

A Greener View: Colony Collapse Disorder in bees affects production of crops

by Jeff_Rugg

Q: I like to eat products made with honey. I have heard there are health benefits, yet I have also noticed that the bee colonies are disappearing from an unknown cause.

I was wondering if any items in the honey are harmful to my health.

A: You are right that eating honey provides several health benefits. It has been found that people have improved exercise performance when they first consume honey. Honey contains antioxidants and helps muscles recover faster from exercise. It is thought to have anti-cancer properties, anti-fungal and anti-bacterial properties - it can help cure burns, cuts and other injuries. And it tastes good.

And you are correct that many honeybee hives have disappeared in recent years, especially the fall of 2006 through the winter of 2007. It is called Colony Collapse Disorder or CCD, since it became a common occurrence and attracted so much attention. Some beekeepers lost half of their colonies.

Bees are very important to American agriculture and our economy. Depending on what you read, they pollinate between 90 and 130 crop types. The discrepancy may come from the fact that bees are required for the pollination of some crops and they just help out in other crops. At the same time, it is necessary to determine if one is talking about honeybees or bees in general.

Crops as diverse as alfalfa, almond, apple, clover, cucumber, pumpkin, raspberry, sunflower and watermelon are all dependent on insects, especially bees, for pollination. Other plants set fruit just fine without bees, but the yield can be improved with their help in pollination. Some examples are: eggplant, soybeans, strawberries and tomatoes. Bees often visit peas, beans and sweet corn but don't seem to assist in yields.

If it weren't for bees, you would have a hard time buying most tree fruits, vine crops and berries at the

grocery store. The California almond crop alone requires almost half of all the U.S. honeybee hives. From late January to early February around 1.2 million hives are used for this one crop. The hives are then moved around the country to help pollinate other crops. Bees add to the production of around \$15 billion in crops every year - if there is a problem with honeybees, there is a problem with agriculture.

Research is being done to determine what causes CCD. Farmers know bees are essential to many crops, and that other insects are pests that often need to be controlled with insecticides. Crops are sprayed with other pesticides for plant disease or weed control. Since farmers pay beekeepers for the use of beehives, it is in their best interest to follow federal laws on how and when to use the various chemical controls to prevent any harm to the honeybees.

The CCD problem is not limited to the United States. Europe and Australia also deal with the issue. Some insecticides have been eliminated in certain farming regions, but the incidence of CCD has not been reduced. And CCD has even occurred in areas where insecticides are not used. Genetically modified crops are not used in Europe, but CCD is found there. Therefore, insecticide use in general has been ruled out as a cause.

A bee virus from Israel has been suspected as being part of the cause; however, the virus has been found in old dead bee samples from many years before the most recent outbreak of CCD. Tiny parasitic mites infect a bee's bronchial tubes, weakening and killing bees - eventually weakening the whole hive. The virus could finish off the sick bees, killing the hive.

It is interesting to note that when a beehive is abandoned, other insects come to feed on the leftover wax and honey. No scavengers are present in hives with CCD.

Genetically, all of the bees in the hive are related to the queen. Cultivated beehives lack sources for new queens, possibly causing problems with the genetic diversity. Colonies are imported from other countries to try to offset this problem, but it could be the source of other difficulties.

CCD may have been present for centuries occasionally causing problems. Many insects, diseases and even

mammal and bird populations go through cycles of low and high mortality. This could be a natural occurrence that comes and goes. Since there is little known about old beehive care from many years ago, CCD may have present well into the past.

Although honeybees are important, they make up only a small number of the total amount of bees. There are at least 3,500 native bee species in North America. Typically these bees are solitary or have hives of only a few hundred at most. They do a lot of the pollinating that honeybees receive the credit for; don't produce honey or wax to any extent that can be harvested; tend to be docile and can be raised by homeowners, commercially more are being produced. They are better pollinators than honeybees; and avoid the parasitic mites that affect honeybees (but can have their own parasites).

The Agricultural Research Service of the USDA is completing research on these bee species in order to find out the pollinators of certain crops and how to best increase their populations.

It is unlikely that anything from CCD in the honey could cause harm to people, but everyone should not eat honey anyway. Infants younger than 1 year old should avoid raw honey - it has been found to be a source of infant botulism, which is very deadly if not treated.

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