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Almonds - Good and Bad

Apparently, the 1997 almond crop broke the record for total weight produced in California -around 744 million pounds. The number of nuts was not particularly great, but the weight of each nutmeat was high. As usual on a high production year, prices to growers dropped a bit from the 1996 short crop season. But, they were still pretty good.

However, fungus diseases of almonds remain a critical challenge. Wet ground and rainy weather have postponed or eliminated many of the normal fungicide applications, at least on the early blooming varieties this year. Also, portions of the state are seeing a problem with the fungus disease anthracnose.

Until just a short while ago, the only registered fungicide that helped much with anthracnose was Captan®. Fortunately, a new product, Break® has been registered for use this season. It is a member of fairly new and very effective class of fungicides currently being used in mammalian medicine. Break® is toxic to fish but seems to be safe to use around birds, bees, and mammals. This is going to be a very challenging year for almond growers and beekeepers, if the rain doesn't let up soon. Let's hope for the best for both groups.

Assistant professor of plant pathology at UC Riverside, Dr. Jim Adaskaveg, was reported in the Jan/Feb 1998 issue of Almond Facts as suggesting that fungicides be used in one of the following patterns to prevent development of resistance.

	<u>Pink Bud</u>	<u>Full Bloom</u>	<u>Petal Fall</u>	<u>Late Spring</u>
1.	Rovral® + oil	Rovral® + oil	Benlate® or Manex®	Captan® or Break®
2.	Break®	Break® or Captan®	Benlate® or Manex®	Captan® or Break®
3.	Break®	Rovral® or Captan®	Manex®	Captan® or Break®
4.	Break®	Break®	Manex® or Captan®	Captan®
5.	Rally®	Rovral® or Captan®	Manex®	Captan®

ABF Queen Symposium

This year I accepted an invitation to participate in the "Queen Symposium" held as part of the annual convention of the American Beekeeping Federation. I was asked to share what I had heard around the western states about problems with honey bee queens. What I heard was similar to other reports that came from other speakers and the audience at the meeting.

First, it should be said that only some beekeepers were having these problems. For certain individuals, with years of beekeeping experience, queen losses were very high, very unusual, and very costly. The rest of the audience was amazed by some of the stories.

In most cases, beekeepers did not complain about initial acceptance of replacement queens (requeening) or queens in packages. However, the problems related to queens that started off well, then quit laying. Where things went after that depended upon the individual. In a few cases the beekeeper felt the queens turned into drone layers. (Hard to differentiate from laying workers.) In other cases, the colonies became queenless. Surprisingly, placing a new queen in the colony often led to the same, peculiar outcome. But, the strangest stories were those that described the queens as starting up, again, later and producing more brood. Those stories ended in either nice, strong colonies or another round of shutting down after a while. (Were these unrecognized supersedures?).

Are there some logical explanations for these occurrences? Well, it is possible that queens are not mating as well as they should. Right now, I'll just mention drone numbers under normal conditions, but more drone information follows. A show of hands suggests that very few bee breeders have invested in drone foundation (no longer available) and purposely reared thousands of drones in their support colonies that might only have hundreds, otherwise. Also, feral drones may even be contributing both sperm to help fill the spermathecae and a little genetic mix to the commercial queens. Those feral colonies have been all but totally eliminated by Varroa mites. Without enough drones, queens are not adequately mated and they will stop laying fertile eggs within a few weeks.

Another problem known to knock queens out of the colonies in about a month is Nosema disease. Once infected with Nosema, the queens digestive tract becomes nonfunctional, she can't digest royal jelly to use for egg production, and she is rejected by the workers. With luck, she'll be superseded, but that will lead to a three week break in brood production.

Are there problems during shipments of queens to consumers? It is hard to tell. The queen breeders' Special Interest Group at the ABF convention decided to devote some funds and efforts to placing max/min thermometers in shipments to monitor temperatures extremes. What about exposure to pesticide fumes? Nobody knows. Speaking of queen and package shipments, the

USPS has plans to increase "Special Handling" rates 220%. This will increase the cost of mailing a single two-pound package by \$12.25 or a 2- or 3-package unit by \$16.50. If you would like to comment on this proposal, contact:

RE: Docket #R97-1
Ms. Margaret P. Crenshaw, Secy.
U.S. Postal Rate Commission
1333 "H" Street, N.W.
Washington, DC 20268-0001

Assuming that the queens in packages and those for requeening arrived in good shape, what could have gone awry after installation/ introduction? We don't know, but this problem is much more severe now that we are fighting mites. What are the secondary effects of placing menthol, fluvalinate, other insecticides or acaricides and substances like essential oils into the hives? Are there toxic effects? Are the chemicals interfering with honey bee communication through pheromones? Is queen substance working the way it should?

Interestingly, Dr. Roger Hoopingarner listened to all the problems, then he mentioned the abstract of a foreign study that detailed the problems encountered when bees were placed on combs contaminated with fluvalinate. Interruptions in egg laying, queen losses, failure to supersede and all the other problems expressed were listed as results of comb contamination. Later, Dr. Thomas Rinderer was discussing some pre-liminary studies they have been conducting with drones. In his studies, only about 50% of the drones in control colonies persisted to mating age. In colonies that had

fluvalinate strips in them, or that were fairly heavily infected with Varroa, NO drones were produced that persisted to mating age. If this phenomenon is occurring in commercial operations, we are terribly short of drones.

Also discussed at the Queen Symposium were the findings of researchers at Penn State University. When they heard about the queen problems they purchased queens, early and late, from a number of breeders. They checked for queen weight, ovary weight, Nosema disease, tracheal mite infestation and sperm counts. It was good to see that Nosema was not a major problem in most operations. It was disheartening to see that nearly one-third of the queens came in-fested with tracheal mites. There were strong correlations between infestation and reduced queen weights, reduced ovary weights and reduced sperm counts. Could tracheal mite infestation be causing some of the problems seen by queen customers? We don't know for sure, yet, but the Penn State researchers are conducting a major study to determine the effects of tracheal mite infestations on queens, so time will tell.

Given just these listed consequences of mite infestations in the colonies and secondary effects of treatments on the bees, it is going to be a long time, if ever, before we return to the "good old days" of beekeeping.

Sweet Corn and Bees

Honey bees have been known to collect pollen from tassels of

sweet corn and field corn for years. Sweet corn pollen has been shown to provide some nutrition to the bees, while field corn pollen provides little other than fiber. Both types of corn are treated to prevent insect damage, especially sweet corn which is often treated numerous times over a relatively short period to protect the ears. Those sprays affect the bees.

In order to better understand the effects of the sprays on honey bees, Dr. Eric Erickson and a host of other researchers combined to conduct research on carbofuran (Furadan®) encapsulated methyl parathion (PennCap-M®), permethrin (Ambush® or Pounce®) and carbaryl (Sevin®) tank mixed with parathion. (This study was conducted some time ago). The researchers wished to determine if there was a way to 1). time applications to protect bees, 2). to compare effects of the insecticides on bees, 3). to see if use of pollen traps could protect bees and 4). to determine if soaking the bees in a liter of sugar syrup immediately after the application for three days might reduce foraging.

Trying to coordinate the application with precise bloom phenology (% tassels) was very difficult, so it could not be a dependable method for protecting bees. Besides, the bee damage was the same for on time and off time applications. Pest control was better in the off time application.

Toxic effects related to specific chemicals varied from the first application to the next and from year to year. Permethrin produced substantially no

increased daily mortality as measured by dead bee traps. Each of the other formulations caused significant losses. The application of pollen traps did little to protect the bees and dousing in sugar syrup had no beneficial effects, either.

The researchers found that in the study areas, the bees only collected between 10 and 20% sweet corn pollen during the studies. Ragweed and legume pollens comprised the bulk of the pollens collected. Residues of insecticides were found on pollen loads of bees, but at low levels. Residues of insecticides were found on dead bees, but at low levels.

The authors conclude that an important aspect of the impacts of insecticide applications on bees is the amount of contact that occurs with contaminated forage in the field. The second year of the study, when twice as much corn pollen was being collected, more bees were killed and more contaminated pollen was collected. Contaminated ragweed pollen appeared to be more important than contaminated corn pollen.

To read the complete article, "Effects of selected insecticide formulation, phased application and colony management strategies on honey bee mortality in processing sweetcorn," see the Journal of Apiculture Research 36(1):3-13 (1997).

Viruses Problematic

Norman L. Carreck wrote a review of the findings of the researchers at the Rothamstead honey bee research laboratory in

England. The lab has been involved in bee disease research for decades and focused on viral diseases about 35 years ago. Since that time, 11 viruses have been identified from honey bees and can be differentiated by serological testing.

As elsewhere around the world, when Varroa mites reached England, so did many cases of colony collapse that could not be explained simply by nutrient drain by parasitic mites. In fact, the article, Varroa and Viruses in the U.K. "Bee Biz, No. 7, February 1998), states that under hygienic conditions, mite feeding only temporarily reduces the protein level of the host bee, with no further consequences to the bee. Thus, the mortality associated with mite feeding appears to be pretty much a mite-vectored, viral disease problem.

What diseases? Certain virus diseases were found in bees sampled from sick and healthy hives, so black queen cell virus (BQCV) and bee viruses X and Y (BVX, BKY) were not implicated. In German samples, chronic paralysis virus (CPV) increased significantly in moderately infested colonies. And very heavily infested colonies provided bees with very high levels of acute paralysis virus (APV). This was the first time that the latent virus (APV) ever showed pathological effects outside the laboratory. APV was also implicated in colony losses in Russia, Yugoslavia, France, Greece, and the U.S. These studies also uncovered the deformed wing virus (DWV) unknown until Varroa was shown to transmit it.

Further studies of infested colonies showed that Varroa contained slow paralysis virus (SPV) months before this latent virus showed up in the bees, adults and larvae. Although it is called slow, it is potent enough to kill colonies when infection levels are high.

However, as in most biological cases, the story is not simply black and white. Some colonies with high virus levels survive while others don't. This suggests that selection and breeding programs could have real value in this battle to protect bees from mites. But, how do you determine which stock or stocks have the complex of desired traits? Usually when you select for one or two traits, you lose or modify others for the worse. Bees don't go along with being manipulated genetically very well at all.

Essential Oils, Again

The Apiary Inspectors of America publish a newsletter that carries items of interest from many of the states. In the December, 1997, issue (Vol. 23, No. 4) State Apiarist Frank Fulgham included the following as part of his report:

"Of major concern to VDACS and Virginia beekeepers is the advertising of illegal mite treatments through direct mailings and the internet. In Virginia, all formulations of formic acid and, so called, "natural and safe herbal or mint products" are illegal. In fact, current research at Virginia Tech is showing that treatment levels of these products sufficient to control mite populations are also causing decreased egg laying

by the queen, increased egg and brood mortality, and decrease in adult bee life span. Attempted queen supersedure results in an increase in queenlessness and laying workers. Field observations by our Virginia bee inspectors support these research findings."

Honey Board Active

The National Honey Board (NHB) is filled with enthusiasm over future plans to promote honey as a health food. While waiting for data to support the advertising claims, the NHB struck a deal with a well-respected teddy bear manufacturer, Russell Berrie, to release a limited edition run of Wembly's. Wembly is a stuffed bear, "hand crafted in the finest European tradition," who wears a black vest bearing an embroidered NHB logo.

Wembly is quite shaggy, has big eyes, and felt claws. He has a black stitched nose and mouth. I'm not sure that he will ever become a true collector's item, but if you happen to be looking for a stuffed bear, this is true quality.

Until the Wembly's are all gone, you can purchase one for \$15 from the NHB. To order call 1-800-553-7162.

Besides the bear, the NHB just released "Hang Tags" that would work best around the necks of squeeze bear honey containers but would work on jars of honey as well. The long, thin strip of stock is printed as eight full color panels, then folded in quarters, punched, and an elastic cord attached to hold it closed. For some reason, bears with hang

tags outsell bears without them, side by side. If you wish to have these tags, that contain recipes and storage information (500 for \$20), call: 1-800-553-7162.

And, if you want to make a big international splash, ask the NHB about the USA Pavilion at SIAL '98, the world's most important inter-national food and beverage exhibition to be held in France from Oct. 18-22 in Paris. Be prepared to negotiate prices right from the booth. The USDA and the NHB are working together to handle logistics. Interested? Call Sherry Jennings at 1-800-533-7162.

One alert reader of The National Honey Market News reported that there is a honey hotline, available to anyone who wishes to call, that dispenses recent honey market reports and takes your marketing data via voice mail. The information is updated frequently by the Mid-US Honey Producers. To reach this service, call: (612)658-4193 and follow the directions.

Prunes and Bees

Prune and pear pollination are a bit tricky to describe. On warm, sunny years, Bartlet pears do not need to be pollinated by bees. On cool, damp, dismal years bees are required to get a good pear set. Prunes are more attractive to bees and are easier to set, but pollinator recommendations vary with location in the state. Here is what UC Farm Advisor Steve Sibbett suggests about bees and prunes in the southern San Joaquin Valley (Prune News- Feb. 1998).

What About Bees This Year???

Bees are required to transfer pollen from a prune flower's anther to its stigma for ultimate fruit set. In absence of bee activity, little fruit set occurs.

"Prunes bloom in mid-March when weather conditions for bee flight and activity are usually good. Under good weather conditions, many growers' experiences have shown that resident bee populations (not rented bees) are sufficient for crop set.

Placing bees in an orchard, however, maximizes its fruit set potential. In many cases, especially when weather is good, an overcropping situation can result and must be dealt with later. Over-cropping and potential for small fruit size is unprofitable and expensive to manage.

The question is whether to rely on native bee population to set the crop or place bees in the orchard; usually beekeepers provide bees free to prune growers:

Place bees if:

- 1) You are in an isolated location,
away from other fruit orchards
- 2) You have not observed significant resident bee populations in the past
- 3) Forecast weather conditions may be unfavorable for bee flight
- 4) Young orchards coming into bearing
- 5) Bloom appears sparse.

Do not place if:

- 1) Your experience has been that the crop sets adequately with native bees (in other words, there's a lot of bees around)
- 2) Trees have not been pruned and imminent bloom appears heavy
- 3) Neighbors have hives placed in their orchards."

Easyloader

Looking for a boom hive loader for a pickup, flatbed or trailer? Billett's Easyloader may be the answer. Available in both auto-leveling and manual leveling models, this articulated boom is capable of lifting 275-440 pounds (depending on the model). It is manufactured to fit the size of your vehicle and designed to fold into a thin rectangle that can be fastened to the front, rear, or midway along the bed. It can stack up against itself from all angles. There is a choice of 12 or 24 volt models and the product has a proven record of 11 years on the market.

If the following features sound good to you, contact Darrell or Karen Copeman, D&K Copeman Engineering, 63 Southern Cross Drive, Ballina, New South Wales, 2478, Australia [telephone: 011-61-2-66-869-736; remember Australia is 18 hours ahead (or 6 hours behind) us].

All models have: 1. electric winching, 2. full leveling system (manual or hydraulic), 3. split boom (7 feet high), 4. boom reach of 15 ft. 9 in. from center, 5. adjustable cradle with winch, 6. relocatable fork tynes on cradle, and 6. "hand hold" lifters can replace tynes.

Prices range around \$12,000 U.S. for pickup model and \$17,000 for large model, delivered.

Bee School

Cardiff, Wales (England) - The First European Workshop on Habitat Management for Wild Bees and Wasps is scheduled for 10:30 a.m. to 4:30 p.m. on Tuesday, April 7, 1998. Eight speakers from various European countries will address topics dealing with: 1. habitat requirements and assessments, 2. interpretation for planners, 3. examples of current practice and 4. methods of funding.

The cost of the workshop is 55 pounds (British) with an additional 10 pounds for the proceedings. For

more information contact Habitat Conference, International Bee Research Association (IBRA), 18 North Road, Cardiff, CF1 3DY, Wales, UK [FAX (+44) 1222 665522].

Sincerely,

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