

## ROUNDUP READY AND CONVENTIONAL SOYBEAN VARIETY TRIALS IN 2004

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**ABSTRACT:** One hundred eighty-five Roundup Ready and 13 conventional soybean varieties were evaluated on a Leeper silty clay soil in 2004. The Roundup Ready varieties were evaluated in separate maturity group (MG) studies (Early MG IV, late MG IV, Early MG V, and Late MG V). The conventional varieties were evaluated in one study and included MG IV, Early MG V, and late MG V varieties. Rainfall (163-211% of normal) in May and June had no adverse effect on yield. Additionally, a three week-dry period from mid July through mid August had no adverse effect on yield for late MG V varieties. The highest yield conventional variety produced 60.7 bu/ac. The highest yield Roundup Ready varieties across all maturity groups ranged from 55 to 70 bu/ac. The lowest yielding varieties across all studies ranged from 28 to 38 bu/ac. The overall mean yields for Roundup Ready early MG IV, late MG IV, early MG V, and late MG V were 40.3, 46.8, 49.0 and 45.5, respectively. The overall mean yield for the conventional variety study was 48.9 bu/ac. When compared to the lowest yielding varieties in each study, selecting the most productive variety has the potential to almost double the soybean yield. Variety selection for high yield and appropriate disease resistance is essential for successful soybean production.

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**KEYWORDS:** Roundup, conventional, soybean, variety trials

**MATERIALS AND METHODS:** Five field studies were conducted in 2004 on a Leeper silty clay loam soil, Verona, MS. Roundup tolerant soybean varieties of early MG IV and V and late MG IV and V were evaluated. All conventional soybean varieties of MG IV, early MG V, and late MG V were evaluated in one study. All experiments were conducted as randomized complete block design with four replications. Plot size was 2 (30-inch) rows x 20 ft.

Soil test P and K levels were high and no fertilizer was applied in the fall of 2003. The study area was bed-rolled on 10/9/03. A burndown application of Roundup WEATHERMAX (glyphosate) + Clarity (dicamba) at 1.0 + 0.25 lb ai/ac was applied 3/14/04. All conventional and Roundup Ready soybean varieties were planted 4/20/04. Roundup WEATHERMAX (0.95 lb ai/ac) was applied as a post-emergence application to all Roundup Ready variety studies on 5/24/04 and repeated on 6/11/04.

The conventional soybean variety study received a preemergence application of Scepter (imazaquin) + Prowl (pendimethalin) + Gramoxone Max (paraquat) + surfactant at 0.125 + 1.0 + 0.43 lb ai/ac + 0.4 pt/ac on 4/20/04. Assure II (quazalofop) at .069 lb ai/ac was applied postemergence on 6/21/04.

Maturity dates, plant height at maturity, and lodging were recorded for all varieties. The 2 rows of each variety were harvested within 5 days after maturity with a plot combine. Following harvest, the grain was cleaned with a 3-sieve seed cleaner, weighed, and grain moisture was determined with a Dickey John GAC II<sup>®</sup> seed moisture analyzer. Yields were adjusted to 13% seed moisture. Variety mean yields in each study were separated using Fisher Protected LSD at the 5% significance level.

**RESULTS AND DISCUSSION:** Rainfall during the growing season was 6.60, 7.38, 2.70, and 2.87 inches for May, June, July, and August, respectively. In the Roundup Ready early MG IV variety trial, 33 varieties were evaluated (Table 1). Plant height at maturity ranged from 25 to 35 inches. Maturity ranged from 8/16/04 to 8/26/04. Yields ranged from 28.7 to 55.1 bu/ac with an overall mean of 40.3 bu/ac. The highest yield variety was Dyna-Gro DG 3443NRR at 55.1 bu/ac. Deltapine DP 4331RR, Genesis C 444RR, Delta King DK 4461RR and USG 7440nRR were not different in yield from Dyna-Gro DG 3443NRR.

Fifty-two varieties in the Roundup Ready late MG IV were evaluated (Table 2). The yields ranged from 31.1 to 55.4 bu/ac with an overall mean yield of 46.8 bu/ac. Maturity dates ranged from 8/23/04 to 9/07/04. Plant height at maturity ranged from 25 to 40 inches. The highest yield variety was Delta Grow DG 4840RR with 55.4 bu/ac. Varieties which were not different in yield from Delta Grow DG 4840RR were Vigoro V48N5RR, Croplan RC 4842, Delta King DK 4868RR, Delta King DK 4967RR, USG 7482nRR, USG 7484nRR, Dyna-Gro DG 36M49, Genesis D 484RR, Genesis D491RR, Schilinger 495RC, AgVenture AV 49J7NRR, Pioneer 94B73, Asgrow AG 4801, Asgrow AG 4903, Hornbeck HBK R4724, Deltapine DP 4724RR, Progeny 4949RR, Delta Grow DG 4860RR, Delta Grow DG 4970RR, Dyna-Gro DG 3481NRR, Mosoy RT 4802 and Armor 49-P9.

Sixty-one varieties in the Roundup Ready Early MG V were evaluated (Table 3). The yields ranged from 31.5 to 70.0 bu/ac with an overall mean yield of 49.0 bu/ac. Maturity dates ranged from 9/07/04 to 9/21/04. Plant height at maturity ranged from 19 to 42 inches. The highest yield variety was Deltapine DP 5634RR with 70.0 bu/ac. NK S56-D7 and Amor GP 530 produced yield equal to DP 5634RR.

Thirty-nine varieties in the Roundup Ready late MG V study were evaluated (Table 4). The yields ranged from 32.5 to 57.2 bu/ac with an overall mean yield of 45.5 bu/ac. Maturity dates ranged from 9/15/04 to 10/01/04. Plant height at maturity ranged from 18 to 36 inches. The highest yield variety was Deltapine DPX J00-2392RR with 57.2 bu/ac. Hornbeck HBK R5924, Deltapine DPX C00-132820RR, DP 5806RR and Garst 6112RRN produced yield equal to Deltapine DPX J00-2392RR.

Thirteen varieties were evaluated in the conventional variety trial (Table 5). The yields ranged from 37.7 to 60.7 bu/ac with an overall mean yield of 48.9 bu/ac. Maturity dates ranged from 8/30/04 to 10/01/04. Plant height at maturity ranged from 19 to 35 inches. The highest yield variety was Hornbeck HBK C5894 with 60.7 bu/ac. Varieties which were not different in yield from Hornbeck HBK C5894 was Bolivar.

These results indicated soybean growers have a good selection of productive varieties that range in maturity from mid August to early October. The most productive varieties yield ranged from 50 to 70 bu/ac. Selection of varieties with high yield potential and appropriate disease resistance is essential in a successful soybean production system.

**COOPERATORS:** None

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Table 1. Roundup Ready Early Maturity Group IV soybean variety trial planted April 20, 2004 on a Leeper silty clay loam soil in 2004, Verona, MS.

Variety	Brand	Maturity date	Plant ht (in)	Yield bu/ac
DG 3443NRR	Dyna-Gro	8/26	34	55.1
C 444RR	Genesis	8/26	33	53.1
DK 4461RR	Delta King	8/26	33	52.7
USG 7440nRR	USG	8/26	32	51.3
DP 4331RR	DPL	8/20	26	50.7
44-R5	Armor	8/20	25	49.0
4401RR	Progeny	8/23	30	48.9
44-R4	Armor	8/23	31	47.5
AG 4403	Asgrow	8/20	31	47.3
DKB 44-51	Dekalb	8/23	31	46.9
USG 7434nRR	USG	8/20	24	46.9
465RC	Schillinger	8/26	29	44.3
DP 4546RR	DPL	8/26	29	42.9
4612RRN	Garst	8/26	31	42.9
HBK R4023	Hornbeck	8/20	28	41.3
AG 4502	Asgrow	8/23	28	41.1
RC 4233	Croplan	8/20	29	40.9
HBK R4623	Hornbeck	8/20	26	37.2
AG 4201	Asgrow	8/20	25	36.7
AG 4603	Asgrow	8/23	27	36.1
USG 7443nRR	USG	8/20	28	35.2
NK S43-B1	NK	8/16	28	34.8
DG 3463NRR	Dyna-Gro	8/20	30	33.7
94M41	Pioneer	8/16	27	33.4
DG 4340RR	Delta Grow	8/16	24	33.2
DG 4630RR	Delta Grow	8/23	28	33.2
E 434RR	Genesis	8/20	27	32.1
AV 46J5NRR	AgVenture	8/20	26	31.9
DKB 46-51	Dekalb	8/20	27	31.8
RT 4502	Southern States	8/23	35	31.2
AG 4102	Asgrow	8/16	28	29.6
RC 4464	Croplan	8/16	26	29.3
435 RC	Schillinger	8/23	32	28.7
		LSD (P=.05)	---	5.4
		CV	---	9.5
		Grand Mean	29	40.3

Shaded values are not different from the highest value.

Table 2. Roundup Ready Late Maturity Group IV soybean variety trial planted April 20, 2004 on a Leeper silty clay loam soil, Verona, MS.

Variety	Brand	Maturity Date	Plant ht (in)	Yield bu/ac
DG 4840RR	Delta Grow	8/26	32	55.4
V48N5RR	Vigoro	8/26	26	55.3
495RC	Schillinger	9/02	32	54.6
AG 4801	Asgrow	8/26	26	54.1
DG 3481NRR	Dyna-Gro	8/26	32	52.3
4949RR	Progeny	9/07	35	52.1
94B73	Pioneer	8/20	29	51.8
RC 4842	Croplan	8/26	30	51.5
USG 7484nRR	USG	8/23	32	50.8
DK 4868RR	Delta King	9/02	28	50.7
DP 4724RR	DPL	8/30	30	50.3
49-P9	Armor	8/23	31	50.2
DK 4967RR	Delta King	8/26	27	50.1
DG 4860RR	Delta Grow	8/30	31	50.0
D 491RR	Genesis	8/26	28	49.8
HBK R4724	Hornbeck	8/30	36	49.3
USG 7482nRR	USG	8/30	27	49.3
RT 4802	Morsoy	8/26	29	49.1
AG 4903	Asgrow	9/07	30	48.7
DG 4970RR	Delta Grow	9/07	33	48.6
DG 36M49	Dyna-Gro	8/26	32	48.6
D 484 RR	Genesis	8/30	31	48.4
AV 49J7 NRR	AgVenture	8/23	31	48.4
RT 4993	Morsoy	8/20	30	48.3
NKS49-Q9	NK	9/07	34	47.6
HBK R4924	Hornbeck	9/07	36	47.5
RT 4980	Southern States	8/30	33	47.3
RT 4809	Morsoy	9/02	27	47.1
RT 5001N	Southern States	9/07	30	46.9
USG 7494nRR	USG	8/23	31	46.9
HBK R4945CX	Hornbeck	8/30	35	46.7
TV 49R12	Terral	8/30	40	46.5
HBK R4820	Hornbeck	9/07	30	46.4
E 484RR	Genesis	8/23	31	46.0
94M90	Pioneer	8/26	30	45.2
DG 4960RR	Delta Grow	9/07	27	44.9
47-G7	Armor	8/23	26	44.8
4858RR	Progeny	8/30	33	44.7
AG 4902	Asgrow	8/26	31	44.0
4703RR	Progeny	9/07	40	43.8
RT 5130N	Southern States	9/02	25	43.2
5012RRN	Garst	9/07	26	43.0
4860RR	Progeny	9/07	32	42.8
USG 7499nRR	USG	8/30	34	42.5
4888RR	Garst	8/30	32	42.2
4922RR	FFR	9/07	34	41.1
RT 517N	Southern States	9/07	25	40.9
DP 4933RR	DPL	9/02	35	39.9
4932RR	Progeny	9/07	40	39.4
RT 4902	Southern States	9/07	40	38.2
DK 4763RR	Delta King	8/20	26	38.2
SG 498RR	DPL	9/02	31	31.1
		LSD (P=.05)	---	7.0
		CV	---	10.6
		Grand Mean	31	46.8

Shaded values are not significantly different from the highest value.

Table 3. Roundup Ready Early Maturity Group V soybean variety trial planted April 20, 2004, on a Leeper silty clay loam soil, Verona, MS.

Variety	Brand	Maturity date	Plant ht (in)	Yield bu/ac
DP 5634RR	DPL	9/21	26	70.0
NK S56-D7	NK	9/21	27	65.5
GP530	Armor	9/21	31	65.4
USG 7524nRR	USG	9/10	42	61.2
RT 5620	Morsoy	9/21	25	58.4
TV56R12	Terral	9/21	34	57.9
5663RR	FFR	9/21	24	57.0
HBK R5624	Hornbeck	9/10	24	55.8
DK 5668RR	Delta King	9/21	27	55.6
HBK R5123	Hornbeck	9/15	42	55.1
V55N5RR	Vigoro	9/21	31	53.6
DP 5414 RR	DPL	9/10	27	53.3
DKB 51-51	Dekalb	9/10	35	53.0
5212RRN	Garst	9/21	25	51.9
52-Q2	Armor	9/10	24	51.7
RT 5602N	Southern States	9/10	21	51.6
HBK R5524	Hornbeck	9/21	27	51.6
RT 5540N	Southern States	9/21	24	51.3
DG 5610RR	Delta Grow	9/21	20	51.3
DG 3562NRR	Dyna-Gro	9/21	26	51.2
RC 5555	Croplan	9/21	29	51.0
95M43	Pioneer	9/10	28	50.6
DG 33B52NRR	Dyna-Gro	9/21	24	50.5
DK 5366RR	Delta King	9/21	27	50.0
DG 5555RR	Delta Grow	9/21	24	49.6
USG 7553nRR	USG	9/21	26	49.3
USG 510nRR	USG	9/07	26	49.1
RT 5553	Morsoy	9/21	27	49.0
DG 5650RR	Delta Grow	9/21	23	48.9
RT 5252	Morsoy	9/10	23	48.9
DKB 54-52	DeKalb	9/21	29	48.8
HBK R5620	Hornbeck	9/21	26	48.7
USG 7514nRR	USG	9/07	25	48.1
5250 RR	Progeny	9/07	23	47.9
DK 5161RR	Delta King	9/21	29	47.7
AG5501	Asgrow	9/10	27	47.6
RT 5302N	Southern States	9/21	26	47.5
HBK R5422	Hornbeck	9/21	25	47.3
USG 7523nRR	USG	9/21	24	47.2
5033RR	FFR	9/07	27	47.0
5660RR	Progeny	9/21	25	46.8
RT 5204	Morsoy	9/07	27	46.6
D 524RR	Genesis	9/07	25	46.5
RT 557N	Southern States	9/21	30	46.2
5225RR	FFR	9/21	27	46.1
AV 52T2NRR	AgVenture	9/21	23	45.7
V562NRR	Vigoro	9/21	30	44.6
56-J6	Armor	9/21	29	44.2
DG 5260RR	Delta Grow	9/07	24	43.7
AG 5605	Asgrow	9/21	20	43.6
TV 56R11	Terral	9/21	31	43.0
DG 3535NRR	Dyna-Gro	9/21	27	42.3
AG 5402	Asgrow	9/21	26	42.0
5503 RR	Progeny	9/21	23	41.5
NK S50-N3	NK	9/07	27	40.9
DG 5460RR	Delta Grow	9/21	24	40.9
HBK R5324	Hornbeck	9/07	19	40.7
RC 5003	Croplan	9/07	23	40.7
DG 5630RR	Delta Grow	9/21	28	40.4
AV 50J6NRR	AgVenture	9/02	21	37.9
545 RCP	Schillinger	9/10	21	31.5
		LSD (P=.05)	----	6.5
		CV	----	9.5
		Grand Mean	26	49.0

Shaded values are not significantly different from the highest value.

Table 4. Roundup Ready Late Maturity Group V soybean variety trial planted April 20, 2004 on a Leeper silty clay loam soil, Verona, MS.

Variety	Brand	Maturity date	Plant ht (in)	Yield bu/ac
DPX J00-2392RR	DPL	9/15	28	57.2
HBK R5924	Hornbeck	10/01	29	56.4
DPX C00-132820RR	DPL	10/01	26	55.7
DP 5806RR	DPL	9/27	32	53.8
6112 RR/N	Garst	10/01	32	52.3
TV 62R11	Terral	10/01	32	51.2
DPX C00-110604RR	DPL	10/01	32	50.6
DPX 5808RR	DPL	10/01	31	49.8
AG 5701	Asgrow	10/01	30	49.5
AG 5905	Asgrow	9/21	30	49.5
95M8O	Pioneer	9/23	27	48.9
DP 5915RR	DPL	9/23	29	48.6
DPX C00-114605RR	DPL	9/21	26	46.7
AG 5903	Asgrow	9/21	29	46.0
USG 570nRR	USG	9/27	30	46.0
DG 8K57NRR	Dyna-Gro	9/21	29	45.8
RT 5999N	Southern States	9/21	34	45.5
RT 5773	Morsoy	9/21	31	45.3
5822RR	Progeny	9/21	28	45.2
DKB57-51	Dekalb	9/21	31	45.1
5812RR/N	Garst	9/21	36	45.0
95B96	Pioneer	9/21	31	44.6
DK 5767RR	Delta King	10/01	30	44.3
TV 57R14	Terral	9/27	28	43.2
3583 NRR	Dyna-Gro	9/21	29	42.8
5924 RRN	Garst	9/21	33	42.2
DG 5960RR	Delta Grow	9/21	27	41.9
5703RR	Progeny	9/21	26	41.7
USG 7582nRR	USG	9/21	28	41.5
RT 5903	Morsoy	9/21	29	41.1
TV 58R12	Terral	10/01	33	41.0
DK 5967RR	Delta King	9/21	29	40.1
RT 5702	Southern States	9/23	34	39.9
DKB58-51	Dekalb	9/21	27	39.8
58-V8	Armor	9/21	27	39.7
TV 59R14	Terral	9/21	30	38.1
RC 5972	Croplan	9/21	27	38.1
RT 5730	Southern States	9/21	18	32.5
		LSD (P=.05)	---	5.3
		CV	---	8.3
		Grand Mean	29	45.5

Shaded values are not significantly different from the highest value.

Table 5. Conventional soybean variety trial planted April 20, 2004 on a Leeper silty clay loam soil, Verona, MS.

Variety	Brand	Maturity date	Plant ht (in)	Yield Bu/ac
HBK C5894	Hornbeck	9/21	28	60.7
Bolivar	Public	9/21	31	58.1
Freedom	Public	9/21	24	53.7
Hutcheson	Public	9/21	25	52.6
DK 5995	Delta King	10/01	27	51.5
DP 4748S	DPL	8/30	32	48.4
DP5110S	DPL	9/13	28	47.9
USG 5002T	USG	9/07	19	46.3
Ozark	Public	9/13	19	45.1
Delsoy 5500	Public	9/21	24	45.1
USG 5601 IT	USG	9/21	25	44.4
Anand	Public	9/21	19	43.9
Progeny 4910	Progeny	9/02	35	37.7
		LSD (P=.05)	---	6.7
		CV	---	9.6
		Grand Mean	26	48.9

The shaded values are not significant from the highest value.