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CA AHB Status

I have just returned from southern California where members of the Africanized Honey Bee Steering Committee met to discuss the current status of the pest population and our readiness to deal with it. We have been meeting for years, so one might wonder how much better prepared we can get.

The truth of the matter is that we have fallen behind. When AHBS arrived in southern California, they caught the attention of the general public and public officials. Local and regional task forces were assembled and training sessions were held for decision-makers and emergency responders. Funds were made available for production and distribution of printed information, slide sets, videotapes and a school curriculum targeting AHBS. We did a lot of information dissemination. So, how did we get behind?

Over the years, AHBS did not spread as fast as we anticipated. They just were discovered in the southernmost tip of Nevada and a

portion of San Bernardino County, the fourth "colonized" county in California. We have had only seven

stinging incidents in California attributed to AHBs since they arrived nearly four years ago, but in the most recent incident a field worker was stung over 300 times. We were concerned that the attending physician may not have been aware of the problems with "organ failure" (kidney failure) that can occur up to a week after such a sting patient is released from the hospital. (Three different Steering Committee agencies conveyed the message to the doctor, independently).

The greatest problem is personnel turnover. A substantial portion of the previously trained health and emergency providers have "moved up" or "moved out". New re-placements are ignorant of the problems encountered working around defensive colonies of honey bees.

Also, at least in Imperial County, pest control operators prefer to work an 8 to 5 day. They have found dealing with honey bee colonies during flight time to be difficult at best, and AHBs are just that much worse. Even if they are willing to work at night, PCO's insurance companies are reluctant to cover removal of bees from buildings. So, who is going to

become involved in AHB removal if the commercial exterminators bow out? In Tucson, there are nearly 30 new bee removal companies that are kept very busy. Maybe something similar will develop in southern California.

Thus, it is time for the net-working to be reestablished, the information to be disseminated, again, and the people of southern California to plan how they will respond to the presence of this nuisance.

Captan[®], Revisited

Apparently, beekeepers in California noted significant losses of brood and bees in a number of colonies that were pollinating almonds, this year. Always suspect of agrichemicals, the finger was pointed at Captan. Therefore, I believe it is worthwhile to review the data that Larry Atkins, and David Kellem generated in the 1970's, when Captan was suspected of causing bee losses around Capay and Woodland, in Yolo County.

Using the standard vacuum-jar dusting technique, Larry determined in 1972 that none of the commercial formulations of Captan or its breakdown product-thiophosgene-was toxic to adult honey bees.

In 1972, Larry and David also conducted a field test in which colonies were fed soy flour patties containing 0,100,500 and 1,000 ppm Captan. A second field test included colonies fed 10% Captan (100,000 ppm) in honey diluted with little water.

The colonies in the field tests prospered, but six weeks after being treated, 3-6 deformed, newly -emerged adult

bees were recovered in the dead bee traps daily.

Daily consumption of patties and production of brood decreased as the concentration of Captan increased. More deformed bees were observed at the low and moderate doses of Captan. Perhaps the highest doses were lethal to brood.

Experiments conducted in 1973 took place in large screen cages. Colonies in one study were fed patties with 0,100,500 and 1,000 ppm Captan and in another study 0.100,200 and 500 ppm Captan.

These results prompted the researchers to conduct further experiments in which effects were determined for eggs, larvae, pre-pupae, pupae and newly emerged adults. Similar to 1972, treated colonies were housed in large flight cages. In patty studies conducted in early summer the percentage of pupae and adults affected were 6.6% -untreated; 41.2% of 100 ppm; 43.8% at 500 ppm; and 2.5% at 1,000 ppm. In late summer, the results were: 4.7%-untreated; 9.8% at 100 ppm; 13.9% at 250 ppm; and 8.6% at 500 ppm.

Additionally, Larry and David applied Captan in acetone to bee eggs and mixed the solution into larval food. About 87% of acetone treated eggs developed capped brood. Eggs treated with one microgram of Captan responded negatively, with only 7% developing to capped brood. Seventy-one of 165 two-day-old larvae developed to the capped stage when fed one microgram of Captan. Sixty-seven (41%) emerged and 7% were abnormal. Increasing the dose of 10 micro-grams per two-day-old larva led to 38.7% development to capped stage and

7% abnormal. Three-day-old larvae seemed to be most tolerant to Captan, and they were selected to determine an LD₅ for "brood."

The dose that kills half the exposed three-day-old larvae when incorporated into their food turned out to be 5.39 micrograms. Overall, the LD₅ dose for all larvae is 3 micrograms per larva. From that figure and other experimented data, it was calculated that exposure to normal field concentrations could produce as much as 33 to 41% damage to brood.

Remember that the effects are dosage dependent. If the larvae are being fed only contaminated pollen, the results will be very different from a diet containing mixes of contaminated and clean pollens. Also, like buckeye, stored pollen can come back to haunt you, later in the season.

To see the full text, obtain a copy of the Journal of Apicultural Research 25(4):242-255 (1986).

Talking to beekeepers this year, they seemed to think that the bee losses coincided with application of Rovral®. If there is a causal relationship, it will be the first time that it has been observed.

Subtropical Fruit

Many UC researchers and extension personnel devote a large portion of their time studying subtropical fruit. The greatest effort is directed toward citrus and avocados, but cherimoya, kaki persimmons, other receive attention. In May the California Avocado Commission and the Citrus Research Board helped UC Extension expand its mailing

list for its publication "Subtropical Fruit News" to every known grower in the state. Volume 6, Number 1, 1998, included a number of articles on avocado and citrus pollination. I will briefly mention a few of the expressed ideas.

Of greatest interest was an article from Florida stating that pollination was basically wind-borne in the avocado orchards that they studied. The researcher stated that avocado pollen is wet, not sticky, when it is released from the anthers. In dry weather, the pollen soon dries and gets blown around the orchards. Apparently, in the humid climates of Florida, the stigmas of the previous days flowers are still white and receptive to the pollen. It was further stated that California conditions dry out the stigmas too quickly for that mechanism to work here.

The next question was, "What pollinators are getting the job done in California?" Studies in southern California revealed that honey bees were the most frequent visitors to avocado bloom. Foraging behavior was similar to that observed in hybrid sunflower fields and in almonds. Pollen collecting honey bees stay pretty much on the pollen donating flowers, so it is difficult to determine how the pollen eventually reaches the receptive female flowers. But, it does.

An article by researchers with USDA in Logan, Utah, expressed their interest in trying alternative pollinators, such as bumble bees, alfalfa leafcutting bees, orchard mason bees and others, in avocado groves. At first they will be superimposed

over honey bees to watch their behavior and see if any yield changes are noted. While this is going on, attention will be paid to other solitary bees found in the groves to see if any new ones are worth studying for potential propagation.

Finally, there was an interesting article on seedlessness in citrus. The amounts of functional pollen vary from none to high depending on varieties of lemons, oranges, grapefruit, limes and mandarins. The levels of parthenocarp (fruit development without pollination and fertilization) vary a lot, too.

In California one of the main problems is to prevent seed formation in citrus that is desired to be seedless. Only "Washington" navel oranges and "Satsuma" mandarin selections can be relied upon to be seedless. Other citrus varies depending upon weather conditions and presence or absence of pollinators. In southern Africa, growers are told to plant at least 10 buffer rows between two cross-pollinating cultivars to prevent seed production. Or they are told to leave an open space of at least 1,640 feet (a little over 1/4 mile) between plantings to avoid problems.

This is an extremely interesting compilation of information that would be useful to beekeepers who use bees to pollinate avocados or who are asked to stay away from certain citrus plantings. To obtain a copy, contact Susana Velez, 4106 Batchelor Hall Extension, University of California, Riverside, CA 92521. She prefers to be contacted by e-mail:

susana@ucracl.ucr.edu (that is the numeral "one" following ucracl), but her telephone is: (909)787-4430.

Microbes and Tracheal Mites

Canadian researchers, working under sterile conditions, tried to isolate bacteria and fungi that might be involved in colony losses to tracheal mite infestations. It made sense that microbes could be involved in bee deaths and a German research paper stated that microbes were common in the tracheae and hemolymph of infested bees.

The Canadians took 614 tracheal samples and 250 samples of bee blood. Using various culture media, they were unable to demonstrate more than a few microbes at all. Identification of bacteria did not reveal any bee pathogens and the fungi represented commonly encountered air-borne spores.

Since numbers of microbes reach hundreds of millions in infected bees, none of the samples suggested that tracheal mites or their damage

were responsible for disease conditions caused by bacteria or fungi. The researchers did not mention viruses, because the study wasn't designed to look for them. However, this information tends to incriminate viruses through the process of elimination.

The biographic reference for this paper is Grant, G.A., D.L. Nelson, J. Belfus-Nogel, and J.D. Bissett, 1977. Micro-organisms associated with tracheal mite-infested honey bees, J. Apic, Res. 36(3/4):141-144.

Overtime

Steve Sutter, UC Area Farm Advisor, published the following information on overtime pay in the February 1998, edition of the Agricultural Personnel Management Newsletter.

California Agricultural Wage Orders and Overtime Rules

As of **March 1, 1998**, California law requires a minimum wage of \$5.75/hour. Overtime to agri-cultural employees working above a fixed number of hours **per day** or week continues to be required. Although California's overtime security doesn't apply to "administrative, executive, or professional" employees, there is no blanket overtime exemption for employees paid salaries.

California occupational **Wage Order 14** applies to those with agri-cultural production occupations (including field packing and equipment maintenance) unless they are covered by Orders 8 or 13. Current State law still requires that agricultural production employees working over

10 hours in a workday, or more than 6 days in a workweek, must receive 1 and one-half times their regular pay rate for hours worked over 10 in a work-day, and for the first 8 hours worked on the seventh workday in the workweek. These employees must be paid twice their regular rate for all hours worked over 8 on the seventh workday in the workweek. However, an employee may be employed on 7 workdays in a workweek with no overtime required if total hours during the workweek do not exceed 30, and total hours in any one workday during that week do not exceed six.

Clerical workers employed by an agricultural company (Wage Order 14) are not considered to be engaged in an agricultural occupation; so, they are governed by occupational **Wage Order 4**, which applies to clerical workers generally and which now requires overtime pay only after 40 hours per week.

For **piece-rate** work, overtime can be computed by raising the regular piece rate by half (for time and a half), with precise records on labeled overtime pieces. Piece-rate workers must earn at least the minimum wage per hour averaged over the employer's pay period (weekly, bi-weekly, daily).

Packing sheds, wineries, and cotton gins - Industry **Wage Order 13** covers operations in a permanent fixed structure, or on a moving packing plant, to prepare products for market when these operations are done on sites owned or operated by the same employers producing the crops. Packing firms, and growers packing or processing for other growers along with their own pro-

duction, are covered by Industry Wage Order 8.

In industries handling crops after harvest, an employee may work up to 72 hours in any workweek, after which he or she must get a day off duty. However, the grape and tree fruit industries, receivers, loaders, forklift drivers, shipping clerks, and maintenance workers are exempt from the day off requirement.

Employees (including clerical) working under Industry Wage Orders 8 and 13, must be paid time and a half for hours over 8 in a day, or 40 hours in a week. Generally, minors may not work over 8 hours in a workday, and the 8-hour premium will therefore not apply to them.

Double-time pay is required for hours over 12 in a day, or in excess of 8 hours in a seventh consecutive day of work in any workweek.

Request free wage order posters, Poster MW-96 (reflecting California minimum wage increase), and "Pay Day Notice", DSLE 8 at (415) 975-2080. Wage order posters communicate rules on tools, reporting time pay, meal periods, and breaks.

Bilingual Journal

Are you looking for a magazine (bee journal) that can be read easily by employees who learned Spanish as their native language? Such a publication is Apitec which is available in Spanish only or in an English/Spanish edition. The November/December 1997 English/ Spanish issue explained the difference between untested, tested, select tested

and breeder queens; an evaluation of the effects of NAFTA; apiculture in the Yucatan; the history of apiculture in Mexico; an article on greenhouse pollination with bumble bees (taken from Bee Biz magazine); and the relationship between apiculture and medicinal plants.

The cost of an annual subscription (6 issues a year) is \$25.00 U.S. Send a transfer of funds from your bank to the following account:

Banco Banamex Mexico City
Cuenta Maestra 20489
Sucursal 701

Under the name of José Ramón Pedrón
To reach the publisher directly, contact:
José R. Pedrón González
Cerro Tres Marías No. 354
Col. Campestre Churubusco
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Phone/Fax: 011-52-5-211-3010

Crows a Problem?

I can remember a time when crows left the area at just the thought of human presence. Now, they seem to be as bold and numerous as pigeons. The following crow control information was published in the Polomogy Post, from UC Coop Extension in Madera, July, 1997.

"Grab you hat, goggles and boombox...time for some serious avian pest control. Insert tape, crank up the volume and listen to the distressed "caw"-ry of Corvus brachyhyunchos--the American Crow--
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which will induce sheer terror into a bird that has become all to common in many urban and rural areas.

The tape and accompanying leaflet are now being offered by

the University of California as a safe and effective way to drive away the pesky birds. Crow roosts--containing from 100 to many thousands of birds can be major nuisances and their noise can be very disruptive. In some cases though crows are a benefit to agri-culture--for instance when they eat almond mummies and take away the overwintering site for Navel Orangeworm. So maybe you want the crows around--you just don't want them roosting in your backyard.

Controlling crow roosts with tape distress calls has been developed by UC research Paul Gorenzel. Anyone with the proper tools--a tape player and protective gear--can drive crows away from nighttime roosting sites. The distress call tricks the birds into thinking one of their group is being attacked by a predator. Dispersing crows with this audio-tape requires no specialized equip-ment and does not require federal, state, or local permits. The tape, proven by UC researchers, and accompanying brochure explain in detail how and when to use the tape and provides valuable background information about where, when and how crows roost, their diet, range and other important crow facts.

To order Controlling Urban Crow Roosts with Taped Distress Calls, contact the UC Division of Agri-culture and Natural Resources at (800)994-8849 or (510)642-2431. Catalog item #21561 sells for \$10.50. Add \$1 for handling, plus \$3 shipping for one tape and 50 cents for each additional tape and brochure. Or mail checks

(payable to UC Regents) to UC Division of Agriculture and National Resources, Communication Services--Public-ations, 6701 San Pablo Avenue, 2nd Floor, Oakland, CA 94608-1239. FAX orders can be placed to (510)643-5470."

Environ. Tox.

UC Extension Toxicologist, Dr. Art Craigmill publishes the Environmental Toxicology Newsletter for his clientele. It is published "Occasionally at Irregular Inter-vals" but each issue usually has something eye-catching. In the September 1997 issue there was this interesting tidbit:

"Another Example of the Dose-Response Relationship."

"Physicians James J. Chamberlain and Igor Z. Abolnik report in the September issue of the Western Journal of Medicine that binge eating of licorice can cause pul-monary edema, or swelling caused by excess fluid around the lungs. Licorice contains glycorrhitic acid, which is known to cause heart problems, including congestive heart failure. The man in the case study ate four packages (about 2 1/4 pounds) of Twizzlers® over a period of three days. REF: Washington Post Health, September 30, 1997."

In the December 1997 issue Art also reviewed the results of residue testing on foods that the Depart-ment of Pesticide Regulation publishes annually (albeit a bit slowly). Fresh produce in California had no residues found in 64.6% of the cases. In 24.5% of the samples less than 10% of the full tolerance level was found. In

only 1.64% of 5,502 samples were illegal residues found. Those residues were 1.33% unregistered product and 0.31% residues above tolerance. These studies continue to demonstrate that, as Art writes, we have "... excellent quality control in the use of pesticides on crops in California." Now, if we could just keep our bees out of these chemicals until the residues reached these levels!

Honey Recipe

The top prize winning Blue Diamond recipe this year included honey as an ingredient. Rose Wollenberg calls her treat Blue Diamond Almond Bars. Give this recipe a try!

Crust: 2 cups flour
1 cup powdered sugar
1 cup butter, softened

Topping: 1 cup brown sugar
1/4 cup sugar
1/3 cup honey
1 cup butter
1/4 cup heavy cream
3 cups sliced almonds

Preparation: Heat oven to 375 degrees. In medium bowl, combine crust ingredients until soft and crumbly. Press mixture into 15"x10" jelly roll pan. Bake until golden, about 10 minutes. Set aside.

In sauce pan combine brown sugar, sugar, honey and butter. Cook over low heat, stirring occasionally until sugar dissolves. Bring to a boil without stirring, boil 3 minutes. Remove from heat, stir in cream and almonds. Spread over crust. Bake until bubbly, about 15 minutes. Cool. Cut into diamonds, triangles or bars.

Seasoned Beekeeping Literature

Looking for a source of less usual bee-related publications?

Joseph J. Bray, P.O. Box 3305
Yale Station, New Haven, CT
06520 [(860)664-3983] has quite a supply. With prices starting under \$10 and at least one exceeding \$600, Joseph offers most of his books for less than \$100. I currently have Beekeeping and Related Subjects Occasional Lists Nos. 13 and 14. I am sure that you could request these lists and others from Joseph, if you are interested.

UC Ag Research

Do you wish to know more about the research projects conducted at UC? If so, take advantage of the periodical described by Keith Mayberry in an issue of Imperial County's Agricultural Briefs.

"California Agriculture" is a bimonthly publication of the UC Division of Agriculture and Natural Resources. Each issue contains articles written by UC scientists and subjects cover a wide array of topics from pest control to consumer affairs. The periodical is available free within the U.S.; \$12 yearly outside the country. Contact California Agriculture, DANR, 1111 Franklin Street, 6th Floor, Oakland, CA 94607 to subscribe or call 510-987-0044."

A couple of issues ago, Dr. Kirk Visscher reviewed the status of Africanized honey bees in California. I am sure that more articles on that subject will be forthcoming.

What's for Dinner?

The National Honey Board has selected six recipes to be used at home for preparing fairly easy, but very tempting, summer entrees and an herb sauce for

vegetables. The recipes are sent printed on both sides of three recipe cards. The cards are perforated into an 8.5 x 9.75 inch card stock that contains color graphics and an ad for the most recent "Sweetened Naturally with Honey" cookbook.

Called "handouts," the sheets are designed to be used in promotions or for accompanying your honey products. Beekeeping associations and assessment-paying supporters can order up to 500 handouts for free (that is 1,500 recipe cards, if you separate them). More handouts

are available to anyone at a cost of \$0.05 each. Looking for a fair item? This is it.

Handouts can be ordered from the National Honey Board by calling (800) 553-7162.

Sincerely,

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