A Sweet Path to Energy Independence

Of all the potential alternatives to fossil fuels, sugar cane has emerged as a powerhouse in Brazil. And FMC has played an important role in advancing this crop’s abundant, renewable supply.
We all enjoy a little sweetness in our lives. We stir it in our coffee. We slather rich, creamy swirls of it on top of cake. We stir it into our cookie dough. We make time for it in our favorite candy bar on an afternoon break. We dole it out in handfuls to ghouls and goblins every Halloween.

Sugar satisfies our sweet tooth. And we typically equate sweet with good. Our vernacular includes phrases such as “the sweet smell of success” and “a sweet deal.” But when was the last time you described a trip to the gas station as anything remotely resembling “sweet”?

Thanks to almost 600 years of agricultural fine-tuning, a nurturing climate and FMC’s scientific expertise, Brazilians today are indeed getting a sweet deal every time they pull up to the pump, with ethanol made from their own sugar cane.

Centuries of Sweetness

Sugar cane has been cultivated in Brazil since 1532. Sugar was one of the first commodities exported to Europe by the country’s Portuguese settlers. More than five centuries ago, sugar was worth almost as much as gold throughout Europe, because its production – a long, slow and labor-intensive refining process – was limited to quantities that simply could not keep up with the demand. Eventually, agricultural science and technology streamlined the process.

As the world’s largest sugar cane producer, Brazil today grows more than 600 million tons per year. That harvest helps make Brazil the world’s second largest ethanol producer. In 2010, Brazil and the U.S. produced nearly 88 percent of the world’s ethanol. That same year, Brazil produced 26.2 billion liters (6.92 billion U.S. gallons), representing 30 percent of the world’s total ethanol used as fuel.

That’s an extraordinary statistic.

The sugar cane crop has also enabled the country to develop the world’s first sustainable bio-fuels economy. In 1976, the Brazilian government made it mandatory to blend ethanol with gasoline. That mandatory blend mix kept changing, so consumers had to make simple but ongoing adjustments to their gasoline engines. In 2003, the Brazilian automobile industry developed flexible-fuel vehicles, which run on any mix of gasoline and ethanol. Flex vehicles achieved a record 92.3 percent share of all sales of new cars and light vehicles in 2009.

Today, there are no light vehicles anywhere in the country that run on pure gasoline. Not only is Brazil’s ethanol production good for the economy, it’s also good for the environment.
Squeezing Every Ounce

A related element of Brazil’s ethanol success story is that it has the most efficient agricultural technology for sugar cane cultivation in the world. Inexpensive sugar cane is used for ethanol feedstock. Residual cane waste (called bagasse) is used to process heat and electric power during production. Making the most of all the available components of the sugar cane plant results in a high energy balance (the amount of output energy produced for the amount of input energy provided) and a very competitive price.

In 2010, Brazilian sugar cane ethanol was designated an advanced bio-fuel by the U.S. Environmental Protection Agency because it created a 61 percent reduction in greenhouse gases. That’s another extraordinary statistic.

So, what is FMC’s role in fueling this best-in-class success story? It’s not that different from what we do for agricultural customers around the world: help ensure that supply keeps up with demand.

FMC Helps Yield Success

The continuation of Brazil’s breakthrough ethanol success story is contingent on a steady, high quality crop of sugar cane. At the end of the day, it’s all about the yield: how much usable crop is harvested per acre (or hectare). One of FMC’s roles is to increase yield by protecting sugar cane against natural pests and weeds – damages that might otherwise threaten the crop yield and Brazil’s economy.

Walter Costa, business director for FMC Agricultural Products in Brazil, compares sugar cane’s prime pest enemy – nematodes – to “belly worms” or tape worms. “You know that if people have belly worms, they eat and eat, but they still lose weight. It is the same with sugar cane and nematodes,” he says. Nematodes are microscopic organisms that feed off the sugar cane plants and, if left unchecked, decimate the crop. Some of FMC’s crop protection products effectively protect the crop so it can grow vigorously.

Yet another enemy – sedges – are common and abundant weeds in Brazil that choke the roots of other plants, like sugar cane, and inhibit growth. After three years of steady application, FMC’s Boral herbicide has virtually eliminated sedges from portions of Brazil’s sugar cane crop.
“Tecnocalda” Points the Way

But herbicides, insecticides and nematicides are only one part of FMC’s Latin America sustainability efforts. “Tecnocalda” is FMC’s innovative management system that provides integrated solutions to help agricultural customers use chemicals in a more economical and sustainable way. The program is based on sustainability principles that deliver less packaging waste; faster, safer and more efficient spray tank preparation; fewer thefts; and easier, quicker and more accurate inventory control. At its core, the program aims to preserve the environment while advancing a better quality of life for future generations.

“Tecnocalda” Integrated Management System

This effort involves yet another by-product of the sugar cane harvest: FMC uses plant material from the ethanol production process to make product containers that use up to 85 percent recycled material. Optimizing packaging in this way provides lower waste emission, promotes the use of eco-friendly materials and delivers a half-million dollars in annual savings.

Whether it’s sugar cane, cotton or other food and fiber crops, FMC is taking a comprehensive approach to sustainability – aiming for positive outcomes in key environmental, social and economic indicators that build strong businesses and communities, as well as healthy returns for FMC.

In other words, it’s um negócio muito doce – a very sweet deal – for everyone.

Do you have comments or ideas about sustainability? Please share them at sustainability.info@fmc.com.