UNIVERSITY OF FLORIDA
IFAS EXTENSION

ENY-120

Upward Ventilation[1]

Malcolm T. Sanford[2]

In the temperate areas of the United States, wintering honey bees is a constant problem. In the attempt to successfully winter their bees, beekeepers have tried a variety of techniques from wraping colonies in hay, straw, tar paper or foam insulation to wintering indoors in cellars or especially constructed buildings. For a long time collective wisdom deemed that it was of utmost importance to insulate the beehive against cold. This was probably influenced by those who thought bees were attempting to warm the interior of their hive as human beings did their houses. This is not the case. The bees only attempt to warm a discrete cluster of individuals within the hive. Insulating practices often bring on other problems; especially vexing is that warm air trapped inside a colony by insulation is full of moisture.

Experience and research now indicate that moisture-laden air is often more detrimental to honey bee colonies in winter than cold temperatures. In colder reaches of the colony, the moisture can condense and may even fall back onto the insulating layer of bees surrounding the cluster, producing an icy ball of bees. Therefore, conventional wisdom now dictates that insulation is not as important as venting excess moisture.

Upward ventilation through use of an upper entrance was reviewed by Mr. G. W. Hayes, "Queen Excluder or Honey Excluder?," *American Bee Journal*, Vol. 125, August, 1985. Although the title suggests that queen excluder use is emphasized, Mr. Hayes also develops a case for upper entrances. He concludes with:

> "We as beekeepers are constantly barraged with information about how beneficial ventilation and moisture removal is in over-wintered colonies. The upper entrance is always suggested as a method to accomplish this in winter and in very warm humid conditions during the summer. There have been many, many articles and whole sections of books written on the upper entrance theme...Perhaps we as beekeepers should be more flexible and look more closely at the upper entrance as a more efficient year-around option."

The need for adequate ventilation is also well documented during nectar flows. Some beekeepers routinely provide upper entrances for bees by propping up covers or even providing elevation blocks at four corners between supers. The practices

1. This document is ENY-120, one of a series of the Entomology and Nematology Department, Florida Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida. Original publication date February 10, 1993. Revised June 12, 1998. Reviewed May 2003. Visit the EDIS Web Site at http://edis.ifas.ufl.edu.

2. M. T. Sanford, professor/extension entomologist, Entomology and Nematology Department, Cooperative Extension Service, Institute of Food and Agricultural Sciences, University of Florida, Gainesville, 32611.

expose the surfaces of the combs to the large volume of air needed to reduce excess moisture in nectar. Care in ventilating hives is always tempered by the possibility of robbing; careful observation and judgment by the beekeeper must always be exercised to provide for maximum ventilation with minimum exposure to robbers. The stronger a colony of bees, the less possibility robbing will take place.

Florida does not have severe winters when judged by the same standards as those in the Midwestern United States, nor does it have the long, intense nectar flows often found in that region. But the State can be extremely humid during much of the year, and so maximum upward ventilation is also required to evaporate excess moisture during nectar flows.

Over the years, large outbreaks of chalkbrood have been reported by beekeepers in Florida. The disease is characterized by the brood turning into hard white chalky looking “mummies” (see ENY-116). It probably exists in most colonies on a year-around basis (is endemic) and, like nosema, becomes epidemic when conditions for its survival are optimum. There is no chemical control for chalkbrood. It appears that “good” management technique will reduce its incidence. Generally this calls for reduction of stress in a colony and the use of stock that might be resistant (that is adept at removing the chalkbrood mummies from cells to allow further brood production).

Chalkbrood is caused by a fungus (*Ascosphaera apis*) that appears to flourish in humid conditions. Does upward ventilation play a role in controlling the disease? Are Florida colonies ventilated properly to aid in reduction of chalkbrood buildup? Many may not be. In the spring of the year when chalkbrood is often problematic, there is quite a lot of stress on a colony. Cool morning moisture-laden air can easily “drain” into the bottom entrances of colonies. As the colony warms up during the day, upward convective ventilation in a properly ventilated colony should dissipate the moisture. The longer the moisture is trapped inside the colony, the greater the chances of it contributing to stress on a colony and to fungal (chalkbrood) development. Beekeepers whose colonies had an abundance of upward ventilation are reporting fewer chalkbrood problems. Perhaps the time has come for the Florida beekeeper, like his/her Midwestern counterpart, to pay greater attention to the role of upward ventilation in a colony.