

**ARKANSAS CORN AND GRAIN SORGHUM PROMOTION BOARD  
PROGRESS REPORT - November 2008**

**Title:** Developing Planting Date Guidelines for Arkansas Corn and Grain Sorghum

**Investigator:** Jason Kelley - Wheat and Feed Grains Extension Agronomist

**Cooperators:** Glenn Studebaker - Extension Entomologist, Keiser  
 Scott Akin - Extension Entomologist, Monticello  
 Paul McLeod - Professor of Entomology, Fayetteville  
 Scott Monfort - Extension Plant Pathologist, Stuttgart

**Status:** Completing year 1 of 3

**Corn Studies:** Corn planting date trials were conducted at Keiser (Northeast Research and Extension Center, Marianna (Lon Mann Station), and Rohwer (Southeast Research and Extension Center). Planting dates at each location were as follows:

<b>Keiser</b>	<b>Marianna</b>	<b>Rohwer</b>
Weather Delayed	March 28	March 27
Weather Delayed	April 16	April 15
May 6	May 1	May 1
May 20	May 13	May 13
June 2	June 2	June 2

Wet weather delayed initial plantings at all three locations. At Marianna and Rohwer, the first planting was delayed approximately 10 days and other plantings were close to being on schedule. At Keiser (clay soil), wet weather delayed initial planting until May 6th, therefore only three planting dates were included. Overall plant stands were good, except for the first two plantings at Rohwer and the first planting at Marianna, which struggled with cool wet weather and resulted in thinner stands compared to other planting dates.

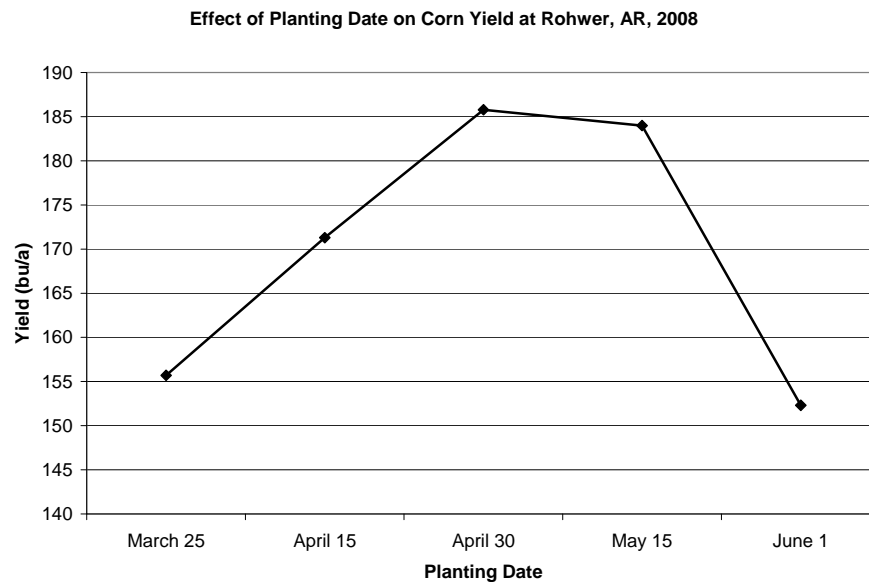
Twelve hybrids (111 -119 day maturity) were evaluated and included;

Pioneer 31P40(RR)	Pioneer 31P42 (RR, Hx)	Asgrow 715 (RR)
Asgrow 715(VT3)	Dekalb 64-82 (RR)	Dekalb 64-78 (RR, YGCB)
Dekalb 64-79 (VT3)	Dekalb 69-40 (VT3)	Belle 1545RY
Terral 26BR41	NK N78GT	NK N78GT,CB, LL

At each site, plots were 4 rows wide x 20 feet long. At Rohwer and Keiser row spacing was 38 inches and 30 inches at Marianna. Soil types were silt loam at Rohwer and Marianna and a clay at Keiser. All plots were irrigated as needed according to the University of Arkansas Irrigation scheduler. Plots at Keiser and Marianna were furrow irrigated and plots at Rohwer were lateral irrigated. All plantings were planted at 34,000 seeds/acre. Fertilizer was applied according to soil test recommendations and total nitrogen applied was 250 lbs N/acre at Rohwer and Marianna and 300 lbs N/acre at Keiser. Nitrogen at all locations was split applied with approximately 1/3 applied at planting and 2/3 applied at sidedress.

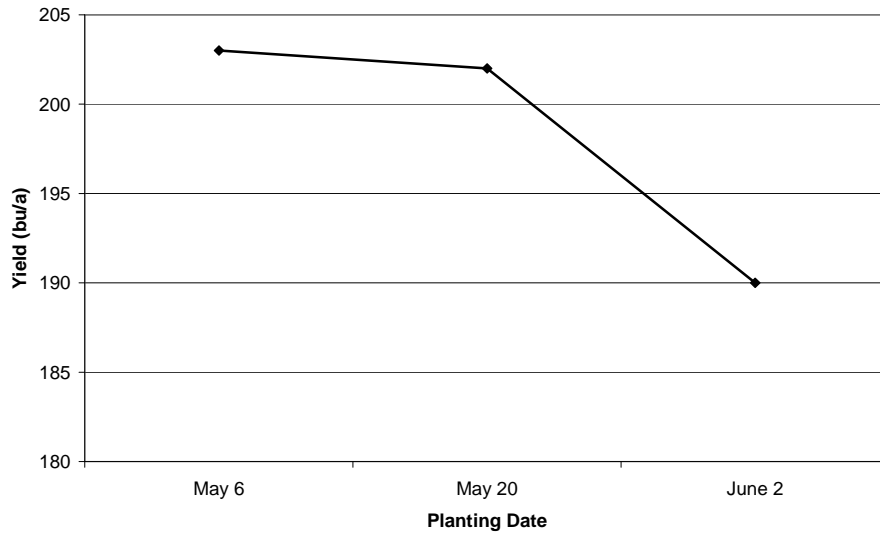
Corn borer levels were evaluated at the end of the season at each location. At Rohwer, less than 1% of non-bt plants of plants were infected with corn borers. At Marianna, in non bt hybrids, southwestern corn borer infection levels were 10%, 25%, 5%, 10%, and 70%, for March 28<sup>th</sup>, April 16<sup>th</sup>, May 1, May 13<sup>th</sup>, and June 2<sup>nd</sup> planting dates, respectively. At Keiser, corn borer levels were low and averaged 2.5, 5, and 20% infestation levels for the May 6<sup>th</sup>, May 20<sup>th</sup>, and June 2<sup>nd</sup> plantings, respectively.

Yields at Rohwer in the first two plantings were lower than later plantings due to lower plant populations. Soil temperatures at planting were 55 and 50 degrees for these plantings and rainfall soon after planting added more stress the seedlings. Many surrounding commercial fields were replanted if they were planted during late March or early April. Hybrid maturity or traits did not influence yields, therefore average yields for each planting date are reported below. Yields peaked at 186 and 184 bu/acre for the April 30<sup>th</sup> and may 15<sup>th</sup> plantings. Yields for the June 1 planting were significantly lower due to planting lodging associated with hurricanes Gustav and Ike.



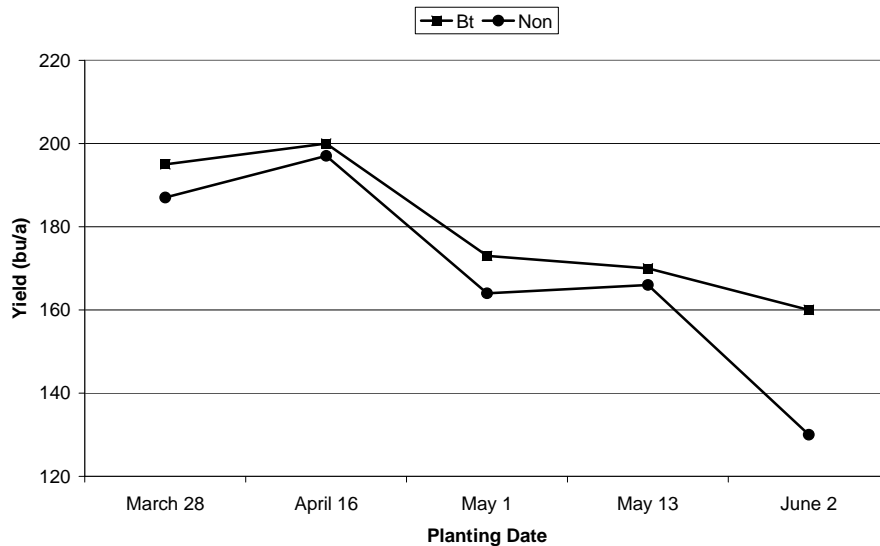
At Keiser (clay soil), planting was delayed until May 6<sup>th</sup> because of wet conditions, therefore only three planting dates were able to be planted. Yields overall were good. Yields were not influenced by hybrid maturity or insect trait, therefore only planting date average yields are reported. Yields of 203, 202, and 190 bu/acre were obtained for the May 6<sup>th</sup>, May 20<sup>th</sup> and June 2<sup>nd</sup> plantings, respectively. Late plantings were much less impacted by hurricanes Gustav and Ike then at Rohwer.

Effect of Planting Date on Corn Yield at Keiser, AR, 2008



At Marianna, corn yields were influenced by hybrid insect trait due to high levels of southwestern cornborer in the June 2<sup>nd</sup> planting date. Yields overall were 30 bu/acre lower from hybrids without corn borer traits compared to bt containing hybrids in the June 2<sup>nd</sup> planting date. Earlier planting dates did not show this yield difference due to lower corn borer levels. Corn borer infestation levels in non-bt hybrids averaged 10%, 25%, 5%, 10%, and 70% for the March 28<sup>th</sup>, April 16, May 1, May 13, and June 2<sup>nd</sup> planting dates. Yields peaked with the April 16<sup>th</sup> planting date and declined after that. Lodging was not an issue in any of the planting dates at Marianna.

Effect of Planting Date on Corn at Marianna, AR, 2008



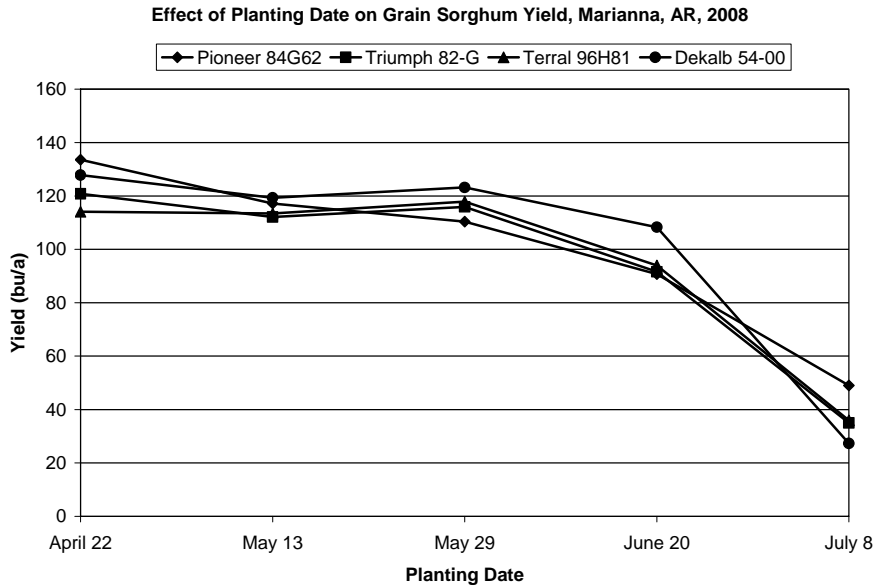
**Grain Sorghum:** Grain sorghum planting date studies to evaluate optimum planting dates for grain sorghum were conducted near Marianna on the Lon Mann Cotton Research Station and on the Jason Holloway farm in Prairie County north of Des Arc. Planting dates for each location were as follows:

<b>Marianna</b>	<b>Des Arc</b>
April 22	Delayed by wet weather
May 13	May 6
May 29	May 29
June 20 (watered up)	June 26
July 8 (watered up)	

Wet weather delayed initial plantings at both locations. The last two planting dates at Marianna had to be watered up due to dry soil conditions. Rainfall soon after the June 20<sup>th</sup> planting at Marianna greatly helped stand establishment, but was still not as uniform as the three earlier plantings. The July 8<sup>th</sup> planting at Marianna also had to be watered up, and stands were less uniform than the June 20<sup>th</sup> planting.

At each site plots were replicated four times and plot size varied from 4 rows wide x 100 feet long at Marianna to 4 rows wide by 35 feet at Des Arc. Row spacing was 38 inches at Marianna and 30 inches at Des Arc. Both sites were furrow irrigated according to the University of Arkansas Irrigation Scheduler. Soils at both sites were a silt loam soil. Four hybrids were evaluated and included; Pioneer 84G62, Triumph 82-G, Terral 96H81, and Dekalb 54-00 and were planted at a seeding rate of 100,000 seeds/acre. Insect pressure at Marianna was relatively light for the first three plantings with no insecticide spraying needed for sorghum midge or headworm control. The June 20<sup>th</sup> planting date was sprayed with an insecticide at flowering to control sorghum midge. The July 8<sup>th</sup> planting was sprayed for armyworms prior to heading, sprayed for midge at flowering, and sprayed for corn earworms during grain fill. At Des Arc, the first planting date was sprayed for sorghum midge, however the other two plantings did not need an insecticide application.

Overall, yields were excellent at Marianna with the April 22, May 13, and May 29<sup>th</sup> plantings all providing similar yields of 124, 115, and 117 bu/acre, respectively when averaged over the four hybrids. The June 20<sup>th</sup> and July 8<sup>th</sup> planting yielded considerably less than earlier plantings at 96 and 37 bu/acre, when averaged over the four hybrids. Yields were lower from the last two plantings partly because of stand problems associated with having to water immediately after planting to bring the crop up. The July 8<sup>th</sup> planting also suffered minor midge damage, even though the plots were sprayed with an insecticide.



At Des Arc, yields were good and averaged 114, 107, and 78 bu/acre for the May 6<sup>th</sup>, May 29<sup>th</sup>, and June 26<sup>th</sup> planting dates. Yields from the May 6<sup>th</sup> and May 29<sup>th</sup> plantings were negatively influenced by hurricanes Gustav and Ike. Substantial grain sprouting and shattering occurred prior to harvest. The amount of shattering differed between hybrids and was likely partially related to hybrid maturity. Averaged over the May 6<sup>th</sup> and May 29<sup>th</sup> planting dates, shattered seeds on the ground was 106, 26, 54, and 26 seeds/ft<sup>2</sup> for Pioneer 84G62, Triumph 82G, Terral 96H81, and Dekalb 54-00, respectively. One hundred seeds/ft<sup>2</sup> was estimated to be equal to 5 bu/acre. Test weights were also negatively affected by the hurricanes with average test weights of 54.1, 56.4, and 59.1 lbs/bu for May 6<sup>th</sup>, May 29<sup>th</sup> and June 26<sup>th</sup>, respectively. The June 26<sup>th</sup> planting did not experience grain sprouting or poor test weights because grain was not mature when rainfall from the hurricanes occurred. Yields from the June 26<sup>th</sup> planting were substantially lower than earlier plantings, even though good stands were realized and no sorghum midge damage occurred.

