

Florida's Honey Standard,
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hive and the subsequent invention of an extractor that could spin the honey from the uncapped frames; the frames could then be returned to the hive to use again. Once beekeepers began selling extracted honey, others started cutting the honey with some form of syrup to increase profit. Tammy Horn, author *Bees in America*, wrote that no health reform movements existed in the early days of the twentieth century. The first law to protect consumers was passed in 1906, and Charles Dadant is credited with getting the law passed. Without it, unscrupulous producers were selling their honey adulterated with sugar without fear of legal recrimination. "Honey adulteration," she writes, "occurred often enough that the market suffered in the States and abroad."

Millions of barrels of Chinese honey are still being transhipped through other

countries — India, Mongolia, Korea, to name a few — and come across U.S. borders as either honey that is labeled as packers blend (in order to avoid the 215% tariff on Chinese honey) or honey labeled with another country of origin that has been adulterated with any number of syrups to be sold in the United States as honey. Attorneys representing the American Beekeeping Federation and the American Honey Producers Association are exerting pressure on the Department of Commerce to initiate action to stop these acts of fraud, but little has been done so far. Already 15 other states — Georgia, North Carolina, Virginia, Maryland, Ohio, New York, Texas, Wisconsin, Kansas, Oregon, California, North Dakota, South Dakota, West Virginia, and Utah — have joined Florida in taking the initiative to pursue state honey standards. For every state



that adopts a honey standard, there will be fewer markets for these adulterated products; the standard is good for the state and sends a message to Congress that beekeepers care enough about their pure and wholesome product to mount a grass-roots campaign to self-enforce their industry.

Florida's honey standard will also be a boon to local beekeepers. The very successful *Fresh from Florida* program offered by our Department of Agriculture will be initiating a new ad campaign to promote the honey standard and to educate Florida's consumers about honey's new standard of excellence. Once again, the great state of Florida sets the pace for the rest of the nation to follow.



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Florida's Honey Standard: The Gold Standard for the Nation

By Nancy Gentry

Public relations coordinator
Florida State Beekeepers Association

ON NOVEMBER 19, 2008, Commissioner of Agriculture Charles Bronson signed Proposed Rule 5K-4.027, which creates a standard of identity for honey in Florida. The formal announcement of the adoption is expected by the close of the year, so by the time you read this article, Florida will have the first honey standard in the United States.

Florida adopted the rule "to establish a standard of identity for honey that is produced, packed, repacked, distributed and sold in Florida or from Florida. It is meant to have the effect on controlling pervasive, illegal practice of blending or diluting pure honey with low-cost syrups (i.e.,

sugar, cane, corn, etc.), thereby committing an economic fraud on both the permanent and transient residents of Florida."

The need for a honey standard has long been recognized. The dedicated men and women of the honey industry trade associations, the National Honey Board, scientists, attorneys, and others worked over twenty years on the project. The culmination of that work was a standard entitled "2001 Revised Codex Standard for Honey" (an American version of an international standard already being used in Europe), which in March 2006 was submitted to the Food and Drug Administration (FDA) for adoption as a national standard. However, in August 2006, the agency would not

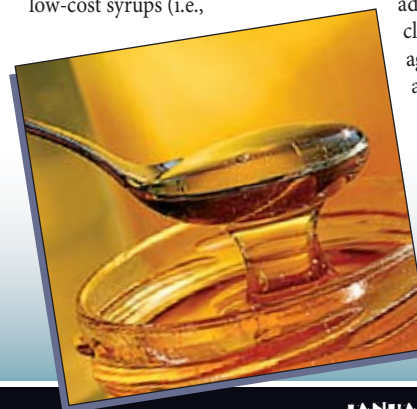
address the petition, claiming "other agency priorities and the limited availability of resources." States are empowered to enact laws to protect their citizenry where no federal law

exists, so the Department of Agricultural & Consumer Services decided to take the lead and adopt a state honey standard.

Why did Florida need to create a more precise definition of honey? Florida law already defines honey as "the natural food product resulting from the harvest of nectar or honeydew by honeybees," yet in the 21st century, a more scientific definition was needed if unscrupulous packers were to be stopped from selling honey that had been adulterated with some syrup (usually high fructose corn syrup — HFCS) or from selling a honey blend, a euphemism for a product that looks like honey — a product that from the label consumers believe is honey, but is not honey. With the adoption of the honey standard, products such as "packers blend," "sugar-free honey," "blended honey," and all the other imitation honeys can no longer be sold in Florida.

Ironically, the problem of adulteration began with the invention of Rev. Lorenzo Langstroth's movable frame

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FROM THE DESK OF JERRY HAYES



Jerry Hayes, FDACS/DPI
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WELL, IF YOU are like me you're wondering: "Where in the world did 2008 go?"

The year 2008 has been another in a series of interesting and successful years for the majority of Florida beekeepers. Yes, we have had our share of challenges but overall, all of us Florida beekeepers have stepped up and worked through them together. As a team consisting of all Florida beekeepers, the Florida State Beekeeper's Association, and all of the growing local and regional associations, the Honey Bee Technical Council, our apiculture specialist, Dr. Jamie Ellis from the University of Florida, Dr. Bill Kern, our African honey bee first responder trainer, and last but certainly not least the absolute best apiary section in the nation or the world, we have weathered 2008 well together.

The commissioner and the legislature have given us the resources to be your active partner. There are no other apiary inspectors anywhere

that have the knowledge, experience, and skills to enable them to take time with new backyard beekeepers in person, on the phone, or in e-mails in order to train, teach, and instruct them on how to be a successful Florida beekeeper, and from the other end of the spectrum to assist commercial, migratory beekeepers having hundreds or thousands of honey bee colonies to be successful as well. Your apiary inspectors can do both with equal ease and everything in between from presenting at schools, fairs, civic groups, and fire departments, inspecting port facilities, certifying queen breeders, working with student honey bee Future Farmers of America or 4-H projects, or assisting with research.

The reason Florida apiculture is perceived so positively in the nation and the world is because we function as a TEAM — from you, the individual beekeeper, through your association group, your apiary inspector, and all the way to Tallahassee. We are a united front. We must continue to stay united and all on the same path with the same goal to make Florida beekeeping even better in 2009. Unless you have been kidnapped and have not read a newspaper or watched the nightly news in months, you

can already see the challenges for 2009. The obvious challenge is the nation's weak economy. We are fortunate to live in Florida, where our state government has guided our economy in a stronger fashion than most other states. But we have been swept along in some ways, and our economy is suffering as well. We, of course, know how important agriculture is in our great state. We as beekeepers know of the vital, fundamental niche that managed honey bees fill for agricultural and environmental pollination and honey production. But do your neighbors, the officials you voted for, your community, and everyone else you know? That is your job as part of this team. And we are here to serve you and transfer the educational, training, and regulatory services that professionally set us apart from all the rest.

Whether it is AFB, EFB, AHB, CCD, IAPV or any other initial that designates a pest, parasite, or disease we are all in this together. We are much stronger together in our little specialized industry than we are apart, or going it alone.

The Apiary Inspection Section wishes all of you peace, prosperity, and happiness in 2009.

Happy
New Year!



UF/IFAS

FROM THE DESK OF DR. JAMIE ELLIS



Dr. Jamie Ellis
UF Assistant Professor

IT'S THAT TIME of year again! Time to begin thinking about attending the 2nd Annual UF Bee College on March 20–21! This year, the Bee College is better than ever. Headlining the 2009 Bee College is Dr. Keith Delaplane from the University of Georgia. Dr. Delaplane heads a research team that was awarded \$4.1 million to study colony collapse disorder. Dr. Delaplane will be our keynote speaker on both days of the Bee College.

The 2009 Bee College will be held at a NEW VENUE. We have reserved the education building at the UF Whitney Lab in Marineland, Florida, about 20 minutes south of St. Augustine. You will not believe how beautiful this location is!

Using the comments from last year's participants, we have beefed up the content that we are offering during the 2009 Bee College. This year, we are offering classes that include producing your own queens (with lessons in instrumental insemination and grafting), marketing your honey, candle/craft making with beeswax, honey house standards, dissecting your own bees for nosema and tracheal mites. Don't worry, last year's favorites

are here as well!
These classes include



installing package bees, clipping/marking queens, assembling hive equipment, disease/pest diagnosis, and honey extraction. We even have a few surprise courses we are offering. There truly is something for everyone at the 2009 Bee College.

Unlike last year, we will not be offering formal beginner or experienced tracks. Instead, we are highlighting in the program those classes/workshops that are targeted toward beginners and those targeted toward experienced beekeepers. This will allow the Bee College participants to move freely between all of the classes/workshops. To facilitate this, we have DOUBLED THE NUMBER OF CLASSES/WORKSHOPS that we are offering this year. You will be inundated with information on beekeeping. You will not be disappointed!

Also new this year is African honey bee training for pest control operators (PCO) and first responders. We will be offering three hours' training in both topics.

Master Beekeepers: We will be offering apprentice level training/exams AND advanced level training/exams on March 19. Please note, the Master Beekeeper Program and the Bee College are separate events. Registration for one does not qualify as registration for the other.

Welsh honey judges: We will be offering training/exams for qualification on 20 March.

There is so much I want to tell you about the 2009 Bee College but so little space to tell you here. Please see both fliers enclosed in this issue of the *Melitto Files*. They will fill you in on the Bee College and Master Beekeeper Program details. You also can visit Ufhoneybee.com for more information. Remember, all of these programs are for you. Space is sure to fill up fast so please register as soon as possible. Due to the high demand, we can only accommodate the first 250 registrants.

I hope to see you at the 2009 Bee College. Your only regret will be not coming! See you there!!!!



“Wagging Wonder”

By Anthony Vaudo
UF Entomology Graduate Student

AS YOU MAY be aware, honeybees have an extremely complex social structure. Many roles need to be filled by the workers in order to maintain a healthy and functional society. One of the jobs performed is foraging. Foragers tend to be the “elder” workers and start the work after they have already had experience building comb, taking care of the brood, producing honey and performing various other jobs in hive maintenance. The forager is responsible for gathering nectar, pollen, water, and propolis for the hive, which provide the essential nutrients for the colony. These workers do their jobs well. Consider how essential honeybees are for humans alone; imagine their importance in wild ecosystems.

In order for any organism to be social, it has to be able to communicate with other members of the same organism to complete a task. How many tasks have you completed without the help of another

or without using a skill someone has taught you? Taking a step back, a major reason any organisms have become social is that through cooperation, they can defend themselves better, increase their offspring’s chance of survival, and exploit more resources over a larger area. So, while honeybee workers in the hive are protecting the hive and raising young, foragers are bringing home goods to nourish everyone. Therefore, honeybees need to gather resources readily and effectively.

Honeybees have developed an amazingly unique form of communication in order to maximize their foraging efficiency: the waggle dance. If you have ever observed this, it can be humorous to see a bee running in a figure eight and stopping to spastically shake its body. As odd as it may seem, this behavior conveys specific information regarding bee foraging. The forager will return from the field to let other foragers in the hive know where the food source is located, especially if it is a profitable food source. The bee has to do this in a very busy, crowded, noisy, dark environment, so it uses several forms of communication to convey the information.

The returning bee tells the direction of the food source from the hive by the direction it faces when doing the waggle part of the dance. The dancer translates the angle of the food source from the azimuth of the sun into the angle the bee faces away from the vertical line on the comb. It communicates the

distance of the food source, or how much energy is required to reach the food by the length of the waggle phase. The longer the waggle, the farther the food.

Keep in mind that during this phase, it is buzzing its wings and shaking its body. The bee communicates the quality or profitability of the food source by how often it buzzes; it will run quickly in a circle to buzz again. The dance looks more energetic for better food sources; imagine it as a fast, pulsating alarm. Additionally, the dancing bee, covered in pollen and nectar, is able to raise its body temperature, thereby causing the floral source’s scent to become stronger, allowing nearby bees to detect the flowery smell. As a result, future foragers can recognize the food when they arrive.

One amazing part of the hive is the comb itself. It has recently been found that the comb can work like a telephone network. It actually amplifies the low frequency vibrations produced by the dancing bee when it buzzes. Potential foragers are recruited to the dance and receive waggle-phase information through their legs. They feel the vibration of the comb.

So many things are communicated in the waggle dance through different senses of the honeybee. The complexity of this behavior is fascinating. Because of the honeybee’s global importance as a pollinator and its necessity to provide the hive with as many nutrients as possible in the shortest amount of time, it makes perfect sense that it would evolve to have this dancing behavior.

Queen or Worker? A Step Beyond Royal Jelly

By Tricia Toth
UF Entomology Graduate Student

HONEY BEES, along with other eusocial insects, are haplodiploidy, meaning females are derived from fertilized eggs, but males are derived from unfertilized eggs. This is why a worker bee is more related to her sister’s offspring than her own. Haplodiploidy in eusocial colonies is not beneficial unless the sex ratio is skewed; therefore, there are more females than males present in a colony at any given time. As a result of haplodiploidy and sex ratio, female honey bees self-organize into castes consisting of reproductive queens and sterile workers.

Beekeepers are aware that feeding of royal jelly to larvae produces a queen rather than a sterile worker. The process that an individual bee undergoes to develop into a queen or worker goes beyond proper nutrition. Caste determination in honey bees involves the release of a series of hormones from the bee brain. The hormones target tissues and undergo changes that worker bees do not experience. The end result is a queen bee that is morphologically larger, has a fully developed reproductive system, and lacks a barbed stinger.

The first step towards queen-larval development is a change in diet during the third larval instar. Before the third instar, both worker and queen larvae are fed royal jelly. Nurse bees switch workers to

low quality diets and continue feeding queen-larvae royal jelly. The worker diet consists of a dilute mixture of royal jelly, mixed with pollen and honey. Queens are not only fed a higher quality diet, but are given continuous attention such as food resources by nurse bees. Worker cells are not only given less rich food, but the food appears to be scarcer and not as fresh compared to queen-larval food. The worker is able to distinguish worker-larvae from queen-larvae based on the type of cell into which the egg was laid.

The quantity and quality of nutrition fed to queen-larvae signals the release of a hormone known as juvenile hormone (JH) from the corpus allatum (CA). For the release of JH to occur, the following steps take place: (1) Diet increases larval size prior to a JH “critical period.” If the larva reaches the “critical period” during the third or fourth larval instar, hormones are released from the brain. (2) The hormones are transported from the brain to the corpus cardiacum at which time they are released into the hemolymph, or bee blood. (3) Once in the hemolymph, hormones act on receptors at the corpus allatum and trigger the release of JH.

Proper nutrition speeds up development of queen-larvae compared to worker-larvae. The difference in timing of JH release between queens and workers determines if the target tissue is modified, for

Honey bee caste determination is not a genetic predisposition, but a physiological process.

instance, whether ovaries become fully developed or sterile. To summarize the process one could say that big honey bees, have bigger CAs, enabling them to release enough JH early in life to produce mature ovaries.

Therefore, we have learned that honey bee caste determination is not a genetic predisposition, but a physiological process based on a cascade of hormones released during larval development. Nutrition regulates which larvae become workers and which become queens. Nutritional state signals the brain to release JH. The result is two morphologically different castes: worker and queen. It is not surprising to find JH playing a major role in caste differentiation because of the many other systems JH is known to modify. Juvenile hormone has a wide range of functions and is involved in molting, metamorphosis, vitellogenesis, female reproductive behavior as well as caste determination and division of labor in social insects. In the case of caste determination in eusocial insects, JH has evolved a role of specializing female tasks.

It has recently been found that honey comb can work like a telephone network.

Florida Beekeeper Management Calendar – Winter 2009

	Month	Management Calendar	Blooming Plants
North Florida: Nosema can be a problem in N. FL, often in Jan and Feb. Monitor closely and treat if needed. Are you moving bees to citrus?	Jan	1) Feed colonies if light (colonies can starve!) 2) Nosema can be a significant colony problem this time of year. You can treat colonies for Nosema disease using Fumigillin. Colonies may need as much as 4 gallons of medicated syrup to control <i>Nosema ceranae</i> . 3) Repair/paint old equipment	Sand Pine ^F , Maple ^F , Willow ^{FM} ,
	Feb	1) Feed colonies if light (colonies can starve!) 2) Can treat colonies for Nosema disease as needed using Fumigillin.	Plum ^M , Cherry ^M , Viburnum ^M , Sweet Clover ^M , Blueberry ^M , Haw ^M , Fetterbush ^M , Oak ^M ,
	Mar	1) Attend UF Bee College in Marineland!! 2) Colony populations begin to grow! Add supers and/or control swarming as necessary. 3) Can treat with Terramycin or Tylan for AFB 4) Make nucs/splits	Orange, Spanish Needle
Central Florida: Citrus blooms in March. Make sure your colonies are ready. Talk with your growers about their pesticide use habits.	Jan	1) Feed colonies if light (colonies can starve!) – also supply pollen supplements if necessary. 2) Nosema can be a significant colony problem this time of year. You can treat colonies for Nosema disease using Fumigillin. Colonies may need as much as 4 gallons of medicated syrup to control <i>Nosema ceranae</i> . 3) Repair/paint old equipment	Sand Pine ^F , Maple ^F , Willow ^{FM} ,
	Feb	1) Feed colonies if light (colonies can starve!) 2) Can treat colonies for Nosema disease using Fumigillin. 3) Can treat with Terramycin or Tylan for AFB	Plum ^M , Cherry ^M , Oak ^M , Walther Viburnum ^M , Sweet Clover ^M , Blueberry ^M , Haw ^M , Fetterbush ^M
	Mar	1) Attend UF Bee College in Marineland!! 2) Colony populations begin to grow! Add supers and/or control swarming as necessary. 3) Can treat with Terramycin or Tylan dust for AFB/EFB 4) Make nucs/splits	Orange, Spanish Needle
South Florida: Varroa numbers begin to grow in S. Florida in Feb. Monitor closely. Are you ready for the Feb citrus bloom? Talk with your growers!	Jan	1) Feed colonies if light (colonies can starve!) – also supply pollen supplements if necessary. 2) Nosema can be a significant colony problem this time of year. You can treat colonies for Nosema disease using Fumigillin. Colonies may need as much as 4 gallons of medicated syrup to control <i>Nosema ceranae</i> . 3) Repair/paint old equipment	Maple, Willow, Spanish Needle ^{FM} , Mexican Clover ^{FM} , Primrose Willow ^{FM}
	Feb	1) Feed colonies if light (colonies can starve!) 2) Can treat colonies for Nosema disease using Fumigillin. 3) Can treat with Terramycin or Tylan dust for AFB/EFB 4) Make nucs/splits	Orange ^M , Sweet clover ^M , Oak ^M
	Mar	1) Attend UF Bee College in Marineland!! 2) Colony populations begin to grow! Add supers and/or control swarming as necessary. 3) Can treat with Terramycin or Tylan for AFB	Same as above

^FContinues to bloom in February, ^MContinues to bloom in March, ^{FM}Continues to bloom in Feb and Mar