

Colombia: A New Ethanol Producer on the Rise?

After slightly more than three years of operations, Colombia's sugar-ethanol industry has become the most developed among all South American nations except Brazil. According to the Colombian Association of Sugarcane Cultivators (ASOCAÑA), Colombia's ethanol plants are also energy self-sufficient. This rapid development has been facilitated by a sugar industry that is one of the most efficient in the world, due to high sucrose yields and low production costs.

Cane-based ethanol production in Colombia is expanding, and land is needed for farmers to sow additional sugarcane needed to meet rising demand. According to ASOCAÑA, if expansion projects develop as planned, ethanol production in Colombia could increase more than 200 percent from 2007 to 2010.

Colombia is unlikely to export cane-based ethanol in the immediate future. Current ethanol production in Colombia is not enough to satisfy domestic mandates, which increase every year and are believed to limit Colombia's export capacity. According to ASOCAÑA and the Colombian Sugarcane Research Center (CENICAÑA), growing demand for cane should not affect Colombian food exports and food security because the cane for future ethanol production will come from new cropland and unproductive pasture land.

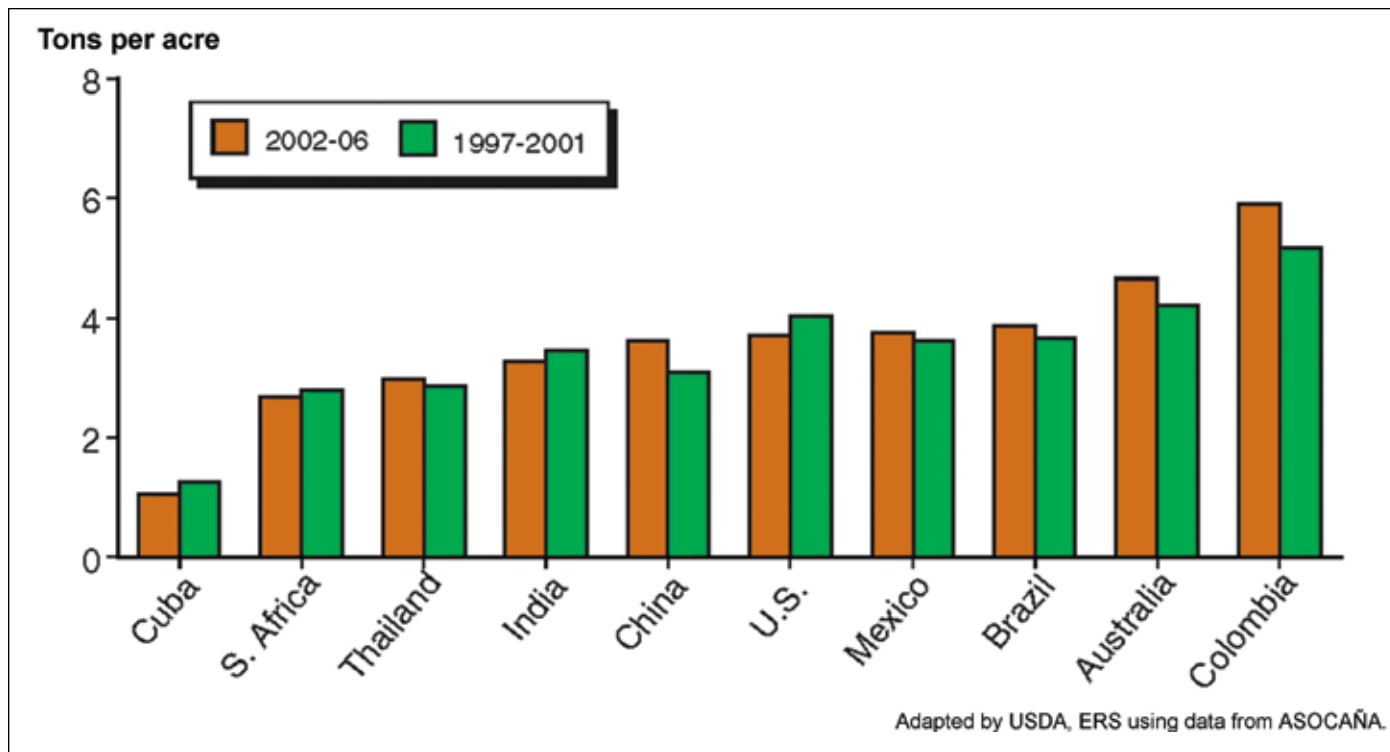
Colombian government policies have aided in the development of the domestic ethanol industry. In 2001, Law 693 established that gasoline must contain a 10-percent ethanol blend by 2006 and a 25-percent blend within 15 years. When the law was issued, Colombia had no ethanol production facilities. It was not until October 2005 that the country began to produce sugarcane-based ethanol.

The Colombian ethanol industry has several distinctive features. First, most Colombian mills that produce ethanol are energy self-sufficient. They use bagasse, the byproduct remaining after crushing and extracting juice from cane, to generate energy needed for processing. They also sell surplus bagasse-based power to the national electric grid. According to ASOCAÑA (2008), even though the cost of production of bagasse-based electricity is higher than that of coal-based or hydroelectric-based electricity, the final price (after tax, commercialization, and transportation costs) that the mills would have to pay for conventional electricity would be higher than that of bagasse-based electricity.

Another distinctive characteristic is that the technology used to produce ethanol in Colombia apparently provides environmental benefits comparable with those associated with the technology used in neighboring Brazil, which has the most developed



Average sucrose yield in selected countries



sugarcane-based biofuels industry in the world. Colombia uses Indian technology rather than Brazilian technology. According to engineers at Colombian ethanol plants, Indian technology enables the plants to comply with tight environmental regulations set by the Colombian government. The advantage of Indian technology is that it produces low volumes of vinasse, the byproduct generated after the distillation of fermented molasses, and allows for the vinasse to be further processed. Most ethanol plants in Brazil do not further process vinasse. On average, Colombian ethanol production generates 1 to 2 liters of vinasse per liter of ethanol, whereas in Brazil, a liter of ethanol generates 15 liters of vinasse. If not properly disposed of or further processed, vinasse can pose a threat to water or soil conditions.

The decision to use Indian technology appears to be paying off. Colombian-processed vinasse contains high volumes of potassium, phosphor, and magnesium, which allows it to be sold as fertilizer.

Lastly, ethanol plants in Colombia use about one-third of the water of Brazilian plants, and about one-half of the energy (ASOCAÑA 2007, 2008). Most sugarcane plantations in Colombia, however, need irrigation, whereas most Brazilian plantations do not.

According to ASOCAÑA, the Colombian sugar industry is the most efficient in the world when measured by sucrose yield tons/acres/year (see figure), and the 2007 LMC International “Worldwide Survey of Sugar and HFCS Production Costs” reveals that the industry ranks among global leaders in lowest costs of production. The cost of production is measured as the sum of field costs, factory costs, and administrative costs. According to ASOCAÑA, the Colombian industry could decrease costs by improving training and, perhaps, expanding use of mechanized harvesting.

As of April 2008, about 70 percent of all gasoline sold in Colombia was blended at the 10-percent level with ethanol. In 2009, a new ethanol plant owned by the Riopaila mill will start producing 79,200 gallons per day. Additionally, an existing ethanol plant is adding production equivalent to 26,400 gallons per day. These new investments will allow Colombia to produce 383,000 gallons of ethanol per day, almost enough to reach a blending rate of 10-percent ethanol in the whole country. This volume of production will help Colombia maintain its position as one of the world’s top eight producers of sugarcane-based ethanol. Despite the expansion, ethanol production in Colombia will equal just about two percent of production in Brazil.

The progress of Colombia’s ethanol industry has encouraged the government, international organizations, and the industry itself to expand the production of biofuels. Anticipating an increase in demand, the government created an agency whose principal objective is to coordinate the sustainable development of the domestic biofuels industry. Also, the government developed a strategy in March 2008 through the interagency “CONPES” process that describes the manner in which it will help support the development of the industry. This strategy includes policies on prices, taxes, and research and development. Moreover, the government is developing a law that will mandate that, by 2012, all new cars be equipped to handle gasoline mixed with at least 20-percent ethanol; in Colombia, this is known as “Hacia el E-20 (towards the E-20.)” An Inter-American Development Bank project, “Sustainable Energy and Biofuel Strategies for Colombia,” is aimed at finding and correcting bottlenecks in biofuels production.

—Excerpted from a report by Jose Toasa of the USDA’s Economic Research Service.