

The Report of Prof. D. C. Suttan, Chemist in Charge of the Florida Sugar Manufacturing Company, St. Cloud, Florida, for the crop season of 1889 and 1890, published in the LOUISIANA PLANTER AND SUGAR MANUFACTURER of April, 1890, will interest practical modern sugar chemists, particularly the description of the crude machinery and methods employed.

The mill was a combination of two second-hand mills, one three-roll mill built by Morris & Co., of Philadelphia, with rolls $29\frac{1}{2}$ x 60 inches; the second two-roll mill built by Leeds, of New Orleans, La., the rolls 44 x 72 inches. The extraction, 76.96%, considering the apparatus, was good, but by no means such as a modern six-roll mill, preceded by a crusher, could, and would have, obtained.

The clarifying apparatus was inefficient, and could by no means care for the juice furnished by the mill, nor supply the demands of the evaporating apparatus; consequently the settling period of the clarified juice was not sufficient.

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"VARIETIES AND MATURITY OF CANE. -- The milling, no doubt, began too early this past season; as is shown by the weekly reports, there is a constant increase in the yield of sugar, from December 5 to the latter part of February, when we find a decrease from causes involving other things.

"Beginning this early, we find two sources of loss, so to speak, which results in a considerable amount in the course of a few weeks; the first loss comes from the fact that a large quantity of sugar, which would have been secreted at a later date, is not at that time present; and second, immature cane always contains a large percent of glucose which is gummy in its nature; occurring along with the glucose, in the green cane, is a large quantity of other gums, which, together with the glucose, hold a good amount of sugar in solution and prevent its crystallization, and otherwise preventing the crystals from growing to any size and firmness in the pan. The masse cuit, in being purged and washed, loses a large per cent of such sugar in passing through the meshes of the centrifugals into the molasses, going to make seconds, which crystallizes in the same manner, and so through the thirds to the last molasses, where we find a high polarization.

"The analysis of the different varieties of cane was carefully watched in order to ascertain which of the numerous varieties on the plantation would be the most profitable for the production of sugar; the red and red ribbon proved to be decidedly the best where they had been surrounded by anything like fair circumstances of growth. Frequently the mill juice contained from 15 to 17.5 of sucrose and .25 to .50 of glucose, a week's run giving 206.66 pounds per ton; 14.50 acres of crystalline cane gave 32.57 tons per acre, and 6,090 pounds of sugar, but on account of other circumstances this is not sufficient to give it the preference over the red and red ribbon.

"As regards green and green ribbon, with the other varieties, they are very poor sugar producers, slow in growth and delicate. During the latter part of February a quantity of green cane was ground which

"showed a mill juice of 15.50 sucrose and 2 per cent of glucose; these canes, with other such varieties, account to a large extent for the high percentage of seconds, and sugar in the molasses, and filter cake.

"It would, no doubt, have been a good idea to have placed the first masse cuit in the hot room, to remain there several days to assist in the growth and hardening of smaller grains, had the capacity of the room permitted it.

"INUNDATED CANE. -- The general proportional yield was greatly reduced, owing to the fact that during the early part of the year a considerable portion of the field was submerged, which retarded the growth of the cane and materially reduced the yield. This was owing to imperfect drainage, which was corrected at a later date, and there is now no fear of a repetition of this superabundance of water.

"The maximum yields, during the season, were 32.57 tons of cane, 6,090 pounds of sugar per acre, and 206.66 pounds of sugar per ton.

"The above is taken from weekly reports. None of the cane which gave the highest tennage presented a good "stand." Had the "stand" been regular, the yield would have been at least thirty-five tons and at about 6,600 pounds of sugar, and, it is reasonable to expect, even forty tons, thus giving a yield of sugar amounting to at least 7,500 pounds of sugar to one acre."

D. C. SUTTON,

Chemist in Charge, 1899