

FLORIDA MELITTO FILES

NEWS FOR BEE LOVERS

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Changing pest management... communication is essential!

Over the past 50 years, citrus growers have faced exotic pests and diseases predicted to cause the collapse of the Florida citrus industry. Through research and changes to management practices, the industry has continued to thrive. However, in 2005 a new disease, citrus greening, was confirmed in Florida. Known as the most serious disease of citrus, greening causes a decline in tree productivity, resulting in fruit unsuitable for consumption.

In countries where greening is present, citrus production has been greatly reduced with many growers switching to alternative crops due to difficulties and disease management expenses. The greening pathogen is spread by the Asian citrus psyllid, a small insect present in all citrus growing areas in Florida. The pathogen is injected into healthy citrus trees by psyllids as they feed. It then moves through the phloem system of the plant spreading throughout the entire tree. Diseased trees will die within three to five years.

While the answer to managing citrus greening may be the development of disease-resistant varieties, it will take years to develop and implement. Meanwhile, management of greening will depend on protection of citrus nursery plants in screened enclosures, removal and destruction of greening infected trees, and control of the Asian citrus psyllid. Researchers found that controlling psyllids in the early part of the year has been critical in maintaining low populations later in the year. When psyllid populations are left uncontrolled early in the year, they explode, reaching levels nearly impossible to control.

One problem with controlling psyllids is the coincidence of pesticide applications during the blooming of citrus trees...and of course visiting bees! Most products recommended for psyllid control are toxic to honey bees and cannot be sprayed during bloom. For the remainder of 2007, the possibility of pesticide applications affecting bees in citrus is past. For 2008, IFAS Extension programs are emphasizing the need to complete early-season psyllid control prior to blooming. In addition, evaluation of pesticides that are "bee-friendly" is underway. The goal is to find at least one product that could be used in proximity to bloom if an unexpected "psyllid emergency" develops. Meanwhile, the best advice for beekeepers is to communicate regularly with grove managers. Ask questions about current psyllid populations in the groves and what is anticipated in the coming days or weeks. Open communication will help ensure problems are avoided.

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FROM THE DESK OF JERRY HAYES

Reports show that the colony collapse disorder situation may have stabilized as the majority of colony losses are behind us. The health of honey bees has captured the attention of the media; as a result, the struggles of Florida's beekeepers have also captured the attention of the country. CCD has generated so much attention that now, for perhaps the first time, people realize the importance of honey bees and their link to pollination and agriculture.

Dr. Jamie Ellis and I have been actively involved in CCD from the vantage point of the CCD Working Group and Research and Advisory Committees. We continue to take samples of bees, bee bread, and combs to be analyzed for

pathogens, chemicals, and anything else that seems out of the ordinary. It would be easier if we could point a finger and have that *aha* moment when the number one culprit is found. After months of looking for number one and not finding it, the search has moved on to what could be the second, third, or fourth negative impact that individually bees can handle, absorb, or tolerate. However, when combined with others, it is just too much for them to take. Some causes being looked at include:

Varroa mites and associated pathogens: weakens bees' immune systems. **Environmental/agricultural toxins:** bring in toxins while foraging. **Genetics:** immune system is individually very weak. **Tracheal mites:** cause added stress. **Small hive beetles:** bring pathogens into colony. **Antibiotics/in-hive treatments (overuse):** use only according to label recommendations. **Nutrition:** high fructose corn syrup and pollen substitute patties are not complete nutrition. **Moving colonies/other stresses:** loading colonies on semi-trailers causes stress. **New pathogens or increased virulence of old ones:** may be coming in on imported queens and packaged honey bees.

If you or I were exposed to this broad range of stressors, I would imagine that we would get sick too.

Honey bees are the keystone pollinator species of production agriculture. Without them, we lose approximately one third of agricultural production; which means we lose foods that you and I eat. Perhaps the average consumer doesn't care where food comes from before it hits grocery store shelves—maybe it doesn't matter to him; however, it does matter that Florida agriculture stays strong and vibrant. Honey bees are a part of this process.

We continue to work closely with the CCD Working Group to solve this perplexing problem. See Amanda Ellis's report on what is being done to help you. Dr. Jamie Ellis also has a very good overview of CCD on the UF/IFAS site. See: http://solutionsforyourlife.ufl.edu/hot_topics/agriculture/colony_collapse_disorder.html or <http://edis.ifas.ufl.edu/IN720>

FROM THE DESK OF DR. JAMIE ELLIS

A lot has happened since mailing out the inaugural edition of the Melitto Files in April. Colony collapse disorder exploded onto the national scene, eclipsing (albeit shortly) many of the other colony problems our bees typically face. Florida suffered from a drought that severely crippled much of the nectar flow throughout the state. Many beekeepers in northern Florida lost colonies to wildfires. And, some commercial beekeepers had bees exposed to insecticides while the bees were located in citrus groves (see cover article). It has been a tough spring to be a Florida beekeeper.

But, all is not lost. The Florida legislature has given another \$300,000 to bee research (if you have not already, you should write your legislators thanking him/her for the money). State bee agencies (FDACS-DPI apiary inspectors and UF) have made key hires who will provide fundamental services to beekeepers throughout the state. Finally, the federal government is considering allocating \$75 million toward much-needed bee research.

That said, a lot has occurred in my lab since April as well. First of all, let me say thank you to those who have provided positive feedback regarding the Melitto Files. Currently, we send the newsletter free of charge on a quarterly basis to about 1300 Florida beekeepers. I hope the list will keep growing.

Secondly, my lab has made key hires in research and extension positions. In January, I hired Trevor Schlueter (AS, BS, MS, Purdue University) as my honey bee research technician. Trevor's background is in mechanical engineering and he is in charge of maintaining the Honey Bee Research and Extension Lab's research projects. Currently, Trevor and I investigate varroa control methods with FDACS-DPI and are about to begin investigations into small hive beetle control, tracheal mite control, and the non-target effects of chemical pesticides on honey bees. Renee Cole, a UF undergrad, joined our lab this summer to assist with research-related issues.

I also recently hired Mike O'Malley (AA, BA, UF) who will serve as my lab's extension technician. Mike is coordinator of the African Bee Extension and Education program, through which he creates educational materials on African honey bees for Florida's 18 million citizens. Mike also is in charge of creating beekeeper educational materials, from pod-casts to informational pamphlets, from power point presentations to instructional DVDs.

I also wanted to make you aware of an opportunity coming your way in the near future. Colleagues and I will be meeting soon to discuss the creation and implementation of the first ever Florida Master Beekeeper Program. Details are forthcoming, but be aware that you will not want to miss this exciting opportunity. This program will go hand-in-hand with a new Bee University that we are designing. Both opportunities are being designed to train Florida beekeepers, hobbyist and commercial, how to be better beekeepers. Remember, my lab exists to serve you. Please let me know how I can best accomplish that mandate!



Dr. Jamie Ellis
UF Asst. Professor

FDACS/DPI

UF/IFAS

FROM AMANDA ELLIS, BIOLOGICAL SCIENTIST
Florida Department of Agriculture and Consumer Services
Division of Plant Industry

The apiary section at DPI has several projects underway to address the needs of Florida's beekeeping industry. These projects address honey bee nutrition and honey bee pest control. The main pest of concern is the *Varroa* mite, the primary cause of bee colony deaths in the US. Our research focuses on controlling mite populations using an integrated pest management approach. The wax moth (*Galleria mellonella*) is another bee-colony pest in Florida, and we are examining ways to control it. Finally, we are investigating the effectiveness of various nutrition supplements for improving colony health.

In order to recommend an IPM plan to Florida beekeepers, we have designed a project that will track fluctuations in seasonal mite populations and determine an economic threshold for the mite. This will allow us to prescribe the best timing of miticide applications for bee colonies in Florida, so beekeepers will be able to reduce pesticide use and associated costs by treating only when necessary.

Also, we are evaluating two non-chemical mite controls to lower beekeepers' dependency on chemical-control methods. The first is the use of powdered sugar as a *Varroa* control agent, a method which will require monthly dusting of colonies with powdered sugar. The second is determining if mite levels in small-cell foundation (4.9 mm) colonies are lower than mite levels in colonies having the industry standard size foundation (5.3 mm). If either non-chemical method reduces mite populations, then we can include them in an IPM-based scheme for mite control.

To address wax moth concerns, we are testing Certan - B-401, *Bacillus thuringiensis* (Bt) to determine its effect on wax moths when the product is applied to the mid-rib of the frame foundation. If successful, beekeepers would experience significantly less equipment loss due to wax moths.

Currently, there is a national emphasis on overall health and nutrition of honey bee colonies. Through our research, we will attempt to develop a dietary supplement or substitute that will improve honey bee health and vigor when natural food resources are scarce or poor. We hope to identify a diet that will improve honey bee colony strength, longevity, and honey production.

Overall, our proposed projects are designed to assist the beekeeping industry in developing successful, long-term management practices. Our goal is to recommend strategies to improve overall colony health by reducing pest populations and other health problems. Our methods will help reduce the industry's dependency on chemical controls, which will, in turn, reduce costs and ensure hive product quality and therefore consumer safety.

FROM MICHAEL K. O'MALLEY
Coordinator, African Bee Extension and Education Program
University of Florida

EXPLAINING THE BEST MANAGEMENT PRACTICES

Recently, FDACS introduced 10 Best Management Practices (BMPs) to assist and standardize beekeeping in Florida with regard to the presence of African honey bees. The BMPs were designed as a tool to help beekeepers maintain European bee colonies in areas where African bees are present. Further, these BMPs serve to help protect the beekeeping industry from issues of negligence associated with keeping European bees in African bee settings. The BMPs were designed with beekeepers in mind with the additional purpose of protecting the public. To help beekeepers understand the importance and reasoning behind them, two BMPs, along with a brief description, will be featured in this and the next four Melitto File issues.

1 Beekeepers will maintain a valid registration with FDACS/DPI, and be current with any and all special inspection fees.






This requirement is not peculiar to the BMPs; Florida law requires all beekeepers to keep a valid registration with FDACS. There is a yearly fee involved, and registration entitles beekeepers to yearly inspections by a state inspector who checks for diseases and colony deficiencies. Also, registered beekeepers receive correspondence and publications (like the Melitto Files!) from the state.

2 A Florida apiary may be deemed as EHB (European honey bee) with a minimum 10% random survey of colonies using the FABIS (Fast African Bee Identification System) and/or the computer-assisted morphometric procedure, ie. universal system for the detection of Africanized Honey Bees, or other approved methods by FDACS on a yearly basis or as requested.

As soon as a beekeeper signs the BMPs, a bee sample is collected by a state bee inspector and tested using FABIS. It is a benefit for beekeepers to have documented proof that their colonies do not contain AHBs—especially in legal situations.

Stay tuned for two more BMPs in the next issue.

Florida Beekeeper Management Calendar – Summer 2007

	Month	Activity	Blooming Plants
North Florida 	July	<ol style="list-style-type: none"> 1) Remove and process honey - main flow stops 2) Varroa populations begin to grow – monitor colonies closely. The economic threshold is 60+ mites/day on a sticky screen or 17+ mites in an ether roll for a colony of average strength. Treat if you exceed these numbers. Options include: Apiguard, ApilifeVAR, Mite Away II 	Spanish Needle ^{AS} , Palmetto, Mexican Clover ^{AS} , Buttermint, Palm, Gopher Apple, Joint Weed ^A , Redbay ^{AS} , Sandhill Prairie Clover ^A , Partridge Pea ^A , Mangrove ^A , Primrose Willow ^{AS} , Spiderwort/Dayflower ^{AS}
	Aug	<ol style="list-style-type: none"> 1) Monitor colonies for varroa (see July) 2) Treat with Terramycin dust for AFB/EFB 3) Feed colonies if light 4) Monitor for and control small hive beetles 5) It's hot! Ensure adequate colony ventilation 	Spotted Mint ^S , Goldenrod ^S , Vine Aster ^S , Sumac ^S
Central Florida: similar to N. FL but 2-3 weeks ahead 	Sept	<ol style="list-style-type: none"> 1) Monitor colonies for varroa (see July)! 2) Consider treating colonies for <i>Nosema</i> disease using Fumidil-B. Colonies may need as much as 4 gallons of medicated syrup to control <i>Nosema cerana</i> 3) Continue to feed colonies if light 	Smart Weed, Bush Aster
	July	<ol style="list-style-type: none"> 1) Remove and process honey - main flow stops 2) Varroa populations begin to grow – monitor colonies closely. The economic threshold is 60+ mites/day on a sticky screen or 17+ mites in an ether roll for a colony of average strength. Treat if you exceed these numbers. Options include: Apiguard, ApilifeVAR, Mite Away II 3) Feed colonies if light 4) Monitor for and control small hive beetles 5) It's hot! Ensure adequate colony ventilation 	Spanish Needle ^{AS} , Palmetto, Mexican Clover ^{AS} , Buttermint, Palm, Gopher Apple, Joint Weed ^A , Redbay ^{AS} , Sandhill Prairie Clover ^A , Partridge Pea ^A , Mangrove ^A , Primrose Willow ^{AS} , Spiderwort/Dayflower ^{AS}
South Florida 	Aug	<ol style="list-style-type: none"> 1) Monitor colonies for varroa (see July)! 2) Treat with Terramycin dust for AFB/EFB 3) Feed colonies if light 4) Monitor for and control small hive beetles 5) It's hot! Ensure adequate colony ventilation 	Spotted Mint ^S , Goldenrod ^S , Vine Aster ^S , Sumac ^S
	Sept	<ol style="list-style-type: none"> 1) Monitor colonies for varroa (see July)! 2) Super colonies if strong B. Pepper flow 3) Consider treating colonies for <i>Nosema</i> disease using Fumidil-B. (see N. FL Sept above) 4) If no nectar flow, feed colonies if light 	Smart Weed, Brazilian Pepper, Bush Aster
South Florida 	July	<ol style="list-style-type: none"> 1) Remove and process honey - main flow stops 2) Varroa populations begin to grow – monitor colonies closely. The economic threshold is 60+ mites/day on a sticky screen or 17+ mites in an ether roll for a colony of average strength. Treat if you exceed these numbers. Options include: Apiguard, ApilifeVAR, Mite Away II 	Spanish Needle ^{AS} , Palm ^{AS} , Mexican Clover ^{AS} , Primrose Willow ^{AS} , Smart Weed ^{AS} , Melaleuca ^{AS}
	Aug	<ol style="list-style-type: none"> 1) Monitor colonies for varroa (see July)! 2) Treat with Terramycin dust for AFB/EFB 3) Feed colonies if light 4) Monitor for and control small hive beetles 5) It's hot! Ensure adequate colony ventilation 	Same as above
South Florida 	Sept	<ol style="list-style-type: none"> 1) Monitor colonies for varroa (see July)! 2) Super colonies if strong B. Pepper flow 3) Consider treating colonies for <i>Nosema</i> disease using Fumidil-B. (see N. FL Sept above) 4) If no nectar flow, feed colonies if light 	Same as above + Brazilian Pepper

^AContinues to bloom in August, ^SContinues to bloom in September, ^{AS}Continues to bloom in Aug and Sept