

Nov/Dec 2005

2005 CSBA Convention Review

Highlights of the 2005 CSBA Convention

Fresh on the heels of the Northwest Corner Beekeepers' convention (Oregon, Washington, Idaho) which had over 400 beekeepers in attendance, the California State Beekeepers' Association convention had nearly 300 members and guests in attendance. The number at the CSBA convention was the highest anyone could remember. Apparently, the problems with controlling mites and the desire to have as many rentable colonies as possible for almonds next spring brought many interested people to the meetings.

In a quick report on public lands, Bruce Beekman reported that administrators of the National Forests in California are stressing protection of endangered species. They are more interested in the condition of their lands than in the output obtained from them. Apiary leases are still being handled in the same manner as before.

2- queen colonies

Eric Olson, a commercial beekeeper from the State of Washington, shared his approach to operating 2-queen hives in a portion of his honey producing operation. After almonds, he locates the queen in a colony and splits the brood five frames above and 3 frames below. The old queen

stays below with a single frame of honey and lots of room for the old foraging bees. The new queen gets the rest of the honey, up above a single screen with an entrance for the upper colony. Each colony has a feeder frame in it.

Eric checks the colonies a week following the introduction of new queens installed at the same time that the splits are made. At this time of the year, it is normal to get better than 90% queen acceptance in the upper colony. Both colonies build up very quickly and by May are ready for early crop pollination. Then, it is off to the Dakotas for a honey crop.

Upon arrival, the upper and lower colonies are reversed and supers added. The bottom colony really gets into brood rearing. Then the screens are pulled. About 30-35% of the colonies continue to operate with two queens.

In central Washington, 2-queen colonies are just left the way they are. In western Washington, they usually divide the colonies into two singles. It appears that the 2-queen colonies produce about 1.5X as much honey as two singles in Montana. Also, the colony losses in the Dakotas are about 8% by February, only 6% in the 2-queen colonies from central Washington, but up to 60% in the colonies split into singles in western Washington.

Although Eric practices pretty intensive *Varroa* control (after almonds, before and after apples, and before splitting), he still is not content with the results of those efforts.

Oxalic acid for mite control

University of Nebraska-Lincoln graduate student, Nick Aliano, reported on his studies using oxalic acid to reduce *Varroa* populations. Nick stated that the strong dicarboxylic acid is available in two formulations: anhydrous, that is hard to obtain and dihydrate that is pretty easy to find.

Oxalic acid is a common plant chemical that kills or repels phytophagous arthropods. There can be 300-17,000 ppm in vegetables. It also is found naturally occurring in honey at levels between 8 and 300 ppm.

Europeans have been using oxalic acid for some time in mite control programs, but it is not registered in most countries. Those countries that allow its use decided on 50 milliequivalents of free acid as an acceptable tolerance level in honey. If used as recommended, that criterion is easily met.

Beekeepers can apply oxalic acid by spraying, trickling (preferred European method) or evaporating. They often get up to 90% effectiveness in broodless colonies. Spraying and trickling are done with acid dissolved in sugar syrup. Nick's lab currently is working with our federal government to obtain permission to apply a specific concentration of oxalic acid in sugar syrup to our bees. The treatment will be directed at broodless colonies in autumn or early winter, but when temperatures are above freezing. Although the diluted acid is not too dangerous, rubber gloves and

goggles will be required during formulation and application of the solution.

Nick studied the effects of oxalic acid on mites in this country, to determine if results around Lincoln, Nebraska, are similar to European results. He used only the spray and trickle treatments. In the spray treatments, the boxes were sprayed between the combs from the top and bottom of the supers. The trickle treatments were applied between the top bars from the top, only. Sticky boards were used to determine mite fall and adult bees were processed in alcohol to determine the level of infestation of adult bees.

Both the spray and trickle methods reduced the number of mites significantly (and dramatically) compared to the controls. The spray reduced the mites by 86% and the trickle by 82%. The bees were not affected negatively by a single treatment. Meanwhile, the control mite population increased by 6%.

Since the researchers concluded that the trickle method is quicker and easier than spraying, that will be the application which is recommended to EPA. The estimated cost of treatment is about 4-5 cents per hive. It also was stated that the solution works best when freshly mixed. It loses its effect relatively quickly at room temperature, but can be stored refrigerated for a day or two.

Nick also compared efficacy of mite control with treatments of Sucroside[®] and three concentrations of oxalic acid in sugar syrup. Each comb was removed and sprayed with Sucroside. The oxalic acid solutions were trickled between the frames. All treatments were repeated at three week intervals.

Again, levels of infestation of adult bees were measured before treatments and

two weeks after the final treatment. Interestingly, the levels of mite infestation in the controls dropped off by about 40%. The oxalic acid treatments were better: between 50 and 60% reduction, but not directly correlated to concentration. The levels of infestation in the Sucroside treatment increased a bit. There was no measurable difference in bee or brood populations in any of the treatments.

The conclusions drawn from these latter studies are that: 1. oxalic acid and Sucroside treatments do not work very well when brood is present in the hive and 2. summer bees can tolerate larger amounts of oxalic acid than previously reported in the literature for autumn and winter mite control.

To determine the value of treating packages with Sucroside and oxalic acid solutions, the researchers collected a very large screened box of infested adult bees, mixed them up, then filled 30 packages. In this case treatments were sprayed through the screen onto the bees. Eight hours later, the packages were installed in hives. Adult bee samples were collected and processed in alcohol one and three weeks after installation.

The reduction in levels of mite infestation was 1% for the controls, about 32% for the Sucroside and nearly 63% for the oxalic acid treatment.

A final study to determine how the acid appears to kill mites was conducted using an elaborate system of modified hive components that allowed only vapor, food sharing or individual contact between treated and non-treated mite infested bees. It appears as though the mode of action of the oxalic acid solution is by direct body contact.

Australian bees

George Hansen, a commercial beekeeper from Oregon, shared his experiences importing packages of honey bees from Australia for almond pollination in 2005. George was of the opinion that the border was opened to imports of bees into the U.S. more for political than biological reasons.

There was a need for the bees this year, since “almond bees” were in short supply. Bees from Australia would not be troubled with red imported fire ant (RIFA) that caused so much border crossing trouble with bees from the southeastern U.S. states.

The bees were shipped in wooden/screen package boxes, very similar to the ones we see around the U.S. except that they were reinforced with diagonal lath strips across the screens. The packages were palletized and set on metal sheets so that the loads would move well along areas with cargo rollers. Sugar syrup was shipped in “walk through” feeder cans with small holes near the upper edge of the can. A few cans slopped syrup and the bees got stuck in it and died. The only other problem was heat when loading at Sydney and when being moved to trucks in San Francisco. The 4-pound packages had more heat problems than did the 3-pounders.

Since time was short in many cases, the \$100-120 packages were installed in the orchards. The hives were opened, frames removed and the packages set in the hives for four days. Then, the feeder cans were removed and the packages laid on their sides, on the top bars (empty super added), so that the bees would crawl out slowly and stay in the hives.

It didn't take long for the liberated

bees to find food sources and begin building up. They really went to town and proved that “late season” bees can act very much like “early season” bees under good flight conditions. The three and four pound packages developed at about the same rate. They had filled two deeps with bees by two weeks after almonds.

It appeared that the Australian queens and bees were as productive as their U.S. counterparts. However, it was not a good idea to install the bees directly onto foundation. The bees immediately moved the syrup from the frame feeder into the few drawn cells and left no room for brood rearing. There may have been a bit more chalkbrood, but there was no worry about *Varroa* or small hive beetles arriving in the packages. This year, George and other beekeepers requested delivery around October 1, 15, and November 1. The bees started rearing brood immediately, but not with nearly as much enthusiasm as they did last spring.

Fungus for mite control

Dr. Frank Eischen, from the USDA/ARS bee research lab in Weslaco, TX, related to the audience what he knows about these studies. Frank was not directly involved with the development of the fungal strains used in these studies, but he has worked in the field with some of them.

The original researchers in this project, Dr. Rosalind James and Dr. Lambert Kanga began the work at the Weslaco bee lab. Now, Rosalind is at the non-*Apis* bee lab in Logan, Utah, and Lambert is at Florida State University. Their preliminary studies determined that strains of fungi in the genera *Metarhizium* and *Hirsutella* killed varroa mites. However, the spores of *Hirsutella* were too sticky to formulate into

a control material. Thus, *Metarhizium* was selected for further study.

In order to get enough inoculum for further studies, the researchers went into partnership with Sylvan, a mushroom growing company. Sylvan desires to get the product on the market. Early trials with concentrated dust formulations showed that they negatively affected the bees. However, lighter dust and strip formulations did not control the mites as well.

To accelerate the process of getting the fungus on the market, Sioux Honey purchased a data packet on the fungus from a company that sells the fungus for other uses. That avoids the time and money involved in all the human health studies.

Field studies were conducted in the winter of 2004. Unknown to the researchers, Sylvan had decided to substitute a different strain of fungus, since the researcher-selected strain did not produce spores well in culture. About that time, Rosalind left Weslaco, as did her supervisor, Dr. Walker Jones. The new Research Leader, Dr. John Goolsby, was pressured by beekeepers and industry leaders to get the product on the market.

In 2005 tests started in March. Colonies had to be found with medium levels of mites. Too few mites provided poor statistical analyses. Too many mites overwhelmed the system and drifting became a problem. By June, plastic strips had been designed and the serious studies begun.

Unfortunately, there wasn't very much difference between the controls and the treatments. Only CheckMite+[®] and Apiguard[®] made a significant dent in the mite population. Apiguard did best. The fungus spores died after being removed from the cultures. The ARS budget was over-

spent and the results were poor. But, there is another study currently being run in Florida.

Frank said that many companies have some trial acaricides they would like tested, including: Vita, Wellmark International, Bayer, and Arvesta.

Locating your hives

Dr. Jerry Bromenshenk, professor at the University of Montana, Missoula, described the latest iteration of electronic equipment that can be used to label and find your beehives.

His newly affiliated company, Bee Alert Technology, Inc., has a product, called HiveMarker[®], which is a small transponder that reacts to a signal sent by a transmitter/receiver. The transponder can be programmed to provide your name and address as owner of the equipment. The receiver has to be within about 5-12 feet of the tag in order to read it, but as you may have seen on the television advertisement, that is good enough for the lady sitting at a desk, in the middle of the highway, way out in the desert, to tell the lost truck driver where the shipment is supposed to be delivered.

The second tag, HiveTracker[®], is a battery operated, “active” system that periodically sends a signal (radio beacon) all the time. That signal can be detected from at least 1,500 feet away on the ground and from about a half mile in the air. The replaceable battery in the tag will last about 7 years, if the timing of the signal has relatively large intervals. The tag also includes a motion detector. When moved, the tag beeps very rapidly for a while, then settles down, again. With this equipment, one could monitor bridges, border crossings, growers’ gates, etc. (receiver is still quite

expensive) and tell whose hives just went by. If you wish to find out more about these systems and determine how much it might cost to use them, call Bee Alert Technology at (406) 541-3160. The U.S. Army related that it would match any money put into the project by beekeepers over the next six months.

Jerry also is working with the military to develop an infra-red laser to detect honey bees flying over explosives buried in the soil. Training the bees to fly over the spots has been accomplished. Fine tuning the electronic equipment to detect the flash from only honey bee wings, beating at a specific frequency and their related harmonics, is supposed to be near completion.

Cost to operate a hive of bees

John Miller, commercial beekeeper from CA, entertained the audience with a presentation on how much it might cost two different beekeeping operations to run a hive of bees for a year.

He pointed out that investing in quality equipment and repairs did not cost that much more, in the first place, but saved a lot of aggravation and extra expenses over time. While John’s demonstration figures were about \$200 a year for the low input beekeeper and \$275 a year for a high input operation, John admitted afterwards that an expense of approximately \$125 per colony was closer to reality. A subsequent speaker, Dan Cummings, who owns almonds and bees, concurred on that figure.

Pollination Brokers

Unfortunately, I had the opportunity to listen to only one of the panel members and take notes. Lyle Johnson has a crew of nine helpers who help him inspect and grade

at least 15% of the colonies that will be under his watch. If there are weak ones, they are left behind, not put into the orchards as “extras.” Lyle tried to cut back on the number of growers with whom he was in business (44 – 19 = 25), but they wanted more bees each, so the total number of colonies remained the same. Lyle is handling around 50,000 colonies and he is charging the growers \$140 a hive for these graded colonies.

Almond Board of California

Chris Heintz, Research Director for the Almond Board, summarized the almond industry and the Board’s involvement in pollination research over the past decades. She related that virtually 100% of U.S. almond production occurs in CA. We ship about 70% of our crop overseas. There are about 5,500 growers and 550,000 bearing acres – about 100 acres per grower. However, just like beekeeping operations, some growers have a huge chunk of the action and some are minimally involved.

Bearing acreage climbed from a little over 300,00 in 1980 to the current 560,000. Optimistic projections for the future have over 750,000 acres in production by 2010 and, perhaps, nearly 850,000 by 2012. If these numbers hold, there will be a need for 1.5 million honey bee colonies in 2010 and over 2 million by 2012. Obviously, the almond industry is very interested in the health of the U.S. honey bee industry and its continuance into the future.

The Almond Board assesses the growers each year and uses a portion of those funds for research. For many years the research dollars stayed close to home, most of them at UC Davis. However, when problems developed with honey bees nationwide (infestations of exotic mites), the Almond Board reached out to other institu-

tions and agencies to try to find solutions to honey bee problems and other areas of interest. The Board has contracted with three universities and USDA/ARS labs for honey bee research. Research topics have included: 1. Africanized honey bees, 2. alternative pollinators, 3. pollination enhancements, 4. honey bee diets, 5. various approaches to varroa mite control, 6. ways to monitor for red imported fire ants, 7. small hive beetle, 8. effects of fungicides on bees, and 9. American foulbrood disease. In the last fiscal budget, 17% of the annual \$788,047 budget was devoted to honey bee studies.

The Almond Board shares those research results with the growers at the annual Almond Industry Conference. This year that meeting is scheduled for December 7th. Presentations on pollination will be presented from 1:45-3:15 PM in the Stanislaus River Room in the Modesto Centre Plaza (connected to Double Tree hotel). Following the presentations, there will be a special session on “Bee Supply: Bloom, 2006 and Beyond,” from 3:30-4:30 PM in the same room.

Red Imported Fire Ants (RIFA)

This topic must be pretty important, because it was covered by three different regulatory speakers (Gary Leslie – CDFG; Carla Markmann – CDFG; and Richard Price – Butte County) at the convention. In essence, RIFA has been carried to holding yards and orchards in or on beekeeping equipment in the past and the regulatory personnel wish to prevent further introductions while allowing the flow of hives from around the country for almond pollination.

Some “temporary” new regulations will be tried for the 2006 season. The quickest way to get into the state is to make sure there are no ants associated with your

bees. Have a local inspection and become “certified” by the local inspector **within seven days of coming to CA**. If no ants are detected at the border, the county of destination will be notified of where the hives will be placed, but the bees can be unloaded immediately upon arrival. If one to five RIFA are detected on the load, then the load proceeds to the county of destination under a “008 hold.” An inspector has to be there to check things out as they are unloaded. If the certified load has more than five RIFA detected aboard (using visual inspection and SPAM bait), then the load has to be “cleaned up” at Needles, CA or sent back home. This would also suggest that certification from the state of origin is suspect and there would be some inter-regulatory discussions, immediately. The find of a single “reproductive” (queen) RIFA would mean that the shipment has to be returned to the state of origin under a “limited federal permit.”

So far, 14 states have agreed to participate in the certification program, including seven states known to have populations of RIFA in them. In some states, the “bee program” is seasonal and off-season inspections may be hard to get. In that case, the bees will come in “uncertified” and the delivery process will be delayed at the destination location.

Without certification, no RIFA are allowed on board. An 008 is automatically issued and an appointment has to be made to unload the bees, under regulatory supervision, at the site of destination.

Besides RIFA, there are five other ant species (including the big-headed ant, the white-footed ant, and species of pharaoh ants) and weeds that are of special interest to the inspectors. CDFA has recorded 2,150; 2,160; 2,350; 2,190; and 2,400 loads of bees crossing the border from 2000 to 2004, respectively. The number of shipments delayed or rejected at the border for those

years were: 19; 8; 29; 26; 6; and 30 – less than 2% of the loads.

The suggestion was made that shipments from RIFA regions should be brought through the Needles area (Route I-40) between 8:00 AM and 4:00 PM on Monday through Friday. If anything turns up, it is a short distance to the clean up area.

At the moment, given the “Q” rating assigned to the small hive beetle, if one or more beetles are found on a load, the load will be shipped out of state “under quarantine notice.” If the CDFA rating is changed to a “B” or “C” level, things will be a bit more lenient. There may be some restrictions on where the hives can be taken, but they won’t be sent back home.

Bee Schools

The Sacramento Area Beekeepers’ Association is holding three 1-day beekeeping classes in February and March. The first two classes, 8:00 AM to 5:00 PM, are for beginning beekeepers and are being taught by commercial beekeeper Randy Oliver from Grass Valley. The dates are Saturday, February 25th and Saturday, March 4th, 2006. Hives will be opened and hives examined, so please bring a veil.

The third class, 8:00 AM to 5:00 PM, is taught at the intermediate level for those with experience keeping bees. The instructor is Eric Mussen, Extension Apiculturist from UC Davis. That course is scheduled for Saturday, March 11th, 2006.

All sessions will be held in the auditorium of the Sacramento County Cooperative Extension office at 4145 Branch Center Road (on the corner one block west of Bradshaw Road at Kiefer Boulevard).

Registration fees are \$35 per adult; \$60 per couple; and \$15 for youth under 18 accompanied by paid adult. To pre-register, call Sacramento Beekeeping Supply at (916) 451-2337 between 9:30 AM and 5:15 PM Tuesday through Saturday. The FAX is (916) 451-7008 or you can e-mail sacbeek@cwnet.com.

You may visit with the bee club members at the State and county fairs or join them at their monthly meetings, third Tuesday of the month (except July and August) from 7:00-9:00 PM in the Belle Coolidge Community Center at the

southeast corner of Fruitridge Road and South Land Park Drive in Sacramento.

Sincerely,

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