Let's Open Our Minds and Mouths to GM Food

By William Revillie

- Genetic modification is still highly controversial despite extensive research failing to produce evidence of harm

Foods derived from genetically modified (GM) crops are not available for human consumption in large parts of the world, including Europe, because of health fears, although there is little or no evidence of any risk. Nevertheless, opponents of GM food claim there is no proof it is safe to eat.

GM food is consumed widely in North America, and advocates for GM crops claim that widespread adoption will be essential to develop the hardy crops necessary to feed the burgeoning population: by 2050 the world will have to grow 70 per cent more food to keep up. The GM food issue is discussed by David Freedman in Scientific American (September 2013) and Mike Gibney in Something to Chew On (UCD Press, 2012).

Traditionally, plant breeders have improved varieties by cross-breeding plants with desirable characteristics, for example high-fruit-yield plants with blight-resistant ones, selecting promising looking progeny and back-crossing these with their parents until eventually a stable new variety emerges with the desired characteristics. The traditional method is slow and unsure, but it works.

For 60 years this method has been supplemented by blasting plants with radiation or chemicals to cause mutations and then picking promising new mutations. Such highly "unnatural" interventions have attracted little public criticism.

In traditional cross-breeding, the progeny of a cross, in addition to inheriting desirable characteristics, also inherits undesirable traits that must be patiently eliminated in tedious back-crossing cycles. New, precise genetic engineering techniques have been developed since the 1970s, allowing a single gene from one organism to be transferred into the genome of another.

Genetic engineering can precisely "zap in" the desired characteristic without any accompanying undesirable traits, and can also transfer genes across species, whereas traditional breeding is restricted to crossing varieties within the same species. In principle, genetic technology can tailor plant characteristics to suit any environment.

Applying weed killer

Monsanto, the agri-tech corporation, has genetically engineered the main commodity crops - corn, maize, soya bean and cotton - to become resistant to the herbicide Roundup (glyphosate). Crops can now be doused with Roundup, eliminating weeds without affecting the plants. This reduces the
requirement for herbicides and for tillage, improves crop yields, reduces soil erosion and the price of food. However, careless use of this technology has allowed the emergence of Roundup-resistant weeds.

Nearly all the corn and soya beans grown in America are genetically modified, and four countries - the US, Canada, Brazil and Argentina - grow 90 per cent of the world's GM crops. Little or no GM crops are grown in Europe, India, China or Africa because of fears they are unsafe to eat, thereby forgoing many advantages offered by GM crops. For example, Asian governments have yet to approve insect-resistant higher-yield GM rice, or Golden Rice, engineered to deliver vitamin A (rice normally has no vitamin A), despite the fact that vitamin A deficiency kills and blinds hundreds of thousands people annually.

Billions of GM meals have been eaten over the past few decades without evidence of harming health, and numerous trials have failed to find ill effects. Some studies have reported that GMF poses health risks, but most have been convincingly rebutted by experts.

The American Association for the Advancement of Science, the American Medical Association and the National Academy of Sciences back GM crops. The EU Commission has funded 130 independent research projects, and none identified special risks from GM crops. Opponents say there is no proof that it is safe, but it is difficult to see how this could be proved.

Genetic modification of food was a radical development and it was greeted with appropriate caution. However, decades of strict examination have failed to produce evidence of harm. Is it not time to develop some trust? Freedman suggests that new GM crops should be safety-tested in the same way that new drugs are tested and we should simply accept all that pass the test. The EU’s chief scientific adviser recently said it is unethical to deny access to GM crops to countries threatened with famine. The general acceptance of sensible precautions would allow the wider world to enjoy the considerable advantages of GM crops.

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Activists: Modified Corn Not So Sweet

By Monica Eng
Tribune reporter

• Biotech company's doctored crop hits stores unlabeled

As the Midwest crunches into sweet corn season, a new type will be appearing on grocery store shelves—even though shoppers have no way to recognize it.

It's genetically modified sweet corn from the biotech giant Monsanto, engineered to resist a common herbicide and certain pests.

The arrival of the crop's first harvest has alarmed consumer groups and activists who say genetically modified foods may pose environmental and health risks. In recent months they have urged major retailers to avoid Monsanto's sweet corn, prompting Whole Foods, Trader Joe's and General Mills to pledge not to sell or use it.

But this week the world's largest retailer, Wal-Mart Stores Inc., confirmed to the Tribune that it would not restrict sales of the genetically modified corn in its stores.

"After closely looking at both sides of the debate and collaborating with a number of respected food safety experts, we see no scientifically validated safety reasons to implement restrictions on this product," said company representative Dianna Gee.

The decision disappointed opponents of genetically engineered foods and is expected to add to an ongoing debate about whether the U.S. should require that such products are tested for safety and labeled for consumers.

"A lot of people who were their customers explicitly said we don't want you to carry this product, and I think it's unfortunate that they chose not listen to that feedback," said Patty Lovera, assistant director of Food & Water Watch. The consumer group had submitted a petition to Wal-Mart with 463,000 signatures, she said.

Other retailers also received requests to avoid the product but have not responded, Lovera said. The Safeway and Kroger grocery chains did not respond to inquiries from the Tribune about the issue.

The U.S. Food and Drug Administration encourages companies to do safety studies of new genetically modified foods but does not require it. Labeling of such foods is required in the
European Union, China, Russia, Australia and Japan but not in the U.S.

Those skeptical of genetically modified foods say it is impossible to know whether the products harm people's health without more long-term research and more transparency.

"How would you ever know if there are adverse health effects?" said Michael Hansen, a senior scientist at Consumers Union, the policy arm of Consumer Reports. "There has been a doubling of food allergies in this country since 1996. Is it connected to genetically engineered foods? Who knows, when you have no labeling? That is a problem."

Monsanto said its genetically modified sweet corn complies with FDA regulations and is helping reduce insecticide use in the U.S.

"Overall, sweet corn makes up less than 1 percent of total corn acreage in the United States ... yet accounts for 40 percent of all corn insecticide treatments," the company said in a statement. "Farmers who grow biotech sweet corn can reduce insecticide applications by as much as 85 percent."

The International Food Information Council, an organization partially funded by the food industry, said campaigns against genetically modified food are groundless.

"Despite the latest attempts from some groups to stigmatize an important food crop, some of which is produced through biotechnology, the fact is that there have been no documented food safety problems with foods produced using biotechnology anywhere in the world," President and CEO David Schmidt said in a statement.

Earlier this year, the American Medical Association affirmed its stance that genetically modified foods do not need to be labeled, but it said that pre-market safety testing should be mandatory.

Genetically modified ingredients, in which a gene from one species is transferred to another to bestow certain traits, are in an estimated 70 percent of all American processed food, according to the Center for Food Safety, a group that focuses on sustainable agriculture. In the U.S., about 85 percent of all corn and 91 percent of soy crops are genetically modified, the group says.

The sweet corn from Monsanto contains a gene that produces a protein called BT that is toxic to pests. Though the protein is used in organic farming as an insecticide, Hansen and other critics cite research that raises questions about whether corn containing BT can cause allergic reactions, immune system problems and gastrointestinal issues.

Hansen said he also worries about the unintended effects of "stacking" different genetic modifications into the same organism. The Monsanto corn has another added gene that makes it resistant to the company's well-known herbicide Roundup.

And although genetically modified corn has been a part of American processed foods since the mid-1990s, opponents say they worry that eating it right off the cob could pose increased risks.

"When your children are going to be eating this corn straight—not in processed products as has previously been the case—that is exactly when you need long-term feeding studies," said Andrew Kimbrell, executive director of the Center for Food Safety.

Monsanto's corn is not the first genetically modified sweet corn to hit U.S. retail stores--Syngenta's
version has been available for a decade and makes up about 3 percent of the market, according to the company—but it's the most controversial.

Monsanto has become a lightning rod for health, environmental, farming and consumer activists because of its size and what critics call its aggressive tactics to control and promote its products. The company primarily produces genetically modified corn and soy crops used in processed foods, animal feeds and fuel, and its first major foray into the fresh foods market has galvanized opponents.

The new Monsanto sweet corn is being harvested now in the Midwest, Northeast, Southeast and Texas. South central Illinois grain farmer Len Corzine said he planted less than an acre of the new corn for his family this year.

"We sprayed it with Roundup early for weeds, but ... we had no insect damage and we didn't have to spray any chemicals," said Corzine, who does not plan to sell the corn commercially. "It was some of the healthiest sweet corn we've ever had and the ear size was great."

The new sweet corn crop is arriving at stores just months before a November vote in California on Proposition 37, which would require labeling of genetically modified foods in the state.

"We absolutely have the right to know if our sweet corn we are eating at our barbecue was genetically engineered in the lab," said Stacy Malkan of California's Right to Know Campaign. "This fall California voters will decide if we can here."

Kimbrell, whose organization has sued Monsanto numerous times over issues with genetically modified crops, predicts "massive consumer backlash" from Wal-Mart's decision to carry the company's sweet corn.

The product is "a completely unnecessary and risky new food," he said. "There is no shortage of sweet corn."

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For Both Sides, Bigger Fish to Fry

By Dennis Brady

Salmon that has been genetically engineered to grow twice as fast as its natural counterpart inched a little closer to the nation's dinner tables on Friday.

The Food and Drug Administration released its findings that the fish do not pose a threat to the environment and are "as safe as food from conventional Atlantic salmon."

That removed a key hurdle for a Massachusetts-based company seeking to market the modified salmon, which critics derisively have dubbed "Frankenfish."

But the move also reignited a long-running debate over whether a nation that already grows and consumes genetically modified plants such as corn and soybeans is prepared to make a similar leap when it comes to animals.

Food-safety activists, environmental groups and traditional salmon fishing industries are staunchly opposed to such a step and are part of a broader global struggle over the use of genetically modified foods.

Countries in the European Union have banned some genetically modified foods outright and instituted tight labeling requirements on foods that contain modified ingredients. Countries such as Russia, Japan and Peru also have instituted restrictions on genetically altered foods.

AquAdvantage, the fast-growing fish at the center of the controversy in the United States, is an Atlantic salmon that contains a growth hormone from a Chinook salmon and has been given a gene from the ocean pout, an eel-like fish. The result is a fish that grows larger and faster than traditional salmon.

Under the company's proposal, no modified salmon would actually be produced in America. The eggs would be produced at a facility on Prince Edward Island in Canada and shipped to another facility in Panama, where they would be harvested and processed. In its assessment, the FDA said the likelihood that the altered fish could escape containment and reproduce in the wild is "extremely remote."

Friday's assessment could pave the way for ultimate approval of the engineered fish. The FDA must first take comments from the public on its report for 60 days before finalizing it. After that, the agency will decide whether to give AquaBounty the green light to begin marketing its fish to Americans.
"We're encouraged by this milestone, and we're grateful that they've elected to continue a science-based process," Ronald Stotish, president of AquaBounty Technologies, said in an interview. "We think this is progress."

Friday's determination echoes findings from two years ago, when the FDA held days of public hearings and convened panels of scientists, staff members and industry officials to consider potential impacts of the altered salmon.

Since then, the approval process for the fish has remained at a virtual standstill. But the public fight over it has churned on.

Some consumer and environmental conservation groups have claimed that the FDA has failed to fully scrutinize the product and its potential effects. Lawmakers on Capitol Hill, particularly those from the Northwest, have backed legislation that would bar the fish outright or require specific labeling about its origins.

"The notion that consuming Frankenfish is safe for the public and our oceans is a joke," Sen. Mark Begich (D-Alaska) said in a statement Friday. "I will fight tooth and nail with my Alaska colleagues to make sure consumers have a clear choice when it comes to wild and sustainable versus lab-grown science projects. . . . Today's report is by no means the final say on this issue."

Rep. Don Young (R-Alaska) was more blunt.

"You keep those damn fish out of my waters. It will ruin what I think is one of the finest products in the world," Young said in an interview, saying he fears that the spread of fish farms could eventually contaminate the wild salmon industry in Alaska. He wants to force delays in any FDA approval.

"If I can keep this up long enough, I can break that company," he said, referring to AquaBounty, "and I admit that's what I'm trying to do."

So far, he appears to have had some success. Stotish said his company has cut back to about a dozen employees, down from more than 30, while awaiting the government's approval.

The nonprofit Center for Food Safety also sharply criticized the FDA's assessment, calling the decision "premature and misguided."

"It is extremely disappointing that the Obama Administration continues to push approval of this dangerous and unnecessary product," executive director Andrew Kimbrell said in a statement.

Meanwhile, industry executives and some agency scientists insist that there is no discernible difference between the altered salmon and wild salmon. Stotish has argued that his salmon would help bolster the world's food supply, lower prices and require fewer resources—all in a safe and sustainable way.

Scientists at the FDA have generally seemed to agree, at least thus far. In a briefing document ahead of the public hearings in 2010, FDA staffers wrote, "We have found no biologically relevant difference between food from [AquaBounty salmon] and conventional Atlantic salmon."

How long a final approval might take is anyone's guess.
AquaBounty first applied for permission to sell its genetically altered fish in 1995, and even by FDA standards, its application has moved at a glacial pace in recent years.

"Because this is a first-of-kind application, FDA's goal is to be as comprehensive as possible in its evaluation and anticipate all outcomes," FDA spokeswoman Morgan Liscinsky said Friday.

Gregory Jaffe, director of biotechnology at the Center for Science in the Public Interest, said he understands the agency's caution but believes the approval process has been excessively long.

"Applicants have a right to a timely, scientifically justified decision," said Jaffe, who participated in the 2010 hearings about AquAdvantage and said he had no real safety concerns with the product.

He said the current fight is less about a relatively small company than about a critical concept—whether the United States should embrace genetically engineered animals for consumption and what the implications of that might be on a large scale.

For now, those answers will have to wait. Jaffe said that even if AquaBounty wins approval for its genetically modified fish, its limited production capacity means that it would make up only a tiny fraction of the U.S. market.

At least for now.

"This is not going to become the majority of our salmon overnight," Jaffe said. "It won't be as hard as winning the lottery, but it will be hard to find a modified salmon steak."

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