

Nov/Dec 2002

Revenue Insurance

Assorted CSBA Convention Highlights

Revenue Insurance

Until the end of November, I was not aware that the federal government sponsored programs that dealt with insuring business revenue. However, when the beekeepers heard that such programs might be available, that started the wheels turning. The results were that I was invited, with a distinguished group of others, to a preliminary meeting to describe what beekeeping is about and to discuss how such a program might be set up to cover a beekeeping operation.

In really simplistic terms, we tried to determine an insurance approach that would provide beekeepers, no matter what their beekeeping emphasis, protection against unanticipated, substantial losses of income.

Because there is so much variation in what beekeepers

do, potential policies will have to be very flexible in their make up. We already have heard that premiums are higher dealing with coverage of volatile components (like the price of honey) *versus* things that are a bit more predictable (like pollination or queen sales income).

The one thing that we were not able to provide to the group working on this project was "data." For every type of policy, there is a group of actuaries who put together the data and set the rates.

Since data on pollination income; queen, nucs, and package income; etc. is not readily available, the beekeepers are being asked to submit data to form the data base. If you are interested in hearing a bit more about this effort and what it mean to your operation, then you should help in the compilation of the data base.

But, I imagine the first question that came to mind was, "What will this cost me?" Obviously, we don't know, now. But, what we do know about the program is that the federal government picks up a little over half the premium charged to the beekeeper. Eventually, this type of revenue insurance is expected to replace the NAP (disaster payment) programs that beekeepers sometimes use for catastrophic honey losses due to weather. Weather would be one of the perils covered in this comprehensive approach. It is likely that insecticide damage, losses to pests and diseases, and violent changes in honey pricing would be covered, also.

Does this sound like it is worth pursuing? If so, data like that which you turned in to the ITC not too long ago is needed. If you still have a copy of that data, please bring it to one of the national bee meetings in January. The people who need the data will be there to collect it.

Assorted CSBA Convention Highlights

The extended Beekman family helped President Bob Beekman organize and conduct a very interesting and informative convention.

The first research presentation was prepared by Dr. Medhat Nasr. He conducted the research in New Jersey, where he was temporarily employed on the staff at Rutgers University. Medhat left Rutgers to return to Canada to fill the position of Provincial Apiarist in Alberta Province. CSBA helped support his research. Due to some paper shuffling delays, Medhat was detained at the Canadian border and Eric Mussen had to present his emailed PowerPoint presentation.

Medhat is concerned with the quality of queens being purchased by U.S. beekeepers. He asked bee breeders across the country to submit sample queens to him last spring. Two hundred and fifty-six queens arrived from ten California queen producers. The queens were measured, weighed, dissected and analyzed. The important quality criteria were tracheal mite infestation, *Nosema* infection, and number of sperm in the spermatheca.

The percentage of queens infested with tracheal mites varied among the producers from zero to 20%. Former studies had suggested that mite infested queens tended to be lighter in weight, had fewer sperm, and were poorly accepted. Size and sperm counts in Medhat's samples were not related to infesta-

tion rates. Longevity of infested queens could not be determined, since they were sacrificed.

Percentages of queens infected with *Nosema* varied, considerably, also. Many queens had no detectable infections. But, in some cases, both the queens and their attendants had spore counts in the millions. We know that *Nosema*-infected queens have a life expectancy of about 30 days.

Sperm counts were variable, also. I have been told that a "fully mated" queen begins her egg laying career with about five million sperm in her spermatheca. The submitted samples peaked with averages around four million. Quite a few data sets showed an average of two to three million. Since a queen is expected to lay for two years with five million sperm, it might be anticipated that a queen with two to three million sperm could perform adequately for one year.

Besides these queen quality traits, Medhat asked beekeepers who were observing significant queen failures to send him some sections of combs from the hive in which the losses took place. He sent the wax to Germany for chemical analysis. There were low levels of fluvalinate (probably from

Apistan[®] strips) in the wax. But, the levels of coumaphos (probably from CheckMite+[®] strips) varied from 24 to 50 ppm. The federal residue tolerance for beeswax is 100 ppm. Coinciding with the 24 and 50 ppm were negligible and significant queen losses, respectively. Although these observations did not necessarily prove a cause and effect relationship, Medhat felt that the correlation was quite compelling.

Medhat plans to rear queens and operate colonies on combs contaminated with various concentrations of coumaphos. He will determine if there are demonstrable short-term and/or long-term effects.

Dr. Frank Eischen, stationed at the USDA ARS bee research laboratory at Weslaco, TX, devoted most of his time to discussing the results of studies he conducted on almond fungicides. But, before we look at that information, I should follow up on Medhat's studies with what Frank found when he exposed colonies to coumaphos.

The Weslaco lab generated the data that led to the Section 18 approval of CheckMite+ strips. So, Frank was concerned about the toxic effects he was hearing about. He introduced queens into hives in Texas that contained

coumaphos strips. Queen acceptance was very good and the queens persisted for the rest of the season. Obviously, more work has to be done before coumaphos can be labeled benign or toxic.

Returning to Frank's almond studies that were funded in part with CSBA funds, he took samples to determine how much contamination was returning to the hives in pollen and where it went from there. Frank netted pollen foragers in orchards two hours after the trees were sprayed with fungicides. Pollen pellets contained 73-700 ppm Captan® (previous studies demonstrated that 1000 ppm are lethal when fed to adult bees). Pellets also contained 1-16 ppm Rally® and 10-60 ppm Rovral®. Further collections taken at 24, 48, and 72 hours post-treatment remain to be assayed. Samples also were taken of adult bees, stored pollen, nectar, bee bread and bee food aspirated from larval cells.

Preliminary results show that Captan is highest in pollen loads, then on adult bees. Rally is most concentrated in bee bread, with pollen pellets second. Rovral was highest in pollen, with a little on the bees.

Various levels of Captan were fed to five frame nucs in large flight cages. Each

nuc was populated with a pound of newly emerged bees and a queen. The bees were supplied food and water. Preliminary results showed the following:

Ave. Amt. Of Brood			
Control		807	sq. in.
50 ppm Captan		761	
500	"	"	690
1000	"	"	614
Ave. Weight of Bees			
Control		103 and 112	mg
50 ppm Cap.		104 and 106	
500	"	"	94 and 106
1000	"	"	95 and 98.

In addition to being smaller, the Captan fed bees (in the 94-98 mg groups) had only a three-week life expectancy while the controls lived for five weeks. Brood cappings were peculiarly dark in the Captan hives and some emerging bees had deformed wings and other body parts.

Frank also tried to determine effects of the fungicides on almond fertilization. Bagged branches had flowers emasculated and then hand-pollinated after treatments with various concentrations of fungicides.

Nonpareils open to Fritz and Peerless pollens (controls) were found to have 47% and 25% Fritz and Peerless paternity (by DNA testing). It was expected that they would be close to 50/50, given the orchard planting. However, over 25% of the

pollination occurred with pollen from other orchards.

It didn't take much to interfere with fertilization. Contact with water significantly reduced nut set. But, the fungicides showed even more effect. Reductions by Rally and Rovral were just a bit worse than water, but Captan produced significant changes at concentration of 500 and 2000 ppm. Frank will be continuing these studies with support from CSBA.

Changing from research to applied apitherapy, Reyah Carlson from Ventura County shared information on bee sting therapy. Reyah was converted, personally, to venom therapy when she was not recovering well from compound fractures following a two-story fall. Bee stings on and around an aching knee cap turned the condition around in a relatively short period of time.

Reyah is a registered nurse and certified apitherapist in Kentucky. She recently completed the comprehensive Charles Mraz apitherapy course presented by the American Apitherapy Society. Reyah brought a heart melting video tape of an MS patient who was out of her wheel chair and back on her feet after she began bee sting therapy. Actually, the patient noticed distinct improvement after receiving a

couple stings from wasps, so she concluded that bee stings might be the answer. As is nearly always the case, her health improved gradually as the number of stings was increased. She now is being treated with 20 stings, three times a week. That is quite a dose of venom, but it tends to be the "maintenance dose" for thousands of patients. If they reduce the number or frequency of stings, they often relapse.

Again, it was reiterated that there are no long term debilitating side effects of venom therapy. Conducted in accordance with accepted "standard protocol," most patients encounter few difficulties other than local discomfort. That decreases with time, also. Judicious patients always will have epinephrine on hand, but it just isn't used.

Quite a few patients do "suffer" what the practitioners call a "crisis." That is welcomed with optimism as a sign that healing is really taking place. Actually, many beekeepers and I have experienced this type of response to multiple bee stings outside the realm of bee sting therapy. The reaction to the venom is systemic. But the details vary from person to person. Some become quite nauseous. I had unbelievable chills. Some have symptoms so similar to anaphylaxis

(hives, incontinence) that it is really scary. But, it is a one-time phenomenon.

Usually, after six weeks, the stings don't bother the patient nearly as much. However, patients agree with beekeepers that spring and fall stings hurt more (stronger venom?) than summer and winter stings.

In response to a question about what conditions respond best to bee sting therapy, Reyah replied that autoimmune diseases like MS, lupus and rheumatoid arthritis respond best. Results with postherpetic facial neuralgia have been excellent. Now, they are just beginning studies on Parkinson's disease.

Previous to treatment, patients are questioned aggressively to rule out latent venereal disease and tuberculosis that may be activated by the changes in the immune system as it takes on the venom components.

In order to get the desired results from apitherapy, the patient is apt to have to make some life style changes. Diets have to be wholesome. Alcohol is to be avoided. Vitamin levels have to be kept high. Honey, pollen, royal jelly, and propolis are apt to be prescribed. Over the counter medicines have to be curtailed. Prescription

medications, taken to suppress the immune system, have to be discontinued.

This dramatic change in treatment regime must be discussed with your physician. He or she is likely to recommend strongly that you do not change your regime. Politely explain that you are going to give it a try and you want to have the person who knows your condition best to continue monitoring your health. It will take months to obtain maximal results of venom therapy, but incremental changes should occur earlier. Both you and your physician will want to know how things are progressing. And remember, just as no one prescription medicine is perfect for everyone, bee sting therapy isn't the answer for everyone, either. But, it sure is worth a try!

A three-member beekeeper panel described the components and methods they use to feed pollen substitutes to their bees. There were no surprises, but numerous hints. If soy flour is going into the mix, be selective. Honey bees eat some products, readily, but refuse to eat others. NutraSoy[®] was noted as attractive to bees. Brewer's yeast usually is acceptable to bees, but Brewtech[®] was the only named product. The sugar syrup used in the patties differed, with one beekeeper using L₅₀ (partially inverted sucrose

syrup). A second beekeeper used sucrose syrup. The claim was that substitute is digested better if the bees are not consuming high fructose corn syrup (HFCS). A third tip was to add a little vegetable oil to the mix to bring the final level to about 4% lipids (especially if solvent extracted soy flour is used - that has <1% lipids).

And, finally, water. I am sure that most of you have never seen this, but water sitting in a barrel long enough turns "black and stinky." But, the bees still use it. To provide better water, one beekeeper hauls a 275-gallon plastic tote to the apiary. In the heat of the summer, that tote will be emptied in a week! To keep the microbes at bay, the water is chlorinated as if it were a spa. Using a floating holder for one-inch tablets, the chlorine has to be replenished every three to four weeks.

The delivery devise is a metal pan with a poultry water level float valve. Sticks or stones keep the bees from drowning. A tent-like wooden cover straddles the pan and keeps "stuff" from getting into the water.

We spent a day visiting nearby beekeepers' warehouses. We saw how-I-do-it for all sorts of things,

including trapping bears. There is no way that I can describe all that was said and seen. If you didn't get one or more tips on how something might be done better (with all the discussion that followed the demonstrations), then you weren't paying attention. One example: while stainless steel plumbing for honey processing costs more than food-grade plastic, it cleans up so much more quickly and thoroughly, it is more than worth the extra expense.

Back on the research front, Dr. Gloria deGrande-Hoffman, leader of the USDA ARS bee research laboratory in Tucson, AZ, described the current research efforts at the lab. One mission is to develop a liquid pollen substitute "diet" for honey bees. In cooperation with another ARS in MS, they have modified a previous insect diet so that bees will eat it. They rear brood on it as well as they do on pollens. But, it is prohibitively expensive as currently formulated. The lab hopes to find inexpensive components to meet the nutritional needs. They also hope to formulate the diet into patties and include essential oils for AFB control.

With the assistance of a visiting chemist, "compound H" has been extracted from bees. It is as toxic to

Varroa as Apistan[®]. The same chemist has taken a look at the volatile body odor of virgin and laying EHB, AFB, and AI (artificially inseminated) queens. They all smell just about identical, except laying EHB queens. Those queens have a very different smell that increases and decreases very rapidly with increasing or interrupting egg laying, respectively. The pheromone concentration also varies with the seasons. And guess what? AHB workers have some queen pheromone and those

lovely AHB intercaste clones (or pseudoqueens) have a pheromone profile nearly identical to laying EHB queens.

Sincerely,

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