A Consistent Approach To Evaluate Genetically Engineered Crops

Agricultural Research Service scientists and staff have been key players in studies that assess whether genetically engineered (GE) crops present any threats to surrounding ecosystems. To date, the results have shown only negligible risks associated with these crops.

But new approaches that would support consistent risk assessment of GE crop use worldwide are still needed. Such guidance could be used in establishing standardized methods for determining whether GE crops are suitable for production in a range of agricultural systems.

Some 20 scientists have started to develop a scientifically rigorous approach for evaluating the potential risk, if any, that GE crops pose to nontarget arthropods worldwide. This team is made up of experts from ARS; the USDA Animal and Plant Health Inspection Service; the U.S. Environmental Protection Agency's Office of Pesticide Programs; U.S., Canadian, and European universities and agricultural research stations; European regulatory agencies; and the national and international private sector.

ARS entomologist Rick Hellmich, who works in the Corn Insects and Crop Genetics Research Unit in Ames, Iowa, is part of this new team.

"We want to develop a science-based approach to investigate whether GE crops could harm arthropods, such as lady beetles, butterflies, or spiders," Hellmich says. "When the issue of GE safety first came up, it was a new area in science, with no clear protocol roadmap. By adapting existing protocols used to evaluate microbial insecticides, we were able to establish that *Bt* corn was not a hazard to monarch butterflies."

A Science-Based Approach

Hellmich believes the results from this project will be very valuable to researchers worldwide. "A consensus approach focused on evaluating GE crops would allow us to develop consistent science-based methodologies," he says. "This would help harmonize regulatory requirements between different countries and different regions of the world."

The team will develop the approach within the risk-assessment framework already used in regulatory toxicology and environmental sciences around the world. This includes a focus on formulating and testing clearly stated risk hypotheses, making maximum use of available data, and using formal decisionmaking guidelines to move between testing stages.

The approach was described in the February 2008 issue of *Nature Biotechnology*.—By **Ann Perry,** ARS.

Richard L. Hellmich is in the USDA-ARS Corn Insects and Crop Genetics Research Unit, Genetics Laboratory, Room 110, Iowa State University, Ames, IA 50011-3140; phone (515) 294-4509, fax (515) 294-2265, e-mail richard.hellmich@ars.usda.gov. ✸

Helping the Peanut Industry

JACK DYKINGA (K4297-14)

A new technology that grades peanuts faster and more accurately is being researched by Agricultural Research Service scientists at the ARS National Peanut Research Laboratory in Dawson, Georgia.

"The U.S. peanut industry is in a period of rapid economic and technical change, and this technology will help the industry maintain a competitive edge," says Marshall Lamb, research leader at the lab.

Lamb was approached by peanut-industry representatives for help in solving labor-shortage issues by automating peanut grading. Engineer Hank Sheppard tested x-ray technology to determine whether such a system could handle the job. When compared to official peanut-grading methods, the technology delivered a 98- to 99-percent accuracy rate, and it was faster—7 minutes versus 20 minutes per peanut grade sample.

"Official grading is labor intensive, requiring three to six people to hand-shell, pick, sort, and grade each nut," says Sheppard. "The industry is having difficulty finding enough people to fill the worker requirements and who are willing to set aside 3 months of the year to do this difficult job."

Accordingly, the industry recently launched an initiative to improve current procedures or develop new technologies that would make peanut grading more efficient while ensuring—or even improving—accuracy and quality.

Another processing problem being addressed by ARS research is peanut moisture. Nuts must have a moisture content of 10 percent or less to be suitable for further processing and shelling. The ability to determine moisture before grading begins would allow processors to divert high-moisture nuts for further drying instead of discarding them. Currently, the nuts are shelled, and then the moisture content is determined.

Chari Kandala, an agricultural engineer at the lab, has developed an automated in-shell moisture-detection system that could work in tandem with the x-ray grading unit to provide peanut processors a more efficient operation.

"We strive to help the peanut industry tackle important technical and quality issues. Applying these technologies may play a role in solving some of their problems," says Lamb.—By **Sharon Durham,** ARS.

Marshall Lamb, Hank Sheppard, and Chari Kandala are with the USDA-ARS National Peanut Research Laboratory, 1011 Forrester Dr., S.E., Dawson, GA 39842; phone (229) 995-7400, fax (229) 995-7416, e-mail marshall.lamb@ars.usda.gov, hank.sheppard@ars.usda.gov, chari.kandala@ars.usda.gov. ✸