



U. C. APIARIES

University of California



Sept/Oct 2012

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Newsletter Emailed to You

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CCD Still an Enigma

A recent, extremely thorough, molecular comparison of microbes from honey bees, collected from colonies displaying signs of colony collapse disorder (CCD) and from weak colonies that displayed no CCD-like signs, did not incriminate any of the detected microbes as

“the” causative agent or agents of the malady. The team of R. Cornman, Y. Chen, D. Lopez, J. Pettis and J. Evans from the Beltsville Bee Lab; D. Tarpy and L. Jeffreys from North Carolina State University; and D. vanEngelsdorp from the University of Maryland combined efforts to analyze 19.28 million Illumina sequence reads from non-CCD bees and 41.95 million reads from bees from collapsing colonies. Their results were published in August of 2012 and can be accessed at: PLoS ONE 7(8): e43562. Doi:10.1371/journal.pone.0043562.

The take-home message was that CCD bees tended to have higher levels of infection and more multiple infectious agents than the somewhat healthier bees. This was especially the case for viruses, but no particular viruses were critical. The involvement of *Nosema* species seemed to correlate with heavier infections, but there were plenty of exceptions. Thus, this study was not able to determine whether the higher levels of microbes were the reason the bees were dying or if the microbes were taking advantage of physiologically weakened bees to ramp up their numbers.

Formic Acid now Organically Approved

Responding to a petition submitted to the USDA Agricultural Marketing Service in May of 2010, the final disposition (favorable) was published in the U.S Federal Register 76 (216) on November of 2011. The petition requested a change to the “National List of Allowed and Prohibited Substances (Crops, Livestock and Processing)” of the “National Organic Program.” The permission to use synthetically manufactured formic acid for mite control in organic honey productions was based on the following: “The use of synthetic formic acid is regulated by other Federal agencies. Formic acid has antibacterial properties that make it effective as a preservative, and the Food and Drug Administration (FDA) permits its use as a food additive in the feed and drinking water of animals (21 CFR 573.480). FDA also permits the use of formic acid as flavoring agent in processed foods (21 CFR 172.515). The Environmental Protection Agency (EPA) has exempted synthetic formic acid from the requirement of a tolerance in or on honey and honeycomb when used to control tracheal mites and suppress Varroa mites in bee colonies, and applied in accordance with label use directions (40 CFR 180.1178).\13\.

The EPA has examined the potential for formic acid residues to appear in beeswax and honey and concluded that residues above those found naturally are not expected when a formic acid pesticide product is used as directed. Synthetic formic acid is currently permitted in Canada and the European Union for use in organic apiculture to control parasitic mites. “At its October 25-28, 2010, meeting in Madison, WI, the NOSB recommended adding formic acid to the National List for use in organic livestock production solely as a pesticide within honeybee hives. The NOSB evaluated formic acid against the evaluation criteria of 7 U.S.C. 6517 and 6510 of the OFPA and received public comment at this meeting. During the NOSB deliberations, the Board noted that

they had not received any public comments against the addition of formic acid to the National List. The NOSB deliberations over the petition for this substance heavily relied upon the information provided by the petitioner. According to the formic acid petition, there are several methods for controlling mite populations in honeybee hives. These methods include those that are mechanical (e.g. trapping) and biochemical such as the use of synthetic sucrose octanoate esters (currently listed on Sec. 205.603) for control for Varroa mites. However, data was provided by the petitioner illustrating that the allowed biochemical and mechanical control methods do not have the same efficacy as formic acid in the climatic conditions in Hawaii, one of the U.S.'s highest-producing organic honey regions. The information presented by the petitioner and considered by the NOSB is generally supported by a June 2011 technical report for formic acid that the NOSB Livestock Committee accepted as sufficient. “Sec. 205.603(b) with an annotation that would limit the substance's use to a pesticide solely within honeybee hives. In their recommendation, the NOSB did not limit the use of formic acid only for treatment of Varroa mites, which was the use specified by the petitioner. Since EPA registers formic acid as a pesticide to control Varroa and tracheal mites, their recommendation and this proposed rule would, in effect, allow the use of formic acid to control both Varroa and tracheal mites in organic apiculture.

At the October 2010 NOSB meeting, the NOP and NOSB discussed the placement of formic acid on the National List. The NOP raised the question of whether listing formic acid, a miticide, under Sec. 205.603(b) is appropriate given that Sec. 205.603(b) specifies that substances under this section be limited to use as “a topical treatment, external parasiticide (emphasis added) or local anesthetic as applicable.” The NOSB explained that research indicated that mites can be considered a parasite. The NOSB also stated that listing formic acid at Sec.

205.603(b) would be consistent with the listing for sucrose octanoate esters, another substance in this National List section which is approved for use in apiculture to control Varroa mites. Through this proposed rule, the NOP is seeking comments on the placement of formic acid on the National List. Furthermore, the NOP may reconsider the placement of formic acid on the National List as part of any future rulemaking on organic apiculture standards. In the NOP's consideration of the addition of formic acid to the National List, the NOP would also like to reiterate that registered pesticide products intended for use in organic production and handling must also be evaluated for compliance with EPA's August 2004 list of inert ingredients, minus any revoked inert ingredients.

The Secretary has reviewed and proposes to accept the NOSB's recommendation. Consistent with the NOSB recommendation, this proposed rule would amend Sec. 205.603 of the National List by adding formic acid (CAS 64-18-6) at paragraph (b)(2) as a synthetic substance allowed for use as follows: Formic acid (CAS 64-18-6)-for use as a pesticide solely within honeybee hives.”

Currently, the only U. S. registered formic acid product for mite control is the NOD Mite-Away Quick Strip[®] formulation. There is a request, being formulated for submission to the IR-4 (“Orphan Drug”) Program, to oversee an experimental trial of the MiteGone[®] refillable pads for use in formic acid fumigation of beehives. If registered as a pestcontrol device, the pads would be sold dry. They can be cut into various sizes to match the dosage requirements of a colony. The approach requires someone to “charge” the pads by soaking them in 65 percent formic acid solution. This is best done just before placing the pads on the top bars. Thus, many beekeepers might be purchasing and handling 65 percent formic acid. That can be done, but sometimes practitioners do not

respect the ability of formic acid to cause human physiological damage, since they think it is a “weak” acid. DON'T make that mistake! If the pads are proven to be effective and can be handled safely, perhaps some intermediary persons, trained accordingly, should be responsible for filling the pads for the beekeepers.

UK Report on Pesticides and Bees

Fairly recently, the European Food Safety Authority (EFSA) contracted with an individual to compile and analyze as much pertinent information as possible on honey bee health – especially as it relates to pesticides – and distill the content into a report. The document is one of EFSA's supporting publications – Supporting Publication 2012:EN-340. The title of the 204-page External Scientific Report is “Interaction Between Pesticides and Other Factors in Effects on Bees.” It was written by Helen M. Thompson of the Food and Environment Research Agency, Sand Hutton, York, United Kingdom.

Instead of just reviewing the abstract, I will mention salient features from the 22 listed major findings.

1. This entry contains an overall statement of the project and notes emphasis will be placed on different exposure routes of pesticides to bees, multiple exposures, and interactions between diseases and parasites.
2. A description of the database: 148 references dealing with routes of exposure; 103 references with mixture of pesticides (84 for honey bees, 19 for other insects); and 112 references for pesticides interactions with disease (71 for honey bees, 7 for bumble bees, 34 for other insects).
3. The determination that the greatest route of exposure to honey bees is through nectar collectors.
4. Other possible exposure routes not well enough studied to make (cont. page 5)

**California State Beekeepers' Association
123rd Annual Convention
2012 Tentative Convention Program
Morongo Casino Resort and Spa
49500 Seminole Drive, Cabazon 92230
November 13-15, 2012**

Program Presentations Allotted Continuing Education Credits are preceded by an Asterisk (*)

Monday, November 12

9:00 am CSBA Board of Directors' Meeting
5:00-7:00 President's Reception

Tuesday, November 13

8:00 am Registration & exhibits open
8:30-10:00 Opening Ceremonies
National Anthem & Flag Salute Gene & Christine Brandi
Welcome & Call to Order Bryan Ashurst, President CSBA
Invocation
President's Message Bryan Ashurst
Memorial Service Gene Brandi
Reading of Rules Eric Mussen
9:00 Welcome Special Guests
9:15 Brief Reports of Standing Committees
10:00-10:25 Exhibitors' Break Sponsored by A&O Fork Lift
10:25 Door Prizes (Bob and Joan Seifert)
10:30 "Honey Bee Nutrition" – Eric Mussen, University of California, Davis
11:15 "North American Pollinator Protection Campaign" – Laurie Davies Adams, Executive Director, San Francisco, CA
11:45 "Report from National Honey Board" – Bruce Boynton, CEO, Firestone, CO
12:00 p.m. Lunch
1:30 "Epidemiological Analyses of Bee Health Data" – Dennis vanEngelsdorp, University of Maryland
2:15 "Failing Queens and Pheromone Signals in Queen Health" – Jeff Pettis, Beltsville Bee Lab
3:00 Exhibitors' Break Sponsored by A&O Forklift
3:25 Door Prizes
3:30 "Research Update from the UC Davis Bee Lab" – Brian Johnson, University of California, Davis
4:15 "Marketing Your Honey Directly to the Consumer" – Gene Brandi (Los Banos), Don Burkett (Reedley), and Alan and Erika Mikolich (Temecula)
5:00 Exhibits Close
7:00 Welcome Reception in Exhibits Room

Wednesday, November 14

7:00 a.m. Sioux Honey Association Member Breakfast Meeting – Doug Mammen
8:00 Registration & Exhibits open
8:00 "Importation of Honey Bee Germplasm in 2011/2" – Steve Sheppard, Washington State University, Pullman
8:45 "Germ Plasm Cryopreservation and Progress in Above Freezing Storage of Bee Semen" – Brandon Hopkins, Washington State University, Pullman
9:15 "Project Apis m Update" – Christi Heintz
9:45 Exhibitors' Break
10:15 "Winter Feeding in Preparation for Almond Pollination" – Frank Eischen, USDA ARS Bee Research Lab, Weslaco, TX
11:00 "Almond Industry Update" – Bob Curtis, Almond Board of California
11:15 "American Honey Producers Association Update" – Randy Verhoek, AHPA Vice-president, Bismarck, ND
11:30 "Legislative Update: - Holly Fraumeni, Platinum Advisors, Sacramento, and Jackie Park-Burris, Palo Cedro, CA
12:00 Noon Research Luncheon – "*Beekeeping in a Flat World: How to Catch your Neighbors Cold*" – Jeff Pettis, USDA ARS Honey Bee Laboratory, Beltsville, MD
2:00 pm Auction Benefitting Honey Bee Research
4:00 pm *"Pesticide Continuing Education" – Larry Lima
7:00 Resolution Committee Meeting chaired by Brock Ashurst

7:30 Research Committee Meeting chaired by David Bradshaw

Thursday, November 15

8:00 am Exhibits open
8:30 **CSBA ANNUAL BUSINESS MEETING**
10:00 Exhibitors' Break
10:25 Door Prizes (Bob and Joan Seifert)
10:30 "Summary of Recent Beekeeping Research Findings" – Randy Oliver, Grass Valley, CA
11:15 "Monsanto's Commitment to Honey Bee Health" – Jerry Hayes, Beeologics (Monsanto), Saint Louis, MO
12:00 p.m. Lunch
12:00-2:00 **CSBA Ladies Auxiliary Business Meeting & Luncheon**
1:30 "Nosema ceranae Infection in Honey Bee larvae, Workers, and Queen-like Adults" – James Nieh, University of California, San Diego
2:15 "How Many Colonies per Acre are Needed for Almond Pollination?" – Frank Eischen, USDA, Weslaco, TX
3:00 Exhibitors' Break
3:25 Door Prizes
3:30 Exhibits Close
3:30 "Using Formic Acid for Mite Control" – Brent Woodworth, Halliday, ND; Frank Pendell, Stonyford, CA; Bob Miller, Watsonville, CA
4:00 "Almond Pollination Panel" – Joe Traynor, Bakersfield, CA; Gordon Wardell, Paramount Farming, Bakersfield, CA; Pat Heitkam, Orland, CA
6:00 Social Hour – No-Host Bar & Silent Auction
6:45 Silent Auction Ends
7:00 p.m. Annual Banquet, Awards & Auction

Friday, November 16

8:00 am CSBA Board of Directors' Breakfast Meeting chaired by John Miller

CONCURRENT SESSIONS

Wednesday, November 14

8:30 am "Keeping Your Bees in the Hive" – Eric Mussen, University of California, Davis
9:15 "Small Scale Queen Rearing" – Randy Oliver, Grass Valley, CA
10:00 Exhibitors' Break
10:45 "How to Make and Install Package Bees" – Richard Ashurst, Westmorland, CA
11:30 "TBA" – TBA

Thursday, November 15

1:30 pm "TBA" – TBA
2:00 "TBA" – George Hansen, Colton, OR
2:45 Exhibitors' Break
3:30 "Virus Monitoring" – Dave Wick, BVS, Inc., Florence, MT
4:15 "Question and Answers" – Jerry Hayes, American Bee Journal's "The Classroom"

(cont. from page 3) definitive statements include: (a) dusts produced during seeding procedures, (b) contact exposure to newly sprayed crops that may hit foraging bees, (c) inhalation of high vapor-pressure compounds from stored pollens or collected water, (d) beeswax as a possible route of exposure and possible transfer to brood, (e) propolis as a source since some trees are injected with pesticides, and (f) water from puddles and guttation droplets.

5. Bumble bees were included in the study.

6. Inadequate data to include solitary bees in the report.

7. Multi-exposure events – too little documentation of overspray residues, contamination of nectar and pollen, and use of pesticides in hives by beekeepers.

8. More data required on realistic levels of pesticide contamination with all pesticides, not just those of interest to the researchers.

9. Additive effects of multi-exposures from pollens and nectar, where synergy can be excluded.

10. Data lacking on relationships between time from exposure to demonstrable effects and on effects of chronic exposure at realistic levels.
11. Data lacking on oral exposures to pesticides, especially since pollen components can trigger detoxification responses in honey bees while some pesticide exposures do not.
12. Doses demonstrating synergies between EBI fungicides and both neonicotinoids and pyrethroids are above realistic, field-exposure levels, to date.
13. Studies of exposure to pesticides should include some fluvalinate and coumaphos, since both are common in many commercial beehives.
14. Modeling with toxicokinetic/toxicodynamic and quantitative structure-activity relationships (QSAR) approaches may prove valuable.
15. Antibiotics may increase the susceptibility of bees to organophosphates, pyrethroids, and neonicotinoids by interaction with membrane-bound transporter proteins.
16. Most studies single out two pesticides to administer simultaneously, however real world exposures contain many more pesticides at once.
17. More species besides honey bees must be studied.
18. More studies should be done concerning *Nosema* or virus infections and susceptibility to pesticides.
19. The determinant, spore counts, between *Nosema* and pesticides may not be adequate to demonstrate the unique interactions between infections and pesticide effects.
20. Studies concerning the effects of exposure on the honey bee immune system often fail to consider the immunocompetence effects of exposure to antibiotics, microbial infections, and parasites.
21. The effects of interaction between diet and presence of pathogens often are not considered in pesticide studies.
22. "Currently there is no clear evidence from field-based studies that exposure of colonies to pesticides results in increased susceptibility to disease or that there is a link between colony loss due to disease and pesticide residues in monitoring studies."

To peruse the details of this 204-page report, access:
www.efsa.europa.eu/en/supporting/doc/340e.pdf.

Revised UC IPM Manual

Even if Integrated Pest Management (IPM) isn't mentioned quite as often as it once was, we still are practicing the concepts, as they have become a part of our every-day life. The second edition of this manual is 290-plus pages in length, with 160 color photos and 100 hand-drawn color illustrations to enrich the text. The modest folks at UC Division of Agriculture and Natural Resources Communication Services describe "IPM in Practice: Principles and Methods of Integrated Pest Management" as the "most comprehensive, practical field guide ever developed for setting up and carrying out an IPM program in any type of crop or landscape." It *IS* the official study guide for individuals preparing for the California Department of Pesticide Regulation's Pest Control Advisor examination.

The price of this substantial, paperbound book is \$35.00. DANR has a right to crow about that! To order a copy, proceed to: anrcatalog.ucdavis.edu (all one line – no spaces) in your web browser. It should be the fourth publication listed: "IPM in Practice, Second Edition." If you wish to purchase 10 or more copies, there is a volume discount.

Beeswax is Old Dentistry

Researchers who were re-examining an old human jawbone, dated from about 6,500 years ago, found the left canine tooth to be vertically cracked in both the enamel and dentin layers. More interestingly, at about the time of the owner's death, he had a beeswax filling applied. The filling was very hard to see, but it showed up well in X-rays. See <http://www.livescience.com/23321-ancient-dentistry-beeswax-filling.html>.

2012 Joint Conference of the Western Apicultural Society and Washington State Beekeepers' Association

Embassy Suites, Seattle [(425) 227-8844]
15920 West Valley Highway, Tukwila WA 98188
October 4 – 6, 2012

Thursday, October 4

11:00 am Apiary Advisory Committee Meeting
2:00 pm Western Apicultural Society Directors and Delegates' Meeting
5:00 – 9:00 Conference Registration
Welcome Reception / Silent Auction Commences

Friday, October 5

7:00 – 9:00 Registration
8:00 Welcome: Jim Smith and Paul Lundy
8:15 “What is Sustainable Beekeeping?” – Jim Bach, Selah, WA
9:00 “Master Beekeeping Programs in WA and OR” – Louis Matej / Carolyn Breece
10:00 Beverage Break
10:15 “The Value of Bees to Almond Production as Predicted by the ALMOPOL
Pollination and Nut Set Program” – Gloria DeGrandi-Hoffman, USDA ARS Bee Lab, Tucson, AZ
11:00 “The Rocky Mountain Survivor Queen Bee Cooperative” – Melanie Kirby, Zia Queen Bees,
Truchas, NM
11:45 “ ‘Vanishing of the Bees’ Education Day” – Don Aman, Kennewick, WA
12:15 pm Lunch
1:15 “Dealing with the Booms and Busts: Indoor Wintering Trials” – Eric Olson, Yakima, WA
2:00 “New Directions in Indoor Wintering of Honey Bee Colonies” – Jason Long, WSU
2:30 “Importation and Distribution of New Genetic Stocks of Honey Bees” – Steve Sheppard, WSU
3:00 “Beverage Break
3:30 “Assessment of Genetic Diversity in Old and New World Honey Bees” – Megan Taylor, WSU
4:00 “New Developments in Honey Bee Germplasm Preservation at WSU” – Brandon Hopkins, WSU
4:30 “Knowing Nucs” – Morris Ostrofsky, Eugene, OR
5:30 Washington State Beekeepers' Association Board Meeting
7:30 Western Apicultural Society Annual Meeting
9:00 Possible late Annual Meeting of Washington State Beekeepers' Association
(see also, possibly Saturday at 5:00 pm)

Saturday, October 6

7:00 am Registration
8:00 “Skagit Valley Beekeepers Queen Rearing Project” – Bill Markus, Sedro-Woolley, WA
8:45 “Preventing Swarms” – Bob Arnold, Deer Park, WA
9:30 Beverage Break
9:45 “Bee Health and Nutrition in the Pacific Northwest” – Ramesh Sagili, OSU
10:30 “Update on HopGuard Field Trials” – Gloria DeGrandi-Hoffman, USDA/ARS Bee Lab, Tucson,
AZ
11:15 “Queen Rearing in the Pacific Northwest” – Susan Cobey, Whidbey Island, WA
12:00 Lunch
1:00 pm “Bringing More Bees to Your Garden: Urban Pollination” – Jeff Riffell, WSU
1:45 “Wings, Bikes, and Trucks: Urban Beekeeping” – Bob Redmond, Puget Sound Beekeepers'
Association
2:30 Beverage Break
3:00 “The Practical Aspects of Beekeeping” – Jan Loman, Hermiston, OR
3:45 “Goals and Successes of New Mexico and Colorado Beekeeping” – Melanie Kirby / Beth Conrey

5:00
6:00

Washington State Beekeepers' Annual Meeting (unless moved to Friday evening)
Combined WAS and WSBA Awards Banquet, Washington Honey Queen, and
End of Silent Auction

Sincerely,



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