

APIS



Apicultural Information and Issues

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Antibiotic-Resistant American Foulbrood: Inspection and Hygienic Bees

THERE'S MORE and more evidence that antibiotic-resistant American foulbrood is for real in Florida. Mr. Laurence Cutts of the Division of Plant Industry's Apiary Bureau¹ is burning more colonies that have become symptomatic than in past years. Many of these have been treated with antibiotic apparently to little avail. Tests at both the Florida and Federal Beekeeping Laboratory in Beltsville, Maryland have confirmed what appears to be a growing tolerance by the causative organism (*Paenibacillus larvae larvae*) for the only currently labeled antibiotic, Terramycin®. This should be no surprise. It parallels what is happening in other livestock industries, as well as humans, signaling that the era of antibiotics as a wonder drug may be drawing to a close². I discussed this as far back as December 1987 in the pages of this newsletter³ and reiterated the concept in an article taken from the Pulitzer Prize series *When Bugs Fight Back* in 1994⁴.

The good news is that Dr. H. Shimanuki of the Beltsville Bee Laboratory sees a new era dawning such that we can expect to see advances made in the materials and methods available for detection, prevention and control of AFB⁵. The bad news is that this may take some time, and those beekeepers having the problem now could be ill-equipped to deal with it. One of the reasons for this is that many are not familiar with the disease's etiology and detection. These have taken low priority in the face of 40 years of effective masking by Terramycin®.

At the same time, a major deterrence to spreading American foulbrood — bee inspection — is being eliminated in many regions. An example of this trend comes from Jim Bach, Washington State's chief apiarist, who has announced his program will be terminated on January 5, 2000. Indeed, in 1991, Richard Taylor, long respected for his contributions to the bee literature, called for an end to mandatory bee inspection (*Bee Culture*, July). He said experience had shown that with the use of antibiotics, beekeepers could control the disease themselves without governmental regulation. The reason bee inspection existed, however, was not because of bureaucratic imposition, but at the behest of beekeepers themselves, who were affected by epidemics they could not control. Granted bee inspection laws were enacted before antibiotics, however, to summarily abandon them seemed like the proverbial "throwing the baby out with the bath water"⁶.

Continued next page

¹ <http://doacs.state.fl.us/~pi/bees.html>

² <http://www.abc.net.au/news/features/antibiotics.htm>

³ <http://www.ifas.ufl.edu/~mts/apishtm/apis87/apdec87.htm#1>

⁴ <http://www.ifas.ufl.edu/~mts/apishtm/apis94/apnov94.htm#2>

⁵ <http://www.ifas.ufl.edu/~mts/apishtm/apis99/apnov99.htm#1>

⁶ <http://www.ifas.ufl.edu/~mts/apishtm/apis91/apaug91.htm#1>

Fluvalinate Exposure: Effects on Queens and Drones

DR. RON CURRIE at the University of Manitoba, Winnipeg, Man., Canada recently published "Fluvalinate Queen Tabs for Use Against *Varroa Jacobsoni* Oud.: Efficacy and Impact on Honey Bee, *Apis mellifera* L., Queen and Colony Performance," *American Bee Journal*, Vol. 139 (November 1999), No. 11, pp. 871–876. Queen tabs are plastic strips containing one-percent fluvalinate as active ingredient. They are inserted into queen shipping cages to kill any mites on queens or accompanying attendant bees. This is supposed to prevent mites from being spread through queen introduction.

According to Dr. Currie, although the queen tabs were more than 99 percent effective in killing mites, they did not eliminate the risk of introducing *Varroa* because all mites were not killed. More important, however, were the effects on caged queens and attendants. Dr. Currie found significant worker mortality and sublethal effects on queens after three days of exposure to 1 percent fluvalinate active ingredient (AI). Queen mortality increased after seven days exposure. A 3-day exposure resulted in a 67 percent increase in supersedure rate than found in control queens or those exposed for seven days. The latter anomaly is apparently due to so-called "weaker queens" being killed or damaged by the tabs prior to and/or during introduction. Once introduction was successful, no difference was seen in either queen survival or colony brood production.

Dr. Currie says that queen mortality and supersedure increases shown by the study require consumers to purchase from 40 to 52 percent more replacement queens than if tabs were not employed. Given this and the fact that they do not ensure mite-free

replacement queens, he does not recommend their continued use. The results presented here provide further evidence that fluvalinate may indeed be responsible for so-called "queen problems" beekeepers have seen in the recent past¹¹.

The drone situation appears to also somewhat reflect that of queens. Dr. T. Rinderer and colleagues at the Baton Rouge Bee Laboratory studied the effect of fluvalinate (Apistan®) on developing drones (*American Bee Journal*, Vol. 139 (1999), No. 2, pp. 134–139). Although the number of drones produced was no different, survival varied significantly. Drones emerging from control colonies where fluvalinate had not been applied were mostly alive (97.5 percent), but those from colonies treated with Apistan® registered a lower (86.1 percent) survival ratio. ■

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Protecting Your Skin From the Sun

DR. ERIC MUSSEN in *From the U.C. Apiaries* (September/October 1999) spotlights protecting your skin from the sun, something all those working in the outdoors should be concerned with¹². He relates information from Mr. Bob Kean of State Fund, an insurance company affiliated with the California Farm Bureau Federation, who says farmers can grow a lot of things, but not new skin.

For starters, Mr. Kean suggests using sunscreen faithfully. Sunscreen is not tanning oil, which has a sun protective factor (SPF) of only 2 to 4, whereas for sunscreen the SPF is at least 15, although 30 to 45 is preferable if you perspire a lot. He says to put sunscreen on 20 minutes before sun exposure and be aware that the prime hours

are from 8 a.m. to 6 p.m. Also be aware that shiny equipment, sand, metal and water can all intensify the sun's rays. Don't go shirtless, use a wide-brimmed hat rather than a baseball cap, and protect the eyes by wearing sunglasses that block 99 percent of UVB and UVA rays.

Finally, examine your skin every three months for changes in color or texture. The American Cancer Society lists warning signs including changes in moles, birthmarks or localized areas of the skin¹³. Anyone finding these changes should act quickly by consulting a physician, Mr. Kean concludes. Information can also be found on the Centers for Disease Control and Prevention¹⁴. A risk appraisal for skin cancer is also available online¹⁵. ■

American Foulbrood Continued

Given the present situation, it is prudent for beekeepers to return to those practices that are known to keep American foulbrood at bay. These include routine inspection for the disease and the judicious use of fire for colonies showing symptoms, especially if these persist after feeding antibiotic. Simply throwing Terramycin® at an AFB problem is a practice that should be carefully re-evaluated⁷. Other routine hygienic procedures include ensuring that colonies are disease-free before exchanging combs, abandoning the practice of open feeding,

and scrupulously washing barrels that contained honey before loading them with feeding syrup.

In the meantime, I received a terse note from Mr. Steve Taber: "Just received *APIS* (November, 1999). Don't understand you folks when you talk about AFB like you do in the lead article⁸. Back in the '30s Dr. Park at Iowa state showed you could breed AFB resistant bees in three to four generations. ... About 20 years later, Dr. Rothenbuhler determined the genetic method of resistance. And about 20 years ago, I showed how easy it was for any bee-

keeper to find hygienic bees in his own bees."

I have known Steve for years and what he has to say is worth listening to⁹. In fact, I had already written a major article in the September 1998 issue of this newsletter about hygienic bees, asking why they were so little used¹⁰. It may well be that resistance to Terramycin® will be a prime incentive for beekeepers to finally begin to implement this technology to its fullest potential. Steve closes his note by saying that hygienic bees also show resistance to chalkbrood and perhaps *Varroa* as well. ■

Is Value-Added for You?

THE *SMALL FARM DIGEST*, published by the Cooperative State Research, Education and Extension Service of the USDA (Vol. 3, No. 2, Fall 1999), discusses the pros and cons of marketing value-added products¹⁶. The article defines value-added as adding features to raw agricultural products that are desirable to customers. These are increasingly important because the world's agricultural trade is shifting from commodities to products¹⁷.

Many farmers have not considered value-added products because they concentrate on what they do best, the article says, which is producing. However, every-one adding value to a product as it goes up the chain from farm to consumer gets paid. Thus, the farmer doing more of the processing and distributing, as well as producing, called vertical integration, has more opportunity to earn. Beekeeping is one of those activities that lends itself well to vertical integration. Examples in Europe are particularly significant¹⁸. This is also one of the important issues driving proposed changes to the Honey Research, Promotion and Consumer Information Act about honey quality assurance¹⁹.

Today's consumer wants taste, nutrition, freshness and variety, according to the article. Knowing preferences of particular customers (baby boomers, ethnic and cultural groups) allows the farmer to exploit niche markets and share in the larger part of the food dollar continually going to the

middleman. It is known that much of the price a consumer eventually pays for any agricultural commodity is represented by costs added after it leaves the farm (beyond the farm gate). This is a competitive area, however, and not for everyone, the article says. It should be approached methodically along with a good deal of study. The article provides numerous considerations for the new food entrepreneur, including business structure and plan, liability and regulations, agreements and copy-

rights, and packaging and labeling. It also lists important resources and provides several examples of successful value-added entrepreneurs, including U-pick blueberries, dairy goats, and chile and taro cultivation. For more information and/or subscribe to *Small Farm Digest*, contact the Small Farm Program, Plant and Animal Systems, USDA, Mail Stop 2220, 1400 Independence Ave. SW, Washington, DC 20250-2220, ph 800/583-3071, fax 202/401-1602. ■

Organic Acids and Essential Oils: The Honey Taste Test

THE CODEX ALIMENTARIUS food legislation in Europe does not allow additives in honey that adulterate its natural flavor. S. Bgdanov and colleagues of the Federal Dairy Research Institute in Liebefeld, Bern, Switzerland have published the results of their investigations into this topic (*Bee Biz*, No. 9, February 1999, pp. 4-7). Some 15 persons trained specifically for sensory tests tasted samples purposefully adulterated with organic acids and essential oils. Varying distinction thresholds for formic (300-600 mg/kg), oxalic (400-900 mg/kg) and lactic (800-1600 mg/kg) acids were found. Honey is most affected by formic and least by lactic. These acids are also found naturally in many honeys, with lower levels found in lighter honeys. Results show that autumn treatments by these acids for Varroa control result in high lev-

els in sugar feed, but these reduce to lower levels subsequently. Thus, formic and oxalic acid can be used in the fall and lactic in the spring (four weeks before the nectar flow) with minimal taste consequences.

Taste thresholds for essential oils were greater than for organic acids. The authors found 1.1-1.3 mg/kg for thymol, 5-10 mg/kg for camphor and 20-30 mg/kg for menthol. Adulterated samples showed a marked astringent, "medical" taste. The authors, therefore, recommend using thymol and thymol blends (Apilife Var®) only at the end of the active season. Both menthol and camphor have less effect on taste, but their effectiveness for Varroa control is not known. In conclusion, the authors state that only alternative Varroa control applications that keep levels of these substances below their taste threshold in honey are advised. ■

Ag-Environmental Awards

COMMISSIONER Bob Crawford, Florida Department of Agriculture and Consumer Services, has announced the 1999 Ag-Environmental Leadership Awards. These go annually to agriculturalists using innovative farming practices that contribute to environmental conservation. This is the sixth year of the program. Winners this go around are the Two Rivers Ranch, Inc., of Thonotosassa, Lykes Brothers, Inc., of Okeechobee, and Suwannee Farms of O'Brien. Those wishing to nominate an operation for the 2000 contest should obtain an application form from Commissioner's Ag-Environmental Leadership Awards, 3125 Conner Blvd., Room 130, Tallahassee, FL 32399-1650. Deadline is April 1, 2000. ■

French Beekeeping Tours

MYRIAM PETERSON writes from the Dorgone in France that she is now running two programs in France strictly for beekeepers. The small group size (six on the average) allows for maximum hands-on participation and question-and-answer sessions. Option one features working with Caucasian bees, whereas option two is for advanced apiculturists and involves visiting commercial beekeepers in the Perigord-Limosin region of France. The cost is \$700 per person. For more information, contact Api-Tours, Combeyrol, 24630 Jumilhac-le-Grand, France, Tel/Fax (33) 05 53 52 24 82 or e-mail: apitours@nomade.fr. For information on French beekeeping, see the 1997 issues of *APIS* and the index of letters I wrote while on sabbatical in that country²⁰. ■

⁷ <http://www.ifas.ufl.edu/~mts/apishtm/apis98/apnov98.htm#2>

⁸ <http://www.ifas.ufl.edu/~mts/apishtm/apis99/apnov99.htm#1>

⁹ http://www.ifas.ufl.edu/~mts/apishtm/letters/aix4_25.htm

¹⁰ <http://www.ifas.ufl.edu/~mts/apishtm/apis98/apsep98.htm#1>

¹¹ <http://www.ifas.ufl.edu/~mts/apishtm/apis98/apfeb98.htm#4>

¹² <http://entomology.ucdavis.edu/faculty/mussen/news.html>

¹³ <http://www.cancer.org/>

¹⁴ <http://www.cdc.gov/cancer/nscpep/skin.htm>

¹⁵ <http://www.aad.org/skinrisk.html>

¹⁶ <http://www.reeusda.gov/agsys/sfd/index.htm>

¹⁷ <http://www.ifas.ufl.edu/~mts/apishtm/apis99/apapr99.htm#2>

¹⁸ <http://www.ifas.ufl.edu/~mts/apishtm/papers/FRENCH.HTM#14>

¹⁹ <http://www.ifas.ufl.edu/~mts/apishtm/apis99/apnov99.htm#2>

²⁰ <http://www.ifas.ufl.edu/~mts/apishtm/letters/aixind.htm>

Argentina and Canada: Honey Production Reports

THE NOVEMBER and December 1999 issues of National Honey Market News provides the annual honey reports for Argentina and Canada respectively. Argentina is the third largest honey producer in the world after

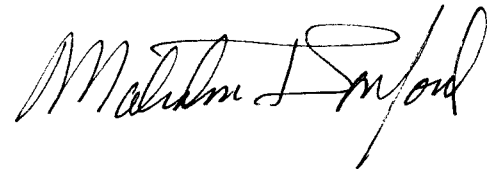
China and the United States. It also is the world's second largest exporter and a force to reckon with in this arena²¹. Almost eighty percent of the honey comes from five provinces (Buenos Aires, Entre Rios,

La Pampa, Cordoba and Santa Fe). Estimates of past honey production have been revised upward, with the 1998 crop at 75,000 metric tons — 7 percent higher than last year. Honey output for 1999 (October 1998 through March 1999) is a record 85,000 tons, due to good weather conditions and increased colony count (2.2 million hives distributed among 28,000 producers). Prices have been sharply reduced to an average of \$.75 to \$.80 per kilogram (2.2 lbs) over the \$1.14 received in 1998. The price decrease reflects a large world honey supply, principally supplied by the United States, China, Mexico and Canada.

Canada had a bumper honey crop in 1998 of about 42,500 metric tons, almost 40 percent above the general average. The 1999 crop is estimated at 35,000 metric tons. The number of Canadian beekeepers increased slightly in 1998 to about 11,192. However, the trend is for a continual decline in the future, with fewer beekeepers keeping more colonies. The average beekeeper manages about 46 colonies, an increase from 42, which was the average from 1992 through 1996.

For a comprehensive view of the world honey situation, see information presented by the USDA's Foreign Agricultural Service²². ■

Sincerely,



Florida and International Bee Meetings

THE ANNUAL Northeast Florida beekeeping seminar will be held Saturday, Feb. 5, 2000, from 9 a.m. to 3 p.m. at the Clay County Agriculture Center, 2463 SR 16w, Green Cove Springs. The cost is \$10 per person (includes lunch). Pre-registration is requested. Please contact the Clay County Cooperative Extension Service, ph 904/284-6355.

A beginning beekeeping workshop will be held at the Hernando County Cooperative Extension Service Office, 19490 Oliver St., Brooksville, FL 34601 (ph. 352-754-4433, fax 352-745-4489), Saturday, March 4, 2000, at 8 a.m. The cost of the workshop is \$25 nonrefundable, and all participants must pre-register no later than Feb. 15, 2000. All checks or money orders should be made payable to the Hernando County 4-H Foundation. All materials as well as lunch will be provided and all participants will receive a copy of *First Lessons in Beekeeping*. For more information, contact the Hernando Extension Office above or Ed Mabesoone, ph 352/596-6263, fax 352-596-7188, e-mail Apism@earthlink.net.

The Honeybee Technical Council will meet in Gainesville on Monday, Jan. 31, 2000, at the Division of Plant Industry auditorium. Contact the Apiary Office for details, 352/372-3505.

Second International Conference on Africanized Honey Bees and Bee Mites: The first conference on AHB and mites was held in 1987 on the campus of The Ohio State University. Over 120 scholars attended. Since then Varroa has been detected in the United States, resistance by Varroa to fluralinate has appeared, the Africanized honey bee crossed the Mexican-U.S. border and the South African small hive beetle was introduced. All of these topics are expected to be on the agenda of the second conference, which will be held at the Carl Hayden Bee Research Center in Tucson, Ariz., April 10-12, 2000. The first announcement calling for papers has been circulated. Further information on this important meeting is available from Dr. Eric Erickson, ph 520/670-6380 x104. Information is also found on the World Wide Web²³.

Seventh IBRA Conference on Tropical Bees: The next IBRA Tropical Bee Conference will be held in conjunction with the Fifth Asian Apicultural Association, 19-25 March 2000, in Chiang Mai, Thailand. Further information is available from the Bee Biology and Research Unit, Dept. of Biology, Chulalongkorn University, Bangkok, 1330 Thailand, ph +66-2-218-5272, fax +66-2-218-5267, e-mail: siriwat.w@chula.ac.th, Web address: <http://www.sc.chula.ac.th/bee2000/>. ■

²¹ <http://www.ifas.ufl.edu/~mts/apishtm/apis98/apsep98.htm#4>

²² <http://www.fas.usda.gov/htp/sugar/1999/november/honey.html>

²³ <http://gears.tucson.ars.ag.gov/conference/CONF2000.htm>

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