



# Beekeeping

## Insect Pest Management

### Department of Entomology *Insect Note*

**Note 3.02**

(Previously Note #1A)

#### THE IMPORTANCE OF HONEY BEES IN NORTH CAROLINA

Honey bees are not native to the New World. They are immigrants, but they are an essential part of both our agricultural economy and the overall ecosystem including homeowners, wildlife, and anyone with an interest in nature.

Honey bees are important throughout the Americas and, in fact, throughout the world, but a brief description of their importance here in North Carolina may be more meaningful to the residents of this state.

##### The Various Ways That Honey Bees Are Important in North Carolina

1. Honey -- Each year honey bees kept by beekeepers in North Carolina produce over \$6 million worth of that delicious food. Some of the most popular honeys in the eastern United States are produced here, such as sourwood, black locust, tulip poplar and many others. Even though honey is a very popular food product, it is not the real reason for the importance of the honey bee.
2. Beeswax, Royal Jelly, Bee Pollen and Other Products of the Hive -- North Carolina beekeepers also produce a wide variety of bee products from the beehive with the aid of their honey bees. These products have a variety of uses such as beeswax for candles and cosmetics, royal jelly for cosmetics, bee pollen as a protein source, and more. These products are very popular as health foods and cosmetics, but they are not the main importance of honey bees in the state.
3. Pollination -- Pollination is defined as the transfer of pollen (the male portion of a flower) to the female portion which is then followed by fertilization and the production of fruit and/or seeds. Honey bees are undoubtedly the most important pollinators of food crops for humans and probably of food for wildlife in North Carolina and the entire nation. This is the main importance of honey bees.

Without adequate insect pollination, many of the crops grown in North Carolina could not be produced on a commercial basis, and honey bees are the most important insect in the process of pollination.

In North Carolina there are many crops that require some insect pollination and the following crops could not be produced if we did not have honey bees available for this task: apples, cucumbers, squash, watermelons, many of the berry crops, and more.

Why Are Honey Bees So Important For Pollination? It is reasonable to ask, "Why can't other insects do the pollination work?" It is true that many other bees (non-honey bees), flies, and other insects also do some pollination when they visit flowers; but those insects cannot take the place of honey bees. Those other insects do not have the special features that honey bees possess:

Reasons Honey Bees Are So Effective in Pollination of Commercial Crops:

- \* A honey bee colony may consist of up to 60,000 individuals while most other insects are solitary or only have colonies of a few hundred individuals.
- \* Honey bee colonies have adult insects throughout the entire year while other insects exist for only a portion of the year as adults. Adults do most of the pollination.
- \* Honey bee colonies can be moved by beekeepers to any location in the state where bees are needed for pollination and this is not usually an option with other insects. (Bumble bees are an exception, but those colonies number only a few hundred individuals.)
- \* Honey bees are managed by beekeepers who have developed successful management practices based on thousands of years of mankind's experience with honey bees.

An Example of the Importance of Honey Bees -- Cucumbers:

North Carolina is one of the leading producers of cucumbers. Cucumbers require insect pollination to produce marketable fruit and the honey bee is the only insect that is a realistic pollinator for this commercial crop. Note the following:

Based on studies at North Carolina State University:

- \* Cucumber flowers that do not receive insect visitation do not set any fruit. They do not even set fruit that is culled or thrown away. NO BEES = NO FRUIT (Cucumbers)
- \* Cucumber flowers not only require insect visitation but each flower requires a large number of insect visits -- the average requirement is 12 insect visits to each flower (blossom) during a one day period. Only honey bees are available in adequate numbers to ensure good cucumber fruit set. A reduced number of bee visits will result in fruit that aborts or in fruit that is small and misshapen.

The importance of honey bees is not limited to just the commercial production of crops such as cucumbers. Honey bees are also important in the pollination of many fruits, vegetables and seeds in the home garden. If your vine crops have flowers but are not producing any fruit (vegetables), then the reason is probably that they are not being pollinated by insects such as honey bees.

Food for Wildlife -- In addition to being important in the pollination of commercial and backyard crops, honey bees are also important in the pollination and production of foodstuffs for wildlife. For example, up to 20 or 25% of a black bear's diet may come from berries, seeds, etc. that are insect pollinated. In addition, many birds feed on insect (honey bee) pollinated seeds, nuts, and berries. Of course, other insects also pollinate many of the foodstuffs for wildlife, but honey bees definitely play a major role.

A Recent Problem -- Honey bees have been important in the pollination of many plants grown in N.C., but recently there has been a serious problem. The accidental introduction of two mite pests into the Americas in recent years has drastically reduced the number of honey bee colonies throughout the Americas, in the U.S. and in North Carolina. We have lost over 1/3 of our managed bee colonies (bees kept by beekeepers) in the state within the last five years and the problem is ongoing. In addition, over 90% of the feral honey bee colonies (honey bees living in the wild) have also been destroyed by the mite pests. This reduction in honey bee numbers means fewer bees for pollination. Beekeepers, researchers and state regulators are all working to reduce the impact of the mite pests on honey bees, but in the meantime it is in everyone's interest to protect all of the remaining honey bee colonies that we have in both managed beehives and in the wild.

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