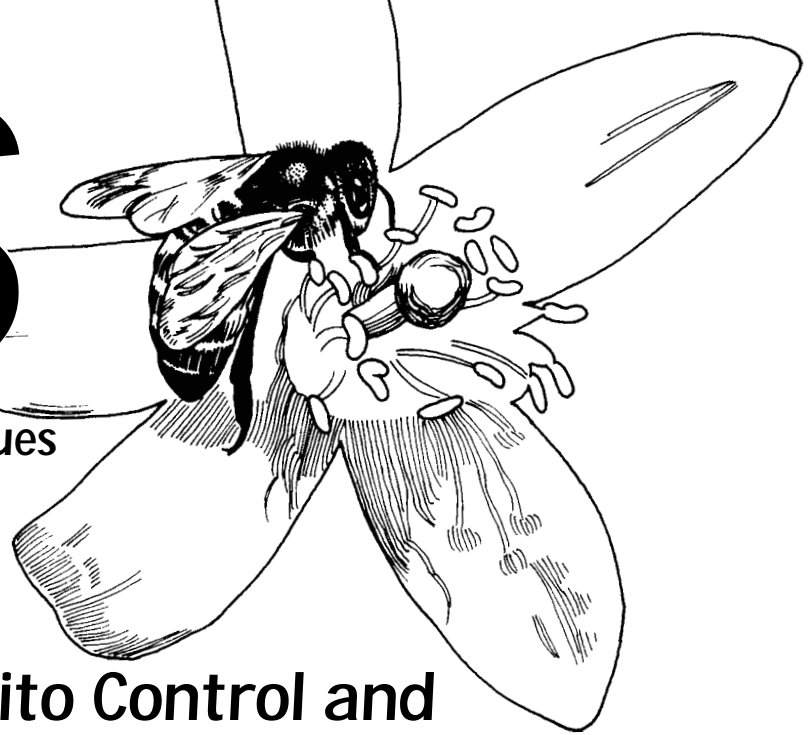


# APIS



## Apicultural Information and Issues

From IFAS/University of Florida  
Department of Entomology and Nematology

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## Mosquito Control and Florida Ecosystem Management

*URBAN GROWTH and its Impact on Future Mosquito Control Problems and Opportunities* is the title of a conference held in late May in Orlando as part of the annual meeting of the Florida Mosquito Control Association<sup>1</sup>. A white paper published by the Florida Coordinating Council on Mosquito Control was presented at the meeting. This impressive document is billed as a "snapshot" of Florida mosquito control in 1997. It contains much information on the history of and current technologies employed in mosquito control efforts. The conference's goal was to seek input and incorporate comments from a wide variety of disciplines into the document prior to its implementation.

The tone of the conference was set the first day with emphasis on broad perspectives affecting Florida's growth. Florida's population increase is expected to be one of the most significant driving forces in the next 25 years, according to Dr. David Mulkey, Department of Food and Resource Economics. Approaching 15 million souls by the turn of the century, the state will swell to 20 million people in the first two decades of the new millennium. Most growth will occur in Dade, Hillsborough, Broward, Palm Beach, Orange and Duval counties, those already affected by significant population increase. The services demanded by these people will seriously challenge governmental resources, including mosquito control, according to Dr. Mulkey.

FLORIDA'S Department of Environmental Protection will also be a key player in the future of mosquito control. According to Ms. Pam Vety, executive director for Ecosystem Management, this office is now pursuing a policy of ecosystem management, rather than attempting to regulate discrete parts of the environment (i.e. water, air, forests). People, of course, are part of the ecosystem and thus a deliberate effort to involve the population in as many areas as possible, including mosquito control, is considered essential. The Department published an Ecosystem Management Implementation Strategy in 1995, which established a number of management areas across Florida. Latest developments can be found in *Ecosystem Management News*, available by writing 3900 Commonwealth Blvd., MS 30, Tallahassee, FL 32399-3000. Other resources about the program can be seen on the Department's website<sup>2</sup>. Water resources will also be affected by population growth, according to Dr. Art Hornsby, Department of Soil and Water Science, University of Florida. Allied with ecosystem management must also be watershed management, he concluded. This also affects mosquito control efforts, which are often aquatic in nature.

Mosquitoes affect the Florida ecosystem in other ways. Although considered a nuisance to humans, they are a major food source for other organisms. *Continued next page*

<sup>1</sup> <http://www.famu.edu/mls/fmca.htm>

<sup>2</sup> <http://www.dep.state.fl.us/rules/index.html>

## Mosquitoes continued

Of particular importance are real possibilities of human disease transmitted by mosquitoes, including St. Louis encephalitis (SLE)<sup>3</sup>, eastern equine encephalitis (EEC)<sup>4</sup> and dengue fever<sup>5</sup>. Most mosquito control districts in Florida have instituted surveillance techniques to find and eliminate mosquito-breeding areas before the insects become a problem. This is the best way to avoid application of other control measures, especially insecticides. Districts also generally employ larvacides, considered a more environmentally friendly way to kill mosquitoes chemically, before resorting to adulticides as a last recourse.

Nontarget organisms, including honey bees, were discussed at length at the conference. Although no active research is going on using honey bees as environmental monitors in Florida mosquito control, it was suggested that this should be explored as pioneered by Dr. Jerry Bromenshenk and colleagues at the University of Montana<sup>6</sup>. There seemed to be unanimity that a whole new approach to mosquito control was on the horizon. One

“ Mosquito control is undergoing great change in Florida. ”

reason for this is reminiscent of recent events in the apiculture world; some traditional pesticides used in killing mosquitoes are in danger of losing their punch due to resistance<sup>7</sup>.

In addition, the new Food Quality Protection Act may result in elimination of some traditional chemical tools mosquito control has used with great success over the years. Controversy over this act has caused Vice President Al Gore to order the Environmental Protection Agency (EPA) to carefully examine and reconsider decisions it makes based on this law<sup>8</sup>. Developing technology to deliver smaller droplets in both size and volume while applying adulticides was also examined in some detail. This could have far-reaching effects

on both nontarget organisms like honey bees and the general pesticide load in the environment.

The take-away message from this conference, and as found in the white paper, is that mosquito control is undergoing great change in Florida. This is expected to accelerate as population grows and governmental regulation shifts to an ecosystem approach. All this will probably be good for beekeepers in the long run. In order to reduce losses over the short term, however, beekeepers should continue to use the tried and true approach in dealing with mosquito control agencies, by communicating and cooperating at the local level<sup>9</sup>. Meanwhile, Mr. Steve Dwinell, chief of Bureau of Entomology and Pest Control, Florida Department of Agriculture and Consumer Services has appointed Mr. Wayne Gail as his mosquito control point man. Complaints or kudos about these activities should be directed to Mr. Gail at 850/414-0056. For other information on mosquitoes, consult the website at the Florida Medical Entomology Laboratory, Vero Beach, Florida<sup>10</sup>. ■

## Organic Honey Again

ACCORDING TO the April 1998 edition of *The Speedy Bee* (Vol. 27, No. 4, p. 1-2), as a result of some 200,000 comments, the U.S. Dept. of Agriculture (USDA) will make fundamental revisions to the proposed national organic standards as published in the *National Register*<sup>11</sup>. Most comments opposed including the products of biotechnology, irradiation and biosolids (municipal sludge) in the organic classification. As a consequence, according to the *Bee*, they will not be included in the revision. Concern is that if the standards are not rigorous and credible, consumers will lose faith in the organic label.

At the same time, the article describes honey industry organizations' efforts that

special provisions be made to accommodate the needs of honey and bees<sup>12</sup>. A joint statement from both national producer groups, the packers and dealers and Sioux Honey Association says that beekeeping should not be considered a "normal" livestock production practice:

“**B**ees clearly do not fit into the Livestock subpart, just as they neither fit in the Crops subpart nor the Wild Crops subpart<sup>13</sup>. Therefore, we urge you to exempt honey and bees from the current proposed rule and propose, in consultation with the U.S. beekeeping industry, a separate subpart, especially for bees and honey and other hive

products. We also object to the inclusion of beeswax in the proposed rule's 'National List of *Non-agricultural* Substances Allowed as Ingredients in or on Processed Products Labeled as Organic or Made With Certain Organic Ingredients.' It would seem that beeswax, unless it is processed in some non-organic way, more properly belongs on the list of 'Non-organically Produced *Agricultural* Products Allowed as Ingredients In or On Processed Products Labeled as Organic or Made With Organic Ingredients.' ”

Bureaucratic efforts to make decisions about the organic designation of honey must be taken seriously if the situation in Europe is any example<sup>14</sup>. According to Mr. Troy Fore, Jr., editor of *The Speedy Bee* and secretary-treasurer of the American Beekeeping Federation, the industry needs to hear from beekeepers interested in true organic production who support the request for a separate beekeeping subpart in the standards. They can contact Mr. Fore at P.O. Box 1038, Jesup, GA 31598, ph 912-427-4233, fax 912-427-8447, e-mail: troyfore@abfnet.org. Anyone filing comments on the original proposal is asked to please forward those remarks as well. ■

## Mediterranean Fruit Flies Return

AFTER THE FLORIDA Department of Agriculture and Consumer Services appeared to successfully rid the Tampa area of the infamous medfly, it has returned to the state<sup>15</sup>. First some were trapped near Umatilla. Then they appeared in Bradenton. Application of pesticides occurred in both places mid-May. By the 27th of May, 491 flies had been trapped in Bradenton and 1,314 in Umatilla, and officials believed counts were stabilizing, showing the effectiveness of application of malathion bait spray.

For up-to-the-minute details on this situation, maps of spray areas, and general information on malathion in both Spanish and English, consult the PestAlert website at the University of Florida<sup>16</sup>. ■

# Transgenic Plants: Coming to a Field Near You?

"IF YOUR BEES are not already foraging in fields of genetically engineered crops, they soon will be." This is the provocative beginning of an article by David Gerry in the May 1998 issue of *Bee Culture* (Vol. 126, No. 5, pp. 27–30). This adds to information published in the April 1997 *APIS* about transgenic colza in France<sup>17</sup> and more fully developed in the January 1998 *APIS* concerning canola in Canada<sup>18</sup>. The scope of this article is large, including the basics of genetic engineering, the relationship between honey bees and Bt, or *Bacillus thuringiensis*, possible allergies to genetically engineered plant products, regulations involving the technology and labeling its products to inform the consumer.

Mr. Gerry believes that putting a single gene into a plant to control one pest, the prevailing philosophy in genetic engineering, will inevitably fail. This parallels the insecticide resistance phenomenon found in much of agriculture and now in *Varroa mites*<sup>19</sup>. For beekeepers, he says, this could mean continual release of new varieties with unknown side effects. Thus, he concludes, one will not only have to be vigilant about insecticides on crops, but also about these chemicals in crops. He reports on a three-year study in France. Results may indicate build-up of insecticide toxins in the honey of genetically engineered rape (colza). Bees were fed sugar solutions containing up to 100 times the protein found in transgenic colza. The results showed shorter life spans and difficulty in distinguishing odors when compared to control colonies. Bee mortality was not considered significant in other studies reported in the April 1997 *APIS*<sup>20</sup>, although the concentrations of proteins fed was not known.

Like the industrial revolution and the advent of digital computers, Mr. Gerry believes, biotechnology will have a profound effect on our lives. Unlike Europe, where the technology is controversial, in North America, he says, there is little discussion. Paradoxically, it is in North America that most of the development is occurring. Biotechnology, nevertheless, is one of the areas that recently was eliminated from the national organic standards (see article elsewhere in this issue) presumably because of public outcry.

As honey bees are exposed to genetic material in combinations they have never encountered, the challenge for the beekeeper is to have as much information on hand as possible, Mr. Gerry says. This includes what crops are being grown in your area that are genetically modified (GMOs), the source of the new genetic material and those markers that identify it. Labeling GMO products and providing information about their origin is a proactive approach that has been successful in Safeway stores in England, according to Mr. Gerry. Tomato puree from transgenic tomatoes was successfully sold in conjunction with an information campaign to educate the consumer. Resistance was not as high as initially feared. With honey from GMOs, Mr. Gerry concludes, it will not be a case of if customers confront beekeepers with questions, but when. Thus, taking the issue in hand now means the producer should have more influence on the outcome. Because biotechnology is controversial, beekeepers must avoid getting trapped between the biotechnology industry and its detractors, Mr. Gerry counsels, and they must collectively decide how to best position honey in the market, given the rising tide of transgenics. The best place for this information — Mr. Gerry quotes Dr. Marion Nestle, chair of the Department of Food Studies, New York University — is on the transgenic product's label. ■

# 1997 Pacific Northwest Honey Bee Pollination Survey

A BEEKEEPING PRACTICE holding much promise in the 1990s is commercial pollination<sup>21</sup>. This enterprise is a service and thus circumstances faced by beekeepers involved in this activity are much different than those who market honey or wax<sup>22</sup>. It also is more effective as a collective enterprise, with cooperation among several beekeepers as seen in the French GRAPP model<sup>23</sup> or as practiced in the Pacific Northwest<sup>24</sup>. It is the latter region that has really taken the lead in this country.

In the April 8, 1998, edition of *National Honey Market News*<sup>25</sup>, an addendum is published reporting survey results of 27 commercial beekeepers by Dr. M. Burgett at Oregon State University. Dr. Burgett says that knowledge of pollination economics is critical to every person contemplating entering the field. It is also important for growers renting colonies to understand current economic conditions of the beekeeping industry.

Data for 1997 show a number of trends, according to Dr. Burgett. One is the dependence of commercial beekeepers on the pollination enterprise in the region; of total income, the average received for pollination fees was 65 percent. This is down from 1995's 72 percent, presumably due to higher honey prices, but higher than in California as a whole, which he calculated at 50 percent. For the past five years, the average sizes of

*Continued next page*

<sup>3</sup> <http://128.227.103.58/txt/fairs/50143>

<sup>4</sup> [http://hopkins.med.jhu.edu/NewsMedia/hnf/HNF\\_345.HTM](http://hopkins.med.jhu.edu/NewsMedia/hnf/HNF_345.HTM)

<sup>5</sup> <http://www.cdc.gov/ncidod/EID/vol1no2/gubler.htm>

<sup>6</sup> <http://grizzly.umn.edu/biology/bees/>

<sup>7</sup> <http://www.ifas.ufl.edu/~mts/apishtm/apis98/apapr98.htm#1>

<sup>8</sup> <http://fshn.ifas.ufl.edu/05cmisp98.htm#b>

<sup>9</sup> <http://www.ifas.ufl.edu/~mts/apishtm/apis98/apmar98.htm#3>

<sup>10</sup> <http://www.ifas.ufl.edu/~veroweb/vero.htm>

<sup>11</sup> <http://www.ams.usda.gov/nop/rule.htm>

<sup>12</sup> <http://www.ifas.ufl.edu/~mts/apishtm/apis96/apfeb96.htm#1>

<sup>13</sup> <http://www.ifas.ufl.edu/~mts/apishtm/apis98/apjan98.htm#1>

<sup>14</sup> <http://www.ifas.ufl.edu/~mts/apishtm/apis97/apmay97.htm#3>

<sup>15</sup> <http://gnv.ifas.ufl.edu/~entweb/dpifsc.htm#med>

<sup>16</sup> <http://extlab1.entnem.ufl.edu/PestAlert/>

<sup>17</sup> <http://www.ifas.ufl.edu/~mts/apishtm/apis97/apapr97.htm#4>

<sup>18</sup> <http://www.ifas.ufl.edu/~mts/apishtm/apis98/apjan98.htm#3>

<sup>19</sup> <http://www.ifas.ufl.edu/~mts/apishtm/apis98/apapr98.htm#1>

<sup>20</sup> <http://www.ifas.ufl.edu/~mts/apishtm/apis97/apapr97.htm#4>

<sup>21</sup> <http://www.ifas.ufl.edu/~mts/apishtm/apis93/APNOV93.HTM#5>

<sup>22</sup> <http://www.ifas.ufl.edu/~mts/apishtm/apis95/APMAR95.HTM#FR>

<sup>23</sup> <http://www.ifas.ufl.edu/~mts/apishtm/apis95/apoct95.htm#T1>

<sup>24</sup> <http://www.ifas.ufl.edu/~mts/apishtm/papers/PORTLAND.HTM#5>

<sup>25</sup> <http://209.76.50.54/honey4.htm>

## Honey Bee Survey continued

commercial operations have increased. Colony numbers were 1,504, an 11 percent increase over 1996 for the beekeepers responding to the survey, who collectively managed 40,605 colonies. The total number of colonies rented was 120,546, producing income of \$3,743,779. The average pollination rental for all crops collectively was \$31.05. Income generated from pollination continues to rise. Over the last five years it has increased from \$22.50 to \$31.05. At the same time, the average annual revenue from pollination rose from \$61,627 (1993) to \$138,669 (1997). Although this is encouraging, Dr. Burgett says, colony maintenance and replacement costs have skyrocketed. Only in the past five years have rental fees begun to reflect close to the true value-added service of managed pollination.

Tree fruits are the dominant crops providing pollination income in the Pacific Northwest, Dr. Burgett says. In 1997 pears,

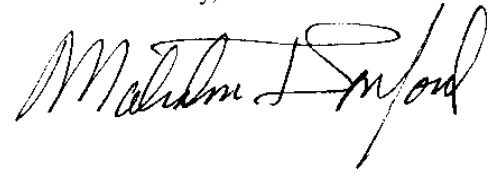
sweet cherries and apples accounted for 40 percent of all reported rentals and 37 percent of reported pollination income. Paradoxically, the most important crop, almonds, is grown in California and accounted for 33 percent of rentals and 39 percent of income. More than 95 percent of colonies used in commercial pollination were also taken to California, according to Dr. Burgett. Besides almonds, most rentals occurred for apples, pears, meadow-foam seed, cherries, vegetable seed, mixed berries, blueberries, squash and pumpkin-seed, and cranberries, respectively. Average rental fees ranged from \$36.50 for almonds and cranberries to \$20.40 for berries. Below that were \$17.85 for clover, \$8.65 for vetch and \$3 for crimson clover, all good nectar crops.

The average colony in the Pacific Northwest was rented 2.97 times in 1997, Dr. Burgett says. Taking a median rental fee of \$31.05, this results in an average income of \$92.20 per hive, down from the previ-

ous year's \$97.50. The 40,605 colonies represented in the survey are about one-third of the region's bees, according to Dr. Burgett. The region's income from rented colonies, therefore, he estimated to reach \$11,231,000 — less than 1.5 percent of the estimated farm-gate value of crops requiring managed pollination in the region. Average numbers, according to Dr. Burgett, are probably the best benchmark to use for those who are contemplating entering the field. Beekeepers in the Pacific Northwest have taken advantage of the current economic situation in their region and will continue to do so in the future, Dr. Burgett concludes. Pressures from escalating costs and parasitic mites have created a condition such that every living colony of bees now possesses a greater potential economic value than in the past.

Many of the same conditions prevail in other parts of the country. Thus, it continues to make sense that beekeepers everywhere carefully explore how the pollination enterprise can help them keep their industry relevant and strong into the next century. I have published a list of references important to beekeepers interested in pollination and also suggested they take a wider view of the potential pollination offers them in the future<sup>26</sup>. As a service to the industry, *Bee Culture* magazine is putting the full text of the pollinator's bible, Agriculture Handbook 496, *Insect Pollination of Cultivated Crop Plants*, on the Web<sup>27</sup>. ■

Sincerely,



## Varroa Pamphlet: A 50-cent Bargain

THE AMERICAN ASSOCIATION of Professional Apiculturists (AAPA) has released an eight-page four-color pamphlet titled *Protecting Honey Bees from Varroa Jacobsoni*. It contains pictures of the pest and describes several methods for detecting this parasite. Of perhaps most significance are regional recommendations for treatment using Apistan®. If you subscribe to *Bee Culture* magazine, my information is the publisher intends to send a copy as part of your subscription.

To obtain a copy if you are not a subscriber, send a check made payable to Dr. M.T. Sanford for \$.50 to Extension Beekeeping, Varroa Pamphlet, P.O. Box 110620, Gainesville, FL 32611-0620. For other orders, contact Dr. Marion Ellis, AAPA Secretary, University of Nebraska, Department of Entomology, 210 Plant Industry Building, Lincoln, NE 68583-0816, ph (402) 472-8696, e-mail: mellis@unlinfo.unl.edu. For information on other publications available through AAPA, contact Dr. Ellis or access the website <http://www.ianr.unl.edu/ianr/entomol/aapa/aapapubs.htm>. ■

<sup>26</sup> <http://www.ifas.ufl.edu/~mts/apishtm/apis95/apjul95.htm#TOP>

<sup>27</sup> <http://www.airoot.com/beeculture/book/index.html>

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