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CA Section 18 for Coumaphos

An application for a Section 18 (emergency exemption) for the use of Bayer Bee Strips (soon to be called CheckMite+) has been submitted to the California Department of Pesticide Regulation. After thorough review by the California agency, it could be forwarded to US EPA for completion of the permit process. We would then join at least 18 other states that have received permission to use a limited number of strips over the next year. To use strips a second year would require applying for a Section 18 all over, again.

Bayer Bee Strips are very similar to Apistan strips in that they are plastic strips impregnated with 10% acaricide. This time an organo-phosphate (OP) chemical is used instead of the synthetic pyrethroid fluvalinate. The new use of an OP immediately raises a flag with US EPA and CA EPA. Both agencies are trying to reduce or eliminate the use of OP's as quickly as they can. While there is no official mandate not to register new uses of OP's, the pressure in that direction is severe. Because of fluvalinate resistance in Varroa mites and the arrival of the small hive beetle, EPA has relented to allow at least temporary use of coumaphos.

At the state level, obtaining permission to use coumaphos may be even more difficult. A few years ago California voters passed a bill that forced CA DPR to develop lists of chemicals that were known or suspect of causing cancer, birth defects and reproductive anomalies in animals. The known troublemakers were removed for use in California. The suspect materials could be continued to be used only if the registrant submitted specific laboratory test data giving the chemical a clean bill of health. Many products that had only a small market in California were withdrawn from use, instead of having the expensive tests conducted. Coumaphos was one of those materials.

If CA DPR believes there is a critical need for the use of coumaphos in bee hives, either the registrant will have to provide the missing information or the regulators will have to decide that the small amount of material, used in the confines of bee hives in a non-food use manner, is not enough to endanger humans or the environment. We should hear about that decision before long.

The manufacturer of the coumaphos strips, Bayer, is also accumulating data to submit to the US EPA for a Section 3 registration. As I understand it, field tests are showing that no residues of coumaphos are found in honey if the strips are

used ONLY WHEN NO HONEY IS BEING PRODUCED. Because of the data, it appears that the registrant will request a non-food use and a ZERO TOLERANCE for coumaphos in honey.

I have some personal misgivings about this approach. Analytical laboratories have instrumentation that can find contaminants at the parts per billion (PPB) levels. California beekeepers produce about 20 million pounds of honey per year. It would only take a couple hundredths of a pound (0.3 ounces or the amount in 6 strips) of coumaphos to put all that honey in jeopardy. If we get the strips for use in California, be sure to follow the directions on the label to prevent a real problem.

The strips will be available only through Mann Lake Ltd. in Minnesota. Each state is allotted a certain number of strips. Apparently, the strips will be distributed on a first come, first served basis. The California request is for 1 million strips so that each of our colonies can be treated once. Hopefully, after a few coumaphos treatments the mites will return to being susceptible to fluvalinate and the treatments can be alternated to avoid resistance.

Impacts of AHBS

Africanized honey bees expanded their range a lot over the last year. Swarms and colonies have been detected on the coastal sides of San Diego, Orange and Los Angeles counties. Thus, AHBS stretch from Las Vegas to the mountains surrounding the southern San Joaquin Valley and everywhere south to the Mexican border. The movement is toward Ventura and Santa Barbara counties.

A major casualty to the beekeeping industry was the decision of Tom and Suki Glenn, of Glenn Apiaries, to terminate sales of open mated queens to their customers this year. This is the message in their e-mail: "We have decided to discontinue selling naturally mated queens for the rest

of this year. It has become clear the Africanized Honey Bee is advancing in California this spring. A recent find of the AHB near our area (10 miles away, which is just beyond mating range of our queens) has caused us to come to this decision. In order to avoid the risk of mismating, and therefore spreading the AHB, we are now raising only artificially inseminated queens, as we have complete control over their genetics.

On the bright side, we can now focus more attention on our breeding program for mite resistance. We will continue to raise artificially inseminated queens. Queen cells are also available now and nucs with artificially inseminated queens will be available soon for pickup.

We have known this change was coming but had hoped we could continue our regular business for all of 1999. We have enjoyed providing naturally mated queens for the last twenty-two years, and look forward to continuing serving the beekeeping community albeit in a slightly different way."

Also, the public is beginning to rub shoulders with the bees. One person called from San Diego to find out who would remove a swarm from her clothes drier vent. She found my telephone number on the San Diego AHB Website. Another person from San Diego called to tell me that we should modify our suggestions to screen chimneys and vents. Apparently, there are furnaces and water heaters that eliminate exhaust fumes by "gravity" (warm air rises). Screening those vents interferes enough with the escape of the exhaust to constitute a hazard to the occupants of the building.

In another situation, a person was contacted to remove bees from a public facility. During the course of the removal, a bee stung a bystander, who subsequently fell down a flight of stairs. The city and bee removal person are being sued. Both sides of

the case contacted me looking for "expert witnesses." I don't get involved in bee-related lawsuits, so I gave them some names to contact.

One evening on local television there was quick mention of a swarm at a southern California shopping mall that was "preventing people from entering the store." This is just the beginning. Wait until the AHBs become numerous!

Feeding Pollen Substitute

Although this is not new information, it is worth hearing, again. Researchers Tania Cremonez, David deJong, and Marcia Bitondi at the University of Sao Paulo in Brazil, compared methods of determining how useful diets were to bees by measuring their total protein and vitellogenin levels in their blood (hemolymph). The values were linked so closely that the much more difficult assay was no more informative than total protein measurements.

What is more important to us is what diets were used and how helpful they were. Bee bread (stored, processed pollen) was compared with a soybean/yeast mixture, pollen pellets, corn meal and sucrose only. The bees ate about similar amounts of the three solid media, but only the bee bread and soybean/yeast diets really helped elevate blood proteins. After six days of feeding on the diets, recently emerged bees had the following blood protein levels in micrograms/microliter:

Bee bread	27.6 - 100%
Soybean/yeast	24.1 - 87%
Pollen	11.4 - 41%
Corn meal	4.0 - 14%
Sucrose	2.2 - 8%

The results of this study show that pollen substitute patties based on yeast, and in this case soy flour, too, do an excellent job of providing nutrition to bees. It also showed, that pollen pellets are not handled as readily as the paste-like bee bread and pollen substitute. So, keep

feeding those patties. You are doing the right thing. The complete text can be read in the Jour. of Econom. Entomol. 91(6):1284-1289 (1998).

Hygienic Stocks

Early this spring Gary Reuter and Dr. Marla Spivak visited California to demonstrate an easy technique to test bees for hygienic behavior. They also wished to determine how much of that behavior occurred in our bees.

I'm pretty sure that a published paper will follow this work, so I'll just make a few general comments on the results. The researchers visited 11 apiaries and tested 139 colonies.

Six of the apiaries appeared to have a "normal" distribution of behavior. A few colonies were really hygienic, and a few were not. Most colonies got on the job and had about half of the dead brood removed.

The remaining stock started at 50% removal and went up from there. Two operations had the majority of their colonies removing 75% or more of the dead brood. One operator had been selecting for this trait for 3 years and over half the tested colonies removed 90% or more.

These techniques are not really difficult. They are written up in the bee journals and require the use of liquid nitrogen. But, it doesn't take very long and the advantages of hygienic stocks when dealing with Varroa mites and brood diseases should increase the demand for them significantly.

WAS 1999

The last WAS Conference of the millennium will be held in Reno, at Harrah's Hotel and Casino, from July 12-15, this summer. Since the meeting is within a couple hours drive of UC Davis, there are quite a few speakers associated with the campus. Dr. Robert Page, Jr. will be discussing genetic and pheromone factors that influence pollen collection. Dr. Christine Peng will describe her

studies on Varroa. Dr. Ron Chuang or his student will show us how bacteria are monitored for antibiotic resistance. Dr. Norman Gary will share some insights on using bees in the entertainment business. And Dr. Eric Mussen will share his opinions on treating colonies for various disease and parasite problems.

From a bit further away, Aurelio Posadas (Sacramento) will review the Red Imported Fire Ant situation as it appears to CDFA. Dr. Adrian Wenner (Santa Barbara) will let us know whether Varroa was able to eliminate honey bees from Santa Cruz Island. Gene Brandi (Los Banos) will be discussing his experiences using bees in commercial crop pollination. Dr. David Kellum (San Diego) will fill us in on how well people and AHBs are getting along in southern California. And, to be sure that this isn't a California only speakers' program, Dr. Lynn Royce from Oregon State University will share her opinions about using Amitraz for mite control.

On Wednesday afternoon, we will have some hands-on things to do and a chance to tour around the area. As always there will be vendor exhibits adjacent to the meeting rooms where our breaks will be held. There will be a social get together Monday evening and meal around the pool on Tuesday evening.

The conference will include a silent auction, which is much better when you bring a nice small something to add to the display cases. There will be an active, after banquet, auction Thursday evening which is much better when you bring something large and valuable to add to the items to be auctioned.

This will be the best West Coast conference of its kind being held this summer. Please reserve those dates on your calendar and plan to come to our meeting. WAS Treasurer, Ron Neese, is handling the conference registration. Please contact him for

more information and registration forms:

Ron Neese
268 Pearl Way
Woodland, CA 95695
(530)666-4053
was@mother.com

Hotel reservations should be made directly with Harrah's Center at 2nd Streets, P. O. Box 10, Reno, NV 89504 or by calling 800-427-7247. The room rates are very good for this first rate hotel.

Watermelon Pollination

Jesús Valencia, Farm Advisor, related the following opinions in Stanislaus County, in the February 1999 issue of Vegetable News.

Watermelon Pollination - "Proper pollination of all cucurbits (watermelons, squash, cucumbers and mixed melons, etc.) is necessary to produce a crop. Without pollinators (bees, and other insects) fruit will have a hard time forming as male and female flowers form at different parts of the plants. Pollinators are even more important in the case of seedless watermelons that require a different variety altogether to create the seedless fruit, because of sterile male flowers they produce.

To increase pollination and reduce the number of seeded plants in the field, several tests were conducted in the county in which seedless and seeded varieties were interplanted down the row as well as traditional method (a seeded variety every third bed). This was an effort to find out the most efficient way in reducing the number of seeded lines while maintaining or improving yield.

The test consisted of transplanting a seeded variety (CalSweet) every other, third and fourth seedless plant and, of course, maintaining as a check a solid bed of CalSweet every third row. Number of total fruit was counted periodically through the season and recorded.

Results: Interplanting of both seeded and seedless watermelon plants in the same row seems to be the most beneficial. Moreover, a CalSweet every third seedless plant produced the highest yields. Even though the data looks good, I need to remind you that this data is based on a single year and caution should be taken in applying information to your entire acreage. If you are doing well with the traditional method, try this approach on a few acres to gain experience before a full conversion of your plantings.

Everybody knows that bees are essential in melons to pollinate and produce fruit. We also know that for a watermelon to be fully pollinated bees must visit the same bloom 10-20 times. If less than that, fruit will be misshapen or deformed or not formed at all. To have a better chance in bees pollinating your crop set hives out when there is at least 10% of blooms open. Earlier than that, bees will find alternate nectar and may prefer them over your crop once it blooms. You should also keep in mind that bees would like to fly down the row rather than across. In the case of seedless watermelons, interplantings down the row of seeded and seedless melons could be most preferable to improve pollination. Get healthy hives on sunny days at 65° F, 75 bees per minute should be entering the hive--count them.

Do you know that there are more than 3500 species of pollen bees in North America? If need to know more, contact the USDA Bee Research Laboratory, Dr. Suzanne Batra, Bldg. 476 BARC-East, Beltsville, Maryland 20705. You can also try the web site at: <http://www.ars-grin.gov/ars/Beltsville/barc/psi/brl/brl-page.html>."

Nutraceuticals

If nutraceuticals is a new word to you, it won't be for long. Modern medical science has accomplished a lot when it comes to repairing

damaged humans, but now attention is shifting to preventing the damage in the first place. We are just scratching the surface when it comes to naturally occurring preventatives, and most of them are plant products.

Most of these "health" compounds are going to occur in, or be put into, your food. Here are the results of some research conducted by the National Honey Board. See you at the juice vending machine!

Nutraceutical Beverages with Honey. The University of Nebraska-Lincoln Food Processing Center recently completed research into the development of two non-alcoholic nutraceutical beverages containing honey as the primary sweetener. Juice beverages containing ginseng or chamomile and sweetened with honey have a healthy, natural appeal, which could be very successful with today's consumers.

Project objectives: The main objectives of this project were:

- To formulate two non-alcoholic beverages--a cranberry juice-based beverage and a lemon juice-based beverage containing a "nutraceutical" or botanical ingredient.
- To determine the effect of honey on bitterness and acidity in juice beverages over time. To determine the effect of honey on the modification or intensification of desirable flavors in non-alcoholic beverages over time.
- To determine the effect of honey on maintaining color stability over time.
- To determine processing parameters which insure the developed products are microbiologically stable.
- To describe (where possible) the mechanism(s) by which honey may affect mouthfeel, flavors, flavor modification or potentiation, clarity, color and microbial stability. Also, to overcome any adverse effects encountered in product formulation.

•To determine consumer acceptance through sensory analysis.

Formulation: A cranberry juice beverage and a lemonade-type beverage were developed. Both beverages were formulated with fruit juice as a base. Each juice drink contained vitamin C and the tart flavors were a pleasant complement to the sweetness of honey. The nutraceuticals used in the cranberry juice-based beverage were guarana with ginseng. Guarana has a high caffeine content, providing a "boost" to the central nervous system.

Ginseng is an adaptogen, meaning it normalizes physical function. It was used in this product for its purported stimulant effect. The lemon juice beverage contained chamomile, which produces a calming effect.

The juice-based beverages were diluted to a lower percent soluble solids content ($^{\circ}$ Brix) with distilled water. Concentrated, unsweetened cranberry juice ($^{\circ}$ Brix:50+/-0.1) was diluted to standard strength ($^{\circ}$ Brix:7.5). Unsweetened, single-strength lemon juice was used. Both beverages were sweetened with liquid, grade A, white clover honey and botanical extracts were added.

Extensive flavor development in both beverages was necessary. Several flavors were evaluated before finalizing the finished prototypes.

Beverage production: During the formulation phase, the beverages were mixed cold and held refrigerated until evaluation. However, for shelf-life studies the beverages were mixed and pasteurized. Prior to mixing with water, flavors and botanical extracts, the honey was heated to facilitate blending. The blended beverages were pumped through a coil pasturizer, using a Masterflex pump, and heated to 165 $^{\circ}$ F. The processing temperature of 165 $^{\circ}$ F was determined in relation to the pH of the prototypes and was sufficient for pasteurizing both beverages. The

pasteurized product was poured hot into clean, eight-ounce glass jars. The jars were capped using a plastisol-lined cap, inverted and allowed to cool. The processed samples were stored upright in the dark at 70 $^{\circ}$ F.

Sensory analysis: A modified hedonic scale was used to determine overall liking and acceptability of appearance, texture, flavor and overall acceptability in the lemon and cranberry beverages. Beverage samples were also evaluated for specific attributes such as lemon and chamomile flavors (lemon beverage) or cranberry flavor (cranberry beverage).

Two sensory panels analyzed two samples of each beverage on test days--giving a total of four replications. Significant differences ($p < 0.05$) were found in flavor and chamomile flavor for the honey, lemon-chamomile beverage. The flavor attribute was found more acceptable on day 90. On day 180, the flavor acceptability decreased to that found on day zero. The acceptability of the chamomile flavor increased ($p < 0.05$) on day 90 and this level of acceptability was still present on day 180. All other attributes increased numerically on day 90 and then decreased on day 180. However, the values were not significantly different. The data indicate optimum storage time at 70 $^{\circ}$ F for the lemon beverage was 90 days.

Conclusion: Honey-sweetened, non-alcoholic beverages combined with botanical extracts were successfully produced. Shelf-life studies revealed very little change in beverage color, pH, percent soluble solids and clarity during six months of storage. The amount of sedimentation increased in both beverages over time. However the lemon beverage had less sedimentation compared to the cranberry beverage. Both beverages were microbiologically stable during storage. Sensory analysis revealed the lemon and cranberry juice drinks

were acceptable for 180 days, with the highest degree of acceptability at 90 days.

It Pays to Advertise

I don't go supermarket shopping very often, but I did a while back when the National Honey Board had put honey bear placards on some shopping carts and coupons in the aisle dispensers near the honey. I didn't buy any honey because the beekeepers keep me well supplied, however, I did wonder if the prompting made any difference.

The Honey Board reported the following: "According to Nielsen market research, honey enjoyed a 6.74% overall retail sale increase during the four weeks honey health messages appeared in stores. This represents a 420,999-pound retail movement increase, compared to the same period a year ago. Making the numbers even more impressive: the 6%+ increase was measured across all 20,000 U.S. supermarkets included in the Nielsen research. The honey promotion actually appeared in only 12,000 of those stores. All indications point to substantially higher sales increases in stores where the promotion appeared. Packer retail sales for February 1999 were up nearly 20%- possibly indicating strong retail orders to replace stock moved in January."

Since advertising seems to pay off, locally, you might be interested in the following: "The National Honey Board has a new recipe brochure available to the honey industry. "Honey, You're a Classic" features color photographs and five classic honey recipes such as Southern-Style Honey Barbecued Chicken and Cinnamon Honey Buns. The brochures fold out into individual tear-off recipe cards.

Beekeeping associations and assessment-paying supporters of the National Honey Board can order up to 500 recipe brochures per year free of charge. Additional brochures are

available at 10 cents each. To order brochures, call the Honey Board's automated order line at 888-421-2977. Press "7" and leave your request. Brochures are also available for download from our Web site: www.honey.com."

Big Doings at Ohio State

NEW RELEASE! SELF-TRAINING VIDEO INSTRUMENTAL INSEMINATION OF HONEY BEE QUEENS, with Susan Cobey

A 25 Minute, Step By Step, Training Video in English & Spanish.

This training video presents the technique of instrumental insemination in specific detail. It is designed for the beginner as well as the beekeeper who wants to refresh and update their technique. The Schley instrument and the Harbo large capacity syringe are used for demonstration purposes. In addition, a review of various types of instruments is presented.

In step by step detail; eversion of the drone, semen collection, positioning the queen, bypassing the valve fold and insertion of semen are explained and demonstrated. Key aspects of each of these topics are reviewed with trouble shooting sections focusing on common problems. Working with stored semen is also featured. To check your technique and success, the video also shows a simple field dissection method of the queen's spermatheca.

VIDEO REVIEW, by Dr. Harry H. Laidlaw Jr.

An excellent video of instrumental insemination of honey bee queens that is practical and covers the essential details of the operation has been produced by Sue Cobey, Dept. of Entomology, Ohio State University, Columbia, OH 43210-1220. This is a teaching video that is suitable for self-learning or as an adjunct to lecture and for demonstration. Sue is an expert honey bee inseminator and a competent instructor, and as this video opens she puts the students at ease by visiting the Rothenbuhler

Honey Bee Laboratory apiary prior to entering the laboratory building. The student is then introduced to various insemination devices that are used, or have been used in the past, where some familiarity with the instruments is gained.

This video teaches visually and verbally by demonstration and explanation of each maneuver as it is performed by the instructor. The student views from the instructor's side or through the microscope as the insemination progresses, which creates a feeling that the student is performing the operation. Cleanliness and care are emphasized, especially in sperm handling. Possible difficulties are listed in appropriate places.

This video is so interesting, and makes it so easy to visualize the process of insemination, that it should encourage beekeepers with a scientific bent to use instrumental insemination for maintaining or improving characteristics of their bees, including temper and resistance to disease and parasites. Instrumental insemination is integral to any carefully planned bee-breeding program and is no longer the exclusive breeding tool of the scientist.

TO ORDER: Send a check or money order payable to: The Ohio State University \$59.95 post paid. (see address below).

OHIO STATE UNIVERSITY SPECIALIZED SHORT COURSES. Instructor: Susan Cobey

Location: Rothenbuler Honey Bee Research Laboratory in Columbus, OH

THE ART OF QUEEN REARING-May 20, 21, 1999

This class is designed to give the beekeeper an understanding and appreciation of what it takes to rear high quality queens, as a hobby or on a commercial scale. The basic biology and principals of queen rearing will be presented. Beekeepers will be involved in going through the various

steps of the process including setting up cell builders, grafting, handling queen cells and establishing mating nucs. Tips on drone rearing and getting the queens mated will also be presented. The class will consist of a combination of classroom and hands on beekeeping. Two basic queen-rearing systems will be demonstrated: a queen right system and queen less system. Beekeepers will make and be given examples of the specialized equipment needed for queen rearing; grafting tools; cell bars and holding frames - so that they can get started rearing queen cells in their own apiaries. Registration is \$100.

INSTRUMENTAL INSEMINATION AND HONEY BEE BREEDING. June 16-18, 1999

This course is for commercial beekeepers who are involved in a breeding program and for laboratory personnel requiring the skill for research purposes. A practical hands-on approach to instruction is provided with emphasis on individual attention. Participants become familiar with the assembly and alignment of equipment and sterilization methods. Various types of insemination instruments are displayed and their features reviewed. The preparation and care of virgin queens and drones will be reviewed. Basic bee genetics and various breeding systems will be presented. Demonstration materials, virgin queens and drones will be provided for the class. Participants will receive a booklet reviewing methods of bee breeding and the technique of instrumental insemination. Registration is \$300.

ADVANCED INSTRUCTION INSTRUMENTAL INSEMINATION. June 24, 25, 1999

As a follow-up to the previous class, the focus of this class will be perfecting insemination techniques and trouble shooting individual problems in the laboratory and in the field. Participants will become familiar specialized techniques such as: short term storage and mixing of semen. Demonstration materials, virgin queens and drones will be provided. Registration is \$200.

For info. and registration contact:
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<http://iris.biosci.ohio-state.edu/honeybee/breeding>.

Sincerely,

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