

# *The Louisiana Sugar Industry*



*Distributed by*  
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## **FROM LOUISIANA SUGAR CANE FIELDS TO YOUR SUGAR BOWL**

Sugar is pure, contains no man-made chemicals or warning labels, is 100% natural, and contains less than 16 calories per teaspoon. Unlike artificial sweeteners sugar has been declared safe by the Food & Drug Administration (GRAS list). Sugar, or sucrose, is produced most commonly from sugarcane or sugar beets when the energy of sunlight along with chlorophyll in the leaves transforms water and nutrients into sugar. Sugarcane and/or sugar beets are produced in 16 states and provided over 9.0 million short tons of sugar to the USA in 2002.

In 2003, sugarcane is being produced on over 450,000 acres of land in 25 Louisiana Parishes. Production should exceed fifteen million tons of cane with an economic impact of \$1.7 billion to the cane growers and raw sugar factories of the state. Louisiana produces about 20% of the sugar grown in the United States (beets and cane). Approximately 27,000 employees are involved in this production and processing of sugar in Louisiana alone.

Of the U.S. sugar producing areas, Louisiana is the oldest and most historic. Sugarcane arrived in Louisiana with the Jesuit priests in 1751 that planted it near where their church now stands on Baronne Street in New Orleans. Several plantations were planted in what is now the city limits of New Orleans and in 1795, Etienne deBore, first granulated sugar on a commercial scale in Audubon Park. Except for disastrous production years during the Civil War, during a disease epidemic of the 1920's, and from 10 degree freezing temperatures affecting the 1990 crop, the Louisiana sugarcane industry has continued to increase in productivity, mainly due to improved varieties, cultural practices, pest control and sugar processing techniques. The Louisiana sugarcane industry is currently in its third century of sugar production.

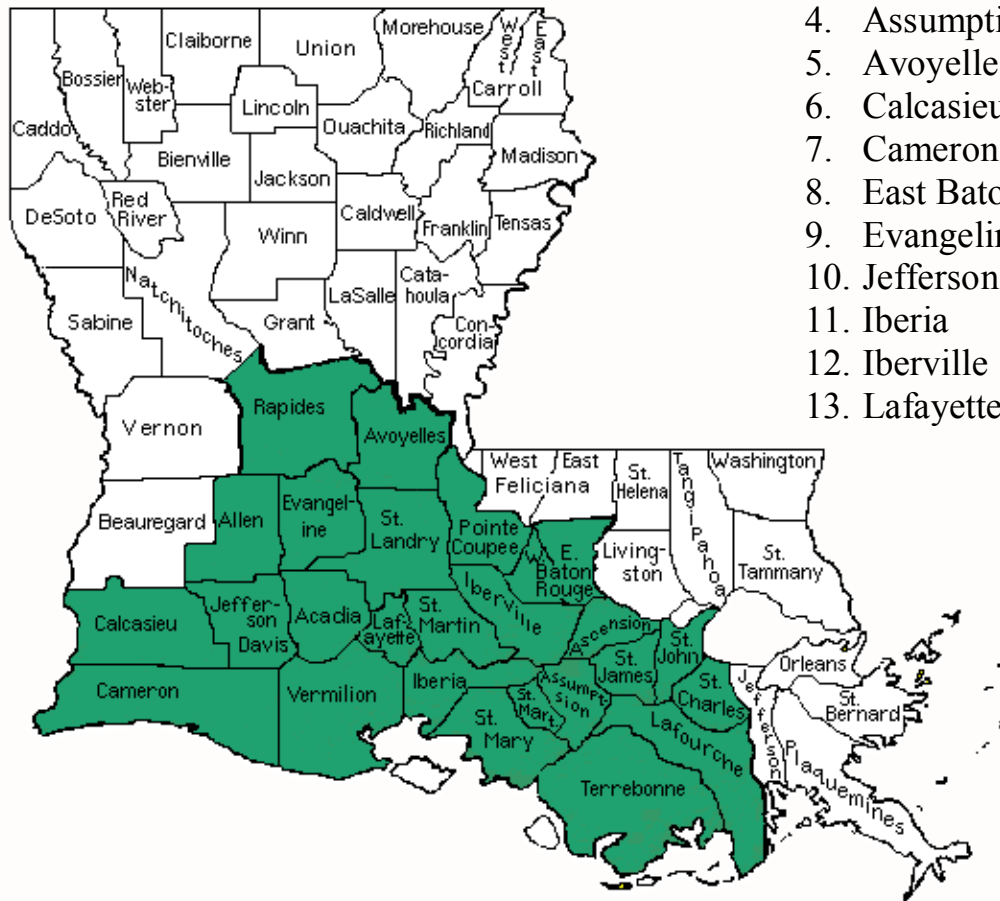
Sugarcane is planted vegetatively, using whole stalks of cane rather than true seed. Each stalk consist of several joints which each have a bud. Cane stalks are planted in rows during the fall of each year and the buds produce shoots of cane the following spring. After maturing into stalks during the late summer, the cane crop is first harvested that fall and is called the plant cane crop. Sugarcane is a grass and more than one cutting can be harvested from each planting. In Louisiana, two to four additional annual cuttings (called ratoon crops) are made before the land has to be fallowed and replanted.

All Louisiana sugarcane is mechanically harvested using either soldier or combine type harvesters. Soldier harvesters cut off the cane tops, cut the stalks from their attachment to the row, and lay them on heaps behind the machine. After the cane heaps are burned to remove excess trash, cane loaders place the cane in large wagons for transport to the raw sugar factories. Combine harvesters cut the stalks into short pieces or billets, while extractor fans remove a portion of the leaf trash. Billets are then transported to the factories.

At the raw sugar factories, cane is washed and crushed, with the juice being boiled down to a thick syrup. The cane by-product is bagasse, which is used as a fuel to power the factories. The thick syrup is separated into sugar crystals ("raw sugar") and molasses (used in livestock feed). The raw sugar is sold to refiners who melt the raw sugar crystals, remove the remaining impurities and color, and produce white or "refined" sugar.

**Prepared and distributed by the American Sugar Cane League of the USA, Inc.  
Dedicated to promoting and protecting the Louisiana sugar industry.**

## Parishes Producing Sugarcane



1. Acadia
2. Allen
3. Ascension
4. Assumption
5. Avoyelles
6. Calcasieu
7. Cameron
8. East Baton Rouge
9. Evangeline
10. Jefferson Davis
11. Iberia
12. Iberville
13. Lafayette
14. Lafourche
15. Point Coupee
16. Rapides
17. St. Charles
18. St. James
19. St. John
20. St. Landry
21. St. Martin
22. St. Mary
23. Terrebone
24. Vermilion
25. West Baton Rouge

**LOUISIANA SUGARCANE INDUSTRY PRODUCTION DATA -- 1963 TO 2002**

Crop Year	ACREAGE		SUGAR PRODUCTION			CANE PRODUCTION		YIELD	MOLASSES	INDUSTRY	
	Total	Harvested	Sugar,	Sugar	Per	Gross Cane	Gross Cane	Recover Per	80°	Number	Number
	Planted	For Sugar	Raw Value	Per Acre	Gross Ton	Ground	Per Acre	Gross Ton	Brix	Of Farms	Of Mills
	<i>Acres</i>	<i>Acres</i>	<i>Short Tons</i>	<i>Pounds</i>	<i>Pounds</i>	<i>Tons</i>	<i>Tons</i>	<i>%</i>	<i>Gallons</i>	<i>#</i>	<i>#</i>
1963	322,029	295,492	759,473	5,140	168	9,062,892	30.7	8.38	60,302,273	2,308	46
1964	348,464	325,231	572,710	3,522	145	7,893,099	24.3	7.26	55,997,650	2,301	48
1965	314,241	288,345	550,035	3,815	155	7,088,693	24.6	7.76	46,339,726	2,218	47
1966	315,487	288,483	562,290	3,898	162	6,959,715	24.1	8.08	42,938,192	2,080	47
1967	316,240	293,820	740,234	5,039	170	8,710,147	29.6	8.50	54,632,966	1,912	46
1968	301,226	282,397	668,667	4,736	167	8,027,523	28.4	8.33	50,626,060	1,794	46
1969	256,580	235,090	537,429	4,572	176	6,112,137	26.0	8.79	39,550,133	1,687	44
1970	286,402	265,692	602,361	4,534	159	7,553,312	28.4	7.97	45,811,299	1,589	43
1971	328,387	301,401	571,213	3,790	155	7,368,010	24.4	7.75	43,407,068	1,513	43
1972	344,611	311,377	659,713	4,237	141	9,353,196	30.0	7.05	54,786,202	1,438	43
1973	349,631	318,907	557,854	3,499	148	7,536,708	23.6	7.40	43,807,499	1,290	39
1974	322,455	307,722	593,922	3,860	157	7,566,270	24.6	7.85	41,956,517	1,180	37
1975	330,861	308,000	643,652	4,180	177	7,273,509	23.6	8.85	40,361,988	1,214	36
1976	328,011	291,000	644,800	4,432	150	8,599,287	29.6	7.50	47,060,076	1,178	34
1977	323,633	304,000	668,175	4,396	160	8,327,441	27.4	8.02	43,501,022	1,103	33
1978	288,847	268,000	550,352	4,107	180	6,112,517	22.8	9.00	31,413,562	977	28
1979	262,872	240,000	505,000	4,208	182	5,542,579	23.1	9.11	31,000,000	853	25
1980	253,869	232,000	492,992	4,250	161	6,106,924	26.3	8.07	32,200,000	808	24
1981	265,000	247,000	711,500	5,761	194	7,348,441	29.8	9.68	38,747,800	800	23
1982	250,000	234,000	675,400	5,773	185	7,288,558	31.1	9.27	35,984,685	780	21
1983	265,000	245,000	606,000	4,947	185	6,537,000	26.7	9.27	31,849,000	768	21
1984	230,000	205,000	451,581	4,406	179	5,036,976	24.6	8.97	23,905,000	749	21
1985	250,000	226,000	530,663	4,696	174	6,087,846	26.9	8.72	30,704,000	714	21
1986	270,000	246,500	656,786	5,329	174	7,531,177	30.6	8.72	36,383,395	715	21
1987	285,000	263,000	748,000	5,688	225	6,665,000	25.3	11.25	35,672,000	725	21
1988	305,000	279,000	814,000	5,835	210	7,763,000	27.8	10.50	41,403,158	725	21
1989	320,000	294,000	864,000	5,878	207	8,329,000	28.3	10.37	41,000,000	696	21
1990	237,000	192,000	443,000	4,615	191	4,648,281	24.2	9.53	25,781,000	685	19
1991	347,000	319,000	750,000	4,700	189	7,945,000	24.9	9.44	43,332,000	725	20
1992	381,000	350,000	880,271	4,933	192	8,984,906	25.7	9.80	42,552,000	726	20
1993	390,000	360,000	893,000	4,961	193	9,240,395	25.7	9.66	50,428,956	693	20
1994	380,000	250,000	1,018,000	5,820	211	9,651,715	27.6	10.55	45,850,000	690	20
1995	395,000	364,000	1,075,003	5,800	200	10,585,417	29.0	10.00	61,450,000	690	20
1996	370,000	335,000	1,051,000	6,273	200	10,488,105	31.3	10.00	56,680,000	690	19
1997	410,000	380,000	1,275,000	6,710	212	12,019,441	31.6	10.61	68,332,000	690	18
1998	425,000	395,000	1,263,400	6,397	189	13,358,869	33.8	9.43	75,935,000	690	18
1999	463,000	432,000	1,675,000	7,800	211	15,982,000	37.0	10.40	92,250,000	690	18
2000	496,000	460,000	1,565,848	6,800	202	15,497,457	33.7	10.10	92,911,811	690	18
2001	491,000	452,000	1,512,841	6,867	207	14,976,997	33.1	10.52	86,678,133	690	17
2002	485,000	446,000	1,335,534	5,989	179	14,879,247	33.3	8.98	73,710,000	690	16

## LOUISIANA SUGARCANE STATISTICS

	<b>2002 CROP/VALUE IN 2003</b>
<b><u>INDUSTRY FACTS</u></b>	
Number of farms	690
Average farm size (acres planted)	715
Number of parishes farming sugarcane	25
Total acres in sugarcane cultivation	550,000
Total acres planted in sugarcane	485,000
% of acreage which is leased land	>80
<b><u>PRODUCTION</u></b>	
Acreage harvested for sugar	446,000
Acreage grown for seed cane	39,000
Total gross tons ground	14,879,247
Total short tons sugar produced (raw value)	1,335,534
Total gallons 80° brix molasses	73,710,000
<b><u>CROP VALUE</u></b>	
Value of the crop in Louisiana	\$ 560,000,000 <sup>1</sup>
Total value to growers and landowners (60%)	\$ 336,000,000
Total value from factories (40%)	\$ 224,000,000
State ranking (plant, animal and fisheries commodities) <sup>2</sup>	Third
State ranking (plant commodities only) <sup>2</sup>	First
Direct economic value generated (x 2.75)	\$ 1,540,000,000
<b><u>EMPLOYMENT</u></b> <sup>3</sup>	
Estimated number of farm workers	11,000
Estimated number of raw sugar factory workers	2,600
Estimated number of refinery workers	1,200
<u>Estimated number of support industry workers</u>	<u>12,200</u>
Total estimated number of industry workers	27,000

<sup>1</sup> Raw sugar is valued at 20.0 cents per pound and molasses is valued at 35.0 cents per gallon.

<sup>2</sup> Excludes Forestry; Louisiana Summary 2002 Agriculture and Natural Resources, LSU Ag Center Pub. 2382

<sup>3</sup> LMC International Ltd; Int. Sugar Jnl., 2002 Vol. 104, No. 1239 (124-129)

# LOUISIANA SUGARCANE PRODUCTION

**Planting:** Prior to planting, the fallow ground is disked and precision graded to insure good drainage. The fallow operation occurs from spring through summer and prepares the seedbed for good germination. Furrows are opened on six-foot wide rows and cane stalks are planted and covered. Each stalk consists of numerous joints, each with a bud which germinates and produces cane shoots. The planting season is from August through September. During the winter, the cane shoots are frozen back to the ground. In the spring the cane resprouts and begins to grow and tiller. Sugarcane is a grass and does not need to be replanted after every cutting. In Louisiana, three or four annual crops are normally harvested from each planting.



**Cultivation and fertilization:** The practice of working or stirring the top soil with disks or hoes pulled by tractors occurs each spring. This helps to control weeds, prepares the soil for fertilization and loosens the soil for cane roots to reach air and moisture. Essential plant nutrients are added to the soil to provide the cane plant with its requirements for maximum cane growth and sugar content.



**Summer growth:** Cane grows most rapidly during the summer months. During this period, the farmer cannot cultivate the crop but does control insects (sugarcane borer). With adequate moisture and typical summer temperatures, sugarcane can grow more than one inch per day during June, July and August.

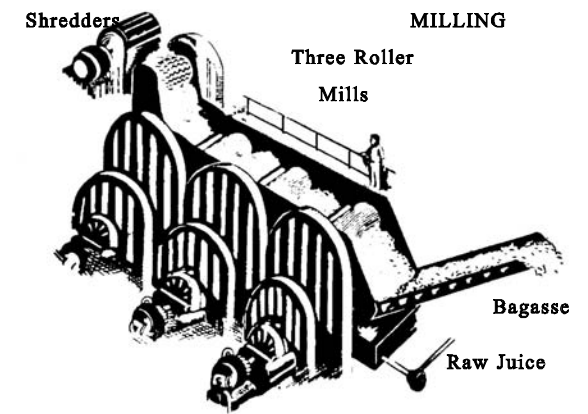


**Harvesting and transport:** The Louisiana harvest season normally occurs from early October through late December. All cane is harvested mechanically. Soldier harvesters cut the stalks even with the ground, cut off the tops and piles the stalks across the rows. Normally cane has about 15% trash (leaves) which is removed by burning. This allows for more efficient transportation and cleaner cane delivered to the raw sugar factory. Cane is normally burned one day after harvest. Mechanical field loaders pick up the cane from the heaps and place the cane into transport wagons. These wagons deliver the cane directly to the factory or to a transloader station where the cane is transferred to highway trailers. Combine harvesters (seen in the photo) cut the stalks into pieces (billets) and loads them directly into transport wagons. After delivery to the sugar factory, the cane is weighed, sampled, and washed before being milled. In the factory, cane is crushed and the extracted juice boiled to produce raw sugar and molasses.

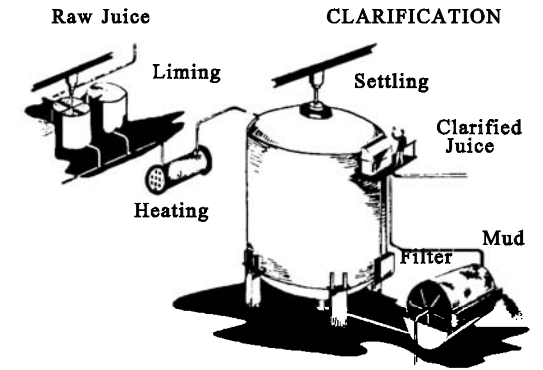


## LOUISIANA RAW SUGAR FACTORY OPERATION

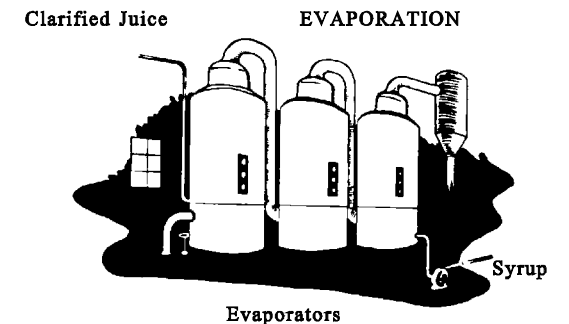
**MILLING** - Delivered cane is weighed for cane yield, sampled for cane quality and washed in the mill yard. Shredders then prepare the cane by producing a uniform mat of chopped cane on the carrier. A series of three-roller mills crush the cane and extract the raw juice. Water is sprayed on the cane to help wash the juice from the cane. The woody residue left after extraction of the juice is called bagasse and is used as a fuel in most factories but can also be used for paper, building boards, plastics, mulch and animal bedding or litter.



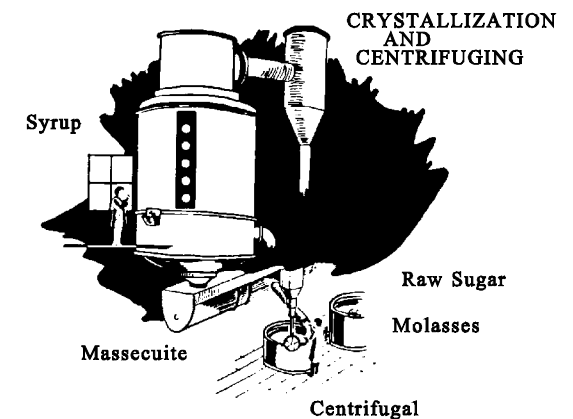
**CLARIFICATION** - The raw juice is strained and heated. Lime is added to cause impurities such as mud to settle. Clarifiers separate the juice into clarified juice and muddy juice. The muddy juice is sent to filters where any juice is removed leaving mud (filter cake) which is returned to the fields.



**EVAPORATION** - The clarified juice is then boiled in evaporators which remove most of the water leaving a thick syrup.



**CRYSTALLIZATION AND CENTRIFUGING** - The syrup is boiled at low temperatures under partial vacuum which causes the development and growth of sugar crystals. Massecuite (raw sugar crystals mixed with molasses) moves to centrifugals which separate the two. After all the commercially recoverable sugar is removed, the resulting molasses is sold as blackstrap molasses and is generally used as cattle food or can be used in production of alcohol, yeast, citric acid or vinegar. The raw sugar is then stored in warehouses until sold to refineries for further processing.



## Questions Most Frequently Asked About Sugar

### 1. What is sugar?

Sugar, or sucrose, is a carbohydrate that occurs naturally in every fruit and vegetable in the plant kingdom. It is a major product of Photosyntheses, the process by which plants transform the sun's energy into food. Sugar occurs in freatest quantities in sugarcane and sugar beets from which it is separated for commercial use.

### 2. Is there a difference between sugar produced from sugar beets and sugar produced from sugarcane?

There is no difference in the sugar produced from either cane or beet. Sugarcane, a giant grass, thrives in a warn, moist climate, storing sugar in its stalk. The sugar beet grows best in a temperate climate and stores its sugar in its white root. Sugar from both sources is produced by nature in the same fashion as all green plants produce sugar - as a means of storing the sun's energy.

### 3. How is sugar produced?

During the refining process, the natural sugar that is stored in the cane stalk or beet root is separated from the rest of the plant material. For sugarcane, this is accomplished by a) grinding the cane to extract the juice; b) boiling the juice until the syrup thickens and crystallizes; c) spinning the crystals in a centrifuge to produce raw sugar; d) shipping the raw sugar to a refinery where it is e) washed and filtered to remove impurities and color; and f) crystallized, dried and packaged.

Beet sugar processing is accomplished in one continuous process without the raw sugar stage. The sugar beets are washed sliced and soaked in hot water to remove the juice. The sugar-laden juice is purified, filtered, concentrated and dried in a series of steps similar to sugarcane processing.

### 4. What nutirents are present in sugar?

Sugar is pure carbohydrate, an important nutrient which supplies energy to the body. Vitamins and minerals are sometimes present, but in trace amounts. Sugar and other nutritive sweeteners play an important role in making other foods tast better and, through their many uses in cooking, increasing the variety of foods available.

### 5. Why is sugar found in many processed foods?

Sugar is prized for its sweet taste and has many other functions in cooking and baking. It contributes texture and color to baked goods. It is neded in the fermentation of yeast, which causes bread to rise. Sugar acts as a bulking agent (ice cream, baked goods) and preservative (jams, fruits), and it imparts a satisfying body of "mouth-feel" to beverages. In non-sweet foods - salad dressings, sauces, condiments - sugar enhances flavors and balances acid content in tomato and vinegar-based products.

### 6. What is honey?

Honey, is a mixture of sugars formed from nectar by an enzyme, invertase, present in the bodies of bees. Honey varies in composition and flavor, depending on the source of the nectar (clover, orange blossom, sage, etc.) A typical analysis of honey would show (exclusive of undetermined substances): 38% fructose, 31% glucose, 1% sucrose, 9% other sugars, 17% water and .017% ash.

### 7. Is honey more nutritious than granulated, powdered or brown sugar?

On an equal weight basis, there is very little nutritional difference between honey and sugar. Because it weighs more, a tablespoon of honey contains slightly more carbohydrates and calories than a tablespoon of sugar. Honey contains only insignificant amounts of some vitamins and minerals, and like sugar, should not be considered a source of these nutrients.

### 8. What is high fructose corn syrup?

Corn syrups are amanufactured by treating corn starch with acids or enzymes. Standard corn syrups, used by the food industry as well as the consumer, contain dextrose and other saccharides.

High fructose corn syrup (HFCS) is made by treating dextrose with enzymes. The result - HFCS - is a liquid mixture of dextrose and frctose that is iused by food manufacturers in soft drinks, canned fruits, james and other food applications.