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## Is Bee Colony Collapse Disorder linked to GMOs?

By Boris Gitlin | [One comment](#) | [Share This](#)

Barry B. Benson from the Bee Movie, might have been right after all – bees have a good reason to sue humans, and probably more than one. Honey bee populations face a dire reality in the United States. Since the major honey bee die-offs have started 3 years ago, some areas have seen deaths of 30-90% of bee colonies each winter. This die-off phenomenon in which worker bees from a beehive or honey bee colony simply disappear is called “colony collapse disorder” (CCD). CCD is used to describe cases where beekeepers discover hives empty after a winter with none or very few alive adult bees and with no accumulation of dead bees to indicate an abrupt disaster.

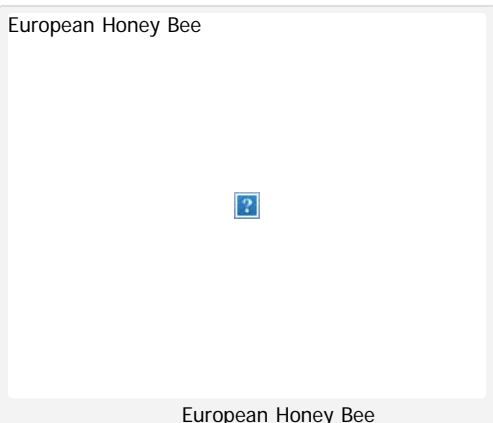
While natural deaths of bee colonies always occur, that occurrence is at a relatively small rate during any given winter. However, beekeeping operations impacted by CCD suffer drastically higher percentage of losses. For example a survey after the winter of 2006 found that CCD-affected operations lost 45% of bee colonies on average as opposed to only 25% losses suffered by non-CCD affected operations. The CCD symptoms include complete absence of adults in colonies after hibernation, no dead bees around the colonies, abandoned brood which is atypical for abandoned bee hives, and plentiful food stores abandoned and not been raided by other bees (such raids happen routinely with other dead colonies). Vacated colonies are also not taken over by moths or other invaders that typically move in quickly.

The dramatic rise in honey bee colony deaths first appeared in 2006 in North America, but it has also been observed all over Central and Western Europe, as well as in some parts of Asia, and, possibly, Brazil. While bee die-offs resembling CCD have been observed in the past, the bee deaths of the last few years attracted wide media attention given the global nature of the crisis and a vital role that honey bees play as pollinators of our crops, from major industrial crops, such as corn, canola, cotton, and soybeans, to specialty crops, such as almonds, cranberries, and many more. Crops pollinated by honey bees value at \$15 billion annually. The potential impact of this problem can not be understated.

For example, almost 100% of almonds grown in California depend on bee pollination and because of CCD devastation bee colonies had to be moved across the country in ever greater numbers to allow almond growth to continue.

Despite research on the issue, the causes of CCD are still not well understood. For starters, bees must overcome ever increasing amounts of pesticides to survive. Then there are diseases. Scientists now point to honey bee’s susceptibility to viruses, carried and transmitted by varroa mites, as well as fungus, and nosema ceranae, that bring devastating disease among bees already stressed by overuse of pesticides, recent dry weather, migratory beekeeping, and pollution. One cause that has also been in the eye of some researchers is the aggressive use of transgenic crops in the United States, Canada, and parts of Europe that has exploded over the past 13 years.

There are conflicting studies on the possible contribution of GMOs to CCD. Certainly, the overuse of pesticides and miticides has long been suspected as a major contributor and possible cause to this conundrum. A study done in University of Pennsylvania has shown that at least one pesticide was present in 100 flower and grass samples examined by researchers and in some cases the number of different pesticides reached six. Traditional pesticides are typically sprayed during periods of lowest bee activity and they have topical residual strength limited to under 2 hours, sometimes up to 4 hours. Pest-resistant GM plants, however, produce Bacillus thuringiensis (Bt) bio-toxin from all parts of the plant around the clock. While several studies have demonstrated that amounts of Bt proteins produced by the GM plants are not directly hazardous to bees, researchers have also shown that “a chance infestation by parasites (microsporidia) resulted in more significant damage to the Bt-fed colonies.” In other words, even sub-lethal exposure to pollen from Bt plants affect bee immunity by decreasing their ability to fight off diseases and parasites. One must wonder how years of on-going exposure may have impacted bees especially since the majority of the main four industrial crops grown in the U.S. (i.e., corn, cotton, soy and canola) are now genetically-engineered for pest-resistance.



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Initializing...

It is clear that CCD has the potential to wipe out honey bee colonies, thereby dramatically altering the way food is grown. It is also clear that additional research of the causes of CCD may require us to change our growing and cultivating methods. I would encourage everyone to learn more about CCD, GMOs, and global food security issues and challenges they pose to our way of life.

Further reading on CCD:

- Collapsing Colonies: Are GM Crops Killing Bees? Spiegel Online <http://www.spiegel.de/international/world/0,1518,473166,00.html> (last visited on September 17, 2009)
- Colony Collapse Disorder – Wikipedia
- Bees and GM Plants. GMO Safety [http://www.gmo-safety.eu/en/oilseed\\_rape/honey\\_bees/339.docu.html](http://www.gmo-safety.eu/en/oilseed_rape/honey_bees/339.docu.html) (last visited on September 19, 2009)

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fariclorref  
October 8th, 2009 at 12:35 am

Intresting, this was actually a very great read! thanks

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