

No to GMO: At least we'll still be able to grow our own food

The author of the opinion piece on March 11 titled, "We may starve, but at least we'll be GMO-free" misunderstands the dangers of GMO, treating worries about GMO as an "ideological luxury" about the speculative health value of GMO foods. It is not just about the healthiness of the food, it is about the health of ordinary agriculture and the small family farm worldwide.

As an example, consider cases where GMO crops are modified to resist insect pests. Environmental biologists understand that GMO modifications used to make plant crops less palatable to insects, or otherwise more difficult for them to eat, will force those insect pests to seek the crops they like that do not possess the engineered deterrent. These are the same species of crops raised by farmers who do not use GMO who may be farming within the same migratory range of flying insects such as locusts. The natural consequence is that any "natural" plants remaining of that species, without the human-created gene, are subject to greater encroachment from the insects. As plants without the human-created gene are decimated by the insect, the "natural" species of plant can become extinct. When that happens, the only plants of that species that will produce food for humans are the ones that have been genetically modified, leaving the world dependent on the GMO producers for food.

This is just one example in a complicated milieu of agricultural ecosystems with many species and many predator-prey relationships, but the point is easy to grasp. The competition is not simply between an old way of farming and another, better, way of farming that can produce efficiency gains for the marketplace to enjoy. GMO of the kind described above push natural crop predators onto their non-GMO competitors and thus threaten to wipe out their crops and their livelihoods.

The effects are even more insidious when one considers that pest populations will adapt quickly to engineered deterrents due to simple breeding over a few generations, exploiting the variability that already exists within their gene pools, and will also develop potentially more strategically relevant countermeasures to GMO through mutation on longer timescales. An example involves GMO-engineered pesticide resistance in plant crops. Pesticides often are somewhat toxic to their target crops, used on GMO-resistant and 'ordinary' crops alike. The GMO crops, resistant to this toxicity, allow application of larger doses of the pesticide. This incentivizes an insect population to develop greater resistance to the pesticide, such that the GMO crops return to a previous baseline level of predation but with more pesticide required to maintain it. Non-GMO crops, however, now have to contend with prey insects that are less vulnerable to the maximum levels of pesticide that the non-GMO crops can absorb, putting those ordinary crops at greater existential risk. Non-GMO farmers easily could lose their entire crops. The long-term effect is that GMO did not matter overall for the GMO crops. In the meantime, GMO has put everyone else out of business, and out of food.

There is a serious risk that the only plants of a given crop species left to produce food for humans are the ones that have been genetically modified. The GMO crops are not only pushing back on their natural predators, but have the effect of risking extinction for their non-GMO counterparts and the people who depend on them for their lives. This is an example of a 'market externality' that in practice

has an anti-competitive effect against innocent people trying to scrape out a living in their own backyards.

There also is a threat to the natural genotype through cross pollination of nearby crops with GMO crops and the resultant reduction or elimination of the natural species.

GMO crops represent a first-world agribusiness advantage with high costs for research, legal protection, lobbying, and marketing. The majority of farmers around the world don't operate at a scale that allows the purchase of fresh GMO seeds every year, instead relying on keeping a portion of their 'ordinary' annual harvest for seed. Many grow their own food, and do not have the means to pay for food that they cannot grow themselves or offer in trade. GMO crops are often engineered to be infertile, requiring those who can afford them to keep paying each year for new seed. When GMO seed is fertile, manufacturers require agreements from their customers not to replant, and manufacturers surveil and sue aggressively for violations. Due to all of these factors, those who cannot afford GMO will suddenly or eventually find themselves without the ability to grow the crops they have always depended upon. Subsistence farming as a way of life for billions of human beings may be an inevitable casualty of continued legal protection for GMO in courts and supply chains around the world. Farmers who have been self-sufficient for generations, who cannot afford GMO seeds every year, may find themselves with no income, no food and no way to obtain food, leading to decreased self-sufficiency and increased dependency (or even starvation) world-wide. In this struggle, GMO does not simply represent a more efficient way to produce food. It represents a way to force all of the food production in the world into the hands of a small number of very large patent-holding organizations via collateral damage to anyone not sufficiently capitalized.

Being against GMO is not just an "ideological luxury." GMO use can lead to a circumstance in which the only plant that will grow and produce food is a plant sown from a GMO seed. History shows that the large-scale inability to feed self and family, to earn a living, and to have standing as a productive member of society, lead to famine, civil war, breakdown of the rule of law, and radicalization at worst, and dependency on the welfare of the state or the charity of others at best. Decision makers who care about global security should pay attention to this risk of GMO. One cannot wisely promote and protect the use of GMO without factoring in such unintended consequences, if in fact they are unintended. In an already destabilized world, a perhaps appropriate message from consumers and from governments to GMO vendors should be that you have every right to your intellectual property, but you are not welcome to practice it here.

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