

SUGARCANE PRODUCTION COSTS IN 2014

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Projected costs and returns for the various stages of sugarcane production in Louisiana were estimated for the 2014 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 2013 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 seedcane, planting cultured seedcane, field operations on plantcane, first stubble, second stubble, and third stubble, succession planting, as well as the costs of harvesting with wholestalk and combine harvesters. Costs and returns were estimated for tenant-operators, reflecting the predominant land tenure situation, and reflect a mill payment of 39 percent of production and a land rent payment of one-fifth and one-sixth shares of the "after milling crop" proceeds. 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. These values also represent production costs per pound of sugar produced at assumed yield levels. Breakeven raw sugar yield per acre of sugarcane harvested are presented in Table 2 for a selected range of raw sugar prices.

Estimated sugarcane production costs for the 2014 crop year were based on projected input prices obtained in the fall of 2013. Projected prices for major production inputs included diesel fuel at \$3.30 per gallon, and nitrogen, phosphate and potash fertilizer at \$0.50, \$0.50, and \$0.37 per pound of active ingredient, respectively. Estimated variable production costs for specific phases of production were as follows: fallow operations and seedbed preparation - \$156 per acre, cultured seed cane - \$521 per acre, hand planting operations - \$275 per acre, mechanical planting operations - \$239 per acre, plant cane field operations - \$276 per acre, first stubble field operations - \$345 per acre, second and older stubble field operations - \$339 per acre, and harvest operations - \$168 per acre.

Allocated (unrecovered) sugarcane planting cost estimates were estimated for sugarcane planted in 2014. Published estimates for allocation of total planting costs as of January 1, 2015, for sugarcane planted the previous year, were as follows: cultured seed cane - \$1,135 per acre, propagated seed cane - \$800 per acre, hand planted whole stalk plant cane - \$758 per acre, machine planted whole stalk plant cane - \$813 per acre and machine planted billet plant cane - \$1,034 per acre. These estimates serve as a basis for the determination of sugarcane crop value associated with changes in land ownership or tenant arrangements.

Table 1. Projected breakeven selling prices for raw sugar for selected yield levels, harvest through third stubble, tenant-operators, Louisiana, 2014

	Selected Yield Levels				
	-10%	-5%	Base	+5%	+10%
Cane yield per harvested acre ¹ (tons)	30.5	32.2	33.9	35.6	37.3
Sugar yield per harvested acre ² (lbs)	6,712	7,085	7,458	7,831	8,204
Sugar yield per rotational (farm) ³	5,105	5,389	5,672	5,956	6,240

One-Fifth Land Share Rent:

-----cents per pound of sugar-----

Breakeven price to recover⁴:

Direct costs	18.4	17.7	17.0	16.4	15.9
Total specified costs	24.3	23.2	22.3	21.5	20.7
Total costs plus overhead	25.5	24.4	23.4	22.5	21.7

One-Sixth Land Share Rent:

-----cents per pound of sugar-----

Breakeven price to recover⁴:

Direct costs	17.7	17.0	16.4	15.8	15.3
Total specified costs	23.3	22.3	21.4	20.6	19.9
Total costs plus overhead	24.5	23.4	22.5	21.6	20.8

¹ Base average farm yield across harvested acreage of plantcane, 1st stubble, 2nd stubble, and 3rd stubble (base yield of 40 tons plantcane, 37 tons 1st stubble, 31 tons 2nd stubble, 29 tons 3rd stubble).

² Average yield in tons per acre multiplied by a 220 CRS.

³ Assumes standard land rotation of 20% each of fallow, plantcane, 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.

Table 2. Projected breakeven raw sugar yields for selected raw sugar price levels, harvest through third stubble, tenant-operators, Louisiana, 2014

	Selected Raw Sugar Price Levels				
	-2.0	-1.0	Base	+1.0	+2.0
Raw sugar price (cents per pound)	20.0	21.0	22.0	23.0	24.0

One-Fifth Land Share Rent:

-----pounds of sugar per harv. acre-----

Breakeven yield to recover:

Direct costs	6,348	6,046	5,771	5,520	5,290
Total specified costs	8,312	7,916	7,556	7,227	6,926
Total costs plus overhead	8,715	8,300	7,923	7,579	7,263

One-Sixth Land Share Rent:

-----pounds of sugar per harv. acre-----

Breakeven yield to recover:

Direct costs	6,098	5,808	5,544	5,303	5,082
Total specified costs	7,984	7,604	7,258	6,943	6,654
Total costs plus overhead	8,372	7,974	7,611	7,280	6,977

DETERMINATION OF OPTIMAL SUGARCANE CROP CYCLE LENGTH

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As newer sugarcane varieties are adopted by producers and older varieties are phased out of production, it is important to evaluate the stubble yield pattern of newer varieties to determine the impact on optimal sugarcane crop cycle length. Given the high cost of planting a perennial crop such as sugarcane, the objective is to maximize total net economic returns from the initial planting. Over the past four to five years, approximately 10% to 14% percent of Louisiana sugarcane acreage was in third or older stubble. This percentage implies that approximately half of the second stubble acreage is being kept for production the following year and the other is being plowed out to prepare for planting a new crop. With the goal of maximizing net returns above variable costs over the entire crop cycle, estimation of the required breakeven third stubble sugar yield can aid the decision of whether to keep older stubble sugarcane tracts in production. Research is being conducted to evaluate the optimal crop cycle length which would maximize economic net returns for existing commercial varieties as well as new varieties as they are released to the industry.

Breakeven third stubble sugar yield is defined as the sugar per acre yield of third stubble required to equate total crop cycle net returns above variable costs for crops cycles through harvest of second and third stubble crops. Factors impacting the level of breakeven third stubble yield include plant cane through second stubble sugar yields, raw sugar market price, grower share of production and third stubble variable production costs. Average outfield trial sugar yields for 2010 through 2014 are shown in table 1 for plant cane through third stubble crops, along with the estimated breakeven third stubble sugar yield. Plant cane sugar per acre yields for major commercial varieties evaluated in the outfield trials averaged 8,704 pounds per acre. Average first, second and third stubble yields were estimated at 93%, 81% and 84% of average plant cane yields. Breakeven third stubble sugar yields were estimated for each of the major commercial varieties. This breakeven yield level varied on a sugar per acre basis, but was observed to be relatively stable on a percent of previous crop cycle yields. Estimated breakeven third stubble yields, based on outfield trial data, ranged on a sugar per acre basis, from 5,318 to 6,315 pounds per acre, but was relatively constant on a percentage basis at approximately 74% of the simple average of plant cane through second stubble yields.

Table 1. Estimated Minimum Required Third Stubble Sugar Yields, 2010-2014 Yields

Variety	Plant Cane ¹	Crop Age			BE Third Stubble ²
		First Stubble ¹	Second Stubble ¹	Third Stubble ¹	
----- (lbs/acre) -----					
HoCP 96-540	8,202	7,161	5,991	6,143	5,318 (74.7%)
L 99-226	9,351	8,803	7,421	7,465	6,315 (74.1%)
HoCP 00-950	9,245	8,061	7,781	7,696	6,200 (74.1%)
L 01-299	8,033	8,972	8,079	8,538	6,250 (74.8%)
L 03-371	8,710	8,178	7,028	7,688	5,931 (74.4%)
HoCP 04-838	8,795	7,936	7,227	7,539	5,939 (74.4%)
Ho 07-613	8,591	7,640	5,971	5,965	5,510 (74.5%)
Average	8,704	8,107 (93.1%) ³	7,071 (81.2%) ³	7,291 (83.8%) ³	5,923 (74.4%)

¹ Source: LSU AgCenter Sugarcane Outfield Variety Trials, 2010-2014 averages.

² Estimated breakeven (BE) third stubble yield based on actual plant cane through second stubble yields. Breakeven third stubble yield is estimated as the minimum required sugar yield for third stubble to equate whole farm net returns to a crop cycle through second stubble. Percentage value equals breakeven third stubble yield expressed as a percent of the simple average of actual plant cane through second stubble yields.

³ Percentage values are stubble sugar yield per acre as a percent of the plant cane sugar yield per acre.

ECONOMIC VALUE OF PRESCRIBED SUGARCANE BURNING

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Prescribed burning is a crop management practice widely used in the production and harvest of many agricultural and timber products across the United States. In Louisiana, prescribed burning is widely used in sugarcane production to reduce the amount of excess plant material associated with the harvest, transportation and processing of sugarcane into raw sugar and molasses. A research study was conducted to estimate the economic value of prescribed burning to the Louisiana sugarcane industry.

The burning of sugarcane as a crop harvest management practice has many benefits, both direct and indirect. In Louisiana some of the direct benefits of sugarcane burning include: (a.) improve the efficiency of harvesting sugarcane in the field, thereby reducing the cost of harvesting sugarcane, (b.) reduce the number of truckloads needed to transport harvested sugarcane to the mills, thereby reducing traffic as well as wear and tear on public roads, (c.) decreasing the volume of plant material which must be processed at raw sugar mills, thereby shortening the harvest and processing season, (d.) increasing the recovery of raw sugar from processed sugarcane, thereby improving the overall quality of the sugar produced, and (e.) decreasing yield losses in subsequent sugarcane stubble crops, thereby extending the crop cycle and reducing planting costs. Some of the indirect benefits of sugarcane burning include: reduce plant diseases which might overwinter on remaining crop material, reduce insect pest populations within fields on subsequent stubble crops, and reduce the establishment and spread of weeds which impact crop yields.

Four direct components of the annual economic benefit of sugarcane burning were estimated here. The annual economic benefit values were estimated using 2011-2013 crop year average sugarcane production data as a base. In addition, an estimated 20% of additional plant material volume would assumed to be present in the field without burning, most of which would remain on the field after harvest, although a sizeable portion would also be transported to the mill along with harvested sugarcane. The four major direct benefits of burning evaluated were: (1) reduction in additional harvested sugarcane transportation costs, (2) reduction in additional processing costs, (3) reduction in sugar recovery losses, and (4) reduction in stubble crop yield losses. Estimating the monetary value of these four potential costs/losses resulted in an estimate of the annual value of the economic benefit of burning to the Louisiana sugarcane industry of \$120,349,196 per year.