

CORN UPDATE



ARKANSAS CORN PERFORMANCE TESTS AND HYBRID SELECTION –2003

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Corn performance trials were conducted at five locations (Figure 1) in Arkansas in 2002. The information provided includes yield potential and agronomic considerations for successful corn production. This publication should help producers select high-yielding hybrids.



**FIGURE 1. LOCATIONS OF ARKANSAS
CORN PERFORMANCE TESTS, 2002**

- 1 – Northeast Research and Extension Center, Keiser - Sharkey Clay Soil
- 2 – Cotton Branch Experiment Station, Marianna – Calloway Silt Loam Soil
- 3 – Williams Farm, Gin City - Severn Silt Loam Soil
- 4 – Bell Farming Company, Des Arc - Calloway Silt Loam Soil
- 5 – Southeast Research and Extension Center, Rohwer- Sharkey/Desha Silt Loam Soil

Methods

Corn hybrids and experimental lines were entered and evaluated in the Arkansas Corn Performance Test to provide an unbiased comparison of their performance. In general, recommended cultural practices were used and tailored by site location.

Each test consisted of 59 hybrids and experimental lines replicated four times in a randomized complete block design. Of the 59 hybrids and experimental lines, 33 and 26 represented early- to mid-season and mid- to late-season hybrids, respectively. For further details concerning agronomic practices, consult the *Arkansas Corn and Grain Sorghum Performance Test – 2002*, Arkansas Agricultural Experiment Station.

Yields of the corn hybrids in the Arkansas Performance Test for 2002 are located in Tables 1A and 1B. The two-year and three-year average yields are reported in Table 2.

Hybrid Selection

Numerous corn hybrids are commercially available in Arkansas. Extensive breeding programs exist for the development of high-yielding hybrids that provide desired agronomic characteristics. These hybrids are released yearly, and many are included in the Arkansas Corn Performance Test.

Hybrid selection is an important management decision for successful corn production. Yield potential is important, but should not be the primary concern when selecting a hybrid. Other characteristics such as lodging, disease reaction, ear shuck cover and ear flexing should also be considered (See Tables 3A and 3B). Corn yields are influenced by the adaptation of the hybrid and by the level of management to maximize the genetic yield potential. No corn hybrid is superior to all other hybrids under all circumstances. Thus, selecting two or more hybrids is recommended which not only spreads the risks associated with adverse environmental factors but also benefits management operations such as harvesting.

The performance of a hybrid differs due to test site and year. While the yield data from all locations may be helpful, the data from the locations closest to your farm may be the most meaningful. Also, the adaptability of a particular hybrid at the location representing a soil type similar to yours is suggested. Hybrid performance differs by location due to disease and environmental factors. By selecting a hybrid with a two- and three-year yield average, a more realistic performance of that hybrid can be evaluated. Therefore, selecting adapted corn hybrids with two- and three-year yield histories is important. (See Table 2).

Maturity

Corn hybrids grown in Arkansas are classified according to maturity. The early- to mid-season and mid- to full-season hybrids correspond to an overall average maturity date of 112 and 119 days, respectively.

The early maturity hybrids perform well when planted early by avoiding environmental stress during late July and August. These early hybrids are adapted to 30-inch row spacing. The ear shuck cover is typically loose on the early hybrids allowing quicker drydown, thus allowing earlier delivery to the elevator for possible premium payments in August.

The late-maturing hybrids offer advantages in late plantings and replanting circumstances due to their ability to tolerate environmental stress. Also, these late hybrids seem to perform better than early hybrids in row widths greater than 36 inches. The late hybrids contain tighter ear shuck cover and better ear tip coverage than the early hybrids. The ear shuck characteristics of the

late hybrid may be beneficial in protecting the ear from possible aflatoxin production.

Diseases

Disease ratings on hybrids grown in Arkansas have not been conducted. Most corn hybrids adapted to Arkansas are developed by private seed companies. These companies or local seed dealers are the only source of information concerning the disease reaction for a specific hybrid.

Good production practices such as balanced soil fertilization and proper irrigation scheduling should help to minimize corn diseases. Also, proper drain furrow construction will also aid in preventing stressed corn, thereby reducing possible disease development.

Nematodes have been reported feeding on corn. However, nematode damage on corn is unknown in Arkansas. Several corn hybrids are excellent hosts for root-knot nematodes (RKN), and corn should not be used as a non-host rotation crop when attempting to manage RKN in other crops.

Insects

Corn can be attacked by many insects, but economic damage may not occur every year. Typically, corn planted in March and April will receive less insect pressure. Insects feeding on the corn seed and the root system can lead to reduced stands. With this in mind, in-furrow insecticides are recommended to control seed corn maggot, southern corn rootworm, white grubs, wireworms and for suppression of chinch bugs. Check the insecticide label for possible interactions with corn herbicides that may lead to crop damage.

Mycotoxins

Storage diseases of harvested corn grain can lead to the production of mycotoxins, especially aflatoxin. The fungi *Aspergillus flavus* and *Aspergillus parasiticus* may produce aflatoxin only under specific conditions. Consequently, the presence of fungi in grain does not always indicate the presence of aflatoxin. To prevent or reduce possible aflatoxin production, plant early, maintain adequate soil moisture and plant corn with adequate shuck cover. Also, adjust the thresher to reduce kernel injury since the fungi can colonize on stressed, cracked or broken kernels. Harvest unstressed areas of corn first, thereby reducing possible grain infection from stressed areas in the field. Rapid drying of the grain is required for safe storage since aflatoxin development stops when the temperature is below 55 degrees F and grain moisture is 12 percent or less.

Table 1A. Yield of Corn Hybrids in Arkansas Performance Tests, 2002¹

Brand/Hybrid	Keiser Irr.	Marianna Irr.	Bell Farm Irr.	Rohwer Irr.	Williams Irr.	Avg.
Early- to Mid-Season Hybrids						
Croplan Genetics 691 BT	159.2	200.8	216.9	200.6	216.6	198.8
DEKALB DKC61-25YG	188.1	223.2	229.6	190.5	226.5	211.6
DEKALB DKC64-10RR	177.1	183.3	220.6	206.1	224.1	202.2
DEKALB DKC64-11RRYG	174.8	177.6	216.4	187.7	225.4	196.4
Dyna Gro 5460RRBt	206.8	195.7	212.1	178.4	205.1	199.6
Dyna Gro 5467RR	182.9	206.1	225.0	196.9	221.3	206.4
Dyna Gro 5528Bt	160.7	212.9	243.1	198.9	210.2	205.2
Dyna Gro 5545	165.2	195.8	225.5	207.1	205.1	199.7
Dyna Gro 5555RR	153.0	211.5	200.5	192.7	198.1	191.2
FFR 736Bt	173.4	211.0	208.3	197.4	230.2	204.1
FFR 740	155.0	177.2	211.8	191.9	217.9	190.8
Garst 8222IT	169.0	170.8	206.0	153.3	203.4	180.5
Garst 8285RR	157.4	176.9	220.5	188.8	181.4	185.0
Golden Acres 2815	169.6	184.0	194.9	208.7	200.4	191.5
Golden Acres 2888IMI	167.9	197.7	229.2	187.5	187.0	193.9
Golden Acres 7770	143.9	204.6	206.7	198.4	202.8	191.3
NK Brand N65-M7	152.8	213.0	222.7	179.6	217.3	197.1
Pioneer 31G98	199.1	216.3	234.7	220.6	205.2	215.2
Pioneer Brand 32R25	176.9	200.9	228.1	200.8	208.0	202.9
Pioneer Brand 32W86	165.2	190.0	258.8	193.3	245.4	210.5
Pioneer Brand 33J57Y G	190.7	195.3	218.9	185.9	226.1	203.4
Southern States SS740	155.9	181.8	185.3	208.9	192.9	185.0
Terral TV2130	173.9	192.6	244.5	209.1	223.6	208.7
Terral TV2140	166.3	186.1	204.1	204.0	204.6	193.0
Terral TV2140RR	177.0	183.7	191.1	182.2	206.4	188.1
Terral TV2140XN1RR	167.3	182.3	213.0	199.6	208.5	194.1
Terral TV2140XN2RR	163.9	179.4	212.8	186.1	199.1	188.3
Terral TV2155Bt	171.3	192.4	212.8	195.6	190.7	192.6
Terral TV2160Bt	147.9	191.2	212.9	175.5	213.3	188.2
Terral TV23R15N	185.1	183.5	173.8	198.8	202.3	188.7
Terral TV26BR10N	187.6	198.2	215.5	209.8	206.3	203.5
Terral TVX24R002	173.5	180.7	223.8	182.8	187.4	189.6
Triumph 1120BtRR	160.1	175.2	202.8	189.7	188.6	183.3
Grand mean	170.3	193.1	215.8	194.2	208.5	196.4
LSD (5%)	31.9	15.6	24.6	27.7	27.4	
C.V. (%)	13.3	5.7	8.1	10.1	9.3	

Table 1B. Yields of Corn Hybrids in Arkansas Performance Tests, 2002¹

Brand/Hybrid	Keiser Irr.	Marianna Irr.	Bell Farm Irr.	Rohwer Irr.	Williams Irr.	Avg.
Mid- to Full-Season Hybrids						
Asgrow RX897RR	166.0	186.9	203.3	205.9	205.9	193.6
Croplan Genetics 1167RR	144.3	187.9	197.0	182.9	210.2	184.5
Croplan Genetics 733Bt	149.4	191.4	189.3	183.2	185.5	179.8
Croplan Genetics 747	168.8	188.6	191.9	163.6	191.7	180.9
Croplan Genetics 818Bt	201.1	195.4	213.2	185.4	222.1	203.4
Croplan Genetics DS822RR	173.6	198.5	162.9	180.9	248.8	192.9
DEKALB DK697	189.8	209.6	207.5	194.0	237.9	207.8
DEKALB DKC65-26YG	199.0	191.6	219.6	179.4	206.6	199.2
DEKALB DKC68-70YG	211.3	197.1	210.4	169.2	222.6	202.1
DEKALB DKC687RR	213.9	190.0	207.1	200.4	237.9	209.9
DEKALB DKC69-70YG	216.3	200.4	226.5	210.1	204.5	211.6
Dyna Gro 5516RR	167.1	190.6	197.8	185.9	214.6	191.2
Dyna Gro 5518RR	171.9	180.8	187.3	194.9	186.2	184.2
Dyna Gro 5515	156.8	177.7	216.1	186.2	200.5	187.5
Garst 8118RR	160.1	169.5	177.5	139.4	202.9	169.9
Garst 8230IT	162.5	201.1	200.9	210.5	215.1	198.0
Garst 8288	191.8	191.8	219.7	175.2	214.9	198.7
Golden Acres 8460	142.0	153.4	198.8	181.8	183.3	171.9
Golden Acres X6076RR	143.9	185.1	183.5	169.1	202.4	176.8
Monsanto Exp267	179.3	161.3	198.1	181.3	207.2	185.4
NK Brand N83-Z8	163.0	199.1	224.8	213.0	236.4	207.3
Pioneer 31B13YG	201.1	202.8	226.2	200.3	227.7	211.6
Pioneer 31R88	165.7	179.6	209.6	201.4	197.2	190.7
Pioneer 32P76YG	187.3	202.2	232.7	214.5	238.3	215.0
Southern States SS859CL	193.9	188.3	188.8	159.3	186.6	183.4
Triumph 1866Bt	134.9	181.5	178.9	164.9	196.0	171.2
Grand mean	175.2	188.5	202.7	185.9	210.9	192.6
LSD (5%)	33.9	13.6	21.3	28.6	20.3	
C.V. (%)	13.8	5.1	7.5	11.0	6.9	

¹ Keiser = Northeast Research and Extension Center.

Marianna = Cotton Branch Station.

Bell Farm = Bell Farming Company, Prairie County.

Rohwer = Southeast Research and Extension Center - Rohwer Division.

Williams = John Williams Farm, Lafayette County.

Table 2. Two and Three Year Average Yields of Corn Hybrids in Arkansas Performance Tests

Brand/Hybrid	Keiser		Marianna		Bell Farm ¹		Rohwer ¹	Williams
	2-Year	3-Year	2-year	3-year	2-year	3-year	2-year	2-year
Early- to Mid-Season Hybrids								
FFR 736Bt	172	-	215	-	-	-	-	196
Garst 8222IT	178	165	167	164	208	194	139	172
Golden Acres 2888IMI	178	161	185	179	217	210	165	169
Golden Acres 7770	156	-	195	-	-	-	-	178
Pioneer 31G98	201	-	208	201	225	-	188	189
Terral TV2130	187	176	178	181	233	221	178	180
Terral TV2140	185	176	196	183	204	200	176	171
Terral TV2140RR	182	-	176	173	193	-	170	186
Terral TV2155Bt	187	-	195	-	-	-	-	162
Terral TV2160Bt	169	171	193	192	208	203	165	187

Mid- to Full-Season Hybrids								
Croplan Gen 1167RR	160	-	169	-	202	-	168	164
Croplan Gen 733Bt	156	-	183	-	-	-	-	144
DEKALB DK697	205	194	213	203	-	-	-	180
DEKALB DKC68-70YG	215	-	182	-	-	-	-	176
DEKALB DKC69-70YG	222	-	190	-	-	-	-	172
Dyna-Gro 5515	172	-	184	-	-	-	-	184
Garst 8288	186	-	180	-	-	-	-	176
Golden Acres 8460	166	157	158	162	199	198	150	162
Pioneer 31B13YG	207	197	210	204	216	214	159	187
Pioneer 31R88	190	-	172	-	-	-	-	177
Pioneer 32P76YG	194	-	216	-	229	-	164	199
Triumph 1866Bt	160	162	186	181	199	197	160	165

¹ Two year average is from 2000 and 2002. Three year average is for 1999, 2000, and 2002.

Table 3A. Characteristic of Corn Hybrids in Arkansas Performance Tests, 2002			
Brand/Hybrid	Ear Tip Cover¹	Ear Height (in)	Test Weight
Early- to Mid-Season Hybrids			
Croplan Genetics 691 BT	-	46	56.0
DEKALB DKC61-25YG	-	53	57.5
DEKALB DKC64-10RR	-	45	56.3
DEKALB DKC64-11RRYG	-	44	57.3
Dyna Gro 5460RRBt	-	44	56.3
Dyna Gro 5467RR	-	40	55.5
Dyna Gro 5528Bt	-	54	55.3
Dyna Gro 5545	-	40	56.3
Dyna Gro 5555RR	-	40	55.5
FFR 736Bt	-	46	57.5
FFR 740	-	44	58.4
Garst 8222IT	3	42	58.2
Garst 8285RR	-	64	56.7
Golden Acres 2815	-	42	56.2
Golden Acres 2888IMI	2	55	58.8
Golden Acres 7770	-	46	57.7
NK Brand N65-M7	-	40	55.6
Pioneer 31G98	2	57	57.9
Pioneer Brand 32R25	-	64	58.1
Pioneer Brand 32W86	-	59	59.1
Pioneer Brand 33J57YG	-	47	56.4
Southern States SS740	-	41	58.1
Terral TV2130	2	54	56.2
Terral TV2140	2	60	56.6
Terral TV2140RR	2	56	56.6
Terral TV2140XN1RR	-	58	56.7
Terral TV2140XN2RR	-	51	56.6
Terral TV2155Bt	2	43	58.9
Terral TV2160Bt	2	56	58.9
Terral TV23R15N	-	48	57.5
Terral TV26BR10N	-	52	57.2
Terral TVX24R002	-	51	59.1
Triumph 1120BtRR	-	44	57.0

¹ Shuck Tip Cover: Good = 3; Average = 2; Poor = 1

Table 3B. Characteristic of Corn Hybrids in Arkansas Performance Tests, 2002			
Brand/Hybrid	Ear Tip Cover¹	Ear Height	Test Weight
Mid- to Full-Season Hybrids			
Asgrow RX897RR	-	53	57.5
Croplan Genetics 1167RR	3	59	57.4
Croplan Genetics 733Bt	-	41	55.5
Croplan Genetics 747	2	48	57.3
Croplan Genetics 818Bt	-	45	56.5
Croplan Genetics DS822RR	-	50	54.8
DEKALB DK697	2	54	58.2
DEKALB DKC65-26YG	-	46	57.2
DEKALB DKC68-70YG	3	50	57.5
DEKALB DKC687RR	3	56	58.1
DEKALB DKC69-70YG	2	52	56.5
Dyna Gro 5516RR	-	45	57.6
Dyna Gro 5518RR	-	54	55.8
Dyna Gro 5515	-	44	56.5
Garst 8118RR	-	54	56.0
Garst 8230IT	-	52	54.9
Garst 8288	-	52	56.9
Golden Acres 8460	3	58	55.2
Golden Acres X6076RR	-	56	56.5
Monsanto Exp267	-	52	57.4
NK Brand N83-Z8	-	51	59.6
Pioneer 31B13YG	3	60	58.6
Pioneer 31R88	3	51	57.6
Pioneer 32P76YG	2	59	58.1
Southern States SS859CL	2	53	54.4
Triumph 1866Bt	2	50	58.6

¹ Shuck Tip Cover: Good = 3; Average = 2; Poor = 1