

Biotech Policy Briefing

Should genetic privacy exist in agriculture?

This is uncharted territory. We need research and analysis on how to think of privacy in an agricultural context.



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Opinion

OTTAWA—As of last year, Canada has a genetic privacy law. It sets rules for the privacy of our personal genomes and non-discrimination based on genetic information. This law has become necessary because decoding our

personal genomes—and those of other people—had become increasingly quick and cheap.

All species have genomes, of course, and since the same decoding technology is being applied to agricultural species, it is a good time to think about the tension between transparency and privacy in the context of growing food.

We already pay a lot of attention to managing information on transgenic plants (GMOs). Last June, for example, the Canadian Food Inspection Agency (CFIA) disclosed that a small unauthorized patch of transgenic wheat was found on a roadside in Alberta which, in turn, swiftly closed the wheat export market to Japan and South Korea—markets estimated at over \$200-million per year. Considering how contentious GMOs are in international trade, our approach to information management and disclosure is not likely to change in this context anytime soon.

Using biotechnology to modify genomes is only half the story, however. As with human genomics, we should think about the

diagnostic benefits associated with decoding genomes. In the agricultural context, one interesting aspect of a genome would be sequences that reveal pesticide resistance.

Pesticide resistance can be a big deal if it appears in an important weed or pest. The recent emergence of a strain of pigweed, Palmer amaranth, resistant to multiple herbicides led to demands for greater scrutiny and purity of commercial seeds. No one wants to take the risk of introducing crop seeds contaminated with an herbicide-resistant weed. Because we are all familiar with epidemiological thinking, customers and society will expect disclosure and a call for privacy would seem strange.

Consider the following sample case for privacy, however. Genetic services are emerging that can help growers manage pesticide resistance by quickly and cheaply mapping the genomes of some pest species. A greenhouse grower who wants to maximize the effectiveness of integrated pest management may want to know the genetic resistance profile

of key pests and may relatively cheaply purchase such information from a commercial decoding service. In this case, the grower has real incentives to keep that information private.

For starters, it is a voluntary action that costs money and transparency could represent an additional expenditure. Secondly, neighbouring growers may not only become free-riders if the data are openly accessible, they may even slander competitors by accusing them of being the source of contagion of a resistance trait. Thirdly, regulators would be empowered with better surveillance and planning tools and companies may prefer to “let sleeping dogs lie.”

On the flip side, the case for transparency is also compelling. Integrated pest management and regional management of pesticide resistance could be much improved, scientists could find invaluable insights into the emergence, spread and management of pesticide resistance, and regulators could save money and be more effective. As a result, growers and society at large would profit.

This is uncharted territory. We need research and analysis on how to think of privacy in an agricultural context. Governance work is required for the design of knowledge consortia or public-private partnerships. Procedures for knowledge management, ownership and consent, benefit sharing and open science need to be developed. There may be a hidden benefit here. Research into the best balance of privacy and disclosure in the agricultural sector may well become relevant to the human context, one day. It is conceivable that our personal genomes contain traits that inform on antibiotic resistance or the propensity to spread a plague. Such information would be of great public interest and it would be good to have more thought and debate under our collective belts, should this possibility become reality.

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