Honey Bees
“The Angel of Agriculture”
Written by Emily Takata

A healthy Honey Bee Colony

In the past decade thousands of honey bees have been dying across the country which has led scientists to research the epidemic in order to find answers. The common name for the honey bee epidemic is Colony Collapse Disorder or CCD. To date there has been no one source of decline in honey bees but many factors are contributors. Some factors could include pesticides, cell-phone transmissions and other chemicals used on agriculture today. The major loss of honey bees has also led to a decline in the economy because the honey bee is directly associated with the production of agriculture. Politicians and the agriculture department need to come together to solve this epidemic in our country by researching CCD and the impact it has had on agriculture, then find a way to solve the problem and restore the honey bee population to healthy numbers.

CCD Research

For the past 30 years Myrna Watanabe has been writing science articles that has been published in several science journals including Nature Biotechnology and The Scientist and has received her AB in Biology at Barnard College, and later an MS and PhD in animal behavior at New York University. According to Myrna Watanabe the first man to realize that some of his honey bee hives were empty was David Hackenberg back in mid-November of 2006. David Hackenberg is a prominent honey beekeeper in Pennsylvania and Florida who owns large apiaries from which he sends his hives all across the nation to pollinate nuts and berries and other plants. Hackenberg contacted Penn State to find and answer to the disappearing bees and found “At the time, it was reported that 20 to 30 percent of beekeepers’ colonies were affected, and among the hypothesized culprits were emerging pathogens, an environmental
chemical or toxin, and stressful apicultural practices” (Watanabe 384-388).

It is evident that research on this newly discovered disorder (CCD) must be conducted in order to prevent future honey bee losses and to sustain agriculture. Brian Walsh on Time.com asserts “Despite the Department of Agriculture’s allotment of $20 million a year for the next five years to study CCD, it’s still a mystery — and the bees keep dying.” As Walsh described the amount of time and money put into researching CCD he made it clear that “bees may be dying not from a single toxin or disease but rather from an assault directed by a collection of pathogens” (Walsh). CCD has many different variables making it hard for researchers and scientists to pin down a cure or preventive measure to protect the nations honey bees. The honey bees are not only affected by CCD but also by mites, deforestation and industrial agriculture.

Honey bees have long been correlated with agriculture thus the nickname “Angel of Agriculture.” In the United States capitalism reigns supreme in the economy and in the agricultural department that still rings true. Because of this capitalist society farmers have researched and implemented ways to boost crop production and one of those ways is to use pesticides or plants specifically engineered with pesticide like genes. These pesticides have affected the honey bees and other insects that live around the pesticide treated crops. The honey bees are affected by the pesticides in two different ways. The first way is when the honey bees ingest the pesticide while gathering nectar. The second way is when the honey bees come into contact with the pesticide that is left as a residue on the crops that were sprayed.

The U.S Department of Agriculture (USDA) is leading the federal government response to CCD. In 2007, USDA established a CCD Steering Committee with representatives from other government agencies, and academia. EPA is an active participant in the CCD Steering Committee. The Steering Committee has developed the Colony Collapse Disorder Action Plan (PDF) (28 pp, 2 MB, about PDF) . The plan has four main components:

1. Survey/Data Collection to determine the extent of CCD
and the current status of honeybee colony production and health;

2. Analysis of Bee Samples to determine the prevalence of various pests and pathogens, bee immunity and stress, and exposure to pesticides;

3. Hypothesis-Driven Research on four candidate factors including new and reemerging pathogens, bee pests, environmental and nutritional stresses, and pesticides; and

4. Mitigative/Preventive Measures to improve bee health and habitat and to counter mortality factors. (USDA)

Also the United States Department of Agriculture has put regulations on the different pesticides used when crop dusting in order to help prevent losses to the honey bees. Anderson and Atkins Jr. have raised awareness of the need for more regulations because “In the past, certain agricultural pesticides have caused severe losses to the apiculture industry but those losses have been reduced by legislation and by corrective measures. However, a great number of new pesticides – many of them highly toxic to bees – have appeared on the market” (Anderson and Atkins Jr.). Although regulations in the legislature have helped to protect the honey bee population more pesticides appear on the market that are in accordance to the legislation but still have a harmful effect on the honey bees. These toxic pesticides contribute to CCD and create new harmful variables that make it hard for researchers and bee enthusiasts to find a solution and protect the nations honey bees.

**Honey Bees and Agriculture**

Many know the honey bees have a nickname “Angel of Agriculture”. The honey bees have been given this unique nickname because they are pollinators of all plant life including the plants grown for agriculture. Some have said “the honey bees have been estimated to be far more valuable as pollinators of agricultural crops than as a source of honey and beeswax” (Anderson and Atkins Jr.).

David W. Roubik compares two different coffee flower bunches that one bunch was pollinated by honey bees and the other was not pollinated by the honey bees. “Ripe berries resulting from open pollination of coffee flowers were heavier than those on control branches that had been bagged with fine-mesh material” (Roubik).
Coffee branch with ripening berries that were pollinated by honey bees

Honey bees around the world are an essential component of the world’s agriculture and the value of the “a honey bee pollination service to U.S. agriculture has been estimated to be greater than 14 million dollars with their value topping $215 billion worldwide. More than three-quarters of all flowering plants must be pollinated by an animal visitor; usually an insect. In addition, it often takes several floral visits by pollinators to ensure maximum fruit set and quality.” (vanEngelsdorp, Hayes Jr., Underwood and Pettis).

A History of Honey Bees

Honey bees are a very diligent insect and work all the days of their lives to contribute to the survival of the entire hive. In the hive there are many tasks to be done by all of the bees and they all work together to complete these tasks. In a hive there are three kinds of bees: the queen bee, female workers and male drones. Each of these types of bees performs the tasks of the hive. All the tasks are “divided according to age and colony needs. Younger worker bees tend to the queen, and older worker bees forage, construct wax cells, convert nectar into honey, clean cells and guard the hive. Ideally, a healthy hive is a collection of overlapping generations” (Tammy Horn). The adult male worker bees are the bees that go out and collect the nectar from the flowers and spread the pollen from flower to flower as they move around. When the worker bees have all the nectar they can carry the bees return to the hive to use the pollen in various ways such as making honey, or help build the honeycomb. A single honey bee may seem insignificant because “a colony of honeybees (40,000 or more in the summer) can easily produce over a hundred pounds of honey, a single honeybee produces only about a teaspoonful in her life” (Be Way Honey). But without all of the individual honey bees working together there would be no hive and no honey made. Not only are bees important in agriculture but also “honey and wax for cosmetics, food and medicinal-religious objects; and inspiration to artists, architects and scientists” (Tammy Horn).

Honey bees are an important part of society for many different reasons that are explained above and CCD has greatly affected the world’s economy and brought the honey bee into the spotlight. Since CCD brought the honey bee into the spotlight it has become evident that the environment and economy are fragile and must be protected if it is to be sustained and bring benefits for future generations of U.S. citizens and peoples around the world. Research continues today to help protect the honey bees and bring their numbers back up as they have been in the past before CCD began to affect hives across the nation.
Work Cited


