

January/February 2001

CheckMite+, 2001

Honey Loan/LDP

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CheckMite+® Available, Again

Word has reached me that CheckMite+ anti-Varroa strips, active ingredient coumaphos, can be purchased and used beginning March 1st, 2001, and ending February 1st, 2002. Hopefully, before the ending date on the Section 18, the product will be available as a Section 3 material, and all the extra work to use it legally will not be required.

However, this means that you will have to go to the Agricultural Commissioner's office to get a printed copy of the "label," before you can start using the strips, again. I believe there may have been some modifications to last year's instructions, so be sure to get the new instructions and follow them completely.

Fleeting Monetary Assistance

According to a letter that I received from the American Beekeeping Federation, your county

Farm Service Agency now should have copies of the instructions for how to process a loan or loan

deficiency payment on your honey. Theoretically, they should be able to write you a check as soon as March 6th. However, **you will have only 30 days from the date the program regulations are published in the Federal Register (probably around March 1st) to make your application.**

What you decide to do depends upon your individual situation. If you have 2000-crop honey under loan in the Old Program, you have two options. If you already sold your honey, you have two options. If your honey is neither sold nor on loan, there are still two options. So, it behooves you to get to the nearest Farm Services Agency, discuss all your options in detail and make the decision that seems best for you. Don't procrastinate!

Amitraz and Tracheal Mites

This spring (we have no real winter in the lowlands of California), there have been reports of significant losses of colonies in some beekeeping operations. Similar losses last year were attributed to *Varroa*

mites, since many beekeepers did not use coumaphos (CheckMite+®) strips and the mites were known to be showing resistance to fluvalinate (Apistan®) strips.

This year, beekeepers who did use coumaphos strips still are losing bees. Colonies with very large fall populations of bees started to decline in early winter and have been going down hill since. So, what might be the cause? I think it may be tracheal mites, but I'll start this exposition earlier in the beekeeping year.

The bees that are going to be the "winter" bees, and therefore also the "almond" bees, are reared in August, September and October. They have a lot of company at that time, because many of the peak population of "summer" bees are still around.

To get the most bees for winter, four things are critical: 1. the queen must be capable of laying lots of eggs; 2. the brood nest area has to have adequate empty space to allow substantial brood rearing; 3. pollens and nectar must be available in abundance; and 4. the immature and

newly emerged bees must not be infested with mites.

I'm not going to describe a good queen. You know whether or not you are working on having good queens. Brood nest space is pretty straight forward, too. If it has been a good honey season, especially near the end, the brood nest area may be filled with honey and pollens, leaving very little room to rear replacement bees for the winter. You have to look into the brood nest to determine the amount of space available.

Abundant pollens and nectar are pretty hard to find in fall in California. Usually, you know if they are available because the bees really "brood up." If they are not brooding up, then it is likely that feeding pollen substitute and sugar syrup is necessary, if you want to have good bees into the next spring.

It is poor mite control that appears to be causing quite a bit of the winter loss problems. Since coumaphos currently is doing an excellent job of subduing *Varroa*, I am going to direct my comments to tracheal mites.

Given the opportunity, tracheal mites move into one-day-old adult bees (workers, drones, and queens) and raise their families until the time that the bees begin to forage or leave the hive for prolonged periods. Then the mites move to new, very young bees. The consequences of being a

host bee are a decrease in hemolymph proteins, a reduced ability to produce royal jelly, loss of the ability to fly, and a reduced life span. Together, this damage leads to colonies with limited brood rearing, inadequate replacement of summer bees that will die going into or during the winter, reduced population levels or colony death.

Is this a predictable consequence of having tracheal mites in a colony population? No. But, if you read the papers on tracheal mites from the late 1980's and 1990's, you will find a definite correlation between elevated infestation levels and colony losses.

How are these losses prevented? There are a number of bee breeders who have spent a lot of time (means money) on selecting for stocks with reduced levels of tracheal mite infestations. Perhaps those stocks should be used for requeening next time.

Most beekeepers use "grease patties" in their colonies, year 'round, to keep infestation levels low. The patties, formulated of one part vegetable shortening mixed very thoroughly with two or two and a half parts of sugar, are consumed fairly well, especially if they are rolled thin, like crepes. They must be in constant contact with the cluster in order to coat the bees with a layer of lipid that interferes with tracheal mites trying to find a

suitable new host bee. Terramycin® can be blended thoroughly into the sugar, to make "extender patties," but the medicated patties should be used only for a short while in the spring and fall, when infection with American foulbrood is most likely.

Grease patties will not subdue an elevated tracheal mite infestation. In fact, occasionally, tracheal mite populations explode in an apiary, despite the fact that the patties are there. Unfortunately, the beekeeper probably won't notice the difference until well after the damage has been done and colonies are being lost. Years ago we recommended that beekeepers sample their bee populations routinely and treat when necessary. Very few beekeepers monitor tracheal mite levels in their colonies.

The only legal, chemical tracheal mite treatment in California is menthol. The menthol fumes reach appropriate treatment levels, with the menthol on the top bars of the combs, when outdoor temperatures stay in the 70-80 degree range. Below 70 degrees, the bees can work on the fumigant container and seal it up with propolis. From 80-90 it is best to have the menthol on the bottom board. Temperatures above 90 will produce too high a concentration of fumes. Bees and queen get run out of the hive, with frequent loss of the queen.

Hopefully, formic acid gel will become available in California. Currently, it is not registered here and even if it was, formulated product is sporadically on and off the market. Tracheal mites are very susceptible to formic acid and it controls them well. Beekeeper tissues also are very susceptible to formic acid and the non-formulated chemical has to be handled with proper, relatively expensive safety gear.

Discussions with beekeepers lead me to believe that many of them think that amitraz is an effective chemical for controlling tracheal mites. This idea may have originated when another, no longer available, plastic strip called Miticur[®], was registered for tracheal mite control. The active ingredient in that strip was amitraz.

If you remember the history of that strip, it was supposed to knock back tracheal mite infestations. However, one or more large beekeeping operations lost very large portions of their operations when the strips failed to control the mites. The beekeepers sued the chemical company for the losses and the strips were removed from the market.

A thorough reading of many papers dealing with control of tracheal mites with amitraz (Ovasyn[®], Mitac[®], and Taktic[®]) reveals that very few studies resulted in good control, if the amitraz was introduced as a

contact treatment. Many authors had no luck reducing infestations, unless the amitraz was used as an aerosol spray or as a burning "fume strip."

Therefore, beekeepers who have been relying on amitraz to control their tracheal mite infestations have not been getting the results that they desire. There was a time when amitraz did control *Varroa* mites effectively, but continued use of amitraz for tracheal mite control (?) led to selection for resistance to amitraz in *Varroa* mites, simultaneously to the selection for resistance to fluvalinate.

So, this winter, it appears that something prompted a resurgence of tracheal mite outbreaks in some beekeeping operations. Treatments with amitraz made little difference and the colonies collapsed. It is time that the industry spread the truth about amitraz and tracheal mites: **contact applications of amitraz (and its miniscule fumigant action) do not control tracheal mites.**

Bears (from Nov. CSBA Conven.)

A show of hands survey of the beekeepers in the audience of the SCBA November convention revealed that about 50% of our members have had a problem with bears in the last year. Apparently, the state bear population was hoped to level out at around 17,000 in the mountains and upper foothills. But,

it appears like the population is approaching 25,000 and there is not enough "wild" area for them. Black (brown) bears used to be pushed way up into the mountains by the grizzlies, but that species is gone from the valley. Black bears are seen at lower and lower elevations, especially in areas with oaks, and they are causing more property damage than ever before. State biologist Lauren Colton shared some interesting insights about bear behavior.

While we hear about "hibernating" bears, they really aren't totally conked out. The females stay dened up when they are pregnant, but the males (especially the "skinny" ones) tend not to hole up at all. In the spring, bears eat succulent forbs and later elderberries and *Manzanita* berries. This diet is a bit short on protein, so bears search for hiding fawns, goats and sheep. In summer, bears eat about 90% veggies and 10% grubs (larval honey bees are a great grub substitute). In the fall, bears fatten up on acorns. They lose only about 5 degrees of body heat when they "hibernate," so they don't really hibernate. Warden Dana Finney described the various levels of bear interactions with humans, according to policy: 1. see one; find footprint, scat or hair 2. repeat sightings, but no real contact, 3. getting into things, like beehives and peoples' vehicles or cabins - no fences = no deprivation permits, 4. attacks on livestock (assumption of

fences) - deprivation permit (deprivation usually provided by a "trapper"), and 5. attacks on humans - they try to hunt it down, immediately.

Bears used to be trapped, tattooed and moved somewhere else. Fish and Game won't do that anymore, but the Park Service still does in some cases.

Apimondia 2001

It really doesn't seem like nearly two years ago, when we went to Vancouver for Apimondia. But, the next Apimondia XXXVII International Apicultural Congress, held under the auspices of the International Federation of Beekeepers' Associations, is meeting in Durban, South Africa, from October 28th to November 1st, 2001.

Dr. Robin Crewe, Dean of the Faculty of Agriculture and Biological Sciences, University of Pretoria, and Congress President has a hard working Organizing Committee that is putting together a very interesting meeting. Pre- and post-meeting tours of 4 to 10 days are available, each including at least one "beekeeper" stop.

Most things that you would like to know can be found on their web site: www.apimondia2001.com. If you wish to contact the organizers, you officially contact the Congress Secretariat. It is likely that you will talk to Cilla Taylor or Ammie Wissing. They anticipate conversing in English.

Their telephone is: 011-27-(0)-12-667-3681; their FAX: 011-27-(0)-12-667-3680. To email: confplan@iafrica.com.

The coordinators suggest that you arrive on Saturday, October 27th. Registration begins on Sunday morning at 10:00. The Opening Ceremony is at 4:00 pm on Sunday. The congress closes at 5:00 pm Thursday, November 1st. "Nationals from most Australasian, European, South American countries, UK, USA, and Canada do not require a visa for South Africa." If you are going to visit outside the cities, it is a good idea to get an anti-malaria treatment before leaving the states. Your US dollar is expected to be worth about 7.5 African Rand (ZAR), unless things change a lot.

Registration for US citizens (called "delegates," when you attend) will be \$370 before June 10th. It increases to \$450, thereafter. Companions register for \$170, or \$180 after June 10th. There are "Companion Outings" during the Congress for those who aren't so enthralled with honey bees. If you decide to register, be aware that there are up to three separate forms relating to the Congress that you need to send: 1. Congress Enrollment Form, 2. Tours and Accommodation Form, and 3. Contest Registration Form, if you are so inclined. As might be expected, there are hotels that are relatively expensive, and those that are more reasonable.

Get your reservations in early, if you wish the less expensive accommodations.

1 lb. Squeeze Bee

Jeffrey Hand, of The Honey Bee Container, Inc., has brought a new, plastic honey squeeze bottle to the market. Similar to the well-known bear, this squeeze bottle has a smiling face of a bee on the upper front portion, with a nice flat area centered on the bottom half to hold your label. On the back is another label space at the top and a set of wings on the bottom half. The container holds one pound of honey and fits a flat, 38mm, flip-top cap (also available).

I imagine that you can receive a sample in golden yellow, bright yellow, red and white, by contacting Jeffrey at 149 Patterson Road, Roebuck, SC 29376. The office phone is (864) 476-6229; mobile: (864) 590-5375; and FAX: (864) 476-0295. For email, use: thehoneybeecontainer@msn.com.

New Mite Book

The beekeeping supply company, Dadant & Sons, Inc., just published "Mites of the Honey Bee." The 280 page, hard-bound, 2001 text is edited by Drs. Thomas Webster and Keith Delaplane. Twenty-seven authors contributed chapters on the life cycles of tracheal and *Varroa* mites, pathological effects of mite

infestations, methods of surveying for the mites, and various methods of mite control.

If you have wondered about the value of essential oils in mite control, etc., then you should read the book, because it reviews nearly all of the pertinent literature written on the subject. Additional chapters cover how to deal with mite populations resistant to control chemicals and other mites that we have not yet found in our bees.

Copies of the book are on the shelves at Dadant outlets. A single copy is selling for \$15.95 and the price drops to \$11.95 each, if purchased in orders of twelve or more. If purchased through the mail, there will be an additional shipping fee.

"Protein Energizer"

For decades, beekeepers have been searching for a recipe that would allow them to feed protein supplement and sugar syrup in the same feeder. Usually, the solids would precipitate to the bottom of the feeder, never to be consumed. Or, the whole thing would begin to "work" as the microbes exploded in the highly nutritious medium.

Dale Bauer, a Minnesota beekeeper, also is affiliated with a feed supply company. Thus, he had available to him many nutrient supplements that he could add to syrup. He finally found a mixture that is very high in nutrients,

lasts pretty well in the feeder, and is attractive to honey bees. He calls his formulation Protein Energizer. You can purchase 2.5 gallons of his product (around \$150.00, plus shipping and handling), mix it into 50 gallons of type 55 corn syrup and feed as usual. A quart (around \$30.00, plus shipping and handling) is mixed with 8.3 gallons of syrup. The final cost will be around \$3.00 per gallon of finished feed.

The price is pretty steep for bee feed, so why would you want to use it? Dale lists the times that he thinks would be most economical to use it: 1. spring build-up; 2. brood rearing; 3. queen rearing and cell building; and 4. prior to and during pollination.

In California, I have only heard of it used for queen rearing. Apparently, it is consumed voraciously when natural pollens aren't available for a few days due to inclement weather.

Protein Energizer can be obtained from Bauer Feed & Supply. 134 Willford Road, Kountze, TX 77625, [(888) 650-6898] or FAX (409) 246-4250.

Development of AFB

Two Danish researchers, Camilla Brodsgaard and Henrik Hansen, in cooperation with Wolfgang Ritter of Germany, conducted experiments to determine what influence, if any, adult bees had on development of AFB in

larval honey bees. To do this, second-generation spores from laboratory cultured AFB were fed to 24-26 hour old larvae. In one experiment, various doses of spores were fed, to see if spore number impacted rate of disease development in laboratory-reared larvae. In the other experiments, bulk nurse bees or queen-right colonies took care of larvae that had been fed over a thousand spores per bee.

In the lab, it did make a difference how many spores were ingested. Only about 8.5% of the control larvae died before defecation. Larvae fed only 3, 6, 12, or 96 spores lived just about the same length as the controls. However, larvae fed 1384 spores, averaged only about 6.5 days before death.

By sacrificing the larvae and culturing their body contents, the researchers determined how quickly the AFB multiplied in their bodies. Multiplication was rapid during the whole larval period, then seemed to slow down during the pre-pupal and time beyond periods. "Signs" of disease, detectable by human visual observations, did not appear until four days after inoculation. Bacterial counts reached about 10,000 bacteria per bee during the larval stage. It has been suggested that the bacteria then reach a "stationary phase," where they don't do much, then start up, again. By the time the larvae are fully digested and converted into

bacteria, the numbers top out at around one million bacteria per larva.

It appears that the presence of adult bees does affect the outcome of these studies. Both queenless bees and queen-right colonies detect and remove infected larvae. The first two days, the bees worked at the same speed. Then the queen-right colonies exceeded the others: They removed 83.5% of the larvae leaving 5.5% showing signs of disease, while the queenless bees removed only 49.1% of the sick bees by day 4 and left 20.3% showing signs of disease, two weeks later.

In the adult bee studies, all larvae were provided with a drop of solution, around their mouthparts, that contained 1384 AFB spores. The expectation was that the larva would consume the drop. It appears as though the bees interfered with inoculation, because in the lab study, all the

inoculated larvae died. With adult bees around, 17% survived. Whether or not the attending bees consume the inoculum or protect the larvae in some unknown manner is yet to be determined.

Sincerely,

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