



University of Arkansas, United States Department of Agriculture and County Governments Cooperating

# Soybean Update

1-05

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## 2004 Soybean Performance Results for Early Soybean Production Systems (ESPS) in Arkansas

Each year hundreds of soybean varieties are commercially available to growers in Arkansas. However, only limited numbers have been tested in Arkansas at April plantings. Yield performance in early (April) plantings varies according to location, adaptability to soils, relative maturity, lodging, shattering potential, disease and nematode resistance, as well as herbicide and chloride sensitivity. This update contains information, derived from the 2003 and 2004 University of Arkansas soybean variety test program and is provided as an aid in variety selection for the Early Soybean Production System (ESPS). Typically ESPS plantings consist of planting very early maturing varieties (generally MG III or IV) in April.

Since proper variety selection involves knowledge of yield potential, maturity, disease reaction, herbicide sensitivity, etc., these and many other important characteristics are listed in **Table 3**. Varieties are considered adapted to Arkansas conditions primarily on their yield performance across the different geographical regions of the state. The location, soil type, and cultural information for each of the 2004 soybean early planted performance trials are found in **Table 1**.

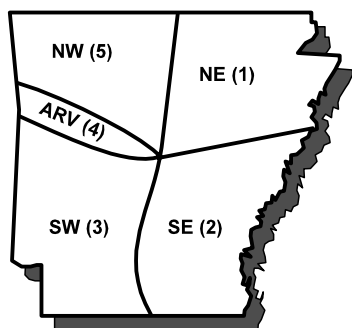
Soybean variety performance may vary from year to year and two-year yield averages are better predictors of performance than data from a single year. Superior performance across several locations suggests that a variety has wide adaptability, thus multi-year and multi-location yields are particularly useful for making variety selection decisions.

The Arkansas Cooperative Extension Service offers its programs to eligible persons regardless of race, color, national origin, religion, gender, age, disability, marital or veteran status, or any other legally protected status, and is an Equal Opportunity Employer.

**SOYVA**, an Extension computerized variety selection program, can assist in making these field-specific variety selection decisions. Presently **SOYVA** sorts through over 100 adapted soybean varieties in Maturity Groups (MG) IV-VI and makes variety recommendations based on responses to specific conditions described by the user. Soybean producers are encouraged to use this publication and **SOYVA** when selecting varieties for the different production systems. Contact your county Extension agent for details concerning **SOYVA** Additional information is available at the Extension web site ( [www.aragriculture.org/](http://www.aragriculture.org/) ) by clicking on the **Computer Programs** link.

### **ADAPTED SOYBEAN VARIETIES FOR EARLY SOYBEAN PRODUCTION**

Generally, varieties within Maturity Group (MG) IV are the best adapted for these early (April) plantings in Arkansas; however, there are situations where varieties from MG III and V may perform well. Recent research indicates that indeterminate MG IV varieties, can produce acceptable yields when planted early (April); and will normally mature in August thru mid September. Varieties of differing relative maturity (even within the same MG) are recommended in an attempt to spread out the risk of shattering due to adverse weather conditions or mechanical problems at harvest. In Arkansas the following designations apply to varieties representing the various MG's: III - very early; IV - early maturity; and V – mid-season maturity.



**Figure 1. Area of Adaptation for Soybean Maturity Groups for All Production Systems**

- Northeast Arkansas (1):** Groups IV, V, or VI
- Southeast Arkansas (2):** Groups IV, V, or VI
- Southwest Arkansas (3):** Groups IV, V, or VI
- Arkansas River Valley (4):** Groups IV, V, or VI
- Northwest Arkansas (5):** Groups IV or V

**Users of this publication are encouraged to review the “Key Code” page for further explanation regarding ratings to disease, herbicide sensitivity and other agronomic considerations.**

**Table 1. Location, Soil Type, and Cultural Information of Early Planted-Arkansas Soybean Performance Trials – 2004**

Location/Type	Soil Type	Planting Date	Row Width	Harvest Date		Previous Crop
				Early EPT	Late EPT	
<b>Early Planting</b>						
Kibler /Irr	Roxanna silt loam	5/6	36"	9/20	9/30	Soybean
Pine Tree	Calloway silt loam	4/20	19"	_____	9/15	Soybean

The KEY CODE for all the following tables is found on the inside of the back page. Refer to the Key Code for a description of the abbreviated characteristics.

**HOW TO MAKE YIELD COMPARISONS USING THE FOLLOWING TABLES:**

The LSD (.05), Least Significant Difference, represents the minimum yield difference required between two varieties within the same location before concluding that their yields are truly different (while assuming a 5 percent risk that the yield differences are due to random chance). Use only the LSD value listed below each column (location-maturity group) to compare variety yield averages among varieties within that column.

***Note: an “ \* ” beside a variety mean indicates that there are no statistical difference between that varietal mean and the highest yielding varietal mean “\*\*” at that test location utilizing the appropriate LSD (.05) value.***

**Table 2. Yields Early Planted Maturity Group III and IV**

	<b>Kibler Irrigated</b>	
	<b>2004 Bu/A</b>	<b>2-Yr Avg.</b>
<b>Brand/Cultivar</b>	-----Bu/A-----	
<b>Early Maturing Cultivars (RM 4.7 or Less)</b>		
Armor 39-E9	50.4	57.8
Armor 44-R4	59.4*	61.2
Armor 44-R5	63.7*	63.6
Armor 47-G7	61.1*	61.5
Asgrow AG3905	56.1	59.8
Asgrow AG4201	59.5*	62.7
Asgrow AG4403	59.5*	60.4
Asgrow AG4502	55.0	57.4
Asgrow AG4603	59.1*	56.6
Dekalb DKB44-51	60.3*	62.1
Dekalb DKB46-51	58.4*	58.9
Delta King 3968RR	56.0	60.6
Delta King 4461RR	61.7*	61.3
Delta King 4763RR	58.1*	60.2
Deltapine DP3861RR	55.9	60.7
HBK R4623	59.0*	56.8
Morsoy RT4480	60.6*	59.6
Pioneer 94B13	48.2	55.5
Pioneer 94B73	63.3*	63.4
Progeny 3900RR	53.5	56.7
Progeny 4401RR	68.2**	65.8
Progeny 4703RR	49.4	48.2
Southern States RT4502N	51.1	53.6
Terral TV39RS31	51.6	52.6
Grand mean	57.5	59.0
LSD (5%)	10.1	----
C.V. (%)	11.0	----

# Notes:

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**Table 2. Yields Early Planted Maturity Group IV and V**

Brand/Cultivar	Kibler Irrigated		Pine Tree Irrigated	2004 Avg. All Locations
	2004 Bu/A	2-Yr Avg.	2004 Bu/A	
	-----Bu/A-----			
<b>Early Maturing Cultivars (RM 4.8 to 5.3)</b>				
Armor GP 474	63.5*	64.5	61.3*	62.4
Asgrow AG4902	55.7	54.3	60.1*	57.9
Croplan RC4842	54.8	58.0	53.0	55.3
Croplan RC4992	65.4*	58.1	51.1	58.3
Delta King 4967RR	65.4*	63.3	59.4*	62.4
Delta King 5161RR	69.6*	61.6	52.2	60.9
Delta King 5366RR	65.3*	59.7	53.5	59.4
HBK R4820	66.6*	61.9	64.7**	65.7
Morsoy RT4802	63.4*	62.5	55.6	59.5
Morsoy RT4993	55.1	59.0	60.6*	57.9
Ozark	69.8**	57.7	----	----
Progeny 4860RR	64.1*	59.4	56.9*	60.5
Progeny 4910	59.0	56.4	----	----
Progeny 4949RR	69.7*	62.3	59.6*	64.6
Progeny 5250RR	60.9*	56.6	52.8	56.9
Southern States RT4902N	57.0	52.8	56.1*	56.6
Southern States RT4980N	56.0	48.8	52.0	54.0
Southern States RT5302N	57.6	54.8	55.0	56.3
Grand mean	62.2	58.4	56.5	59.3
LSD (5%)	9.2	----	8.2	----
C.V. (%)	9.2	----	10.4	----

# Notes:

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**Table 3 Part 1**

**Disease & Herbicide Sensitivity Ratings**  
**SELECTED CHARACTERISTICS OF**  
**ADAPTED MATURITY GROUP III, IV, & V**

VARIETY	Disease / Nematode Ratings <sup>1</sup>						Herbicide Sensitivity		Chloride <sup>7</sup> Sensitivity Ratings	
	Phytoph- <sup>2</sup> thora Root Rot	Root <sup>3</sup> Knot Nema- tode	Soybean <sup>4</sup> Cyst Nematode	Frog- eye Leaf- spot	Stem Can- ker	Sudden Death Syn.	Prop <sup>5</sup> - anil	Sulfen <sup>6</sup> - trazone	2004	2003
Armor 39-E9	MR*	S	3m,14m	M*	R*	M*	R	S	EXC	EXC
Armor 44-R4	M*	S	3m,9m*	S	MR	MR*	R	T	INC	INC
Armor 44-R5	MR*	S	9m*,14m	R	MR	MS*	R	T	INC	EXC
Armor 47-G7	MR*	S	3m,5m	MS	MR	M*	R	S	INC	INC
Armor GP 474	MR*	MR	3m,14m*	MS	MR	MS	R	T	INC	MIXED
Asgrow AG3905	M*	S	3m,5m,14m	MR*	M*	M*	MS	T	INC	INC
Asgrow AG4201	MR*	S	3m,9m*,14m	MS	MR	M*	R	S	INC	MIXED
Asgrow AG4403	M*	MR	2m,5m,14	S	S	MR*	R	T	INC	EXC
Asgrow AG4502	M*	S	2m,9m*,14m	MS	R	M*	R	S	EXC	INC
Asgrow AG4603	MR*	S	2m,3m,9m*14m	VS	MR	M*	MR	S	MIXED	MIXED
Asgrow AG4902	MR*	S	2m,3m,5m,6m	MS	MR	M*	R	T	MIXED	INC
Croplan RC4842	-----	MR	3m,14m	---	---	---	MR	S	INC	INC
Croplan RC4992	-----	S	5m,14m	---	---	---	MR	S	INC	INC
Dekalb DKB44-51	M*	S	2m,5m	S	S	MR*	MR	T	INC	INC
Dekalb DKB46-51	M*	S	2m,3m,5m,14m	S	S	M*	R	S	INC	INC
Delta King 3968RR	-----	S	3*,6*,14m	MR*	R*	MS*	MS	S	EXC	EXC
Delta King 4461RR	-----	MS	6*,14m	S	MR	MR*	R	T	INC	INC
Delta King 4763RR	M*	S	14m	S	S	MS*	R	T	MIXED	INC
Delta King 4967RR	M*	S	3m	MR	MR	S	R	S	---	INC
Delta King 5161RR	M*	S	5m,9m	MR	MR	MS	S	T	INC	EXC
Delta King 5366RR	MS*	MR	2m,3m,9m	R	S	VS	MR	T	EXC	MIXED
Deltapine DP3861RR	M*	S	14m	MR*	MR*	M*	S	S	INC	INC
HBK R4623	M*	S	2m,3m,14m	R	S	MR*	R	T	INC	INC
HBK R4820	M*	S	-----	S	S	MS*	R	T	INC	INC
Morsoy RT4480	M*	S	2m,3m	S	MR	MR*	MR	T	INC	INC
Morsoy RT4802	-----	S	3m,14m	---	---	---	MS	S	INC	INC
Morsoy RT4993	-----	MS	3m,9m,14m	MS	MR	MR	R	T	INC	INC
Ozark	-----	MS	14m	MR	R	MR	MS	S	INC	MIXED
Pioneer 94B13	M*	MS	3m	---	---	---	S	T	INC	INC
Pioneer 94B73	M*	S	2m	R	MR	---	R	T	INC	INC
Progeny 3900RR	-----	MR	2m,5m,14m	MS	---	---	R	T	INC	INC
Progeny 4401RR	M*	MR	2m,5m,14m	S	MR	---	R	T	INC	INC
Progeny 4703RR	-----	S	2m,5m,14m	MR	S	---	R	T	EXC	MIXED
Progeny 4860RR	M*	S	3m,5m	MR	MR	MS	R	T	INC	INC
Progeny 4910	S*	MR	3m,6m	VS	R	S	R	T	INC	INC
Progeny 4949RR	-----	S	-----	R	MR	S	R	T	MIXED	INC
Progeny 5250RR	MR*	S	1m*,2m	MR	R	S	MR	S	EXC	EXC
Southern States RT4502N	M*	S	5m	---	---	---	S	T	INC	INC
Southern States RT4902N	M*	S	-----	VS	MR	---	R	S	INC	INC
Southern States RT4980N	M*	S	5m,9m	S	MR	MR	R	T	INC	INC
Southern States RT5302N	MR*	S	5m,9m	R	S	MR	MR	T	INC	INC
Terral TV39RS31	-----	S	5m,14m	---	---	---	MS	T	INC	INC

**Table 3 Part 2**

**Agronomic Characteristics**  
**SELECTED CHARACTERISTICS OF**  
**ADAPTED MATURITY GROUP III, IV, & V**

VARIETY	Herbicide Tolerance	Rel. Mat.	Plant <sup>8</sup> HT (In)	Lodg- <sup>9</sup> ing	Shatter <sup>10</sup> Rating	Avg. Days <sup>11</sup> to Maturity	Flower Color	Pubes- cence	Hilum (Eye) Color
Armor 39-E9	RR	3.9	39	1	1	120	WHITE	GRAY	BUFF
Armor 44-R4	RR	4.4	42	1	1	132	PURPLE	GRAY	BLACK
Armor 44-R5	RR	4.5	35	1	1	129	PURPLE	BROWN	BLACK
Armor 47-G7	RR	4.7	41	1	1	128	WHITE	BROWN	BLACK
Armor GP 474	RR	4.9	39	1	1	130	PURPLE	GRAY	BLACK
Asgrow AG3905	RR	3.9	40	1	1	124	PURPLE	TAWNY	BLACK
Asgrow AG4201	RR	4.2	39	1	1	129	WHITE	TAWNY	BLACK
Asgrow AG4403	RR	4.4	45	1	1	131	PURPLE	TAWNY	BLACK
Asgrow AG4502	RR	4.5	39	1	1	127	PURPLE	TAWNY	BLACK
Asgrow AG4603	RR	4.6	42	1	1	128	WHITE	TAWNY	BLACK
Asgrow AG4902	RR	4.9	42	1	1	132	WHITE	TAWNY	BLACK
Croplan RC4842	RR	4.8	39	1	1	130	PURPLE	TAWNY	BLACK
Croplan RC4992	RR	4.9	47	1	1	137	WHITE	GRAY	BUFF
Dekalb DKB44-51	RR	4.4	34	1	1	120	PURPLE	TAWNY	BLACK
Dekalb DKB46-51	RR	4.6	41	1	1	128	WHITE	TAWNY	BLACK
Delta King 3968RR	RR	3.9	33	1	1	119	WHITE	GRAY	BUFF
Delta King 4461RR	RR	4.4	47	1	1	133	PURPLE	TAWNY	BLACK
Delta King 4763RR	RR	4.7	39	1	1	128	WHITE	TAWNY	BLACK
Delta King 4967RR	RR	4.9	40	1	1	131	PURPLE	TAWNY	BLACK
Delta King 5161RR	RR	5.1	32	1	1	142	WHITE	GRAY	BUFF
Delta King 5366RR	RR	5.3	39	1	1	147	PURPLE	GRAY	BROWN
Deltapine DP3861RR	RR	3.8	36	1	1	119	PURPLE	GRAY	BLACK
HBK R4623	RR	4.6	43	1	1	127	PURPLE	TAWNY	BLACK
HBK R4820	RR	4.8	43	1	1	132	WHITE	TAWNY	BLACK
Morsoy RT4480	RR	4.4	44	1	1	132	PURPLE	TAWNY	BLACK
Morsoy RT4802	RR	4.8	38	1	1	131	-----	-----	-----
Morsoy RT4993	RR	4.9	38	1	1	129	-----	-----	-----
Ozark	Conv.	5.0	38	1	1	142	PURPLE	GRAY	BUFF
Pioneer 94B13	RR	4.1	38	1	1	136	WHITE	TAWNY	BLACK
Pioneer 94B73	RR	4.7	43	1	1	124	PURPLE	TAWNY	BLACK
Progeny 3900RR	RR	3.9	38	1	1	125	PURPLE	TAWNY	BLACK
Progeny 4401RR	RR	4.4	43	1	1	122	PURPLE	TAWNY	BLACK
Progeny 4703RR	RR	4.7	50	1	1	134	-----	-----	-----
Progeny 4860RR	RR	4.8	38	1	1	134	PURPLE	TAWNY	BLACK
Progeny 4910	Conv.	4.9	42	1	1	136	WHITE	TAWNY	BLACK
Progeny 4949RR	RR	4.9	40	1.3	1	137	-----	-----	-----
Progeny 5250RR	RR	5.2	28	1	1	141	WHITE	TAWNY	BLACK
Southern States RT4502N	RR	4.5	47	1	1	128	WHITE	TAWNY	BLACK
Southern States RT4902N	RR	4.9	47	1	1	137	WHITE	GRAY	BLACK
Southern States RT4980N	RR	4.9	41	1	1	132	PURPLE	TAWNY	BLACK
Southern States RT5302N	RR	5.3	35	1	1	143	PURPLE	TAWNY	BLACK
Terral TV39RS31	RR	3.9	39	1	1	122	-----	-----	-----

### KEY CODES FOR TABLE 3

#### \* Denotes Seed Company Data

1. Soybean disease and nematode ratings were conducted by Drs. Kirkpatrick and Cartwright with support from the Arkansas Soybean Promotion Board. Disease ratings are characterized by the following scale:

**R** - Resistant    **MR** - Moderately Resistant    **MS** - Moderately Susceptible

**S** – Susceptible    **VS** - Very Susceptible    **FT** - Thought to be Field Tolerant

Additional soybean disease data can be accessed at the following website:

<http://comp.uark.edu/~avrtest/index.php?sb&content>

2. Currently the University of Arkansas is not evaluating soybean varieties to *Phytophthora Root Rot* tolerance. Therefore, these ratings are based on seed company information.

3. Root-knot nematode ratings refer to the Southern Root-Knot Nematode, *Meloidogyne incognita* (see <http://comp.uark.edu/~avrtest/index.php?sb&content> for additional information on experimental methods).

4. Ratings for soybean cyst nematode provided by Drs. Riggs and Kirkpatrick or various companies - "m" designates moderate resistance to that race and a blank space indicates resistance is not known, or it has no resistance.

5. Propanil (Propanil, Stam M4, etc.) injury at drift rates (0.25X rate) applied to V4-V5 soybeans. Ratings represent injury 8 days after application where **R** = < 10% injury, **MR** = 10-20% injury, **MS** = 20-30% injury, and **S** = > 30% injury. Additional ratings were evaluated 22 days after application, but were found to be negligible.

6. Sulfentrazone (Authority, etc.) tolerance ratings at 0.375 lb. a.i./A in greenhouse studies:

**T** – Tolerant

**I** - Intermediate

**S** - Sensitive

7. Chloride Sensitivity: **INC** - Includer    **EXC** - Excluder    **MIXED** – Mixed population  
(Excluder varieties accumulate chloride and restrict it to the roots. Includer varieties accumulate chloride throughout the plants. Varieties with a mixed population have both includer and excluder plants. Don't assume that high soluble salts constitute a chloride ion problem. Chloride levels should be determined by irrigation water tests and/or plant tissue analysis.)

8. Soybean plant height reported in inches and is an average of all locations.

9. Soybean lodging is an average of all locations and is reported using the following criteria: **1** = all plants erect, **2** = all plants slightly leaning or a few plants down, **3** = all plants moderately leaning or 25-50% of the plants are down, **4** = All plants considerably leaning or 50-80% of the plants are down, **5** = all plants down.

10. Soybean shattering is an average of all locations and is reported by using the following criteria: **1** = no shattering, **2** = 1-3% shattered, **3** = 4-8% shattered, **4** = 9-19% shattered, **5** = 20% or more shattered.

11. Days to maturity represent the average (of all locations) number of days from planting until 80% of the soybeans in the plot were thought to be mature.

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