

July/Aug 2004

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*California Beekeeping Statistics*

*Apitherapy Connection*

*Review of the 2004 WAS Conference*

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California Beekeeping  
Statistics

First, the big picture. Depending upon the reference source, here is what our beekeeping looked like in 2002. The USDA Farm Census reported that we had 864 "bee farms" in California (an individual kept one or more hives of bees) and 720 (83.8%) of them reported obtaining honey income from 421,523 colonies. USDA Honey Market News reported honey from 440,000 colonies. Those numbers are fairly close, but the total number of pounds of honey produced in California that year differed significantly between reports: Farm Census = 16,303,281 lbs. (38.68 lbs./colony) vs. Market News = 23,320,000 lbs. (53 lbs./ colony).

More specifically, I tabulated the data from the 2002 County Agricultural Commissioners' Crop Reports, by county. Those reports do not tell how many beekeepers are included, but their reported value of the honey crop that year was \$51,090,723. Tulare County, alone, reported almost enough honey to cover the state total given in the Honey Market News.

California's total beekeeping income was \$126,651,220. The largest share came from pollination rentals (\$68,771,878). Honey, as noted above, was right behind. Bee Breeders reported \$5,542,901. But, the greatest value was to growers, who realized yields worth \$4,353,460,249 of crops

requiring honey bee pollination.

The details of this data set, by county, can be reviewed on my Web page: [entomology.ucdavis.edu/faculty/facpage.cfm?id=mussen](http://entomology.ucdavis.edu/faculty/facpage.cfm?id=mussen). Look for the article titled "Don't Underestimate the Value of Honey Bees!"

### Apitherapy Connection

The American Apitherapy Society has spruced up its Web page. There are articles on using hive products for medicinal purposes. I found the one on using diluted venom on various parts of the head to be especially intriguing (look under heading "Journal"). There now is a STORE where one can purchase books, CD's, and videos on apitherapy. There are cages for holding bees and tools for administering bee sting therapy. Credit card orders can be submitted through PayPal or an order form can be printed from a PDF file and mailed to them.

If you wish to visit the site and perhaps become an AAS member, go to: [www.apitherapy.org](http://www.apitherapy.org).

### WAS 2004

As usual, the 2004 Western Apicultural Society

Conference brought out the warm weather - about ten degrees warmer than the normal eighties in Missoula. That was an ideal reason to walk across the bridge and visit the Big Dipper ice cream store. "The Kid" still resides in some of us - I had licorice. You just don't find licorice ice cream that often. Heat wasn't a problem inside the conference hotel. Members wore sweaters to the lecture room.

### Pre-conference Activities

The conference format was somewhat different from previous meetings. The official WAS Conference was only two days in length. A day earlier, WAS President Dr. Jerry Bromenshenk devoted the morning to pre-conference activities. While Bill Ruzika shared his experiences using formic acid for mite control in beehives at the hotel, other participants piled into vans and were taken to the area around Jerry's apiary. A portion of that group investigated the Native Plants Garden which is adjacent to the apiary. Another group dispersed to see the workings of Jerry's electronics group: electronic hives, bee mazes, using electronic chip tags to mark hives for identification, and observing bees finding sources of trained odors.

Jim Bach gave the rest of us a very thorough session on how to examine your bee colonies and how to interpret what you see when you look at them. Many observations are open to numerous interpretations, but a solid knowledge of honey bee biology and bee behavior can limit the number of erroneous interpretations by quite a bit.

Jerry had one of the "Frankenhives" at that apiary location. A Frankenhive is a nuc (1/4 size of normal hive body) that has up to 96 thermistors imbedded in it. Connected to a computer, hive temperatures can be taken every few minutes, 24 hours a day. In an empty nuc box, the temperature increases from the top down as the sun warms up the box. In an occupied nuc box, morning temperatures are a bit low, reach "normal" by mid day, then get a bit warmer only at the bottom of the hive in late afternoon, then cool off at sunset. The temperature differential observed is about 0.5 degrees Celsius. It appears that the bees do an excellent job of keeping the brood nest area at a level temperature all day. Early in the six year study, one side of the hive seemed to get warm daily, but that turned out to be an artifact due to heat being brought in from the outside by sunlight-heated thermistor wires.

Little temperature spikes (2-3 degrees C) were seen daily on days preceding swarming. When the swarm issued, there was a quick 2-3 degree increase in temperature throughout the hive that lasted for 10 minutes. During that time worker bees were running all over in the hive, trampling nurse bees that tried to hold their ground on the brood combs. The temperature receded back to normal in about 20 minutes after the swarm left. Other observations that Bill Madsen and Jerry have noticed are: honey bees will regulate temperatures in queenless hives, as long as there is brood present; colonies of honey bees being moved on trucks will regulate their temperature only if they do not become "dry" - moving air and some water evaporation really help. When the truck stops for fuel, hive temperatures begin a steep climb, unless water is sprayed on the hives. So, Jerry is thinking about adding a "drip line" of misters under the hive covers for moving bees on trucks in warm weather.

When the researchers introduced a small volume of hot air into the hive, the heat registered on the equipment, but it was moved, nearly intact, to a corner of the hive very quickly - too quickly, in fact, to have been accomplished by fanning.

If and when Jerry gets a bit of free time, he and his co-workers are going to try to determine how that heat is moved. They have seen some really different behavior by bees in the area of the heat, but they have not been able to determine for sure what the bees are doing to move the heated air.

### Emphasis on the Environment

The first afternoon, Jerry brought quite a number of speakers to a session that focused on pesticides and their effects on pollinators. Nearly all the WAS members were in attendance, as were about 30 additional individuals who were very interested in hearing about the pesticide issue.

Jerry began the session with a presentation by Gabe Patrick, head of EPA's Office of Pesticide Programs. Gabe has the unenviable job of documenting the positive effects that EPA pesticide programs have had on the environment. Actually, it seems that atmospheric and aquatic environments and animals tend to be more amenable to monitoring than do terrestrial organisms, other than plants. At a meeting in early May, Gabe attended a one-day session on how honey bees, and other social and solitary

hymenopterans, might be used to demonstrate environmental changes. One of the biggest problems that came to the surface was determining what and how to measure the environmental parameters. We have very little field data on any of these animals. To prove that things are getting better or worse, you need to have data to compare. After hearing a day of pollinator biology, a "contracted staff" was going to get back to Gabe with a plan on how to approach this project. He hasn't heard from them, yet!

Unfortunately, most of the attention that EPA programs get is on the negative side. That particularly seems to be the case with honey bees. A number of audience members had, or are continuing to find, losses of honey bees to insecticide applications. Since the labels on the insecticides tend to carry language that prohibits use of the chemicals where they will kill honey bees, the question is, "Who is supposed to be enforcing the labels?" EPA is ultimately responsible, but enforcement has been delegated to the states. And, that is where the problem lies. Enforcement varies immensely from state to state, and at times it seems that local economic considerations outweigh honey bee health. That sends the issue

to the courts, where politics play an important role. Although not mentioned too much at this meeting, there is an attempt being made to exempt bee warnings from labels of insecticides used to kill adult mosquitoes. Until West Nile Virus runs its course, and individuals are no longer becoming infected and in some cases killed, people aren't going to worry too much about what else besides mosquitoes may be killed when the public agencies are fogging or spraying to protect their clientele.

For those of you who do not read Bee Culture, Dr. James Tew requested that beekeepers who suffer what they believe to be pesticide losses to their colonies contact him with all the specific information they can generate on the incident(s). Please send the information to Jim at: State Specialist, Beekeeping; The Ohio State University, Wooster, OH 44691. Jim's e-mail address is: Tew.1@osu.edu.

#### Neonicotinoids - the Newest Class of Insecticides

Neonicotinoids are called "environmentally friendly" by the companies that sell them. Nicotine is extremely toxic, but the neonicotinoid analogs are

much safer to handle, persist in the environment much longer than the original botanical, and tend to become systemic in the organism that is treated with them. For some reason they are extremely toxic to aphids but appear to have no detrimental effects on *Lygus* bugs, another plant sucking insect. The question is, what do they do to honey bees? The Europeans have devoted an enormous amount of effort toward trying to determine what, if anything, the neonicotinoids do to bees in the trace amounts that tend to occur in pollen and nectar. While European beekeepers are convinced that exposure to contaminated plant products leads to colony dwindling and death, laboratory and field studies have not yet backed those claims.

Gabe has access to the company data on the currently registered neonicotinoids. There are a couple that seem to be relatively harmless to honey bees. At the other end of the spectrum are those that are highly toxic to honey bees that contact the wet spray or residues for up to three days. Studies conducted by and for the manufacturers of these products have not determined any detrimental effects from exposure to nectar and pollen containing trace amounts of the systemic insecticides.

It was interesting to note that a study conducted on rape sprayed with clothianidin demonstrated 1 part per billion (ppb) in nectar, but 8.6 ppb in the honey stomach. Currently, in conjunction with the Canadians, studies are being conducted to determine what, if any, effects on eggs, larvae, adults, and hive production 130-day or longer exposure to neonicotinoids has on honey bees.

#### Better Pesticide Labels

Gabe finished his presentation by describing an effort to re-design insecticide labels to allow better decisions to be made for their use. The idea is to explain on the label how long the insecticide will be toxic to honey bees that visit the plant after the application is made. The "Residual Time" might be minutes or days. The problem is, there are no standard environmental criteria for conducting the residue experiments. A chemical applied to an alfalfa field in the Central Valley of California is going to be irradiated strongly, heated significantly, and dried to a crisp. The same chemical sprayed on an alfalfa field in New England may be protected by a heavy cloud cover, kept quite cool, and the humidity can be very high

for many consecutive days. So, you would not anticipate that the residue would break down at nearly the same rate in New England as in the desert West. So, how many labels have to be written for the same product? How can you predict the weather? I do not envy Gabe in either of his roles: providing proof of how EPA programs have enhanced the environment or developing labeling that will allow effective use of insecticides to protect crops while simultaneously protecting honey bees.

#### Promoting Pollinators

On the up side, Kimberly "Kim" Winter reported on the efforts of the North American Pollinator Protection and Conservation program (NAPPC - she calls "Napsie") to raise the conscience level of and promote the protection of pollinators. NAPPC has members from all walks of life who deal heavily in public relations. The organization has numerous task forces, among which are: environmental stewardship, international trade in pollinators, ecosystem health indicators (Kim was at the May meeting with Gabe, maybe that will help), curriculum for schools, and research - NAS study on baseline data for non-*Apis* pollinators. They have a Website

([www.nappc.org](http://www.nappc.org)) and they have steering committees that correspond by conference calls.

The next day Kim shared photos of the elaborate and beautiful exhibits on pollinators that NAPPC prepared for display at the Botanic Garden in Washington DC until October 11<sup>th</sup> of this year. Individual displays feature pollinators from wind, through insects, to birds and bats. It is too stunning to ignore. Color photographs of pollinators were solicited from around the world. One of Gail Bromenshenk's (Jerry's wife) gorgeous honey bee close ups was chosen for the display. Each of the daily 700 visitors to the area are offered a poster sized folder, with pollinators on the front and descriptive text on the back. Hopefully, the message will sink in and many legislators will keep pollinators in their minds when they are deliberating environmental issues.

Another promoter of honey bees, Dick Rogers from Canada, shared his affiliation with the International Apis Health Assessment Committee (IAHAC - he called "eye hack"). Maintained at Wildwood Labs, Inc., there is a Website that functions a bit like a bulletin board, but it is interactive. If you have something to share

with other interested individuals, you send the info to the site. It is read and reviewed by Dick before he puts it on line for others to see. There is a lot of information at that site. Some is available for all to see, some reserved for registered guests. If you would like to visit the Website, it is: [www.Apishealth.org](http://www.Apishealth.org).

### Focus on Insecticides

Despite the fact that some participants felt that there was a little too much emphasis on insecticides at the conference, Dr. Dan Mayer feels otherwise. Dan is one of the few remaining individuals who has spent decades testing the toxicities of various agricultural chemicals to arthropod pollinators. From the observations and stories coming from the field, Dan feels that the honey bee/pesticide problem may be as "bad" as it was in the 1960's. It appears as though there now is very liberal interpretation or complete dismissal of the label warnings about killing honey bees.

One very frustrated beekeeper, Jeff Anderson from Minnesota, has lost colonies from applications of honey bee toxic sprays to popular plantations. His question

is: "Who is the enforcement agent to force compliance with the labels?" There has been a lot of "buck passing" and no one seems to wish to take direct responsibility. That has pushed the issue into court, where judges now appear to be the ones who will decide how to interpret the labels. The relatively new Montana state entomologist, Patty Denke, said that she would look very carefully into cases that appeared to be pesticide misuse in Montana. (Cont. next issue)

Sincerely,

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