REUTERS

Food: Is Monsanto the answer or the problem?

Wed, Nov 11 2009

By Carey Gillam

ST. LOUIS (Reuters) - Norman Borlaug, the father of the Green Revolution of the 1960s and 1970s, had only months to live when he received a visit from an old friend, Rob Fraley, chief of technology for Monsanto Co.

Borlaug, who won the Nobel Peace Prize in 1970 for his work increasing food production in starving areas of the globe, welcomed Fraley to his Dallas home, where the two men sipped coffee and tea and discussed a subject dear to their hearts: the future of agriculture and the latest challenges of feeding the human race.

Fraley, who first met Borlaug 20 years earlier, when they served as founding board members for an agricultural group that works with developing nations, said he showed his friend photos of new types of corn that Monsanto was developing. Using biotechnology and genetic transfers, Monsanto, the world's largest seed company, hoped to create a corn variety that could grow well in dry conditions, even in drought-prone Africa, helping to alleviate hunger and poverty -- and fatten its bottom line.

"We were showing him some of the pictures of the drought-tolerant corn," Fraley recalled. "You could see his eyes were starting to well up, and I said, 'Norm, what's wrong?' He said, 'Rob, I've made it all the way through the Green Revolution. I don't think I'm going to make it through the gene revolution.'"

The topic of Fraley's final conversation with his friend that day underscored the unfolding of a modern era of global agriculture. In this new paradigm, traditional plant breeding is giving way to the high-tech tools of rich corporations like Monsanto, which are playing an increasingly powerful role in determining how and what the world eats. It is also generating controversy, as critics continue to question the safety of biotech crops, and fear increasing control of the global food supply by giant corporations.

Still, few dispute that something needs to be done. The United Nations has said that food production must double by 2050 to meet the demand of the world's growing population and that innovative strategies are needed to combat hunger and malnutrition that already afflict more than 1 billion people.

Amid this dire outlook, St. Louis, Missouri-based Monsanto -- along with its biggest corporate rivals, charitable foundations, public researchers and others -- is forming a loose coalition of interests instigating a second Green Revolution. "What we do builds on what he started," Fraley said of Borlaug, who died in September at the age of 95.

GENE JUGGLING

Founded in 1901 as a maker of saccharine, Monsanto has undergone several evolutions of its own. The company spends an estimated $2 million a day on agriculture research and development -- more than any other company. It employs about 400 scientists in four St. Louis-area research facilities, applying an array of new technologies to plant genetics, with a goal of doubling yields in major crops, such as corn and soybeans, between now and 2030.

"If we do that successfully, it won't just be good for Monsanto, it will be good for the world," Fraley said.

As it positions itself to be a leader in advancing a global fight against hunger, Monsanto has started working with nonprofit organizations in poor nations, donating research and genetics to help needy farmers.

The moves run parallel to Monsanto's commercial sales of high-priced seeds and agricultural chemicals to farmers in wealthy nations, which has made the company a darling of Wall Street and helped it post record net sales of $11.7 billion and net income of $2.1 billion for fiscal 2009.

The U.S. Department of Agriculture and governments around the world are encouraging Monsanto -- as well as rivals DuPont, Dow Chemical, BASF and other corporate interests -- to work with academics, foundations and public institutions on how to increase food production globally.

Drought-tolerant crops, particularly corn, are high on the agenda amid concerns about a changing climate. Improved wheat is also a major goal.

Corn and wheat account for about 40 percent of the world's food and 25 percent of calories consumed in developing countries, and millions of people get more than half of their daily calories from corn and wheat alone, according to the United Nations' Food and Agriculture Organization.

"We want to encourage the private sector to help shape research. These are important issues for all Americans and the world," said Roger Beachy, President Barack Obama's newly appointed director of the U.S. National Institute of Food and Agriculture.

Critics say the nonprofit work is a way for Monsanto to get even the world's poorest farmers hooked on pricey patented seed technology. But Monsanto and biotech supporters say it is the only way to grow enough food to feed a world population expected to hit 9.4 billion by 2050.

"Global ag production must grow by 70 percent by 2050, and it will have to come out of increased yields because there is only a minimal amount of new land that can be put into production without environmental problems," said Mary Boote, executive director of an industry group called the Truth About Trade and Technology. "Biotechnology has to be one of the tools we use."

MAIZE FOR AFRICA

Monsanto's humanitarian work in Mexico, Africa, India and elsewhere is still in the early stages. One of its largest projects is participation in the development of a type of maize -- a major food source for 300 million Africans -- that grows better in drought-prone areas of the continent.

"Drought is at the top of the list as a challenge for farmers there," said Natalie DiNicola, director of global development partnerships for Monsanto.

Monsanto is working with African researchers in a partnership launched in March 2008 with funding from the Bill and Melinda Gates Foundation and the Howard Buffett Foundation. The company is donating some of its genetic "markers" and other breeding resources. Five African nations -- Uganda, Kenya, Mozambique, South Africa and Tanzania -- are testing sites.

The work comes at a time of "tremendous need" for African farmers, who sometimes suffer complete crop failures due to drought, said Daniel Mataruka, executive director of the Kenya-based African Agricultural Technology Foundation.

"The strategy of the whole project is to ensure there is yield stability ... that there is some kind of yield," Mataruka said.

Along with helping poor farmers obtain better seeds, the project is also educating and assisting them in proper use of fertilizers and land management. While Monsanto's short-term goal is "global good," the company hopes that eventually the farmers it helps will become commercial customers.

"There is an absolute need to help these farmers ... make them more food-secure and help them climb out of poverty," said DiNicola. "We would hope that projects like this one and others are going to lift them out of poverty enough that someday the market is working and they can become customers for us."

The company's work on drought-tolerant crops for African farmers dovetails with research for a commercial drought-tolerant corn that Monsanto hopes to have on the market by 2012. Racing rival DuPont, which also is developing a drought-tolerant corn, Monsanto is experimenting with a number of gene combinations to stimulate greater photosynthesis, improve root structures, and enhance other characteristics so the transgenic corn can yield more kernels with less water. Keywords: FOOD/MONSANTO

DARK HISTORY

But even as Monsanto steps up its humanitarian efforts, the company faces a host of hurdles, not the least of which is its own image. Dubbed "Mon-Satan" by some detractors, the company has garnered criticism for many of its products, policies and promises -- and its humanitarian effort is no different.

"Monsanto is merely trying to hide its profit motive behind a mask of altruism," said Andrew Kimbrell, executive director of the Center for Food Safety, a private advocacy group. "Monsanto has a long history of putting profit before the welfare of people and communities."

Before it turned to seed technology, Monsanto was primarily a purveyor of chemicals, including the infamous Agent Orange herbicide blamed for widespread health problems during its use by the military in the Vietnam War.

Then there was Alabama, where the company operated a plant making polychlorinated biphenyls, or PCBs. Monsanto closed the plant in 1971, before PCBs were banned for being linked to a range of health problems. But thousands of residents living near the plant alleged their health and homes were ruined by PCB contamination and sued Monsanto. The company spun off its chemical assets related to the litigation, but ultimately was hit with $600 million in damages.

Monsanto has also faced criticism over its Roundup herbicide, which it continues to sell today, although profits are waning. Roundup is the world's top-selling weed killer, but critics charge that its widespread use has prompted the emergence around the world of "super weeds." They also contend Roundup residue in plants and in the soil can be harmful.

The company also has been accused of falsely representing the product as environmentally friendly. France's highest court last month found that Monsanto had engaged in false advertising for claiming its herbicide was biodegradable. Monsanto said the ruling did not question the safety of its herbicides, or their customer benefits, and was merely about the "use and possible interpretation of language in a specific advertisement."

Critics say that, just as Monsanto insisted that its chemicals were safe, the company claims its genetically engineered crops are safe. Many consumer and environmental groups around the world say disrupting DNA in plants is harmful to human health and disruptive to nature. Monsanto's products are banned in many parts of Europe and elsewhere.

The U.S. government does not independently test genetically modified crops for safety, and researchers differ on whether there might be negative health consequences to animals and people.

Monsanto says legitimate science supports its position that its products are safe, and officials say pressing needs for sustainable agriculture and higher-yielding harvests make old arguments over genetic modification obsolete.

But Monsanto-bashing is not limited to what its detractors call "Frankenfood." Even critics who aren't against biotech crops say Monsanto has gained a monopoly in the seed industry, charging farmers exorbitant prices and stalking and suing producers who don't pay up.

"Monsanto has demonstrated itself to be greedy and they have a credibility problem," said Fred Stockes, executive director of the Organization for Competitive Markets, a nonprofit group focused on ensuring competitive agricultural markets. "Now they are trying to cast themselves as a leader in the Green Revolution. That rings very hollow."

Monsanto has acknowledged the U.S. Justice Department has been asking questions about its role in the seed industry amid allegations about its market dominance, but the company has said such criticism is without merit.

Given its history, Monsanto's motives are likely to be questioned again and again. "All we can do is look at the past and see what they've done so far, and the balance sheet on Monsanto does not give you lots of reasons for hope," says Michael Pollan, an author of several books on food and agricultural practices.

HIGH-TECH TOOLS

But, for all its controversies, Monsanto continues to dominate the marketplace and its technological advancements in key crops are winning over more and more farmers.

"We are in the golden age of the biological sciences," said Robert Thompson, a professor of agricultural policy at the University of Illinois, who is familiar with Monsanto's work. "Genetic engineering significantly increases the efficiency of research."

The company's labs also sport "near-infrared" technology, using laser light to scan soybean seeds and gauge soy content and other characteristics. And a newly patented set of seed "chippers" is being used to rapidly trim flecks of soybean and corn seeds and mechanically position them for testing, so that, throughout the system, Monsanto scientists can glean results from 100,000 seeds a day.

The company hopes its work will be further bolstered through an investment announced in August in Pacific Biosciences of California for development of a new DNA sequencing system for genetic analysis.

Monsanto also is opening its first research center in China as a base for collaborations with Chinese scientists. The company said on November 4 that the Beijing research center would focus on early-stage bioinformatics and genomics research. It adds to the company's research centers in the United States, Brazil and India.

"We're entering a really phenomenal decade," said Robert Reiter, Monsanto's vice president of breeding technology. "We see a line of sight to really advance to new levels of (food) productivity." The company has started taking this message directly to the countryside, hauling a mobile technology unit by semi-trailer from farm town to farm town around the United States to educate farmers about the future of seed technology.

Supporters of biotech crops say education is key to overcoming criticisms and expanding the world's food supply.

"We have to at least double food production, and technology can make a big contribution. If we don't do it, the downside is huge," said Clive James, director of the International Service for the Acquisition of Agri-Biotech Applications, which was founded by Borlaug and helps promote and track usage of biotech crops.

"The best promise that the world has ... is to combine the best of conventional technology with the best of biotechnology so we can feed the world tomorrow," said James. (Editing by Jim Impoco and Walter Bagley)