

ECONOMIC RESEARCH IN SUGARCANE IN 2004

M.E. Salassi and J.B. Breaux

Department of Agricultural Economics and Agribusiness

Projected costs and returns for the various stages of sugarcane production in Louisiana were estimated for the 2004 crop year. Production and tillage practices, as well as application rates for fertilizer, herbicides and insecticides, were updated. Input suppliers and equipment dealers were surveyed in 2003 for current input prices. Specific operations for which production costs were estimated included field operations on fallow land, seedbed preparation, cutting and planting heat-treated seed-cane, planting cultured seed-cane, field operations on plant-cane, first stubble, second stubble, and third stubble, succession planting, as well as the costs of harvesting with whole-stalk and combine harvesters. Costs and returns were estimated for tenant-operators, reflecting the predominant land tenure situation, and reflect a mill payment of 39% of production and a land rent payment of 20% of the "after milling crop" proceeds (12.2 percent of production). Total costs of production plus overhead for crop cycles through harvest of second, third and fourth stubble were estimated and breakeven prices to cover direct and total specified production costs were estimated for one-fifth and one-sixth share rental arrangements. Summary breakeven prices to cover production costs through harvest of third stubble for alternative yield levels are shown in Table 1.

An economic study was completed which estimated the cost differences between whole-stalk and billet sugarcane planting methods in Louisiana. Sugarcane planting costs were estimated for four types of planting systems: hand planting, whole-stalk machine planting, and one-row and three-row billet planting. Planting ratios and labor requirements were determined from data collected from growers using the various planting methods. Whole-stalk planting ratios were 7.5/1 for hand planting and 5.5/1 for machine planting, while planting ratios for billet planters was 3.0/1. Total planting costs per acre of plant-cane planted were estimated at \$579 for whole-stalk hand planting, \$578 for whole-stalk machine planting, \$712 for one-row billet planting and \$673 for three-row billet planting. Calculations reveal that increasing the planting ratio for billet planters could significantly reduce planting costs. Opportunity costs of increased seed-cane acreage were found to be a significant economic factor in the evaluation of billet planters. This study was conducted in cooperation with Dr. Jeff Hoy, Department of Plant Pathology and Crop Physiology, LSU AgCenter, and was published in the 2004 Journal of the American Society of Sugarcane Technologists.

Table 1. Projected Breakeven Selling Prices for Raw Sugar for Selected Yield Levels,
Harvest Through Third Stubble, Tenant-Operators, Louisiana, 2004

	Selected Yield Levels				
	-20%	-10%	Base	+10%	+20%
Cane yield per harvested acre ¹ (tons)	27.9	31.1	34.9	38.4	41.9
Sugar yield per harvested acre ² (lbs)	5,584	6,212	6,980	7,678	8,376
Sugar yield per rotational (farm)	4,257	4,736	5,321	5,853	6,386
One-Fifth Land Share Rent:					
	-----pounds of sugar per rotational acre-----				
Share of production per rotational					
Mill share (39.0%)	1,660	1,847	2,075	2,283	2,490
Landlord share (12.2%)	519	578	649	714	779
Grower share (48.8%)	2,077	2,311	2,597	2,857	3,116
	-----dollars per pound of sugar-----				
Breakeven price to recover ⁴ :					
Direct costs	0.155	0.141	0.129	0.119	0.111
Total specified costs	0.208	0.187	0.171	0.158	0.146
Total costs plus overhead	0.245	0.220	0.201	0.185	0.171
One-Sixth Land Share Rent:					
	-----pounds of sugar per rotational acre-----				
Share of production per rotational					
Mill share (39.0%)	1,660	1,847	2,075	2,283	2,490
Landlord share (10.2%)	434	483	543	597	651
Grower share (50.8%)	2,163	2,406	2,703	2,974	3,244
	-----dollars per pound of sugar-----				
Breakeven price to recover ⁴ :					
Direct costs	0.149	0.135	0.124	0.114	0.107
Total specified costs	0.200	0.180	0.164	0.151	0.141
Total costs plus overhead	0.235	0.212	0.193	0.177	0.164

¹ Average farm yield across harvested acreage of plant-cane, 1st stubble, 2nd stubble, and 3rd stubble (base yield of 36 tons plant-cane, 37 tons 1st stubble, 34 tons 2nd stubble, 33 tons 3rd stubble).

² Average yield in tons per acre multiplied by a 200 CRS.

³ Assumes standard land rotation of 20% each of fallow, plant-cane, 1st stubble, 2nd stubble and 3rd stubble.

⁴ Breakeven prices are calculated by dividing grower's share of production into direct costs, total specified costs, and total specified costs plus overhead. No adjustment is made for molasses payments, hauling rebate, or other adjustments.

Table 2. Estimated planting costs for 100 acres of plant-cane, whole-stalk planting

Planting cycle phase:	<u>Whole-stalk hand plant</u> ¹		<u>Whole-stalk machine plant</u> ²	
	Acres	Total	Acres	Total
	Required	Cost	Required	Cost
	--acres--	-dollars-	--acres--	-dollars-
Cultured seed-cane	1.8	1,937	3.3	3,603
First seed-cane expansion	13.3	7,516	18.2	9,560
Second seed-cane expansion	100.0	48,473	100.0	44,681
Total cost to plant 100 acres		57,926		57,843
Total planting cost per acre		579		578
Variable planting cost per acre		399		405

¹ Whole-stalk planted seed-cane planted by hand with a 7.5:1 planting ratio.² Whole-stalk planted seed-cane using a one-row whole stalk planter with a 5.5:1 planting ratio.

Table 3. Estimated planting costs for 100 acres of plant-cane, billet planting, 3:1 planting ratio

Planting cycle phase:	<u>One-row billet plant</u> ¹		<u>Three-row billet plant</u> ²	
	Acres	Total	Acres	Total
	Required	Cost	Required	Cost
	--acres--	-dollars-	--acres--	-dollars-
Cultured seed-cane	11.1	12,243	11.1	12,714
First seed-cane expansion	33.3	17,020	33.3	16,991
Second seed-cane expansion	100.0	41,956	100.0	37,631
Total cost to plant 100 acres		71,219		67,336
Total planting cost per acre		712		673
Variable planting cost per acre		496		457

¹ Billet planted seed-cane using a one-row billet planter with a 3.0:1 planting ratio.² Billet planted seed-cane using a three-row billet planter with a 3.0:1 planting ratio.

Table 4. Estimated opportunity cost of additional seed-cane acreage required by billet planters

Planting operation:	<u>Seed-cane acres required</u> ¹		
	Whole-stalk	One-row	Additional seed-cane
	machine planter	billet planter	acres required
	--acres--		
Plant cultured seed-cane	3.3	11.1	7.8
Plant first seed-cane expansion	18.2	33.3	15.1
Plant second seed-cane expansion	100.0	100.0	-
Total additional seed-cane acres			22.9
Opportunity cost of additional seed-cane acreage per acre of plant-cane planted ²			\$321

¹ Seed-cane acres required to plant 100 acres of plant-cane. Planting ratios: one-row machine whole stalk planter 5.5/1, one-row billet planter 3.0/1.² Opportunity cost calculated as 22.9 acres x 7,000 lbs per acre x \$0.20 per lb / 100 acres.