

PRODUCER ADJUSTMENTS TO INCREASING PRODUCTION COSTS AND NEW PRODUCTION TECHNOLOGY

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Abstract

Growers are producing cotton with wider equipment and fewer “trips-over-the-field” in an effort to reduce cost per unit of output.

Introduction

The current costs of producing cotton and its low price have forced growers to lower their production costs per pound of output. Since very little new technology has been available to increase yields, growers have been working to reduce direct costs, fixed costs, and general farm overhead costs utilizing fewer “trips-over-the-field” with wider equipment. Monsanto’s new technology, genetically modified seed (GMS), has been primarily responsible for recent costs reducing changes in production practices. Ninety-two percent of Mississippi’s 2003 cotton crop was grown with GMS, two-thirds was stacked (BtRR), and the balance was Bt or RR. Currently, the majority of Mississippi’s crop is grown reduced till (RT) or no-till (NT). RT has alternatively been labeled “limited seedbed/chemical tillage” or “conservation tillage.”

This paper is divided into two sections. The first examines how the costs of selected sets of production practices and equipment complements have changed since the introduction of Monsanto’s GMS in 1995. The second section highlights how individual growers have changed the way they grow cotton and/or organize their farms.

Direct and Fixed Costs, Five Production Systems

The Mississippi State University Budget Generator was utilized to estimate direct and fixed costs per acre for five systems of production in the Delta Area of Mississippi.

- I. 8R-40” solid, conventional tillage, non-transgenic (conventional) variety [8R-40, solid, CT/CV].
- II. 8R-40” solid, reduced tillage, BtRR variety [8R-40, solid, RT/BtRR].
- III. 8R-40” 2X1 (8 rows planted), reduced tillage, BtRR variety [8R-40, 2X1, RT/BtRR].
- IV. 12R-40” solid, reduced tillage, BtRR variety [12R-40, solid, RT/BtRR].
- V. 12R-30” 2X1 (12 rows planted), reduced tillage, BtRR variety [12R-30, 2X1, RT/BtRR].

System I is best described as how cotton used to be grown or how eight percent of Mississippi’s 2003 crop was produced. Systems I and II have a planter width of 320 inches or 26.67 feet. The planters associated with systems III and IV have a width of 480” (40’). The system V planter covers 540” (45’). Systems I, II, and III utilize 4R pickers (4 headers). Systems IV and V employ pickers with 6 headers (6R). The pickers for each system are 50 percent as wide as the planter, indicating that the picker associated with system V has a width of 270” or 22.5’. It is 12.5 percent wider than the picker associated with systems III and IV and 68.75 percent wider than the picker associated with systems I and II.

Table 1 reports the estimated direct and fixed costs per acre for the five systems of production. Relative to system I, system II reduces direct costs by seven percent and reduces fixed costs by 13 percent. The largest improvement in direct cost is associated with system III (23 percent) and the largest reduction in fixed cost is associated with system V (50 percent). The “best system” maximizes net revenue which is a function of costs, yields (primarily soil types), and output prices.

Individual Grower Adjustments

The typical Mississippi cotton farm produces cotton and soybeans. Several growers improve their efficiency by producing only cotton. Grower no. 1 produces only cotton. He grows 8R-38” solid, NT with an 8R planter and 4R picker. His equipment complement is one tractor, one hi-boy, and one picker. He applies liquid UAN as a dribble with his hi-boy. He has two part-time laborers which he employs part-time in his non-ag business.

Grower no. 2 produces only cotton. He grows 8R-38” solid, NT which he harvests with 4R pickers. He produces 7.5” UNRC, NT which he strips. He likes growing only cotton, but is considering replacing his UNRC with another planting pattern which can be picked (spindle harvested).

Grower no. 3 also produces only cotton. He grows 6R-38" solid, RT which he harvests with 4R and 2R pickers. He grows 7.5" UNRC, NT which he strips. He is considering growing only UNRC when his current pickers are replaced.

Grower no. 4 grows soybeans and cotton. He changed his cotton production system from 8R-38" solid, CT to 6R-40" 2X1, RT. He currently plants six rows which he harvests with a 4R picker. He modified his picker to harvest the "guess rows" with an in-cab switch (clicker) which adjusts one set of headers up to eight inches. He provides all of his labor except that his wife helps during harvest. He custom applies his fertilizer (split applications of N). He plants no GMS cottonseed and routinely received a price premium for his Fibermax varieties. The Mississippi State University Extension Service has worked closely with this grower to improve his overall level of management. He has 3 years' experience with his new system of production. In each of the three years, 2001-2003, his yields and net returns have been larger than the best experienced prior to 2001. Some of the improvement is associated with the new system of production but a portion of the increase in yield and profitability is probably due to the grower's improved management.

Grower no. 5 produces mostly cotton. He grows 30-inch full skip no-till which he plants 12 rows at a time and harvests with a 6R picker (6 headers). The author has closely followed this grower's transition for 38" solid, CT to 30" 2X1, NT. He has experienced a slight improvement in yield (land basis) and net returns have increased.

Like grower no. 5, grower no. 6 produces his cotton in a 30" 2X1 pattern. His system is a cotton/corn rotation. The corn is grown 30" solid and the cotton is produced 12R-30, 2X1, RT. This grower continues to knife-in all his fertilizer. Cotton's yield response to the corn rotation continues to increase after several cycles in the rotation. The author has closely followed this farming operation for almost 30 years and is of the opinion that cotton's yield responses to a corn rotation (on a farm of this soil type and location) may continue to increase for 10-14 years. This grower is especially pleased with the cost savings associated with his 6R pickers which cover 22.5 feet per pass or 45 feet per round.

Summary and Conclusions

Growers continue to adopt cost reducing new technology by producing cotton with less tillage, fewer "trips-over-the-field", and larger (wider) equipment putting upward pressure on farm size. The next round of new technology will likely results in every larger cotton farms.

Table 1. Estimated direct and fixed costs per acre, five cotton production systems, Mississippi, 2004.

System	Direct Costs	% Change	Fixed Costs	% Change
I. 8R-40, Solid, CT/CV	463.21	-	100.44	-
II. 8R-40, Solid RT/BtRR	428.47	7	87.78	13
III. 8R-40, 2X1, RT/BtRR	355.75	23	57.35	43
IV. 12R-40, Solid, Rt/BtRR	410.35	11	72.93	27
V. 12R-30, 2X1, RT/BtRR	365.20	19	50.33	50