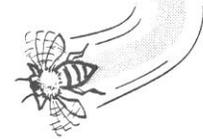




U. C. APIARIES

University of California



Nov/Dec 2012

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Newsletter Emailed to You

The newsletter is published bimonthly, in February, April, June, August, October and December. If you wish to have this newsletter sent directly to your email address when it is published, please follow the instructions below.

Send an email addressed to <https://lists.ucdavis.edu/wws/subscribe/ucdavisbeenews>, fill in the blanks and click **Subscribe**. If you can't make it work, my contact information is listed at the end of this newsletter.

If you wish to be removed from the list, then you do the same thing as above, but instead of **Subscribe** click **Unsubscribe**.

You Did It!

Over the past four years, alone, 86 Cooperative Extension farm advisors and specialists have left ANR, primarily through retirement. When the administrators at UC Agriculture and Natural Resources (ANR) requested suggestions for future academic

hires in Cooperative Extension (Farm Advisors and Specialists) contributors submitted more than 100 proposed positions. Among them was the position of "Extension Apiculturist on the UC Davis Campus."

At the completion of the submission process, the potential positions were listed and comments on each position were solicited from responders. I informed as many possible responders as I could, and you did the rest. In total, more than 800 comments were spread over the proposed positions. The positions were pared down to 50+ with high-priority, with 33 recommendations for "first hires." Nineteen positions eventually made it to the new hire level, and the "Extension Apiculturist on the UC Davis Campus" was among them.

Finances permitting, the 19 new positions will be filled in phases. The first phase, expected to begin soon, contains seven positions. The second phase, planned to begin in February of 2013, contains seven more positions, including the Extension Apiculturist. The final phase of this hiring contains the final five positions with

recruitments beginning in May 2013. If they remember that I still will be around for a while, they might bump the apiculturist recruitment to May.

Although it sometimes seems like hiring in the UC system moves at a glacial pace, it appears that there could be a bit of overlap between my current appointment and that of the next Extension Apiculturist. That might be very beneficial for the incoming person. Information on the history of the position and various industry contacts and connections would be helpful.

What is “Crowdfunding?”

OK, I admit it. I’m a Luddite seriously locked into the pre-social network days. Facebook, Flickr, LinkedIn, Myspace, Twitter, etc., are all foreign to me. Looking at Wikipedia, there are 189 “active” sites out there and 14 on the “defunct” list. However, I am familiar with the “flash mob” phenomenon – one evening we saw a neighborhood “party” grow from loud and noisy to just about totally out of control. We saw another example when a large group of individuals were summoned to a Davis park to dance for a specific charity.

In this case, I was asked to publicize an attempt at crowdfunding an effort by two graduate students at the University of Washington to raise enough funds to conduct a study on bees and urban farming crop yields. When I received the message on Nov. 20, they had raised \$325 or the necessary \$3,500 to get the study under way.

This is the first, and last, time that such an effort will be written about in my newsletter. I presume it is legitimate, but that remains to be seen. If you are at all interested in this opportunity to see what is going on, go to the following crowdfunding website:

<https://www.microryza.com/projects/citizen-science-urban-pollination>. If you wish to contact the originator of this message, my mail shows Kiley Riffell <kileyriffell@gmail.com>.

CA Apivar Registration

On Dec. 17, 2012, California beekeepers became eligible, under permit, to purchase and apply Apivar® (0.5 g amitraz each) strips for *Varroa destructor* control. The emergency exemption expires on Dec. 4, 2013, at which time the purchased strips must have been used as labeled or “returned to the manufacturer or distributor in unopened containers or disposed of” properly, unless the Section 18 is renewed.

The permit and labeling (if the California-specific label is not on the container) must be onsite when the strips are applied and removed.

Record-keeping for the product is voluminous. The distributor actually is listed on each individual’s permit. Records will be submitted to EPA concerning product sales, and agricultural commissioners will be responsible for a year-end report on how much was used. That information will come from monthly use reports submitted by beekeepers. If beekeepers fail to report their uses, the interpretation will be that it wasn’t used and the Section 18 will be allowed to expire, permanently.

Strips may be used only twice a year – spring and fall. Two strips (packaged as a separable double strip) are placed only in the brood chamber, in contact with the bees. The strips are left for 42 days, unless they have to be shifted over to remain in contact with the bees. The strips are left in the hive for 56 days if shifted.

If you do not already have a Section 18 permit, visit your local agricultural commissioner's office and pass the safe use of pesticides test. If you think that you may be ill-prepared for the test, you can purchase, and study, the following \$35, soft-bound book from UC ANR from which the questions originate: "The Safe and Effective Use of Pesticides, 2nd edition." Go to: <http://anrcatalog.ucdavis.edu/PestManagementExamPrep/?page=1> and look for the book – catalog # 3324. (I think that you will find it on the second page of that particular site.) If you prefer to place an order by phone, please call 1-800-994-8849. Have your credit card (debit card) handy.

Update on Pristine[®]

New information never ceases to turn up! In November, researchers from BASF shared with me their results of trials in which honey bee nucs, foraging in very large tents/tunnels (called "semi-field" tests) were examined for their ability to rear queens during, and after, their sole food source, *Phacelia*, was treated with a 2X dose of Pristine. No abnormalities were noted in the colonies or the queens the bees produced. More interesting was the following question: Do the growers routinely use insect-growth regulators (IGRs) in their almond sprays? We found some in the pollen we sampled from the almond orchards. I used to think that the answer to that question was, "No."

It now seems that instead of treating with "dormant" or "delayed dormant" oil and insecticidal sprays for controlling peach twig borers in their wintering "hibernacula" (by smothering them), the growers can wait until much later in the season and put the next generation of small borers out of business with IGRs.

IGRs have been used in crop production for decades, even on crops where honey bees were pollinating, without any detrimental effects to the colonies. Under those circumstances later in the season, it is likely that the bees can and do find other food sources to feed upon in addition to the crop being pollinated. Thus, the dose of IGR they might get from contaminated crop pollen is diluted through mixing with fresh pollens that do not have IGR on them. In the case of almonds, practically all the pollen being consumed and stored is almond pollen. Very little dilution can take place. Perhaps this might explain the difficulty bee breeders in northern California have when trying to rear queens in hives that have been located near almond orchards. Crop production practices continue to change whenever failures to control pests or ways to save money become important. It is difficult for beekeepers to keep up with those changes, but they can be critically important.

Advances in RNAi

The promises of molecular genetics, positively impacting honey bees, are closer to becoming realities. I have written previously about attempts by a company called Beeologics[™] to inoculate adult honey bees with dsRNA (double-stranded RNA) targeting Israeli Acute Paralysis Virus to prevent the virus from replicating in adult honey bees. In two years of experiments, the results showed that the approach worked, but needed to be improved. Beeologics was purchased by Monsanto, and more funding should become available for work on honey bees.

Meanwhile, the originators of the RNAi approach to honey bee virus elimination, at the Hebrew University of Jerusalem, continued to conduct their studies but the target became *Varroa destructor*. They recently published a paper describing their success in feeding *Varroa* targeted-dsRNA,

combined with a green fluorescent protein marker, to adult bees in sugar syrup and following the marker through those adult bees, into immature bees that the nurse bees were feeding, and eventually into the mites. The mites picked up the marker from feeding either on adult bees and or feeding on pupae that were reared by inoculated adult bees. Since the inoculum targeted some *Varroa* RNA that does not occur in honey bees or in humans, they compared mite levels in colonies 60 days after treatments began. The honey bee colonies all appeared to be the same strength. Compared to control colonies, treatments with dsRNA containing a few anti-*Varroa* targets +GFP, and treatments with a cocktail of anti-*Varroa* targets, reduced the mite populations by 53 percent and 61 percent, respectively.

This is a good start, but the research protocol called for the dsRNA inoculum to be fed 10 days at the beginning, 32 days of feeding twice a week, then ending with 14 days of feeding daily, again, to finalize the study. This is not a feasible approach to controlling mites in a real world situation. To review this work, go to: [doi.1371/journal.ppat.1003035](https://doi.org/10.1371/journal.ppat.1003035) and click on “Bidirectional transfer of RNAi between honey bee and *Varroa destructor*: *Varroa* gene silencing reduces *Varroa* population.”

Stay Informed

Formerly, you either had to subscribe to a bunch of bee journals (scientific and beekeeper-oriented) or spend a bunch of time in libraries to keep up with current honey bee and beekeeping information. But the journals and magazines had quite a lag period, so we found out about things well after the fact. For the scientific information, it often needed someone to analyze the information and determine the “So, what?” for beekeepers to use.

Then, things moved onto the web. At first the web provided access only to journal article abstracts, without a way to see the rest of the publication without paying for it. Many are still that way (thus, the terribly misleading abstract about the effects of neonicotinoids on colonies from Harvard researchers a while ago).

Currently, many publications are being placed directly into the public domain as PDFs (author pays up front, since the publisher is very unlikely to sell many reprints). So, how do you know when such a publication hits the Internet? One way is to set up a browser, like Google, to alert you when something new shows up that contains your key search word. Be choosy with your key words or you will be flooded! Another way is to let an intermediary sort through the “hits” and forward what is pertinent. Such services are being provided by the American Bee Journal [[http:info@americanbeejournal.com](mailto:info@americanbeejournal.com)], Bee Culture [“Catch the Buzz” at <http://home.ezezine.com/1636/>], and the American Beekeeping Federation [“ABF E-Buzz” at info.abfnet.org]. Request to be added to those mailing lists and be right up to the minute.

Nosema/Fipronil Synergy

Most beekeepers are familiar with results of studies conducted at the USDA Beltsville Bee Lab that demonstrated a synergy between imidacloprid and *Nosema ceranae* infections. The infections became worse when the bees had been exposed to the neonicotinoid. A group of researchers in France conducted a similar experiment and obtained similar results with fipronil and thiacloprid and *Nosema ceranae*. The French researchers expanded their studies on the insecticide fipronil, a phenylpyrazole with the chemical name (5-amino-1-(2,6-dichloro- α - α -trifluoro-p-tolyl)-4-trifluoromethylsulfinylpyrazole-3-carbonitrile). In this case, they decided to

see if they would induce synergism when the treatments were administered in four different regimes. In one approach, newly emerged bees were inoculated with *Nosema* spores and exposed during the first week to a sublethal dose of fipronil, right after emerging. In the second case, the bees were exposed to the fipronil for a week at the beginning, but the microbe was inoculated a week later. In the third situation, bees were inoculated with *Nosema ceranae* right after emerging and the week-long application of fipronil was applied a week later. Finally, the bees were treated with both stressors at the same time, after being caged for one week.

It turned out that over the 23 days of the trials, being exposed to sublethal levels of fipronil alone, and being inoculated with *Nosema* spores alone, did not change mortality very much from that of the controls – between 75 and 80 percent survival. However, when the toxicant and microbe were combined, the survivorship dropped to between 23 and 39 percent. The only difference was in timing of the mortality. If either the application of toxicant or inoculation with the microbe was delayed a week, then the mortality was delayed but showed a much steeper loss with time.

The authors of the paper suspected that the synergism could go one of two ways. The toxicant could make the bees more susceptible to infections or the exposure to sublethal doses might induce stress resistance to infections. In this case, as in the case of mosquitoes and either entomopathic fungus *Beauveria bassiana* or *Metarhizium anisopliae* and permethrin, the combination was particularly hard on the insect. With mosquitoes, that can be good. With bees, that isn't so good.

If you wish to examine this study, it should be available on the Internet. The title

is: "Parasite-insecticide Interactions: A Case Study for *Nosema ceranae* and Fipronil Synergy on Honeybee." Authors are Julie Aufauvre, et al. URL is: doi: 10.1038/srep00326. The Journal is Scientific Reports 2: 326.

Top Bar Beekeeping: New Books

Interest in beekeeping seems to wax and wane, especially at the small scale (used to be called "hobby") level. I arrived in Davis in 1976, toward the end of the "hippie movement." However, interest in beginning beekeeping was still quite intense. I was mailing about ten "Bee-ginner Beekeeping" packets a week. Over time, interest faded. Also, over time, folks began using the Internet to find things and it was no longer necessary to contact an agricultural university to obtain farming and beekeeping information.

Following the furor over colony collapse disorder, interest in small-scale beekeeping burst upon the scene again. As was the case four decades earlier, the non-commercial beekeepers are sure they can do things better than their commercial counterparts. This time, there is much more interest in using non-conventional (other than Langstroth) hives. Interest in top bar beekeeping has expanded greatly.

I have not had much experience with top bar hives, and I am not going to become involved in the substantial discussion of how-to-do-it. Fortunately for me, three authors have decided to let us know how they manage honey bee colonies in those hives. Les Crowder and Heather Harrell combined to publish "Top-Bar Beekeeping: Organic Practices for Honeybee Health." Les has been keeping bees for 30 years and the chapters in their 175-page book are: 1. Top-Bar Hives, 2. The Supercreature, 3. Beekeeping Basics, 4. Hive management, 5. The Seasons, 6. Honey, Beeswax, and Other Products, 7. Evaluating Your Queen, 8.

Problem-Solving, 9. Raising Queens, and 10. Planting for Bees. This book is advertised at Amazon.com for less than \$20. The publisher is Chelsea Green Publishing, White River Junction, VT.

The other author, with four decades of beekeeping experience, 25 with top bar hives, is Dr. Wyatt Mangum, who published "Top-Bar Hive Beekeeping: Wisdom and Pleasure Combined." In his 411-page book, we find chapters titled: 1. From "What is a Top-Bar Hive?" to "Large Beekeeping Operations Using These Hives," 2. How a Bee, Part Drone and Part Worker, Changed me from Frames to Top Bars, 3. Building a Top-Bar Hive and Other Support Equipment, 4. Establishing a Colony in a Top-Bar Hive and Handling the New Combs, 5. Colony Management for Honey Production and Special Topics: Part 1 – Seasonal Top-Bar Colony Management Mainly for Honey Production and Part 2 – Important Topics to Help Beekeepers Flourish, 6. Harvesting Honey and Wax, 7. From Recycled Wood to Revenue: Building a Pollination Business in a Wasteful World, 8. Queen Rearing and Package Bee Production with Top-Bar Hives: New Revenue Frontiers, 9. Reusing Old Top Bars and Repairing Old Hive Bodies: New Life for Beehives, 10. Home-Grown Hives: Sustainable and Creative Beekeeping, 11. A Bee House with 30 Top-Bar Hives: A Wonderful Place to Watch Bees, and 12. Tinkering with Top-Bar Hives: Projects in the Works. This publication also contains four appendices: 1. Maximum number of end pieces cut from 12-inch wide board lengths, 2. Standard placement of handgrips and entrances on top-bar hives, 3. Top-bar hive body assembly jig, and 4. Attaching foundation strips without melted wax. Wyatt's book is self-published through Signature Book Printing, so go to "https://signature-book.com/New3Books/G4051%20Mangum%20web%20page.htm" to price and order his publication.

Early Bee Schools

Three opportunities to attend a beginning beekeeping seminar are listed for Grass Valley, CA. All classes, conducted from 8:30 a.m. to 4 p.m. at the Cedar Ridge Wye (13469 Colfax Hwy or Route 174), are limited to the first 40 pre-paid registrants. Beekeepers Dan Wheat and Gary McClaughry will teach the seminars on Saturdays Jan 19 and March 16. Serge Labesque will lead the seminar on Saturday, Feb 9. Lunch will be served at all three seminars and the cost will be \$40 per person. The contact information I received suggests calling A to Z Supply Garden Center, at 13396 Ridge Road in Grass Valley, for registration assistance. The phone numbers given are: 530-273-6608 or 530-274-3871.

Bay Area beekeepers will be providing a class for beginning beekeepers in the Buckley Room of the Randall Museum (199 Museum Way, San Francisco) on Saturday, January 26th, from 10 a.m. to 2 p.m. There will be time scheduled for only a short lunch break, so it would be best to bring a lunch with you. The cost for the class is \$20 for members and \$40 for non-members. For further information and reservations, please contact Charlie Blevins at blevinsbees@gmail.com.

It is a good idea to visit the websites of various beekeeping organizations in your area to determine if they will be offering courses for beginning or advanced beekeeping. Simply putting "beekeeping organizations (your state)" in a browser is likely to give you plenty of leads.

Beekeeping Courses Online

Penn State Beekeeping 101 is a beekeeping training course for potential beekeepers, beginning beekeepers, or for experienced beekeepers who wish to update

their knowledge and techniques. This (up to 12 months) course allows participants to learn from nationally recognized experts; take the course sessions anytime, anywhere, and at your own pace; and trade questions, successes and stories with other program participants. The instructors are Tom Butzler, Penn State Extension horticulture expert who has been teaching beekeeping to youth and adults for 15 years and Maryann Tomasko Frazier, Penn State Entomology expert, senior extension associate, who teaches courses in beekeeping, general entomology and teacher education. The cost of the course is \$189. For more information, or to register, please go to: <http://beekeeping101.psu.edu/>.

Apiology and Apiculture (ENWC 214) is the name of an online bee biology and beekeeping course that can be taken for university credit or for personal enjoyment. All that is required is a computer and the ability to connect with the Internet (however the textbook, “Honey Bee Biology and Beekeeping” is suggested reading). This is an introductory-level, college course covering basic bee biology with an emphasis on bee colony management. This scientific approach to studying the life of honey bees includes bee biology, anatomy, physiology, behavior, bee botany, and communication. In addition, it offers an introduction to beekeeping, including techniques for practical bee care, bee culturing, and managing honey bees for honey production and crop pollinations services. The course is overseen by retired professor of apiculture, Dr. Dewey Caron. To view the course syllabus and sign up for the \$295 non-credit approach, please go to: - www.continuingstudies.udel.edu/udonline/search and look for ENWC214, or call Melanie Rehberg at 1-800-597-1444 (press 5 and ask for Melanie). For course credits: www.continuingstudies.udel.edu/udonline/registration.

Frustrated by .docx Files?

Not all people have the money or inclination to keep updating their computers and computer software. However, many folks and organizations have updated to MS Office 2007. When that software compiles your data (Word document or Excel document), according to labnol.blogspot.com, the document is “essentially a bunch of zipped XML documents – you can even rename the extension from .docx to .zip and extract the contents using Winzip, like any other zip file.” Right! As long as you have Winzip!

There is another way to solve this problem. Microsoft has developed a “Compatibility Pack” that you can download and install on your computer that will translate those .docx files into .doc files and you will be able to open them in MS Office XP, Office 2000, or Office 2003. The URL is: <http://www.microsoft.com/downloads/details.aspx?familyid=941B3470-3AE9-4AEE-8F43-C6BB74CD1466&displaylang=en>.

Honey Adulteration

A lot of noise has been made recently about the filtering of pollens out of honey. In some eyes, this filtered product is no longer honey. However, we have been doing that for decades with few complaints. So, what about real adulteration of honey? Adulteration is the addition of non-honey components to the mixture that is labeled pure honey. Is this a common problem?

According to Discover Magazine, in its online blog: <http://blogs.discovermagazine.com/80beats/2012/04/09/is-there-salt-peter-in-your-saffron-and-melamine-in-your-milk/#.UNzTTToZvB8E>, “Topping the list of most-frequently adulterated foods are olive oil, milk, honey, and saffron.” It goes on to say, “Searching by food or by adulterant, you can get a sense of what’s going on in the

top four (Editor's Note! Honey is # 3). Most of the adulteration doesn't seem immediately dangerous, merely fraudulent. Honey is diluted with cheap corn syrup and other sugars."

How often is this happening? More than 1,000 cases of adulteration were discovered between 1980 and 2010. Of those, olive oil led the pack with 167 cases (16 percent of the total finds). Milk was second, with 143 cases (14 percent). Honey was third with 71 finds (7 percent). Honey was followed by saffron (57 cases – 5 percent), orange juice (43 cases – 4 percent) and coffee (34 cases – 4 percent). Much

further down the list, beeswax is mentioned as having been found adulterated 8 times or one percent of the total finds.

Happy New Year,



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