

# Why Plant Patenting Floats Free of GMO Crop Controversies

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Public debates about the merits of genetically modified crops often end in polarized shouting matches. They pit so-called “romantic environmentalists” against scientifically-minded advocates for companies that derive their livelihoods through the patenting and licensing of GMO seeds. According to Vandana Shiva, one such “romantic environmentalist,” Monsanto is imposing a form of “food totalitarianism” upon the world’s populace through its restrictive licensing of patented GMO seeds that cannot be saved for growing future crops.<sup>1</sup>

In all of these fiery GMO debates, the more longstanding practice of plant patenting is granted a free pass. On one level, that may seem odd. Both plant patenting techniques and the recombinant DNA technology used to create GMO crops aim to alter and create new plants. Yet, the science behind plant patenting stems from Gregor Mendel’s hybridization experiments with garden peas in the 19th century. His discoveries led to the field of Mendelian genetics, or laws of inheritance. GMO techniques, in contrast, are rooted in the first U.S. patent issued in 1980 employing recombinant DNA technology.<sup>2</sup>

Established in 1930, U.S. plant patent rights are granted to any person who “invents or discovers and asexually reproduces any distinct and new variety of plant, including cultivated sports, mutants, hybrids and newly found seedlings . . .” (35 U.S.C. § 161). According to the act’s legislative history, “any person who invents or discovers a new and distinct variety of plant shall be given by patent an exclusive right to propagate that plant by asexual reproduction; that is by grafting, budding, cuttings, layering, division, and the like, but not by seeds.” The plant patent act does not provide patent protection for varieties of plants found growing in an uncultivated or wild state.

The lack of plant patent rights for “seeds” is the most significant distinction between plant patents and patented GMO crop technology. GMO patent rights are based on general U.S. laws applicable to “utility” patents — not plant patent laws. For agri-businesses, GMO-related

patents are a natural extension of recombinant DNA technology that initially led to medical breakthroughs — such as the ability to synthetically derive erythropoietin, the protein regulating the body’s production of red blood cells.

Plant patent terminology is foreign to most people. Three classes of plant varieties are protectable:

In the first class of cases, *the sports* [i.e., “sports of nature”], the new and distinct variety results from bud variation, and not seed variation. A plant or portion of a plant may suddenly assume an appearance or character distinct from that which normally characterizes the variety or species. In the second class of cases, *the mutants*, the new and distinct variety results from seedling variation by the self-pollination of species. In the third class of cases, *the hybrids*, the new and distinct variety results from the seedlings of the cross-pollination of two species, two varieties, or of a species and a variety.

All such plants must be asexually reproduced in order to have their identity preserved. This is necessary because seedlings either produced by chance or self-pollination from any of these methods would not preserve the character of the individual plant. Because

these plant patent methods are emotionally accepted by the farmer and the food consumer, they do not engender the backlash reserved for their “Frankenfood” counterparts.

In the GMO crop debates, the “hard” science community focuses on issues of “food safety” rather than overall “food satisfaction.” “Romantic environmentalists,” in turn, devote more attention to the holistic, psychic aspects of food ingestion. While they criticize anti-GMO views as “unscientific,” GMO proponents themselves ignore “food satisfaction” as a better measure of food quality. That concept is not well understood scientifically; it is much harder to model and study. It would require a cross-disciplinary analysis — both psychological and sociological — of the ramifications of consuming GMO crops. That more penetrating scientific analysis has yet to take shape.



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1: M. Specter, “Seeds of Doubt: An Activist’s Controversial Crusade Against Genetically Modified Crops,” *The New Yorker*, August 25, 2014.  
2: See “Process for Producing Biologically Functional Molecular Chimeras,” U.S. Patent No. 4,237,224 (issued on December 2, 1980).