
- DEKALB® DKC68-26 brand began dropping around the planting rate of 28,000 seeds/acre.

Evaluations of the “FLEX” Characteristics of Three DEKALB® Brand Corn Products



## RESULTS & DISCUSSION

Evaluations of the “Flex” Characteristics of DEKALB® Brand Corn Products  
Average Grain Yield@15.5%



Scott Learning Center,  
Scott, MS 2016

◆ DKC66-97 Brand    ■ DKC68-26 Brand    ▲ DKC67-72 Brand

Evaluations of the “FLEX” Characteristics of Three DEKALB® Brand Corn Products



## RESULTS & DISCUSSION

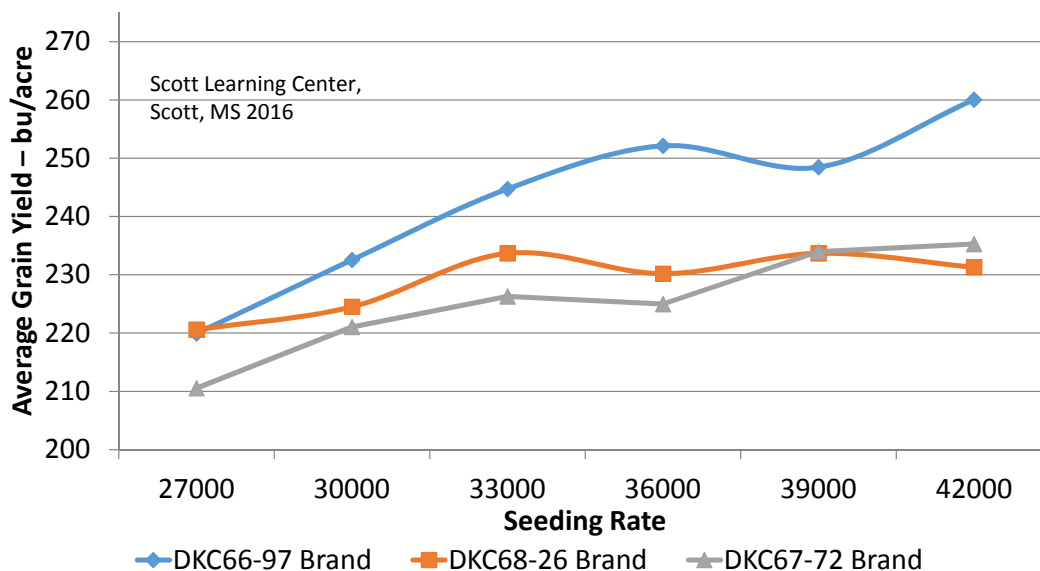
- **Harvested Yield Results**
  - The yield results showed one product to be more fixed (DEKALB® DKC66-97 brand), one to be intermediate (DEKALB® DKC67-72 brand), and one having greater flex (DEKALB® DKC68-26 brand), which allowed it to tolerate reduced stands and still maintain yield potential.
  - As measured in ear size, compensation stopped at similar levels to where yield began to decrease in response to decreasing populations.

Evaluations of the "FLEX" Characteristics of Three DEKALB® Brand Corn Products



## RESULTS & DISCUSSION

Evaluations of the "Flex" Characteristics of DEKALB® Brand Corn Products  
Average Grain Yield@15.5%



Evaluations of the "FLEX" Characteristics of Three DEKALB® Brand Corn Products



# RESULTS & DISCUSSION

- Harvested Yield Results
  - As in previous work at the Monsanto Learning Center at Scott, MS, the data indicates that 1000 corn plants is worth from 4 to 6 bu/acre depending on the flex characteristics of each product.<sup>1,2</sup>
  - Few plots had any plants that made more than one ear/plant and none had secondary ears at populations higher than 15,000 plants/acre.
    - For this reason, we can assume that a thin stand cannot be compensated for by producing multiple ears/plant.

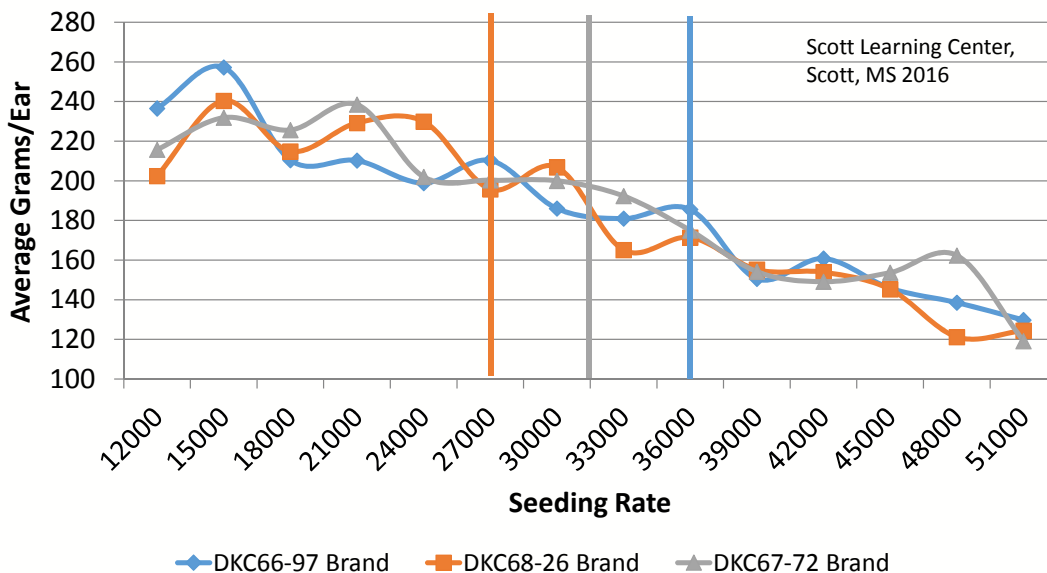
<sup>1</sup>How much do 1000 corn plants contribute to corn yield? 2014. Scott, MS. Monsanto Learning Center Demonstration.  
<sup>2</sup>Influence of planting population on ear number and size in midsouthern corn production. 2015. Scott, MS. Monsanto Learning Center Demonstration.

Evaluations of the "FLEX" Characteristics of Three DEKALB® Brand Corn Products



# RESULTS & DISCUSSION

## Evaluations of the "Flex" Characteristics of DEKALB® Brand Corn Products Primary Ear Size

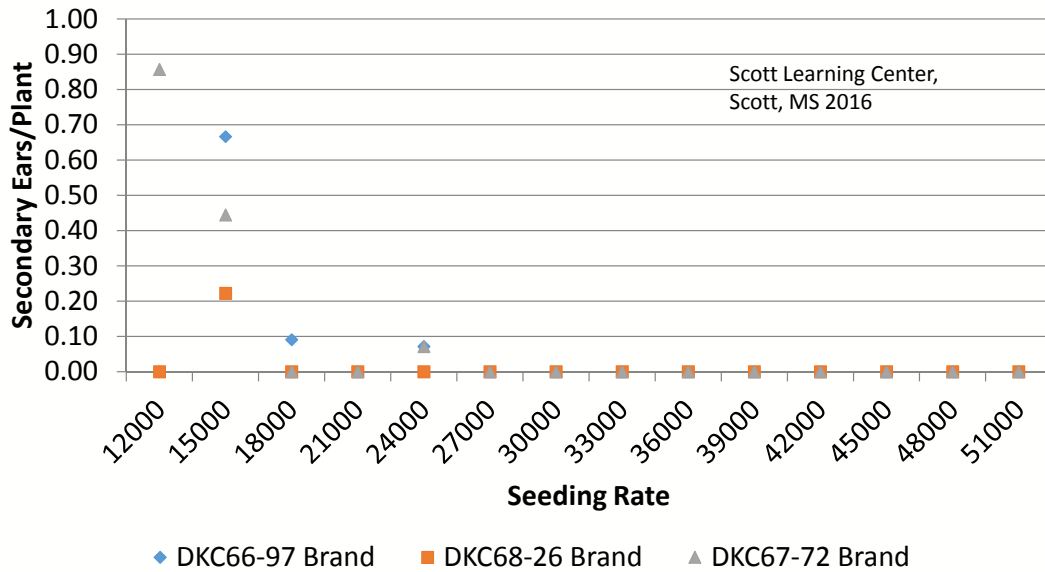


Evaluations of the "FLEX" Characteristics of Three DEKALB® Brand Corn Products



## RESULTS & DISCUSSION

### Evaluations of the “Flex” Characteristics of DEKALB® Brand Corn Products Secondary Ears/Plant



Evaluations of the “FLEX” Characteristics of Three DEKALB® Brand Corn Products



## RESULTS & DISCUSSION

#### Sources:

<sup>1</sup>How much do 1000 corn plants contribute to corn yield? 2014. Scott, MS. Monsanto Learning Center Demonstration. <http://www.monsanto.com/products/documents/learning-center-research/2014/slc-lc-how-much-do-1000-corn-plants-contribute-to-corn-yield.pdf>

<sup>2</sup>Influence of planting population on ear number and size in midsouthern corn production. 2015. Scott, MS. Monsanto Learning Center Demonstration. <http://www.monsanto.com/products/documents/learning-center-research/2015/influence%20of%20planting%20population%20on%20ear%20number%20and%20size%20in%20midsouthern%20corn%20production%20-%20slc.pdf>

Evaluations of the “FLEX” Characteristics of Three DEKALB® Brand Corn Products




# LEGAL STATEMENTS

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Evaluations of the "FLEX" Characteristics of Three DEKALB® Brand Corn Products





# Replanting Options in DEKALB® Brand Corn Products

2016 Learning Center Demo Report  
Monsanto Learning Center at Scott, MS



## BACKGROUND

- The 2016 planting season presented many challenges in establishing corn crops and many growers were forced to replant, some more than once.
- Many difficult replanting decisions were faced by growers.
- This demonstration was designed to evaluate the effectiveness of several replanting options.



## BACKGROUND

- Questions growers should ask include:
  - Should I replant into standing corn?
  - What is the advantage to destroying standing corn before replanting?
  - What is the impact of the maturity delay associated with replanting?
  - What is the yield potential of reduced corn stands?
  - This demonstration is an extreme case, but it ties in well with other Learning Center demonstrations from 2016 and previous years.

Replanting Options in DEKALB® Brand Corn Products



## BACKGROUND

- The goal of this demonstration was to evaluate the replanting options available to growers. Options included:
  - Keeping poor stands
  - Replanting stands to appropriate populations
  - Supplementing substandard populations by planting into standing corn.

Replanting Options in DEKALB® Brand Corn Products



## STUDY GUIDELINES

- Two DEKALB® brand corn products (DKC67-14 brand and DKC67-72 brand) were conventionally planted on March 29, 2016.
- Half of the plots were planted at 18,000 plants/acre.
- The other half of the plots were planted at 36,000 plants/acre.

Replanting Options in DEKALB® Brand Corn Products



## STUDY GUIDELINES

- The following treatments were applied:
  - Keep 36,000 plants/acre
  - Kill original plants and replant 36,000 plants/acre on April 11, 2016
  - Keep 18,000 plants/acre
  - Kill original plants and replant 18,000 plants/acre on April 11, 2016
  - Replant 18,000 plants/acre when original plants reached the spike stage on April 11, 2016
  - Replant 18,000 plants/acre when original plants reached the 2-leaf stage on April 18, 2016
  - Replant 18,000 plants/acre when original plants reached the 4-leaf stage on April 25, 2016

Replanting Options in DEKALB® Brand Corn Products



# RESULTS & DISCUSSION

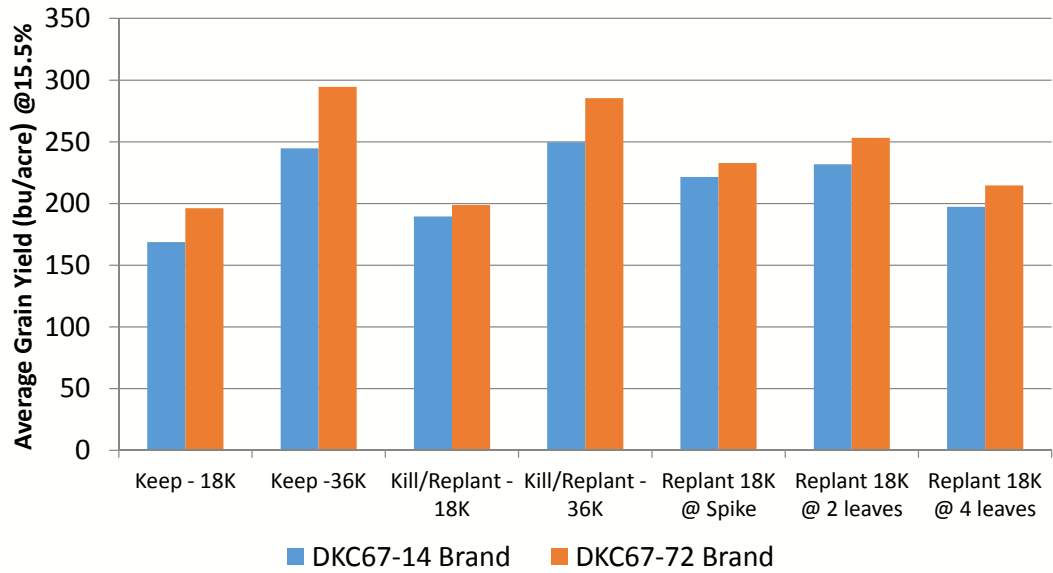


Figure 1. Results of replanting options with two DEKALB® brand corn products by treatment.

Replanting Options in DEKALB® Brand Corn Products



# RESULTS & DISCUSSION

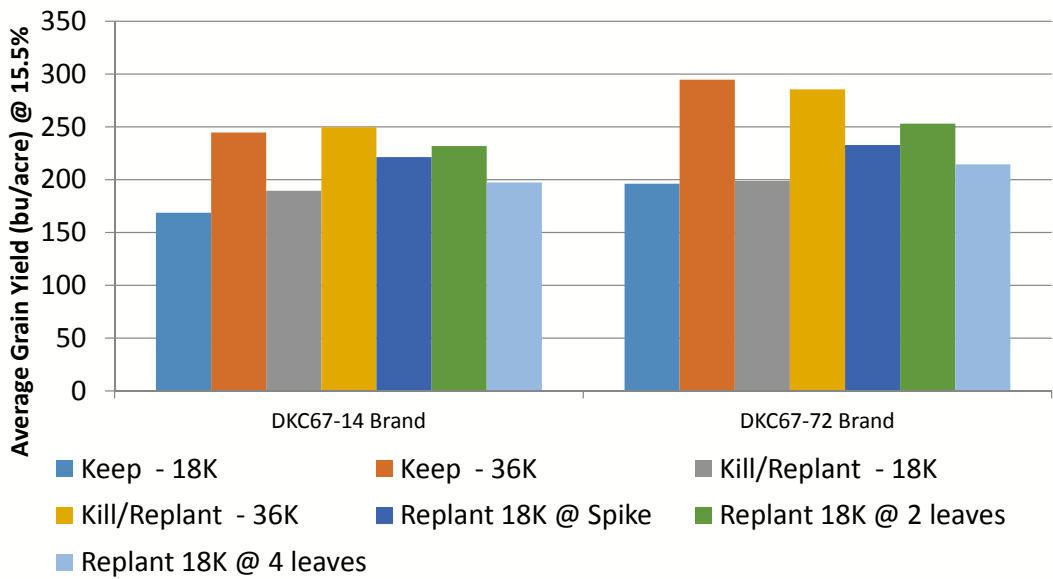


Figure 2. Results of replanting options with two DEKALB® brand corn products by corn product.

Replanting Options in DEKALB® Brand Corn Products



## RESULTS & DISCUSSION

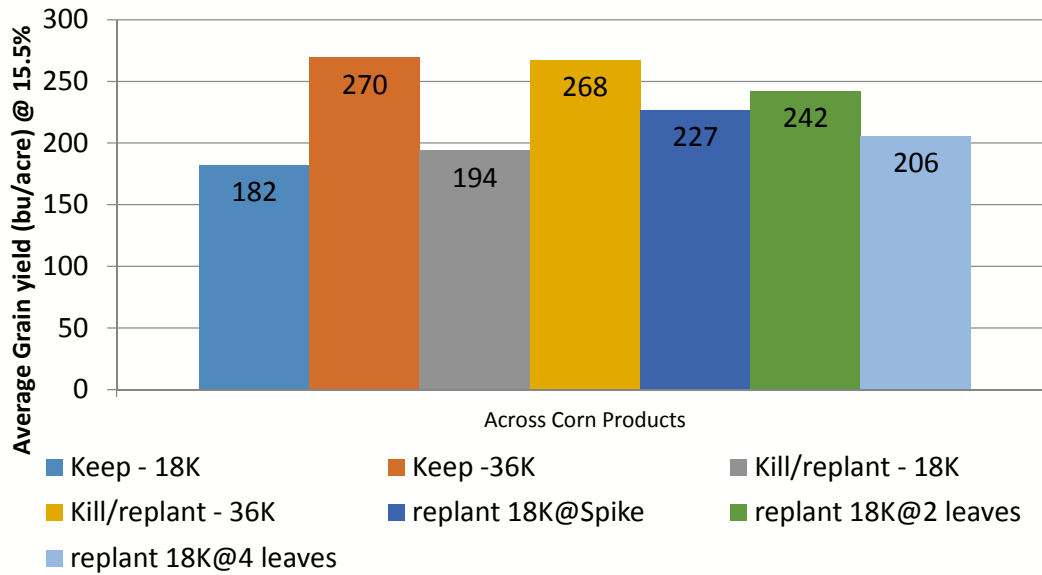


Figure 3. Results of replanting options with two DEKALB® brand corn products across corn products.

Replanting Options in DEKALB® Brand Corn Products



## RESULTS & DISCUSSION

- No penalty in yield was measured when comparing the first planting date to the replanted date at either the 36,000 or 18,000 plants/acre planting rate.
- The 18,000 plants/acre planting rate yielded, on average, 30% (81 bu/acre) less than the 36,000 plants/acre treatment across both corn products. This is \$200.00+/acre net gain.
- Planting into standing corn produced slightly better yields than keeping a substandard population but did not have the yield potential of the cleanly replanted corn at either population.
- Averaged across the “planting into three standing corn” treatments, the “destroyed and replanted” treatments yielded 16% (43 bu/acre) more when starting over clean. This is a net gain of close to \$100.00 per acre.
- Results from this demonstration indicated that DKC67-14 brand should not be planted at populations this high due to concerns about standability.

Replanting Options in DEKALB® Brand Corn Products



## TAKE AWAYS

- Starting clean (first plant or replant) is a good idea, even with the associated maturity delay.
- Longer replant delays would likely cause some decrease in yield potential due to several issues including heat-induced pollination problems, heat during grain-fill, and late-season weather events that could induce lodging. This should be carefully factored into the replanting decision.
- This demonstration indicated that, if corn fields have questionable stands, replanting should be seriously considered.
- The worst option was to keep substandard populations, closely followed by replanting into standing corn without destroying the existing plants.
- In short, if you think you have an issue in a corn field, you're likely correct, you do.

Replanting Options in DEKALB® Brand Corn Products



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Replanting Options in DEKALB® Brand Corn Products



# Response of DEKALB® Brand Corn Products to Planting Depth and Date

2016 Learning Center Demo Report  
Monsanto Learning Center at Scott, MS



## BACKGROUND

- Some areas of the southeastern United States received excessive amounts of precipitation during the early 2016 planting season.
- In response to the early season wet conditions a demonstration was planted to evaluate the response of DEKALB® brand seed products to several planting dates and planting depths.



## STUDY GUIDELINES

The study was conducted at the  
Monsanto Learning Center at Scott, MS

- Commerce silt loam soil type
- Previous crop – cotton
- Conventional tillage
- Corn yield environment – 240 bu/acre
- Harvested on August 30, 2016
- Standard area agronomic practices were implemented

Response of DEKALB® Brand Corn Products to Planting Depth and Date



## STUDY GUIDELINES

### Treatments

- Planting dates – March 7, March 29
- Planting depths – 1.5 inches, 3.0 inches
- Corn products and populations
  - DKC68-26 brand planted at 34,000 seeds/acre
  - DKC66-97 brand planted at 39,000 seeds/acre
  - DKC67-14 brand planted at 34,000 seeds/acre

Response of DEKALB® Brand Corn Products to Planting Depth and Date





## STUDY GUIDELINES

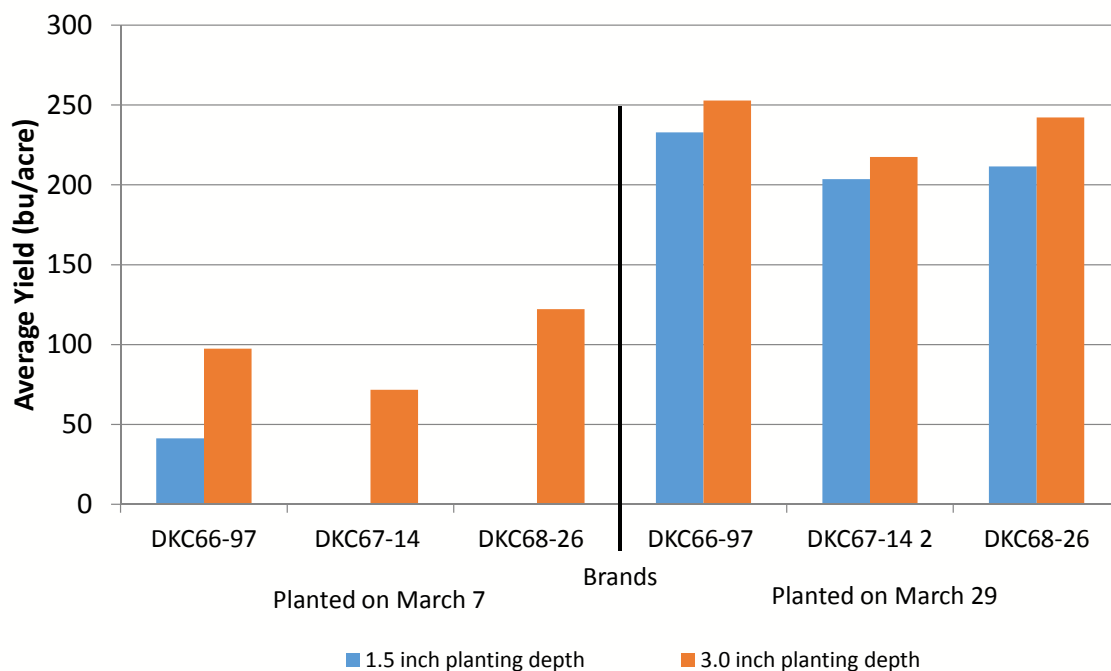
- Approximately 15 inches of rain fell during the 10 days after the March 7, 2016 planting.
- A majority of the rainfall after the March 7, 2016 planting was received in three days, which was during seed imbibition. Excess moisture delayed or prevented emergence.



Response of DEKALB® Brand Corn Products to Planting Depth and Date



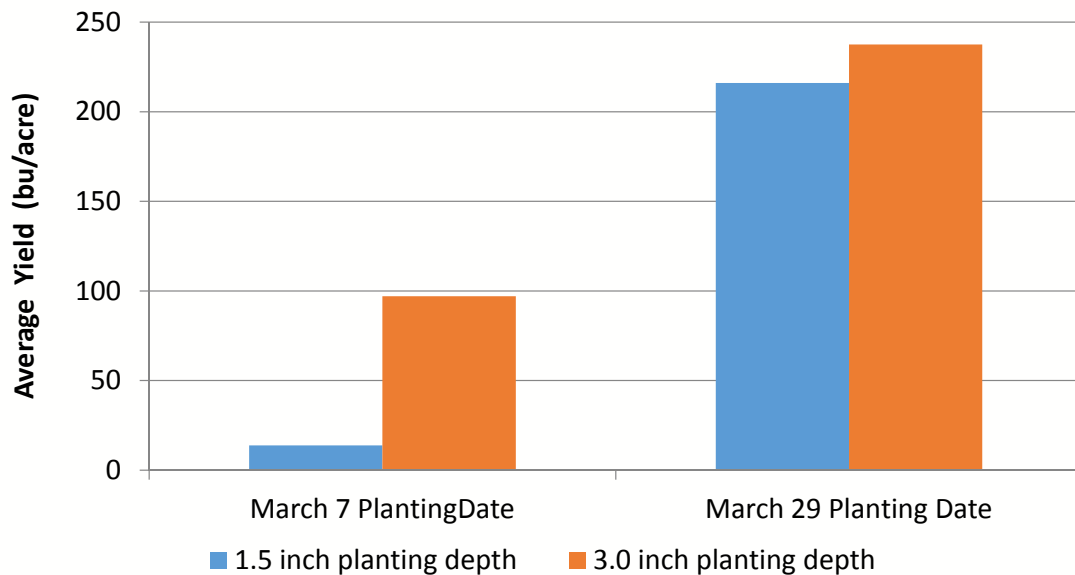
## RESULTS & DISCUSSION



Response of DEKALB® Corn Brand Products to Planting Depth and Date



## RESULTS & DISCUSSION



Response of DEKALB® Brand Corn Products to Planting Depth and Date



## RESULTS & DISCUSSION

- A large increase in yield was observed in the March 29 planting date compared to the March 7 planting date.
- The seed brand products yielded well when planted in better soil conditions.
- Deeper planting (3 inches versus 1.5 inches) resulted in increased yield for both planting dates.

Response of DEKALB® Brand Corn Products to Planting Depth and Date



## RESULTS & DISCUSSION

- There was an average of 83 bu/acre yield increase with the deeper planting compared to the shallow planting for the March 7 planting date.
- Maximum average yield for the March 7 planting date at the deeper planting was 97 bu/acre.
- There was an average of 22 bu/acre yield increase with the deeper planting compared to the shallow planting for the March 29 planting date.
- Maximum average yield for the March 29 planting date at the deeper planting was 238 bu/acre.

Response of DEKALB® Brand Corn Products to Planting Depth and Date



## TAKE AWAYS

- Planting depth is important when adjusting and setting planters.
- Consider delaying planting when soil conditions are poor.
- If considering replanting, evaluate and determine existing population. If replanting is warranted, do so without hesitation.
- The DEKALB® brand seed products offer high yield potential when planted at the proper time and depth.

Response of DEKALB® Brand Corn Products to Planting Depth and Date



## LEGAL STATEMENTS

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# RESPONSE OF DEKALB® CORN PRODUCTS TO POPULATION

2016 Learning Center Demo Report  
Monsanto Learning Center at Scott, MS



## BACKGROUND

- A demonstration was established to evaluate the response of new DEKALB® brand corn products to different plant populations.
- The objective of this demonstration was to provide information about new DEKALB® brand corn products to help growers with the following questions:
  - If I increase the plant population, will the yield potential increase?
  - Do higher plant populations lead to an increase in lodging?



## STUDY GUIDELINES

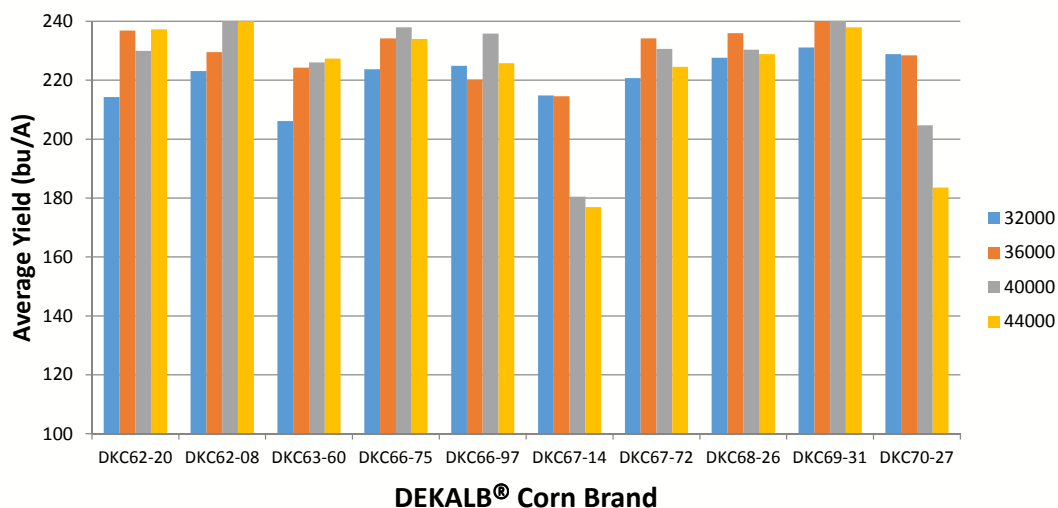
- 10 DEKALB® brand corn products were planted on March 29, 2016 with the following conditions:
  - Soil Type: Commerce silt loam
  - Previous Crop: Cotton
  - Tillage: Conventional
  - Nitrogen: 240 lbs N/acre
  - All other agronomic practices were standard for local conditions.
- Each product was planted at populations of 32,000, 36,000, 40,000, and 44,000 seeds/acre.
- Ear samples were harvested to help understand the flex characteristics of five different corn products.
  - Ears from 10 row feet of each plot were harvested.

Response of DEKALB® Corn Products to Population



## RESULTS & DISCUSSION

Response of DEKALB® Corn Products to Different Plant Populations



Response of DEKALB® Corn Products to Population



## RESULTS & DISCUSSION

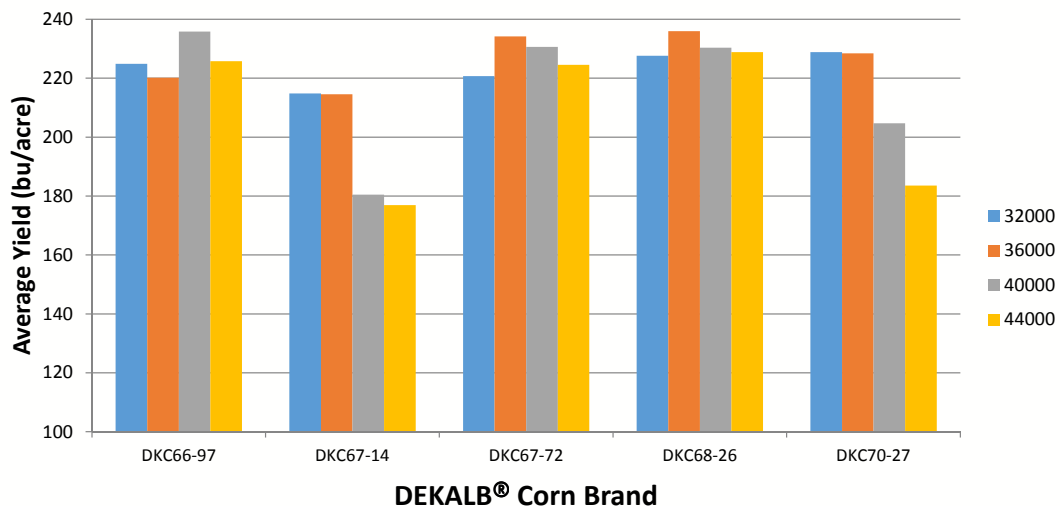
- Most DEKALB<sup>®</sup> corn products responded favorably to plant populations in the range of 36,000 seeds/acre.
- Two DEKALB<sup>®</sup> corn brands, DKC70-27 and DKC67-14, demonstrated a significant lodging risk when planted at higher populations.
  - Recommend not planting above 36,000 seeds/acre.
- The remaining eight DEKALB<sup>®</sup> corn products appear to have the ability to stand at higher populations and may be safely planted in high input systems at higher populations.

Response of DEKALB<sup>®</sup> Corn Products to Population



## RESULTS & DISCUSSION

Response of DEKALB<sup>®</sup> Corn Products to Different Plant Populations

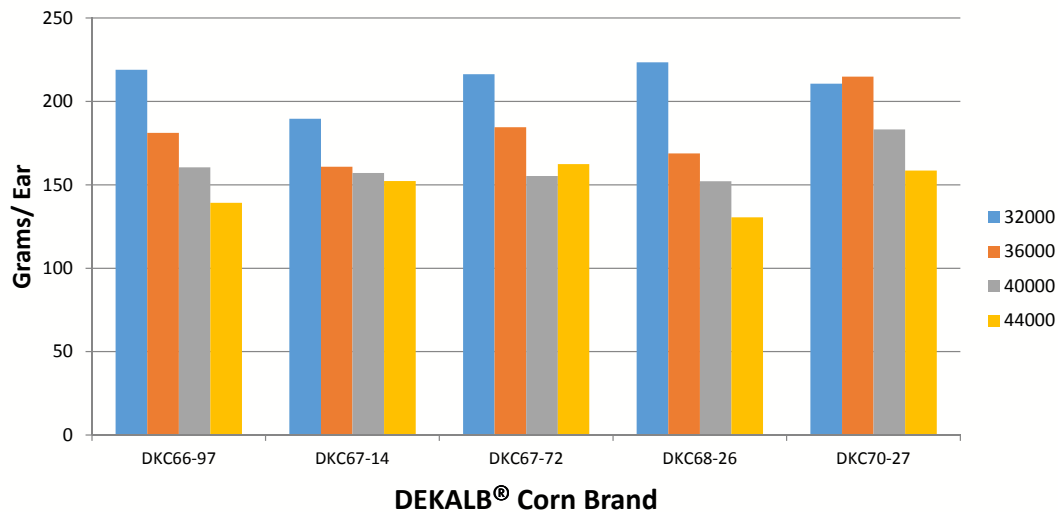


Response of DEKALB<sup>®</sup> Corn Products to Population



## RESULTS & DISCUSSION

### Response of DEKALB® Corn Product Ear Size to Different Plant Populations



Response of DEKALB® Corn Products to Population



## RESULTS & DISCUSSION

- In general, ear size decreased as population increased.
- DEKALB® corn brands DKC70-27 and DKC67-14 may have more ear flex in response to changes in growing environment and available resources, which can be an advantage as lower populations are recommended for these two corn brands.

Response of DEKALB® Corn Products to Population





## TAKE AWAYS

- It is important to consider local data based on individual corn products to help determine the most favorable plant population for your farm.
- In general, the corn products in this demonstration performed well at 36,000 seeds/acre.
- Corn ear size tends to decrease as population increases.
- It is recommended to plant higher populations of corn products with a more fixed ear. Corn products with more ear flex can be planted in lower populations due to the ability to produce larger ears. Both approaches have high yield potential and will depend on grower preferences and growing conditions.

Response of DEKALB® Corn Products to Population



## LEGAL STATEMENTS

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Response of DEKALB® Corn Products to Population



# Response of Deltapine® Cotton Varieties to Different PGR Regimes

2016 Learning Center Demo Report  
Monsanto Learning Center at Scott, MS



## BACKGROUND

- Cotton varieties respond differently to plant growth regulator (PGR) treatments.
  - PGRs are used to help force a shift from vegetative to reproductive growth to establish acceptable yield potential.
  - It is important to understand the response of new cotton varieties to different PGR application techniques (timing and rates).
  - Varieties today are less determinate than many in the recent past. For that reason, sound PGR management is essential, especially during seasons like 2016 that favor strong vegetative growth.



## STUDY GUIDELINES

- This trial was set up to provide strong growth conditions. The following parameters were used:
  - Mid planting date which allowed a relatively high amount of early-season heat accumulation.
    - Planted on May 11, 2016.
  - High population.
    - 52,000 seeds/acre.
  - High nitrogen fertility.
    - 120 lbs N as 28% liquid UAN
  - Following soybeans.
  - Fully irrigated.
  - Mid-season rainfall, diseases (target spot), and associated fruit shed made PGR management even more important during 2016.
- Harvest date: October 5, 2016.

Response of Deltapine® Cotton Varieties to Different PGR Regimes



## STUDY GUIDELINES

- Treatment List:
  - Untreated check (UTC) – No growth control
  - Aggressive regime –
    - Season total of 48 ounces/acre of Pentia™ plant regulator (Mepiquat pentaborate).
      - June 13 (16 ounces/acre)
      - June 22 (16 ounces/acre)
      - July 8 (16 ounces/acre)
  - Passive regime –
    - Season total of 48 ounces/acre of Pentia plant regulator (Mepiquat pentaborate).
      - June 27 (12 ounces/acre)
      - July 8 (16 ounces/acre)
      - July 14 (20 ounces/acre)

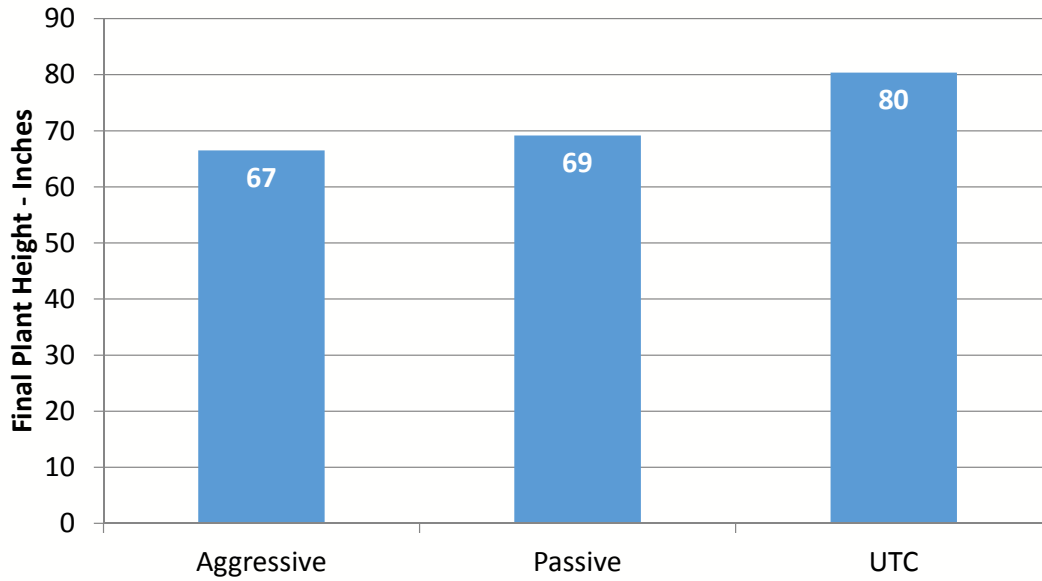
Regime	Date	PGR Rate (ounces/acre)
Aggressive	June 13	16
	June 22	16
	July 8	16
Passive	June 27	12
	July 8	16
	July 14	20

Response of Deltapine® Cotton Varieties to Different PGR Regimes



# RESULTS & DISCUSSION

Figure 1. Average height of cotton plant by PGR regime.

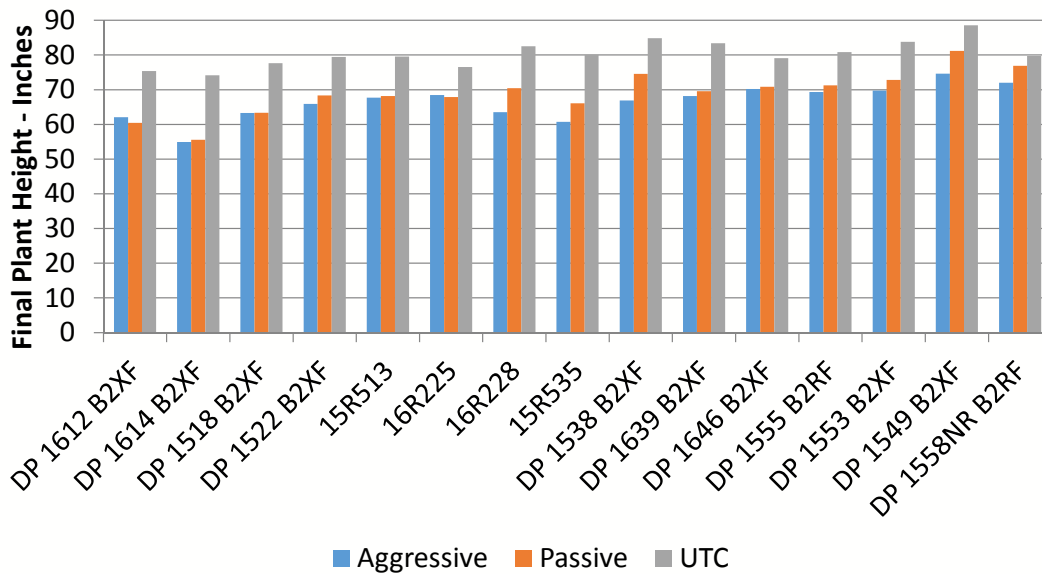


Response of Deltapine® Cotton Varieties to Different PGR Regimes



# RESULTS & DISCUSSION

Figure 2. Height of cotton plants by variety and PGR regime.\*

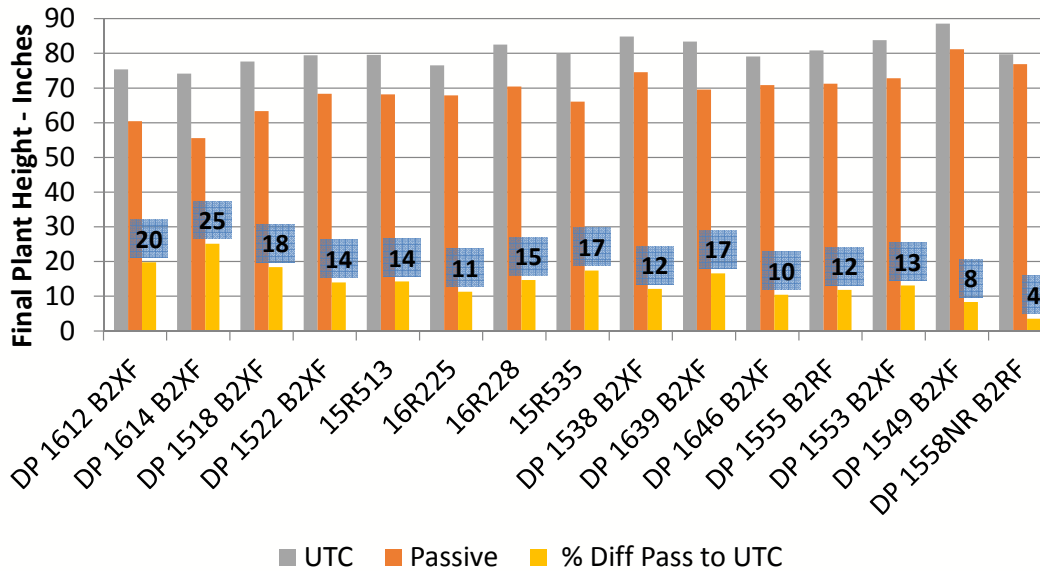


Response of Deltapine® Cotton Varieties to Different PGR Regimes



# RESULTS & DISCUSSION

Figure 3. Cotton height of passive PGR regime when compared to untreated check.\*

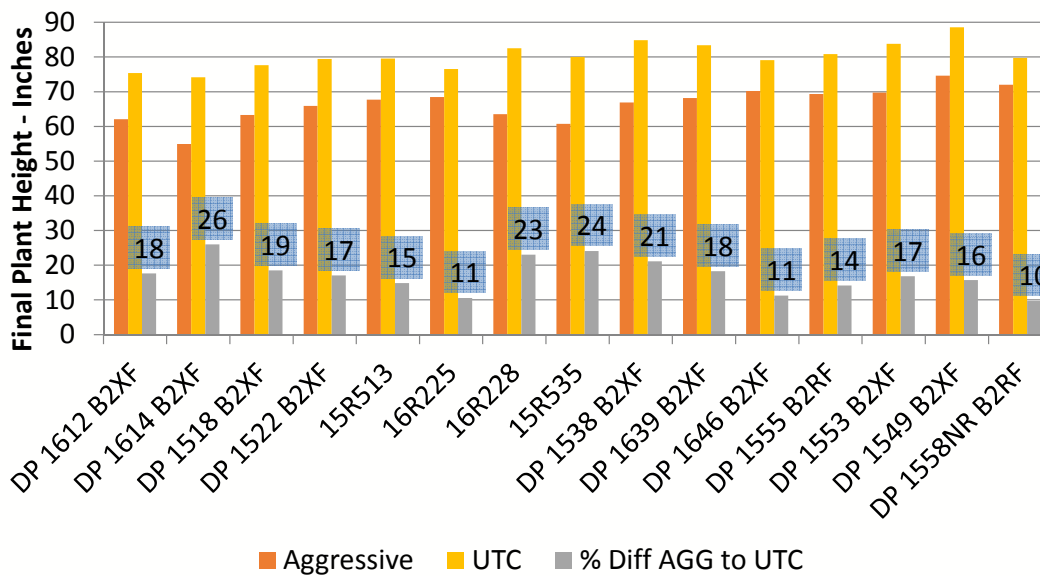


Response of Deltapine® Cotton Varieties to Different PGR Regimes



# RESULTS & DISCUSSION

Figure 4. Cotton height of aggressive PGR regime when compared to untreated check.\*

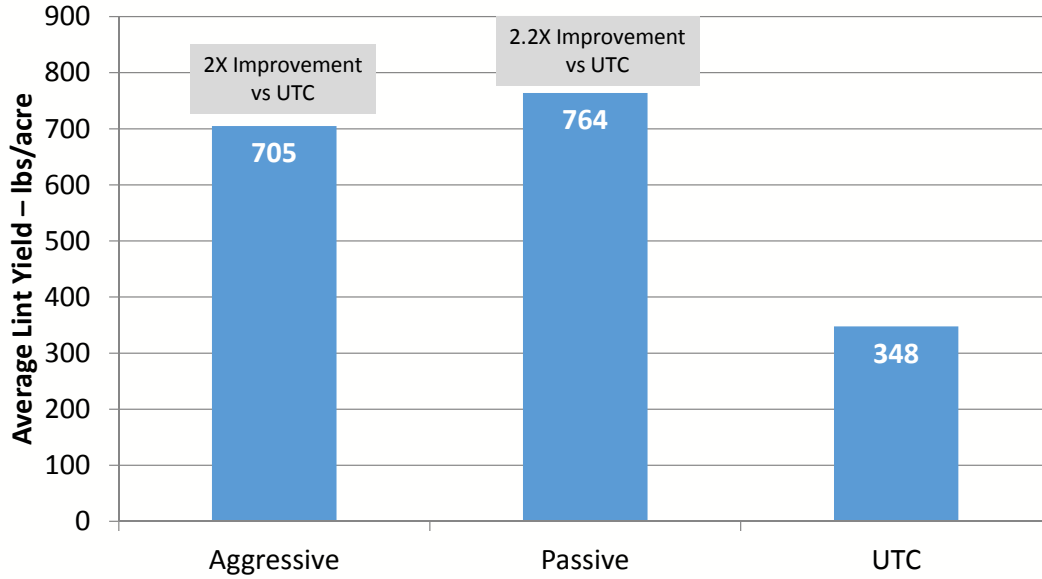


Response of Deltapine® Cotton Varieties to Different PGR Regimes



# RESULTS & DISCUSSION

Figure 5. Average cotton yield (lb lint/acre) by PGR regime.

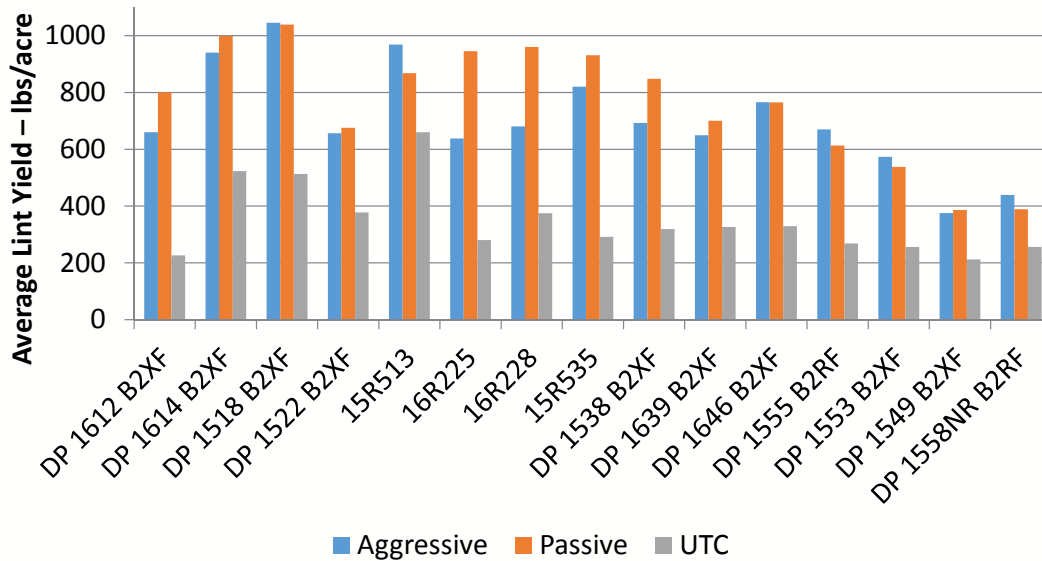


Response of Deltapine® Cotton Varieties to Different PGR Regimes



# RESULTS & DISCUSSION

Figure 6. Cotton yield (lb lint/acre) by variety and PGR regime.\*

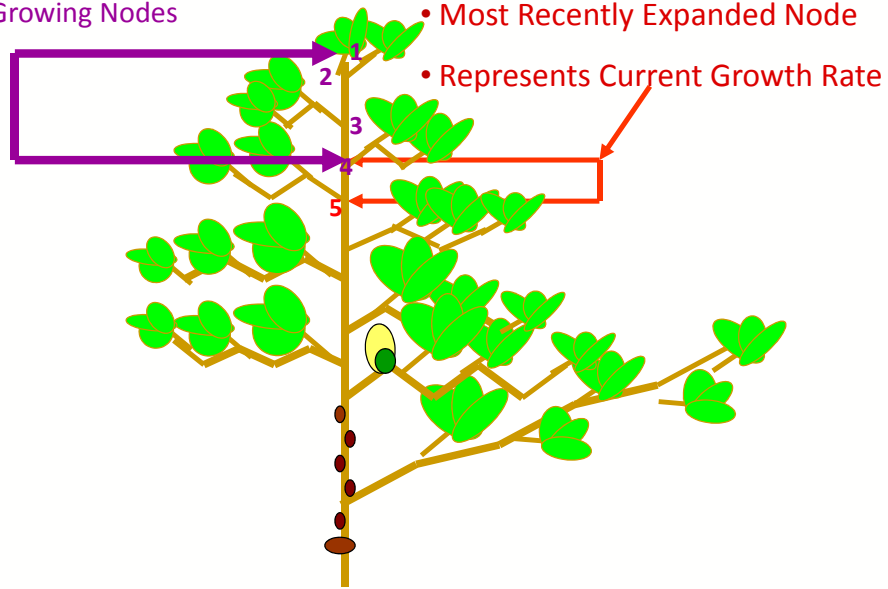


Response of Deltapine® Cotton Varieties to Different PGR Regimes



# RESULTS & DISCUSSION

Actively Growing Nodes



Response of Deltapine® Cotton Varieties to Different PGR Regimes



# RESULTS & DISCUSSION

## PGR Monitoring and Management

TL size of a US quarter count as 1 to node 4



Node between 4 and 5 from the top – “The one that bends”



Response of Deltapine® Cotton Varieties to Different PGR Regimes



# RESULTS & DISCUSSION

## Tools for Estimating PGR Application Rates and Timing

- Understand the plant growth process
- Mepiquat chloride is:
  - Not degraded by the plant
  - Active at  $\approx 10$  ppm dry wt.
- Response to mepiquat chloride over time
  - Rate
  - Timing
  - Plant size
  - Previous applications



Response of Deltapine® Cotton Varieties to Different PGR Regimes



## TAKE AWAYS

- The average height in the untreated plot with no PGR applied was 80.4 inches. This is indicative of extremely strong growth conditions (Figure 1).
- A range of responses in height reduction was recorded across the varieties tested (Figure 2).
- The best way to characterize varieties is by the percent reduction in height in the various PGR treatments (Figures 3 and 4).
  - Varieties with high amounts of height reduction are more sensitive to PGR applications and generally require less aggressive management.
  - They may also be less sensitive to stressful growing conditions (i.e. less determinate or more indeterminate). The inverse is also true for more determinate or less indeterminate varieties.

Response of Deltapine® Cotton Varieties to Different PGR Regimes





## TAKE AWAYS

- The range of responses in height reduction from aggressively managed plots was from 10 to 26 percent (Figure 4).
- The range of responses in yield was from 2.0 to 2.2X when comparing the PGR treated plots to the untreated control plots (Figures 5 and 6).
- This highlights the potential value of sound PGR management in producing cotton.
- All varieties should be managed responsively depending on how they are growing in each field on each farm.
- When making PGR application decisions for any cotton variety, remember to look at the node elongation of node 4 – 5 from the top of the plant, soil moisture, agronomic practices, and weather patterns.

Response of Deltapine® Cotton Varieties to Different PGR Regimes



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Response of Deltapine® Cotton Varieties to Different PGR Regimes



# RESPONSE OF DELTAPINE® VARIETIES TO ROW CONFIGURATION

2016 Learning Center Demo Report  
Monsanto Learning Center at Scott, MS



## BACKGROUND

- There are several reasons why a grower may plant cotton with varying row configurations.
- For example, growers are sometimes forced to have planters setup with different row configurations.
- This can result in planting cotton with a skip row.



## BACKGROUND

- A demonstration was established to evaluate the response of Deltapine® cotton varieties planted with varying row configurations:
  - **Solid planted.** Every row planted. However, due to the limitations of plot work, four rows were planted, followed by one skip row, leading to a **4:1 skip row**.
  - **2:1 skip row.** Two rows were planted followed by one skip row. This method is currently used by some growers due to planter setup restrictions and to help increase water conservation and reduce boll rot.
  - **1:1 skip row.** One row was planted followed by one skip row. This method is not typically used by growers, but it was included in the demonstration due to recent interest how a 1:1 skip row would perform.

Response of Deltapine® Varieties to Row Configuration



## BACKGROUND

- This demonstration was designed to investigate the implications of different row configurations.
- Setup and management of varying row configurations may be altered depending on grower preferences and equipment.

Response of Deltapine® Varieties to Row Configuration



## STUDY GUIDELINES

- Four Deltapine® varieties were planted on May 11, 2016 with the following conditions:
  - Row Spacing: 38-inch rows
  - Soil Type: Silt Clay Loam
  - Previous Crop: Corn
  - Tillage: Conventional
  - Nitrogen Applied: 120lbs N/acre as 28% UAN liquid
  - All other agronomic practices were timely and per local practices.
- All plots were harvested on October 12, 2016.
- Total accumulated growing degree days (DD60s) from planting to harvest: 2956.

Response of Deltapine® Varieties to Row Configuration



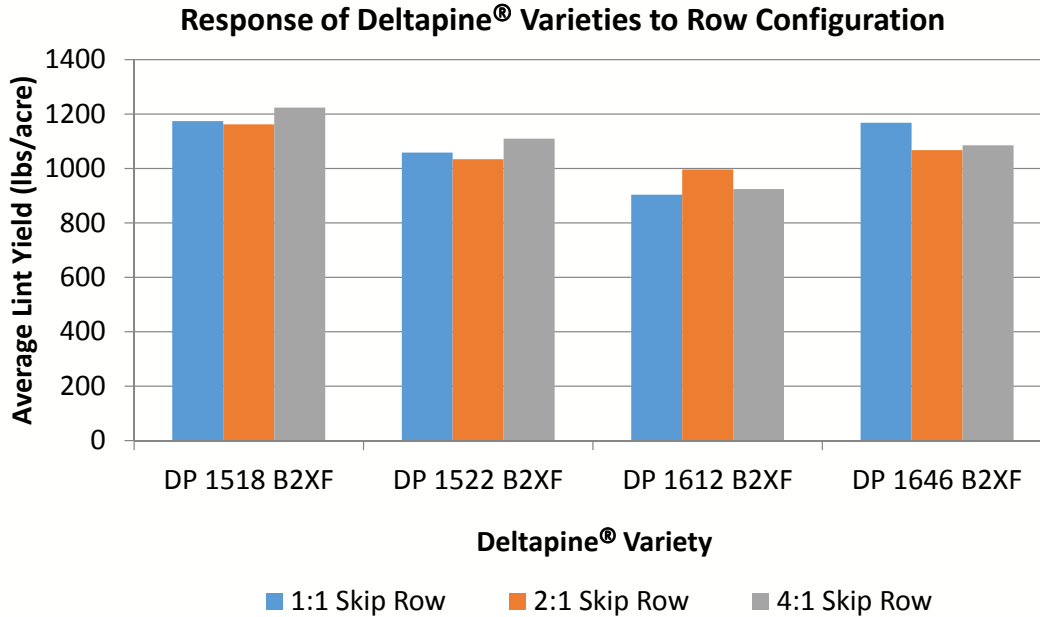
## STUDY GUIDELINES

- Plots were planted at row acre populations of 50,000 seeds per acre.
  - 4:1 skip row: 50,000 seeds per acre
  - 2:1 skip row: 33,000 seeds per acre
  - 1:1 skip row: 25,000 seeds per acre
- Lint yield calculations were based on 2015/2016 Beltwide turnouts.
- Yield goal for this demonstration was 1200 pounds of lint per acre.

Response of Deltapine® Varieties to Row Configuration



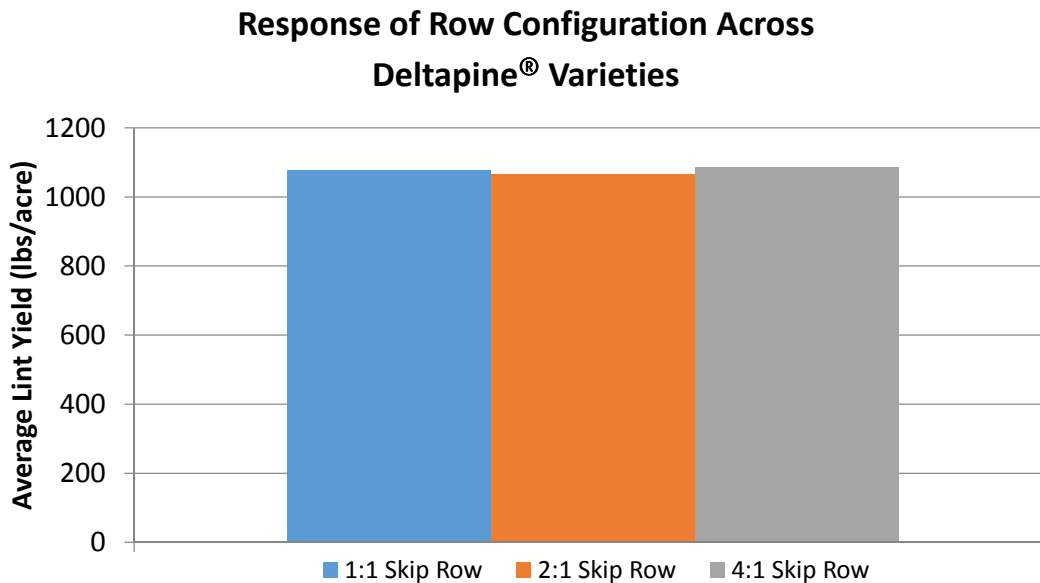
## RESULTS & DISCUSSION



Response of Deltapine® Varieties to Row Configuration



## RESULTS & DISCUSSION

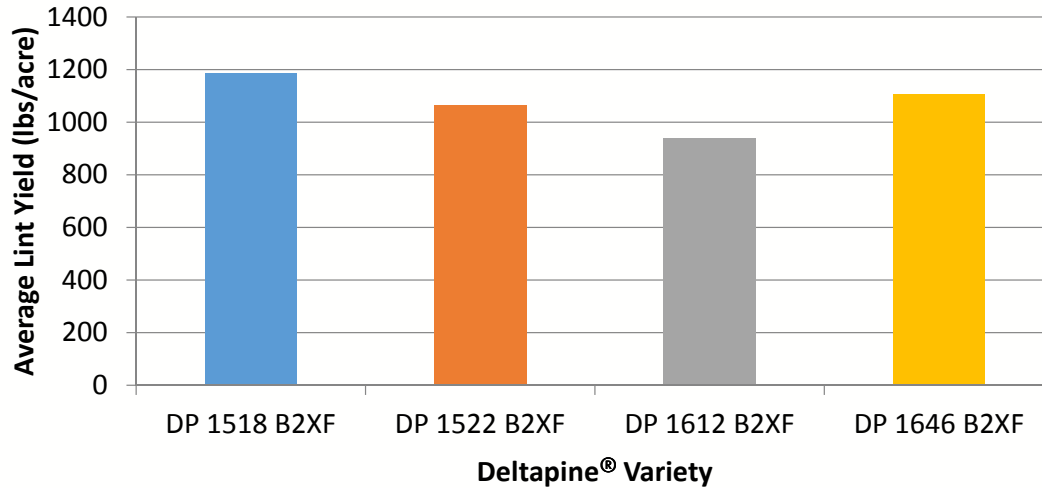


Response of Deltapine® Varieties to Row Configuration



## RESULTS & DISCUSSION

### Response of Deltapine® Varieties Across Row Configuration

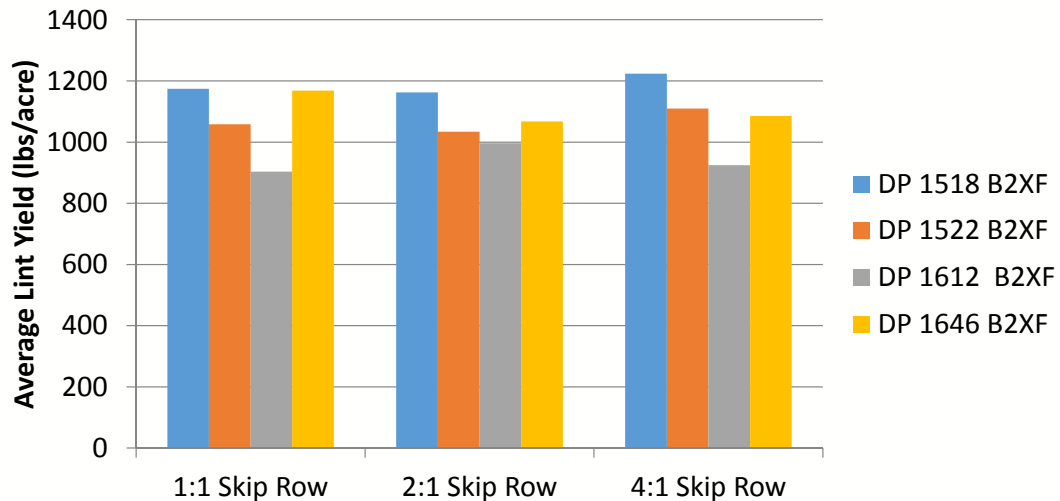


Response of Deltapine® Varieties to Row Configuration



## RESULTS & DISCUSSION

### Response of Deltapine® Varieties to Row Configuration by Row Configuration



Response of Deltapine® Varieties to Row Configuration



## RESULTS & DISCUSSION

- This demonstration clearly exhibits the compensatory ability of cotton as a crop.
- All row configurations yielded approximately the same across the trial.
- The cotton varieties in this trial performed well even with reduced plant populations and what may be considered non-ideal row spacings.

Response of Deltapine® Varieties to Row Configuration



## TAKE AWAYS

- Growers should carefully manage growth with PGRs in skip row configurations.
- Skip row planted cotton often requires a balance of good growth control without excessive shortening.
- There may be some opportunity with skip row cotton to reduce the need for growth control and reduce boll rot.

Response of Deltapine® Varieties to Row Configuration



## TAKE AWAYS

- In the event that growers are either forced to or choose to plant a skip row configuration, acceptable yield levels may be maintained.
- It is recommended to continue to maintain per field acre populations similar to solid plantings versus planting according to row acre.

Response of Deltapine® Varieties to Row Configuration



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Response of Deltapine® Varieties to Row Configuration





# Response of Four Deltapine® Cotton Varieties to Population and Planting Configuration

2016 Learning Center Demo Report  
Monsanto Learning Center at Scott, MS



## BACKGROUND

- Two decisions growers must make when planting cotton are planting configuration (hill drop or drilled) and planting population.
- In addition to addressing these two concerns, this demonstration also evaluates the yield potential of Class of 2016 Deltapine® cotton varieties.



## BACKGROUND

- Cotton growers have historically used hill drop as a way to get better stands using the “pushing power” of more than one seed per hill.
- There may be less need for this power in today’s world for many reasons, including:
  - Improved seed quality
  - Later planting due to boll weevil eradication and Bollgard® insect-protection traits. Early planting was a tactic used to evade insects in times past.
  - Better planting machinery

Response of Four Deltapine® Cotton Varieties to Population and Planting Configuration



## STUDY GUIDELINES

- Four Deltapine® cotton varieties (DP 1555 B2RF, DP 1614 B2XF, DP 1639 B2XF, and DP 1646 B2XF) were planted on May 11, 2016 and harvested on September 13, 2016.
- All varieties were conventionally planted in 38-inch rows on clay silt loam soils.
- All varieties were planted at two populations: 41,000 seeds/acre (3 seeds/row foot) and 55,000 seeds/acre (4 seeds/row foot).

Response of Four Deltapine® Cotton Varieties to Population and Planting Configuration



## STUDY GUIDELINES

- Drilled seed were uniformly planted down the row, resulting in:
  - 41,000 seeds/acre – 3 seeds/row foot = 1 seed per 4 inches or 1 on 4 inches
  - 55,000 seeds/acre – 4 seeds/row foot = 1 seed per 3 inches or 1 on 3 inches

Response of Four Deltapine® Cotton Varieties to Population and Planting Configuration



## STUDY GUIDELINES

- Hill drop seed were planted in three configurations (X seed on X inches). As population/number of seed per hill changes, the spacing of the hills must change to adjust the per-acre populations.

Response of Four Deltapine® Cotton Varieties to Population and Planting Configuration



## STUDY GUIDELINES

- **2 seed hill drop – 2 seeds/hill**
  - 41,000 seeds/acre – 2 on 8 inches
  - 55,000 seeds/acre – 2 on 6 inches
- **3 seed hill drop – 3 seeds/hill**
  - 41,000 seeds/acre – 3 on 12 inches
  - 55,000 seeds/acre – 3 on 9 inches
- **4 seed hill drop – 4 seeds/hill**
  - 41,000 seeds/acre – 4 on 16 inches
  - 55,000 seeds/acre – 4 on 12 inches

Response of Four Deltapine® Cotton Varieties to Population and Planting Configuration



## STUDY GUIDELINES

- Data taken included average yield and emergence vs planted %.
- Beltwide lint turnouts from 2015 and 2016 were used to calculate final yields.

Response of Four Deltapine® Cotton Varieties to Population and Planting Configuration



## RESULTS & DISCUSSION

- Few differences were observed in yield potential among the planting configurations.
- All of the configurations performed well, so growers should use the ones that suit their preference.

Response of Four Deltapine® Cotton Varieties to Population and Planting Configuration



## RESULTS & DISCUSSION

- The three seed hill drop treatments produced higher final stands but not higher yields, clearly demonstrating the compensatory ability of cotton plants.
- This configuration could be used in fields or planting conditions when need arose to manage crops if obtaining a suitable stand is difficult, including very early planted fields and fields that have a high probability of crusting.

Response of Four Deltapine® Cotton Varieties to Population and Planting Configuration



## RESULTS & DISCUSSION

- In three of the four varieties tested, no yield advantage was seen in planting the higher population.
- In this trial, DP 1646 B2XF tended to yield numerically higher when planted at higher populations. This is indicative of the higher yield potential that is observed in that variety across the Cotton Belt.
- We will be doing more work on this issue. Also, there is a potential growth management implication that growers should clearly understand and acknowledge when planting higher populations.

Response of Four Deltapine® Cotton Varieties to Population and Planting Configuration



## RESULTS & DISCUSSION

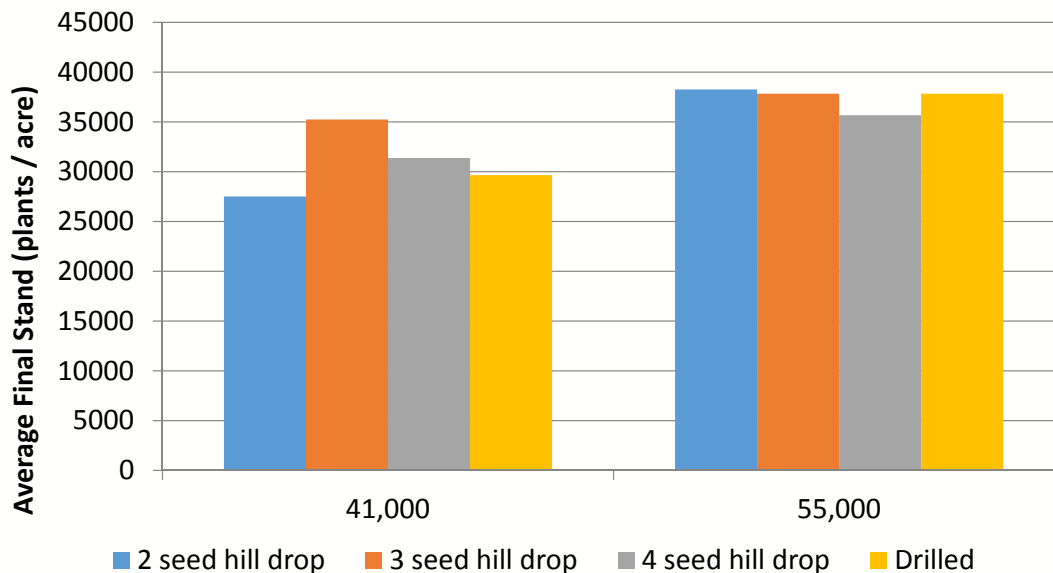


Figure 1. Response of four Deltapine® cotton varieties to population and planting configuration across varieties, final stand, and plants/acre.

Response of Four Deltapine® Cotton Varieties to Population and Planting Configuration



## RESULTS & DISCUSSION

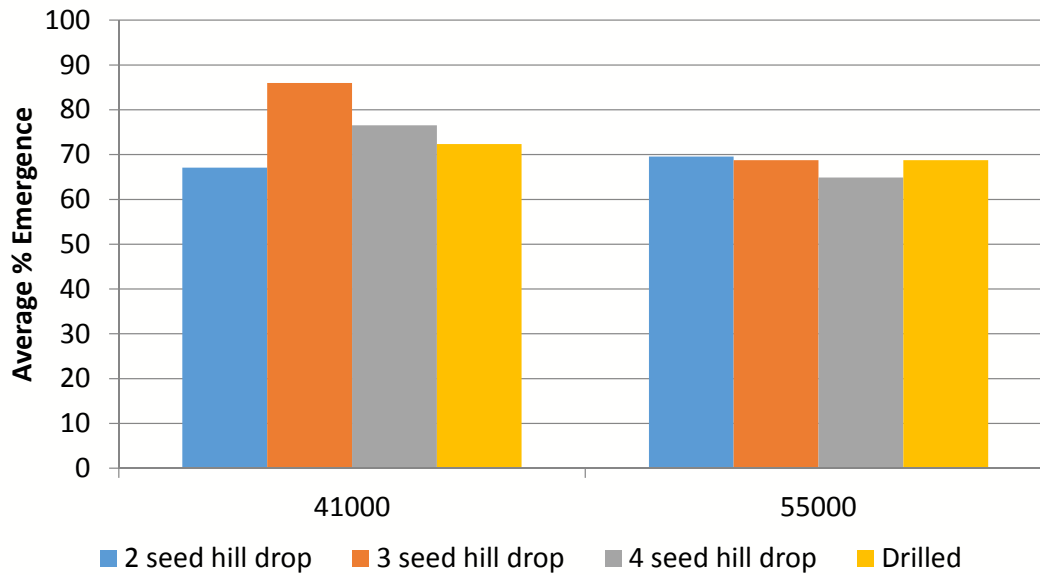


Figure 2. Response of four Deltapine® cotton varieties to population and planting configuration across varieties and % emergence.

Response of Four Deltapine® Cotton Varieties to Population and Planting Configuration



## RESULTS & DISCUSSION

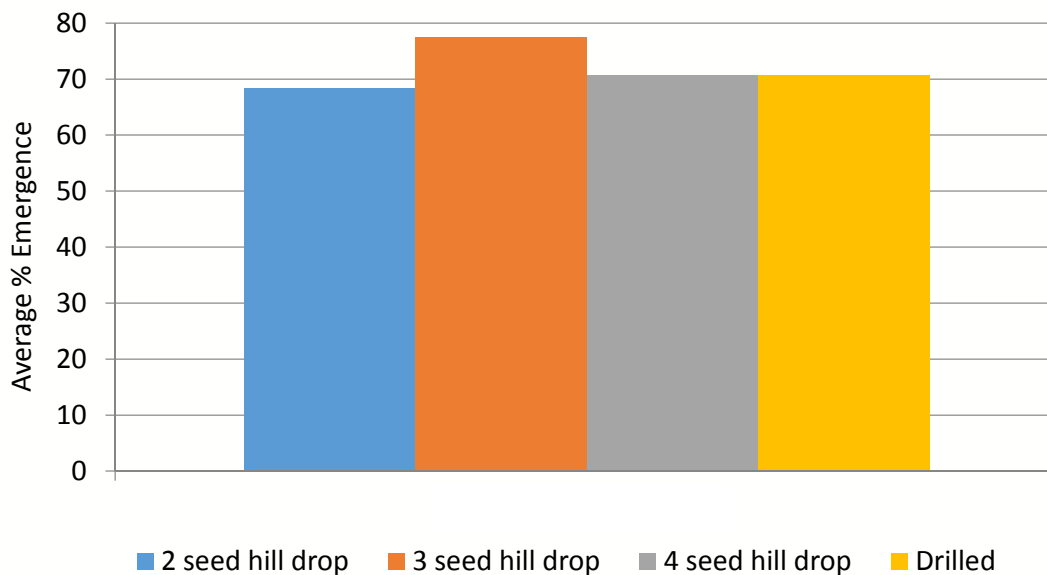


Figure 3. Response of four Deltapine® cotton varieties to population and planting configuration across populations, varieties, and % emergence.

Response of Four Deltapine® Cotton Varieties to Population and Planting Configuration



## RESULTS & DISCUSSION

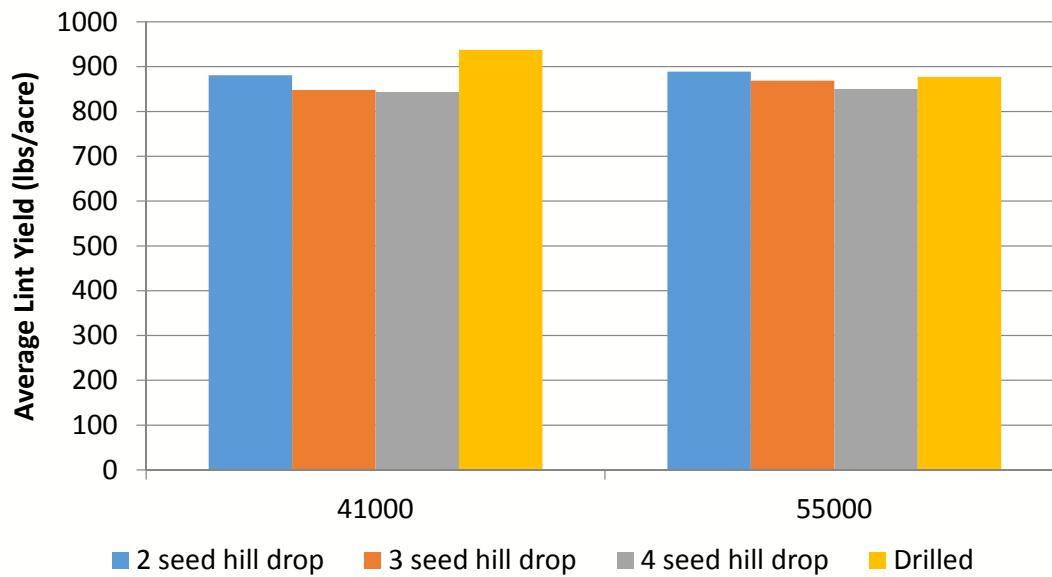


Figure 4. Response of four Deltapine® cotton varieties to population and planting configuration across varieties. (Yield = Lint lbs/acre).

Response of Four Deltapine® Cotton Varieties to Population and Planting Configuration



## RESULTS & DISCUSSION

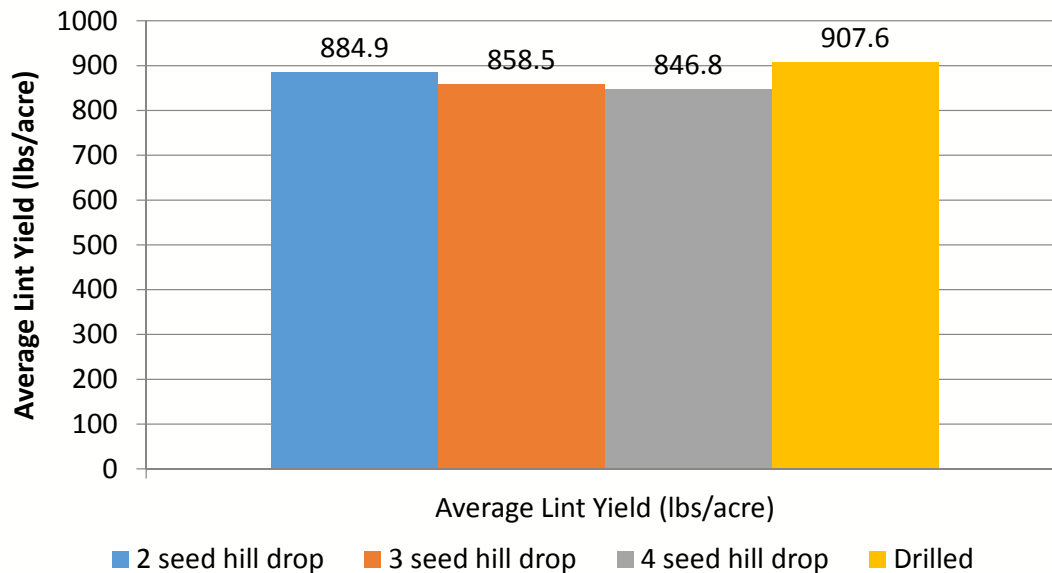


Figure 5. Response of four Deltapine® cotton varieties to population and planting configuration across varieties. (Yield = Lint lbs/acre).

Response of Four Deltapine® Cotton Varieties to Population and Planting Configuration





## RESULTS & DISCUSSION

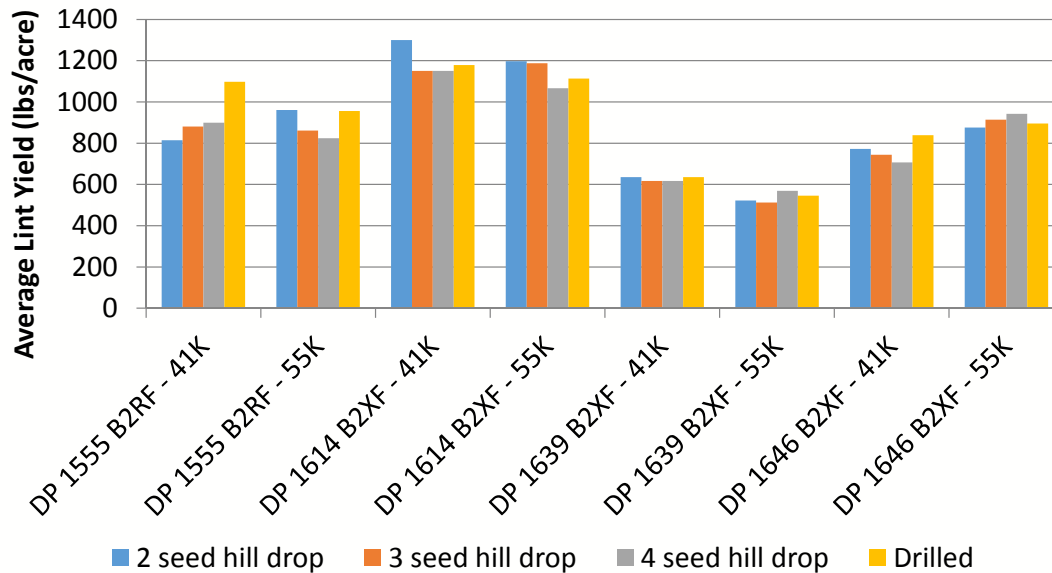


Figure 6. Response of four Deltapine® cotton varieties to population and planting configuration across varieties. (Yield = Lint lbs/acre).

Response of Four Deltapine® Cotton Varieties to Population and Planting Configuration



## TAKE AWAYS

- Use the planting configuration that fits your operation.
- This study suggests that, if hill drop is selected, use either the two seed or three seed option. If improving population is the intent, use the three seed hill drop.
- In this study, yield potential remains acceptable in all configurations.
- Variety placement and management remains a critical concern regardless of the planting configuration or population planted.

Response of Four Deltapine® Cotton Varieties to Population and Planting Configuration



## LEGAL STATEMENTS

**The information discussed in this report is from a single site, non-replicated demonstration. This information piece is designed to report the results of this demonstration and is not intended to infer any confirmed trends. Please use this information accordingly.**

**Always read and follow IRM, where applicable, grain marketing and all other stewardship practices and pesticide label directions.**

***B.t. products*** may not yet be registered in all states. Check with your Monsanto representative for the registration status in your state.

**Individual results may vary**, and performance may vary from location to location and from year to year. This result may not be an indicator of results you may obtain as local growing, soil and weather conditions may vary. Growers should evaluate data from multiple locations and years whenever possible.

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