

Sugar Cane in Costa Rica

THE PROCESS

By Corrine Anderson, ©2014

I arrived in Costa Rica in the late spring of 2009, and on my first ride up to the town of San Isidro, above Grecia, where I rented a charming house on the top of a ridge that looked both ways for miles, it was pointed out to me that San Isidro and Grecia are surrounded by miles of sugar cane and coffee, the mainstays of the economy in this region.



As I became acclimated to my new home, and rode the local bus to Grecia, the closest city, for just about all of my needs, I enjoyed watching the sugar cane and coffee plants grow.

In the late fall, I began to notice some tufts of bloom coming up in the sugar cane fields. I first assumed that they were some sort of weed making its presence known

in the cane fields, but it soon became clear that the sugar cane itself was blooming and this was the first sign of the approaching harvest time. The tall and elegant blooms made the cane fields more noticeable, and they were everywhere, backed by puffy clouds, lit by the setting sun, filling distant fields, creating a plush white surface on even more distant fields. It was only a matter of time before I discovered that the road I lived on was the path to the local sugar cane cooperative factory, Cooperativa Victoria, located just two miles down the road on the way to Grecia.



Beginning in early January, small tractors were hauling small tractor-loads of cane, packed in large bundles fastened with a pair of chains in front and rear. (The tractor pictured here was probably the last load of the day, giving the workers a ride home, or at least as far as the Cooperativa). Only the harvest from local fields is delivered by these small tractors.

Cooperativa Victoria has 18 collection spots all over the region, and larger trucks gather the smaller loads at these collection spots and travel many miles to bring the harvest to the Cooperativa in Grecia. (These large trucks are a constant part of the traffic flow going right through the middle of Grecia on their way to the Cooperativa).

Ninety-five percent of the sugar cane in Costa Rica is harvested by hand, by men swinging machetes to chop the stalks off right at ground level - (the new cane arises from the roots of the old cane). It comes down to the factory in stalks about 6-8 ft. long, the dried leaves of the stalks being left on the ground in rows to provide mulch for the next crop. It is packed into bundles



in the field by cane loaders right on to the tractor, with chains lain on the bottom of the tractor wagon, and then the chains are fastened over the top when the load is full. The first loads are on their way to the factory shortly after dawn (about 6:30) and they keep running those tractors up and down the hill until almost dark, between 5:30 and 6:00 pm.

It is the beginning of April as I write this, and the parade of loaded tractors has continued incessantly since January. Harvest will last until sometime in May-June. The 5% of the cane that is harvested by machine is cut into 9" pieces by the harvester (ideal for dumping into the mills that begin to process the cane) and loaded into large bins directly on the trucks that will haul them to the factory. Machine harvesting is only possible when the cane fields are very large and relatively flat which is not the type of terrain found in most of this region. The sugar cane fields



reveal starkly the rows that have been harvested, as the tall green stalks slowly disappear into the distance. Strikingly, the new cane for next year's crop springs immediately up - within a few weeks the new cane is over 12 inches high. It comes up from the same roots as the old stalks, and the entire root system gets replaced about once every 5-6 years.

The trucks and tractors form a constant line-up at the entrance to the factory. Each vehicle is

individually weighed, and then passes by a "sampler," a tractor with a long snout edged with sharp teeth. The sampler projects the snout into the cane load, picking up a sample of each particular load, which is bagged and sent immediately to the Laboratory right there on the grounds for analysis of the quality of that particular load.

Payments to the farmers are made on the basis of the sugar content of each delivery.

The bundles on the tractors and trucks are dropped onto a loading area with the assistance of a crane that locks onto the chains that hold the bundles together lifts them and





either lines them up on the ground or drops them right into the first loading bin. The bins that hold the pre-cut pieces are dumped directly into the loader that begins to feed the cane into the mill. The smaller bundles wrapped with chains are picked up by crane and dropped into the feeder, where a young, agile worker leaps in and quickly disconnects the bundles from their chains. He has to move quickly as the loader that holds the cane is constantly moving.



The cane moves up to the top of the feeder where it begins its first process of chopping for the milling process.

It goes through two sets of blades that chop it fine in preparation for the milling process.



From the feeder on the outside of the building the cane enters the first of five mills where it is chopped finer and finer, each mill pressing the cane with heavy steel and iron drums to extract the juice from the cane.



As the cane moves progressively from mill to mill, the pulp becomes finer and drier, until it emerges as a very fine waste product which is recycled in two ways. Part of the pulp is used to make compost which is stacked in a field across the road from the factory, and sold back to the farmers to enrich their fields. Another part is dried and burned to provide energy to help run the mill.





The juice extracted from the cane now begins a series of processes to remove the liquid, remove impurities and reduce the product to the final dry sugar crystals that are packaged and sent to market. First the juice is put into long horizontal tanks where it is heated to extremely high temperatures,

evaporating a large quantity of the water in the juice. The water that is evaporated from the juice leaves the factory and goes into a large pond outside the factory through a sprinkling system to cool it. Some of the cooled water is then used to help cool the evaporating tanks within the factory.



The sugar cane liquid then gets poured into large upright vertical clarifiers to precipitate out the impurities.



From the clarifying tanks, it flows through evaporating tanks, removing even more liquid.



At this point, the juice contains only 15-20% solids, and must be evaporated and concentrated even more to a honey-like syrup called **meladura**. This syrup then enters a series of vertical tanks which further evaporate the liquid, making a thicker and thicker honey.



The texture and thickness of the honey is periodically tested by removing a small sample, dripping it onto a piece of glass and checking it with a magnifying glass. The evaporating tanks are very carefully controlled for temperature and timing by computers.

After leaving the evaporating tanks, the meladura, by this time a dense mixture of sugar crystals and honey syrup, enters large centrifuges which separate out the syrup from the sugar crystals.



The sugar crystals are then tossed in a drier (which looks very similar to a front-loading laundry drier) as it revolves and tosses the crystals while it passes a current of hot air through them to thoroughly dry the product to prevent spoilage and growth of harmful micro-organisms.

When all the moisture has finally been removed, the dried sugar moves on to the packing room where a series of machines drop 1-kg. portions into plastic bags, seals them and passes them down to the workers who pack the packages into larger 50-kg. bags, stitch the larger bags across the top, and stack them for shipping to markets. At right you can see the packing machine, dividing the sugar into 1-kg. portions.





A coarser variety is packed into 50-kg. and 1000-kg. bags for shipping to and use by food and alcohol processing factories.

“Big Bags” containing 50 and 1000 kg. of sugar.

A portion of the sugar is not packed but transported by truck to Punta Morales port for international exportation in large vessels.



And that is how those lovely sugar canes, blowing in the morning breeze, become the refined sugar that comes to your table.



About the Author

Corrine Anderson hails from the San Francisco Bay Area. She came to Costa Rica in 2007, settling in the Grecia area to explore the beauty of the country with her camera.



She has since returned to California, but maintains an active role in the Grecia expat community.