

Future GM foods like wheat, rice and salmon face even greater hurdles than today's GM corn or soy

For many corn and soybean farmers in the U.S., the new normal is to plant genetically modified crops. But considering how quickly the technology is being adopted, GM products could find their way into the lives of more kinds of farmers — and consumers. Scientists continue to research and develop many other potential GM products. But some big hurdles still stand between these products and the market: consumer resistance, regulatory approval and projected economic benefit.

One potential product that has sparked recent controversy is GM wheat. Monsanto Co. began developing GM wheat in 1998 but abandoned those efforts in 2004. Research resumed in 2009, but no GM wheat has made it to the market. “It was a scientific success; there was never a question on that,” said P. Stephen Baenziger, a wheat breeding professor at the University of Nebraska-Lincoln and board of trustees member for the International Rice Research Institute. But opponents of genetically modified organisms are even more opposed to modified wheat than they have been to corn and soybeans.

Another GM crop that has raised a row is golden rice, which was developed by two European scientists in 2000 to address a nutritional problem common in Southeast Asia. Now the development of the rice is taken as a humanitarian effort and overseen by the International Rice Research Institute. Some consumer activist groups argue that making developing countries dependent on such an important crop would put them at the mercy of large companies such as Syngenta, which contributed to the development of golden rice. “I think people are scared that should this happen and should it be successful, the floodgates would open (for more genetically modified foods),” Baenziger said.

But the biggest leap in biotech may be the leap from plants to animals. “Suddenly you have an organism that looks back at you, and your sense of ‘what am I doing to it?’ becomes heightened,” said Eric Hallerman, a fish genetics professor at Virginia Tech University.

The biotechnology company AquaBounty in Maynard, Mass., has produced a variety of genetically engineered Atlantic salmon that would grow faster than typical salmon. AquaBounty has filed for approval to the Food and Drug Administration to grow its AquAdvantage fish in its Panama facilities. In 2010, the FDA ruled that the GE salmon preliminarily appeared safe, but it has yet to grant a final approval. Hallerman said the wait may leave AquaBounty bankrupt if a decision isn't made soon. “It's all political at this stage. Science left the building a long time ago,” said Alison Van Eenennaam, an animal genetics professor at the University of California, Davis.

The future of potential products remains questionable in the face of growing consumer resistance. Sally Mackenzie, a plant genetics professor at the University of Nebraska-Lincoln and principal investigator at the Center for Plant Science Innovation, said she worries the process might prevent some of the technologies being developed in the lab from being put to commercial use, and that, she said, would be a loss to consumers. “In my mind some of the biggest traits are those that haven't even hit the market,”

Mackenzie said, like the possibility of using a biotech trait to deflect the disease that is afflicting the citrus industry or one that would eliminate the allergenic factor in peanuts.

Despite the controversy and the politics, Baenziger said he thinks GM technology will continue to be even more important in the future. “When we get to the point where we’re not productive and there isn’t enough food, then people will change,” Baenziger said. “They have to.”

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