APIS

Apicultural Information and Issues

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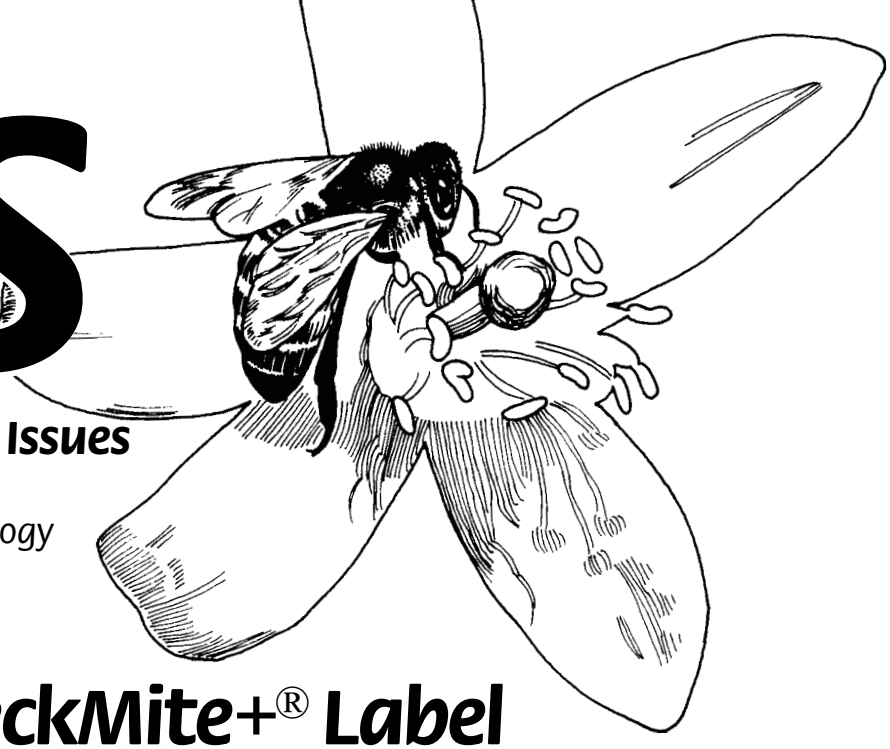

Inside APIS:

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CheckMite+® Label Reapproved in Florida

THE GODS HAVE SMILED AGAIN on Florida beekeeping. According to a letter from Agriculture Commissioner Bob Crawford dated January 31, 2000, to Richard Gaskalla, director of the Division of Plant Industry, the United States Environmental Protection Agency (EPA), under provisions of the Section 18 of FIFRA, has issued a specific exemption for the use of CheckMite+® Bee Hive Pest Control Strips (coumaphos-impregnated plastic strips) to control Varroa mites (*Varroa jacobsoni* Oudemans) and the small hive beetle (*Aethina tumida* Murray) in beehives. This emergency exemption will expire January 18, 2001.

This is good news for Florida beekeepers, but carries some important caveats. A new **14-day waiting period** is established before supers can be replaced, and there can be **no sale of comb honey** from hives treated for either Varroa or small hive beetle. This is because the label is granted as a **nonfood use**. Other specific provisions of the label are that strips used for Varroa control can only be left in for a **maximum of 45 days** and once in place, they **must remain** for **at least 42 days**. The latter ruling means that removing strips prematurely is a violation of the label, even though in many pesticide application situations, using less than prescribed treatments is not considered a violation. For small hive beetle, the label says to leave strips and cardboard on the bottom board for at least three days and remove after 45 days. The label also directs that there should be no more than two treatments a year for Varroa nor four per year for small hive beetle. Strips cannot be reused.

THE COMMISSIONER'S letter states that all provisions on the label must be closely monitored by the Division of Plant Industry (Apiary Inspection[1]) and Division of Agricultural Environmental Services (Pesticide Compliance Monitoring[2]). The commissioner's letter also says that the decision to approve the exemption was made only after considerable deliberation due to the potential for residues to occur if the CheckMite+® product is not applied in strict accord with the specific exemption. The commissioner's office must immediately report any adverse effects or misuse under the exemption to the EPA. The following information will also be required to be reported by July 30, 2001: 1) total number of beehives treated and total number of CheckMite+® strips used; 2) brief discussion of the effectiveness of the CheckMite+® strips; and 3) a description of any unexpected adverse effects which may have resulted from the use of the CheckMite+® strips under this exemption. *Continued next page*

[1]http://doacs.state.fl.us/~pi/plantinsp/bees.html
[2]http://doacs.state.fl.us/~aes/compli.htm

The Powdered-Sugar Shake:
Detecting Varroa While Not Killing Bees

WHY DID IT TAKE SO LONG? That's a question that comes to mind when contemplating the newest technology to determine the number of Varroa mites in a colony. The powdered-sugar shake is taking Florida apiculture by storm. The technique separates Varroa mites from honey bees, as is the case for the ether roll, but the bees survive the procedure. This was first reported by University of Nebraska graduate student Paula Macedo, according to the January 2000 edition of *Bee Tidings*, a cooperative publication of the University of Nebraska Cooperative Extension Service and the Nebraska Honey Producer's Association, written by Dr. Marion Ellis [3]. Dr. Ellis suggests three reasons why this might work:

1. Varroa mites have a sticky pad called the empodium that helps them adhere to their host. The presence of powdered sugar could make it difficult for the mites to adhere to their host.
2. Powdered sugar stimulates the bees' grooming behavior.
3. The powdered sugar on the mites' bodies stimulates them to release from feeding to groom themselves.

To use the technique as described in *Bee Tidings*, one needs the following:

1. A wide-mouth canning jar with two-piece lid.
2. #8 mesh hardware cloth or any other mesh that will retain the bees while letting Varroa pass through.
3. Window screen or any other fine mesh hardware cloth that will let the sugar pass through but retain the Varroa.

Cut the #8 mesh screen to replace the circular, center portion of the lid. Collect 200-300 bees in the jar. A funnel can be used to facilitate the process. Replace the modified lid and add about a tablespoon of powdered sugar through the screen. Roll the jar to distribute the sugar. Wait a few minutes, swirl the jar again, and pour the sugar and mites through the screen into another container. The mites can be separated from the sugar by pouring the mixture through the window screen. The bees can be returned to the colony where their hive mates will lick them clean.

This technique works well, according to the article. It is superior to the ether roll, separating up to 90 percent of the mites from the bees. The Florida bee inspection service has found this to be the case and is shifting over to its use. The chief, Mr. Laurence Cutts, believes the powdered sugar shake may well mean more Varroa testing by beekeepers now that their bees don't have to be sacrificed as part of the procedure.

> "The powdered-sugar shake is taking Florida apiculture by storm."

When Varroa was first detected in Florida, Dr. William Ramirez of Costa Rica[4] described to me his experimental treatments using dust to control Varroa. I believe he used flour, but he said anything would do, including crushed, dried leaves. Again, his reason was that any dust would prevent the mites from hanging onto the bees. Unfortunately, Dr. Ramirez' studies, conducted I believe in France, could not be replicated to others' satisfaction and so the idea never really caught on. Dr. Marion Ellis in *Bee Tidings* writes that the powdered-sugar technique cannot be used as a treatment. It only dislodges a few mites, and those Varroa that fall off simply crawl back onto the bees. In addition, mites in brood are protected from dust treatments. ■

CheckMite+ Continued

There's a lot at stake here for all parties concerned. Both bee inspectors and pesticide compliance inspectors will be on the lookout for improper use of the product. It goes without saying that using any other formulation containing the active ingredient coumaphos is prohibited. A key issue is potential contamination. There is the real possibility that a single documented case of product misuse or use of any non-labeled product would be grounds for the CheckMite+® Section 18 label to be revoked. This would leave Florida beekeepers with no labeled product that is effective in controlling Varroa mites. Beyond contamination, there is the possibility that mites will become resistant to coumaphos. This has already been reported in Italy, where other formulations have been in use.

Discussion at the Honey Bee Technical Council was also oriented toward beekeeper safety. It was reiterated that coumaphos, the active ingredient in CheckMite+®, as an organophosphate, is much more toxic to mammals (humans) than is fluvalinate, the active ingredient in Apistan®. The material is easily absorbed through the skin and may affect both the immune and nervous system; the label requires use of chemical-resistant gloves for this reason. The warning, statement of practical treatment, and environmental hazard potential as listed on the label should be taken seriously. ■

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[3] http://ianrwww.unl.edu/ianr/entomol/beekpg/tidings/btid2000/btdjan00.htm#Article2
[4] http://www.ifas.ufl.edu/~mts/apishtm/apis99/apmar99.htm#1
[5] http://www.ifas.ufl.edu/~mts/apishtm/apis99/apjun99.htm#1
[6] http://www.floridamosquito.org/
[7] http://www.pherec.org/
[8] http://www.floridamosquito.org/mosqlinks.html
[9] http://gnv.ifas.ufl.edu/~veroweb/
[10] http://www.floridamosquito.org/buzz/index.html

More on Small Hive Beetles: Integrated Control Possibilities

Mr. David Westervelt of the Florida Department of Agriculture and Consumer Services discussed his most recent experiences with small hive beetle during the January meeting of the American Beekeeping Federation in Fort Worth, Texas. Most losses have been around honey houses, according to Mr. Westervelt, and are involved with improperly storing filled and recently extracted supers. Any wax debris is a prime target for infestation and so cleanliness is essential when beetles are present[5].

When beetles build up near the honey house, they can then be transported by beekeepers to the out yards, spreading the insect around Mr. Westervelt said. A key element, therefore, is to control the beetle near the honey house. Adult beetles can be attracted to brood in strategically placed nucleus boxes, and larvae will congregate around fluorescent light sources in honey houses, where they can easily be swept up and put in buckets of water. Both of these techniques can help reduce beetle populations in the honey house.

A small number of beetles can produce a big problem because they tend to lay all their eggs at once, Mr. Westervelt said. A correlation is that you can achieve a good measure of control by systematically eliminating as many adults as possible. During the latest meeting of the Honey Bee Technical Council in Gainesville, a young hobby beekeeper, Christopher Creel, described an inside-the-colony technique that he found trapped many adults. He cut a hole in the bottom board and attached a jar filled 1½" to 2" with honey. Over the opening, he bolted a square of Plexiglas elevated by a couple of washers. There was just enough room to allow adult beetles, but not bees, to crawl under the Plexiglas. Many of the beetles eventually wind up in the jar. This trapping idea is passive in nature and requires no chemical use. It could be modified in a number of ways by beekeepers and integrated into colony management on a permanent basis.

James Baxter of the Weslaco Bee Laboratory described the situation he saw recently in the beetle's homeland, the Republic of South Africa. Two phenomena he observed were the amount of propolis bees put at entrances and how clean the insects kept the hive's bottom boards. Thus, entrances were protected from beetle entry and there were fewer places to hide on the bottom board. Mr. Westervelt said that the propolis and wax bumps often seen on bottom boards are great places for adult beetles to hide. The Cape honey bee (*Apis mellifera capensis*) also aggressively attacks beetles, according to Mr. Baxter, carrying both adults and larvae from the hive, consuming any exposed eggs, and corralling adults into areas where they do not lay eggs. This behavior appears to be a major reason there are so few problems in out yards. South African beekeepers also use cold rooms for storing filled and extracted supers in almost every case due to potential beetle infestation. ■

Apicure: Formic Acid Treatment Becomes a Reality

After many fits and starts, a mite treatment based on formic acid has finally hit the market. This is the first "soft chemical" to be legally available to U.S. beekeepers. It is effective for both tracheal and Varroa mites. Mr. Bob Stevens of Betterbee, Inc., discussed the pros and cons of this new product at the recent bee meeting held at Archbold Biological Laboratory near Lake Placid, Florida. The product is called Apicure® and is formulated in a special gel, making it less dangerous to handle than liquid formic acid. The gelling material is food-approved, and the formic acid is also food-grade, especially imported from Europe. Thus, the possibility exists that organic certification can be obtained when Apicure® is used. Formic acid is also naturally present in honey so that potential residues are not considered as problematic as for "hard" chemicals (fluvalinate and courmaphos). Nevertheless, residue issues still exist. Too much formic acid may impart an objectionable taste and odor, Mr. Stevens said. Finally, even after many years of use in Europe, there has not yet been any indication that mites have become resistant to formic acid.

The downside of formic acid is that it generally has not been found to be as effective as the hard chemicals, fluvalinate and coumaphos, for controlling Varroa in Europe and Canada. For an account of experiences in the *Continued next page*

Mosquito Control Short Course

I have just completed my second year of teaching the Annual Dodd Plenary Short Course on beekeeping, sponsored by the Florida Mosquito Control Association[6]. This year a couple of beekeepers were in attendance, and there was a report on cooperative research by Manatee County Mosquito Control District and Florida A & M University's Public Health Entomology Research and Education Center (PHEREC)[7]. The traditional key issues focused on during the course were cooperation and communication between beekeepers and mosquito control agencies. Many agency personnel in attendance indicated that they had few if any conversations with beekeepers, and showed a willingness to go the extra mile to protect honey bees if and when contacted. This is part of a new focus by many in these organizations concerning nontarget organisms.

The research conducted by Dr. Harry Zhong of PHEREC and colleagues was a preliminary study of the impact on honey bee colonies through aerial ULV application of naled (Dibrom®). Not surprisingly, indications are that honey bee death is correlated with the amount of naled deposited on filter paper set near hives, and a residue of about 1000 ug/m^2 is needed to kill bees. This research is scheduled to continue and shows a commitment on the part of at least one mosquito control agency to understand how its activities affect beekeeping. Anyone with concerns about mosquito control should contact their local agency[8]. Another potential resource in this area is Dr. Roxanne Rutledge, new extension medical entomologist at the IFAS Florida Medical Entomology Laboratory[9], 200 9th Street S. E.,Vero Beach, FL 32962, ph 561-778-7200, e-mail: crr@gnv.ifas.ufl.edu. She will be the new editor of the Association's newsletter known as *Buzz Words*[10]. ■

American Foulbrood Control Without Drugs

The Florida bee inspection service continues to find American foulbrood that has become resistant to oxytetracycline (Terramycin® in the United States)[12]. This is bringing into clearer focus the consequences of relying on antibiotics to control this bacterial brood disease. I mentioned in back issues of this newsletter efforts elsewhere to abstain from using antibiotics, especially in Australia and New Zealand[13].

An outline of the methods employed in New Zealand to control AFB without using drugs was published in the January 2000 issue of *Bee Culture* (Vol. 128, No. 1), pp. 36–39, by Mr.Cliff Van Eaton, a professional beekeeper from Tauranga[14]. A rise in AFB incidence between 1985 and 1991 prompted implementation of a control program. It was financed and directed by the National Beekeepers Association[15]. The work was carried out by government personnel on contract, and the program also included a significant counseling and research component.

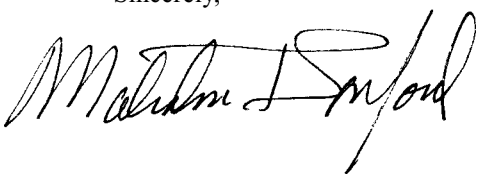
The program by most measures has been successful such that many believe AFB can be totally eliminated from New Zealand in the future[16]. The recipe is simple. Beekeepers use routine and constant inspection, manage their colonies in ways that do not distribute AFB spores and systematically destroy colonies that show symptoms. The premise for the program is: *Most AFB infections in beehives are due to beekeeping practices that are carried out on those hives*. Research has shown that materials most likely to carry infective levels of AFB spores are: 1) extracted honey supers, which are often taken from AFB hives and then put on clean hives, generally a year later; and 2) frames of brood and honey, which are often moved unknowingly from hives with subclinical AFB (those not showing symptoms) to clean hives. The same studies revealed that feral colonies, drifting bees, and contaminated hive tools, smokers, gloves, foundation, queens and even the soil in front of hives are of little consequence in spreading the disease.

Mr. Van Eaton, along with Dr. Mark Goodwin have authored a manual, which contains a detailed description of the New Zealand program, called *Elimination of American Foulbrood Without the Use of Drugs*. The publication has sections on life history, symptoms, spread, inspection and diagnosis, and dealing with infected equipment and hives.

There is a most interesting chapter on the natural progression of the disease in a colony. It describes in-depth scenarios of how colonies become infected and how some show symptoms while others may not. Two other specialized chapters discuss case studies of AFB incidence in various outfits and specific management plans suggested to eliminate American foulbrood from them.

The book is 78 pages long and contains 24 color photos and 11 illustrations, as well as a glossary of terms and selected bibliography. It is available directly from Mr. Van Eaton for US $10, 25 Perkins Drive, Te Puna, RD 6, Tauranga, New Zealand, ph/fax +64-7-552-4156, e-mail: cliff@comvita.com. Betterbee sells them for $12.95, ph 800-632-3379 ■

Sincerely,



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latter country, see: "Use of Formic Acid in Canada For The Integrated Management of Mite Pests of Honey Bees," *Proceedings 36th Apimondia Congress*, Vancouver, BC, September, 1999, pp. 142–143. However, the material is effective within the context of integrated pest management (IPM), which also includes use of bottom board screens and/or drone-brood traps. This is the case in Denmark, according to Mr. Stevens, where no hard chemicals are legal for Varroa control. The use of formic acid right after the honey harvest in conjunction with drone brood removal in the spring and lactic acid in the fall is routine. This results in effective mite control and no pesticide residues in wax or honey. Similar strategies are used in other European countries[11].

Although labeled, much is still not known about formic acid. How it kills mites, that is, it's mode of action, is not understood, according to Mr. Stevens. There are conflicting reports about whether it kills mites in sealed brood. The material will probably not vaporize at temperatures under 45 degrees F., and evaporation rates also depend on colony strength, sun exposure, air movement and other factors. In conclusion, Mr. Stevens said, there is a beekeeper learning curve that must be negotiated to achieve adequate control.

As of this writing, Mr. Stevens said the material has yet to be approved in either California or Florida, although he expects the application process in these states to be completed soon. The Florida application is being reviewed and a decision should be made shortly. As of this writing, there appears to be no reason the application would be denied. Most beekeeping supply outlets will stock the product, but it can also be ordered directly from Apicure Inc., 8 Meador Rd., Greenwich, NY 12834, ph 518-692-9802. ■

[11] http://www.ifas.ufl.edu/~mts/apishtm/letters/aix3_23.htm
[12] http://www.ifas.ufl.edu/~mts/apishtm/apis_2000/apjan_2000.htm#1
[13] http://www.ifas.ufl.edu/~mts/apishtm/apis99/apnov99.htm#1
[14] http://www.beekeeping.co.nz/beecult.htm
[15] http://www.nba.org.nz
[16] http://www.beekeeping.co.nz/pmxwork.htm

APIS, a monthly newsletter, is celebrating its 17th year of service to beekeepers. For subscription or other information, please write, phone, fax or e-mail.

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