

# Washington State Beekeepers Association

*Keep the "Bee" in Business*

Publication of Washington State Beekeepers Association

www.wasba.org

March 2007

## President's Message

Well we had our first executive board meeting for the new year and it was well attended. I want to thank everyone who attended. It was good to see Arlene and Lee Massey. They were really missed at the convention. Lee is still trying to sell out but I'm not sure it will ever happen as he keeps buying bees.

We will plan on another meeting June 23 so check the web site for the location. We are hoping it will be a picnic affair and that will be nice. We are going to have two field days this year one in Puyallup and one in area one. We won't have one in Pullman this year. Steve is working an agenda with each area.

There will be continued discussion around funding of research and what research will be funded. The nominations are in for the Apiary Advisory Board and the committee will be taking them to the state.

We came up with list of potential speakers for the 2007 convention and I think we did pretty good building a good program. Now it is up to Steve Sheppard and I to get them in place. Look for more info on the web site about the convention. We will try to do monthly updates and get everything going.

The Executive Committee has approved Bob Arnold, Eric Olson, Lisa Knox and I to meet with Oregon and work

out a formal tri-state convention agenda and set of rules we will operate by. Hope to report on our progress in June.

Be sure and read the meeting minutes as we covered a lot of items at the meeting and you can get a good feel for the programs. Check the web site for updates to the agenda for June as new items come up.

Jerry Tate

## June Executive Board Meeting Agenda

6/23/07

10-11 will be committee meetings

11-2 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

Individual Membership

Association Membership

Master Beekeepers Certification Committee Report

Area Reps

Bee yard Reports

### Old Business:

WSU Report-Steve Sheppard

Report on Apiary Advisory Committee Formation-Eric and Jim

Status of Joint Convention-Jerry

Field day status

### New Business:

Discussion of Options for improvements Bee yards support

How can we support local clubs better

## Washington State Updates

### Program Calendar for the Association.

#### June 23, 2007:

WSBA Executive Board Meeting

**Location to be determined**

#### October 25 to 27, 2007:

WSBA Convention at the beautiful

**Sun Mountain Lodge** in

Winthrop, WA

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# Executive Board Meeting Minutes

WA State Beekeepers Association  
March 10, 2007 Executive Board Minutes  
Jody Lynn Pilarski, Secretary

The meeting location was the Bar 14 Restaurant, Ellensburg Washington.  
The Meeting was called to order at 11AM by Jerry Tate, WSBA President.

## Committee Reports

1. The Secretary's Report-minutes in last newsletter.

A motion was made to accept the Executive Board minutes from the November, 2006 meeting as written.  
Motion Seconded/ Motion carried and Approved.

2. The Treasurer's Report

The Treasurer's Report was distributed by Lisa Knox, Treasurer. One correction was submitted to change the total membership date line item from 2006 to 2007. The general account balance is \$10,792.56. The scholarship/research savings and CD balances subtotal is \$66,651.25 for a total balance of \$77,443.81. It was noted that during the past year, grants in the amount of \$4,750.00 were distributed. The funding for these grants came from the following sources: \$750.00 from the Van Wechel Research Fund, \$2,000.00 from the Timmons Scholarship Fund, and \$2,000.00 from the Thurber Scholarship Fund.

A motion was made to accept the Treasurer's Report.  
Motion Seconded/ Motion carried and Approved.

3. Master Beekeepers Certification Committee Report

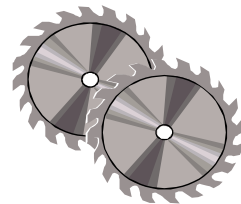
The Master Beekeeper Committee is going to be reviewing and updating the Apprenticeship Certification tests. The last revision of these tests was in 2000. The Committee is also going to be taking over the responsibility of the certificate database and issuing of certificates. Committee co-chair, Paul Lundy, will update the information according to what has already been submit-

*(Continued on page 4)*

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## Oregon Beekeeper Remembered

### William Joseph Ruhl

Wednesday, January 31, 2007

A memorial service will be at 2 p.m. Saturday, Feb. 3, 2007, in Lents Baptist Church in Portland for William Joseph "Bill" Ruhl, who died Jan. 29 of leukemia at age 88. Mr. Ruhl was born Jan. 19, 1919, in Tekoa, Wash. During World War II, he served in the Army Air Corps in South Africa and Europe.

After the war, he moved to Portland, where he owned Oregon Rubber Mats and then Ruhl Bee Supplies for 16 years. He also was a beekeeper, raised and sold queen bees and sold honey. He taught beekeeping in Indonesia and in Clackamas and Portland community colleges.

He was a member of the church. In 1942, he married Wilma Kent; she died in 1989. He married Geyne Crouch in 1991.

Survivors include his wife; daughter, Kathleen Matsunaga; son, Bill Jr.; stepson, Paul Rohay; eight grandchildren; and nine great-grandchildren.

Remembrances to the mission fund of his church. Arrangements by Farnstrom-Gable.

## Tate's Honey Farm

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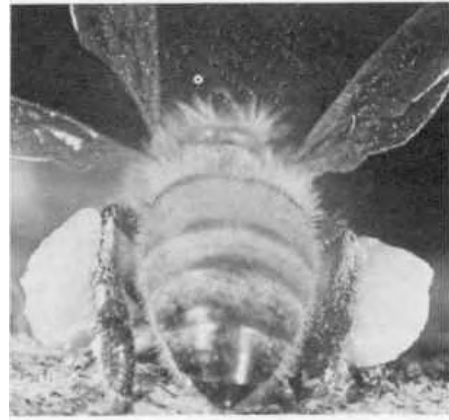
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# Executive Board Meeting Minutes, continued

(Continued from page 2)

ted. Once he has the database current, Tim Bueler graciously accepted the responsibility for maintaining and issuing the certificate program. WSU has had staffing changes that have made it difficult for them to complete these duties.

## 4. Area Reps

All areas reported that the colder weather has slowed everything down. The bloom seems to be delayed due to the cold weather with some indication of "Flash Blooms" with the Almond crops. Commercial beekeepers are reporting heavier losses. The hobbyists and local beekeepers seem to be suffering less loss of hives. Bee brokers have not reported an increase in the cost of packages at this time. The commercial beekeepers are importing bees to accommodate or "boost" populations for their losses; however, they are seeing significant bee mortality from those imported bees.

Area 6 currently does not have an area representative. They will be recruiting for a new representative for this area.

## Old Business

### 1. Mt Baker Beekeepers Convention report-Jo Miller

Jo Miller was pleased to announce that the Mt Baker Beekeepers Convention earned a profit from the conference! The gross income was approximately \$10,000 and after expenses, earning approximately a \$1,400 profit. They are building a history book of conferences from the past 3 years and are developing a conference notebook that will include a breakdown of actual tasks with expenses in an effort to help other associations with future conferences. It was noted that everyone had a great time and was very complimentary of the event. The event book will include cost for speakers, location, food, entertainment and projections for "libations".

Miriam Bishop expressed great gratitude for the incredible gift that she received from the convention attendees and wanted to thank everyone for their support during her difficult illness.

The next State Convention will be at Sun Mountain Resort, October 25-27, 2007. Efforts are underway to schedule speakers. More information will be forthcoming in the newsletter.

### 2. WSU Report-Steve Sheppard

Dr. Sheppard reviewed several personnel changes that have occurred within the apiary program which included two graduate students soon to be completing their programs and moving on to other endeavors. Dr. Sheppard has hired one part-time technician and there is a new student beginning the fall program. Graduate students Ben Horwath and Sam Hapke continue to work with the program.

Discussion took place regarding strengthening the WSU program. Eric Olson and others within the state have been advocating with the WSU Dean to develop the apiary program into a more western area service center and diagnostic resource. Dr. Sheppard mentioned that it is frequently easier to obtain capital funding rather than full time employees. There is a projected \$100,000 cost to improving the WSU honey house and program. Eric was encouraging membership support in helping this program develop into a state of the art apiary resource center for the west coast. Eric and Jerry mentioned that they were looking at grant monies and funding through the Pesticide Commission and Tree Fruit Commission. Several of the grants are requiring one-to-one matched funding before they will commit to a project. The granters look at "gifts in-kind" but that doesn't count toward the one-to-one matching cash leverage.

(Continued on page 5)



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# Executive Board Meeting Minutes, continued

(Continued from page 4)

Dr. Sheppard gave an overview of the queen rearing program. They are trying to develop several queen lines for evaluation. They have scaled back to 20 colonies for each line. They are using the same process as last year. They will still be supplying some queens to local organizations and they are trying to get 2 sets of queens through 2 cycles that would be finishing for the year in July.

Dr. Sheppard discussed bringing new bee stock into the US and the fact that there are still significant restrictions from Europe to import new stock. Some researchers however, have been able to have drone sperm imported. Dr. Sheppard will be pursuing this for the WSU program. A handout was given to the members that outlined 2007 Honey Bee Research Needs. Members were encouraged to review this document and contact Jim Bach if they have any additional comments or ideas to be included. The goal is to develop an ongoing "colony health over time standard".

### 3. Report on Apiary Board Formation-Voting

Twelve candidates are being forwarded to the Apiary Advisory Board Director for approval. Candidates are as follows:

Area 1 – Paul Lundy, Tim Bueler, Stan Pallo  
Area 2 – Bob Smith, Jim Smith, Carol Elliott  
Area 3 – Eric Olson  
Area 4 – None  
Area 5 – Paul Hosticka, Tim Hyatt  
Area 6 – Jerry Tate

All candidate names will be forwarded on to the Apiary Board Director. Recommendations from WSBA for committee appointments are as follows: Stan Pallo, Jim Smith, Eric Olson, Paul Hosticka, Tim Hyatt, Jerry Tate

A motion was made to accept and forward committee membership appointments to the Apiary Board Director as stated.

Motion Seconded/ Motion carried and Approved.

## **New Business**

### 1. Discussion to resolve issues over joint Conventions-Jerry Tate

Jerry Tate discussed the concerns regarding joint conventions with the Oregon State Beekeepers Association. This has been a long time tension between the two state organizations and WSBA wants to reach out and resolve the issues. Jerry asked for support from the Executive Board to meet with the Oregon group and negotiate new rules for future joint conventions. These rules would include the goals of the conventions, how to split resources/profits, and shared responsibilities. The initial intent would be to replace the state convention approximately every 3 years. The Board would recommend a convention on the east side of WA State, the west side of WA State and then a possible tri-state convention that could include the Idaho beekeepers.

A motion was made to form a committee to meet with the Oregon State Beekeeper Association. Volunteering to the committee are: Bob Arnold, Jerry Tate, Lisa Knox, and Eric Olson.

Motion Seconded/ Motion carried and Approved.

### 2. Sam Hapke Grant Request-Scholarship Committee

Sam's project "Integrated mite management of the parasite *Varroa destructor* in western Washington State, USA" was approved for funding by the Scholarship Committee. The \$1,000 requested will come from the Van Wechel Research Fund when the certificate of deposit matures on March 28, 2007.

### 3. WSU Field Day discussion-Jerry Tate and Steve Sheppard

There was a discussion to have another set of field days. Approximately 40 people attended the Puyallup Field Day at Farm 5. Approximately 60 people attended the WSU/Pullman Field Day. It was noted that the majority of the attendees in Puyallup were novice/new beekeepers. The Pullman attendees were more "seasoned" beekeepers. The Board agreed to skip the Pullman field day for the next 2 years in order to create more of a demand from newer beekeepers in that area. Pierce County Beekeepers Association will coordinate a date and time with Dr. Sheppard for the next Field Day at Farm 5 in Puyallup.

### 4. Bee yard reports-Tim Bueler, Bob Arnold and Louis Matej

Tim reported that they are having mixed results regarding the WSU queens and bee yard program is having a slow start. They

(Continued on page 6)



# Executive Board Meeting Minutes, continued

*(Continued from page 5)*

feel they that overall it is a good start but are having very heavy mite loads and are waiting to see how things are when the weather improves.

Ron Babcock had many questions regarding the ability of the club to re-queen with stock that didn't come from the WSU program. Dr. Sheppard assured the group that whatever they do to keep their program going is up to them. The local clubs are not required to re-queen with WSU stock. The initial WSU grant was for the first 3 years at the Pullman program and whatever people do in the field to keep their local apiaries going was fine.

Louis Matej reported that the Pierce County Beekeeping Association currently has 8 colonies. They seem to be doing fairly well but it didn't appear that any of the WSU queens established themselves. The club was also given a building by the WSU extension program to store equipment and support the local program. The apiary is a great resource for the students. The club also has a mentor program that also will be using the apiary for teaching and questions. The club also is going to try to develop its own queen rearing program utilizing the club apiary.

Jerry Tate asked the Board for more options and ideas for supporting and assisting the local clubs with their apiaries. Anyone that would like give input, please contact Jerry.

## 5. Goals for 2007 WSBA

This item was tabled until the June Meeting.

## 6. Discuss/report by Jim Bach on Nosema ceranae

Jim discussed the Nosema ceranae situation. This Nosema appears to be a new type/strain from Europe. They found the first samples of this in Kentucky and Florida. The Nosema appears to look different than what we typically experience, however it may actually be the same. Jim is proposing that local associations take samples and send them to him. Jim will research types of bottles and solution protocols for the collection of the samples. He in turn, will then send the samples to a diagnostic lab to find out if this is associated with "colony collapse disorder". The diagnostic lab where the sample will be sent to is in France. Jim stressed the importance for our state to be included in the data collection and analysis.

Jim also stated that this again supported the need to have a local lab (WSU) to complete diagnostic testing and research.

A motion was made for the WSBA to fund these efforts.

The motion was tabled until more information on cost could be gathered.

## Other Business

### 1. Boy Scouts of America

Discussion took place regarding the need to encourage more hobbyist beekeepers. It was noted that the Boy Scouts of America no longer have the beekeeping merit badge in their national program. Paul Lundy mentioned that if clubs are interested they can do a special order through the Boy Scouts of America for the merit badge. Paul also stated that he helped present a merit badge class for Boy Scout Troop 1506 in his local community, as does Jerry Tate. Several Board members showed interest and will be following up on conducting classes in their areas.

### 2. Prime Curriculum

Lisa Knox mentioned a group called "Prime Curriculum". The organization develops and distributes educational kits called "Where Your Food Comes From". These packets are used in grade school classes and in the past received funding from WSBA via Bob Stump in the amount of \$150.00.

A motion was made for WSBA to provide funding in the amount of \$150 to Prime Curriculum for educational packets.

Motion carried/second/ and approved

### 3. Alice Van Wechel

Alice was in the hospital undergoing heart surgery. She is currently recuperating at Garden Village, 206 S 10<sup>th</sup> Ave, Yakima WA 98902. The telephone number is: 509-453-4854

Meeting was adjourned at 2:00 pm.

The next meeting will be in June/July. Refer to the newsletter for more information.

# Washington Apiary Advisory Committee to be Recreated

## Washington Apiary Advisory Committee To Be Recreated

By James C Bach  
WA State Apiarist, retired  
[jcbach@fairpoint.net](mailto:jcbach@fairpoint.net)

*Originally reported in the Western Apicultural Society Winter 2007 Newsletter*

The Washington State Beekeepers Association (WSBA) President Jerry Tate will ask the Washington State Department of Agriculture Director to recreate an Apiary Advisory Committee (AAC). The AAC was first instituted in about 1983 to advise the director on all matters of interest to beekeepers in the state. The state was divided into six county groups each having approximately the same beekeeper and colony numbers to achieve approximately equal representation. Six commercial and non-commercial beekeepers served three-year terms until the Apiary Program was terminated in December of 2000.

Jerry asked Vice President Eric Olson, John Timmons and James Bach to develop a list of nominees to present to the director. Chapter 15.60 RCW provides authority to the director to form the committee. "The committee shall advise the director on administration of this chapter and issues affecting the apiary industry. The committee may also advise the director on the funding of research projects of benefit to the apiary industry." It may include "... members representing the major segments of the apiary industry including commercial and noncommercial beekeepers, representatives from the Washington State University apiary program or cooperative extension, and receivers of pollination services as deemed appropriate."

When the WSDA Apiary Program was terminated WSBA recommended to the director that the beekeeper registration program be retained so that the registration fees could be used to fund research of interest to Washington beekeepers. It was determined at the time that WSBA funds could be used for education and other programs, but it was important to have a research funding

*(Continued on page 8)*

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## Washington Apiary Advisory Committee to be Recreated, continued

mechanism. Many beekeepers at the time supported the idea of retaining the beehive registration process in the department for this purpose. In 2005-06, 251 beekeepers registered 71,334 colonies. There is approximately \$73,000 in the registration account. It costs the department about \$2,000 to conduct the registration process each year.

The AAC development committee has mailed a cover letter, a nomination form and nominee biography questionnaire to 365 registered beekeepers and beekeeper associations asking for nominations to the AAC. WSBA members agreed on a policy that only beekeepers who have registered their bees and paid registration fees should be appointed to the AAC to decide on how their fees are to be spent. They also decided members appointed to the AAC should not be required to be members of any beekeeper association. Unregistered beekeepers are encouraged to register their bees and participate in the AAC process by attending committee meetings and providing information, ideas and suggestions for the benefit of Washington apiculture.

Since much of the state statute and regulations were removed with the termination of the Apiary Program it may be necessary to re-create regulations that will specify the county areas that beekeeper members will represent and perhaps how many receivers of pollination the director will appoint to the AAC.

## Nosema Ceranae - Is it in Washington State?

### Nosema ceranae -- Is It In Washington State?

By James Bach

“Recent scientific research has shown that *Nosema ceranae* (*N. ceranae*) may be present in many countries in Europe. This, perhaps “new” disease could have arrived in Europe around the year 2000 and has contributed to dramatic colony losses throughout Europe.

*N. ceranae* does not necessarily cause the typical diarrhoea observed with infections of *Nosema apis* but is known to effect progressive population disappearance (“dry nosema” or “slow nosema”). Unlike *N. apis*, *N. ceranae* is present in colonies throughout the entire year. It is thought to be much more virulent than *N. apis*. *Nosema ceranae* cannot be distinguished from *Nosema apis* by a simple microscopic observation of the spores. The only way to distinguish between the two species is to perform genetic screening by molecular biology methods.”<sup>1</sup>

VITA is intending to make a general survey of *Nosema* incidence in Europe during 2007 with the help of beekeepers. They are inviting honeybee samples from any beekeeper throughout Europe that suspects that their colonies are suffering with this disease. They are also inviting samples from the USA exclusively through the Apiary Inspectors of America.

Ingemar Fries (Germany) first described *N. Ceranae* in the Asian honeybee *Apis cerana*. When European researchers began looking they found it in their own countries. German information suggests that *N. ceranae* is more virulent and kills bees throughout the year not just during the winter. A translation from the German by Eric McArthur MIL, by permission from Dr. Wolfgang Ritter, Freiburg University informs us that *N. ceranae* was found in *Apis cerana* in 1996.<sup>2</sup> In 2005 Chinese researchers reported it had been discovered in *Apis mellifera* in Taiwan. That same year the Veterinary Medicine University in Madrid, Spain found it in European honey bees. In Spain, *Nosema* had risen from 10% in 2000 to 20% and 30% in the following years reaching 88% in 2004. Using molecular-genetic methods (PCR) the new vector has been shown to be present in Germany in 8 of 10 tested apiaries. In late summer and autumn of 2005 with moderate to severe *Nosema* infestation in all of the samples tested, most of the colonies or the whole apiary died. The symptoms of defecation and crawling bees sometimes suspected with *Nosema* were not always present in infected apiaries.

Observations have determined that crawling bees and colony losses occur throughout the year, colonies are dying within a short time period, some hives are full of dead bees, many apiaries were showing numerous bee cleansing flights even at low temperatures of 4 C. (39.2F.) At this time linkages between these symptoms and *N. ceranae* infestations can't be made. Dr. Adony Melathopoulos also mentions that Fumagillin can be used successfully to control *N. ceranae*.

In an email report of a recent study Adony says that “Median survival time of *N. apis* infected and non-infected bees ranged from 18 to 54 days.” In the *N. ceranae* study report<sup>3</sup> abstract: “*Nosema* free bees were inoculated with 125,000 *N. ceranae* spores. Three replicate cages of 20 honey bees were prepared and fed the spores in syrup, with one control cage that was fed only sugar syrup. The infection rate in the treated cages was 100% of the dose administered. The presence of *Nosema* inside the ventricular cells was confirmed using ultra-thin sectioning and transmission electron microscopy.

By day 3 p.i. (post-infection) a few cells (4.4% ± 1.2) were observed to be parasitized. By 6 days p.i. more than half of the

(Continued on page 15)



## Oregon & Idaho Beekeepers Meet

*By Rosanna Mattingly, originally reported in the Western Apicultural Society Winter 2007 Newsletter*

About 170 beekeepers from around the Pacific Northwest took up residence along the Oregon Coast at Newport in late October for a joint meeting of Oregon and Idaho beekeepers' associations. In addition to conference sessions, attendees gathered in hallways with hot coffee and in unseasonably warm sunshine beachside. Conference presenters Susan Cobey (Ohio State University), David VanderDussen (NOD Apiaries), Joe Traynor (Scientific Ag Co), Marina Meixner and Steve Sheppard (Washington State University), Diana Sammataro (Carl Hayden Honey Bee Research Lab), and others shared a wealth of information, longterm experience, and perspectives on both the known and the not known.

Participants had opportunities to increase their understanding about declines in the genetic diversity of North American honey bee populations, the evolutionary history of bees in Ethiopia, the history, development, approaches, and ongoing efforts in queen breeding programs. They also learned how to raise queens, about almond pollination and implications for beekeepers, the many Varroa mitotypes, research and appropriate management, including benefits and use of formic acid treatment for mite control, and the fantastic array of mites on the planet (even though they include Tropiclaelaps) and the unsolved mystery of their communication by means of volatile substances.

The conference also provided hands-on events, from candlemaking to honey bee dissections for tracheal mite infestation, as well as a bee school for novice beekeepers. In addition, conference-goers were able to preview a draft of an updated publication on reducing bee poisoning from pesticides, soon to be released by Oregon State University's Extension Service.

## Apiary Advisory Committee Update, by Jim Bach

### Apiary Advisory Committee Project Update #1

Eric Olson, WSBA Vice President, Tom Hamilton, ID commercial beekeeper and Jim Bach have met with Washington State University to discuss the enhancement of the honey bee research program under the PF Thurber Endowed Chair. We discussed the current and urgent needs of commercial and non-commercial beekeepers in the western states. In preparation for the discussions we created a list of research needs (see elsewhere in this newsletter). They focus on the basic definition of colony health and how little we know about it. Much research has been done on aspects of nutrition, larval development etc. but nothing has been done from a perspective of everything going on in the bee hive. We want to include such things as environmental, chemical and other residues in comb, the effect of miticides on bee behavior, their residues in comb, pollen nutritional quality, queen pheromone production, brood nest air sampling, queen survival, brood survivability and other factors of the colony environment. With this complete picture, monthly for two or three years we should have a comprehensive idea of what is going on in hives, especially migratory commercial hives. Having this information will enable us to conduct other studies related to colony health and survival, and eventually with collaborative research going on in other parts of the country, develop a whole picture of colony health and how to design changes to colony health.

Dr. Steve Sheppard is working on a visionary approach to our research needs, the number of scientists, technicians and hourly staff needed to accomplish our vision. Next we will sit down and determine potential collaborators in this research effort, funding sources, goals and objectives, priorities of research to be conducted, and the publication of information.

On March 8, 2007 Eric Olson, John Timmons and I met with the Director of Agriculture Valoria Loveland, Deputy Director Bob Gore and Asst. Director Mary Toohy to discuss the formation of an Apiary Advisory Committee (AAC). The committee will advise the director on issues of interest and concern to the beekeeping community and on research projects that need funding from the beekeeper hive registration fees in an account with the department. Director Loveland endorsed the idea for an AAC and promised the help of her department in getting it formed. She will select nominated registered beekeepers, representatives from pollination user groups and a WSU representative to sit on the committee. We hope to have the first meeting of the AAC in May of 2007.

Any beekeeper may attend the AAC meetings and give input to the committee. They are also encouraged to write us with their ideas, concerns, goals, etc. that will give direction to the deliberations of the AAC. We will probably start by mailing the meeting announcement to registered beekeepers but we will also post all AAC information on the WSBA web site at: [www.wasba.org](http://www.wasba.org).

These AAC Updates will be published as needed to keep you informed and will be posted on the WSBA web site. Stay in touch for more information.

Jim Bach, [jbach@fairpoint.net](mailto:jbach@fairpoint.net), 509-910-6861.

## WSU Update; Marina Meixner leaves for Germany

Dear Washington State Beekeepers,

The new year is here and brought some major changes with it: I will be leaving WSU and the bee breeding program and move to Germany in the end of February. I will start a new job at the bee research institute in Kirchhain in March. This is a permanent position, in its scope similar to the one I held at WSU, in that it involves honey bee breeding, bee pathology (mainly viruses) and also some extension work. I am very excited about this new position and also about the opportunity to move "back home" (although I know that it may give me some "culture shock" in the beginning).

I have very much enjoyed to work with the Washington State Beekeepers and I want to thank all of you for your interest in the selection and breeding program and your active and encouraging support. I am sure that the positive collaboration between the beekeeping community and WSU in this area will continue and that "our" queens will continue to improve!

Keep me informed.  
Stay in touch and come visit me in Germany!

Best Wishes,  
Marina



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## 2007 Honey Bee Research Needs, by Jim Bach

### 2007 Honey Bee Research Needs

Define colony health – individual bee health

A baseline definition and parameters for colony health have never been established. We simply do not know what constitutes colony health, or how it is influenced by beekeeper management, migratory transport, hive agricultural environment, natural hive and comb contamination and by agricultural chemicals and miticides. We do not know how these various influences change over time and how those changes alter colony survival and longevity. We know a little about colony nutritional needs but they have not been specifically identified. We know a little about various pollens available to bees but not their nutritional parameters or relative quality. Various pollen supplements exist on the market but we know little about their quality except by beekeeper reports of their attractiveness to bees.

A study is needed that will sample identified colonies in three migratory operations, eastern and western Washington hives, monthly and uniformly for three years.

Sample bees in center, edge and top of brood nest  
Sample in honey supers later in the year, or continue in

brood nest, & Correlate data from the sample sites (to determine ease of sampling and comparability of data)  
Identify larval survivability  
Quantify and qualify fat bodies in individuals  
Blood protein content (other constituents)  
Marked queen longevity  
Colony noise measured with dB meter  
Number of bees in queen retinue  
Look for external mite species on bees  
Amoeba disease  
Other internal conditions observed  
Nosema test in spring and fall (early March & mid to end of Sept.)  
Colony HBTM and Varroa assay in spring and fall (or monthly)  
Colony air sample (Bromenshenk)

(250 combined bee sample from ten random hives in apiary, mix sample, remove 125 bees, and dissect 50 bees for HBTM, 25 bees for Nosema, & randomly another 50 to compare uniformity of results.) Note beekeeper (keep anonymous), sample number, collection date, apiary location to nearest city & direction from city (NW Seattle, N

*(Continued on page 12)*

## Pesticide Update: Section 18 Issued for CheckMite+ Strips

Pesticide Notification Network; This information **and more** are available on the PNN

web page at: <http://ext.wsu.edu/pnn/>

Notification Number: 2007-27

Date: 03/01/2007

EPA has issued a Section 18 (07-WA-04) for the use of **CheckMite+ Bee Hive Pest Control Strips** to control small hive beetles in honeybee colonies. Use under this Section expires 2/1/08.

For Use Only Under Section 18 Authorization for **Control of Small Hive Beetles** in Honeybee Colonies.

For use only as authorized in **WASHINGTON STATE** by the U.S. Environmental Protection Agency (EPA) under section 18 of F.I.F.R.A. It is a violation of Federal law to use this product in a manner inconsistent with the Section 18. This labeling must be in the possession of the user at the time of application. **This labeling expires February 1, 2008.**

**Crop / Usage Sites:** bee,

**Product:** CheckMite+ Bee Hive Pest Control Strips

**Types:** Insecticide

**Ingredients:** coumaphos

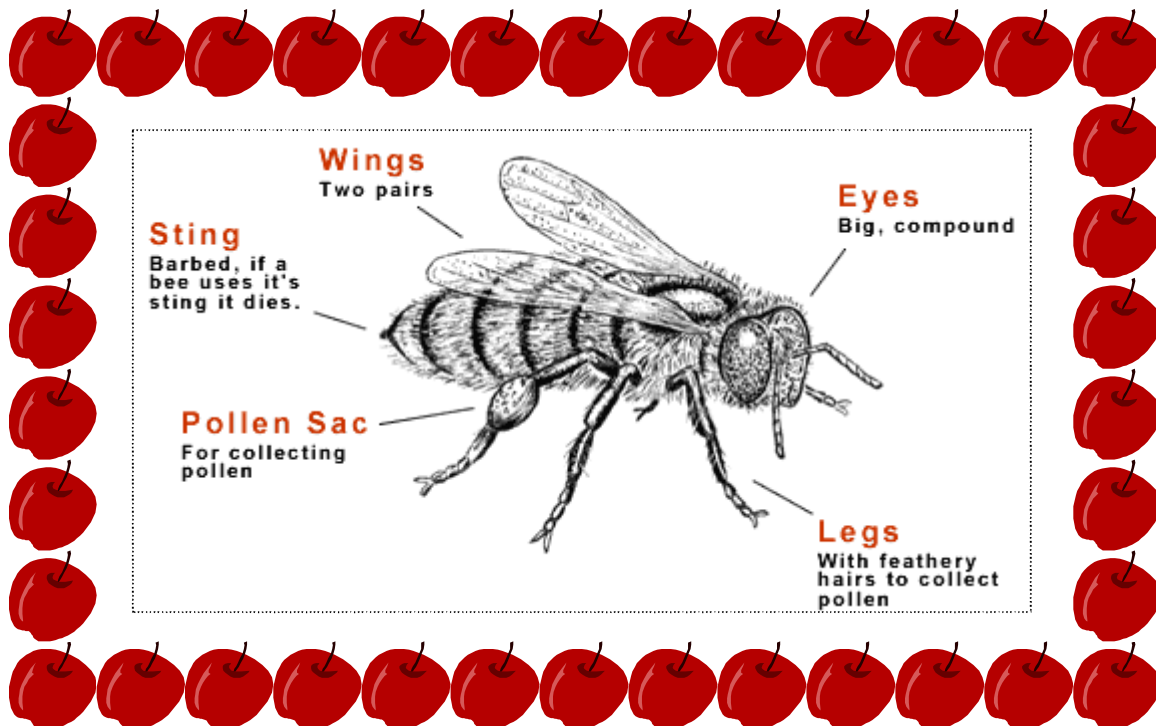
**Manufacturer:** Bayer CropScience

*Ed note: This section 18 does not allow the use of CheckMite+ Strips for Varroa control, only the Small Hive Beetle.*

## WSU Update; Ben and Sam

New grad student, Sam Hapke, will be studying IPM at the Pierce County Apiary in the coming year. His studies will look at the differences between mite treatments in the damp west half of the state vs. the much drier and colder eastern half.

Our other grad student, Ben Horwath, has been busy in CA with commercial beekeeper Eric Olsen from the Yakima Valley. Ben is studying real world, commercial, migratory beekeeping and how it affects the bees. FINALLY, we're getting real world studies and Eric (along with almost everyone at WSBA) is ecstatic!



## 2007 Honey Bee Research Needs, by Jim Bach - continued

(Continued from page 10)

Grandview etc.), state, # of colonies in apiary, # of colonies sampled.

### Queen acceptance

- Queen source(s) and strain
- Identify queen introduction practice
  - Queen cage introduction
  - Cell introduction, where placed, when
  - Marked queens?
  - Placed in Nuc, split or parent colony

- Queens kept in queen bank
  - Bank fed pollen supplement
  - Queens attractive or not

- Is old queen being killed and dropped in brood nest
  - Queen pheromone contamination
- Do beekeepers look for a second queen?
- Queen rejection time period – days

### Queen longevity – weeks, months

- Note queen strain and source variables
- Effects of miticides

### Pollen hoarding behavior

- Some colonies gather very little – small pellets that go through the trap screens
  - Stored pollen maintains smaller brood nests
- Some gather a drawer full in the same time period

### Pollen varieties available during monthly sampling

- Identify plant species
- Identify pollen grain surface texture
- Identify nutritional constituents of pollens
- Identify by month

### Frame and comb residues

- Age of comb
- Is brood comb wax contaminated
- Swab cocoons vs. comb extraction
- Larval cocoons contaminated – remove from cell for analysis
- Amount of wax available for contact by bees in brood combs
  - Cell top edges + cell caps

### Honey bee diagnostic laboratory needed.

A previous lab closed because of the owner's other commitments. There is no other lab in WA, OR, ID or MT to our knowledge; WSU could provide the valuable service and charge a fee

James C Bach

[jcbach@fairpoint.net](mailto:jcbach@fairpoint.net)

## Other Research

### Journal of Economic Entomology

2007, vol. 100, no. 1, pp. 1 - 10

### Duration and Spread of an Entomopathogenic Fungus, *Beauveria bassiana* (Deuteromycota: Hyphomycetes), Used to Treat Varroa Mites (Acari: Varroidae) in Honey Bee (Hymenoptera: Apidae) Hives

W. G. Meikle; G. Mercadier; N. Holst; C. Nansen; V. Girod

### Abstract

A strain of the fungus *Beauveria bassiana* (Balsamo) Vuillemin (Deuteromycota: Hyphomycetes) isolated from varroa mites, *Varroa destructor* Anderson & Trueman (Acari: Varroidae), was used to treat honey bees, *Apis mellifera* L. (Hymenoptera: Apidae), against varroa mites in southern France.

Fungal treatment caused a significant increase in the percentage of infected varroa mites compared with control treatments in two field experiments. In the first experiment, hives were treated with a formulation containing 0.37 g of *B. bassiana* conidia per hive and in the second experiment with a dose of 1.0 g of conidia per hive. The percentage of infected varroa mites also increased in the nontreated (control) hives, suggesting a movement of conidia, probably via bee drift, among the hives.

Mite fall was significantly higher among treated hives compared with control hives on the sixth and eighth days after treatment in the first experiment. These days correspond to previously published data on the median survivorship of mites exposed to that fungal isolate. The interaction of treatment and date was significant in the second experiment with respect to mite fall. Increases in colony-forming unit (cfu) density per bee were observed in all treatments but were significantly higher among bees from treated hives than control hives for at least a week after treatment. The relationship between cfu density per bee and proportion infected was modeled using a sigmoid curve. High levels of infection (>80%) were observed for cfu density per bee as low as  $5 \times 10^2$  per bee, but the cfu density in hives treated with 0.37 g generally dropped below this level less than a week after treatment.

We have shown that the application of the conidia of fungi occurring naturally in beehives is associated with greatly increased percentages of infected mites and with significantly increased daily mite fall. These results are a promising step toward developing new control strategies for varroa. The dosages used here were selected as being sufficient, based on our past experience with entomopathogenic fungi, without being excessive, because conidia are generally expensive, but studies on dose response are needed.

Considering the dynamics of mite fall, percentage of infection, and cfu density per bee observed here, future work also should explore the effects of a second treatment per hive, probably after 1 or 2 wk when cfu density per bee had declined.



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## New Honey Bee Publication From OSU, U of ID and WSU

### PNW 591, titled "*How to Reduce Bee Poisoning from Pesticides*".

This 28 page pamphlet discusses causes, signs, and symptoms of bee poisoning; state regulations regarding bee protection; measures that beekeepers, pesticide applicators, and growers can take to protect bees, and hazards from pesticides other than insecticides, miticides, and blossom-thinning agents. Contains tables indicating toxicity of insecticides to honey bees, alfalfa leaf cutting bees, alkali bees, and bumble bees. WSBA contributed \$3,000 toward the cost of printing this publication.

You can view the new publication for free on the web at:

<http://extension.oregonstate.edu/catalog/pdf/pnw/pnw591.pdf>

## Colony Collapse Disorder

From Extension Apiculturist Eric Mussen in the  
*January/February 2007* update newsletter from UC Davis.

This is one way to bring our profession into the limelight, but not the best way. In case you have been living in a cave recently, commercial beekeepers (and some others) around the country have been watching their populous colonies dwindle right down to few or no bees in days. This started in the summer and continues to this day. The empty hives have honey, some have stored pollens, and sometimes significant patches of brood in them. The neglected brood appears to have every disease that we can recognize and other conditions seen only when brood suddenly is no longer is cared for, gets chilled, dies, and decomposes.

Besides all the media attention, honey bee researchers from the USDA bee lab in Beltsville, MD, the Department of Entomology and cooperating scientists from Penn State University, and researchers from the University of Montana are involved. They have scurried around the country taking samples of bees and combs (from collapsing and seemingly healthy colonies) and asking questions of each affected beekeeper. The last samples were taken from south-central California last week, and now there will be thousands of hours of laboratory tests conducted to see if there is a common, negative thread to this problem.

Dr. Jerry Bromenshenk from the University of Montana is conducting a Web survey of beekeepers having this problem, and those who don't, to try to determine commonalities. You can do Jerry a big favor by going to the following Web site and entering data from your operation, good or bad:

[www.beesurvey.com](http://www.beesurvey.com)

One of the suspected culprits in these colony losses is the recently named species of what we used to call a microsporidian, but now they tell us it is a type of fungus, *Nosema ceranae*. That organism was named for its presence in *Apis cerana*. While we assume it originated in *A. cerana*, it was not found until after we introduced EHBs into Asia, so perhaps it moved over from EHBs. We have no solid evidence to suggest that *Nosema ceranae* is involved, but we do know that is in the US. Is it new? If you look back into the dark ages of honey bee disease research, you will find that Dr. Basil Furgala and I spent a good deal of time looking through microscopes at extracts of digestive tracts, looking for *Nosema apis* spores.

Once in a while, we would see something that looked like *N. apis*, but it was too small. Another difference was that the smaller organisms were sort of half transparent at one end and opaque at the other, not typical of *N. apis*. We thought maybe it was a different *Nosema* that might infect honey bee larvae or smaller spores that hadn't matured, but we just overlooked it and didn't count them in our studies. A brief note in the Volume 45, Number 3 (2006) issue of the Journal of Apicultural Research has an article by I. Fries

(Continued on page 15)

## Colony Collapse Disorder, continued

(Continued from page 14)

and cooperators showing light and electron microscope images of the spores of both species. They look similar to what we saw, but none pictured have the split color look.

Another potential factor in this disorder situation could be malnutrition. It is known that malnutrition is a serious stress on honey bees, leaving them more susceptible to diseases and complicating additional stresses, such as the physical beating taken while being hauled around on trucks, pesticide exposure, or food shortages while the bees are being used at saturation densities for crop pollination.

When foraging honey bees can not find and collect enough quality pollens to meet the nutritional needs of the colony, then the brood that is reared is done so at the expense of the nutrients that have been stored as reserves in the bodies of the nurse bees. The brood is not as healthy as it should be and neither are the nurse bees. Numbers of bees reared drops significantly when pollens are not available. The malnourished bees that are reared have shortened life expectancies. If this situation develops at the time when the winter bees are supposed to be reared, then it is likely that some of the colonies will lose all their bees as the summer bees die of old age and the malnourished winter bees die early, also. It has been the experience of some beekeepers that if you push malnourished bees to rear brood without incoming sources of fresh pollens, you can “burn the bees out” and the colony populations will dwindle soon thereafter. It appears that it would have been better to have not tried to stimulate early brood rearing.

The rapid disappearance of the bees seems remarkable. However, it must be remembered that during normal times, around 1,000 eggs are laid daily, 1,000 new bees emerge in a week, and 1,000 bees die six weeks later. Even with dead bee traps on the hives, only a few bodies are collected from the 1,000 that die each day. Nearly all the bees fly out and die away from the hive. So, if most of the bees are reaching the end of their life spans at about the same time, there can be a wholesale exodus from the hive.

Hopefully, the studies of various aspects of this disorder will provide us with a better understanding of how different factors influenced colony losses. Then, we can begin to consider how to prevent the losses in the future.

Extension Apiculturist Eric Mussen, UC Davis.

## Nosema Ceranae - Is it in Washington State?

(Continued from page 8)

counted cells ( $66.4\% \pm 6$ ) showed different parasite stages. This value increased on day 7 p.i. ( $81.5\% \pm 14.8$ ). Only one control bee died on day 7 p.i. In the infected groups, mortality was not observed until day 6 p.i. ( $66.7\% \pm 5.6$ ). **Total mortality on day 7 p.i. was 94.1% in the three infected replicates and by day 8 p.i. no infected bee was alive.** On day 3 p.i. mature spores could be seen inside the host cell tissue implying that the *N. ceranae* development cycle had been completed.”

**The Washington State Beekeepers Association will conduct this survey by having the Area Representatives send me samples of bees to be analyzed** We would like to know if *N. ceranae* is in the state and if it might be linked or associated in some manner with the high colony losses beekeepers are reporting.

If you have questions send them to me at: [jcbach@fairpoint.net](mailto:jcbach@fairpoint.net), or 509 910 6861.

References:

1. *Protocol For Sampling Honeybees For Subsequent Nosema Analyses*, Vita (Europe) Limited – 30<sup>th</sup> January 2007
2. Information received in email from Dr. Adony P. Melathopoulos, Beaverlodge, AB Canada through Doug McRory, Ontario Provincial Apiarist.
3. *Experimental infection of Apis mellifera honey bees with Nosema ceranae (Microsporidia)*, M Higes, et. al, Journal of Invertebrate Pathology Vol. 94, Issue 3, March 2007, Pages 211-217.

# Pacific Northwest Honey Bee Pollination Economics Survey 2006

Pacific Northwest Honey Bee Pollination Economics Survey 2006

By Michael Burgett

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Corvallis, OR 97331

Since 1986 the Honey Bee Laboratory at Oregon State University has conducted an annual survey of pollination economics in the Pacific Northwest (PNW). The information from each year of the survey has been made available both regionally and nationally. The information has proved to be most useful to individual beekeepers who generate income from pollination rental, which is the primary source of income for the majority of commercial beekeepers in the PNW.

The use of managed honey bee colonies for commercial crop pollination remains the most important function of the PNW beekeeping industry. The vast and diverse agriculture of the region relies on a healthy and strong beekeeping industry to maintain optimum production. An enhanced knowledge of pollination economics is crucial to every beekeeper that enters into the world of commercial crop pollination. It is also important for those growers who contract honey bee colonies for managed pollination to understand the current economic conditions of the beekeeping industry.

The pollination requirement for commercial agriculture in the PNW is enormous. Between Washington, Oregon and Idaho there are ca. 355,000 acres of crops grown that require or benefit from managed honey bee pollination. The “farm-gate” value of those combined crops is approximately \$1,750,000,000! Nearly half of those acres and 60% of the dollar value is in one crop – apples.

The USDA National Agriculture Statistical Service estimates that there are 200,000 production honey bee colonies in the PNW. And with these numbers there are some interesting hypothetical calculations that can be made. If all growers were to rent 2 colonies for each acre of blooming crop (355,000 acres), the resulting pollination requirement would utilize 710,000 colony rentals. If we multiple this by the 2006 average colony rental fee (\$7385) it results in a potential pollination rental income of more than 52,433,500 million dollars. If we add to that the 2006 estimated California almond pollination income available to all PNW commercial beekeepers (\$22.8 million) we end up with a potential gross pollination income of 75 million dollars. Another way to look at this is, ‘how much pollination income, under optimized conditions, should have been produced from one commercial honey bee colony in the year 2006?’ For the PNW that figure is approximately \$375.

Comparing the hypothetical PNW rental income (\$52.5 million) to the farm-gate value of the crops pollinated in the PNW (\$1.75 billion) shows that the money spent by growers to optimize pollination is 3% of the total crop value. This is another impressive illustration of what a remarkable bargain pollination rental is to the commercial agricultural industry of the PNW.

This year’s survey continues to show a number of trends, one of which is the dependence of PNW commercial beekeepers on the income generated from colony rentals. For 2006 the average commercial beekeeper reported receiving 66.6% of his or her annual operating gross from pollination rentals. This percentage is slightly lower than the previous year 2005 (70%), but continues to show that the dominance of pollination rental income to the commercial beekeepers of the PNW.

Recent increases in the average pollination rental fee have been strongly influenced by a dramatic rise in the pollination rental fees paid by California almond growers. In 2005 almond growers responded to a perceived shortage of colonies by dramatically increasing the price they paid for pollination; this has obviously continued for the 2006 pollination season. The average almond pollination fee for 2006 was \$129.20! This is a 63% increase from the 2005 average (\$79.40).

For 2006 the average pollination rental fee, computed from commercial colony rentals on all crops reported (including almonds), was \$73.85. This is a 44% increase from the average pollination fee of 2005 (\$51.30) (see Tables 1 and 2). This escalation is due to the continued increase in the average almond pollination rental fee but many crops pollinated within the PNW also experienced rental fee increases. Table 2 illustrates the average fees paid by crop and a comparison to the average fee received in 2005.

During the past ten years the average rental fee has increased from \$31.05 (1997) to \$73.85 (2006), an increase of 138%. It needs to be stressed that honey bee colony rental has for many decades been an underpaid service to the agricultural industry. It is really only within the past decade that rental fees have begun to more accurately reflect the enormous value-added service of managed pollination. This is shown by the 400% increase in the average pollination fee during the last seventeen years; 1990 = \$18.40 to 2006 = \$73.85.

*(Continued on page 17)*

## Pacific NW Honey Bee Pollination Economics Survey, continued

*(Continued from page 16)*

Within the PNW, tree fruits are the dominant crop type for pollination income. In 2006 the combination of pears, sweet cherries and apples accounted for 37% of all reported rentals and 20% of all reported pollination income. Paradoxically, the single most important crop for PNW beekeepers is grown in California, i.e., almonds. Almonds were responsible for 39% of all rentals and 69% of all rental income in the 2006 survey (see Table 4). Almonds consistently have produced a high average pollination fee; and for the past two years have displayed remarkable fee increases (for 2005 the average was \$79.40 and for 2006 \$129.20!) In 2006 the combination of California almonds and PNW tree fruit accounted for 76% of all rentals and 89% of all pollination income, which illustrates the dominance and importance of these crops for a commercial PNW beekeeper (see Table 4). All other PNW cropping systems that utilize honey bee pollination contributed 11% of a beekeeper's gross pollination income in 2006.

In 2006, for crops pollinated in the PNW, cucumbers provided the highest average fee at \$67.50 per colony rental, but this average is derived from only 398 reported rentals. In terms of acreage, apples are the largest crop grown in the PNW and this is reflected by the large number of reported rentals (22% of all rentals and 12% of the total reported rental income.) Berry crops (blackberries, Marion berries, Logan berries, raspberries), are late spring to early summer bloomers and copious nectar producers. The 2006 average pollination fee for combined berry crops was \$24.45, a lower price than the average fee because beekeepers have an expectation that a honey crop will also be produced. The rental of colonies for blueberry pollination has been increasing in recent years due to more acreage in production. The average fee for blueberries in 2006 was \$32.40, higher than other berry crops due to the fact that there is little to no expectation of a surplus honey crop.

The average PNW commercial honey bee colony was rented 2.1 times in 2006 and this includes California almonds. This is a slight decrease from 2005. This statistic has been dropping since 1999 when the average number of rentals per colony was 2.8. Does this actually reflect the real world situation? Are commercial beekeepers concentrating on almonds and PNW tree fruit (which historically provide the major sources of pollination income) and reducing the number of colonies involved in minor crop pollination? At this time our data are not able to provide a reasonable answer to this question. For the 2006 pollination season an average rental fee of \$73.85, combined with an average of 2.1 pollination rentals per colony, results in an annual per colony pollination income of \$155.10, which is up significantly from the past few years. With the "average" commercial operation running 3,855 colonies, a hypothetical 2006 gross pollination income for the "average" commercial beekeeper was \$597,910.

The combined colony numbers from those commercial beekeepers who responded to the 2006 survey, (73,250 hives), represent about 37% of the USDA's estimate of colony numbers in Oregon and Washington. Therefore, if we multiply the total reported pollination income (\$11,084,385) by a factor of 3, we have a ball park estimate of the pollination income generated by commercial beekeeping in the PNW, i.e., a regional pollination income of approximately \$33,253,155. This is far more than the normal "estimates" assigned to the bee industry by agricultural economists, who, for reasons unexplained, usually do not even include pollination rental income in their estimates of the beekeeping industry economic status. Pollination income in the PNW far exceeds the value of honey and wax sales for our regional beekeeping industry. Pollination rental income is frequently three to four times greater than honey and wax sales in any given year and this disparity between pollination income and honey/wax income has increased dramatically, especially in the past two years.

The 2006 survey asked commercial beekeepers to report the total number of full-time or full-time equivalent employees working for their operations. The figure for the "average" commercial beekeeping operation in 2004 was 2.9 full-time employees; for 2005 it was 3.4 employees and for 2006 it is 4.8. Another interesting way to look at this is to ask the question "what is the 'colony equivalent'", meaning what is the number of colonies necessary to hire one full-time employee? That figure was very close to 1,500 colonies/employee in both the years 2004 and 2005. In 2006 the "colony equivalent" is 1,115 hives per full-time employee.

While colony income from pollination rental is a critical statistic, so therefore is the annual cost to maintain a healthy hive of honey bees. Responses to this question on the survey have varied widely, often from a misunderstanding of what was being asked. However, numerous commercial beekeepers, who have over the years maintained good cost accounting records, have responded with numbers that are very reasonable relative to today's economy. The average annual hive maintenance cost was \$138.45 per colony for the year 2006. The range in responses was a high of \$200/hive to a low of \$80/hive. This wide range suggests that beekeepers should try to be more precise in calculating their operational costs. If you can't answer the question of your operating cost on a per colony basis you need to re-adjust your operational accounting. For 2006 the average colony maintenance cost is lower than the average per colony pollination income. From the 2006 survey data pollination income was \$151.10/colony and the colony maintenance cost was \$138.45; a difference of \$12.65 per colony. This a change from recent years when the average operational cost was somewhat higher than the average pollination income on a per colony basis. This still illustrates that the majority of net operational profit is generated by sources of income outside of pollination rental, most importantly, honey production.

*(Continued on page 18)*

## Pacific NW Honey Bee Pollination Economics Survey, continued

(Continued from page 17)

Remember that the data presented here represent the pollination rental situation of a hypothetical “average” commercial beekeeper in the Pacific Northwest. For individual beekeepers the survey results are most useful as benchmarks against which they should compare their individual operations. Please let me stress again that all of these “projections” are only as accurate as the data provided by responding beekeepers. The projections also assume that the participating beekeepers collectively represent the mainstream of commercial beekeeping in the Pacific Northwest. The 2006 survey is produced from a significantly greater number of commercial beekeepers and hence number of colonies and reported rentals than in 2005.

I wish to again thank all those beekeepers in Oregon and Washington who took the time to participate in the survey, which over the past 20 years, has generated the most accurate assessment of commercial pollination known in the U.S. I also offer sincere thanks to the Washington State Beekeepers Association for the funding support to continue this annual survey of PNW regional beekeeping economics.

**Table 1. Average Pollination Fee 1995-2006**

<u>1995</u>	<u>1996</u>	<u>1997</u>	<u>1998</u>	<u>1999</u>	<u>2000</u>	<u>2001</u>	<u>2002</u>	<u>2003</u>	<u>2004</u>	<u>2005</u>	<u>2006</u>
29.60	31.55	31.05	29.65	32.25	32.85	33.65	36.40	36.45	38.65	51.30	<b>\$73.85</b>

**Table 2. 2006 Average pollination fees by crop as reported by 19 PNW commercial beekeeping operations.**

<u>Crop</u>	<u>No. Rentals</u>	<u>Avg. Fee</u>	<u>Fee +/-<sup>1</sup></u>
Pears	7,975	\$37 <sup>80</sup>	-1.5%
Cherries	14,842	\$39 <sup>50</sup>	+4.7%
Apples	33,408	\$40 <sup>00</sup>	+8.4%
Berries <sup>2</sup>	5,206	\$24 <sup>45</sup>	-19.0%
Blueberries	8,568	\$32 <sup>40</sup>	-13.3%
Cranberries	1,564	\$44 <sup>40</sup>	+48.0%
Vegetable seed	5,856	\$43 <sup>80</sup>	-2.4%
Clover seed <sup>3</sup>	5,330	\$29 <sup>85</sup>	-20.8%
Crimson clover seed	50	\$35 <sup>00</sup>	+41.2%
Radish seed	1,589	\$46 <sup>80</sup>	+88.7%
Cucumbers	398	\$67 <sup>50</sup>	+76.2%
Sq. & Pump. seed	788	\$44 <sup>00</sup>	-6.6%
Watermelon	1,100	\$35 <sup>00</sup>	-16.6%
Meadowfoam	3,092	\$42 <sup>45</sup>	+16.1%
Misc. <sup>4</sup>	1,162	\$21 <sup>65</sup>	- 2.2%
Almonds	59,130	\$129 <sup>20</sup>	+62.7%
<p><b>SUM = 150,058 rentals generating \$11,084,385</b>  <b>Average Pollination Fee = \$73<sup>85</sup></b></p>			
<p><sup>1</sup>% change from 2005  <sup>2</sup>Includes blackberries, raspberries, Marion berries, &amp; Logan berries.  <sup>3</sup>Includes red &amp; white clover as grown for seed.  <sup>4</sup>canola, apricots &amp; kiwi</p>			



## Pacific NW Honey Bee Pollination Economics Survey, continued

**Table 3. Average colony numbers, average rental fee per hive, and average annual rental income per hive for a commercial beekeeping operation in the Pacific Northwest 1992-2006.**

<u>Year</u>	<u>Average No. Colonies</u>	<u>Average Rental Fee</u>	<u>Average Annual Rental Income per Colony</u>
1992	765	\$19 <sup>25</sup>	\$49 <sup>70</sup>
1993	990	\$22 <sup>50</sup>	\$62 <sup>25</sup>
1994	1,225	\$28 <sup>10</sup>	\$78 <sup>70</sup>
1995	1,348	\$29 <sup>60</sup>	\$78 <sup>15</sup>
1996	1,350	\$31 <sup>55</sup>	\$97 <sup>50</sup>
1997	1,504	\$31 <sup>05</sup>	\$92 <sup>20</sup>
1998	1,153	\$29 <sup>65</sup>	\$83 <sup>00</sup>
1999	2,058	\$32 <sup>25</sup>	\$89 <sup>30</sup>
2000	2,055	\$32 <sup>85</sup>	\$77 <sup>40</sup>
2001	3,168	\$33 <sup>65</sup>	\$64 <sup>60</sup>
2002	4,255	\$36 <sup>40</sup>	\$63 <sup>75</sup>
2003	2,612	\$36 <sup>45</sup>	\$86 <sup>40</sup>
2004	3,555	\$38 <sup>65</sup>	\$74 <sup>60</sup>
2005	2,055	\$51 <sup>30</sup>	\$112 <sup>85</sup>
<b>2006</b>	<b>3,855</b>	<b>\$73<sup>85</sup></b>	<b>\$151<sup>10</sup></b>

**Table 4. Pollination rentals and income by crop type from 19 PNW commercial beekeepers.**

Crop	# Rentals	% of total rentals	Rental Income	% of total rental income
Tree Fruit	56,225	37%	\$2,224,397	20%
Almonds	59,130	39%	\$7,638,135	69%
All other crops	34,703	24%	\$1,221,853	11%
<b>Total</b>	<b>150,058</b>	<b>100%</b>	<b>\$11,084,385</b>	<b>100%</b>

### Summary Information - 2006

Total number of participating commercial beekeepers = **19**

Total number of colonies in the survey = **73,250**

Total colony rentals = **150,058**

The average per colony pollination rental fee (for all beekeepers, for all crops including California almonds) was: **\$73<sup>85</sup>**

The average commercial colony was placed in **2.1** pollination sets in 2006, for an average per hive rental income of **\$151<sup>10</sup>**

The average commercial bee operation maintained 3,855 colonies and grossed **\$597,910** in pollination rental income for 2006.

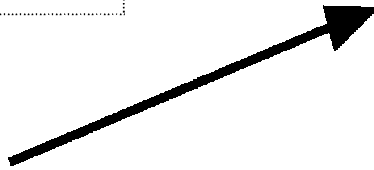


## Beekeeper's Calendar

**AUG 6 - 10:** EASTERN APICULTURAL SOCIETY  
2007 SHORT COURSE & CONFERENCE, University of  
Delaware, Newark, Delaware.  
Info secretary@easternapiculture.org

**AUG 19 - 23:** WESTERN APICULTURAL SOCIETY  
ANNUAL CONFERENCE, Tucson, Arizona.  
Info DianaSammataro, mellisam2003@yahoo.com

**SEPT. 9 - 14:** APIMONDIA 2007, Melbourne Australia.  
Info www.apimondia2007.com or queenbee@gil.com.au



If this newsletter has a bright **ORANGE DOT**,  
then you need to pay dues for 2007!!

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