

The Brave Old World of Genetic Engineering



By Henry Miller — April 30, 2019



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By Henry I. Miller and Rob Wager

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A Washington Post [article](#) [1], “The Future of Food,” discussed the methods we use to breed food crops but suffered from a shortcoming we see often: “pseudo-balance” -- the seeking out of clueless commentators to contradict advocates of superior modern genetic modification techniques. We hate to break it to the author of the article (who holds a bachelor’s degree in “magazine journalism, international relations and Spanish”) but, in spite of what they teach you in journalism classes, not every issue has two sides and benefits from point-counterpoint.

Because most of society is between two and six generations removed from farming, that subject is largely terra incognita, literally and figuratively. This lack of knowledge makes the public very susceptible to fear-based marketing of food.

Humans have been modifying the DNA of our food for thousands of years. We call it *agriculture*. Early farmers (>10,000 years ago) used selective breeding to guide DNA changes in crops to better suit our needs. Approximately a hundred years ago plant breeders began using harsh chemicals and/or radiation to randomly change, or mutate, the DNA of crops. These mutagens caused innumerable changes to the DNA, none of which were characterized or examined for safety. Problems were rare. Today more than half of all food crops have mutagenesis breeding as part of their pedigree.

Ancestral varieties bear little resemblance to the domesticated crops we eat today. There are many striking pictorial examples [here](#) [2].

Approximately 30 years ago agricultural scientists and plant breeders began to use recombinant DNA technology (“gene splicing”) to make far more precise and predictable changes in the DNA in our crops. This molecular genetic engineering (GE) takes a gene with a known function (e.g., toxicity to certain insect predators) and moves it into a crop to transfer the desirable trait. That enables the GE crop to protect itself from insect pests. This one trait has allowed farmers around the world to reduce broad spectrum insecticide spraying by billions of pounds. One would think environmental non-governmental organizations (eNGOs) would cheer such innovation. Sadly, this is not the case; once again, no good deed goes unpunished.

Activists (many of whom are paid for their advocacy) have teamed up with companies that sell organic and natural food products to vilify crops crafted with molecular techniques, which have been dubbed “GMOs,” genetically modified organisms, or “Frankenfoods.” This anti-genetic engineering industry and their lobbyists are primarily responsible for the significant public apprehension towards this technology. They have been very successful generating fear towards genetically engineered (GE) crops (aka GMOs) in the public. They then use that fear to [sell alternative](#) ^[3] food products to the unsuspecting public.

Now this same industry is lobbying globally for even higher regulatory barriers for gene edited crops and animals. They have had success in Europe and Africa and are now setting their sights on North America.

The *Post* article quoted perennial genetic engineering skeptic Jennifer Kuzma as saying about gene editing, “We need a mandatory regulatory process: not just for scientific reasons, but for consumer and public confidence.” The latter claim, especially, is a fallacy: Thirty years of excessive regulation of genetic engineering has neither reduced public anxiety nor quieted the critics. If anything, these regulations have fanned public concerns about this safe, superior technology. As Barbara Keating-Edh, representing the consumer group Consumer Alert, testified before the U.S. National Biotechnology Policy Board in 1991:

“For obvious reasons, the consumer views the technologies that are *most* regulated to be the *least* safe ones. Heavy involvement by government, no matter how well intended, inevitably sends the wrong signals. Rather than ensuring confidence, it raises suspicion and doubt” [emphasis in original]. (Keating-Edh, B. Statement before the National Biotechnology Policy Board (20 September 1991), cited in *Biotechnology Law Report*, March-April 1993, 12 (2); 127-182.)

“Anti-genetic engineering activists are calling for gene editing organisms to be lumped in with over-regulated, nebulously defined “GMOs,” for regulatory purposes, and many regulators agree.” Regulators love to expand their mandates, empires and budgets.

And, it should be noted, the new gene editing techniques are an improvement over the decades-old recombinant DNA techniques in precision and predictability.

We have more than 20 years of [data](#) [4] on commercialized GE crops. Literally hundreds of analyses by governmental and professional groups have found that GE crops are as safe, or in some cases safer, than crops from other breeding methods. Putting it another way, there is no evidence that the use of molecular genetic engineering techniques confers unique or incremental risks.

It seems that consumers crave technology in every aspect of their lives except in food production. Why is that? It is because of a multi-decade, multi-national, multi-billion dollar [fear](#) [5]-and-[smear](#) [6] campaign against genetically engineered crops and derived foods by the anti-genetic engineering industry.

Technology has helped to double food production in the last 50 years. We have the cheapest, safest, most abundant food supply in history, but now those who seek to increase the market for organic/natural products want to force agricultural science to a more primitive, less productive time by embracing inefficient practices. Although they have been successful in creating a niche for their products, we cannot let them reverse the stunning scientific, economic and environmental [advances](#) [7] that have come from genetic engineering and gene editing technology.

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[1] https://www.washingtonpost.com/news/business/wp/2018/08/11/feature/the-future-of-food-scientists-have-found-a-fast-and-cheap-way-to-edit-your-edibles-dna/?utm_term=.a09bb6e1c514

[2] <https://www.sciencealert.com/fruits-vegetables-looked-before-domestication>

[3] http://academicsreview.org/wp-content/uploads/2014/04/AR_Organic-Marketing-Report_Print.pdf

[4] <https://www.tandfonline.com/doi/abs/10.3109/07388551.2013.823595>

[5] <https://www.wsj.com/articles/the-organic-industry-is-lying-to-you-1533496699>

[6] <http://dailycaller.com/2018/07/19/how-russia-and-ngos-collude-to-damage-american-exceptionalism/>

[7] <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0111629>