Study cites abundance of genetically modified canola crops

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Genetic engineering has been hailed as a tool to produce crops that are left unharmed by weed-killing pesticides and that are more productive than their forebears. But critics have worried that modified plants might take over land used by native species and that increasingly hardy "superweeds" may develop. A new study supports some of these fears, detailing an abundance of genetically modified canola crops found outside cultivation in North Dakota.

The so-called feral canola is the first report of a genetically modified crop found in the wild in the U.S., although another genetically engineered plant designed for putting greens, creeping bentgrass, was found in Oregon in 2004. Feral modified canola has also shown up in the last decade in Canada, Germany, France, the United Kingdom, Japan and Australia.

In the U.S., 90 percent to 95 percent of commercially grown canola is genetically modified to be herbicide resistant; the researchers said that 80 percent of the wild canola identified in the most recent discovery had at least one of two herbicide-resistance genes.

Furthermore, a small number of the plants contained both genes, although plants containing both genes have never been commercially released. The combination's existence suggests that engineered genes can be highly mobile and could potentially be transferred to pernicious weeds, although canola has few weedy relatives.

"The canola study is a signal that gene movement into the environment is a general phenomenon," said Doug Gurian-Sherman, an agricultural biotechnology scientist at the Union of Concerned Scientists, a nonprofit organization that focuses on environmental issues.

This phenomenon means that the original benefit of the genetic engineering is ultimately lost, he says, forcing farmers to come up with new ways to control weeds - such as turning to the more toxic, longer-lasting herbicides used in the past.

"The effectiveness of the technology breaks down over time," Gurian-Sherman said, "and as it moves forward to genes that can have a bigger impact on the environment, these gene-movement issues will be more and more important."

The study's researchers, who presented their research on Aug. 6 at the Ecological Society of America's annual meeting, were more measured in their response. "The first message is, don't freak out, but let's figure out what's going on," said Cynthia Sagers, the University of Arkansas ecologist who led the study. An obvious question is what will happen if, or when, these novel traits get into native species.

But one of the next steps, she said, is to investigate whether herbicide use is connected to the canola's spread. The conventional wisdom is that these chemicals are only used on agricultural fields, where they kill weeds but leave the engineered crop unharmed - but it's possible that the herbicides are also spreading beyond the farms, perhaps allowing the modified canola to survive where native plants can't.

The finding and the unanswered questions take on added weight with researchers currently working to produce plants resistant to drought or disease. Such versions could produce hardier crops, but also increasingly dangerous weeds.

The concerns go beyond genetic engineering. Traditional breeding has recently produced drought-tolerant corn and sorghum; if these genes are introduced to weeds, the result would be the same, regardless of whether the source was genetic engineering or traditional breeding.

"Genetically engineered crops and non-genetically engineered crops tend to create the same classes of problems," said University of California, Riverside, plant geneticist Norm Ellstrand.