

## Anti-GMO sociologists mute attacks on biotech, urge greater sensitivity to cultural impacts

The public debate over the safety and challenges of GMOs shows no sign of cooling despite signs that scientists have reached a general consensus. Last week, in a [Pew survey](#) of more than two thousand of the nation's top scientists—members of the American Association for the Advancement of Science—88% said they believed there were no serious health or safety issues posed by the consumption of genetically modified foods.

But the public perception has been different—distrust of the science establishment and anxiety about unknown health and environmental consequences. Some of those concerns were on display earlier this week in another in the ongoing series of public webinars presented by the National Academy of Sciences National Research Council, which is reviewing the GMO issue, with plans to release an updated policy statement in 2016. While most of the prior public sessions have featured scientists, this testimony came from three social scientists—all of whom have expressed reservations about the the use or potential misuse of the technology.

[The webinar can be viewed in its entirety here.](#)

It may be a sign that the tenor of the debate is slowly changing that the most convincing argument against genetically modified crops was also the least science-based. While still critical of the application of the technology, they all seemed resigned to the inevitability of the advancement of genetically modified crops and are urging ways that they could be deployed to better benefit society.

Abby Kinchy, a sociologist focusing on food and biotechnology from Rensselaer Polytechnic Institute, and author of *Seeds, Science, and Struggle: The Global Politics of Transgenic Crops*, focused on gene flow or what she called “transgenic pollution”, using Mexico as her example. Almost two years ago, activists challenged scientists’ right to plant experimental genetically modified varieties of the crop, claiming it would endanger the ‘purity’ of traditional maize, a staple and symbol of Mexico. A 2013 lawsuit and ruling has [thwarted the plans](#) of multinational seed companies from selling their GM maize varieties to Mexican farmers. The protests and legal wrangling have also stalled public-sector biotech researchers who are close to producing GM maize strains tolerant to drought and frost, and other varieties with a reduced need for herbicides and fertilizers.

Kinchy did not address the fact that Mexico currently imports 40 percent of its corn, which is the key reason the country has embarked on a agricultural modernization plan with the potential introduction of GM crops as the centerpiece of its efforts. Rather, she laid out concerns about the cultural importance of maize. Gene drift is a fact of farming, and occurs naturally all the time. As a result, there are no “pure” varieties of corn, conventional or organic. However the very possibility that a GM variety might mix with a non-GMO variety has stirred special concerns among environmental activists.

Although [no transgenes](#) have been found in Mexican farms, it’s almost certain that it would occur if GM crops are introduced—it’s a fact of nature. For more than a decade, sociologists and environmental policy

researchers have been [ringing alarm bells](#) about the cultural impact of such mixing, suggesting it may pose a challenge to “genetic diversity.”

Most of the GM research in Mexico is focused on decreasing reliance on imports of yellow corn used mostly for feed and biofuel, as well as develop such traits as drought tolerance, cold resistance and weed resistance to be used to save disappearing local varieties. GM crops would go a long way toward addressing these concerns. Kinchey sidestepped these issues, instead focusing on “contamination” concerns, and blaming the North American Free Trade Agreement and Monsanto’s dominance in the agricultural seed industry.

While economic concerns of the country at large remain the focus of Mexico’s agricultural industry and government, small farmers, distrustful of technology and foreigners, have long stood apart from the ‘green revolution’. As a consequence, since the 2013 planting ban was instituted, much critical biotech research has been scrapped or moved elsewhere. The fight to maintain the ban will be long and determined, funded by outside NGOs such as Greenpeace.

When Kinchey was asked whether there were workable solutions to the gene drift concerns, she was unable to come up with much aside from instituting buffer zones, which are used throughout the world. It’s not a fail-safe solution—gene drift has been part of agriculture since its inception, so some limited drift is inevitable. In the long run economic concerns will probably trump cultural ones and “transgenic pollution” will occur. Indigenous farmers will have little choice but to accept the fact that their traditional varieties would include some traces of GM corn, just as they now contain traces from various indigenous and non-indigenous varieties due to prior gene mixing.

Mary Hendrickson, a rural sociologist with the University of Missouri, raised concerns about what she believes is an unhealthy concentration of the seed industry in the hands of a few companies. However, her real concern was much larger: like many anti-GMO social scientists, she objects to the overall structure of capitalism, which she believes encourages oligopolies, baking in differences between the haves and have nots.

Hendrickson starts off her presentation with a misrepresentation of data. She offers a graphic showing the top three companies in seed and agricultural chemical marketshare and then states that Monsanto, Syngenta and Dupont are among the top firms in both. Her graphic doesn’t actually show this, as Monsanto and Dupont aren’t listed among the top firms in agrochemicals. Checking ETC data shows Monsanto and Dupont listed as fifth and six in marketshare, with a much lower percentage than the top three.

Most of Hendrickson’s research concentrates on breaking up agribusiness trusts. She was critical of plant patents, which have been around since the 1930s when the first hybrid seeds were developed. Activists often decry patents because they require that farmers buy new seeds of the same variety every year.

No farmer is required to buy more expensive patented seeds, of course; they could always switch to off-patent seeds. But most do not because of the higher yields and revenue generated by patented seeds, offsetting the slightly higher seed expense. Hendrickson contended a farmer might have difficulty buying

non-GM seed in an area where mostly GM crops are grown, but she provided no evidence for this claim. This seems an unlikely occurrence in 2015, when a farmer can open any seed catalog and find hundreds of varieties of heirloom and off patent hybrid seed listed along with GM seed. Farmers are business people; they are likely to purchase whatever seed provides the best yields with the fewest inputs and overall costs.

Hendrickson's discussion of her work in South Africa was more compelling, as it seems that farmers there are eager to use GM crops, but lack the training in soil fertility, storage and other practices. She suggested that more public sector involvement, market access, financial support and infrastructure upgrades could be very beneficial to South Africa, especially in the area of weed management, as available labor is in short supply.

[Matthew Schnurr](#), an international geographer at Canada's Dalhousie University outlined specific concerns with the development of transgenic matooke bananas in Uganda. He also addressed issues surrounding other transgenic staple crops linked to development grants from the Gates Foundation. Of the three presenters, Schnurr was most embracing of transgenic technology.

The bulk of his talk detailed inefficiencies he found in the way the Gates Foundation has used its funding dollars. Schurr's team interviewed farmers in Uganda to find out what their concerns were, how comfortable they were with the technology and what was most important to them. Farmers claimed color, texture and yield of bananas, which provide 50% of the carbohydrates for Ugandans—were more important than diseases that have been the primary focus of researcher and have driven efforts to develop GM pest resistant varieties.

Schnurr laid out specific changes that may be necessary to get Ugandan farmers to adopt the GM matooke banana. He urged scientists to spend more time getting to know the sociological and economic aspects of a population before designing new crops if they want farmers to embrace them.

**Amber Sherwood-K is a graduate student in the SUNY Buffalo Science and the Public program. She writes on issues surrounding genetically modified organisms and agriculture. Follow her on Twitter @AmberSherwoodK.**

#### **Additional resources:**

- [Mexican scientific community split by legal battle over GM corn](#), Nature
- [Ugandan scientists develop virus-resistant banana, but law may prohibit it from reaching farmers](#), New Vision