**Rice Industry Troubled by Genetic Contamination**

By Rick Weiss

Washington Post Staff Writer
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When Fred Zaunbrecher heard in August that the popular variety of long-grain rice he was planning to grow had become contaminated with snippets of experimental, unapproved DNA, the Louisiana rice farmer took it in stride and ordered a different variety of seed for his spring planting.

But when federal officials announced last week that the rice he and many others switched to was also contaminated -- this time with a different unapproved gene -- irritation grew to alarm. The two sidelined varieties accounted for about a third of last year's Southern rice crop, and planting was set to begin within days.

"Everybody's been scrambling for seed," Zaunbrecher said. "I have no idea whether there will be enough or not."

The tremors going through the U.S. long-grain rice industry -- amplified by the decision of many biotech-wary nations to restrict imports of U.S. rice until questions of purity are resolved -- have revealed how vulnerable a $1 billion agricultural sector can be to the escape of something as small as a molecule of DNA. But rice is not the only crop being affected by genetic pollution.

Eleven years after the first gene-altered crops got the go-ahead for U.S. planting, biotech acreage is at a record high. Almost 90 percent of U.S. soy and corn, as well as about 60 percent of U.S. cotton, is spiked with genes from other organisms, mostly to confer resistance to insects and to make the crops immune to weed-killing chemicals.

Yet some of those genes have spread to weeds, making them tougher to control. Biotech crops approved only as animal feed have found their way into human food. And plants engineered to make medicines in their tissues have escaped from their test plots.

"Something's not working," said Al Montna, who grows 2,500 acres of rice in California. "Something's got to change."

Some farmers are pointing fingers at biotech-seed producers, whose carelessness, they say, has allowed experimental DNA to drift into commercial varieties, transforming U.S. rice into a global pariah and sending the industry into its biggest crisis in memory.

Others are fed up with the Agriculture Department, which in the past six months has been scolded in three federal courts for not keeping adequate tabs on the burgeoning business of genetically engineered crops.

Whatever the root cause, the string of recent missteps has sullied an industry that, though long controversial in much of the world, has mostly grown under the radar in the United States.

Advocates say the biotech revolution has improved productivity while reducing the consumption of pesticides and tractor fuel. A report commissioned by industry leader Monsanto Co., released last week, estimated that biotech crops in 2005 allowed farmers to reduce their carbon dioxide emissions by 9 million tons -- equivalent to removing 4 million cars from the roads.

But increasingly, farmers are concluding that early assurances that engineered varieties could be kept segregated from conventional crops were overstated.

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So far, gene escapes have not had discernible effects on human or animal health, leading some proponents to suggest that the real problems are the strict rules in place from the early days of biotech, when safety was a major concern.

"Most of these issues have been issues of regulatory compliance and quality control," said L. Val Giddings, president of PrometheusAB, a Silver Spring-based biotech consulting firm. "These are important, but they aren't safety concerns."

Giddings and some others say it is time for more discriminating standards that would treat many biotech crops as environmentally friendly instead of criminalizing every smidgen of errant DNA.

Others see things differently.

"For years the industry said, 'This will never get out,' " said Joseph Mendelson III, legal director of the Center for Food Safety, a Washington advocacy group that has won several legal challenges against the Agriculture Department's handling of biotech crops. "Now it's, 'It will get out, but what does it matter?' We can have a scientific debate about that, but in the meantime it certainly matters a lot economically, because so much of the world doesn't want this stuff."

U.S. farmers such as Zaunbrecher have been caught in the middle, fighting off domestic efforts to introduce gene-altered rice until international markets warm to the product. He was going to plant a conventional variety called Cheniere on at least 500 of his more than 2,000 acres, until he learned that it had become inexplicably tainted with a weedkiller-resistant gene created by Bayer CropScience of Research Triangle Park, N.C., that was unapproved for rice.

In its place, he ordered Clearfield131, another non-engineered variety, developed by BASF of Germany. But on March 5, the USDA put out an emergency call to prevent all planting of that variety. Tests had found two laboratory-made genes not meant to be in it, one belonging to Bayer and one that has yet to be fully identified.

"Everybody's frustrated," said Bobby Hanks, who employs about 100 workers at Louisiana Rice Mill near Crowley. "At this point, the industry has very little confidence in researchers to keep these things out of the food stream."

Cynthia Sagers, a plant ecologist at the University of Arkansas, said USDA rules on how to isolate experimental rice from other varieties have not been stringent enough. Textbooks say rice is a self-pollinating plant, meaning its pollen does not drift far. "But stand in an Arkansas rice field at 11:45 on a sunny day," Sagers said, "and you'll see a zillion billion pollen grains blowing around."

Even if the pollen is contained, accidental mingling of engineered and conventional seeds occurs easily, especially when biotech varieties are not restricted to dedicated equipment and distribution streams.

A string of recent court rulings has revealed regulatory shortcomings for other biotech crops. In August, a federal judge criticized the USDA, saying it had "utter disregard" for the risks posed by plantings of biotech corn and sugar cane that the agency had endorsed in Hawaii. Two rulings in February took the agency to task for not fully considering the risks posed by biotech alfalfa and turf grass.

In the absence of stricter federal rules, some states have taken matters into their own hands. When a company recently sought permission to grow rice endowed with human drug-producing genes in California, officials there said okay -- if the company stayed at least 500 miles from the nearest rice field and waited for a special ruling from the state's Department of Food and Agriculture.

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When the company sought instead to plant in Missouri, that state's legislature withheld promised research money until the company gave up and moved to Kansas -- a state that welcomed the project in part because no other rice is grown there.

Cindy Smith, deputy administrator in charge of biotechnology regulation at the USDA's Animal and Plant Health Inspection Service, said that oversight has improved considerably in the past two years and that other changes are coming. Central among them is a risk-based system that will streamline approvals of biotech crops that are similar to others with proven safety records while raising the bar for those that pose the greatest risks.

"The nature of our regulatory system is that it has to continually evolve . . . because we're regulating a technology that continues to evolve," Smith said. And though she said she "fully appreciates" the gravity of the occasional failing, Smith noted that the agency has overseen more than 13,500 field tests on nearly 80,000 locations nationwide, the vast majority without a hitch.

Yet in today's global market -- in which biotech food is largely shunned, in part as a matter of "green" philosophy and in part as a covert means of trade protectionism -- that may not be enough, said Montna, the California grower, who is chairman of the USA Rice Federation.

"Everything is about market acceptance," Montna said, noting that the rice federation has pushed for stricter testing of all seed to prevent future surprises.

That would help not only farmers but seed companies, too -- some of which are now suffering from decreased sales because their varieties have become contaminated, and others of which are being sued for misplacing their genes.

"I'm seeing a lot of very, very angry people," said Adam Levitt, a Chicago lawyer who is involved in a class-action lawsuit against Bayer that already includes hundreds of rice farmers and millers.

Bayer spokesman Greg Coffey said the company should not be blamed if the federal rules that it followed are inadequate.

"We do believe our work has adhered to USDA regulatory guidelines," he said, completing the circle of blame that on many farms today is as familiar as the seasons.

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