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Small Hive Beetle

Rumors of the presence of small hive beetles in California have been substantiated by the California Department of Food and Agriculture. The beetle currently is rated as a "Q" pest, meaning that it's permanent status as an "A," "B," or "C" pest has not been finalized. An "A" rating means immediate quarantine and eradication, similar to our earlier experiences with the arrival of exotic mites. It is likely that the beekeepers would prefer a "B" rating that allows the Agricultural Commissioner to decide how to deal with the pest.

In this case, the colonies were inspected to determine whether or not any larvae were developing. It was cool (almond pollination) and no immatures were seen. So, the hives had Check-Mite+® strips placed on the bottom boards, under corrugated plastic. This was interpreted as "a treatment approaching eradication," and

the beekeeper was allowed to take the bees out of state.

Small hive beetles have been transported into a number of states in the U.S., but they appear to be most problematic in the southeast where there are high humidities and sandy soils. Beekeepers in those regions have learned how to treat in and around the hives, and how to handle honey and comb debris around the honey house, appropriately. The beetles never quite go away, but they aren't that much of a problem, either.

Day Length and Varroa

Temperate climate honey bees respond to decreasing day lengths by decreasing their brood rearing, in a gradual approach to obtaining their appropriate sized winter population.

An analysis of the data that I presented in my March/April

newsletter, based on studies of annual egg laying in observation hives in Oregon, shows the trend. Egg laying peaked in May (100%). It dropped to 79% in June, 64% in July, 33% in August, 30% in September, and 15% in October.

This means that in order to have a substantial, healthy wintering population of bees, there must be excellent brood rearing conditions at the end of summer.

Using a different approach, what if you wish to have one of those hallowed "eight framers" for almond pollination next spring (actually "winter" according to the calendar). A well-covered frame of bees has about 2,000 bees on it, so an eight framer must have a hive population of about 16,000 bees. If your queen were still laying 1,000 eggs a day in late summer (which she's not), then you would need 16 days of egg laying, followed by 21 days of development time, before the bees emerged. Since not much brood rearing is going on in October, the end of that egg laying period would be around the first week in September. The beginning of that egg laying period would be around the third week in August.

In order for your brood to be protected from *Varroa* mite damage, you would want to have your treatment in the hives at least a week earlier, or the second week in August. That has been my recommendation for years, and many scientific studies have led to the same conclusion.

*Varroa* mite populations build up during the year. When the amount of brood is high, the percentage of pupae infested remains low to moderate. As the summer progresses, and brood rearing decreases, the percentage of pupae infested increases quickly. If the mite population is high, most of the late season brood will be infested. Bees that have been fed upon by *Varroa*, when they were pupae, will at least have lowered protein levels in their blood, severely reduced ability to produce royal jelly, and a significantly reduced life expectancy. Deformed wing and acute bee paralysis viruses kill bees quickly. Is it any wonder that the colony dwindles or dies going into or during the winter?

Late September or October treatments for *Varroa* will kill a lot of mites. But the damage to the bees already has been done and the colony is apt to perish, despite the treatments.

Now is the time to decide what action you will be taking late this summer. Your wintering and early spring populations will be a product of your decisions.

#### Apiary Brand Numbers

Years ago, when the California beekeepers ceased paying apiary assessments, the centralized apiary program ended. The Supervisor of Apiary Projects was reassigned to another program. All office records and text books made their way from CDFA to my storage shelves. And, I told

everyone that the apiary brand number program was terminated.

As is often the case, I was WRONG! If you ask the appropriate question at your County Agricultural Commissioner's Office, you should be able to obtain a copy of Form 63-037 (IPCB, BDC/VPRC 20.20.30). This gives the instructions and application form for obtaining an "Apiary Serial Number Brand for Bee Equipment."

The instructions cover two-thirds of a page, but you fill out the form, write a \$25 check to the proper account, and mail it to a Sacramento address. You have to buy your own branding iron from an outside company, after you are assigned a life-time brand number.

This "service" is available only to "citizens and nationals of the United States." So, there is a statement of citizenship form that needs to accompany the application with "supporting documentation."

The packet includes forms for reporting sales of branded equipment and destruction of branded equipment.

Also included is a two-page summary of "Information for Beekeepers." One interesting piece of information is that the extracts from the Food and Ag Code (Div. 13, No. 465), that relate to bees and packing honey (legal container sizes), can be purchased for \$2 from Supply Service, Department of Food and Agriculture, 1220 N Street, Sacramento, CA 95814. If you aren't up on the current regulations, this

would be a good time to read the rules, again.

### EpiPens Revisited

Many people who know that they are allergic to bee or wasp stings carry a "bee sting kit" with them. While it is essential to have the epinephrine available, it is a bit complicated to follow all the steps for using the syringe properly when you are beginning to fear for your life.

For years, an alternative delivery system has been available for these shots. They are called the EpiPen<sup>®</sup> and EpiPen<sup>®</sup> Jr. The EpiPen auto-injector administers 0.3 mg of epinephrine when used, the EpiPen Jr. 0.15 mg. There is still quite a bit of epinephrine left in the injector after the shot administered. That is because if only the small quantities of the shot were included, they wouldn't be stable very long.

The greatest advantage of an EpiPen is that it can be used through clothing. The carrying tube is opened ("arming" the injector). The pen is taken out, then pressed against the thigh (bare skin or covered). The needle and the measured dose of epinephrine are injected into the thigh automatically.

Despite the fact that a single shot can turn off the symptoms of anaphylaxis almost immediately, the product literature states that the "effects of epinephrine usually last 10 to 20 minutes." Hopefully, that gives

you time to get to medical attention. It does not mean that you are "cured" and won't have any further problems.

If carrying that sting kit is too cumbersome, then contact Dey, Inc., 2751 Napa Valley Corporate Drive, Napa, CA 94558 [(800) 755-5560] and ask for the pamphlet, "Questions & Answers About the EpiPen & EpiPen Jr. Auto-injectors for Acute Allergic Emergencies (Anaphylaxis)." The pamphlet contains specific medical information that might be of interest to your doctor. Anyone can obtain a single copy, or large numbers, of the pamphlets from his or her Dey regional representative. The regional reps are all available through the same toll-free 800 number. Like the sting kits, EpiPen's can be obtained only by prescription. The final complication is that not all pharmacies carry them, and they may have to be special ordered.

### Fumagillin and *Nosema*

It has been quite a few years since I have emphasized the control of nosema disease in this newsletter. Nosema disease was a hot item with me when I arrived from Minnesota, because we had spent years proving that *Nosema* control was much more than worth the investment in medication.

I preached the hardest to the bee breeders. It is one thing to have sick bees that hang around and don't accomplish anything. But, it is another thing to have your queen infected and predic-

tably lost within 30 days, no matter what the time of the year.

California beekeepers, mostly the bee breeders, doubled their purchase and use of Fumidil-B<sup>®</sup> for each of the first four years that I was around. I believe that they are still using the same amount of chemical, today.

I lost track of the product, since I wasn't studying nosema disease, anymore. However, Dr. Tom Sanford, Extension Apiculturist at the University of Florida, Gainesville, became interested in the product and checked into it. He reported his findings in the March 2001 Issue of APIS, Tom's extension newsletter. I have included Tom's article, since it is very informative.

### Fumagillin: The Material that Controls *Nosema apis*

The February issue of *Hive Lights*, (Vol. 14, No.1, pp. 14-15) published by the Canadian Honey Council, contains an article by Heather Clay on fumagillin's manufacture and use. This antibiotic is used to control nosema disease, called a "silent killer," which is often ignored by beekeepers in spite of evidence that it affects colony productivity. However, Ms. Clay says current marketing information suggests that in the United States, use of the material has increased because nosema disease (*Nosema apis*) is being more recognized as an added stress on colonies that also have parasitic mites.

According to Ms. Clay, the Canadian supply of fumagillin is produced in Highriver, Alberta, by Medivet and marketed as Fumagilin B<sup>®</sup>. She quotes Willie Baumgartner, Medivet's owner, that fumagillin was originally patented by Upjohn, a pharmaceutical company (now apparently part of Pharmacia), in 1953. Since it had no apparent value for humans, it was not kept, and in 1957 Abbott Labs patented a product called Fumidil-B<sup>®</sup> for treatment. The Hungarian company Chinon infringed on the patent rights, but Abbott chose to use the company as a source of the material, rather than pursue patent infringement.

Medivet developed an improved product that was more soluble, called Fumagilin B, in the 1980's, according to Ms. Clay. Chinon was purchased by the French company Sunofi, according to Mr. Baumgartner, and later improved the fermentation technology and moved production from Hungary to India. Sunofi has given additional markets to Medivet, which now supplies the United States, Chile, New Zealand, Australia and Israel.

In the United States, Mid-Continent Agrimarketing, Inc. is the main source and sole national and international distributor for Fumidil-B, according to its catalog. Other suppliers market the product under Mid-Con's name. Ms. Clay concludes that a long list of drugs has been tested for treatment of *Nosema* but so far nothing works as well as fumagillin, and the good news is that there has been no reported drug resistance of *Nosema apis* to the material.

According to an article by Dr. Ingemar Fries at the Department of Entomology, Swedish University of Agricultural Sciences, the antibiotic fumagillin kills the active stages of *Nosema*, but not the spores, and its effect diminishes over time.

Experiments show that even when fumagillin is administered both in autumn and spring, infection levels might still be harmful. Wintering bees on clean or disinfected combs is, therefore, advisable with or without medication.

A simple way to make combs free from viable *Nosema* spores is to use acetic acid, according to Dr. Fries: "A 60 percent solution can be used for this purpose, with approximately 2 ml per litre volume to be treated. The acid is put on top of a stack of boxes in an empty box that is closed with a lid. The acid is allowed to remain in an open container on the combs until it has evaporated or until the combs are to be used again."

Dr. H. Shimanuki in the 1992 edition of *The Hive and the Honey Bee*, published by Dadant & Sons, Inc., (p. 1102) alternatively suggests 80 percent acetic acid and after fumigation, equipment be aired at least two days, preferably a week before use. He also admonishes beekeepers that decontamination of equipment will be negated if beekeepers hive infected package bees, or transfer infected bees on combs, to treated equipment.

## What is a Pesticide?

That question is answered (according to California laws) on a Consumer Fact Sheet, with that title, published by the California Department of Pesticide Regulation. I'll include excerpts from the Sheet, but I imagine you can find the whole thing, and many other topics of interest, at the DPR web site: [www.cdpr.ca.gov](http://www.cdpr.ca.gov).

"People often think *pesticide* means *insecticide*. Actually, pesticide refers to not only pesticides but many other kinds of chemicals. A *pesticide* is any substance intended to control, destroy, repel, or attract a pest. Any living organism that caused damage or economic loss or transmits or produces disease may be the target pest. Pests can be animals (like insects or mice), unwanted plants (weeds), or microorganisms (like plant diseases and viruses)."

The following are listed as pesticides: algicides, attractants, biocides, defoliant, desiccants, disinfectants and sanitizers, fungicides, fumigants, herbicides, insect growth regulators, insecticides, miticides, microbials, molluscicides, nematocides, ovicides, plant growth regulators, repellents and rodenticides.

"Because most pesticides are designed to be toxic to their target pest - and because any substance can be harmful if used improperly - pesticide use is strictly controlled. Cal/EPA's Department of Pesticide Regulation (DPR) regulates all aspects of

pesticide sales and use, recognizing the need to control pests, while protecting public health and the environment and fostering reduced-risk pest management strategies. The Department's strict oversight includes product evaluation and registration, local use enforcement, environmental monitoring, and residue testing of fresh produce."

## Introducing Queens (IBRA)

Every beekeeper probably has his or her own method for successfully introducing queens into a colony. These methods usually work very well, **except when they don't**.

There is a very well illustrated and comprehensive article on "Queen Introduction" in the Vol. 82, No. 1, 2001, issue of Bee World. This is one of the journals published by the International Bee Research Association (IBRA), 18 North Road, Cardiff, CF10 3DT, United Kingdom. IBRA can be reached by phone at 209 20 372409, by email at [mail@ibra.org.uk](mailto:mail@ibra.org.uk), or through the Internet at [www.ibra.org.uk](http://www.ibra.org.uk).

Doug McCutcheon, long time provincial apiarist in British Columbia, Canada, wrote the article. He covers the topics of Why introduce queens?, Brief History of Requeening, Care of Queens on Arrival, Preparing for Requeening, and Queen Introduction (many methods, including making nucs).

IBRA has published excellent articles in excellent journals for many decades. Many of the arti-

cles can be purchased, individually, from IBRA. Check out their web site for the details.

### Why Honey Works

The following very brief points are taken from a thorough article also written for the Vol. 82, No. 1, 2001 issue of Bee World by Peter Molan. Peter is a researcher at the University of Waikato in Hamilton, New Zealand. His work led to the registration of irradiated honey as an approved antibiotic treatment in N.Z.

Antibiotic properties - It has been known for a long time that diluted honey contains hydrogen peroxide, but there are non-peroxide antibiotics of variable strength in honeys, too. They seem to be at their highest in manuka honey, which is the honey that is registered for medicinal use. The antibiotic components are susceptible to heating, so the honey must be kept around room temperature or it loses its effects. In some cases, honey has been able to heal wounds that would not respond to conventional therapy with antiseptics and other antibiotics, especially where there was antibiotic resistance. The author suggests that honey should be tried on non-healing wounds, wounds that increase in size or develop ulcers or abscesses, skin grafts that fail, and wounds with inflammation.

Immune system boost - It has been known for a long time that a sugar solution often sped up wound healing. That is presumed to be due to a supply of extra glucose that tissues use for repair and

macrophages use for the production of hydrogen peroxide. Macrophages also engulf and digest invading microbes, and honey has been shown to enhance that activity. But, according to Molan, honey also stimulates B-lymphocytes, T-lymphocytes, and neutrophils. All these cells are critical to our immune defense mechanisms.

Anti-inflammatory action - Inflammation is normal and usually helps in the wound healing process. But, if it gets out of hand, too much swelling, too many exudates, and overproduction of collagen fibers can result in significant scarring. Honey tends to reduce the inflammation to reasonable levels and reduces or eliminates scarring.

If you wish to know more about the details of how honey is believed to accomplish these effects, read the article "Why honey is effective as a medicine: 2. The scientific explanation of its effects," pages 22 - 40 (lots of references).

### CMAC 2001 Moved

The CMAC (Charles Mraz Apitherapy Course), sponsored by the American Apitherapy Society (AAS), now will be held at the Drawbridge Inn, Fort Mitchell, Kentucky (Greater Cincinnati Ohio Area) from July 27<sup>th</sup> through 29<sup>th</sup>. The Drawbridge Inn has 505 rooms, three swimming pools, four restaurants, and provides free shuttle service from the Cincinnati airport.

Participants in the course receive fundamental knowledge on the basics of apitherapy. Hands-on training in ethical and safety standards follows, including the best utilization of hive products, both for general health and healing therapy. Topics include Bee Venom Therapy, The Apipharmacopeia, Apitherapy Rules and Principles, and much more.

Course fees are \$150 (\$175 after July 1) for AAS members and \$175 (\$200 after July 1) for non-AAS members. Deadline for registration is July 1. CMAC registration is being handled by Jennifer Conover (937) 364-1108 or email - [AAS\\_office@apitherapy.org](mailto:AAS_office@apitherapy.org).

Hotel reservations (\$69-79 per night) are handled separately at (800) 426-3841.

Sincerely,

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