

The Bee Cause



Volume 9, Issue 2

February 2012

- Next general meeting is 7:30 Tuesday, February 14th at the River Heights Community Centre, 1370 Grosvenor Ave., Winnipeg.
 - (in room right of main-door)
 -
- Speaker:** Summary of the Manitoba Beekeepers Convention by Rhéal Lafrenière

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Multiple Routes of Pesticide Exposure for Honey Bees Living Near Agricultural Fields

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Abstract

Populations of honey bees and other pollinators have declined worldwide in recent years. A variety of stressors have been implicated as potential causes, including agricultural pesticides. Neonicotinoid insecticides, which are widely used and highly toxic to honey bees, have been found in previous analyses of honey bee pollen and comb material. However, the routes of exposure have remained largely undefined. We used LC/MS-MS to analyze samples of honey bees, pollen stored in the hive and several potential exposure routes associated with plantings of neonicotinoid treated maize. Our results demonstrate that bees are exposed to these compounds and several other agricultural pesticides in several ways throughout the foraging period. During spring, extremely high levels of clothianidin and thiamethoxam were found in planter exhaust material produced during the planting of treated maize seed. We also found neonicotinoids in the soil of each field we sampled, including unplanted fields. Plants visited by foraging bees (dandelions) growing near these fields were found to contain neoni-

cotinoids as well. This indicates deposition of neonicotinoids on the flowers, uptake by the root system, or both. Dead bees collected near hive entrances during the spring sampling period were found to contain clothianidin as well, although whether exposure was oral (consuming pollen) or by contact (soil/planter dust) is unclear. We also detected the insecticide clothianidin in pollen collected by bees and stored in the hive. When maize plants in our field reached anthesis, maize pollen from treated seed was found to contain clothianidin and other pesticides; and honey bees in our study readily collected maize pollen. These findings clarify some of the mechanisms by which honey bees may be exposed to agricultural pesticides throughout the growing season. These results have implications for a wide range of large scale annual cropping systems that utilize neonicotinoid seed treatments.

Citation: Krupke CH, Hunt GJ, Eitzer BD, Andino G, Given K (2012) Multiple Routes of Pesticide Exposure for Honey Bees Living Near Agricultural Fields. PLoS ONE 7(1): e29268. doi:10.1371/journal.pone.0029268

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Presidents Comments – February 2012

As I begin this page the radio prediction for weather on February 1st is for + 3 degrees Celsius. Does this suggest that there is not much of winter left and that Manitoba will have an early spring, or do we wait until the official Groundhog Day prediction? Either way it has been an easy time for indoor wintered hives, and perhaps also for those bees wrapped outdoors. This is often the time when brood rearing may begin again, and the bees are required to raise the temperature higher in the brood nest area. And this of course, requires the bees to consume more of their winter stores to generate the higher temperatures required for brood rearing.

This relates to the amount of accessible food remaining in the hive, and we all hope that there is enough food. It is possibly too late to do anything for the Outdoor Wrapped Hives, but the Indoor Hives may be accessible enough to place a small syrup feeder container on the top feed hole. It would also be necessary to raise the indoor room temperature to + 10 degrees Celsius or over 50 degrees Fahrenheit for 2 to 3 days for the bees to transfer the syrup from the feeder tub to where they want to store it in the hive. This will and has worked for some indoor wintered hives, and for others it made little difference. Several beekeepers I met at last weekend's Beekeeping Convention have done this and they felt they had saved many hives that were on the edge of starving out. I plan to do a through check of my own hives and will consider doing a similar food supplement program.

A summary report of the 3 day beekeeping conference will be provided by the Provincial Apiarist, Mr, Rhéal Lafrenière at the RRAA meeting on February 14th at the River Heights Community Club. It will be well worth your time to attend this presentation.

I will share with you some of the discussion topics from the conference that were a part of the coffee breaks or at the Friday night Banquet. One coffee break topic was what preparation is being done in Manitoba to deal with the "Small Hive Beetle" population that is likely living in the adjacent states of Minnesota and North Dakota. Migratory beekeeping practices in the USA move many bees to the West Coast in February, and then disperse across the southern states for March and April, and then to the blueberry pollination states for the month of May. After that, their hives may be moved to the western border states which are adjacent to all of western Canada. Are the populations/locations of the Small Hive Beetle in the USA being monitored by anyone?? This is likely a new task/concern for the Provincial Apiarists but some resources are needed to minimize/prepare for the eventual arrival of SHB in Manitoba. Our province should not be surprised as they were in 1988 when varroa mites were identified in SW Manitoba. We have been made aware of the expanding SHB problems in SW Ontario and we need to know where and when it is likely to be found in this province.

Another topic was the PMRA approval of the NOD formic acid Quik Strip varroa mite which can be used in hives anytime during the spring or summer. The Bee Maid supply store is expected to have these in stock later in February or March. The test results were positive in terms of its efficacy on Varroa Mites.

And a final discussion topic was on Hawaii and the new problems that have become widespread in regard to Varroa Mites and Small Hive Beetles. This state does not have a State Apiarist Department, nor are beekeepers required to be registered with the State Department of Agriculture. Thus you may find any number of "in the bush" beekeepers with little training in beekeeping or exposure to bee related information.

Fortunately for us, the 3 large commercial beekeepers who yearly supply over 100,000 queens to North America are rapidly learning how to control the influx of Pest Problems common to the Big Island of Hawaii. The lesson here is that

(continued on Pg 4)

**Minutes of the RRAA General Meeting
River Heights Community Club –
January 10, 2012**

7:30 PM: Charles Polcyn opened the January meeting.

Announcements: The nomination committee's report noted that the present executive members were willing to maintain their responsibilities on the executive if no further names were put forth from the membership. At the Jan. meeting, Charles called for additional nominations from the floor. No further nominations were made. The executive list will remain unchanged for 2012.

Minutes: Moved by Gilles Lantagne and seconded by Ken Rows to approve the minutes as circulated in the Bee Cause. No changes were required.

Treasurer's Report: John Speer reported that the RRAA account is now approximately \$5,000. Membership dues will remain at \$25 for the present year.

MBA Report: - Jim Campbell reported on the January, 2012 Manitoba Beekeepers' Convention. NOD's request for PMRA registration of Mite Away Quick Strips has been approved.

Meetings: Presentations for our spring meetings:
February – Rheal Lafreniere with a rundown on the MBA Conference
March – A report on Spring operations and colony health management
April – Making candles with your surplus wax
May – Another approach to queen rearing
Your executive needs to hear from you about ideas that can be developed into programs for future meetings.

Bee Cause Newsletter: As many of our members regularly use their computers on line, your executive committee wanted to know how many would prefer to receive their newsletter as a pdf file. This would ensure that the newsletter would be received before regular meetings and save some money for the RRAA at the same time. Members without computers would still be able to receive a paper copy in the mail. Moved by Chris Argiriou and seconded by Marg Smith to establish an electronic version of the Bee Cause for regular circulation to members and associates on our address list.

Coffee Break: Coffee and cookies.

Program:

Traveling beekeeper, Charles Polcyn, shared some of his many pictures and experiences of beekeeping in Columbia. Charles shared with the local beekeepers appropriate items from his wide experience on increasing honey production, bee pests and also honey marketing.

Loonie Draw: Charles shared an assortment of honey that he had collected in Columbia. Prizes were awarded to: Armand St. Hilare, Alex Remkes, Ken Rows, Sandra Smith, Jeff Richards, Chris Argiriou, Gilles Lantagne, and Brent. Doug won a jar of Czech honey. Gilles Lantagne and Ted Sosnowski won hand make change purses from a crafter in Rennie, MB

Ron Rudiak, recorder – RRAA

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MBA Report February 2012

Jim Campbell, MBA Rep

The board of the Manitoba Beekeepers' Association (MBA), over the past few months, has undertaken several actions.

As a follow up to earlier meetings with the Manitoba Buckwheat Growers Association (MBGA), Peter Kevin, Scientific Director, University of Guelph, has requested MBA to join him in a meeting to hear about some work he is doing with the National Sunflower Association of Canada. There may be some opportunity to use his sunflower research and development program as a springboard to look into increasing buckwheat acreages and nectar availability. The plan calls for a meeting sometime in the first quarter of 2012.

Producers across Canada recently received some good news with the Pest Management Regulatory Agency (PMRA) announcement that Mite Away Quick Strips (MAQS) has been granted registration for use in Canada, effective 18 January 2012. The 47.5 % formic acid product is applied via two pouches placed at right angles to the top bars of the brood chamber. Product instructions are found on www.miteaway.com and product should be available from Bee Outfitters this spring.

Both Hobby and Commercial honey producers of Manitoba have been encouraged to participate in the Honey Bee Biosecurity Consultation survey. This baseline survey is designed to determine how producers prevent and or mitigate spread of diseases and pests. The survey looks at many things such as what is done with bottom board scrapings, how is AFB infected material dealt with, what methods are used to treat for varroa, and how often is the apiary monitored for disease and pests.

In another area, MBA will be meeting later in February with the Manitoba Farm Products marketing Council (MFPMC). The purpose is to update the supervisory board on what MBA does, plus obtain approval for the changes to the administration fee regulation, as recently approved at the MBA AGM.

For more good news, MBA received notification that the Canadian Food Inspection Agency (CFIA) has agreed to issue Import Permits for New Zealand package bees, effective 1 February 2012. There has been concern about pests being imported in packages, which led USA to ban imports last year.

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Editor's Note by Ken Rowes

Richard Branson, philanthropist, entrepreneur suggests to define your brand and deliver on your promise. Brands always mean something and if you don't define what your brand is your competitors will. It's clear our brand is **Top Quality Honey** from the best Bee stock and source we can have. We need to be clear in our objectives, techniques and hive placements regarding honey/pollen source not to jeopardize quality honey and quality bees. This has always been and continues to be a dynamic interplay of new and old problems with new and old approaches.

I have published information on OSB vs. plywood for your information. It is interesting and worth your discussion.

Have you thought of adding 2 new frames to the hive moving 2 older honey supers to your brood box. Now's the time to make new ones. And you can plan on discarding some old brood comb, another control on nosema. You can bump this up to your whole stock.

Are our bees going to make it? The big question! Yes you can add some hard honey indoors or out. If you have mite assessment screens yes you can treat with oxalic acid drips. Mild February weather can allow for this. Treat only if necessary but you can add a kilo of honey over the whole in the inner cover with an empty box and some insulation.

Moisture is the mild weather dread. Ventilation or circulation need to be checked and not left for granted.

For some years I have felt January is turning into February in climatic characteristics and triggers me to think how/what am I going to do with my winter stock.

Corey de Witt (Leduc Ab.) places a black thin plastic box over the singles when unwrapping.



Our March meeting will delve into more spring management.

2012 is a yellow year for marking queens.

CLASSIFIED

1 For sale: 1 complete D.E. Hive. Includes, brood chamber, super, queen excluder, bottom board, inner cover and ventilated top covers. Perfect for the back yard beekeeper. \$100 OBO. Contact, **Lance W. Phone # 712-6783, Email; lancewld@gmail.com**

2 Wanted: honey sump or clarifier. Contact information is: **Jonathan Hofer (204) 981-6562 jonhofer1984@gmail.com**

3 For sale: Stainless Steel storage tank. Cylinder, 45" diameter and 55" high. Tank holds over 300 Canadian Gallons or about 4500 pounds. Tank stands 65" high. Located near Starbuck. **Phone: Jacob Hofer (204) 799-2433.**

4 For Sale: Maxant 600-5 Double Wall S.S. Botling/Storage Tank with two 1800 Watt Immersion heating elements. Elements powered by 120v/110v.

The Bee Cause is the official publication of the Red River Apiarists' Association for distribution to its members and their colleagues in the beekeeping industry. It is published eight times a year on a monthly basis except December and the summer months of June, July, and August when membership meetings do not occur.

Articles can be best submitted in word documents as email attachments. Though they may be edited for spelling and basic grammar, no changes will be made to their contents, message and opinions. They are those of their originator and not of the Red River Apiarist Association.

Deadline for any submission to this newsletter is the second Saturday preceding the membership meeting to allow for publishing and mailing delays. Regular membership meetings are normally scheduled 7:30 PM on the second Tuesday of every month at the River Heights Community Centre located at 1370 Grosvenor Avenue in Winnipeg except the months as noted above.

The Red River Apiarists' Association, formed in 1963, represents the beekeepers of the Red River Valley and environs in southern Manitoba. The association provides a forum for the promotion of sound beekeeping practices through education, networking opportunities, meetings, field days, workshops, presentations by local apicultural experts, as well as the dissemination of this monthly newsletter.

We are on the web!
www.beekeepingmanitoba.com

Tank previously used as wax melter, hence the two elements. Tank in very good condition, with thermometer and a sightglass. Tank holds 42 gallons or about 500 pounds of honey. **Ph (204) 981-6562 or e-mail jonhofer1984@gmail.com**

5. For Sale: - Strong 4 frame nucs, with laying queens. Will accommodate 3 or 5 frame nucs. Available approximately May 15 weather permitting. Ph **Chris Argiriou 296-4848 (cell) or 885-4588 (home)**

6. For sale: - Spring nucs ready for May 15th weather permitting. 3 frame \$100; 4 frame \$125; 5 frame \$150, may also have single hives available. call **Dennis Ross 878-2924, cell 782-7838**

7. For sale: Manitoba Hygienic Bees for sale in Spring 2012. Nucs available late May, 3 or 4 Frames with young laying Queens. Single Bee-Hives available as well. Manitoba Raised Queens available late May through summer **contact Wally at 1 204-266-2276 !**

8. For sale: Strong 4 frame nucs, ready in May, with local young queen from last year. Contact: **Lance W. Phone: 712-6783; Email: lancewld@gmail.com**



Logo thoughts by the Editor.

When you are creating your logo and reaching out to customers you may want to create a brand that's very corporate and remote. Too some organizations, they want to reflect some idealized perfect image of themselves. Their brands lack texture, character, and public trust. We must wear the sense of humour, wanting to be honest about the ups and downs of our business and to share what we think the people who matter most to us—our customers. The people who see our ads and logo are the same people who read about our tussles, our set-backs and our mistakes. So we must not pretend the real world doesn't affect us. Be honest about what we are offering. Be prepared. Know what we stand for and be certain that we're delivering on it! Then you'll be able to answer every question openly and frankly, building relationships with your customers, the public and the media. —/\—

NOD Apiary Products announced today that they received notification from the PMRA that Mite Away Quick Strips™ (MAQS) has been granted registration in Canada. For more details and a short 2-minute video demonstrating application check out NOD's website at www.miteaway.com. —/\—

Mite Away Quick Strips™ (MAQS) has now received registration for use in Canada!

After being available in some other markets for over 2 years Mite Away Quick Strips™ (MAQS) has now received registration for use in Canada!

MAQS is a 7-day, single application mite control product registered for use against varroa and tracheal mites. There are two critical application times. MAQS can be used during the honey flow but since it is best to have healthy colony populations going into the honey flow, spring treatment 4 to 6 weeks before the flow is recommended. A honey super can be on. To allow the bees time to produce a healthy winter cluster, MAQS should be applied at the end of the honey flow, usually while the last super is still on. For most parts of Canada this will be late August or early September.

The active ingredient is formic acid and its formates, contained in a saccharide gel matrix, wrapped in a specially formulated wicking Ecopaper. Formic acid vapour is released over a 3 to 4 day period at levels sufficient to kill varroa mites on the bees and the mites attempting reproduction under the cap. The male varroa are par-

ticularly susceptible, so young surviving females are likely to be infertile. Overall efficacy is expected to be in the 95% range over time, when compared to other products that just treat varroa on the adult bees (phoretic varroa).

MAQS technology allows for an expansion of the temperature range. Daytime highs, for the first three days, can be in the 10 to 33°C (50 to 92°F) range, which will allow for increased flexibility. Beekeepers need to be certain that the temperatures will be below the maximum temperature on the critical first day, so a maximum high of 85°F is recommended for the day of application.

Beekeepers can expect a brief hic-up in brood rearing in some colonies, which is quickly made up by the queen laying enthusiastically. Treatment may also trigger queen supersedure activity, so some colonies may replace their queens or may end up with mother/daughters both present. This is also fairly common if the bees had already started queen cells before treatment.

The bees will expand the cluster when treated so a bee-beard may form on the hive during the first stage of treatment. This is normal behavior, which varies widely between colonies, even in the same yard. It is more likely to occur at higher temperatures. The bees usually go back in a few hours later, or if the temperatures cool. Having a super on may reduce the bearding behavior.

The colony should not be disturbed during the 7-day treatment period. The hives should have good food reserves at time of treatment, ready to be converted into brood. Feed reserves should be monitored after treatment, and supplemented if necessary.

MAQS has been shown to suppress nosema spore levels in the one trial where levels were monitored. Further work in this area will be undertaken in near future.

The mites are not expected to develop resistance to formic acid, so once the transition is made to consistently using MAQS the beekeepers of Canada can relax, knowing that varroa control will be sustainable, with no risk of chemical residues accumulating in wax or honey.

For more information call toll free 866-483-2929 or check MAQS out at [www](http://www.miteaway.com).

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"APOLOGIZING:

Does not always mean you are wrong and the other person is right. It just means you value your relationship more than your ego." ---- author unknown

"Would you rather be right, or happy?" Which relationships are you willing to maintain and strengthen by apologizing?

- Ralph Marsdon

(pesticide routes from Pg 1)**Editor:** Guy Smagghe, Ghent University, Belgium**Received** August 18, 2011; **Accepted** November 23, 2011; **Published** January 3, 2012**Copyright:** © 2012 Krupke et al. This is an open-access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited.**Funding:** This research was funded by an award from the North American Pollinator Protection Campaign to CK, GH and BE and by an award from the Managed Pollinator Coordinated Agricultural Project (United States Department of Agriculture National Institute of Food and Agriculture 2009-8511805718) to GH. The funders had no role in study design, data collection or analysis, decision to publish or manuscript preparation.**Competing Interests:** CK has received funding in the past from agrochemical companies that manufacture and distribute a wide range of pesticides, including many of those mentioned in this manuscript. These entities include the Bayer Corporation, BASF and Syngenta. (continued on Pg 7) None of these entities were involved with this work or are aware of it in any way, financial or otherwise. This does not alter the authors' adherence to all the PLoS ONE policies on sharing data and materials.

A copy of the full article is available from the RRAA editor at cost of copying.

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Concerned about toxic off-gassing from OSB and plywood? So what is bad for the hive and where the hives are sitting? An article covering the concerns of contamination and toxicity for the average beekeeper. Compiled by Ken Rowes RRAA editorIan MacLeod of Berkeley, CA, explains the concerns of off-gassing of plywood and OSB boards. First of all, **there is not a huge difference in off-gassing between OSB (oriented strand board) and exterior-grade plywood.** You are right to be concerned, however, about off-gassing from wood panels, as the EPA has classified formaldehyde as a probable human carcinogen.Having said that, **there are important differences in the types of formaldehyde resins and their use in wood panel products.** The first important distinction is between urea-formaldehyde (UF) and phenol-formaldehyde (PF).

- UF is more toxic and should be avoided at all costs in anything you put in your home.
- PF is more water resistant and stable than UF, which means formaldehyde will off-gas at lower levels and very slowly, but for a longer period of time. PF products are considered to be relatively hazard-free.

Most exterior plywoods and OSBs use PF. **Unfortunately, many interior plywoods, MDFs (medium-density fiberboards), and particleboards contain urea-formaldehyde.** These materials inside your home can have a greater impact on your indoor air quality than exterior structural panels or OSB.For interior use, Columbia Forest Products makes a line of formaldehyde-free hardwood plywood panels that use a soy-based adhesive. For MDF interior panels, Medex and Medite II are formaldehyde-free and are your best options. **I would request formaldehyde-free wood panels wherever possible, but they may not always be available.** If formaldehyde-free panels are not available for your project, use products that contain less-hazardous PF.**There are other important differences between plywood and OSB** that are worth discussing.

- One is that OSB is much more resource-efficient than plywood. Plywood requires large-diameter trees for its slices of veneer, whereas OSB uses smaller trees and utilizes practically the entire tree. The trees used to make OSB often come from tree farms, reducing pressure on older-growth forests.
- OSB tends to be cheaper than plywood as well.
- One major drawback of OSB in the past was that it tended to swell when wet, especially around the edges. This is especially a problem with sub-floors, where the tongue and groove have to match between adjacent panels, and where any bumps in the subfloor can translate directly into the finish floor. OSB manufacturers have been working hard to reduce this problem.
- Some newer types of OSB, so-called "New-generation" OSB panels, use isocyanate resins that reduce the swelling risk. Isocyanate-resin panels do not contain formaldehyde and are considered non-volatile when cured; they off-gas less than PF panels. They also use edge sealers to prevent water infiltration at the side of the panel. Louisiana-Pacific TopNotch Sub-Flooring and Weyerhaeuser Structurwood are examples of this kind of product.

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(from Pg 7) Both plywood and OSB, if they get wet over a prolonged period of time, will buckle and delaminate, so you should use only Exposure-1 ply or OSB and materials should be kept as dry as possible to avoid any problems.

Structurally, plywood and OSB panels are essentially the same, although some structural engineers prefer Structural-1 plywood for shear walls. Check with your contractor and make sure local codes are met.

Another **environmental consideration is whether you can get Forest Stewardship Council (FSC) certified panels**. Certification ensures that the trees come from sustainably managed forests or from other renewable sources.

In California, we can sometimes get both FSC plywood and FSC OSB, but not all the time or in all the sizes we want. Check with your local lumberyards on price and availability. The supply often depends on a local lumberyard's relationships with regional mills, so it is always best to ask.

Does priming and painting OSB help prevent off-gassing? Amy Green LLC of New York provides some incite into this in March of 2010.

There are some companies out there such as the Architectural Coatings + Design Center based out of Los Angeles, who sell sealants specifically to stop off gassing from OSB and protect indoor air quality.

However, **sealing or painting OSB to stop off gassing isn't necessary when you look into the OSB process and how OSB factories handle off gassing and curing at the plant** which stop off gassing by the time it reaches your construction site.

According to the Structural Board Association Representing OSB, "There is no measurable off gassing from the finished [OSB] panel." You can read more about their studies of OSB in their Technical Bulletin which touches on other sustainable aspects of OSB such as

- using Aspen as a rapidly renewable resource for OSB production
- OSB production is resource efficient as it uses all parts of the tree, and
- sustainable farming practices OSB companies follow for production.

As for Volatile Organic Compounds (VOC)'s in OSB, OSB companies must follow stringent guides, greatly limiting the VOC's they emit into the air. The two most common resins for binding OSB are polymeric diphenyl methane diisocyanate (MDI) resin and phenolic resin. During the pressing operation, the resulting gases are driven off and collected in a venting system. The collected gases either go to the en-

ergy system as part of the under fire air supply, are incinerated in a regenerative thermal oxidizer (RTO) or treated with a bio-filter.

MDI is actually formaldehyde free, which is the main carcinogenic off gassing concern people usually have, so that isn't a concern with most OSB. However these are not the most eco-friendly of resins, and MDI is a poison when inhaled. The factories do stand by the study above from the Structural Board Association, that once OSB leaves the factory, the panel isn't off gassing. You can read more about MDI at the Toxics Use Reduction Institute.

Fortunately, the resins in OSB are designed to completely cure in the hot press process at the plant, and after the process, SBA mills hot stack panels for at least 48 hours after trimming to allow gases to dissipate, and current findings are that the OSB panels will only very minimally off gas after that, doing so only when coming in contact with high heat and cutting, such as when they are cut on site during construction or demolition. So if you're doing construction or demolition with the OSB, make sure to wear a mask and gloves to protect against fumes when cutting, and be sure to vent the area with a fan or other blower system to remove fumes from the space after cutting.

However, if the OSB has already been in use for some time, findings are that there really is no reason to paint or otherwise seal it to protect from VOC's and off gassing as it shouldn't be off gassing unless cutting is involved.

Furthermore, the Eastern Laboratory in Québec and the Minnesota Natural Resources Research Institute (MNRRI) in Duluth, MN have determined that there are no additional VOCs released from OSB when it is burned or placed in a landfill than what is released from solid wood, so there aren't additional off gassing worries with disposal.

My recommendation if the OSB is existing, let it be. If it's existing and you're cutting it, then follow the protection and venting recommendations. However, **if you haven't selected the product yet, look into the newer types of OSB, called "new-generation" OSB panels**, which use isocyanate resins that do not contain formaldehyde and are considered non-volatile when cured. —//\—

(from Pg 4)

Armed with the knowledge that our bees had been thriving in Northwest Washington's fungus-rich environment within the world's largest temperate rainforest, we decided to gamble on the prospect that our bees could develop a tolerance to this new microsporidian as well. As we held our breath, two successive years of 90% loss passed, followed by 2 additional years of 50% loss.

Though spring is late in coming this year, those heavy winter losses have resulted in hardy un-medicated bees that are now maintaining healthy populations in spite of staggering *n. ceranae* spore loads. By carefully selecting our breeder queens from this core group of survivors, we offer regionally unique queen lines that demonstrate a genetic makeup capable of withstanding many of the lethal pathogens that threaten honeybees everywhere. —//\—

Beekeeping for the Hobbyist: Non Credit Course

Offered by the **Department of Entomology, University of Manitoba & Manitoba Agriculture, Food and Rural Initiatives**

Date: 9 Wednesdays from 25 January to 21* March, 2012 + Apiary demonstration in April.

*No classes 22 Feb, U. of M. mid-term break

Time: 700-9:30 p.m.

Location: 220 Animal Science/Entomology Building

Fees: \$75 (course fee) + recommended text

"Beekeeping in Western Canada" \$30

Honey bees can be managed with ease by urban people. Besides the honey and bees wax they produce, and their value as pollinators of various crops, their highly developed social organization provides fascinating material for study.

This series of lectures and demonstrations will deal with the nature of beekeeping; the life history, anatomy, and social behaviour of bees; economics; how to manage colonies of bees; equipment and site selection; pollen and nectar producing plants, nectar flows; seasonal management ; pests, parasites diseases and their control; regulations; honey houses; extracting equipment; grading and marketing honey and beeswax.

Registration: Limited enrolment. Registrants should come to the first meeting of the class unless notified otherwise. Written requests for withdrawals involving tuition refund (subject to a \$10 administration fee) will be accepted before the **SECOND** meeting of the class. No refunds will be made after that date. The University reserves the right to cancel any course and refund full fee, and to reschedule classes cancelled due to unavoidable circumstances.

Instructors:

Dr. R.W. Currie, Professor, Dept. of Entomology, Univ. of Manitoba, (474-6022)

R. Lafrenière, Provincial Apiarist, Manitoba Agriculture, Food and Rural Initiatives, (945-4825)

D. Ostermann, Extension Apiarist, Manitoba Agriculture, Food and Rural Initiatives, (945-3861)

Tear off and Mail to:

R.W. Currie, Dept. of Entomology, University of Manitoba, R3T 2N2

Registration Fee(s) # People * \$75 = ____\$. # Text books *30 \$= ____\$. Total amount ____\$.

Enclosed is a check for ____\$ payable to the Dept. of Entomology, University of Manitoba.

Name _____ Home Phone _____

E-mail _____

Address _____ Business Phone _____

Red River Apiarists' Association Winnipeg, Manitoba 2012 MEMBERSHIP APPLICATION

I apply for membership in the Red River Apiarists' Association. Membership includes one-year subscription to the newsletter "The Bee Cause" (8 issues)- \$25.00.

Name _____ Tel. _____

Address _____

City _____ Prov. _____ Postal Code _____

E-mail address _____

Signature _____

New Member [] Renewal [] Student [] [free 1st year]

Other. Please specify. _____

This completed form may be brought to the meeting or mailed with your cheque to :

John Speer, RRAA Treasurer

Box 16, Group 555, Winnipeg, Manitoba R2C 2Z2.

Make cheques payable to Red River Apiarists' Association.

Please do not send cash in the mail.