

May/June 1997

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More on Cotton

Some readers may wonder why I mention cotton and cotton pest control so frequently in this newsletter. The reason for this is that cotton is one of the few summer plants in California that can be depended upon to produce a reliable honey crop every year. Therefore, cotton attracts beekeepers like a magnet attracts metal filings.

Cotton honey is relatively light colored, mild flavored, and very low moisture. It is highly desirable as a blending honey. Being in good demand, cotton honey is produced by nearly one third of California's beekeepers. That means that hundreds of thousands of colonies are placed within flight distance of cotton. We cannot afford to lose all those colonies to insecticide poisoning.

Any beekeeper who has colonies within flight range of cotton fields should be certain to contact the ag. commissioner and ask for notification of applications of bee-toxic insecticides. Page 5 of my March/April 1997 newsletter lists UC recommended

insecticides/acaricides for cotton. A number of the products are highly toxic for many days after application. Colonies that are damaged by exposure to those chemicals probably will not have a chance to recover fully by fall. This leads to poor wintering and substandard colonies in the spring.

Be aware of what is going on in the neighborhood of your bees and be sure to take protective measures when necessary.

The good news about cotton is that technology may be able to reduce the insecticide load. The following article is taken from the May, 1997, Agricultural Briefs from Imperial County.

Changing Technology for Cotton  
Pest Management by Eric T.  
Natwick

"Most of the cotton acreage in Imperial County and Riverside County will be planted with transgenic *Bt* cotton this year. A gene from a specific *Bacillus thuringiensis* (*Bt*) soil inhabiting bacterium that produces a protein toxin capable of killing most Lepidoptera larvae has success-

fully been spliced into cotton. The result is cotton that is resistant to most cotton worm pests. The toxin produced by the *Bt* gene will control or at least suppress cotton bollworm, tobacco budworm, pink bollworm, cotton leaf perforator, cabbage looper, and beet armyworm.

The *Bt* toxin is most efficacious against larvae that have just emerged from the egg and begin to feed on the cotton plant. When the young larvae feed on the cotton they ingest the toxin and soon stop feeding. The larvae then die within a few days. The *Bt* toxin is not as effective against larger worms. Cotton plants that do not have the *Bt* gene are not protected and, therefore, the mandatory acreage planted to the non-transgenic cotton may need to occasionally be sprayed for worm pests.

Even though the transgenic *Bt* cotton has a great deal of resistance to worm pests, field scouting is still needed for worms and other pests. Scouting may require some adjustment for those that have made treatment decisions based on egg counts. *Bt* cotton is only toxic to the worms once they begin to feed, therefore, egg counts don't count. Larvae must be allowed to hatch from the eggs and take a few bits of the protein toxin. Larvae must be observed with the understanding that few if any will survive. If unusually heavy populations of a worm pest are present it is possible that a few could survive to damage the cotton crop. Although this is not likely to occur, scouting is still necessary to insure that the crop is not damaged.

Many other insect pests of cotton and spider mites are not

controlled by the *Bt* toxin and scouting for these pests must also be continued so that crop protection chemicals can be applied when treatment thresholds are reached. Some pests to scout for are southern garden leafhopper, lygus bugs, cotton fleahoppers, false chinch bugs, aphids, spider mites, and silverleaf whitefly.

Technology is also providing new tools for control of whitefly. Two new products were used in Arizona last year under section 18 registrations for control of silverleaf whitefly, Knack and Applaud. These new insecticides are insect growth regulators (IGR's). My research over the past five years has shown that these two products are efficacious for whitefly control, but their use will require that the PCA's and growers understand the proper timing for application and the limitations of these products.

Knack (pyriproxyfen) has IGR activity as a juvenile hormone mimic and is very active against whitefly eggs and nymphs. Knack stops development of the eggs and nymphal stages, and female whiteflies that come into contact with pyriproxyfen do not lay viable eggs. Applaud (buprofezin) has IGR activity as a chitin inhibitor and is active primarily against whitefly nymphs with poor ovicidal activity, but it has some activity against female adult whitefly with reduced oviposition and females may lay sterile eggs.

These new insecticides should be used early in the season before heavy whitefly populations build. They may suppress the whitefly population development for as much as three weeks. Treatments should be

initiated when the threshold of five adults per leaf and one nymph per one inch leaf disk have both been reached. Neither of these materials should be used when heavy migration of adults are entering the field. In this case the whitefly population should be treated with an insecticide with adult activity either in combination with Applaud or Knack or prior to using these materials. Neither of these new insecticides control whitefly adults which in high numbers are capable of depositing large amounts of honeydew.

The Arizona resistance management program called for Applaud and Knack to be used early in the season. Non-pyrethroid insecticides like Provado, endosulfan, and Ovasyn were to be used if needed mid-season. Pyrethroids were to be used only in high risk situations late in the season."

#### On the Web

I'm not allowed to remain technologically obsolete for long. The Department of Entomology has a "web master" who is helping us, less technically oriented individuals, get onto the world wide web. So, for those of you who use the computer to find information, the issues of my newsletter will be "on line." The URL is:  
<http://www.entomology.ucdavis.edu/faculty/Mussen/news.html>.

For those of you who surf the web, this means that you won't have to pay for a newsletter subscription unless you wish to continue receiving a "hard copy."

#### WAS in Tucson

As you will note on pages 4 and 5, this year's Western Apicultural Society (WAS) Conference in Tucson, Arizona, is going to be an extremely interesting meeting. If you haven't witnessed Africanized honey bees first hand, but you would like to (totally suited up or you are not allowed to enter the gate), this is your opportunity.

Ron Neese, WAS Treasurer, is collecting registration fees. Registration is \$35. A \$5 Breckenridge Brewery Mixer; \$37 Tour of Old Tucson with BBQ dinner; and \$13 Mexican Food Banquet with Mariachis (each one optional) brings the total to \$90 per person. Make checks payable to WAS and mail to: Western Apicultural Society; Ron Neese, Treasurer; 268 Pearl Way, Woodland, CA 95695.

Deal directly with the Windmill Inn for room reservations at \$60 per night [(800) 547-4747].

Stagecoach shuttle will deliver you from the airport if you don't rent a car [(520) 889-1000].

#### Fire Ants

We have native fire ants in California. They do not bite and sting and build huge mounds like the imported fire ant, but they are an agricultural pest. Fire ants cause problems with almonds, table grapes and citrus. We are interested in ant control research because we have problems with other ants, especially the Argentine ant.

Researchers at UC Riverside and UC Berkeley are trying to determine the best attractants to be put into the fire ant baits. American Cyanamid Co. developed Amdro® a few years ago. That

formulation contained gydra-  
methylnon in a matrix of corn  
grits and soybean oil. Their new  
product Tahara® contains (Cont. pg.  
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hydramethylnon in a matrix of freeze-dried silkworm pupae. Actually, southern fire ants prefer freeze-dried American cockroaches to silkworms, anchovies, mealworms and crickets. The bait effect, in the field, lasts about as long as a spray application of Lorsban®, suggesting that Tahara kills the foragers, but not the nestmates, immatures, or queens. Two, well timed, applications of Tahara should keep ants off the orchard floor during almond harvest.

Perhaps Argentine ants will like the new bait when it becomes available. If not, we'll have to keep changing the attractant. (From article on pages 8, 9, Nut Grower, June 1997.)

### Honey Bee History

Dr. Michael Stimmann, another UC Davis extension specialist, noticed this article in the Woodland Daily Democrat. The article that preceded it described an 1896 collision between two buggies in a Woodland inter-section. One buggy was overturned and two people thrown out. Neither was hurt badly.

#### 75 years ago - 1921

"The Clark and Henery Construction Company crew was peacefully working on the highway between the Esparto railroad crossing and Carruth's corner with teams when a swarm of bees from the Freeman Parker apiary suddenly took a notion to migrate. A strong north wind was coming down the pike at the time causing the buzzers some annoyance and ruffling their otherwise sweet disposition. In picking out a soft landing place 10,000 of them alighted on the backs of Dr. Fred Burrows' fine

string of four horses, while the other 333 sought to interest a band of Missouri mules. All the horses were severely stung, and it appeared for awhile as if one of them at least would die. First aid was rendered by J. V. Leithold and a veterinarian sent for. When he arrived all the animals were out of danger, and he complimented Dr. Leithold upon his treatment. Several of the teamster also have visible marks of the short encounter."

### Pollination Evaluation

Joe Traynor, owner and principal player of the Scientific Ag Co. in Bakersfield, shares with me his newsletter that he sends to beekeepers and growers who participate in his pollination program. Joe has a slightly different sense of humor and it shows, occasionally, in his newsletter. I am not sure if Joe wrote the following, or not, but it appeared in his June 1, 1997 newsletter.

#### Evaluating Orchard Pollination - The Zen Method

"Around 10 AM on a nice spring morning during peak bloom (preferably on a Sunday when there are no distractions) go into the middle of your orchard, sit down, assume the Lotus position and face to the southeast.

Breathe deeply, close your eyes and become conscious of all sounds: the chirping of birds, a barking dog, the drone of an airplane and, of course, the humming of honey bees.

Focus on the humming of the bees and relax as you gradually filter out all other sounds and all other thoughts. Begin humming yourself, first at a low

pitch, then gradually raise the pitch until you approximate the same frequency of the bees. Continue humming at this pitch until you actually BECOME A BEE (not difficult if you have attained the proper receptive stage). As a worker bee, soar over the bloom and then visit individual flowers; as you do so, you will experience first-hand the distribution of pollen in your orchard and you will become aware of the most attractive areas of your orchard.

As noon approaches, face to the south and transform yourself from a bee into a pollen grain, stuck to the body hairs of a honey bee. (If you are at one with your surroundings, this transformation will be a smooth one.) Become the all-powerful male life force of the plant kingdom. Many who have undergone this transformation have also achieved an unexpected side benefit: an amazing improvement in their marital lives.

As the bee carries you from flower to flower, continue to keep your mind free of extraneous thoughts and, imperceptibly, the entire pollination process will infuse your mind and body. Revel in the short but intense life of a pollen grain. Inhale the flower fragrance and dabble in the stigmatic secretions of a number of flowers—don't get trapped by the first shiny stigma you see. Immerse your entire being into everything that is happening in your orchard now—stay in the moment, stay in the "zone."

Finally—and you should probably have someone with you the first time you try this—at around 2 PM, face to the southwest and, maintaining your pollen grain persona, attach yourself to an attractive stigma.

Take a deep breath and dive, head first, into the style, the long tube connecting the stigma with the ovary. As gravity pulls you downward, steer yourself toward the ovary. As you get close, you will sense, rather than see, the ovule; at this time relax and let nature take its course.

As you join with the ovule, you will experience a temporary dizziness, followed by a sensual explosion that cannot be fully described—suffice to say it will never be forgotten, probably never duplicated. Again, be careful with this phase—one grower that tried this on his own had to be extricated from an irrigation pipe by the local fire department.

At the end of the day, you should be totally relaxed with an overwhelming sense of well being. You should also have a thorough knowledge of how your orchard was pollinated; if not, at least you will have had an unforgettable and, perhaps, even a life-changing experience."

### Ulee's Gold

Already promoted as an Academy Award winner, "Ulee's Gold," a movie about a fictitious Florida beekeeper, will be opening in a theater near you this summer. Obviously, if the story simply was about keeping bees, Ulee (Peter Fonda) would be about as famous as the rest of his peer group. But, Ulee's family has a bunch of crises and Ulee's neighbor (Patricia Richardson who is "Jill" in the TV sitcom "Home Improvement") helps him try to get everything back in order. As the promotion states, "Torn from his isolating routine, Ulee must draw on old strengths and craftiness to save his family and, ultimately,

himself." Sounds like the typical life of a beekeeper. Let's watch it and decide for ourselves. (See one page article on the movie on page 49 of Bee Culture, June 1997.)

Bee School

The American Apitherapy Society is sponsoring a comprehensive training course titled, "The Apitherapy Knowledge Review Course." As the title suggests, the course will review bees and beekeeping, hive products and their medicinal values, bee venom and its application, and considerations involved with setting up "stinging groups." Each of these focus areas will have a full day devoted to it, from Thursday, July 3rd, through Sunday, July 6th.

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This is not a certification program, although participants will receive a "certificate of completion." If you wish to learn more about this four day meeting in "the rustic countryside of Pennsylvania," contact coordinator Louise Estupinian (415) 454-0692. Her address is P.O. Box 217, Corte Madera, CA 94976-0217. Internet e-mail: chinamed@well.com. Compuserve e-mail: 102450, 3252. Full cost for course, printed materials, meals, etc. is \$325.

Sincerely,

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