

# APIS



## Apicultural Information and Issues

From IFAS/University of Florida  
Department of Entomology and Nematology

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## Status of Varroa Control

IN RESPONSE TO RUMORS that Apistan® no longer controls Varroa, the following statement has been released from a joint meeting held recently at the Beltsville Bee Laboratory:

“Due to recent reports within the U.S. beekeeping industry which indicate that in certain localities Apistan® has reduced effectiveness in controlling *Varroa jacobsoni*, a meeting was held by USDA-ARS on October 6, 1997, in Beltsville, MD. In addition to ARS scientists, the meeting was attended by individuals representing the Apiary Inspectors of America (AIA), the American Honey Producers Association (AHPA), the American Beekeeping Federation (ABF), and Wellmark International (formerly Zoecon). Preliminary tests by ARS indicate that this reduced effectiveness could be due to one or more factors including (i) decreased response by Varroa to fluvalinate; (ii) strip formulation; (iii) misuse of fluvalinate; or (iv) a combination of these factors. More detailed testing is underway to determine the scope of the problem, and work continues aggressively to provide the beekeeping industry with alternative treatments. Meanwhile, only Apistan® is registered for the control of Varroa and beekeepers are urged to continue using Apistan® in a manner consistent with the label.”

**T**HIS INFORMATION was confirmed at the recent meeting of the Florida State Beekeepers Association in Pensacola (October 23–24 1997). Dr. H. Shimanuki of the USDA-ARS Beltsville Bee Laboratory and Oscar Coindreau of Wellmark International, which markets the product, said that investigation is continuing. Both urged beekeepers to continue to use the product in accordance with the label in order to conserve its usefulness as long as possible (see February 1995 APIS).<sup>1</sup>

Experience in Florida with Varroa control by Apistan® is mixed. Many beekeepers continue to get adequate control, while others do not. Until we have more adequate and substantive information, the advice I gave in the September, 1997, APIS stands: “Failing to follow up Varroa treatment by confirming the size of the resultant mite level is a prescription for disaster.”<sup>2</sup> For other information on Varroa see <http://www.ifas.ufl.edu/~mts/apishtm/threads/varroa.htm>. ■

<sup>1</sup> <http://www.ifas.ufl.edu/~mts/apishtm/apis95/apfeb95.htm#FL>

<sup>2</sup> <http://www.ifas.ufl.edu/~mts/apishtm/apis97/apaug97.htm#1>

# The Changing Face of the Beekeeping Short Course

I HAVE ALWAYS been interested in the dynamics of beekeeping short courses. Like many activities of this sort, they ebb and flow and are ever-changing. Their durability depends on many factors including the costs, makeup of the audience, perceived expertise of those delivering information and organizational ability of the coordinators. In Florida, the tradition-bound Beekeepers' Institute collapsed a few years ago (see September 1993 *APIS*).<sup>3</sup> Since then, several vibrant regional seminars in the Panhandle, Northeast Florida and central Florida have taken its place.<sup>4</sup>

I recently was invited to attend the University of Illinois Bees and Beekeeping Short Course on the Champaign-Urbana Campus. An event of this kind had not been held there for many years. There is no longer an extension program with the recent retirement of Gene Killion. In spite of having no mandate in this area, however, Dr. Gene Robinson of the research and teaching faculty, along with his chief apiarist, Jack Kuehn, postdoctoral associates and students put on a well-

orchestrated course in August 1997. Besides me and several faculty members at the University of Illinois, the course also featured Purdue's extension apiculturist, Dr. Greg Hunt.

Programming at short courses is always challenging, given the disparate experience levels of participants. One innovation in Illinois this year was to place participants in the active role of bee researchers. The activity was divided into two parts. It began with kin recognition. A single foreign bee was introduced into a group of 10 related bees and the reactions were recorded. This was followed by a full-blown defensive behavioral test to see how much correlation there might be between the reactions of the 10-bee sample to a foreign bee and their parent colony's reaction to a uniform disturbance. A brick was used to administer a single blow to the colony; vibrating leather patches were then allowed to be stung for one minute. The number of stings in the patches was then compared among colonies tested and with the observations made in the kin recognition study.

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An innovative short course in Illinois placed participants in the active role of bee researchers.

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There was some discussion by those organizing the course as to how experimentation would be viewed by beekeeper participants. Most were delighted that the majority actively participated in the experiments and subsequent discussions. This real-time experimentation might be something others should consider in putting on educational events of this nature. It leads to something beyond dissemination of information. The Illinois participants now have a better perspective of how bee research is conducted and from this, more appreciation of the difficulties inherent in coming to decisions based on this activity. ■

## Marketing Honey as a Value-Added Product

SOYBEAN HONEY from the Midwest may soon be marketed as more than simply a sweet. The soybean is well-known for its many healthful benefits. Now the honey from this plant is being considered as a member of a group of materials called “nutraceuticals.” Another name for these is “pharmafoods.” These hybrid words are derived from pharmaceuticals and nutrients. The actual meaning of nutraceutical, according to Dr. May Berenbaum, who chairs the Department of Entomology at the University of Illinois, is a food that makes you healthy.

Honey as a healthful food is nothing new, according to Dr. Berenbaum,

who spoke on the subject at the University of Illinois beekeeping short course. There are many examples from cultures all over the world that this is indeed the case. Honey also has been used with success in surgical procedures and for burn treatment.<sup>5,6</sup> Preliminary research on soybean honey from the Midwest now has introduced another possible use of this particular sweet. It seems that some is high in flavanoids and carotenoids, making it a candidate not only as a nutritious food, but also an antioxidant. Antioxidants are thought to be important in treatment and prevention of many conditions from AIDS to cancer. They pre-

sumably act to scavenge free radicals, the products of chemical reactions either produced in the body or taken in from the air or water. Many people now take supplementary beta-carotene and vitamins E and C to ensure these free radicals are eliminated.<sup>7</sup>

There are many foods that are full of antioxidants, including sweet potatoes, carrots and cantaloupes. According to Dr. Berenbaum, the University of Illinois is pursuing the necessary work on soybean honey so that it too might be marketed in this way. One issue to be addressed is the inherent variability of the sweet; some soybean honey will

*Continued on page 4*

# Narrowing the Honey Bee Genetic Base

EVER SINCE INTRODUCTION of the Varroa mite in 1987, the press has become sensitized to the fact that the bee population is being threatened by this parasite. As with most issues of this sort, reports range from the sublime to the ridiculous. Some have been justifiably criticized for their lack of investigative rigor and sensationalistic fervor. Although wild honey bees are being lost, commercial agriculture continues to prosper because treated, managed colonies are still available for pollination. The beekeeping industry should also be gratified that honey bees are at last getting some of the respect they have so long deserved as pollinators in helping produce a bountiful food supply.

Lost in most of these reports is a major effect the reduction of the feral bee population may have on genetic diversity of the managed honey bee population (see October 1996 *APIS*).<sup>8</sup> Nature has built into honey bee behavior elaborate mechanisms to prevent a narrowing of the genetic base. Most significant is the fact that queens mate with 10 to 17 drones in the air (see April 1996 *APIS*).<sup>9</sup> Effectively controlling mating activity has been a goal of many queen breeders, but often is impossible unless some degree of isolation is established. This usually has been accomplished on islands.<sup>10</sup>

THE UNITED STATES' production of honey bee queens and package bees, like many crops, is based on a few individuals. Because of this, genetic variation in the drone population provided by wild or feral nests has been considered beneficial. It keeps the genetic base in commercially available queens and bees from becoming too small. With less genetic material generally available, however, the probability of inbreeding increases. The consequences of this have been well described in other crop- and animal-breeding systems. They include sus-

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The beekeeping industry may have to accept more risk in importing bee stock in exchange for widening the genetic base of commercially available queens and bees.

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ceptibility to diseases and pests, expression of harmful recessive traits, or a general lack of vigor. In humans, the possibility has led to prohibitions in most cultures of marriage within immediate families.

In honey bees, there is also another risk when the genetic base narrows. It is known that as inbreeding occurs there is more chance for diploid drones to be produced. These individuals are homozygous (have the same gene form or allele) at the sex locus; only those with different alleles become females. All diploid drones are destroyed by the colony in the larval stage and the queen is then obliged to lay another egg to replace each. Colonies suffering this condition, called “inbreeding depression,” may have 50 percent less developing brood. As a consequence, they cannot build enough population to produce surpluses, and in some cases may not survive (see September 1992 *APIS*).<sup>11</sup>

Dr. Marion Ellis estimates that the

entire United States' commercial queen population is the result of five hundred individual breeder queens (September 1997 *Bee Tidings*, Nebraska Cooperative Extension Newsletter).<sup>12</sup> If this is so, there is the possibility that inbreeding depression may be reaching epidemic proportions, and some of the weaknesses seen in bee populations attributed to a variety of causes may in fact be due to this condition. Unfortunately, little is known about the genetic history of many queen mothers used in commercial operations. Nevertheless, it is important to know about the situation and its possible implications.

As inbreeding becomes more probable, the concept of making the 1922 bee importation law more relevant to current conditions takes on greater significance (see February 1997 *APIS*).<sup>13</sup> The beekeeping industry may have to accept more risk in importing bee stock in exchange for widening the genetic base of commercially available queens and bees (see April 1989 *APIS*).<sup>14</sup> ■

<sup>3</sup> <http://www.ifas.ufl.edu/~mts/apishtm/apis93/APSEP93.HTM#1>

<sup>4</sup> <http://www.ifas.ufl.edu/~mts/apishtm/apis96/apaug96.htm#3>

<sup>5</sup> <http://www.medmedia.com/j6/34.htm>

<sup>6</sup> <http://www.beesting.com/potato.html>

<sup>7</sup> <http://www.realtime.net/anr/antiox.html>

<sup>8</sup> <http://www.ifas.ufl.edu/~mts/apis96/apoct96.htm#4>

<sup>9</sup> <http://www.ifas.ufl.edu/~mts/apishtm/apis96/apapr96.htm#4>

<sup>10</sup> [http://www.ifas.ufl.edu/~mts/apishtm/letters/aix5\\_30.htm](http://www.ifas.ufl.edu/~mts/apishtm/letters/aix5_30.htm)

<sup>11</sup> <http://www.ifas.ufl.edu/~mts/apishtm/apis92/apsep92.htm#2>

<sup>12</sup> <http://ianrwww.unl.edu/ianr/entomol/beekpg/tidings/btidsp97.htm#Item2>

<sup>13</sup> <http://www.ifas.ufl.edu/~mts/apishtm/apis97/apfeb97.htm#2>

<sup>14</sup> <http://www.ifas.ufl.edu/~mts/apishtm/apis89/apapr89.htm#2>

## Marketing continued

probably have more antioxidant properties than others. This is also true of New Zealand manuka honey, marketed for its healthful and curative uses. Only certified "active" manuka honey, which is a small percentage of the total crop, qualifies.<sup>15</sup>

Fortunately, for most honey retailers, the possible health and healing properties are just a few of many characteristics that can be used to market honey as a value-added product. Others, such as marketing soybean honey as an antioxidant, are also being investigated and suggested to large-scale manufacturers by the National Honey Board.<sup>16, 17</sup> ■

## Economic Adulteration Continues

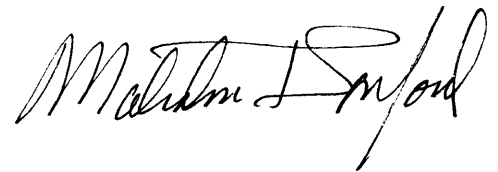
THE FRESH FROM FLORIDA program is one of many offered by the Florida Department of Agriculture and Consumer Services. Another is the continuing effort to identify and stop economic adulteration of honey. Ms. Betsy Woodward, chief of the Food Residues Laboratory and keynote speaker at the recent Florida State Beekeepers Association convention in Pensacola, addressed current activities in this arena (see March 1996 *APIS*).<sup>18</sup> She showed that there is a correlation between the number of arrests and convictions in this arena with less activity. Unfortunately, there is almost no budget at the federal level to actively pursue these cases. However, federal authorities can and do prosecute cases based on evidence presented by the Florida Food Laboratory. Ms. Woodward (ph 904/488-0670, FAX 904/487-6573) concluded her remarks by asking beekeepers to continue to be vigilant in this area and to alert local food and bee inspectors of possible violations. ■

### Fresh from Florida

IN 1990, THE Florida Department of Agriculture and Consumer Services (FDACS) launched a promotional program with the above title to help fresh fruit and vegetable marketing. It has now been expanded to all Florida commodities, including honey, as announced at the Florida State Beekeepers Association meeting in Pensacola. A key ingredient of this program is a direct tie-in to a multi-media advertising campaign. A \$50 annual membership fee also entitles participants to use of a special "Fresh From Florida" logo, and publication in both a member and international export directory.

As an additional incentive, new members are entitled to a free metal farm sign that measures 32 by 48 inches. The sign alone is worth more than the membership fee. For more information on the Fresh From Florida Program, contact Stephen Monroe, development representative at FDACS, Mayo Bldg., Room 414, Tallahassee, FL 32399-0800, ph 904/488-9682. ■

Sincerely,



<sup>15</sup> <http://www.wave.co.nz/honey/index.html#images/titlebar13.gif>

<sup>16</sup> <http://www.ifas.ufl.edu/~mts/apishtm/papers/nhbsem.htm#4>

<sup>17</sup> <http://www.nhb.org>

<sup>18</sup> <http://www.ifas.ufl.edu/~mts/apishtm/apis96/apmar96.htm#2>

*APIS*, a monthly newsletter, is celebrating its 15th year of service to beekeepers. For subscription or other information, please write, phone, fax or e-mail.

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