

Washington State Beekeepers Association

Keep the "Bee" in Business

Publication of Washington State Beekeepers Association

www.wasba.org

May 2008

President's Message

The elusive CCD is getting some major attention at WSU. Our Colony Health research has started and we secured some significant funding. The other aspect has been the publicity it is drawing all over the state. Eric Olson has been leading the charge for WSBA.

April 3rd we had a meeting of the Apiary Advisory Committee, the committee requested \$10,000 for WSU colony health research. This was approved and the recommendation taken to the state. This money has now been made available to WSU.

April 16 Eric Olson, Lee Hamilton, Jim Bach and I attended a meeting at WSU for the awarding of checks to WSU for the colony health studies. Lee and Eric each Donated \$10,000 which has started the ball rolling.

Current Contributions are as follows:

Lee Hamilton-\$10,000
Eric Olson-\$10,000
Tree Fruit Commission-\$10,000
Long Beach Cranberry Growers Assoc. \$3,000
Tony Noyes of Noyes Apiaries-\$2,500
Idaho Honey Producers \$5,000
Washington State Bee Registration \$20,000

We are working on additional funding from other Sources, \$40,000 from the Governor's Emergency Fund and \$40,000 from the Pesticide Commission. We will be posting contributions to our web site. If you would like to contribute to this effort you may do so by sending you donation to:

**Department of Entomology, FSHN
Rm 166
Pullman, WA 99164-6382
Attention: Barb
Make checks out to: WSU Bee Research**

(Continued on page 2)

Washington State Updates

Program Calendar for the Association.

June 14, 2008:

WSBA Executive Board Meeting
Bar 14 Ranch House Restaurant
1800 South Canyon Road, Ellensburg, WA
10 AM to 1PM

October 16, 17, 18:

**Joint Oregon/Washington State
Beekeepers Convention Oct. 16-18** at the Red Lion
in Vancouver, WA
WSBA Executive Board Meeting Oct. 16 at the
Red Lion in Vancouver, WA
WSBA General Membership Meeting Oct 17 at
the Red Lion in Vancouver, WA

Haagen Dazs Airls "Help Save the Honey Bees" Commercial

As part of the "Haagen Dazs Loves Honey Bees" campaign, Haagen Dazs began airing a commercial on April 20 with a "Save the Honey Bees" message, stressing the importance of pollination. As part of the campaign, Haagen Dazs will donate \$250,000 to Colony Collapse Disorder research. To view the commercial, visit the Haagen Dazs Loves Honey Bees web site at <http://www.helpthehoneybees.com>, then click on "See the Ads" at the bottom of the page.



President's message, continued

(Continued from page 1)

Convention Update - you may now get your room reservations on line or by calling. See the instructions on our web site or in this news letter. Our speakers are lining up very nicely and have only one or two more to complete our list.

Jeff Pettis from USDA

Dr. Dave Tarpy from North Carolina University

Dr. Eric Mussen from UC Davis

Dr. Mike Burgett

Dr. Steve Sheppard

WSU has been a very busy place lately, maybe not busy enough for Eric Olson, but they are getting off the ground in many areas. Steve just returned from Europe with drone semen for the research he and Sue Cobey are doing to inject additional genetic diversity into our queens. They have been artificially inseminating virgin queens from Wooten, Glenn & Koehnen. They have been busy until finals hit running test on the samples provided for our Colony Health Study. They will finish up all the samples they have on hand this next week and be ready for another flood from the selected beekeepers. They have hired full time lab folks to run the samples and it takes sometime for them to get up to speed. We are putting the finishing touches on the rest of the testing program and we still have queen rearing going on. The research into bee wax has started and the first samples have been run.

Check out the following conference and see if you can fit it into your busy schedule. Western Apicultural Society
http://groups.ucanr.org/WAS/Conference_Information/

Up coming Events:

- **WSBA Executive Board Meeting June 14, Bar 14, Ellensburg 10am-2pm**
- **WAS Conference Aug 17 –Aug 21, 2008 at the Holiday Inn, Victoria, British Columbia, Canada.**
 - **WSBA Executive Board Meeting Oct. 16 @ 1600 at the Red Lion in Vancouver, WA**
 - **WSBA General Membership Meeting Oct 17@1700 at the Red Lion in Vancouver, WA**
- **Joint Oregon/Washington State Beekeepers Convention Oct. 16-18 at the Red Lion in Vancouver, WA**
ABF National Convention Jan 13-17, 2009 in Reno, NV

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Board Meeting Agenda for the June 14th meeting

6/14/08

10-11 will be committee meetings
Master Beekeepers
Joint Convention

11-1 will be general executive board meeting with lunch for 1 hour.

Reports:

The Secretary's Report-minutes from newsletter
The Treasurer's Report
Membership Report
Master Beekeepers Certification Committee Report
Area Reps

Old Business:

WSU Report-Steve Sheppard
Report on Apiary Advisory Committee-Eric Olson
Status of Joint Convention-Jerry

New Business:

Progress on funding for WSU research-Eric Olson
Request for funds for WSU research

Catch the BUZZ from Eric Mussen

LATEST NEWS ON N. CERANAE FROM MUSSEN'S NEWSLETTER

This information was gleaned from Eric Mussen's UC Davis Newsletter. Information below on how to subscribe. It is one of the best there is. This article has good information on treating Nosema ceranae. You need to know this.

Colony Collapse Still Around

Stories of collapsing colonies are still coming in. As in the previous year, they started in late summer and continued right through almond bloom. Involved beekeepers varied from some who never had problems before to others who were hit hard two years in a row.

As in previous years, samples taken after the collapse don't tell us too much, because whatever happened occurred earlier. What we see is empty hives with no sample bees left to take.

Something that quite a number of beekeepers have noticed is that Nosema infections are much higher than they anticipated. When I arrived fresh from the University of Minnesota, I really emphasized the necessity of controlling nosema disease, especially if a beekeeper was going to sell queens and bulk bees to other beekeepers. That made quite an impact, especially on our Bee Breeders. Sales of fumagillin rocketed up in California.

Our Bee Breeders have been using fumagillin for decades to control Nosema apis with very good results. They had their treatment schedules worked out and samples sent to me for spore counts were nearly always ND (not detected).

This year, Dr. Marla Spivak and her crew began a project, with the assistance of Sue Cobey, to help the Bee Breeders select breeder queens whose workers demonstrated elevated hygienic behavior. Marla was pleasantly surprised to observe how well that trait already is established in many of the stocks.

During those visits to the beekeeping outfits, samples also were taken of worker bees and analyzed for Nosema spores. A few

(Continued on page 5)

JUNE 14, 2008

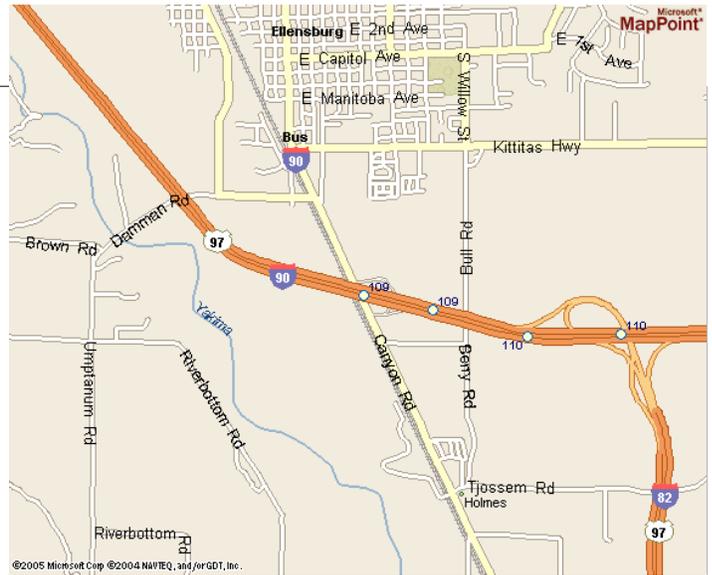
The next
WSBA Executive Board Meeting
will be held at the:

Bar 14 Ranch House Restaurant
1800 South Canyon Road, Ellensburg, WA
Phone: 509-962-6222

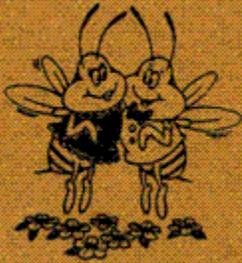
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Committees meet from 10 AM to 11 AM.



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Journal of Economic Entomology: Short - Term Varroa Fumigation

Source: [Journal of Economic Entomology](#), Volume 101, Number 2, April 2008 , pp. 256-264(9)

APICULTURE AND SOCIAL INSECTS

Short-Term Fumigation of Honey Bee (Hymenoptera: Apidae) Colonies with Formic and Acetic Acids for the Control of *Varroa destructor* (Acari: Varroidae)

DENNIS VANENGELSDORP, ROBYN M. UNDERWOOD, AND DIANA L. COX-FOSTER
J. Econ. Entomol. 101(2): 256D264 (2008)

ABSTRACT Controlling populations of varroa mites is crucial for the survival of the beekeeping industry. Many treatments exist, and all are designed to kill mites on adult bees. Because the majority of mites are found under capped brood, most treatments are designed to deliver active ingredients over an extended period to control mites on adult bees, as developing bees and mites emerge. In this study, a 17-hour application of 50% formic acid effectively killed mites in capped worker brood and on adult bees without harming queens or uncapped brood. Neither acetic acid nor a combined treatment of formic and acetic acids applied to the West Virginia formic acid fumigator was as effective as formic acid alone in controlling varroa mites. In addition, none of the treatments tested in late summer had an effect on the late-season prevalence of deformed wing virus. The short-term formic acid treatment killed 60% of varroa mites in capped worker brood; thus, it is a promising tool for beekeepers, especially when such treatments are necessary during the nectar flow.

Treatment. Colonies in each apiary were divided into four groups, with the colonies in each group having approximately the same amount of brood. Each of the resulting groups was randomly assigned to one of four treatments: 1) W, 100 ml of distilled water; 2) FA, 75 ml of 50% formic acid; 3) AA, 50 ml of 50% acetic acid; or 4) F_A, formic and acetic acids (75 ml of 50% FA + 50 ml of 50% AA) applied at the same time into a colony on separate fume boards. The F_A treatment was not applied in the PDA apiary. Immediately before treatment, a sticky board was inserted into each colony and hive entrances were reduced to 5.1 by 2.1 cm by using duct tape. Any holes in or between hive components also were sealed using duct tape. Treatments were applied at 1600 hours on 23, 25, and 26 August 2004 by using West Virginia formic acid fumigation boards (Amrine et al. 2006). Amrine et al. (2006) provide complete details on the specifications of this fumigation board.

Summary. Although the level of mite mortality measured in this study was insufficient for a standalone treatment (Calis et al. 1998), 50% formic acid treatment for 17 hours does hold considerable promise as a tool for beekeepers that need to control mites during the nectar flow. This short-term fumigation method is highly advantageous compared with previously used, long-term methods that had to remain in place for 4wk to ensure that mites emerging from brood were treated (Bracey and Fischer 1989). Additionally, prolonged treatment negatively affects honey bee brood care and feeding (Bolli et al. 1993). In this study, the short-term treatment with 50% formic acid for 17 hours did not negatively impact brood production or queen survivorship.

A treatment that takes 24 h and kills 50% of varroa mites in brood may be a useful tool for beekeepers that need to treat for varroa mites during the nectar flow. The short-term method tested in this study meets these criteria; thus, it holds considerable promise as a tool beekeepers can incorporate into their mite control arsenal.

Catch the BUZZ from Eric Mussen, continued

(Continued from page 3)

years ago, ND was the norm. This year, ND was a rare exception. Most colonies had levels of infection that required treatment, according to the old guidelines. Some counts were as high as we see in laboratory studies of caged bees.

How did this happen? Did our old friend, *Nosema apis*, become resistant to the fumagillin? I doubt it. The few studies that have been conducted over time showed no problem of that sort.

Perhaps this isn't *Nosema apis*. It is likely to be *Nosema ceranae*, according to verbal reports of the CCD researchers. The European studies suggest that *N. ceranae* is susceptible to fumagillin, but they use it at dosages up to four times stronger than we use for *Nosema apis*.

The Bee Breeders are not the only ones to see increased *Nosema* infections this year. Other California beekeepers are reporting high spore counts. Some are reporting globs of bee feces on the fronts of hives and on the ground in front of the colonies. Last fall, Randy Oliver was taking some samples from his colonies. He found that returning foragers, captured around noon and especially if they were writhing around on the ground, had elevated levels of spores. However, workers taken from the brood nest (nurse bees?) did not have demonstrable spores.

This follows the pattern that Dr. Higes presented at our MegaMeeting in Sacramento a few months ago. He stated that the nurse bees would appear to be uninfected during the spring and summer, but as late summer and fall approached, the bees inside the

(Continued on page 7)

2008 Joint Oregon/Washington State Conference

How to make Group Reservations on RedLion.com

1. Go to RedLion.com on the Internet.
2. Click on the word "Reservations" at the very top of the screen.
3. Scroll down to the bottom of the screen, for the section titled "Room block and group reservation."
4. Enter your check-in date & check out date. Enter the group code for the Washington State Beekeepers Association, which is 081016WA.

Under Hotel, select Red Lion at the Quay (2nd from top).

This will enable group attendees to get all of their group rates, and for the group to get credit for all of the rooms reserved.

These instructions are for anyone using Windows. Mac users will see a slightly different interface.

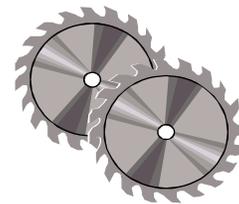
How to make Group Reservations on the phone

1. Call 800-RedLion (800- 733-5466)
 2. Be sure to mention you are getting special rates for the Washington State Beekeepers Association. (Your rates are lower than government, AAA, AARP or other discounts.)
- If you have any difficulty, or have special requests, please call Qynne McKibben, at 360-750-4916.

Your special rates will be honored three days before, and three days after the convention, in case you'd like to stay longer.

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Catch the BUZZ from Eric Mussen, continued

(Continued from page 5)

hive would start to build up spore levels, as well as the foragers. When nearly all the “house bees” were infected, the adult population would abandon the hive. Is this what we call CCD?

As our beekeepers try to resolve this nosema disease problem, they have to consider three important factors. The first is that worker honey bees infected with *Nosema ceranae* apparently will not take feed, either syrup or patty. Thus, the bees have to have the medicated syrup applied onto their bodies to force them to clean themselves off and take their medicine. Since you can only apply a small amount of syrup per treatment, the researchers in Spain suggest four treatments at one week intervals.

The second difference between treating *Nosema apis* and *N. ceranae* concerns the dosage of the medication. Without saying much about experimental trials, the Spanish have decided that the dosage should be about 2.5-3.0 times higher than that used for *N. apis*. Thus, they would mix the 95 gram bottle into 40 gallons of syrup, instead of into 100-120 gallons.

The third interesting factor is the formulation of the fumagillin that now is available to us. Fumagilin-B® is imported into the United States from a Canadian company, Medivet. The product is not “registered” as such, but the FDA has worked out a type of memorandum of understanding so that the product can be imported and used in the U.S.

The numbers on the label differ from those on the label of the old Fumidil-B®, but the mixing instructions are the same for *Nosema apis*. However, since it is not likely that we have *Nosema apis* in our bees anymore, you should pay attention to the instructions for use against *Nosema ceranae*.

The Medivet label divides its instructions into fall and spring uses. Fall isn’t difficult, because they are the same instructions as for the old Fumidil-B in the fall. It is the spring use that demands careful study.

The instructions say to feed “at a rate of 30 mg fumagillin activity per colony, 4 times at 1 week intervals.” For our purposes, the next set of instructions is better. “Dissolve 454 g Fumagilin-B (one large bottle) in 40 US gallons of sugar syrup and feed each colony 1 pint (treats 320 colonies). Repeat 3 times at 1 week intervals.” Schedule to complete treatment at least 4 weeks before adding honey supers.”

Yes, this means that the dosage is about 2.5 times stronger than we used to use for *Nosema apis*. Yes, this means many additional visits to the bee yards. And, if you notice that the bees in the colony just are not taking up medicated syrup, you may have to pour it on the bees. That is the procedure used by the Spanish researchers. Spraying the applications on the bees is being tested, currently, by Medivet.

(Continued on page 8)

WSBA Officers & Exec. Committee

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509-966-2867

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For more information,
please visit us at:

www.wasba.org

Catch the BUZZ from Eric Mussen, continued

(Continued from page 7)

There are a few other Medivet suggestions that bear repeating. Make sure the fumagillin is well blended into the syrup. This formulation blends into syrup much more readily than the old Fumidil-B – do not get the syrup very hot or the fumagillin will be inactivated. Check to see if the bees are taking the syrup. Nosema ceranae-infected bees often stop feeding all together.

You can subscribe to Eric Mussen's electronic Newsletter by visiting the address below. It is one of the best there is.

<http://entomology.ucdavis.edu/faculty/mussen/news.cfm>

This message brought to you by Bee Culture magazine, The Magazine Of American Beekeeping www.BeeCulture.com

Subscribe to the Apis Newsletter: <http://apis.shorturl.com>

The **Western Apiculture Society of North America** is holding its 2008 Annual Conference August 17 to 21 in Victoria , the capital city of British Columbia, Canada.

Victoria is a beautiful port city on the southern tip of Vancouver Island boasting the best climate in Canada.

Would your business be interested in participating in the conference? The Conference will promote beekeeping within the topics of agro-tourism, health and medicine. To present your company to beekeepers from around North America your participation could be by attending the conference through the trade fair, sponsoring a coffee break or the evening wine and cheese event, as well as contributing an item for the silent auction.

The WAS host organizers are striving to attract 120+ participants from all over western North America. We are excited about the quality of the conference and encourage your participation by joining us in Victoria.

If you would like more information on the trade fair room, exhibitor's prices or general sponsorship information please call George Field. Photographs and a floor plan of the exhibitors' area are available on request.

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May 2, 2008 Capital Press Agriculture Weekly

Bee disease investigation turns up new suspect *Different strain of protozoan appeared in U.S. in 2007*

[Cookson Beecher](#)
Capital Press

Eric Olson is alarmed at what he has discovered in his quest to find out why he and his fellow beekeepers are losing so many hives to the mysterious Colony Collapse Disorder. This spring alone, Olson lost 4,000 hives worth about \$1.2 million.

He said if he suffers similar economic losses next year, he'll be out of business. In the same vein, he said the continued loss of bee hives will jeopardize Washington state's entire agricultural economy.

"You can't get any more serious than that," he said. In an effort to put a finger on the cause, Olson has become a sleuth-researcher. Joining forces with WSU entomology professor Steve Sheppard, he is working on a large-scale colony health survey that involves testing bees every 30 days for several major pests and pathogens.

The results have been surprising. In November, when Olson took samples from some of his hives, test results showed no Nosema spores. Nosema disease is caused by a spore-forming protozoan, *Nosema apis*, which invades the digestive tracts of honeybee workers, queens and drones.

In late January, things had changed. When he and Sheppard took samples, they found from 550,000 to 2.65 million Nosema spores per bee.



Beekeepers Eric Olson of Yakima, Wash., left, and Tom Hamilton of Nampa, Idaho, look over graduate student Mathew Smart's shoulder at a Washington State University entomology lab. The two beekeepers have each donated \$10,000 in seed money to underwrite research on Colony Collapse Disorder. - Courtesy of H. Dennis Brown

(Continued on page 10)

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Queens, Bees, Honey & Pollination

May 2, 2008 Capital Press Agriculture Weekly, continued

(Continued from page 9)

On March 1, Olson was stunned to find that the number of Nosema spores had jumped to 3.3 million to 8 million per bee. In late March, he treated all of the company's hives with a double dose of fumagillin, which he said should have caused the Nosema to either disappear or at least go down in numbers.

By April 1, all of the bees in the hives with high counts of Nosema were dead. In mid-April, much to Olson's surprise, DNA analysis identified the spores taken from the infected hives as a different strain of Nosema known as *Nosema cerenae* - a microsporidium that attacks the bees' ability to process food. Once found only in Asian bees, *Nosema cerenae* is now found in hives in many countries across the globe. It was first reported in the United States in 2007. "It's a new kid on the block," Olson said. "We might be looking directly at the reason beekeepers have lost so many hives."

Sheppard agreed, saying *Nosema cerenae* is a likely culprit. According to the Washington State Beekeepers Association, beekeepers in the state have suffered losses of 35 to 50 percent to Colony Collapse Disorder in recent years. Those figures are especially troubling to growers because eight of 10 of the state's most valuable crops - apples, pears, blueberries and raspberries among them - depend on bees for pollination.

Olson has joined with other industry interests to donate seed money for a research project that will study commercial bee colonies monthly for two years. The project will sample honeybees, their nutritional intake, their health, their hives, contents and combs, and agricultural chemical and bee pest chemical residues.

Information will also be gathered about bee behavior, virus and pathogen levels, queen attractiveness (with genetic implications), air quality and other factors. The goal is to ensure there will be enough commercial colonies available to meet growers' needs.

Olson and Tom Hamilton, a beekeeper from Idaho, have each donated \$10,000 to the project. Noyes Apiaries in New Plymouth, Idaho, has donated \$2,500. And the Idaho Honey Association has donated \$5,000. The Washington State Bee Registration Program has kicked in an additional \$20,000. And the same amount is being requested from the Washington Tree Fruit Research Commission and the Yakima Growers and Shippers. With those donations and dedicated funds from the Washington State University Agricultural Research Center, researchers plan to spend nearly \$200,000 over the next two years to look at causes of and possible treatments for the disease.

Richard Zack, chairman of WSU's Entomology Department, said Colony Collapse Disorder is the latest in a number of factors that have threatened the beekeeping industry for many years. "The people who can provide commercial pollinating services are disappearing, and if we solve this specific problem, another one will come along," he said. "The goal of this research is to build a program that will help the industry become sustainable again, no matter what happens in terms of disease, nutrition and a thousand other factors."

For Olson, it's important to tackle this challenge on a regional basis. "We'll be way better off if we can turn this into a regional effort," he said. Idaho beekeeper Hamilton agreed. "We're hoping we can get a good lab at Washington State University that can serve the region. We need lab workers and research. It will give us an opportunity to monitor hives and see what the problems are."

Staff writer Cookson Beecher is based in Sedro-Woolley, Wash. E-mail: cbeecher@capitalpress.com.

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CCD Survey Update

APIARY INSPECTORS OF AMERICA

In the Fall of 2007, the Apiary Inspectors of America (AIA) in collaboration with the USDA-ARS Beltsville Bee Lab conducted a study to help determine the distribution of various bee parasites and pathogens. Preliminary results from this survey reveal:

- 1) Nosema levels tended to be higher in colonies collected from CCD-suspect apiaries
- 2) Mean varroa levels over all sampled colonies were approaching critical levels (9.5 mites/100 bees), but levels did not differ between colonies in CCD-suspect and non-CCD suspect apiaries.
- 3) Israeli Acute Paralysis Virus (IAPV) was found in 9 of the 11 states sampled, and in 47% of all sampled colonies.

The last of these findings begs the question, "What should beekeepers do who are or suspect their colonies are infected with IAPV?" To answer this question a review of both published and the most current data from multiple research efforts are in order.

What do we know about IAPV as of May, 2008?

1. What is IAPV's linkage to CCD?
 - a. As published in September 2007 (Cox-Foster et al, Science, 2007)
 - i. Among pathogens, IAPV is the most consistent indicator of CCD
 - ii. KBV, N. apis, and N. ceranae are also indicators of CCD
 - iii. Additional "stress" factors may be needed to activate IAPV
 - iv. No cause and effect between IAPV and CCD was demonstrated
 2. How many strains of IAPV exist in the US?
 - a. At least two strains, or "families", of IAPV are present in the United States (J. of Virology, in Press)
 - i. One lineage is most prevalent in apiaries from the eastern and northwestern U.S. and probably was present before importation of Australian bees into the US in 2005.
 - ii. The second strain is more frequent in sampled colonies from the western U.S.. This strain matches more closely to several isolates sequenced to date from Australian package bees.
 - iii. The strain of IAPV found in Israel that defined this newly described species, is distinct from those in the US and Australia.
 - iv. Extensive variation in the genetic sequence of the virus suggests that the virus is rapidly changing in the U.S. or has been present as multiple lineages for some time.
 3. What happens to IAPV infected colonies?
 - a. On-going research in Israel and the U.S. supports the assertion that IAPV can impact adult bee health and result in rapid mortality of infected bees.
 - b. Not all colonies with IAPV are in poor health
 - c. Some colonies that have IAPV can "clear" their infection to below detectable levels over time; this is perhaps due to resistance in these colonies to either varroa and/or viruses
 4. How can IAPV be transmitted?
 - a. IAPV can move from uninfected to infected colonies within an apiary
 - b. While not demonstrated for IAPV, other bee viruses (DWV, SBV, BQCV) can be brought to colonies on forager pollen loads, suggesting an outside reservoir for some bee viruses (Singh, et al, poster at Eastern Branch ESA, 2008, from PSU)
- c. IAPV has been detected in non-apis bees in the vicinity of IAPV positive colonies in 2007. (Singh, et al, poster at Eastern Branch ESA, 2008, from PSU)

(Continued on page 12)

CCD Survey Update, continued

(Continued from page 11)

5. How widespread is IAPV in the US?

- a. As of Fall, 2007, IAPV was found in at least 19 states; and thus, the virus is widespread.
- b. IAPV has been present in the US since at least 2002 (Chen and Evans, 2007).
- c. IAPV seemed to have a more limited distribution in 2004 than at present (Cox-Foster et al 2007).

Considering all these factors, undue concern over IAPV detection is not warranted. While IAPV's role in colony losses remains a priority in ongoing research, we do know that high levels of other common bee viruses, such as KBV, DWV, and ABPV, have also been linked with certain incidences of high colony mortality or decline in worker numbers. We also know that nearly all bee colonies are infected with at least one type of virus and that all these viruses are potentially pathogenic.

Recommendations for beekeepers

If you have reason to believe that "virus" is negatively impacting your honey bee colonies some general recommendations are:

1) Practice hygienic practices

- a. Do not combine weak colonies with strong colonies without knowing the reason for the weakness as this may transfer disease.
- b. Do not combine or exchange colony hardware (with other beekeepers, or within an operation/apiary) as it may transfer disease.
- c. Where this is an option, irradiate dead out equipment before reusing. At a minimum, consider storing dead-out equipment as long as possible before re-use.

Scientists are actively seeking new and economical methods for reducing the transmission risks of used comb and hive equipment.

2) Reduce colony stress

- a. Control Varroa: Varroa has been shown to activate virus that were quiescent in honey bee. Use labeled products such as Apiguard, ApiLifVar or Mite away II. Do not use home made chemical mixtures.
- b. Control Nosema: Use Fumagillin according to label directions to control Nosema apis and N. ceranae in honey bees.
- c. Control Bacterial Infections: Use labeled products such as Terramycin or Tylan for American or European Foulbrood. These chemicals do not control virus and must be used according to labeled directions to control bacterial infections in honey bees.
- d. Ensure colonies are well fed, especially with protein supplement, during time of dearth.

This document was prepared and reviewed by: Dennis vanEngelsdorp, Pennsylvania Department of Agriculture;

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One of the CCD Researchers gave this brief overview of what you should expect to see if any of your colonies are coming down with Colony Collapse Disorder symptoms. Watch for these signs. If your colony has other issues you will see different symptoms. Don't ignore them, but know that you are dealing with other problems rather than CCD.

CCD NOTE:

CCD colonies are not necessarily completely dead - remember, you'll usually see a queen and a small cluster of young bees. Typically, in a given bee yard you'll see a few strong colonies and some moderate colonies - both of which visually look to be ok. Then you'll see failing CCD colonies - a queen, mostly young bees on the comb with her, and an excess of brood (at the time of year when queens are laying - often only 2-4 frames with some bees). You'll also see some collapsed colonies (with only a queen and a small retinue of very young bees that will barely

(Continued on page 13)

CCD Survey Update, continued

(Continued from page 12)

cover 1/2 of one frame), and a few empty boxes.

Over a period of a few weeks you'll usually see more failing and collapsed colonies in a yard. You'll sometimes see CCD taking out every colony in a beeyard but more often it takes out 50-80% of the colonies within a beeyard or holding yard. In large holding yards, CCD starts at one end and rolls through to the other end like a wave.

This past fall/winter/spring, there's been a higher percentage of empty boxes found in CCD apiaries (even the queen is gone). Remember also that *Nosema ceranae* and CCD are NOT the same. Cases that look like the classic *Nosema ceranae* kills reported by the Spanish had dead bees with lots of *Nosema* in them.

This message prepared by Bee Culture, The Magazine Of American Beekeeping www.BeeCulture.com

Rough time for bees on North Olympic Peninsula

By Paige Dickerson, Peninsula Daily News, Serving the North Olympic Peninsula

For the first time since he moved to the North Olympic Peninsula three decades ago, a strange silence will surround Dave Myhre's home. The hobbyist beekeeper no longer has bees in his 10 hives. Sometime between the time they were tucked quietly away in their hives for the winter, and a nice day in January when he checked on them, the bees vanished. "It will be really strange this spring not to have the bees around," the Port Ludlow-area resident said. Myhre, who said he is awaiting the delivery of some new bees, said he believes the problem is linked to a strain of the protozoan — *nosema ceranae*.

The arrival of the protozoan in the North Olympic Peninsula, which had largely escaped the inexplicable Colony Collapse Disorder that has decimated hives in other parts of the country, has hurt several beekeepers. The strain of protozoa seen in the hives grows best in cold, rainy winters. Unlike some of the other strains, the pathogen doesn't have as many obvious symptoms leading up to the death of the bees. Usually the bees will die near the hives, but Myhre believes his died when they left the hive for food. "There was about 100 that were dead in the nests, but all the rest had vanished."

Breeder loses hives

Dan Harvey, a professional queen bee breeder who owns Olympic Wilderness Apiary in Joyce, said that the new strand of *nosema* has hit the Peninsula hard. Harvey once had about 150 hives, but is down to about 75 after the protozoan killed off many of his bees. He said he hadn't been treating the bees with the chemicals because the philosophy of the apiary is to stay away from chemical solutions, and to build up bee resistance through breeding.

However, since he received lab results, he has treated his remaining bees, and advised all the beekeepers he knows to do the same. "The lab technician called me and said that before this most recent breakout, he had never seen spore counts higher than 5 million per bee," Harvey said. "But in the latest test, there was one bee that had 142 million — in one bee." "The lab e-mailed us and said that they had never seen anything like it."

The strain of fungus is more resistant to treatment than other strains, he said, so the chemical to treat it is less effective than it has been. There could be hope, though. Harvey said some of the surviving queen bees — mostly wild bees that were native to the West End — are showing an encouraging resistance to the protozoa. "There could be a silver lining," he said. "This could end up showing that through breeding a resistance could be inherited."

Other losses

Les Tavenner, a hobbyist beekeeper in Port Townsend, said that he has had losses from disease, but not lately, and not from fungus. "My worst loss was a few years back I lost about 80 percent of my hives to mites," he said.

Coleman Byrnes, president of the North Olympic Peninsula Beekeepers Association and a hobbyist beekeeper himself, said he has lost about half of his hives. He's not sure why. "Last year, we had a really late spring, a short summer and a hard winter," he said. "The bees starve mostly." He said he hadn't seen obvious symptoms of *nosema fungus*, but that he was still investigating the cause of the losses. He also said he had been treating bees with a medicine meant to fend off *nosema*.

Walter Schicker, another Jefferson County keeper, said he has lost five of his seven to mites. Mark Urnes, a Port Angeles-area beekeeper, said that he had two hives that he tended to as a hobby, but both were lost. He said he had not yet determined what caused the deaths. "I think it is really early, and I'm not sure what I would look for right

(Continued on page 14)

Rough time for bees on North Olympic Peninsula, continued

(Continued from page 13)

now," Urnes said. "Hopefully as we get warmer weather, it will start to go away."

Native bees

Bees are often used to pollinate crops, sometimes professional beekeepers transport their bees to pollinate orchards and large fields of crops. "Nearly everything we eat is touched by bees," Ed Giersch, a hobbyist beekeeper in Clallam County, said. "Beef — well what do you think that they are feeding the beef? Alfalfa, which is pollinated by bees. "Everything from the apple you eat is touched by bees."

Although the problem worldwide could lead to changing eating habits based on unavailability of certain crops, Giersch said, that on the Peninsula, beekeeping is less of a regional necessity and more of a hobby and business for honey.

Native bees could take over pollination on the Peninsula should the imported bees die out, said Judi Stewart, a Jefferson County Master Gardener and member of the Jefferson Fruit Club. "About 250 mason bees — our local native bees — could do the work of 50,000 honeybees," she said.

Reporter Paige Dickerson can be reached at 360-417-3535 or paige.dickerson@peninsuladailynews.com.

Heating Kills Honey Bee Pathogen

Bozeman, Montana-April 24, 2008 – Researchers at Montana State University have discovered a possible treatment to sterilize beekeeping equipment exposed to *Nosema ceranae*, according to Dr. Robert Cramer, an expert in fungal pathogenesis.

Using a technique called flow cytometry to measure the viability of the fungal spores of *N. ceranae*, Julie Elser in the Cramer Lab discovered that treatment of the spores with heat at 50°C (122°F) for 90 minutes led to 96% mortality of the spores. Similar treatment of the spores with extreme cold did not significantly affect viability.

While these results are preliminary, the ease, cost, and safety of heat treatment suggests that beekeeping equipment could be disinfected at temperatures that will not melt the wax in the combs.

Randy Oliver, a California beekeeper, who has been writing about *Nosema* and coordinating with the researchers, comments: "This is an important confirmation of a potential practical method for comb sterilization, that could be of immense benefit to the industry. It confirms a body of research on the previously known *Nosema apis* which suggested that *N. apis* spores were susceptible to heat treatments. The demonstrated heat sensitivity helps to explain the newer *Nosema ceranae* epidemiology. But until the actual Cramer trial, we did not know if the *Nosema apis* sterilization data was applicable."

Many beekeepers have hot rooms that could be used to clean up comb, says Dr. Jerry Bromenshenk, CEO of Bee Alert Technology, Inc. in Missoula, MT. At this time of the year, beekeepers who have lost bee colonies to *Nosema* disease may be reluctant to put new bees on to old combs, fearing re-infection. A 2-3 hour exposure of bee equipment to temperatures around 120°F may be warranted.

Bee Alert is working with the Cramer lab, Randy Oliver, and other beekeepers to set up field trials of the effectiveness of heat treatment. Funding for the *Nosema* research was provided by the California State Beekeepers Association and the Montana Agricultural Research Experiment Station.

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This message brought to you by Bee Culture, The Magazine Of American Beekeeping www.BeeCulture.com

**The Washington State Beekeepers Association Baseline Honey Bee
Colony Health Project
By James C Bach**

Vision: We see bee research as an applied cooperative program with other universities and USDA's Agricultural Research Service (ARS). Our vision for HB Research is to identify the issues and solutions in honey bee management and provide an all encompassing picture of it with causes, data and solutions. The goal is to solve the problems facing beekeeping in Washington and the western states, not just research them year after year without comprehensive and practical answers and solutions.

Goals:

1. To implement a Colony Health Project consisting of gathering information including data that would define and identify the current honey bee health status and issues in commercial migratory colonies, and
2. Develop a data picture of the current baseline colony health of honey bees in Washington, and
3. Identify strategies that would improve colony health, queen and colony survivability in the next five years, and
4. Project methods should be provided in detail so that industry and potential funding sources can get a comprehensive view of the scope, complexity and relative value of the study, and
5. Disseminate Project observations, findings, and data in industry newsletters, web pages and journals.

Background:

A baseline definition and parameters for colony health have never been established. We do not know:

- what constitutes colony health,
- how it is influenced by beekeeper management, migratory transport,
- the hive agricultural environment,
- pollen species nutritional value variability,
- naturally occurring hive and comb contamination, and from that caused by agricultural chemicals and bee pest miticides,
- how these various influences change over time to alter colony survival and longevity.

We know something about honey bee nutritional needs but little about various pollens available to bees in their migratory transport and individual pollen species nutritional parameters or relative quality. Various man made pollen supplements are available but we know little about their quality except from beekeeper reports of their relative attractiveness to bees and the resulting colony population increase.

Project Parameters:

1. A two or three year baseline research project (The Project) consisting of a monthly analysis and sampling of hives and their contents in one or two commercial interstate migratory operations between WA, CA, ND & MT.
2. The analysis would consist of the current bee hive internal environment to include
 - Bee samples from the hive entrance and top of the colony, and in the honey supers (during the nectar flow months) to be analyzed for:
 - Blood protein levels,
 - Bee fat body size and condition,
 - HBTM, Varroa mite and Small Hive Beetle load,
 - External mite species – incidence and levels,
 - Nosema species – incidence and levels,
 - Amoeba disease incidence and levels,
 - Virus species
 - Other pathogens and residues.

WSBA Colony Loss Survey

Spring 2008

Please complete all questions so we can compile complete data. Thank you.

How many colonies did you have in early July 2007? _____

How many colonies did you have in early October 2007? _____

How many colonies did you have in early March 2008? _____

What do you think was the cause, or symptoms of the losses you had? (Check all that apply.)

bees and queens still alive, or
all live bees absconded from the hive with only a few dead bees left and 6 to 8 combs of honey,
or
bees all dead on the bottom board, or starvation.

What was your Varroa levels (per 100 bee sample) in September 2007? _____, or

Unknown _____

What was your Honey Bee Tracheal Mite level (% infested) in September 2007? _____, or

Unknown _____

Did you treat for Varroa in 2007? What did you use _____, and

when did you use it (month)? _____

Did you treat for HBTM in 2007? What did you use _____, and

when did you use it (month)? _____

Do you plan to restock the empty hives? With packaged bees? _____, or

With a nuc or split? _____

Thanks for completing our survey. It will provide important information about colony losses in Washington. The survey data will be compiled, economic calculations made and the information distributed to policy makers.

Thank you,

Please return to: Jim Bach, PO Box 397, Selah WA 98942-0397

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