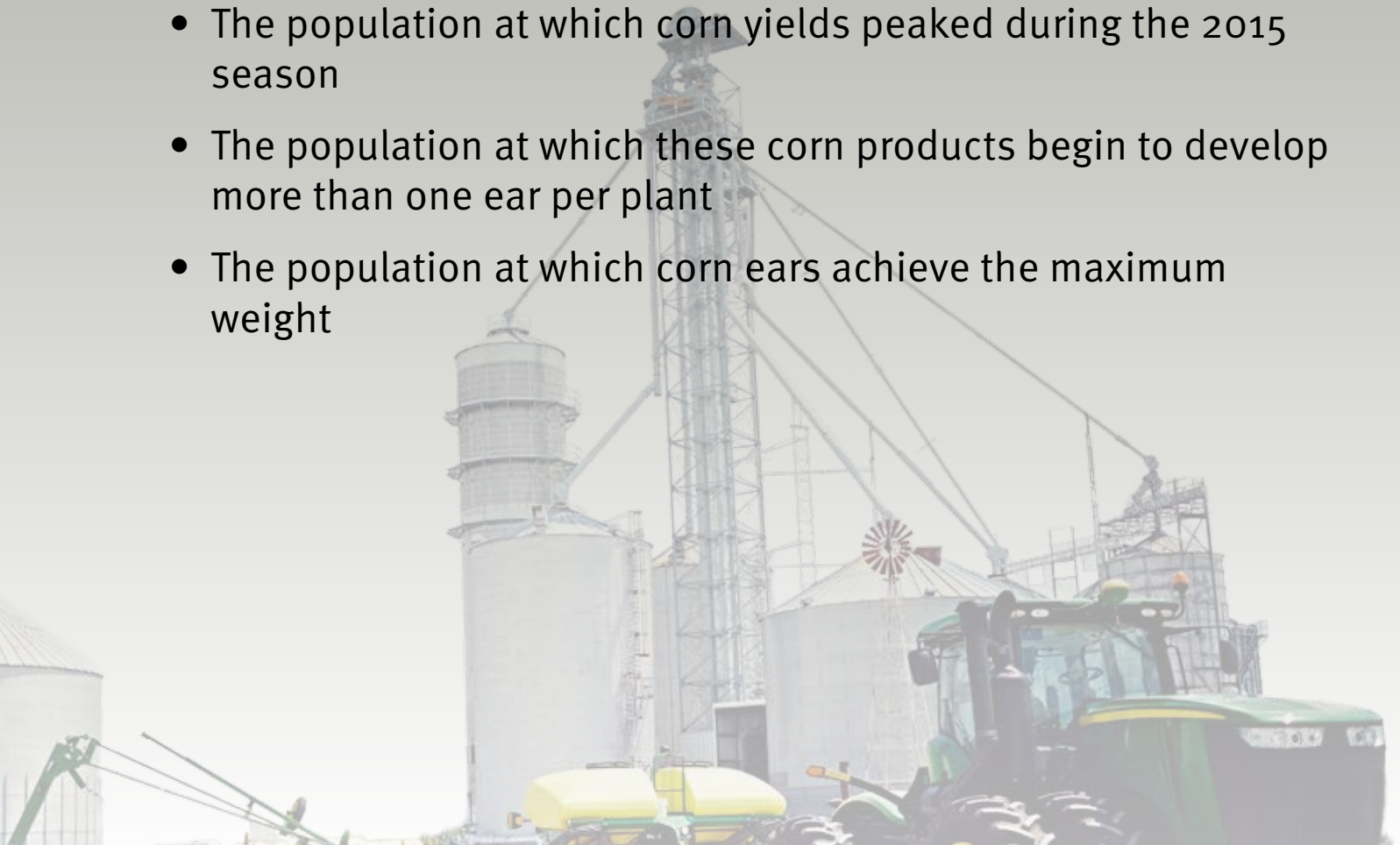




# INFLUENCE OF PLANTING POPULATION ON EAR NUMBER AND SIZE IN MIDSOUTHERN CORN PRODUCTION

In order to learn more about ear flex in corn, a corn demonstration trial was conducted at the Monsanto Learning Center at Scott, MS to determine how corn plants respond to changes in population by ear size, ear weight, and yield. This study examined:

- How corn responds to decreasing population in ear size and number of ears per plant
- The population at which corn yields peaked during the 2015 season
- The population at which these corn products begin to develop more than one ear per plant
- The population at which corn ears achieve the maximum weight

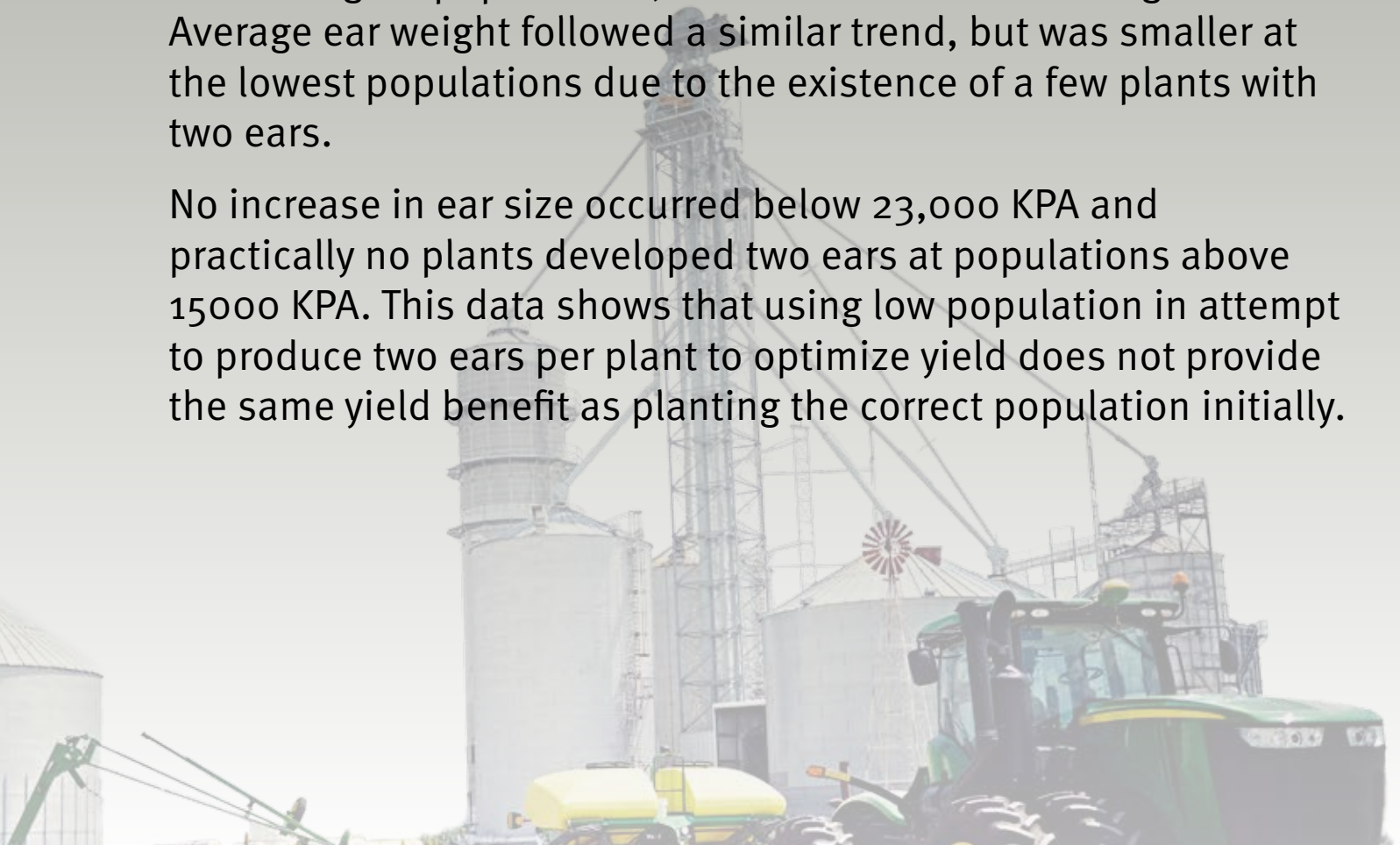




## INFLUENCE OF PLANTING POPULATION ON EAR NUMBER AND SIZE IN MIDSOUTHERN CORN PRODUCTION

In this trial, two DEKALB® Brand Products were planted at 17 different populations ranging from 10,000 to 42,000 KPA (kernels/acre). Samples were taken and data generated regarding ears/plant, ear weight, and yield. In 2015, corn yields were maximized in the 35,000-36,000 KPA range. Some, but very few, plants developed two ears below 15,000 KPA. Primary ear weight was maximized somewhere between 20,000 and 25,000 KPA. At higher populations, ears were smaller and weighed less. Average ear weight followed a similar trend, but was smaller at the lowest populations due to the existence of a few plants with two ears.

No increase in ear size occurred below 23,000 KPA and practically no plants developed two ears at populations above 15000 KPA. This data shows that using low population in attempt to produce two ears per plant to optimize yield does not provide the same yield benefit as planting the correct population initially.



## Study Guidelines



- A corn demonstration trial was conducted at the Monsanto Learning Center at Scott, MS to learn more about how corn plants respond to changes in population by ear size, ear weight, and yield.
- There have been many studies on corn response to population. This is a follow up to those studies in defining the reaction of corn to population changes.

Influence of Planting Population on Ear Number and Size in Midsouthern Corn Production

## Study Guidelines



- How does corn respond to decreasing population in ear size and number of ears per plant?
- At what population did corn yields peak during the 2015 season?
- At what population do these corn products begin to develop more than one ear per plant?
- At what population do corn ears achieve the maximum weight?
- The fundamental question is: What is this characteristic that we refer to as “flex” in corn?

Influence of Planting Population on Ear Number and Size in Midsouthern Corn Production

## Study Guidelines



- Products used:
  - DKC64-69 brand– This product demonstrated as much flex as recorded in the Midsouthern corn seed from DEKALB® Brand.
  - DKC66-87 brand – This product demonstrates less flex, but is still very yield capable even at relatively low populations.
- Planting date:
  - 3/30/2015

Influence of Planting Population on Ear Number and Size in Midsouthern Corn Production

## Study Guidelines



- This demo was planted as follows:
  - 2 replications
  - Planted 4 rows by approximately 175 foot rows
  - Planted populations from 10,000 to 42,000 KPA (kernels/acre)
  - Stands were counted for proper analysis as needed
- This demo was sampled as follows:
  - 8 foot samples were harvested from each plot
  - Within each sample the ears were harvested individually
  - Ears were then shucked, shelled, and weighed individually
  - Data was generated as to ears/plant, yield, and ear weights in response to population
- Each plot was also machine harvested for yield

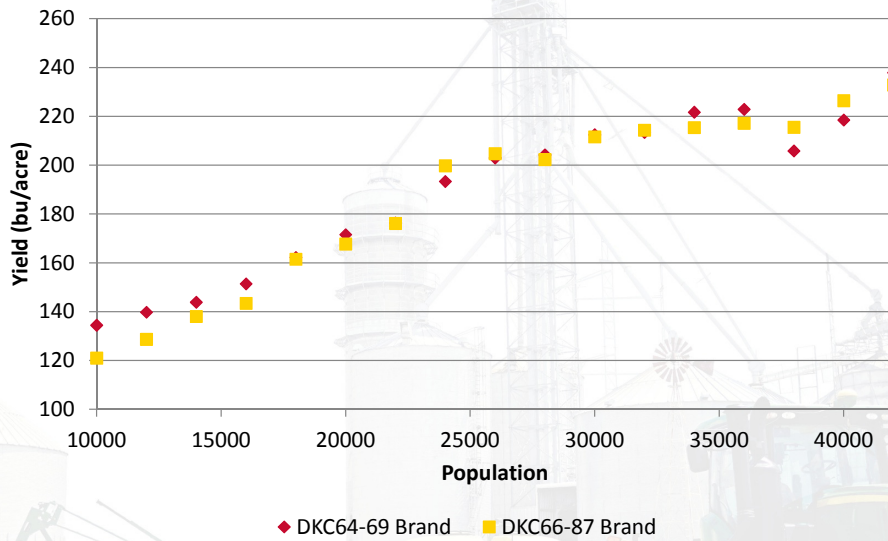
Influence of Planting Population on Ear Number and Size in Midsouthern Corn Production



# Results and Discussion



### Figure 1. Yield by Population

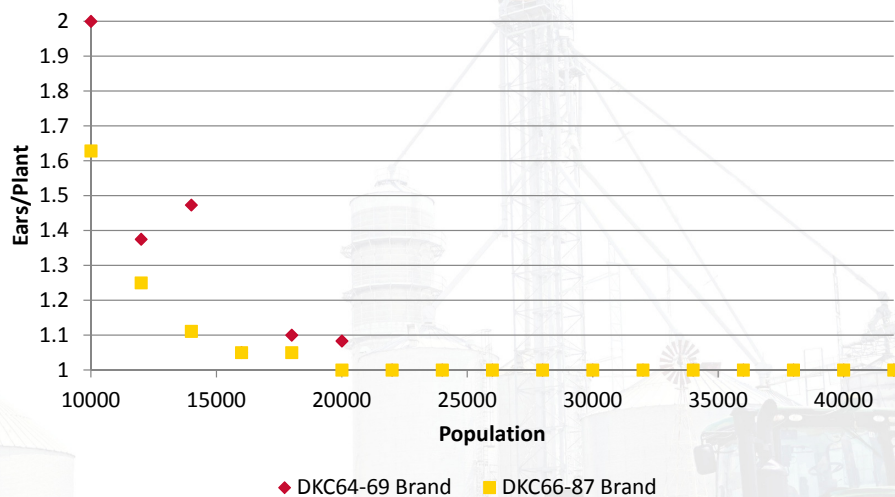


Influence of Planting Population on Ear Number and Size in Midsouthern Corn Production

# Results and Discussion



### Figure 2. Ears per Plant by Population

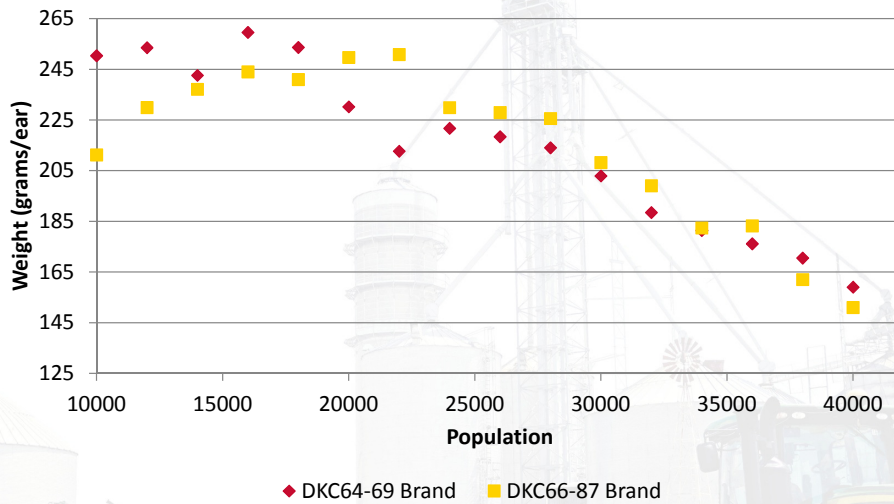


Influence of Planting Population on Ear Number and Size in Midsouthern Corn Production

# Results and Discussion



### Figure 3. Primary Ear Weight by Population

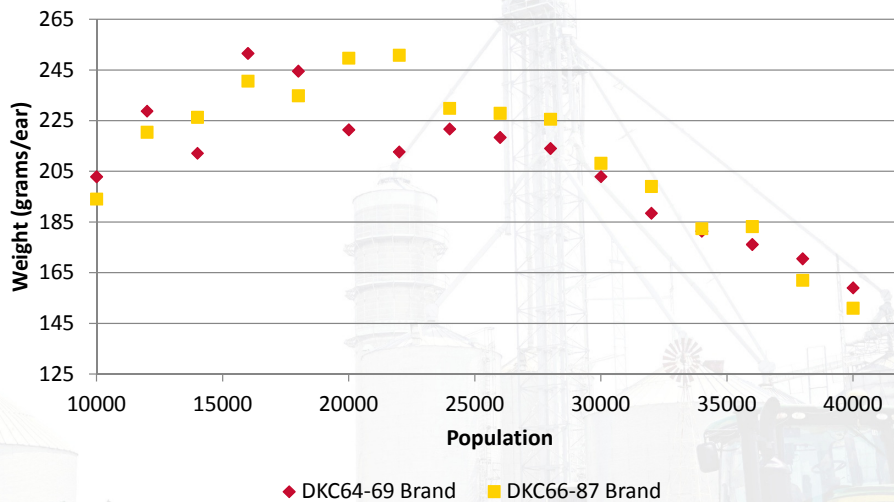


Influence of Planting Population on Ear Number and Size in Midsouthern Corn Production

# Results and Discussion



### Figure 4. Average Ear Weight by Population



Influence of Planting Population on Ear Number and Size in Midsouthern Corn Production

## Take Aways



- During 2015, corn yields were maximized in the 35,000-36,000 KPA range.
  - This is different than the previous 4-5 years where in some cases yield continued to go up as population increased.
- Very few plants had two ears develop below 15,000 KPA.
  - This is primarily a response to light in our environment.

Influence of Planting Population on Ear Number and Size in Midsouthern Corn Production

## Take Aways



- Primary ear weight was maximized somewhere between 20,000 and 25,000 KPA.
  - Ears were as large as they could be at populations below that.
  - At higher populations, ears were smaller but weighed less.
- Average ear weight followed a similar trend, but actually got smaller at the lowest populations due to the existence of a few plants with 2 ears.

Influence of Planting Population on Ear Number and Size in Midsouthern Corn Production

## Take Aways



- For example:
  - If the plants at 23,000 KPA had the largest possible ears at approximately 230 grams per ear and the 42,000 KPA population had ears weighing approximately 150 grams per ear, the ears were close to 35% smaller in the high population, but the low population only contained approximately 55% of the plants of the high population.
  - This calculates to a 40 bu/acre difference in yield and agrees with the combine harvested yield difference.
- This data shows that using low population in attempt to produce two ears per plant to optimize yield does not provide the same yield benefit as planting the correct population initially.
  - No increase in ear size occurred below 23,000 KPA and practically no plants developed two ears at populations above 15000 KPA.

Influence of Planting Population on Ear Number and Size in  
Midsouthern Corn Production

## Legal Statements



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

**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. **Always read and follow IRM, where applicable, grain marketing and all other stewardship practices and pesticide label directions.** Asgrow and the A Design®, Asgrow®, DEKALB and Design®, and DEKALB® are registered trademarks of Monsanto Technology LLC. Deltapine® is a registered trademark of Monsanto Company. All other trademarks are the property of their respective owners. ©2015 Monsanto Company. 151204084125 120715JMG