ROUNDUP READY SOYBEAN VARIETIES RESPONSE TO EARLY PLANTING

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ABSTRACT: A field study was conducted on a Leeper silty clay loam soil at Verona, Mississippi to determine maturity group (MG) IV and V productive soybean variety response to selected early planting dates (4/18/02, 4/30/02, and 5/20/02). Growing conditions were favorable through July 30 followed by about a 3 week dry period in August. The growing conditions were more favorable for the April than May plantings. The data indicated a variety by planting date interaction for yield, plant height at maturity, and kernel weight (gm/1000 seed). Yields ranged from 26.4 to 47.2 bu/ac. All varieties showed equal or higher yield for 4/18/02 than 5/20/02 or 4/30/02 planting. TV 5666RR (RM 5.7) produced lower yield than all other varieties across all planting dates with no difference between planting dates. Both Pioneer 95B53 and AG 4702 showed yield $\geq$ 37.7 bu/ac with no difference between planting dates. DK 4868RR and DG 4950RR produced higher yield planted 4/18/02 than planted 5/20/02. All varieties were shorter in height when planted 4/18/02 than planted 4/30/02 or 5/20/02. MG IV (AG 4702, DG 4950RR, and DK 4868RR) and early MG V variety (Pioneer 95B53) planted 4/18/02 showed decreased plant height at maturity and matured 2 weeks earlier than planted 5/20/02 with no yield loss to early planting. Kernel weight (gm/1000) for most varieties was not affected by planting date.

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KEYWORDS: Roundup, soybean, varieties, early planting

MATERIALS AND METHODS: A field study on a Leeper silty clay loam soil was initiated during the 2002 growing season to evaluate selected planting dates' (4/18/02, 4/30/02, and 5/20/02) effect on productive Roundup Ready soybean maturity group (MG) IV (DK 4868RR, AG 4702, DG 4950RR) and V (Pioneer P95B53 and Terral TV5666RR) varieties growth and yield response. The experiment was conducted as a split plot in a randomized complete block design with planting dates as main plot factor, and varieties as subplot factor with 4 replications.

Fertilizer was applied based on soil test recommendations. Phosphorous was not required but potash (K_2O) at 250 lb/ac was applied broadcast to the soil surface on 10/04/01. All plots were disked twice on 10/04/01, and do-alled (row conditioner) on 11/05/01. Gramoxone Max (paraquat) + surfactant at 1 lb ai/ac + 1 pt/ac was applied as a burndown on 4/17/02. Postemergence applications of Roundup Ultra Max (glyphosate) at 1 lb ai/ac was applied on 5/20/02, 6/05/02, and 6/21/02. Planting dates 4/30/02 and 5/20/02, also received an application of Roundup Ultra Max at l lb ai/ac on 7/08/02. Soybeans were planted no-till in 30-inch rows 4/18/02, 4/30/02, and 5/20/02. All seed were treated with Apron + Vitavax (formulation)

fungicide at 4 oz/50 lb of seed. The fungicide was diluted with 2 oz water/50 lb of seed and applied to the seed in a batch hopper seed treater. The batch seed treater was operated until the seed were uniformly coated with the fungicide.

Plant populations were recorded 4 weeks after planting. Maturity date and plant height at maturity were recorded. Varieties were harvested within 5 to 7 days after maturity with a plot combine. The center 2 rows of a 4-row plot were harvested for yield. The plot seed samples were weighed and seed moisture was determined with a Dickey John® GAC 2000 grain analysis computer and yields were adjusted to 13% seed moisture. All data was analyzed with the Mixed procedure of SAS and treatment means were separated using Fisher Protected LSD calculated at the 5% significance level.

RESULTS AND DISCUSSION: The 2002 growing season temperature was normal with above normal rainfall for May and July followed by no rainfall for the first 3 weeks of August. Growing conditions were more favorable for the April than May planting. Soybean yields ranged from 26.4 to 47.2 bu/ac across all planting dates and there was a planting date by variety interaction (Table 1). Planted 4/18/02, DK 4868RR with a relative maturity (RM) of 4.9 produced the highest yield of 47.2 bu/ac. Pioneer 95B53 (RM 5.3) yields of 39.9 to 43.3 bu/ac, AG 4702 (RM 4.7) yields of 42.5 to 37.7 bu/ac and TV 5666RR (RM 5.7) yields of 34.3 to 26.7 bu/ac were not different across planting dates. Both DG 4950RR (RM 4.9) and DK 4868RR (RM 4.9) produced higher yield planted 4/18/02 than planted 5/20/02.

There was a planting date by variety interaction for plant height at maturity (Table 2). The 4/18/02 planting was about 5 inches shorter in height than 4/30/02 and 5/20/02. DG 4950RR was the tallest variety across all planting dates. DK 4868RR and DG 4950RR planted 4/18/02 were shorter in height than planted 4/30/02 or 5/20/02 with no difference between 4/30/02 and 5/20/02 planting dates. Plant height at maturity for AG 4702, Pioneer 95B53, and TV 5666RR increased as planting was delayed from 4/18/02 to 5/20/02. Each variety showed differences in height between each planting date.

Maturity ranged from 9/02/02 for the MG IV (RM 4.7 to 4.9) varieties (Asgrow AG 4702, DG 4950RR, and DK 4868RR) planted 4/18/02 to 10/03/02 for MG V (RM 5.3 to 5.7) varieties (Pioneer 95B53 and TV 5666RR) planted 4/30/02 and 5/20/02 (Table 3). All MG IV varieties and the early MG V variety (Pioneer 95B53) planted 4/18/02 matured about 9/02/02 and 9/16/02, respectively, about 2 weeks earlier than planted 5/20/02. Late MG V variety, TV 5666RR, maturity was not affected by planting date, and maturity ranged from 9/30/02 planted 4/18/02 to 10/03/02 planted 4/30/02 or 5/20/02.

Kernel weight (gm/1000 kernels) data indicated a planting date by variety interaction (Table 4). AG 4702, TV 5666RR, and Pioneer 95B53 showed no difference across planting dates. DK 4868RR showed higher seed weight for the 4/30/02 planting than planted 4/18/02 with no difference between 4/30/02 and 5/20/02 planting date. DG 4850RR showed higher kernel weight for the 5/20/02 planting than 4/18/02 or 4/30/02 planting. The results indicated MG IV and early MG V (Pioneer 95B53) varieties planted 4/18/02 showed reduced plant height at maturity and matured 10 to 14 days earlier than planted 5/20/02 with no yield loss.

COOPERATORS: None

PUBLICATIONS: None

Table 1. Roundup Ready soybean maturity group IV and V varieties yield response to planting dates on a Leeper silty clay loam soil in 2002, Verona, MS.

Variety	Brand	RM[1]	Planting date 4/18/02	Planting date 4/30/02	Planting date 5/20/02
			bu/ac	bu/ac	bu/ac
1) AG 4702	Asgrow	4.7	39.7	42.5	37.7
2) DG 4950RR	Delta Grow	4.9	41.2	32.9	26.4
3) DK 4868RR	Delta King	4.9	47.2	40.6	37.0
4) 95B53	Pioneer	5.3	43.0	41.3	39.9
5) TV 5666RR	Terral	5.7	34.3	28.4	26.7

WI P.date LSD (.05): 8.5[2]
WI Varieties LSD (.05): 8.3[3]

[1] Relative maturity.
[2] LSD(.05) for comparing varieties within planting dates.
[3] LSD (.05) for comparing within variety.

Table 2. Roundup Ready soybean maturity group IV and V varieties height at maturity response to planting dates on a Leeper silty clay loam soil in 2002, Verona, MS.

Variety	Brand	RM[1]	Planting date 4/18/02	Planting date 4/30/02	Planting date 5/20/02
			Height (in) at maturity	Height (in) at maturity	Height (in) at maturity
1) AG 4702	Asgrow	4.7	29	33	38
2) DG 4950RR	Delta Grow	4.9	38	43	43
3) DK 4868RR	Delta King	4.9	31	36	36
4) 95B53	Pioneer	5.3	25	29	33
5) TV 5666RR	Terral	5.7	28	33	36

WI P.date LSD (.05): 2[2]
WI Varieties LSD (.05): 2[3]

[1] Relative maturity.
[2] LSD(.05) for comparing varieties within planting dates.
[3] LSD(.05) for comparing within variety.

Table 3. Roundup Ready soybean maturity group IV and V varieties yield response to planting dates on a Leeper silty clay loam soil in 2002, Verona, MS.

Variety	Brand	RM[1]	Planting date		
			4/18/02	4/30/02	5/20/02
			maturity dates		
1) AG 4702	Asgrow	4.7	9/02	9/02	9/13
2) DG 4950RR	Delta Grow	4.9	9/02	9/06	9/16
3) DK 4868RR	Delta King	4.9	9/02	9/16	9/16
4) 95B53	Pioneer	5.3	9/16	10/01	10/03
5) TV 5666RR	Terral	5.7	9/30	10/03	10/03

[1] Relative maturity.

Table 4. Roundup Ready soybean maturity group IV and V varieties' kernel weight response to planting dates on a Leeper silty clay loam soil in 2002, Verona, MS.

Variety	Brand	RM[1]	Planting date		
			4/18/02	4/30/02	5/20/02
			gm/100 kernel		
1) AG 4702	Asgrow	4.7	121	121	127
2) DG 4950RR	Delta Grow	4.9	119	126	139
3) DK 4868RR	Delta King	4.9	132	142	136
4) 95B53	Pioneer	5.3	120	120	120
5) TV 5666RR	Terral	5.7	139	145	147

WI PD LSD (.05): 8[2]
WI Var LSD (.05): 8[3]

[1] Relative maturity.
[2] LSD (.05) for comparing varieties within planting dates.
[3] LSD (.05) for comparing within variety.