



# B-PLUS

BEEKEEPING REPORT FROM MICHIGAN STATE UNIVERSITY

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## BREEDING/SELECTING DISEASE RESISTANT BEES

I had the privilege, this week, to get an advance copy of Steve Taber's new book entitled, "**Breeding Super Bees**". The book will be out sometime soon; A. I. Root Company is the publisher. I highly recommend it to all beekeepers even if you never want to raise queens yourself. First, because you will be better able to evaluate the queens you have in your colonies after reading what Steve has to say about them. Secondly, he has put a lot of bee biology into the book.

Steve has advocated, and bred into the queens that he has sold, the use of disease resistant stock. The procedure used to select for disease resistance is not difficult and can be done by most beekeepers or queen breeders. Some of the genes for disease resistance are simply inherited, and can be incorporated into your stock rather quickly. The genetics of this American foulbrood disease resistance was published by W. C. Rothenbuhler more than 20 years ago. Why it has taken the beekeeping industry so long to use this information is not clear. It is possible that by the time that this information was available we had antibiotics and collectively decided that it was easier to use them than select for disease resistance. Whatever the reason that we haven't used disease resistance has probably been contrary to our own best interests. In his book Steve talks about disease resistance (DR) and I would like to quote from a section.

"A DR colony will occasionally show 2 or 3 infected cells, but will clean them up....

"My suggestion, then, is if you find several diseased cells during an inspection, mark it for further inspection in 10 days to 2 weeks. During the second inspection, if you find 20 or more cells of AFB, then you should destroy the queen and feed Terramycin to clean up the unit, (if that is legal in your state), along with installing a new queen. However if only 1 or 2 AFB cells are seen after this period, you are assured of having DR bees and should leave them alone.

"I realize this suggestion goes against most state laws concerning AFB. I think we should work for more flexibility in State Inspection Laws, recognizing that some bees are truly resistant to AFB. Only those susceptible should be destroyed. **Further, this would put selection pressure on the entire population in favor of the DR genes.**

(Emphasis mine.)

I suspect that we have been throwing away these genes for 60 years. A reversal of this practice should help in lowering disease throughout the state.

## VARROA MITES IN MICHIGAN?

As I write this we don't know if there are varroa mites in Michigan. They have been found in Wisconsin, Florida and Pennsylvania, and there are rumors that they may be in Michigan. There are some scientists that feel they have been in the U. S. for some time (3+ years). That is typical for varroa infestations that have occurred in Europe or South America, that is, it takes about 2 to 3 years before the mites are numerous enough to start causing damage to colonies or to readily find the mites.

There are many scientists that say that varroa is the worst thing that happens to honey bee colonies, and makes even AFB disease look insignificant by comparison. Why is that so? What makes varroa so deadly to the honey bee?, and where did they come from? I will try to summarize some of the things that we know about these mites and try to look into the crystal ball for the future of this mite and beekeeping.

*Varroa jacobsoni* is an external mite that was originally located in southeast Asia. There it was a pest of the smaller honey bee of the area *Apis cerana*. Varroa has only minor effect on *A. cerana* because of *cerana*'s shorter brood cycle. On *cerana* the varroa mites develop on the drone larvae and pupae, and if their numbers are reduced it has almost no effect on the colony. Therefore on *cerana* they act like a "good" parasite. On *A. mellifera* the European honey bee (EHB) that we have, varroa develops on both worker and drone larvae and pupae. The reason for this difference is that in *cerana* the time of the worker's immature stages is 18 days and drones 21 days. Whereas in our bees (EHB) the worker time is 21 and the drone is 24 days. Thus when varroa moved onto *A. mellifera* the development time of the worker corresponded quite well to varroa. *A. cerana* and varroa have co-existed for a long time in their native habitat. It was only in recent times that someone took *A. mellifera* to S.E. Asia, which may have been OK, but then someone was shortsighted enough to then bring them back (of course with some varroa attached) to other parts of the world.

European scientists have been developing procedures and chemicals to treat infested colonies and there are some good possibilities. However, once a colony or apiary has varroa they must be treated annually, usually in the fall during a broodless period. Some of the chemicals used in Europe will never be used in the U. S. because of their toxicity and other problems. Another serious problem with mites is that because of their short generation time they often develop resistance to chemicals rather quickly. Other methods of control have not yet been effective enough to control the mites. It turns out that the Africanized honey bee of South America is somewhat resistant to varroa simply because it too has a slightly shorter brood cycle. Thus, there may be hope in breeding a bee with a shorter brood cycle, and there has been some progress, in Europe, along those lines.

## APPEAL FOR RESEARCH SUPPORT

In the past I have sent you a separate mailing requesting that you help support beekeeping research in Michigan. This year I am going to try to save some postage and hope you will respond from this newsletter. Michigan is unique in that for every dollar (up to \$200/person) that you send to MSU (or any public institution) you get to deduct half off the top of your Michigan tax return. Plus you get to deduct the whole amount, if you itemize, from your Federal tax. So all in all, the gift for bee research takes a fairly small bite, yet we get to use the whole amount.

I don't have a lot of space to write about our research programs. We have had an exciting year in some ways and we will talk about it at future meetings and try to write of some things in this newsletter. Sometimes it seems like we can't keep up to the problems, especially with our short seasons. However, with good students and colleagues like George Ayers, there is progress.

If you could help us out, make out your check to:

MSU Development Fund

and send it to me at the fdbwing address:

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**THANKS VERY MUCH FOR YOUR HELP**