

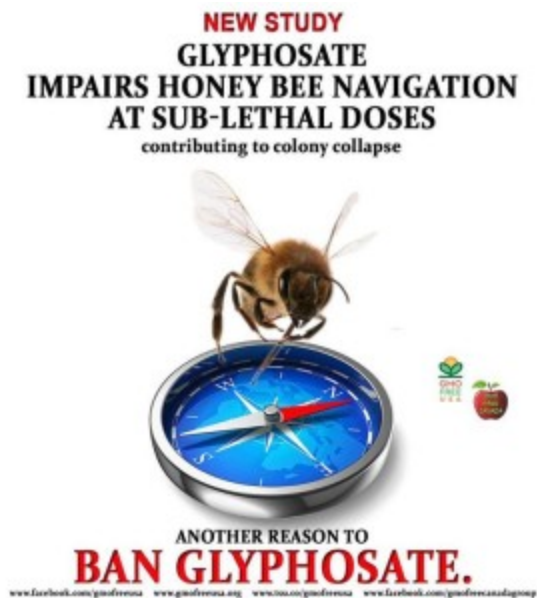


Glyphosate is no bee killer

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Honey bees have had a rough decade or so. Starting in 2006, Colony Collapse Disorder (CCD) started to empty hives of these precious pollinators. While CCD appeared to have ebbed by 2012, honey bee losses, mostly linked to different factors, remained high enough to be [of concern to](#) the U.S. Environmental Protection Agency and the U.S. Department of Agriculture. And earlier this summer the White House [announced](#) that Interagency Pollinator Health Task Force would begin digging into the problem further.

As far as what caused CCD, nobody knows, although most scientists are convinced it was not neonicotinoids, as many advocacy groups have claimed. It's [not the first time](#) managed honey bee hives have been decimated by unexplained factors. Indeed, [most experts agree](#) that the cause was likely multifactorial, citing a combination of stressors that include pests and pathogens, disease, nutrition, genetics, environmental exposures and commercial bee hive management practices.

CCD appears to have passed (for now), and populations of commercial honeybees [have recovered](#). But those facts haven't stopped anti-pesticide and anti-GMO activists from blaming, and continuing to blame, a number of pesticides, from neonics to glyphosate (the active ingredient of Roundup).

- In a 2013 paper, anti-GMO scientist [Don Huber took a glancing swipe](#) at neonicotinoids for possibly causing CCD, but warned his readers to focus on “*a more problematic cause of CCD*”: glyphosate. Huber claimed that glyphosate's widespread use worldwide could only link it to bee mortality. In other words, correlation equals cause.
- Quack website [Natural News ran](#) a headline in 2014, “*Groundbreaking study shows that Roundup causes honeybees to starve,*” based on an Argentine study that did not actually show that. But the story has continued to thread its way through [anti-GMO websites](#).
- As for [the study itself](#), the researchers used laboratory-raised bees and fed them the glyphosate active ingredient in a sucrose solution. They found that “field realistic doses” of glyphosate did not actually starve or kill the bees, but instead affected their learning and nectar-homing behavior. The researchers warned that “*However, no effect on foraging-related behaviour was found.*” Critics noted that the doses were not field realistic and bees do not regularly sip on glyphosate cocktails.

Glyphosate scares un-field-realistic

This September, the USDA's Agricultural Research Service published [a study looking at](#) “field realistic doses” of 42 pesticides (40 insecticides and miticides, one fungicide, and one herbicide — glyphosate) on honeybees. In their study they used honeybees from local (Arkansas) beekeepers, and set up spray conditions designed to better replicate “field realistic” exposures. Importantly, they not only measured lethal concentrations and doses, they also matched those lethal concentrations to actual commercial uses of each pesticide.

Of the 42 pesticides tested, 26 of them killed more than 99 percent of the field test bees. These included common organophosphates, neonicotinoids, carbamates and pyrethroids. But not all neonicotinoids killed the bees, and one pesticide came in dead last on the deadly list: glyphosate. Glyphosate's lethal concentration was already quite high, which is a good thing (requiring 4.62 x 10 to the 34th mg/liter versus the worst, the neonic dicotophos, with a toxicity of 24.92 mg/liter). In other words, it takes tons of glyphosate to kill a bee!

Even when factoring in the widespread use of glyphosate — a favorite factoid used by anti-GMO activists to point to glyphosate harm — the herbicide still came in dead last in the study. This is consistent with [earlier studies](#) that on glyphosate that were presented to the USDA and EPA in support of the Roundup approval.

The USDA team conducted the study to show that alternatives existed for farmers to eradicate persistent pests like stink bugs and the tarnished plant bug, which persist in row crops like cotton, soybean, rice, and corn. Seven pesticides, including the neonic insecticide acetamiprid, did not appear to kill more than 1 percent of bees that were exposed. Other members of the least-toxic list also included new pesticides with unique ways of killing harmful insects.

Over the past 20 years or so, adoption of transgenic cotton, soybean, rice, and corn has become widespread. This change has reduced the threats from chewing insects but hasn't had much of an effect on sucking bugs like stinkbugs and the tarnished plant bug, which moved in to the space vacated by the chewing insects. Thus, in some cases farmers have had to use additional pest control methods such as seed treatment insecticides and leaf sprays. Seed treatments are applied before the seed before planting and provide protection to the developing seedling; used correctly, they minimize the likelihood that any non-target or beneficial insect will ever come into contact with the insecticide. Leaf sprays are applied to the growing crop and should be applied in a way that minimizes exposure to non-target organisms; however, there is a greater chance that pollinating insects might come in contact with the pesticide. It's therefore important to use the best product for the pest in question and to not demonize an entire class of pesticide based on perception and misinformation.

While no farmer has ever jumped at the chance to spray pesticides, the study calls into question existing (in the European Union and parts of Canada) and proposed (in the US) harsh regulations, on neonics. For farmers, there are actually options. And at least two of them involve apparently safe pesticides that the anti-GMO and anti-pesticide movements want to ban.

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