

APIS



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Inside APIS:

Raising the Bar on Pesticide Use

A new chemical is labeled, but with significant costs.
Page 1.

Honey and Grapefruit

Look for this promotion at your local store. *Page 2.*

Florida Bee Meetings

Two February events. *Page 3.*

Stewardship

Mosquito control operators and beekeepers have similar concerns. *Page 3.*

Gaicho Loses its Label in France

Beekeepers in France demonstrate and prevail; in Florida, imidacloprid gets Section 18.
Page 4.

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Raising the Bar on Pesticide Use: Coumaphos Approved in Florida

IN WHAT MANY SEE as a direct turnabout, the Environmental Protection Agency (EPA) has approved a Section 18 exemption label to use coumaphos (Bayer Bee Strips®) in Florida. The official letter written to the applicant, Florida Department of Agriculture and Consumer Services, dated January 6, 1999, states that the product can be used for both Varroa (*Varroa jacobsoni*) and small hive beetle (*Aethina tumida*).

This is a specific exemption **for Florida only**. Beekeepers in other states should check with their appropriate department of agriculture to see if a label is approved. This material cannot be used where there is no exemption. As with any pesticide, the applicator must have the label in hand and use the product in strict accordance with its wording. **Remember: The label is the law** and must be followed to the letter.

The Florida Section 18 label carries the following conditions and restrictions:

1. The Florida Department of Agriculture and Consumer Services is responsible for ensuring that all provisions of this specific exemption are met. All applicable directions, restrictions and precautions on the label as submitted by the state must be followed. The Department must immediately inform EPA headquarters of any misuse. The Department is also required to provide specific information about the use of this product in accordance with 40 Code of Federal Regulations (CFR) 166.32.
3. A maximum of 360,000 Bayer Bee Strips® may be used; 300,000 to control Varroa mite and 60,000 to control the small hive beetle.
4. Treatments must be applied when bees are not producing a surplus honey crop. Honey supers must be removed before strips are applied and cannot be replaced until the treatment is complete. **Gloves must be worn** when handling strips.
5. Based on residue data submitted for the Section 18 label application, treating with Bayer Bee Strips® has been defined as a non-food use. **No tolerances** are established for coumaphos in either honey or beeswax. The exemption expires January 1, 2000. Thus, it is not permanent, and vigorous pursuit of continuing the labeling process for general use (Section 3) is suggested by EPA.

The Section 18 label is six pages long, includes a two-page letter from the EPA, and does not appear on the packaging for the strips. **Be sure** to obtain the **full label** when purchasing this product so that it can be in your possession at all times. Other highlights include: Applicators can only treat twice a year for Varroa and four times a year for the small hive beetle. Like Apistan®, Bayer Bee Strips® are a plastic delivery system. They can be left in hives only for

Continued next page

specified periods of time (42 to 45 days for Varroa; three to seven days for *Aethina tumida*) and no honey supers can be in place during treatment.

Approval of this material is good news for Florida beekeepers afflicted with fluvalinate (Apistan®)-resistant mites and/or small hive beetles. Bayer Corporation, the Florida Department of Agriculture and Consumer Services, the Weslaco, Texas, Beneficial Insect Laboratory, and cooperating Florida beekeepers (particularly Ms. Charlotte Randall) are deserving of a hearty “well done” to achieve this label. At the same time, however, the bar on pesticide use has been raised considerably, and this label puts the compliance onus squarely on the beekeeping community. Thus, the already increased scrutiny of chemical use in Florida operations, as reported in the December 1998 *APIS*, can be expected to intensify¹. Reporting is very strict. The retailer (Mann Lake Supply²) must document every strip sold and report the name of the purchaser. This in no way compares to Apistan®, which has a much looser label (Section 3) with minimal reporting requirements.

Coumaphos is in a class of highly toxic materials known as organophosphates (OPs). It is a cholinesterase inhibitor, which attacks the nervous system. Developments of this insecticide type were associated with German studies on related compounds, the so-called “nerve gases” (sarin, soman and tabun)³. Suffice it to say OPs are among the most toxic of insecticides. The LD50 of coumaphos for absorption through the skin (dermal), for example, is 860 milligrams per kilogram of body weight in rats⁴. It is, therefore, much less benign than fluvalinate, the active ingredient in Apistan®, a synthetic pyrethroid, with a dermal LD50 in rats of 20,000 milligrams per kilogram of body weight⁵.

Organophosphates are the basis of many commonly used insecticides (malathion, Diazinon®, parathion, Dibrom®). As part of the Food Quality Protection Act (FQPA), the EPA has proposed that a specific national limit on the total amount of any pesticide class be called a “risk cup”⁶. Because so many pesticides are in the organophosphate

class and they are used on many crops, adding just a little coumaphos in honey to this cup can overflow it. One way to get around this is to have **zero tolerance** for coumaphos in honey or wax. Use of the material is not expected to affect the risk cup, but puts a significant burden on the beekeeping community.

Finally, the number of strips that can be used according to the label is fixed and must be considered a limited resource. To conserve them, they should be employed only as a last resort. Because of a limited supply, and the fact that the reporting requirements are high — as are the human health and contamination risks — the prudent beekeeper should think twice before using Bayer Bee Strips®.

Although Varroa resistance to fluvalinate has been demonstrated in Florida, it is not necessarily extant in all the state’s colonies⁷. Until resistance is detected in an apiary, Apistan® will still be effective as it is in most other states. Unfortunately, it is not easy to determine resistance and the phenomenon is a moving target. The April 1998 *APIS* describes a field test for detecting fluvalinate-resistant Varroa⁸. It may be modified by employing only 2.5% or 10% Apistan® strips, rather than comparing both, resulting in a relative resistance level.

Resistance can also be suspected if one observes failure to control mites by Apistan® using ether roll or sticky board as confirmation or if it is demonstrated in nearby apiaries. Finally, generally only one colony need be tested in an apiary as resistant mites can be assumed to quickly populate nearby colonies.

The small hive beetle likewise is not present in all Florida bee colonies⁹. Again, there is no reason to use the new coumaphos-based product with its asso-

ciated requirements and risks until a beetle problem has been demonstrated in an apiary. There are many fewer strips available for this use than for controlling Varroa.

Although not known exactly, it is thought that after a period of time, resistant Varroa mites could again become susceptible to fluvalinate. Thus, Apistan® can continue to be a part of the beekeeper’s arsenal against Varroa and can be used in rotation with Bayer Bee Strips®. They should not be used together in the same colony. Results of the interaction between the two active ingredients (coumaphos and fluvalinate) are not known, and the practice could result in mites resistant to both labeled products. Treatment rotation, along with other chemicals (formic acid is on the horizon as a labeled product) and physical means (drone trapping, smoking, and modified bottom boards) should all be examined as part of an integrated approach to Varroa mite control¹⁰. Beekeepers could then choose particular methods most compatible with their own operating style.

Experience in Europe reveals that coumaphos has a high affinity for beeswax and the possibility of it being absorbed into this recyclable bee product is high. This has already happened for fluvalinate¹¹. Reliable sources indicate that documented misuse of coumaphos or detection of any residue, no matter how slight in honey or beeswax, resulting in the “risk cup” overflowing, could damage ongoing efforts to secure general registration (Section 3) and/or cause the Section 18 exemption to be withdrawn. Thus, the “use it right or lose it” philosophy as outlined in the February 1995 *APIS* for fluvalinate (Apistan®) goes in spades for coumaphos (Bayer Bee Strips®)¹². ■

Honey and Grapefruit: Sweet and Healthy

THE NATIONAL HONEY BOARD has joined with the Florida Citrus Commission on a supermarket promotion. Both honey and grapefruit will be sold in specially marked citrus bins in 3,000 stores. Some 7,000 other stores will be offered the opportunity to participate. A colorful brochure has been produced with recipes and helpful hints for both products. Check this promotion on at your local shopping venue and give the Board some feedback¹³. ■

Stewardship: Making the Most of Limited Resources

HONEY BEES have long known about stewardship. These insects truly share and partition their resources in remarkable ways. It is because of this that they can efficiently produce a larger-than-needed honey crop, which they can then share with the beekeeper.

The Section 18 exemption for coumaphos mentioned elsewhere in this newsletter has introduced the need for a greater sense of stewardship to the beekeeping community. The new product (Bayer Bee Strips®) is limited to a specific number of strips. Beyond this, placing any pesticide in the bees' environment that might ultimately find its way into other environmental systems also highlights the concept of stewardship. An organization closely examining stewardship is the Florida Mosquito Control Association. In his presidential address on November 16, 1998, David A. Dame discussed some of that industry's concerns, which appear to be parallel and relevant to those of the beekeeping community. These remarks were published in the Florida Mosquito Control Association's newsletter, *Buzz Words*, December 1998, edited by Dr. Charlie Morris¹⁴.

Stewardship: "We in mosquito control deal with stewardship every day. We have to — our workday decisions are often directly related to habitat manipulation or placement of various agents or chemicals in the environment. The way we handle these responsibilities has a strong bearing on the public's perception of the mosquito control industry."

Training and Public Education: "We all know how an uninformed and misinformed populace can interfere with the legitimate activities of mosquito control whereas an informed citizenry can be supportive." As a consequence mosquito control runs continuing education for its members, enters local schools to inform students, and interacts positively with the press.

Pesticides: "Our stewardship appears to be in for some rough times in the near future. We may have to fight to keep our insecticide use out of the 'risk cup'. EPA leadership has as its first target the removal or major reduction of the organo-

phosphate insecticides (OPs). To have to rely solely on pyrethroids could add a significant burden to an already costly commodity. But even more serious is the fact that without OPs, we would not have enough tools to battle pesticide resistance."

Mosquito Resistance to Pesticides: "Few, if any of us, currently alternate insecticide classes to reduce likelihood of resistance. For some operations, decisions on these matters may boil down to economics. But when the wrong choices eventually lead to loss of susceptibility to an entire class of insecticide, where will we find replacements — at any cost? The cold hard truth is that there is little hope that replacements will be available. We urgently need to reemphasize the importance of conserving the chemicals now at our disposal by using

them in a manner that minimizes the possibility of resistance development. There is no magic bullet — all that we have at our disposal is good stewardship."

Conclusions: "National and international agencies and interests will continue to look to Florida for guidance and example. That is our reward for practicing good stewardship on a day-to-day basis."

The beekeeping industry now has an OP (Bayer Bee Strips®) and pyrethroid (Apistan®), with few other controls waiting in the wings. Besides resistance, the beekeeping industry must also ensure that its products are not contaminated. Like mosquito control, it must also fight to keep and conserve these materials by practicing good stewardship. ■

Florida Bee Meetings

SATURDAY, FEBRUARY 13, is set for the Archbold Biological Station beekeepers meeting. The meeting will run from 10 a.m. to 4:30 p.m. This is shaping up to be an excellent event with representatives from the educational and regulatory community on hand. On-site registration is \$6/person, \$10/couple. Lunch will be available for \$6 as well. Archbold Biological Station is about seven miles south of Lake Placid. The station's entrance can be found by going one mile west on Route 70 from the junction between Route 70 and Hwy 17, followed by one and a half miles south on Old State Route 8. The auditorium is about half a mile from the entrance. The phone number is (941) 465-2571.

A workshop will be offered at the Clay County Cooperative Extension Service Exhibition Building, four miles west of Green Cove Springs at 2463 State Rd. 16W on Saturday, February 20. Dr. Mike Hood of Clemson University is the featured speaker. He will discuss the small hive beetle and Varroa mite control. Other speakers round out a full day's activity (8:45 a.m. to 5 p.m.). The cost is \$10 per person, which includes lunch. Pre-registration is required by February 16, 1998. Mail checks to 4-H Youth Foundation/BEESC, P.O. Box 278, Green Cove Springs, FL 32043-0278. For further information, phone (904) 284-6355. ■

¹ <http://www.ifas.ufl.edu/~mts/apishtm/apis98/apdec98.htm#2>

² <http://www.mannlakeltd.com/>

³ <http://www.wmc.car.md.us/HTMLpages/Academics/Biology/EH96/pesticides/organophosphates.html>

⁴ <http://ace.orst.edu/cgi-bin/mfs/01/pips/coumapho.htm>

⁵ <http://ace.orst.edu/cgi-bin/mfs/01/pips/coumapho.htm>

⁶ <http://www.msue.msu.edu/ipm/ipmrptv6n1h.htm>

⁷ <http://www.ifas.ufl.edu/~mts/apishtm/apis98/apaug98.htm#4>

⁸ <http://www.ifas.ufl.edu/~mts/apishtm/apis98/apapr98.htm#2>

⁹ <http://www.ifas.ufl.edu/~mts/apishtm/apis98/apoct98.htm#1>

¹⁰ <http://www.ifas.ufl.edu/~mts/apishtm/apis96/apoct96.htm#2>

¹¹ <http://www.ifas.ufl.edu/~mts/apishtm/apis96/apaug96.htm#1>

¹² <http://www.ifas.ufl.edu/~mts/apishtm/apis95/apfeb95.htm#FL>

¹³ <http://www.nhb.org/index.html>

¹⁴ <http://www.famu.edu/mls/fmca.htm>

Gaicho Loses its Label in France: Mad Bee Disease Also Affects Bumblebees

MR. CLAUDE IVERT¹⁵, my beekeeper friend from Aix-en-Provence, France,¹⁶ sent me the latest information on the controversy regarding the pesticide Gaicho's® use on sunflowers. A crowd 1,500 strong of French beekeepers believing that the material caused problems with honey bee colonies demonstrated in Paris under the famous Eiffel Tower¹⁷. As a result of that and other efforts, the French Ministry of Agriculture and Fisheries has withdrawn the provisional label for Gaicho® until further study can show exactly how the material affects honey bees¹⁸.

Gaicho® is formulated with a pesticide called imidacloprid. It is implicated in what the French have called "mad bee disease." Apparently, it acts on the insects in various ways, interrupting their normal behavior. According to a post distributed on the Bee-L list, the material also affects bumblebees:

From: pub00613@innet.be

(Karel Bolckmans)

Date: Wed, 18 Dec 1996

"We executed both several lab and field trials with imidacloprid to check its toxicity on bumblebees. The trials confirm our observations in countries where the use of imidacloprid on tomatoes is registered (e.g. Spain) and also observations of illegal use of the product in countries where it is not yet registered for

greenhouse tomatoes (Belgium and the Netherlands). The use of imidacloprid as a drench is definitely not compatible with the use of bumblebees. We, together with other commercial bumblebee producers (e.g. BCI, Israel), have strong indications that imidacloprid is indeed transported into the pollen. Adult bumblebees don't seem to be killed but become unable to fly for a while and stay in the hive without collecting pollen. It is probably the lack of food, which affects the brood resulting in a rapid decline of the colony. The cotton wool in the hive becomes typically very dirty and tunneled with many ventilation holes when the colony has been exposed to imidacloprid."

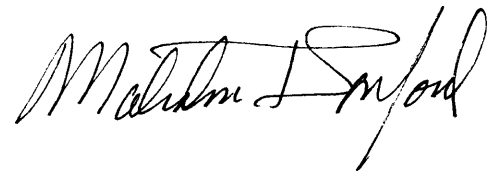
ACCORDING to the *Dade Vegetable Newsletter* (Vol. 8, No. 2), October – November 1998, p. 5, on November 13, use of imidacloprid (Admire® and Provado®) on beans was given a Section 18 label. Whether these materials in Florida will affect honey bees is not known, but this may bear watching in vegetable production areas. The Florida label calls for use in potatoes, cotton and tobacco. Other vegetables (not grown for seed) may also be involved. The full Admire® 2 Flowable label can be searched for on the Bayer website¹⁹.

Stan Sandler²⁰ commented about the use of imidacloprid on potatoes in his area on the Bee-L list in April 1998:

"I have been trying to keep tabs on imidacloprid because it is rapidly becoming one of the most commonly used pesticides on potatoes in Prince Edward Island. It is impossible to keep bees on PEI without having them within flying distance of a potato field somewhere. They almost never visit the fields (they have no weeds usually and the bloom is completely unattractive), except for water possibly when they are irrigating, but there is the spray drift problem (we are a windy isle)."

The material is not expected to cause problems because it will be applied as a drench at planting. It is not a knockdown insecticide, so adult whiteflies may still be seen, though they should not be actively feeding. Apparently they get sick and stop feeding once they have ingested the insecticide. Since it is not a knockdown material, honey bees are probably not affected directly, but the symptoms seen in whiteflies appear to be similar to what has been observed in bumblebees and French honey bees. ■

Sincerely,



¹⁵ cl.iver@wanadoo.fr

¹⁶ http://www.ifas.ufl.edu/~mts/apishtm/letters/aix2_24.htm

¹⁷ <http://perso.wanadoo.fr/cl.iver/parindex.htm>

¹⁸ <http://www.agriculture.gouv.fr/mapa/agriweb/actualite/com15199.stm>

¹⁹ http://uscrop.bayer.com/bayer_data/start.cgi

²⁰ sandler@auracom.com

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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