



MARCH 2008

NEWSLETTER OF THE ALAMANCE COUNTY BEEKEEPERS

Remember...

March 15 Dandelion blooms

Check food stores, brood and brood pattern; help colonies build to full strength for tulip poplar honey flow

Alamance County Beekeepers

This month's meeting...

will be at Western Steak House at 6:30 pm Thursday, March 20. Don Moore will talk about NC's Master Beekeeper Program. The NC Master Beekeeper Program, sponsored by N.C. State University (Entomology/Apiculture Extension), the N.C. State Beekeepers Association, and the N.C. Dept. of Agriculture, is the oldest, continuously active, Master Beekeeper program in the United States. It is a multilevel program with over 3,500 individuals enrolled at some level of the program. Don has reached the highest level in the Program, that of Master Craftsman Beekeeper. Come benefit from his knowledge.

March Article

The following article was taken, with permission of Dr. Mike Hood from the South Carolina Beekeepers/South Carolina Cooperative Extension Service. I found the article very interesting and thought I should share it with you. The original article was published in October, 2007 as stated by Dr. Hood in his article below. You can review the entire published article on the PLoS ONE website. It is a lengthy (nine pages) and technical article on the website.

Don Moore

FOR HONEYBEE QUEEN, MULTIPLE MATING MAKES A DIFFERENCE

by Dr. Mike Hood

The success of the "reign" of a honey bee queen appears to be determined to a large degree by the number of times she mates with drone bees.

That is what research by scientists in the Department of Entomology and WM. Keck Center for Behavioral Biology at North Carolina State University suggests. Dr. Freddie-Jeanne Richard, a postdoctoral research associate; Dr. David Tarpy, assistant professor and North Carolina Cooperative Extension apiculturist; and Dr. Christina Grozinger, assistant professor of insect genomics, found that the number of times a honey bee queen mates is a key factor in determining how attractive the queen is to the worker bees of a hive. Their research was published Oct. 3 in the online scientific journal PLoS ONE.

A honey bee queen mates early in her life, Tarpy explained, but usually with multiple partners, the drones of another bee colony. Richard, Tarpy, and Grozinger found that the number of partners appears to be a key factor in making the queen attractive to the worker bees of a colony - the more partners, the more attractive the queen is and the longer her reign is likely to be.

The scientists also conducted experiments that suggest that the number of times a queen mates is a factor in altering the composition of a pheromone, or chemical signal, the queen produces. It is the composition of this pheromone that appears to attract the worker bees of a hive.

A honey bee colony consists of a single queen and several thousand sterile worker bees. Throughout most of her life, the queen's job is to lay eggs. However, early in a queen's life, she makes several mating flights. On these flights, she mates - in midair - with anywhere from one to more than 40 drones. The average number of drones with which a queen mates is 12. The queen stores the semen from her mating flights for the remainder of her life, two to three years for a long-lived queen.

However, some queens are not so long-lived. They are rejected by the workers of the hive. The research of Richard, Tarpy, and Grozinger sheds light on this rejection mechanism.

Because queens mate early in their lives and store semen, it stands to reason that queens that have mated multiple times and accumulate more semen might be more valuable to a colony. But Tarpy said researchers have not studied the impact of the number of times a queen mates on her physiology until now.

To determine the effect mating has on honey bee queens, the scientists artificially inseminated queens. It's difficult to determine the number of times a queen mates under natural conditions. Some queens were inseminated with the semen from one drone, others with the semen from 10 drones. The scientists then put the queens in hives and observed them.

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They found that worker bees paid more attention to the multiply inseminated queens. Worker bees demonstrate what is known as a "retinue response" to their queen; they lick her and rub their antennae on her. The retinue response to the multiply inseminated queens was more pronounced.

"This tells us the workers can tell how many drones the queen has mated with," said Grozinger.

Like many animals, honey bees use pheromones to communicate. When Richard analyzed pheromone produced in the mandibular gland of honey bee queens, she found that pheromone composition changes dramatically after queens mate and that the number of times the queen mates appears to be a key factor in determining the extent of pheromone alteration.

Richard added that when worker bees were exposed to pheromone from queens inseminated with semen from one drone and queens inseminated with semen from multiple drones, the workers showed a preference for the pheromone from the multiply-inseminated queens.

Richard added that an analysis of the mandibular gland pheromone found differences in the chemical profile of pheromone from once-inseminated and multiply-inseminated queens. The scientists also found differences in the two types of queens in brain-expression levels of a behaviorally relevant gene.

"Our results clearly demonstrate that insemination quantity alters queen physiology, queen pheromone profiles and queen-worker interactions," the scientists write in the PLoS One paper.

Tarpy said the research could have implications for bee breeding and for beekeepers. The research suggests that queens that mate with multiple partners are superior, so breeders may want to select for this behavior.

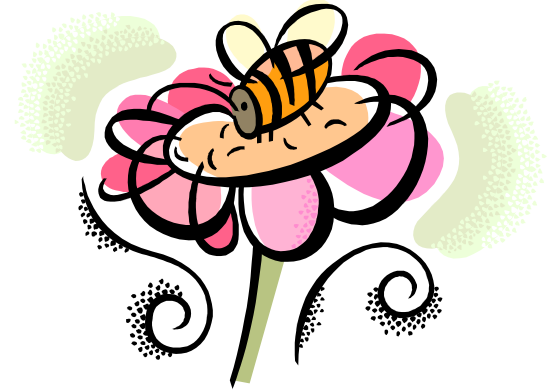
At the same time, beekeepers usually buy mated queens when they re-queen their hives. Tarpy said it should be possible to devise a test to determine if a queen has mated few or many times. Such a test would help beekeepers determine the quality of the queens they buy.

Source: Public *Library of Science News Release*, American Bee Journal, Dec. 2007

Citation: Richard F-J, Tarpy DR, Grozinger CM (2007) Effects of Insemination Quantity on Honey Bee Queen Physiology. PLoS ONE 2(10): e980. doi:10.1371/journal.pone.0000980.

Will this be your last copy of the newsletter?

If you have not renewed your membership dues for 2008, then the answer is "YES". If you're not sure you've paid, be sure to check with Janice Foulks at our next meeting.



Beekeeping Class of 2008

Congratulations to each of the students of the Beginning Beekeeping class for completing their final classroom session of 2008. We hope that the class Field Day, which will be held later this month, will be even more challenging as each new student beekeeper learns more about this truly beneficial insect, the Honey Bee.

Extractor Offer

Though extracting time is months away, Ken Pipes is offering his extractor on a loan basis, free of charge, to any new beekeeper that is a member of the Alamance County Beekeepers. It is a four-frame tangential extractor that will handle the deep, medium and shallow size super frames. This extractor is motor driven with a manual speed control. (Extractor will need to be held down while in use.) All frames to be extracted should be wired or have reinforced foundation. Please call Ken at 336-229-5622 if you would like to use his extractor. If no requests are received to use his extractor, he will again use it as a honey storage tank.

Thanks to Don Moore for providing the following poem, which I'm sure many of us can identify with. Here is some of Don's background information on the author.

Several years ago and certainly more than once, Lawrence Cutts came and made some presentations at the NCSBA spring and/or summer meetings. At the time Lawrence was Don Hopkins' counterpart in the state of Florida. He has since retired and I'm not sure that he is still living. Anyway, he was somewhat of a poet and he read some of his works at the state meetings. I asked him if we could use them and he said we could. I put them in the computer and we have published some of them (most of what I have) in our newsletter, but that was in 1999, I believe. [Note: This poem was published in the March 1999 ACB newsletter.]

A Bee Yard

I was driving along through the country side,
Fields and forest stretching far and wide,
When all of a sudden in the distance I spied,
A bee yard.

There must have been a thousand things to see,
Cattle grazing, a beautiful tree,
But the only thing that stood out for me, was,
A bee yard.

I've spent my lifetime working with bees,
Wanted nothing else, why thank you, please,
Stooping and bending and down on my knees, in,
A bee yard.

I always loved being out in the wild,
It made me feel I was Mother Nature's child,
For I know that there is where she smiled, on,
A bee yard.

I'll work with bees until I die,
And when I do, why, don't you cry,
Just bury me where I'll be close by,
A bee yard.

Billy
Shake
Spere

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*April Article: Joe Eiden*

*April Meeting Refreshments: Dan Fuhrman*

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