

# Soybean Update

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## 2003 Soybean Varietal Performance for Early Soybean Production Systems (ESPS) in Arkansas

Although over 150 soybean varieties are commercially available to growers in Arkansas only about 50 have been tested in Arkansas at April plantings. Varietal yield performance in very 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 varietal information, derived from the 2002 and 2003 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.

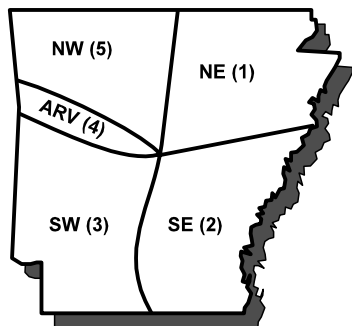
Since proper variety selection involves knowledge of yield potential, maturity, disease reaction, herbicide sensitivity, etc., these and many other important characteristics are listed in **Table 3**. Varieties are considered adapted to Arkansas conditions primarily on their yield performance across the different geographical regions of the state. The location, soil type, and cultural information for each of the 2003 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.

**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.uaex.edu](http://www.uaex.edu)) by clicking on the Crops, Soils, and Water Management home page.

### ADAPTED SOYBEAN VARIETIES FOR EARLY SOYBEAN PRODUCTION

Generally, varieties within Maturity Group (MG) IV are the best adapted for these very early (April) plantings in Arkansas; however, there are situations where varieties from MG III, V and even VI may perform well. Recent research indicates that indeterminate MG IV varieties, can produce acceptable yields when planted extremely 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 very early; IV - very early maturity; V - early maturity; and VI - midseason maturity.



**Figure 1. Area of Adaptation for Soybean Maturity Groups for All Production Systems<sup>1/</sup>**

- |                                   |                     |
|-----------------------------------|---------------------|
| <b>Northeast Arkansas (1):</b>    | Groups IV, V, or VI |
| <b>Southeast Arkansas (2):</b>    | Groups IV, V, or VI |
| <b>Southwest Arkansas (3):</b>    | Groups IV, V, or VI |
| <b>Arkansas River Valley (4):</b> | Groups IV, V, or VI |
| <b>Northwest Arkansas (5):</b>    | Groups IV or V      |

<sup>1/</sup> Selected late maturing MG III varieties such as Williams 82 can be used to consistently facilitate an August harvest when planted by April 30.

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

**Table 1. Location, Soil Type, and Cultural Information of Early Planted-Arkansas Soybean Performance Trials – 2003**

Location/Type	Soil Type	Planting Date	Row Width	Harvest Date		Previous Crop
				Early EPT	Late EPT	
<b>Early Planting</b>						
Keiser (NEREC)/Non-Irr	Commerce silt loam	4/16	38	9/16	9/26 & 10/02	Soybean
Kibler /Irr	Dardanelle silt loam	5/06	36	10/02	10/13	Southern Pea
Rohwer (SEBES)/Irr	Sharkey clay	5/27	19	9/26	10/03	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 varietal 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 that this year 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 IV**

	Keiser <sup>#</sup> Non-Irrigated		Kibler Irrigated		Rowher Irrigated		2003 Avg. All Locations
	2003 Bu/A	2-Yr Avg.	2003 Bu/A	2-Yr Avg.	2003 Bu/A	2-Yr Avg.	
Brand/Cultivar	-----bu/A-----						
<b>Early Maturing Cultivars (RM 4.7 or Less)</b>							
Armor 39-E9	.	.	65*	58	41	51	53
Armor 44-R4	.	.	63*	55	57**	60	60
Armor 44-R5	.	.	63*	57	48	55	56
Armor 47-G7	.	.	62*	62	50*	54	56
ASGROW AG3702	.	.	61*	53	40	46	51
ASGROW AG4201	.	.	66**	57	39	43	53
ASGROW AG4403	.	.	61*	54	44	51	52
ASGROW AG4603	.	.	54	52	37	49	45
DEKALB DKB 44-51	.	.	64*	55	41	51	52
Delta King 3961RR	.	.	56	51	44	53	50
Delta King 3968RR	.	.	65*	56	50*	52	58
Delta King 4461RR	.	.	61*	56	55*	55	58
Delta King 4763RR	.	.	62*	61	54*	55	58
Deltapine DP3861RR	.	.	65*	54	42	46	54
Morsoy RT4480	.	.	59	52	50*	58	54
Pioneer Brand 94B13	.	.	63*	57	36	45	49
Pioneer Brand 94B54	.	.	55	50	49	52	52
Pioneer Brand 94B73	.	.	64*	^	54*	^	59
Progeny 4401RR	.	.	63*	58	44	49	54
Southern States RT4502N	.	.	56	53	43	48	49
Terral TV4589RR	.	.	55	51	41	54	48
Terral TV4890RR	.	.	51	50	48	55	49
Grand Mean	.	.	55		42		53
LSD (5%)	.	.	6		7		.
C.V. (%)	.	.	5.8		10.2		.

<sup>#</sup>Heavy rains and standing water caused poor uniformity in the Early Maturing Cultivars (RM 4.7 or less) at this location. Therefore, the results are not reported.

<sup>^</sup>These entries were not entered in the 2002 Early Planted Trial, therefore 2-year results are not available.

**Notes:**

**Table 2. Yields Early Planted Maturity Group IV cont.**

Brand/Cultivar	Keiser Non-Irrigated		Kibler Irrigated		Rowher Irrigated		2003 Avg. All Locations
	2003 Bu/A	2-Yr Avg.	2003 Bu/A	2-Yr Avg.	2003 Bu/A	2-Yr Avg.	
-----bu/A-----							
<b>Early Maturing Cultivars (RM 4.8 to 5.3)</b>							
Armor 52-C2	60**	^	51	^	45	^	52
Armor 53-K3	55*	^	53	^	45	^	51
ASGROW AG4902	54*	47	53	55	54*	56	53
ASGROW AG5301	46	46	48	50	59**	55	51
Croplan Genetics RC4992	51	52	51	50	50	53	50
Delta King 4868RR	55*	49	60*	59	53*	52	56
Delta King 4967RR	57*	49	61*	61	48	48	55
Delta King 5366RR	55*	57	54	54	55*	52	55
HBK R4820	56*	51	57*	57	48	53	54
Manokin	56*	55	46	48	47	50	50
Morsoy RT4802	53*	50	62**	60	49	53	55
Morsoy RT4809	49	47	57*	60	55*	56	54
Ozark	51	54	46	51	57*	49	51
Progeny 4910	55*	51	54	54	54*	56	54
Progeny 4932RR	52*	50	48	49	49	53	50
Progeny 5250RR	53*	49	52	58	59**	56	55
Southern States RT4902N	53*	51	49	49	50	51	50
Southern States RT4980	53*	47	42	45	46	49	47
Southern States RT5302N	54*	55	52	50	47	51	51
Terral TV4886RR	49	46	39	39	43	50	43
Grand mean	49		49		47		52
LSD (5%)	8		7		8		.
C.V. (%)	8.8		7.8		9.4		.

^These entries were not entered in the 2002 Early Planted Trial, therefore 2-year results are not available.

**Notes:**

**Table 3 Part 1**

**Disease & Herbicide Sensitivity Ratings  
of Adapted Maturity Group 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	2003	2002
Armor 39-E9	MR*	—	3*,14m*	MS*	R*	MS*	MS	S	EXC	EXC
Armor 44-R4	MS*	S	3*,9m,14m*	S	MR	MR*	MR	T	INC	INC
Armor 44-R5	MR*	S	3*,6m,14*	MR	MR	MS*	MR	—	EXC	INC
Armor 47-G7	MR*	S	3*,9m*,14m*	MS	MR	MS*	MS	S	INC	INC
Armor 52-C2	FT*	S	3*,9m,14m*	MS	R	S	S	S	SEG	INC
Armor 53-K3	MR*	MS	3*,6m,14m*	MS	R	MS	MR	T	SEG	INC
ASGROW AG3702	MR*	—	S	S*	—	MS*	MS	T	INC	INC
ASGROW AG4201	MS*	S	3*,9m,14m*	MR	MR	MS*	MR	—	SEG	INC
ASGROW AG4403	MR*	MS	3m*,9m	S	MR	MS*	MR	T	INC	INC
ASGROW AG4603	MR*	S	3*,6m,9m,14m*	S	MR	MS*	MR	—	SEG	SEG
ASGROW AG4902	R*	S	3*,6m,14m*	S	MR	S	MR	T	EXC	EXC
ASGROW AG5301	—	S	3m*,5m,14*	S	R	S	MR	—	EXC	EXC
Croplan Genetics RC4992	MR*	—	3m*,14*	R*	MR*	R*	MS	S	INC	INC
DEKALB DKB 44-51	MS*	MS	3m*	S	MS	MR*	MR	T	INC	INC
Delta King 3961RR	S*	S*	2m*,3m*,5*,6m*,14m*	MR*	R*	MR*	MR	T	SEG	SEG
Delta King 3968RR	S	S8	2m*,3*,5m*,14m*	MR*	R*	MS*	MS	S	EXC	SEG
Delta King 4461RR	MS*	MR	2m*,5m	S	MR	—	MR	T	INC	INC
Delta King 4763RR	FT*	S	3*,9m	MS	MR	S	MR	T	INC	INC
Delta King 4868RR	MS*	S	5m,6m	S	S	MS	MS	T	INC	INC
Delta King 4967RR	FT*	S	6m	R	R	MS	MR	S	INC	INC
Delta King 5366RR	MS*	MR	3m*,14m*	MS	MR	MS	MS	T	SEG	EXC
Deltapine DP3861RR	MS*	S*	3*	MR*	MR*	MS*	MS	S	INC	INC
HBK R4820	MR*	S	6m	S	MS	MR	MR	T	INC	INC
Manokin	R	MS	3,4m	S	R	MR	MR	T	EXC	EXC
Morsoy RT4480	R*	MS	5m, 9m	S	MR	MR*	MR	T	INC	INC
Morsoy RT4802	S*	S	3*,9*,14*	R	R	MS	MS	S	INC	INC
Morsoy RT4809	R*	S	6m	S	S	MS	MS	T	INC	INC
Ozark	—	MS	14m	MR	R	MR	MS	S	SEG	INC
Pioneer Brand 94B13	—	—	3m*,14m*	—	—	MR*	MS	T	INC	INC
Pioneer Brand 94B54	—	MR*	3m*,5m*,14m*	—	—	R*	MS	S	SEG	INC
Pioneer Brand 94B73	FT*	S	S	MR	MR	S	MS	T	INC	INC
Progeny 4401RR	FT*	MR	3m*,14m*	S	MR	—	MR	T	INC	INC
Progeny 4910	FT*	MS	3*,6m,14*	S	R	MR	MR	T	INC	INC
Progeny 4932RR	MR*	S	S	S	R	MS	MR	S	INC	INC
Progeny 5250RR	R*	MR	3*,14m*	MR	R	MS	MS	S	EXC	EXC
Southern States RT4502N	—	S	3*,14*	MS	R	—	MR	T	INC	INC
Southern States RT4902N	—	S	S	S	R	MS	MR	S	INC	INC
Southern States RT4980	MR*	S	3*,14*	S	R	MR	MR	T	INC	INC
Southern States RT5302N	—	S	S	R	MR	MS	MS	T	INC	INC
Terral TV4589RR	R*	S	3*,14*	S	MR	S	MR	S	EXC	SEG
Terral TV4886RR	MR*	S	3*,6m,14*	S	R	MS	MR	T	EXC	EXC
Terral TV4890RR	MS*	S	3*,9m,14m*	S	R	—	MR	T	EXC	EXC

**Table 3 Part 2**

**Agronomic Characteristics  
of Adapted Maturity Group IV-V**

VARIETY	Herbicide Tolerance	Rel. Mat.	PLT <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	33	1	2	117	WHITE	GRAY	BUFF
Armor 44-R4	RR	4.4	35	1	1	125	PURPLE	GRAY	BLACK
Armor 44-R5	RR	4.4	33	1	1	123	PURPLE	BROWN	BLACK
Armor 47-G7	RR	4.7	35	1	1	127	WHITE	BROWN	BLACK
Armor 52-C2	Conv.	5.2	33	1	1	146	WHITE	GRAY	BUFF
Armor 53-K3	RR	5.3	31	1	1	146	PURPLE	GRAY	CLEAR
ASGROW AG3702	RR	3.7	34	2	1	116	PURPLE	GRAY	BLACK
ASGROW AG4201	RR	4.2	33	1	1	126	WHITE	TAWNY	BLACK
ASGROW AG4403	RR	4.4	37	1	1	125	PURPLE	BROWN	BLACK
ASGROW AG4603	RR	4.6	33	1	1	127	WHITE	TAWNY	BLACK
ASGROW AG4902	RR	4.9	40	1	1	137	WHITE	BROWN	BLACK
ASGROW AG5301	RR	5.3	29	1	1	141	WHITE	GRAY	BUFF
Croplan Genetics RC4992	RR	4.9	44	1	1	138	WHITE	GRAY	BUFF
DEKALB DKB 44-51	RR	4.4	41	1	1	125	PURPLE	TAWNY	BLACK
Delta King 3961RR	RR	3.9	38	1	1	122	PURPLE	TAWNY	BLACK
Delta King 3968RR	RR	3.9	32	1	1	117	WHITE	GRAY	BUFF
Delta King 4461RR	RR	4.6	39	1	1	127	PURPLE	TAWNY	BLACK
Delta King 4763RR	RR	4.7	37	1	1	127	WHITE	TAWNY	BLACK
Delta King 4868RR	RR	4.8	39	1	1	136	WHITE	BROWN	BLACK
Delta King 4967RR	RR	4.9	35	1	1	134	PURPLE	TAWNY	BLACK
Delta King 5366RR	RR	5.3	32	2	1	146	PURPLE	GRAY	I.BLACK
Deltapine DP3861RR	RR	3.8	33	1	1	117	PURPLE	GRAY	I.BLACK
HBK R4820	RR	4.8	33	1	1	136	WHITE	TAWNY	BLACK
Manokin	Conv.	4.9	30	1	1	138	WHITE	BROWN	I.BLACK
Morsoy RT4480	RR	4.4	38	1	1	126	PURPLE	TAWNY	BLACK
Morsoy RT4802	RR	4.8	34	1	1	133	PURPLE	TAWNY	BLACK
Morsoy RT4809	RR	4.8	36	1	1	137	WHITE	BROWN	BLACK
Ozark	Conv.	5.3	30	1	1	142	PURPLE	GRAY	BUFF
Pioneer Brand 94B13	RR	4.1	38	1	1	124	WHITE	TAWNY	BLACK
Pioneer Brand 94B54	RR	4.5	41	1	1	124	PURPLE	TAWNY	BLACK
Pioneer Brand 94B73	RR	4.7	41	2	1	125	PURPLE	TAWNY	BLACK
Progeny 4401RR	RR	4.4	39	1	1	126	PURPLE	TAWNY	BLACK
Progeny 4910	Conv.	4.9	42	1	1	136	PURPLE	BROWN	BLACK
Progeny 4932RR	RR	4.9	44	1	1	138	WHITE	GRAY	BLACK
Progeny 5250RR	RR	5.2	27	1	1	141	WHITE	TAWNY	BLACK
Southern States RT4502N	RR	4.5	40	1	1	126	WHITE	TAWNY	BLACK
Southern States RT4902N	RR	4.9	48	1	1	138	WHITE	GRAY	BUFF
Southern States RT4980	RR	4.9	41	1	2	136	PURPLE	TAWNY	BLACK
Southern States RT5302N	RR	5.3	37	1	1	142	PURPLE	TAWNY	BLACK
Terral TV4589RR	RR	4.5	38	1	1	125	WHITE	BROWN	BLACK
Terral TV4886RR	RR	4.8	44	1	1	136	PURPLE	BROWN	BLACK
Terral TV4890RR	RR	4.7	42	1	1	125	WHITE	BROWN	BLACK

## 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    **SEG** - Segregating

(Excluder varieties accumulate chloride and restrict it to the roots. Includer varieties accumulate chloride throughout the plants. Segregating varieties 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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