

Genetically Modified Crops Contribute to Biodiversity Loss

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Deniza Gertsberg is a practicing attorney in the New York City area and the editor and publisher of *GMO Journal*, a website focused on the health, environmental, and moral impacts of genetically modified foods and ingredients.

It is a statistic that is hard to deny: industrial forms of agriculture, with emphasis on large-scale monoculture crop production, have a negative impact on biodiversity. The Food and Agricultural Organization of the United Nations, referring to the scale of the loss as "extensive," found that some 75 percent of plant genetic diversity has been lost since 1900 as farmers turn to genetically uniform, mass-produced crop varieties.

The term "biodiversity" was derived from "biological" and "diversity," and refers to the total diversity of all life in a given locale—one as small as a backyard (or smaller) or as large as the entire planet Earth.

Since genetically modified crops (a.k.a. GMOs) reinforce genetic homogeneity and promote large scale monocultures, they contribute to the decline in biodiversity and increase vulnerability of crops to climate change, pests and diseases.

The Impact of GMOs on Biodiversity

Genetically modified crops grow in a dynamic environment and interact with other species of the agroecosystem and surrounding environment. As "biological novelties to the ecosystems," GM crops may potentially affect the "fitness of other species, population dynamics, ecological roles, and interactions, promoting local extinctions, population explosions, and changes in community structure and function inside and outside agroecosystems."

The impact of GMOs on biodiversity is also seen in the development of superweeds and superbugs.

The recent concerns raised by Dr. Don Huber, who noted a link between GM crops, engineered to withstand continued applications of glyphosate, plant diseases and spontaneous abortions and infertility in pigs, horses, cattle and other livestock, further underscore the troubling fact that GM crops may likely have a larger negative impact on the agroecosystem and the surrounding environment. More importantly, Huber's revelations further point to the inaccurate assumptions made by this nation's regulators. GM crops are not substantially equivalent to their conventional counterparts, they interact in novel ways to impact the plant, the soil and the animals that consume them and government agencies should think twice before deregulating GMOs.

Independent scientists studying the effects of GMOs have also raised other concerns regarding the impact of GMOs on biodiversity. The spread of transgenes to wild or weedy relatives, the impact of GMOs on

nontarget organisms (especially weeds or local varieties) through the acquisition of transgenic traits via hybridization, the evolution of resistance to pests (in case of *Bt* crops), accumulation of *Bt* toxins, which remain active in the soil after the crop is plowed under and bind tightly to clays and humic acids and the unanticipated effects of the *Bt* toxin on nontarget herbivorous insects, are areas of concern as are increasing concerns about the adverse impact of GMOs on insects (such as bees, for example), nematodes, and birds, all of whom either consume GMOs seeds or their by-products or are present in glyphosate saturated soils. "[T]he vast majority of soybeans and cotton, and 70% of our corn, is Roundup Ready, leading to over 230 million lbs of glyphosate being sprayed each year," noted Bill Freese, the Science Policy Analyst at the Center For Food Safety.

Furthermore, the impact of GMOs on biodiversity is also seen in the development of superweeds and superbugs since over-reliance on and the abundant use of single herbicide and pesticide lead to resistance in the pest community. The "unregulated use of glyphosate-resistant crop systems has triggered an epidemic of glyphosate-resistant weeds infesting 10 million acres or more," in this country alone.

GMOs contribute to a decline in biodiversity in one other way. According to Bill Freese, the Science Policy Analyst with the Center For Food Safety, as biotech companies acquire conventional seed companies, conventional and organic seeds are pushed out. Freese states that:

When Monsanto buys up seed firms, it discontinues the conventional lines, and offers only biotech versions.... So from Monsanto's perspective, it makes no sense to sell a high-quality conventional variety when you can charge higher prices and make more money selling that exact same seed, only with a Roundup Ready or other biotech trait(s) stuck into it.

It's not just Monsanto. Bayer and other biotech firms don't want to sell conventional varieties anymore. [They are] [n]ot as profitable. And since the biotech trait is patented, you get the bonus of patent protection when you insert the trait into a seed. That allows the likes of Monsanto to sue farmers for the "crime" (patent infringement) of saving seed,....

While additional studies are needed to gain a fuller understanding of the impact of GMOs on biodiversity, the currently available information begs the question of whether GMOs bring more harm than good, especially when small-scale farmers, using ecological methods, can address the pressing agricultural concerns.

Further Readings

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