



Pesticides Are Causing Farmers to Become Suicidally Depressed



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Life on the farm ain't easy: the dawn-to-dusk hours, the physical toll of work in the fields, the variability of the weather, and the incredibly low net pay are just some of the factors that call to mind the lyrics of Bob Dylan's 1963 "Ballad of Hollis Brown," the [tale](#) of a desperately

impoverished South Dakota farmer who ends up killing his wife, his five children, and finally himself. The Bard's song might be decades-old, but new evidence compiled by researchers at the National Institutes of Health (NIH) suggests that serious depression among farmers is a real contemporary issue, one that in some cases can lead to farmworker suicide. The culprit, according to the NIH? Pesticides, which farmers both inhale and absorb through their skin as they apply them to their crops. These dangerous chemicals, researchers found, alter farmers' brain chemistry, increasing their risk of depression by up to 90 percent.

To produce their [report](#), released last month, a group of eight NIH epidemiologists surveyed 21,208 pesticide applicators in Iowa and North Carolina, asking them to report whether they had received a doctor's diagnosis of depression between 1993 and 2010. In total, 1,701—eight percent—said they had. The researchers, who also examined the specific chemicals used by farmers to kill insects, weeds, and fungi, found that farmers who used one class of common insecticide were up to 90 percent more likely to have been diagnosed depression, and that farmers who used common fumigants were up to 80 percent more likely to be depressed.

“Plenty of these studies have been done in the past, and basically all of them come to the conclusion that exposure to pesticides leads to neurological effects which in turn cause a depression that can increase the likelihood of suicide,” says Melanie Forti, director of health and safety programs at the Association of Farmworker Opportunity Programs, a farmer advocacy group based in Washington, D.C. “We’re not a scientific program, so we haven’t done any of our own studies, but we have years of anecdotal information that support the same conclusion.”

As Forti explains, the seven pesticides identified by the NIH as the most likely to cause depression in human applicators are designed to eradicate living things, whether that's a corn-

destroying cutworm or soybean-threatening giant ragweed. The fact that such chemicals should also harm humans, Forti says, doesn't come as a surprise.

"These are chemicals that are created to kill," she says. "We don't know exactly how much exposure is needed to harm people, too, but we know that it's an issue."

Animal testing performed by the NIH has shed some light on what might happen to the brains of farmers exposed to pesticides. A 2009 [study](#) stated that rats exposed to pesticides had altered brain cells; a 2003 [study](#) found that pesticides impaired the function of rats' neurotransmitters; and a 2005 [study](#), enticingly titled "Effect of Pesticides on Kynurenic Acid Production in Rat Brain Slices," concluded that the chemicals limited the production of this acid, which acts as an anticonvulsant and has been used in the treatment of neurobiological disorders.

"I don't think there's any question that pesticides can affect the functions of the brain," Dr. Freya Kamel, the lead author of the NIH study, told *Environmental Health News* this month.

The problem, Melanie Forti explains, lies with the EPA, which is responsible for reviewing potentially hazardous pesticides and banning them from the market if they don't meet safety requirements. The agency's process, she argues, is lax and full of loopholes that allow dangerous pesticides to reach the marketplace anyway, a conclusion that a comprehensive 2013 [report](#) released by the NRDC also reached.

"There should be more regulations on the type of pesticides being used," Forti says.

Lack of regulation is an even bigger problem in countries in South America and Asia, Forti points out. A study of Brazilian farmworkers found a link between [pesticide use and suicide](#); in

the farming-intensive region of Zhejiang, in China, farmers who stored pesticides in their homes were found to be almost twice as prone to [suicidal thoughts](#).

Here in the US, Forti says, other stressful conditions that affect farmworkers are enough to create deep depression that's only exacerbated by the toxic chemicals they're exposed to every day.

“Eighty percent of domestic farmworkers are Latinos,” she said. “These people have left their countries in pursuit of the American dream, and they’ve had to leave their families behind. And when you add to that 40 years of exposure to pesticides? You can see why depression might affect them.”

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