Commentary

A Perspective on the Co-existence of Organic and Genetically Engineered Crops

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Lingering scientific and legal questions and growing consumer opposition to genetically engineered (GE) crops in the United States has slowed the pace of both research and approvals of new GE crops and technologies. Law suits brought by the Center for Food Safety, among others, have illuminated enormous gaps and scientific inadequacies in the USDA's review of petitions to deregulate (i.e., approve) new GE crops.

At this point, organic farmers and food companies bear all the risks associated with failures of "co-existence," as well as all the costs, inconvenience, and related burdens of avoiding – and dealing with -- the contamination of organic crops and the seed supply.

The almost inevitable adverse impacts of GE crops on organic farmers, organic price premiums, and the export of organic foods and animal feeds are fortunately gaining recognition and will have to be addressed more fully, and honestly, in future and ongoing USDA assessments.

The Department of Justice is exploring the role of market power in creating and expanding GE seed price premiums. Concerns are mounting worldwide over the GE seed industry's degree of control over plant germplasm and plant breeding priorities, and the erosion of choice in the seed marketplace.

In addition, all is not well on the GE farm. New production-oriented problems have emerged, in particular, the incremental unravelling of the Roundup Ready (RR) herbicide-tolerant weed management system in the wake of the spread of resistant weeds. The RR system is costing farmers more and more per acre, and is working progressively less well. Other

problems appear to be spreading in some regions dependent on GE seeds, including several associated with plant nutrition and diseases.

In response to these challenges, an attempt is already underway by Monsanto to lower the cost of the RR system through reductions in GE seed price premiums and more broadly, the GE crop industry is scrambling to produce crop varieties resistant to multiple herbicides, a response akin to pouring gas on a fire to snuff it out.

In short, those promoting and vested in GE crops are working hard to change the subject. New industry-driven tactics, strategies, and initiatives are emerging in an attempt to reposition GE crops, in the hope that a brighter halo will set the stage for a relaxation of regulatory requirements and/or new and expanded public subsidies for GE crop technology in the U.S. and around the world.

Two of the significant components of this evolving political and PR campaign rest on the notion that –

- GE crops and technology are essential to feed the world and combat food insecurity; and
- GE and organic crops can co-exist peacefully, without consequences, on the same landscape.

The assertion that GE crops are essential to feed the world is under active debate in multiple venues. An example is briefly described in the item in this issue of "The Scoop" entitled "Debate over GE Food Heating Up in Africa."

Some of the reasons why the principles embedded in organic farming and agroecological approaches to agriculture have more to contribute to food security than GE crop technology are discussed in Chuck Benbrook's recent interview with "Nourishing the Planet" (see http://www.organic-center.org/reportfiles/Benbrook_HTP_Interview.pdf).

But what about co-existence?

Whether co-existence is possible, and the impacts of attempts at co-existence, will obviously depend on the definition of "co-existence."

The biotech industry argues that co-existence exists now, and points to the fact that a few million acres of organic corn, cotton, soybeans, and canola are planted in the midst of 150 million plus GE crop acres across North America. So, if one defines co-existence as the presence of GE and organic crops in the same agricultural region, the biotech industry is correct, there is co-existence today.

Co-existence, however, goes well beyond the mere sharing of a landscape. In the context of the debate over GE and organic crop production, the term "co-existence" is used widely and consistently around the world to describe a state of being whereby cropland within an agricultural region is planted to both GE and organic crops with no added costs or adverse impacts triggered by one on the other, and if such added costs and adverse impacts occur, the party that is harmed is fairly compensated by the party bringing about the harm.

The costs associated with a co-existence scheme would include ongoing sampling and testing, the need for buffers, and the loss of markets and/or price premiums when buyers and/or markets reject organic crops because of detected or feared contamination.

There are two major threats to co-existence at the field level. One set involves the flow of genes, usually via pollen, from GE fields to conventional fields, possibly resulting in the contamination of nearby organic crops, and over the long-run, the contamination of the organic and conventional seed supply.

The second set of issues arises from the fact that most pests are mobile and do not respect farm boundaries. Conventional alfalfa farmers, for example, will spray a field infested with adult insects. In many cases, the insects in the alfalfa field may have previously fled a nearby orchard or cotton field when it was sprayed. When the conventional alfalfa producer applies an insecticide on the crop, this act will often drive some of the bugs out of the field, seeking greener pastures. Any nearby organic field will do just fine in this scenario.

A different shoe fits the other foot. When an organic alfalfa farmer experiences an insect outbreak, a standard management practice is to monitor population levels closely, and then cut the field when insect feeding

damage becomes serious enough to reduce yields significantly. As the field is cut, some of the bugs will choose to move on and some will settle onto a conventional farmer's fields, possibly triggering the need for an insecticide application.

Organic and conventional farm neighbours can and routinely do impact across-the-fence pest pressure as a result of how they manage their crop. This sort of impact has existed since the first field boundary was laid out with stones and is usually not addressed through government policies or regulatory requirements. The two exceptions are programs designed to control and prevent the spread of noxious weeds, and programs that strive to keep invasive species from gaining a hold in an agricultural area where vulnerable crops are grown.

Dealing with the Consequences of Gene Flow

Gene flow via pollen is the problem at the heart of the co-existence debate in the U.S. and Europe. If this problem could be solved, or managed in a way acceptable to conventional and organic farmers, the trail to mostly peaceful co-existence would likely be blazed fairly quickly, assuming of course that conventional growers and the biotechnology industry accept the responsibility to cover the costs of co-existence and a mechanism is put in place to do so.

Europeans have been debating various co-existence schemes for over a decade and have failed to agree on an EU-wide system. The Danes, however, have put in place a national system. Its major features include:

- Farmers planting GE crops in Denmark are responsible for ensuring co-existence within the meaning spelled out in their national program;
- Crop specific rules are promulgated including separation distances, cropping intervals, and the cleaning of machinery; and
- A compensation scheme is established for organic or conventional farmers harmed economically by gene flow from GE crop acres.

Non-GE farmers experiencing losses would be compensated based on lost crop price premiums. GE farmers would pay the compensation if they failed to comply with the rules. In cases where they complied with the rules but contamination occurred nonetheless, the impacted non-GE farmers are to be

compensated from a fund financed by a tax of $8.00 per acre of land planted to a GE crop cultivar.

Under the Danish system, it is not completely clear who bears the costs of all the routine testing that would be required to implement the scheme. But without doubt, such costs would be substantial in an area heavily planted to GE crops, like the American Midwest.

The Non-GMO Project

In the United States, the Non-GMO Project (http://www.nongmoproject.org) is by the most comprehensive effort to prevent GE gene flow into the seed supply and organic crops and food. I have served and continue to serve on the project's technical advisory board and standards committee and am aware of the complexities and costs confronting organic farmers and food companies that wish to meet the standards embedded in the Non-GMO Project's verification requirements.

It is too early to estimate the effectiveness or costs of compliance with the Non-GMO Project's requirements, which include routine testing and a healthy dose of paperwork. It is also likely that over time average Non-GMO Project costs for most crops, regions, and foods will fall as more efficient methods are devised to identify and address high-risk versus moderate- versus low-risk crop scenarios.

Progress will also no doubt be made in devising crop and region specific compliance protocols that work with a high level of reliability, and can over time allow a relaxation of testing requirements.

Despite these uncertainties, the Non-GMO Project is creating a rigorous, science-driven foundation upon which an organic-GE crop co-existence scheme could be devised and put in place. The broadening support and participation across the organic food industry in the Non-GMO Project is encouraging, but a huge problem remains – all the costs of participation are borne by the organic food industry and organic farmers, as are the risks of setbacks, which are inevitable.

With some stretching of what seems plausible today, I can imagine in the future the emergence of several private-sector programs like the Non-GMO

Project that offer transparent, testing-based programs and protocols to prevent, detect, and isolate gene flow, rendering it an occasional but essentially inconsequential occurrence.

With a whole lot more stretching of the maybe-some-day plausible, I could see conventional farmers and the biotech industry agreeing to pay for part of the costs of a realistic co-existence program, while lobbying Congress to put up the rest of the needed funding from public dollars.

On the co-existence front, no one knows whether the old adage “Where there is the will, there will be a way” will ever apply. One reason for doubt is another old adage with ample adherents on both sides of the debate – “I’d rather fight than switch.”