

**DELTAPINE SEED ULTRA NARROW
ROW COTTON EVALUATION
OF DP 425RR, DP 436RR, DP5415RR,
DP 458B/RR and DP 5111 IN MISSISSIPPI**

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Abstract

Deltapine Seed, a separate operating division of Delta and Pine Land Company, evaluated studies on its elite varieties for the Mid-South in an Ultra Narrow Row Cropping (UNRC) environment. The UNRC concept has renewed interest in the Mid-South with the prospect of yields equal to or better than conventional cotton while potentially reducing production costs. Deltapine Seed's objective is to provide crop management information to maximize yields and profits on its varieties. Plant mapping recorded the environmental impact on the architecture and retention of the cotton plant. Yield data and fiber traits were determined with monetary values applied.

Introduction

Five Deltapine Seed varieties were selected to evaluate their performance in an environment of Ultra Narrow-Row Cotton production in Mississippi. The five varieties were DP 425RR, DP 5111, DP 436RR, DP 5415RR, and DP 458B/RR. Deltapine DP 425RR and DP 436RR, two short-season; smooth-leaf varieties containing Roundup Ready® technology, have backgrounds with a broad-base stable performance in the Mid-South. Both varieties are early big-boll varieties with good verticillium, fusarium and stress tolerance. These two short-season varieties were evaluated with two mid-season varieties, DP 458B/RR and DP 5415RR that also contain the Roundup Ready technology. DP 458B/RR also has the Bollgard™ gene. These two smooth-leaf varieties have aggressive vegetative traits in optimum conditions and good gin turnout with very desirable fiber quality properties.

A new, very short-season conventional variety developed for the northern Cotton Belt is DP 5111, which has high yields and has been proven drought tolerant. It was compared with other transgenic varieties in the UNRC trial. DP 5111 rated in the top five in the Mid-South verticillium test.

Methods and Materials

The trial design was a randomized complete block design with three replicates. Roundup Ultra® was applied at a rate of 32 oz. on 4/20/98 as a burndown. Sixty-eight pounds of

actual nitrogen in the form of ammonia nitrate was applied broadcast on 5/11/98. The study was planted on 5/13/98 in 10-inch rows with final plant density ranging from 94,000 to 134,000 plants per acre. Broad-leaf weed control consisted of two 6 oz. applications of Staple® broadcast over the top on 6/2/98 and 6/12/98. Pix® applications were applied on the following dates 6/12/98, 6/19/98, and 6/26/98 at a rate of 4 oz., 4 oz., and 16 oz, respectively, for a total of 24 oz. which held plant height to an average of 18.3 inches. Early and late insect control was the same as conventional row cotton and is shown in Table 1. Flood irrigation was applied at a rate of 2-3 inches per acre on 7/3/98. Cotton defoliation consisted of Def 6 applied at a rate of 1.5 pints and Prep™ applied at a rate of 2 pints on 10/1/98, and Starfire® applied at a rate of 6 ounces on 10/8/98. Plots were harvested on 10/21/98. Cotton samples were ginned for yield and fiber quality analyses.

Results and Discussion

The Deltapine Seed varieties all competed in the UNRC production climate producing an average of 934 pounds of lint per acre (Table 2). The short-season varieties, DP 425RR and DP 5111, grown at Scott, MS made slightly higher yields at 1,001 and 990 pounds, respectively as shown in Table 2. They were more mature and had more cotton open on 9/1/98. Turnout was low (26.5%) due to extreme heat and drought (Table 2). Whole plants pulled up by the stripper harvester and cleaned out with gin equipment also contributed to low turnout. Staple averaged 35.1 with strength at the 26.8 level as shown in Table 2. The five varieties averaged 4.4 micronaire (Table 2) with a color grade of approximately 41. Dollar value averaged \$657.00; however, DP 5111 produced the highest value at \$701.00 (Table 2) when fiber property values were applied.

Plant height averaged 18.3 inches with 15.0 nodes retaining an average of 3.7 bolls per plant (Table 3). First position fruit retention averaged 72.0% (Table 3). On 8/25/98, all varieties had 50% or more of the cotton open. The density and applied UNRC management practices altered the architecture of all the different cotton maturates and plant types to fit a similar profile.

Summary

Five varieties (DP 425RR, DP 5111, DP 436RR, DP 5415RR, and DP 458B/RR) were evaluated and the environmental impact on the architecture and retention of the cotton plant was recorded. The trial design was a randomized block design with three replicates in an Ultra Narrow Row Cropping environment. The study was planted on 5/13/98 in 10-inch rows with final plant density ranging from 94,000 to 134,000 plants per acre. Broad-leaf weed control was applied. Early and late insect control was applied in the same manner as conventional row cotton. Plant height on the five varieties averaged 18.3 inches with 15.0 nodes retaining an average of 3.7 bolls per plant. First

position fruit retention averaged 72.0%. All varieties had at least 50% or more of the cotton open on 8/25/98. DP 425RR produced the highest yield at 1001 lb. lint per acre. However, DP 5111 produced the highest value of \$701.00 when fiber property values were applied. Gin turn out was low, but fiber quality properties were excellent with this UNRC trial.

Disclaimer

Mention of a trade name, proprietary product, or specific equipment does not constitute a guarantee or warranty by Deltapine Seed Company and does not imply approval of the product to the exclusion of others that may be available.

Table 1. Early and late insect control.

Product	Rate	Date
Orthene®	1/3 lb/Ac	5/26/98
Vydate®	1 gal. To 12	6/4/98
Vydate®	1 gal. To 12	6/12/98
Malathion®	1 gal. To 10	6/30/98
Baythroid®	1 gal. To 50	7/9/98
Baythroid®	1 gal. To 50	8/3/98

Table 2. Ultra Narrow Row Cotton fiber properties.

Variety	Lint	Value /		Strengt		
	(Lb/ac)	Acre	% Turnout	Staple	h	Mike
DP 425RR	1001	693	28.0	35.3	25.3	4.3
DP 5111	990	701	26.2	35.3	29.5	4.6
DP 436RR	925	654	26.3	35.7	25.4	4.3
DP 5415RR	878	621	25.2	35.0	27.3	4.3
DP 458B/RR	876	615	26.9	34.3	26.3	4.5
Mean	934	657	26.5	35.1	26.8	4.4
P	N/S	-	N/S	N/S	N/S	N/S
%CV	10.5	-	7.6	1.8	6.4	4.0
LSD	-	-	-	-	-	-

Table 3. Ultra Narrow Row Cotton plant map data.

Variety	Height	Total nodes	Avg.	
			boll/plant	% FP1
DP 425RR	17.2	14.9	3.7	56.8
DP 5111	20.1	15.0	3.4	67.6
DP 436RR	20.1	15.5	4.3	81.4
DP 5415RR	18.1	14.8	3.5	71.4
DP 458B/RR	16.2	14.6	3.6	83.3
Mean	18.3	15.0	3.7	72.1