

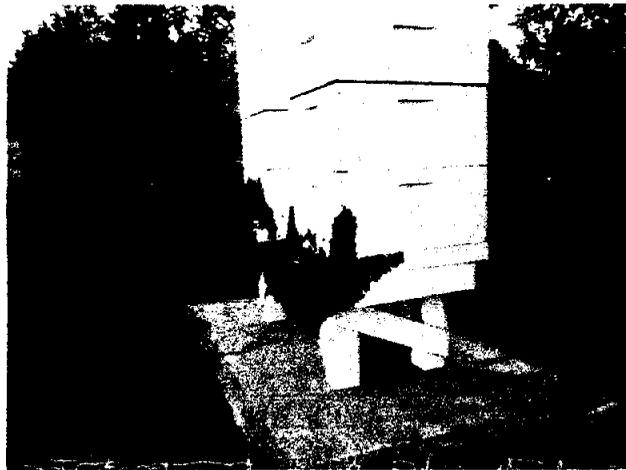
Red River Apiarists' Association

# ***Bee Cause***



Volume 2, Issue 2

February 2000



*Remember when it was that warm out...*

## Meeting Location

**River Heights Community Center**

**1370 Grosvenor St.  
(intersection of Oak & Grosvenor)**

## Meeting Date

**Feb. 15th**  
7:30 PM in the upstairs meeting  
room

Guest speaker(s):

Ted Scheuneman

Topic(s):

Spring hive inspections

Guests are always welcome and coffee will  
be served as usual, byob&b's :)

RRAA Website URL:

<http://www.blazeinet.com/rwayne/RRAA.html>

The *Bee Cause* newsletter is published by the *Red River Apiarists' Association* eight times per year (monthly excluding June, July, August and December).

Membership in the *Red River Apiarists' Association* is \$20.00 per year and includes a subscription to the *Bee Cause*.

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## ***President's message:***

What a GREAT bunch of people to lead the RRAA's Thirty Seventh year. We are now well into the new year, and although last months elections seem long gone, for the new executive, our term is just beginning. My thanks to those who were appointed and elected to serve our members. Thanks also to the more than 25 at the meeting.

We plan to have lively discussions continue to be the norm for our meetings. Although we may not be able to answer everyone's specific issue, we guarantee that other beekeepers can offer ideas to help provoke thinking about the many choices we all have in our favorite industry. Feel free to let us know a topic desired for any meeting.

The Beekeeping Course has begun at U of M, and perhaps we will be able to interest some of these students in joining our discussions and meetings.

Another favorite past time is fast approaching --- TAX Time. I started my preparations on a program called "Quick Tax". This program includes sheets for both Farming and other Business. I love the planning tool which lets me see tax figures for various options I am considering . As a side note, I recently read an article predicting Canada Customs and Revenue Agency (formerly Revenue Canada) may be back auditing farmers. It seems the Feds made NISA payouts as non farm income, thus it may not be used by full time farmers to deduct farm losses. Time will tell whether or not this is just a rumour or fact. Whatever the case, be sure to keep good records to support any audit questions.

See you at our February meeting

Jim Campbell

## ***Editors note:***

Well low and behold the RRAA website is back up again! Who said that Ron takes his time getting things done?

The newsletter is there available for download and I will try to keep at least 3 or 4 back issues there also. The URL again is:

<http://www.blazeinet.com/rwayne/RRAA.html>

If you have something you'd like posted on the website that pertains to our organization, forward it along to me either be email or snail mail. Both the addresses are posted on the executive listing page.

Once again I'm going to ask, if you have an email address please forward it along to me personally at my email address.

Last month's meeting was very interesting to say the least. Daryl Wright gave a presentation on the Varroa mite detection and treatment scenarios. Not enough can be said about this, so we've published a couple of more articles on it in this issue. Thanks for the submissions reporter Ron. The other topic brought up there that I found very amusing was the one of hive locations used by certain beekeepers, hehehehehe, ah well you had to be there to get the full effect eh.

Later Ron

# Red River Apiarists' Association

## MINUTES

January 11, 2000

Rod Boudreau, president called the meeting to order at 7:35PM, 28 members in attendance. Rod announced that the topic for the evening was " Mite control", presented by Daryl Wright

**Motion:** To accept the minutes from the November 9<sup>th</sup> meeting as distributed. (Moved by: Jim Campbell Second by: Herb Schon).

**CARRIED**

### **Business**

Dennis Ross, treasurer, presented the Annual Financial Report

**Motion:** To accept the Financial Report as presented. (Moved by: Ron Rudiak Second by: Ron Wayne).

**CARRIED**

### **Committee Reports**

Rhéal Lafrenière, nomination committee chair announced that all executive offices had at least one nomination and that the 1<sup>st</sup> vice-president position had three nominations. The membership agreed that a show-of-hands ballot would be used to determine the winner of the election. A call for nomination from the floor and the election occurred after the coffee break.

### Elected Executive Officers for 2000

President - Jim Campbell

1<sup>st</sup> Vice-president - Doug Henry

2<sup>nd</sup> Vice-president - Ray Kozak

MBA Representative - Jim Campbell

Newsletter editor - Ron Wayne

Newsletter Reporter - Ron Rudiak

Treasurer - Dennis Ross

Secretary - Ron Rudiak

Jim Campbell, MBA rep, announced that the MBA Annual Convention was going to be held in Brandon on February 7&8 and that further details could be found in the Manitoba Beekeeper Newsletter. Jim also announced that the joint CHC and SBA convention in Saskatoon was going to be held on February 3-6, additional information could be found in the Hive Lights newsletter.

Ron Rudiak, newsletter reporter announced that a Direct Farm Marketing Conference was going to be held in Brandon on February 25 & 26 and he strongly encourage beekeepers to attend.

Chris Argiriou raised the question about distance between different beekeeper bee yards.

### **Evening Events**

Daryl Wright's presentation on Varroa mite monitoring and control options was very interesting. The options presented were based on his over-seas experience as a Regional Bee Inspector in the UK. Although Daryl reported that many of the practices were common place in many countries in Europe, he was quick to note that beekeeping in North America is very different than in Europe and that many of the options he spoke of are not approved for us in Canada.

**Motion:** For adjournment (Moved by: Dennis Ross, Second by: Jim Campbell)

**CARRIED**

Rod Boudreau closed the meeting at 9:30pm.

## **Varroa Mites - Test and control measures**

Daryl Wright

It has been shown that the chemical controls, Apistan and Bayvarol, containing fluvalinate, work with up to 99 % efficiency when used according to the label directions. Although most mites are killed within 21 days, these strips must be left in a honey bee colony for 42 days (through 2 brood cycles) in order to be most effective. The active chemical, fluvalinate, does not affect mites which may be incubating under brood cappings but can kill them only after they emerge with the young bees. Re-infestation of treated colonies is often an obstacle to maintaining healthy colonies where hive density is high within a region. For this reason all hives in an apiary should be treated at the same time. Treatment times should be co-ordinated with other beekeepers in the same area. Formic acid, when used for control of varroa mites, has been demonstrated to be 60 to 90 % effective for this purpose. Formic acid is also effective against tracheal mites and chalkbrood.

When using a natural substance for mite control, beekeepers must check carefully to see whether or not such treatment is effective. Many apiarists have used an essential oil, such as thymol, with varied degrees of success. Oxalic, acetic and lactic acids are also possible to use but may not be effective enough to gain control of mite populations and ensure colony viability. Because these essential oils and acids are found in living flora and fauna, they do not require registration for use.

Another treatment that has found favour among European beekeepers is treating the bee colony with powdered talc, French talc being the best. Every bee within the entire colony must be dusted with this fine powder which increases grooming behaviour. As the mites are cleaned off the bees they fall through the screen of a varroa floor and cannot climb back up to re-infect the colony. After an hour the floor tray is removed and the collected mites are disposed of. Dusting with icing sugar creates a similar grooming activity, although under high moisture conditions icing sugar will tend to clump, loosing its effectiveness.

*(Continued on page 6)*

(Continued from page 5)

In Europe some beekeepers have used homeopathic methods with success. Many of these treatments are claimed to build up resistance and immunity. Anne Proctor in England writes about her methods and claims to be highly successful.

Drone brood trapping, is labour intensive, but can be an effective control measure for varroa mites. To begin this method, a drone comb is placed in the brood chamber in the spring or alternatively an empty frame may be paced in the brood area and the bees allowed to build natural drone comb. When the comb is full of sealed drone brood, it is removed from the colony. The brood is not allowed to emerge but may be frozen for several days or cut out and destroyed. The cappings of the frozen brood are then scratched off and the comb replaced into the colony. The bees will clean out the dead brood and begin immediately to rear more drone brood. When this comb becomes filled with sealed drone brood it is again removed and the brood destroyed. This process must be repeated several times throughout the season to be effective. Watching the calendar is important for this system to work.

Comb trapping is done by confining the queen to a worker comb by the use of a comb cage which is essentially a queen cage which surrounds a brood comb completely. After 9 days the queen is confined to a second comb while the first comb becomes infested with mites. After a further 9 days the first comb is removed while the queen is confined to a third comb. In another 9 days the second comb is removed and the queen is released into the colony. After 9 more days the third comb, on which the queen was confined, is removed from the colony and destroyed. This method, while it can be very effective, is time consuming and requires a high degree of beekeeping skill. Its use must be limited to the end of the honey flow, in early August, to avoid harming the colony or losing a large amount of the honey crop.

Going into winter with a high mite count causes serious problem because it adds additional stress to the colony. Chemical treatment for mites should begin when the last super of honey is removed in the late summer and continued for the recommended time interval. Treatment with formic acid is dependent on weather and temperature conditions for effectiveness. Using only a fall treatment is not recommended because the build up of mites during the summer will have damaged a lot of young bees which cannot survive the winter.

Licensed varroa chemicals do not leave detectable residues in honey provided they are used as directed by the manufacturers. Some treatments, such as the use of Apistan, have been shown to leave residues in beeswax, although these are typically very small (a few parts per million) and are not necessarily harmful. Potential residues are minimized by observing the following simple rules:

- 1 Never treat immediately before or during a honey flow, or while supers are on the hive.
- 2 Do not use more than the prescribed dose.
- 3 Don't apply the treatment for longer than directed.
- 4 Always follow strictly the label directions supplied with all licensed products.
- 5 Do not move any combs from the brood boxes into the honey supers.

## Varroosis - a parasitic infestation of honey bees

### MAFF - Ministry of Agriculture Fisheries and Food (UK)

#### What is varroosis?

In order to deal effectively with either varroa or tracheal mites it is first necessary to understand a little about these pests. The infestation of honey bee colonies by the parasitic mite *Varroa Jacobsoni* is known as *varroosis* (pronounced *varro-osis*). This mite, generally referred to simply as varroa, is specific to honey bees. The natural host of varroa is the Asian honey bee, *Apis cerana*, which has its own natural defences against the mite. Through movement of colonies, varroa has spread to our own honey bee, *Apis mellifera*, which has no such defences. If left untreated, infested colonies will die.

(Continued on page 7)

*(Continued from page 6)*

Since the 1970s varroa has spread throughout Europe, North and South America and North Africa. It was first found in Western Europe in 1977, in Germany. The first outbreak in Britain was discovered in April 1992 in Torbay, Devon. At the time of writing, it is now widespread throughout most parts of England, Europe, North and South America. Only Australia, New Zealand and Hawaii appear to be free from this pest.

It is common for bees to leave full frames of brood and honey when they become severely infested with mites. Ten thousand mites is often enough to destroy a colony.

#### **Varroa biology**

Varroa is an external parasitic mite that lives exclusively on honey bees, feeding from their blood (haemolymph). To breed, the adult female mite enters a brood cell shortly before the cell is capped, where she remains in the brood food until the cell is sealed. She then feeds on the developing bee larva. Mating between mite offspring (brother and sister) takes place within the cell. The male mite cannot survive once the bee emerges from the cell; consequently all mature varroa mites visible within the hive are female.

Mites, if given a choice, prefer to breed in drone brood, yet they are also well suited to infest worker cells of the European honey bee. In winter, when brood rearing is restricted, mites over-winter solely on the bodies of the adult bees within the winter cluster, remaining there until brood rearing commences the following spring.

#### **Mite life span**

During the summer, female varroa mites may live for 2-3 months. However, during the winter or broodless periods, they can live much longer, feeding on adult bees. Mites cannot survive without bees - for instance on combs or equipment - for more than about two days.

#### **How varroa spreads**

Varroa mites depend on adult bees for transport, through the natural processes of robbing and drifting. Although adult drones do transfer mites, the majority of mites are transferred by worker bees. The principal way in which mites migrate, however, is when the beekeeper moves bees over long distances, often unaware of the mites' presence.

#### **Effects on infested bees**

Individual bees infested by varroa during their development normally survive, but suffer a degree of damage depending on how many mites have infested them. Infested bees may have a shorter life than uninfested bees. Severe colony infestation may cause some brood to die in the cells and emerging adults may have deformed wings and abdomens. The reasons for this are not fully understood; however, it is thought that much of the harm results from the presence of viruses transmitted between bees by the mites. Such viruses may be naturally present in many colonies at very low levels without causing any obvious disease. However, in heavily varroa-infested colonies they are sometimes present at much higher levels, and capable of injuring or killing the bees they infect.

#### **Effects on colonies**

The harm caused to infested colonies depends largely on the level of infestation. In the early stages, the low numbers of mites normally have no obvious effect on the colony and infestation will easily go unnoticed by the beekeeper. In time, the mite population will increase until it ultimately reaches a level that the colony can no longer tolerate. At this stage a colony will appear to lose its social organization and disband - a process referred to as colony collapse. The size of the mite population that is needed to cause collapse varies greatly between colonies. However, typically it is several thousand.

#### **Colony Collapse**

Severely infested colonies may show no signs of harm until late summer and may well produce very good honey yields. However, examination of pupae at this stage would show a high proportion of both drone and worker brood to be infested, often with multiple mites per cell. Such levels of infestation prevent the replacement of the ageing adult bee population with healthy young bees. Colony collapse can then occur very quickly,

*(Continued on page 8)*

(Continued from page 7)

frequently within two to four weeks. Many colonies may collapse during August and September, while others may collapse the following spring.

The signs of colony collapse are:

A sudden decrease in the adult bee population.

Very few dead bees within the hive.

Various abnormalities of the brood, often including bald brood, poor brood pattern, neglected and dead sealed brood which may be discoloured brown and partially removed from the cells.

**Be sure to exclude the possibility of these signs being caused by foul brood infection.**

Close examination will reveal numerous varroa mites on remaining bees and in brood cells.

### **Mite invasion**

The crucial feature of the spread of varroa is the movement of mites, frequently in large numbers, from infested colonies into other colonies in the vicinity, spread by the movement of bees between apiaries. This process plays a key role in the increase in the level of infestation. Such mite invasion can occur at any time during the beekeeping season, but is normally most acute in late summer when heavily infested colonies in the area are collapsing.

As colonies collapse, they are robbed by other colonies from within the apiary or from nearby apiaries. It seems that bees from a collapsing colony may abscond from their own hive and return to the hive of the robbing bees. In this way, very many mites can be transferred to the robbing colonies and the influx of mites causes the mite population to increase far faster than would otherwise have occurred.

Experience in the UK so far has shown that in areas of high colony density, with many heavily infested colonies left untreated, the rate of mite invasion has been extremely high and mite populations have built up to critical levels in less than one season, sometimes in only a few months. It is essential to regularly monitor infestation so that sudden increase can be detected and action taken to control it before colonies collapse.

### **Detecting varroa in your colonies**

Varroa infestation may not show obvious signs until the infestation is very severe, by which time it may be too late to save the colonies. Beekeepers must never assume that their colonies are varroa free, but **must** regularly check for the presence of mites.

There are several simple methods that can be used by beekeepers to detect infestation. In each case it will be easier to detect a well-established infestation with many mites than an early infestation with very few mites. Female varroa mites can be easily recognized by their flattened oval shape (1.6 X 1.1 mm) and reddish-brown colour. The bee-louse, *Braula coeca*, which is commonly seen harmlessly living on adult bees may be confused with varroa but can be easily distinguished by its more rounded shape and the presence of legs on both sides of the body.

#### **Drone brood sampling**

1 Select an area of sealed drone brood at an advanced stage (ideally pink-eye or purple eye stage), as this will not disintegrate on removal.

2 Slide the prongs of a honey-uncapping fork under the domed cappings parallel to the comb surface and lift out the pupae in a single scooping motion.

3 Examine the drone pupae for varroa mites - these are easily seen against the pale drone bodies. Repeat until at least 100 cells have been examined.

#### **Detecting natural mite mortality ('mite drop')**

(Continued on page 9)

*(Continued from page 8)*

1 Place a sticky board under the colony, consisting of a stiff cardboard panel covered lightly with a vegetable oil (Crisco shortening).

2 Over this place a rectangular metal mesh panel (3-5 mm mesh) through which colony debris can fall but bees cannot pass, to remove it.

3 At regular intervals remove the debris which collects and carefully examine it for mites.

4 If the amount of debris is large, as for instance in early spring, mites may be very difficult to detect. It can be helpful to mix the debris with methylated spirit in a large container. Wax and propolis particles will sink to the bottom, whereas many of the dead mites will float to the surface.

#### **Using a proprietary varroa treatment for detection**

Many of the proprietary treatments for varroa can also be used for detection and can be very sensitive, capable of detecting very small numbers of mites in a colony.

1 Arrange a sticky board for collecting floor debris.

2 Apply the varroa treatment in the way described in its label instructions. **Follow these instructions closely.**

3 Examine for mites after 24 hours. If none are seen, check again after several days.

#### **Monitoring mite levels in colonies**

Once varroa has been found in an apiary, the beekeeper must **regularly** estimate the level of infestation in the colonies. This is because the rate at which the infestation will increase depends on many factors and will differ between areas and from year to year. This makes it difficult to anticipate in advance how long it will take before the infestation reaches a level where colonies are likely to suffer harm.

by monitoring their colonies, beekeepers can see how the infestation is developing and can use this information to help decide what method of control would be most appropriate and when it should be applied. For instance, if it is found that colonies are becoming heavily infested in spring or early summer, this provides early warning that some form of varroa control will be required before the autumn treatment.

The monitoring methods outlined below are based on the detection methods previously described, but here use the number of mites detected to indicate the infestation level. It is advisable to monitor, if not every colony in the apiary, then at least a representative proportion as the level of infestation may vary greatly between colonies; monitoring only one colony may give results that are unrepresentative of other colonies.

At present it is unfortunately not possible to use a simple rule-of-thumb to determine accurately the varroa population within a colony, or to predict when a colony will collapse. This is partly because the complex biology of varroa infestation is not yet fully understood; and partly because biological and geographical variation means that figures that apply in one region may not always apply in another. A MAFF research project, partly funded by the BBKA, which is due to be completed in June 1997 aims to provide beekeepers with a monitoring method, intended to allow more accurate assessment of the mite population of colonies in the UK.

The experience of beekeepers in Europe, who have been managing colonies with varroa for many years, suggests that the best policy for beekeepers is to become experienced in monitoring mite numbers in their own region at different stages of the year and to learn to relate this information to the degree of infestation and subsequent performance of their colonies.

*(Continued on page 10)*

*(Continued from page 9)*

#### **Assessing the proportion of infested drone pupae**

- 1 At regular intervals, remove about 100 drone pupae with an uncapping fork as previously described.
- 2 Estimate the proportion of pupae that have varroa mites on them.
- 3 As a very rough guide, colonies with less than 5% drone brood infestation can be considered lightly infested, whereas those with 25% and above are severely infested and in danger of suffering collapse.
- 4 At times when there is no drone brood, it is possible to examine worker pupae in the same way. However, as mites have a preference for drone brood, a smaller proportion will normally be infested and this must be taken into account when assessing the level of infestation.

#### **Monitoring natural mite-mortality**

- 1 Maintain the colony with a sticky-board installed for 5 to 7 days so that colony debris can be collected and removed.
- 2 Remove and examine the debris and carefully count the number of dead varroa mites on the floor. Divide the number of dead mites by the number of days the sticky-board was in the colony. This is the daily mite drop figure.
- 3 The number of mites dying from natural causes in a colony is closely linked to the size of the varroa population. However, other factors within the colony also have a significant effect, in particular the amount of emerging brood present. At times when a large amount of brood is emerging, such as in late summer, this results in a correspondingly large daily mite-drop.
- 4 As a very rough guide, very lightly infested colonies may have mite-drop in late summer of less than one per day, whereas very heavily infested colonies at this time might have a mite drop of 50 or more per day.

#### **Examining bees and brood for mites and signs of damage**

- 1 During routine colony inspections, carefully observe adult bees for attached mites. Look for bees with deformed wings or abdomens.
- 2 Examine combs of brood for dead or deformed pupae. Make sure you don't overlook the possibility of such signs being caused by foul brood infection.
- 3 Experience in the UK suggests that once mites are clearly visible on combs of bees and in particular once damage to brood caused by varroa starts to occur, then it is very likely that **colony collapse will occur before the end of the season** if the infestation is not promptly controlled.

### **FURTHER INFORMATION**

For further information contact Don Dixon at (204)945-3861 or Rhéal Lafrenière at (204)945-4285 from the Manitoba Department of Agriculture. They have the latest information available for the detection and treatment of bee diseases and parasitic mites using approved methods.