

Project Gaia/Brazil Site Report: Urucânia - Usina de Jatiboca (200 km from Belo Horizonte)

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The Jatiboca Sugar Company was founded in 1920 in the municipality of Ururcania situated near the city of Ponte Nova, some 200 km from Belo Horizonte, the capital of the state of Minas Gerais, Brazil.

Currently the company has capacity to produce about 1 million sacks of sugar and up to 32 million liters alcohol per year. It owns a total sugar cane planting area of 9000 ha and supplies another 2000 ha. It has 900 permanent employees, and more than 600 workers are contracted during the sugar cane harvest. In the last harvest (2005); 4,986,769 liters of hydrated alcohol was produced; 8,750,634 million liters of anhydrous alcohol was produced; and 984,149 fifty kg bags of sugar and 21,630,225 kg of molasses were produced.



Jatiboca Sugar Company



Company houses

The company selected 20 families that work for them to participate in the Project Gaia pilot study, donating 5 liters of ethanol/week for each family. The study began in May and finished up in December 2006.

The families live in homes owned by the Company in various communities in the area. Fifteen families live in villas sited at the entrance to the company grounds. This is a rural community. Four families are located about 30 km from the factory in the district of Ana Florencia, in the grounds of a factory that closed down. One family lives in the urban district of Cardosas. The majority of these families work on the sugarcane plantations.

We partnered with the Jatiboca Sugar Company after being introduced to them by the President of Siamig (Sugar Companies Association of Minas Gerais), Mr. Custodio Martins da Silva, who is a shareholder with the Jatiboca Company. The President of the Jatiboca Sugar Company is Mr. Moacir de Melo.

Socio-economic Profile of the Families

In Jatiboca, 15% of the participating families are 'white', 55% are 'medium-brown', and 30% are 'black'. The head of each family works at the sugar company

Education

Heads of households have the following levels of education:

- 10% did not have a formal education
- 70% had elementary education
- 20% had finished middle school

Family size

Of the 20 families participating in the pilot study, 50% had 3-4 people living in the home, 40% had 5-6 people, and 10% had more than 7 people living in the home.

Family income

The families work at the sugar company. During the harvest, family income is higher, and is influenced by the size of the harvest. Also, many of the family members work during the harvest to increase the total family income. But, the vast majority of workers live in company housing and are taxed from their salary by the company to pay for their housing.

We used the following parameters, established by Shell Foundation, to determine living standards. In Jatiboca:

- 10% of families lived on up to US\$ 1.00/day
- 90% of families were between US\$1.00-3.00/day
- No households earned more than US\$ 3.00/day

The families live modestly, despite electronic appliances observed in their homes, e.g. TV, DVD player, refrigerator. One family does not possess a TV, but it may be due to religious reasons.

Findings

Findings from pilot study participants show the following:

Safety issues

- 84% feel that the CleanCook Stove is Safe, 16% Very Safe
- Compared to LPG: 58% say CleanCook safer than LPG, 31% say less safe
- Compared to wood: 58% say CleanCook safer, 5% (1 person) say less safe
- Smoke Levels: 95% very low, 5% high
- Compared to wood, 100% say CleanCook is lower



I stopped using firewood. The CleanCook stove is safer, especially with children around. And my baby is affected by the smoke from burning wood.”—Meire, wife of Geraldo

Positive and negative factors of the CleanCook stove:

These were open questions, some families gave more than one response:

- Positive factors: 56% safe, 32% faster cooking, 8% efficiency.
- Negative factors: 30% too few burners, 26% pot supports are not good, 11% dirty pots, 11% difficult to clean, 11% not safe

Willingness and ability to pay for CleanCook:

- Around 58% of the sample said they did not know what a fair price would be.
- 55% said R¹50, (R100 ~ \$57US)
- 32% said R100
- 5% said R150.

Asked what price they would be able to pay:

- 5% up to R50
- 16% stated between R100-120,
- 21% between R150-200

Buying a CleanCook

- 15% were not interested
- 22% weren't sure
- 26% would buy it cash
- 37% said they would need financing, of those 37%--71% would use microcredit.

Ethanol use

One problem identified by 47% was they wouldn't know where to buy ethanol - Jatiboca is a rural area where there is often no gas pump nearby, and sugar companies are not allowed to sell it directly to people.

Ethanol pricing

- 47% said did not know a fair price to pay
- 53% said between R0.75-1.00 per liter
- 32% of families said they could pay up to R1.00 per liter
- 11% said up to R1.20 per liter

Time saving

The question was asked 'How much cooking time/day was saved by using the CleanCook stove?'

- 32% did not know
- 58% saved between 20-30 minutes a day
- 5% said about 15 minutes
- 5% said about an hour (they used wood before)

Before the test, 83% used wood and LPG in combination as they needed more than one burner to cook the food.

Continued use of CleanCook

- 55% would use it depending on the price of ethanol and the stove
- 28% would use it if the sugar company continued to donate ethanol
- 17% not interested

Suggestions to improve the stove

- better pot supports – 41%
- more burners – 35%
- an attached table – 15%
- increase tank size – 6%
- add handles for easy transport – 3%

¹ Brazilian Real

Future Outlook

The results from Jatiboca are in agreement with the results at the other sites where we tested the CleanCook stove. After the 3 months that the alcohol was donated, we implemented an offsetting cost per liter of alcohol mechanism to determine willingness to pay for the ethanol.

Of the total number of families, 67% continued to use the CleanCook stove, due mostly to its fast cooking time and its safety. For the large majority of families, another relevant factor is the possibility to buy fuel in small amounts, principally for families that are not on a fixed income.



Since we began using the CleanCook stove we stopped using gas. The ethanol we receive lasts for a week. The stove is very economical. It is very easy to use and is safe to use when my daughter is in the kitchen.— Tamires, daughter of study participant Gilson, from Ana Florencia

We are negotiating with metal companies about manufacturing the CleanCook stove in Brazil. In relation to suggestions to improve the stove, a one-burner model already exists. This could be adapted and cooks could then choose a model based on the number of burners. Also, the suggestion to improve the pot supports is already being worked on.

We are also testing the CleanCook stove in other settings, like campgrounds and with truckers, where it is being accepted favorably by the users.

The biggest concern at this time is the high price of a liter of ethanol. We know that the CleanCook stove, in the near future, will be a viable cooking option for families because strict environmental regulations, including fuelwood cutting, are being put into effect, and LPG prices continue to rise.



Project Gaia team visit

Brazil's climate is favorable for sugarcane production, and the people living in the rural areas understand the process very well. In Minas Gerais, like other parts of the country, the agriculturalists are familiar with the production of cachaça (a hard rum), which implements a distilling process that could be easily adapted to produce ethanol in a micro-distillery. We intend to provide incentive to micro-distillery producers, with community investment to supply ethanol to families that use a CleanCook stove.

Our intention is for communities to procure their own ethanol after having established a cooperative or association of families so that they could be self-sufficient at the local level.

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