Pandora's Picnic Basket?

Concern is growing that unapproved genetically engineered crops could find their way into the food chain. Industry experts say it's time for a wake-up call and stress the importance of better monitoring practices

'Contamination of one crop can cause a widespread problem that can't be tracked or recalled' 'The number of inspections and audits conducted by federal and state inspectors has gone down due to decreasing budgets' By Joy LePree

STATISTICAL SOUP

OK, so it's not exactly an "attack of the killer tomatoes," nor is it a plague of locusts of Biblical proportions, but the accidental release of Bayer CropScience's LLRICE 601, a genetically modified strain of rice that had not yet received USDA approval for commercialization, into commercial stocks of long-grain rice is expected to have a significant economic impact on Bayer CropScience as well as U.S. rice farmers and exporters. The trouble began in July when Bayer's own test results indicated that LLRICE 601 was detected in some commercial supplies of long-grain rice in storage bins in Arkansas and Missouri. The company notified the USDA and the FDA, and by mid-August the story made national headlines.

GMO FOOD FIGHT

While opponents of biotech foods implied that this renegade rice was a horrific problem, it actually posed no human health, food safety, or environmental risks, according to USDA's Agriculture Secretary Mike Johanns. "It was never a human or animal health hazard," says Tom Deeb, executive consultant at ASI Food Safety Consultants. "This rice contains the same gene technology that we've been using on corn and soybeans for over a decade to make them resistant to weed control products. Bayer just never asked for permission to commercialize the product and without that approval it shouldn't have entered the food chain." "The protein found in LLRICE 601 is the same protein that's been approved for use in other products, and it is considered safe," says Cindy Smith, deputy administrator for the USDA's Animal and Plant Health

Inspection Service's (APHIS) Biotechnology Regulatory Services program. Bayer's prepared statement regarding safety is that "the protein [found in LLRICE 601] is well known to regulators and has been confirmed safe for food and feed use in a number of crops by regulators in many countries including the EU, Japan, Mexico, U.S., and Canada." As a matter of fact, Bayer already has two products, LLRICE 62 and LLRICE 06, which are based on the same protein, approved but not yet in the commercial realm, says Smith.

SOMETHING TO STEW ABOUT

Still, LLRICE 601 should not have made its way into the food supply, so the USDA is conducting an investigation to determine the circumstances of the release and whether any regulatory violations occurred. "All we know is that the strain of rice was present in a foundation seed of a variety of rice planted in 2003," says Smith. "From there, one could determine that there would be trace levels of 601 in that rice, but how the seed spread we don't know because it's a tremendously small amount." From past experience with other biotech foul-ups such as the well-documented StarLink case in 2001, where a genetically engineered corn not approved for human consumption turned up in the food stream, experts know that it is almost impossible to find the source of the release and to locate all the commercialized food products that may contain the protein. "The problem is that the time between release and discovery can be years, and the release is no longer contained to just one state or grower," says Maria Beug-Deeb, president of T&M Associates. "Our grain system is very fluid between states and counties so contamination of one crop can cause a widespread problem that can't be tracked or recalled. We are still finding StarLink in our food today."

CAN 'T EAT THA T!

Despite the gloomy forecast, investigation will continue, and the price will be high for Bayer CropScience and the industry. "LLRICE 601 has the potential to be a half-billion to billion-dollar problem," says Deeb. The hefty price tag will come from testing rice to be sure it doesn't contain the strain, product recalls, and lawsuits. Already farmers in California, Arkansas, Missouri, Mississippi, Texas, and Louisiana are gearing up for class action lawsuits against Bayer, alleging that its GMO rice has contaminated their crops. And the product recall situation could be a nightmare depending on the extent of the release as 58 percent of the U.S. utilization of rice is in direct food use, 16 percent is used in processed foods and beer, respectively, and 10 percent is used in pet food, according to USDA estimates.

BASIC INGREDIENTS

Rice exports are already suffering. According to USDA statistics, the U.S. provides about 12 percent of the world rice trade. In 2005, 80 percent of rice exports were long-grain varieties. Since the news broke in August, Japan, the Philippines, and the European Union are demanding certification that U.S. rice that crosses their borders is GMO-free. This requires testing of all exported rice products, which is a costly and time-consuming process. Industry experts are hoping these economic ramifications serve as a wake-up call for better monitoring of the GMO process. "Because there is no taste, smell, or other physical difference between GMO and non-GMO, it takes very sophisticated testing equipment to know whether GMOs are in the finished product," says Beug-Deeb. "It's not cheap or simple, nor is it something that in production can be done routinely, so it comes down to very careful segregation processes during production."

TOMORROW'S MENU

"Releases like this are a standard quality problem that can be avoided via processes like those used to keep organic product separate from non-organic," says Deeb. "Each company in the production chain should have quality and segregation systems that begin when the seed arrives. Systems that validate to whom seed went and where it is planted must be in place. "During the planting and growing phases, monitoring of the growth cycle is essential as are audits of the farm, equipment, and harvesting processes. Then systems and processes for segregating, labeling, and identifying GMO products are necessary during storage," he continues. "Following storage, there must be processes and documentation for what is done next, whether it's is burned, bagged, or destroyed," he says. However, Michael Phillips, vice president for food agriculture with the Biotechnology Industry Organization, says these systems are already in place. "There are best practices that the industry uses in terms of ensuring quality and what goes into bags of seed that are put out for sale," he says. "As in any business, there are good manufacturing practices that people follow, but once in a while there's a glitch or human error." To avoid the "glitches" that may be responsible for past, present, or future releases of regulated GMOs, Deeb suggests a higher degree of oversight and verification from the USDA or state departments of agriculture. "Since GMOs have been established as safe, the number of inspections and audits conducted by federal and state inspectors has gone down due to decreasing budgets. We are in a situation where the number of inspections is minimal," he says. "Government and private GMO developers need to find a way to audit and verify that these steps in the process are really happening." Despite the mistakes, industry experts say GMO foods have a solid future. "This is the wave of the future," says Phillips. "The adoption rate is growing because it is a technology that farmers want to get their hands on. Biotechnology has huge advantages for developing countries, and while there's a lot of talk and hype about safety, there has not been one incident during this decade with crops in the marketplace in which there's been any harm to consumer health or the environment. So, it's safe to say we have a very bright future." *Joy LePree is a contributing writer for CHEM.INFO. She has worked as a*

journalist for 14 years, covering a variety of issues and trends involving chemicals, processing, engineering, and maintenance. To share your comments about the content of this article, send an e-mail to Lisa Arrigo, editor-in-chief, at lisa.arrigo@advantagemedia.com.

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