

## GMOS IN THE WILD – TWO REPORTS

### 1. FIRST GM PLANTS FOUND IN THE WILD<sup>1</sup>

Melissa Breyer<sup>©</sup>

This is the stuff of my nightmares: Genetically-modified (GM) plants escaping the confines of agriculture and invading the wild. We thought regular invasive species were bad? They seem tame compared to genetic contamination of the wild. Even more alarming: Some of the plants had a mix of modified genes, indicating that they are reproducing on their own. Although GM plant populations in the wild have been found in Canada, this is the first time they have been found in the United States.

Meredith G. Schafer, from the University of Arkansas, and colleagues established transects of land over 3000 miles long including interstate, state and county roads in North Dakota from which they collected, photographed and tested 406 canola plants. The results show that transgenic plants have clearly established populations in the wild. Of the 406 plants collected, 347 tested positive for CP4 EPSPS protein (resistant to glyphosate herbicide, aka Roundup) or PAT protein (resistant to glufosinate herbicide, aka LibertyLink). The finding shows that genetically modified canola plants can survive and thrive in the wild perhaps for decades—the study was presented today at the annual meeting of the Ecological Society of America.

The team's key finding was two plants that each carried both types of herbicide resistance — a combination that is not commercially available. The only way this can happen in the wild is if the plants are reproducing on their own. "There were two instances of multiple transgenes in single individuals," said coauthor Cynthia Sagers, University of Arkansas.

*"Varieties with multiple transgenic traits have not yet been released commercially, so this finding suggests that feral populations are reproducing and have become established outside of cultivation. These observations have important implications for the ecology and management of native and weedy species, as well as for the management of biotech products in the U.S."*

Once a GM crop is released it cannot be unreleased, and there are no systems in place to prevent genetic contamination through pollen flow, spills or human error. Although the GM plants found by the roadside are assumed to be the result of escaped seeds during transportation, the GM plants found away from roads suggest that the plants are taking on a life of their own.

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<sup>1</sup> Care2, Healthy and Green Living Newsletter, Aug 6, 2010

## 2. GM PLANTS ESCAPE INTO AMERICAN WILD<sup>2</sup>

Jessica Marshall<sup>©</sup>

Researchers have found hundreds of transgenic, herbicide-resistant canola plants across North Dakota. Two wild plants carried a combination of genes not available commercially, suggesting that the plants are reproducing in the wild. This could lead to herbicide-resistant weeds, among other possible problems.

Genetically modified canola plants have been found growing wild in the U.S., in some cases far from fields of cultivated genetically modified canola. Results reported today at a meeting of the Ecological Society of America in Pittsburgh, Penn., suggest that the plants are reproducing on their own, making this the first report of an established population of GM organisms in the wild in the U.S., according to the team.

Meredith Schafer of the University of Arkansas in Fayetteville had been scouring North Dakota without success for weedy relatives of the canola plant, to test whether they had acquired GM traits through cross-pollination with the GM canola plants widely cultivated throughout the state. "We were in a local grocery store and saw some yellow flowers growing by the side of the road and we thought, 'There's some of the weeds we were looking for.' Lo and behold, it was canola," she said. The team used test strips that work much like a pregnancy test to determine within 5 minutes whether a plant is carrying one of the two most commonly introduced genes in genetically modified canola.

The genes each produce a protein that lends resistance to two different common herbicides. One gives resistance to Roundup, or glyphosate, and the other gives resistance to Liberty, or glufosinate. These GM traits allow farmers to spray their fields with these herbicides, eliminating other weeds while allowing the herbicide-resistant crop to grow. "We had genetically modified canola (by the road near) the grocery store and in a large density," Schafer said.

The finding encouraged the team to look further for escaped canola, instead of its weed relative. "We set out across the state in a car. We tested every five miles and where we found canola we did the test," Schafer said. They expanded their search the following season. The team found canola at 46 percent of the more than 600 stops they made, and 80 percent of the canola plants tested were the genetically modified variety. The researchers could not test for a third type of genetically modified canola, which represents about 10 percent of the canola planted in North Dakota, so there may be more GM canola present than they detected.

They found high densities of GM canola on major roads, which may result in part from GM seeds being spilled in transit. "We also found a lot in the middle of nowhere, not close to cultivated fields at all," said Cynthia Sagers, Schafer's advisor at the University of Arkansas. The team's key finding was two plants that each carried both types of herbicide resistance -- a combination that is not commercially available. "The only way this can happen in the wild is if these are perpetuating in the wild, if they're reproducing out there," Sagers said.

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<sup>2</sup> Discovery News – Earth News, August 06, 2010

There is some chance they did not detect reproducing plants, said Ignacio Chapela of the University of California, Berkeley. The combination could also have been found if a seed carrying both GM traits that was made for research had been released with the commercial product, he said. "We've seen so many cases where the stock gets contaminated with seeds. Research seeds get put into the seeds that are being marketed," he said.

That said, the findings are not surprising, he added. "This is something that was predicted that then has been observed by farmers for many years, especially in Canada where canola is planted so widely." "We know that they are getting out there," Chapela continued, speaking of the GM plants. "Before it was a rhetorical question, now it is a reality." The reality that plants can escape cultivation should become part of the discussion about how GM plants are used, Chapela and Sagers agreed. "I don't think the findings are necessarily a human health risk," Sagers told Discovery News. But they could be a problem for farmers. "I think the herbicide resistance is going to be a very serious problem for agronomists and farmers in the near future," she said. "I think it could be an environmental problem if we find we've created these herbicide-resistant weeds."

Other GM traits could raise different concerns, including human health risks, she added. "There have been 1100 plants approved for field trials and who knows what those are -- pharmaceutical proteins, drought-resistant crops? Herbicide-resistances are very simple traits. Products in development are more complicated."