B-PLUS
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Dept. of Entomology, E. Lansing, MI 48824-1115

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Miticur ® STRIPS HAVING PROBLEMS?

On January 15, 1993 Hoechst-Roussel Agri-Vet Company issued a news release indicating that the large (300 strip) packages of Miticur® (amitraz) should not be used. The news release said to hold the strips, or return them to the dealer for exchange for the smaller (30 strip) packages. At that time there were a few reports from Florida that the strips were killing bees. Since that initial report from Hoechst-Roussel there have been other reports of problems with the strips causing bee mortality. It may be difficult to determine the exact number of colonies that have been killed, simply because there are other reasons that a colony can die...including from high levels of mites that were not killed. If you have questions regarding any problems with this product call Hoechst-Roussel at 1-800-723-6516. We hope that difficulties with the material or formulation can be worked out in the near future.

The second "shoe" to drop concerning Miticur® may be somewhat more disconcerting. There are a number of reports coming in that the Miticur strips are not controlling tracheal mites unless the strips are left on the colonies 6 weeks or more, and then maybe not to a high level of control (90%+). The time of year is important for control as well.

A bit of good news has come in regarding the use of some different formulations of amitraz (the chemical in the Miticur strips) for the control of tracheal mites. It seems that for control the chemical must get to the mites directly, or else stop movement to a new host. The long treatment period needed to control tracheal mites indicates the strips are only interfering with reproduction. Some newer formulations and treatments may be getting at direct control. More information should be coming soon.

TREATMENT TIMING AND MITE BIOLOGY

It is becoming more evident with each new story on treatment failure or colony losses that we have to be more careful of treatment timing. Sometimes we take for granted that if we take a

"pill" all of the sickness will disappear. This is regardless that we took the wrong pill or at the wrong time. The same can be said for the treatment for tracheal mites and varroa mites. But more specifically, treatment may be complicated by the life history of the mites in relation to the seasonal life history of the honey bee colony. Lets start with varroa. They can only reproduce on the developing pupae. Thus, when there is no brood in the colony the number of mites will decline via natural mortality. As soon as the colony starts producing brood the mites do also. The first few new bees produced may in fact have more mites than honey bee larvae that develop later in the season. This could cause these "over-infested" bees to die early. The next pattern is where the bees probably outrun the mites as the brood population grows very rapidly in May and June. Drones, which are now produced in abundance, are preferred to workers as hosts for the young varroa, at a ratio of 3 or 4 to one.

The next stage occurs when the colony stops producing drones in late summer. Then all of the varroa females are forced to use worker pupae at a time when the total brood population is being reduced by the honey bee colony. The consequence is that these pupae become infested with two or more females that lay eggs and these worker bees do not survive. **These were the colony's winter bees!** We can now add to the colony's woes by bringing in additional infested "drifters" from colonies that were dying from heavy populations of varroa. Is there any doubt why so many colonies died in the fall or early winter?

Treatment with chemicals may be currently complicated by the collapse of all of the untreated colonies. These include the feral (wild) colonies, as well as the colonies of beekeepers that did not treat their colonies. If you wait to treat your colonies until after the fall honey flow you may be too late. The influx of mite infested bees from outside colonies, and the movement of mites into the few remaining worker pupae does not leave the colony with a sufficient number of winter bees. It seems that we need to refine our understanding of the treatment times with some very critical studies. As one colony collapses the bees move to other colonies in what could be described as a chain reaction. The French beekeepers have addressed this problem by all treating with Apistan(R) strips at the same time. That apparently allows them to reduce the frequency of treatment to once every third year. I am not sure when during the year they treat, and that could be important as well. The life history of the mite tells us that the best time to treat is when there is no brood. Then all of the mites would be out of cells where a chemical could control them. The possible exception to this would be if the treatment was a good, penetrating vapor that would enter the brood cells. Apistan(R) and Miticur(R) do not control by vaporization, but by contact. This means that the best time to control mites would be in the late fall when there is no brood, yet we have already indicated that by that time the colony may be in serious trouble. Until conditions stabilize, we may have to compromise and treat in August after the summer flow. For those in areas where there is an important fall honey flow these strips then would have to be removed and the supers for the fall honey put on. A later re-treatment after the fall crop of honey was removed may then also be in order.

Tracheal mites complicate the problem for the U.S. beekeepers. Most honey bees in Europe are resistant to *Acarapis woodi*, and the beekeepers do not need to worry about this pest. Here we still do. We have not yet succeeded in completely establishing resistance. (That in itself is a serious research problem. See comments about resistance research below.) Identifying those

colonies that have mites, and to what levels, is also a serious complicating factor with tracheal mites. Sampling for tracheal mites is not easy. For most beekeepers it is just easier to assume that you have mites and treat. Again, research has not been very clear as to the best time to apply any chemical. As the colony increases their brood rearing in the spring the percentage of bees with mites goes down. Possibly the mites are not keeping up with the growing honey bee population. It seems that this is just the best time to hit the mites, and to knock them down to a level that will take at least a year for them to recover. With perfect hindsight it looks like that is when we should have been using menthol. The spring weather is much more conducive to the proper vaporization of this chemical, and it will kill tracheal mites if the temperatures are right.

Beekeepers have been reasonably lucky with their ability to control the serious bee diseases with one antibiotic (Terramycin) that can be applied over a fairly broad time frame. Our mind set is that we want the same thing in our pesticide control of mites. I don't think we can be as fortunate.

Most modern pest management strategies require good monitoring of the pest to know when the level is above an economic threshold. That is, you don't treat until it is necessary. That policy should be used for at least the varroa mite. We may need to have some good economic and sampling studies to understand what are these levels. For example, if you put in an Apistan strip for one hour along with a sticky board on the bottom of the hive to sample for dead mites. How many mites do you need to see before it is critical to treat? Do you need to sample all colonies in an apiary, or just some of them? The time of the year that you take the sample would also be important, as the economic level could change throughout the year.

Sampling for tracheal mites is out of the hands of most beekeepers. They will have to rely on the development of resistant bees, or will have to treat prophylactically on a best guess basis. Once we can get the level of tracheal mites below 20 percent in all of our colonies I think that this pest will be of little concern.

MITE RESISTANT HONEY BEES: CURRENT STATUS

The U.S.D.A. Baton Rouge Laboratory will release a stock of bees, originally from Yugoslavia, that is "resistant" to tracheal mites, and to some extent to varroa. There have been new importations of Buckfast bees to incorporate their apparent resistance to tracheal mites. We were looking at the resistance to these mites in the Sierra queens from Arizona. Unfortunately that research was dramatically terminated this past week by the effects of varroa. It would appear that in the future we will have to selectively control varroa while we search for tracheal mite resistance. Then control tracheal mites as we look for varroa resistance. Some resistance to varroa is conferred with hygienic (house cleaning) behavior. To select for this trait yourself just freeze some sealed brood for a day. Then insert a 2 in. square of this dead brood into the center of a brood frame. Good hygienic bees will remove these dead bees within 24 hours.

LYME DISEASE AND BEEKEEPING

Lyme disease was identified in 1975, after a high frequency of arthritis was found near Lyme, Connecticut. Outbreaks of Lyme disease are rare, but increasing. Although anyone outdoors can get the disease, beekeepers are considered prime candidates because the often work in areas where ticks are found.

The organism causing Lyme disease is the spirochete, *Borrelia burgdorferi*, associated with various species of ticks. There are several main reservoirs of Lyme disease in nature. The white-tail deer and the white-footed mouse are primary hosts. Other mammals may also harbor the disease.

The major problem with lyme disease is difficulty in diagnosis. Symptoms can mimic other conditions or worse, not be present at all in the early stages of the disease. It makes it important to recognize tick bites, and bring to the attention of a physician the link between symptoms and tick bites.

Typically, there are several phases of Lyme disease. The first symptom may be erythema, an enlarged ring of redness surrounding a central puncture, the site of the tick bite. It usually disappears after four weeks, but can last for months. A rash usually surrounds the bite. It may not itch, but may feel warm to the touch and is often followed within a week or two by flu-like symptoms including muscle and joint aches, fever and night sweats. Several weeks to months later, the second phase of the disease occurs in about 60 percent of the cases and usually consists of joint pain (commonly in the knees), but also may involve neurological disturbances: headaches, meningitis, paralysis of the facial muscles. Heart problems, dizziness and fainting may occur in some patients. Months, to years later, the final stages of the disease may include arthritis and other disorders.

If any of the above symptoms appear, a test is in order. Unfortunately, diagnostic tests are not 100 percent accurate. Antibodies in the blood may not appear in the blood until four to six weeks after being bitten. Antibiotics taken by the patient will also interfere with the diagnosis.

It generally is not possible for beekeepers to avoid the places where ticks are found. You can use repellents, but ticks will often crawl to untreated areas. The best answer seems to be to carefully examine your body for ticks after being outdoors. Ticks imbedded in the skin should be gently removed by using tweezers as close to the mouth, where they are attached, as possible. Most important is to be aware of any local rashes and other symptoms, and then see a physician.

TALES FROM THE LONESOME HIVE

The LH spent most of 1992 recovering from its very close brush with death from tracheal mites. If you remember, sometime in early April of last year most of the adult bees left the hive in an apparent attempt to cleanse itself of the mites. What remained was the queen and about 1,000, or fewer bees. The 5 or 6 frames of brood that were left in the hive died from the cold as the few

remaining bees could not keep them warm. I reduced the box to the size of a nuc, and was able to supplement the population with a small, early swarm that I captured nearby.

The bees were able to build back up to a fairly respectable colony by late summer, and even stored some honey. Since 1992 was not a very good honey year, in this area, they did not produce enough honey for me to mess up the extractor. The fall weather was even worse than the summer and so we did not have to worry about having the hive get so full of honey that they would not raise any late brood.

I examined the bees on the last week end of March and they look quite good at this time. I removed some of the lower supers and left them with three 6 5/8 in. hive bodies. As soon as possible I will try to raise a new queen in a division and get them started into a two-queen mode. The plans are to try to produce some cassette comb honey this year. We had planned on this venture last year but had to put it on hold because of the tracheal mite disaster. John Hogg, the inventor of the cassette half-comb, and I have had many discussions regarding the ways to produce comb honey. I think that John has most of the right ideas. It is just that I am stubborn enough to want to try with a "single" colony. If I succumb to any of several alternative plans for producing comb honey the whole thesis of the Lonesome Hive may get lost.

FOOTNOTE TO THE LONESOME HIVE

As you have read elsewhere in **B-Plus** the MSU apiary lost about 80 percent of its colonies to T-V syndrome (tracheal and/or varroa mites). A somewhat good sign was that 3 of 4 colonies that had daughter queens from the Lonesome Hive survived. That was almost 40 percent of the survivors! It certainly is too soon to ascribe a lot of resistance to this strain, but it was encouraging. I would be curious to know what happened to the other daughter queens that were auctioned off at the MBA summer meeting in 1991. Did they survive?

PLAYING POLITICS WITH BEEKEEPERS AND HONEY

Members of Congress continue to use the honey loan program for political gain. They call it "one of the least justified programs around." When almost any rational person could look at **ANY** of the other crop-loan programs and see less justification. In the case against honey, the politicians see a way to make a budget cut, and look good to their constituents back home. Regardless of the real economic sense to agriculture in terms of pollination, or even in fairness across all loan programs, certain members of Congress see a way to make political gain. You and I have been much too quiet! We have not spoken out to our friends, local clubs, to fruit grower's organizations, and to our representatives in Congress. We have not sold the public on the basic reasons for the loan program. The honey loan/buy-back program has been the best model of how the program was intended to work when it was established in 1949; orderly marketing of the crop.

All beekeepers have benefitted from the government programs - even if they have never used them. By having a healthy industry the hobby beekeeper is able to buy equipment and supplies at reasonable prices. They are able to have research programs at universities.

We all have benefitted from a stable, healthy beekeeping industry. Yet the whole program is probably going to be eliminated for political gain. Now is the time for **ALL** beekeepers to act. Call and write your Representatives and Senators in Washington. You can get the phone numbers from the Congressional switchboard at 202-224-3121. Be positive but emphatic. The price of honey has supported the industry and to ask, or hope, that the fruit/pollination industry will take up the slack is wishful thinking.

One possible avenue of "escape" could be to ask Congress that if they take away the loan program, then give us some tariff relief from cheap imported honey. The honey industry probably needs about a 20% *ad valorem*, tariff on imported honey to compensate for the $0.10/hr. labor in China. The U.S. Government has argued for lowering tariffs in other countries, but under these circumstances it seems to be the only way to protect an important agricultural industry. One that supports a very large segment of agriculture. We can't import pollination so we need to protect the stability of the pollination industry...one that has historically supported itself by the sale of honey.