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Scientific American Perspectives

A Seedy Practice

Scientists must ask seed companies for permission before publishing independent research on genetically modified crops. That restriction must end

BY THE EDITORS

Advances in agricultural technology—including, but not limited to, the genetic modification of food crops—have made fields more productive than ever. Farmers grow more crops and feed more people using less land. They are able to use fewer pesticides and to reduce the amount of tilling that leads to erosion. And within the next two years, agritech companies plan to introduce advanced crops that are designed to survive heat waves and droughts, resilient characteristics that will become increasingly important in a world marked by a changing climate.

Unfortunately, it is impossible to verify that genetically modified crops perform as advertised. That is because agritech companies have given themselves veto power over the work of independent researchers.

To purchase genetically modified seeds, a customer must sign an agreement that limits what can be done with them. (If you have installed software recently, you will recognize the concept of the end-user agreement.) Agreements are considered necessary to protect a company's intellectual property, and they justifiably preclude the replication of the genetic enhancements that make the seeds unique. But agritech companies such as Monsanto, Pioneer and Syngenta go further. For a decade their user agreements have explicitly forbidden the use of the seeds for any independent research. Under the threat of litigation, scientists cannot test a seed to explore the different conditions under which it thrives or fails. They cannot compare seeds from one company against those from another company. And perhaps most important, they cannot examine whether the genetically modified crops lead to unintended environmental side effects.

Research on genetically modified seeds is still published, of course. But only studies that the seed companies have approved ever see the light of a peer-reviewed journal. In a number of cases, experiments that had the implicit go-ahead from the seed company were later blocked from publication because the results were not flattering. "It is important to understand that it is not always simply a matter of blanket denial of

all research requests, which is bad enough," wrote Elson J. Shields, an entomologist at Cornell University, in a letter to an official at the Environmental Protection Agency (the body tasked with regulating the environmental consequences of genetically modified crops), "but selective denials and permissions based on industry perceptions of how 'friendly' or 'hostile' a particular scientist may be toward [seed-enhancement] technology."

Shields is the spokesperson for a group of 24 corn insect scientists that opposes these practices. Because the scientists rely on the cooperation of the companies for their research—they must, after all, gain access to the seeds for studies—most have chosen to remain anonymous for fear of reprisals. The group has submitted a statement to the EPA protesting that "as a result of restricted access, no truly independent research can be legally conducted on many critical questions regarding the technology."

It would be chilling enough if any other type of company were able to prevent independent researchers from testing its wares and reporting what they find—imagine car companies trying to quash head-to-head model comparisons done by *Consumer Reports*, for example. But when scientists are prevented from examining the raw ingredients in our nation's food supply or from testing the plant material that covers a large portion of the country's agricultural land, the restrictions on free inquiry become dangerous.

Although we appreciate the need to protect the intellectual property rights that have spurred the investments into research and development that have led to agritech's successes, we also believe food safety and environmental protection depend on making plant products available to regular scientific scrutiny. Agricultural technology companies should therefore immediately remove the restriction on research from their end-user agreements. Going forward, the EPA should also require, as a condition of approving the sale of new seeds, that independent researchers have unfettered access to all products currently on the market. The agricultural revolution is too important to keep locked behind closed doors.

