

News For South Carolina Beekeepers



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LOCAL NEWS

The South Carolina Beekeepers will hold their one-day annual spring meeting at the Farm Bureau Building on Knox Abbott Drive, Columbia, on 1 March 2008. The February 2008 newsletter will give further details of this meeting. The summer meeting is scheduled to be held at Clemson University on 17-19 July 2008. An introductory beekeeping short course will be offered the first day of the summer meeting. Guest speakers committed for this meeting include David Tarpy from North Carolina State University, Jamie Ellis and Amanda Ellis from the University of Florida. Mark your calendars now for these two important meetings.

Two honorary awards were presented at our South Carolina Beekeepers 2007 summer meeting in July. Georg Burbach of Lancaster was selected to receive the "2007 South Carolina Beekeeper of the Year Award." The letter of recommendation follows. "Georg was recommended for this award by the Lancaster County Beekeepers in recognition of his service to his adopted community, church, and the beekeepers of Lancaster county. Although Georg comes from a long line of beekeepers in his native Germany, it was not until 1957 that he began keeping bees in the United States, a swarm that he caught in a nail keg. Next he caught another swarm and put it in a borrowed Sears and Roebuck hive and he has been keeping bees and producing honey now for 50 years. None of this qualifies a person to be named beekeeper of the year. But to know Georg is to know that the one thing he enjoys almost as much as beekeeping is sharing his knowledge and youthful enthusiasm with other people. When we have a question, we ask Georg. When we lose a queen during the middle of a honey flow, we ask Georg, he just might have one. There is not a beekeeper in Lancaster County who has not been helped by Georg Burbach. Whether its helping a sick friend to work his or her colonies or patiently coaching a newbie, George's willingness to give of his time and wisdom is without equal. Without Georg there would probably not be a group of beekeepers who meet on a regular basis in Lancaster County." Our hats are off to Georg Burbach for being a great ambassador for beekeepers and beekeeping in South Carolina.

Danny Howard, Clemson University Distinguished County Agent in Greenville County, was selected to

receive the "2007 Extension Agent of the Year Award." According to our records, this is the 5th time Danny has been selected to receive this award in the past 19 years. The Piedmont Beekeepers recommended Danny for this award for his support of the South Carolina beekeeping industry. The letter of recommendation follows. "As the executive secretary of the Piedmont Beekeepers, for the past 12 years, Danny provides leadership in the management of the Piedmont Beekeepers. Business meetings are held in a timely manner to plan for educational programs. Keeping the Piedmont Beekeepers updated on the movement of the Africanized bee into the United States is one of the educational programs he offers the beekeepers. Another is the control of honey bee pests and disease. David was instrumental in inviting Dr. Bill Simpson with the Clemson University Agro-Medicine Program who gave a presentation on apitherapy and allergies. Danny arranged speakers from Clemson University and the University of Georgia including Mike Hood, Keith Delaplane, Jennifer Berry, and Eleanor Spicer to discuss honey bee management at the Piedmont Beekeepers meetings. He also initiated an effort between the fruit growers, home owners, and beekeepers to prevent the kill of bees from pesticide application. When a problem arises in the beeyard, Danny provides assistance to the beekeepers in collecting bee samples and sending them to the Clemson University Bee Lab or the USDA Bee Lab in Beltsville, Maryland, in an effort to identify the pest or isolate the disease and recommend control. Danny takes numerous calls from the public in an effort to educate homeowners on salvaging bee swarms and removal of bees in structures. He provides educational information on honey bees to teachers, so they can offer their students the many teaching points and benefits of honey bees. Danny attended the Eastern Apiculture Society, <www.easternapiculture.com>, meeting held recently in Young Harris College, Georgia, where he completed the short course and attended many other educational opportunities at the conference. Danny is also a regular attendee at the beekeeping in-service training sessions that are offered annually at Clemson University. This opportunity and others offered at our state beekeeper meetings keep Danny abreast of what is going on in the beekeeping industry. Danny develops an annual swarm capture list to assist homeowners and

beekeepers in salvaging bee swarms. He uses the Piedmont Beekeeper web site <<http://pba.beebuzz.org>> to recruit new beekeepers and publishes notices advertizing monthly meetings." Please join me in giving Danny a **big thank you** for supporting the beekeeping industry for many years. This award is well deserved and we hope that Danny will keep up the outstanding work.

MID-STATE BEEKEEPERS ASSOCIATION TO OFFER A BEGINNING BEEKEEPING SHORT COURSE

The Mid-State Beekeepers is offering a Beginning Beekeeping short course. The course will meet for three days. The first day will be Jan. 26, 2008. The second day will be Feb. 23, 2008 and the last day will be March 29, 2008. The classes will meet from 8:30 A.M. to 4:00 P.M. The class will be at the Lexington County Farm Bureau Building, 121 Park Road, Lexington, SC. The March 29th class will be held at a bee yard with a tour through the bee yard, which will include going into a beehive.

The fee for the course will be \$35.00, which will include:

- Beginning Beekeeping book
- Year membership in the Mid-State Beekeepers
- Year membership in the SC Beekeepers
- Optional test to be certified as a SC Certified Beekeeper - SC Beekeepers
- Miscellaneous course material

The beekeeping course will concentrate on how to get started in beekeeping. The course will be taught by experienced hobbyist and commercial beekeepers from the mid-state area. These same experienced beekeepers will be available to assist you in getting started in beekeeping. The course is open to the first 30 applicants.

For further details, contact Frank Blanchard (803-345-3463). Make check payable to Mid-State Beekeepers and mail to Frank Blanchard, 342 Primrose Lane, Chapin, SC, 29036, by Dec. 16, 2007.

ABF 2008 CONVENTION IN SACRAMENTO WITH NATIONAL BEEKEEPING CONFERENCE

The American Beekeeping Federation's 2008 Convention will be included in the National Beekeeping Conference set for Jan. 8-12 at the Doubletree Hotel in Sacramento, Calif.

In addition to the joint conventions of ABF and American Honey Producers Association, the Conference will host the meetings of American Bee Research Conference, American Association of Professional Apiculturists, Apiary Inspectors of America, and National Honey Packers and Dealers Association. On Tuesday, Jan. 8, prior to the start of the Conference proper, the

Committee for the Promotion of Honey & Health will hold its first symposium.

The Conference will truly be a not-to-be missed event, one that will not be repeated in the foreseeable future.

The Conference opens on Tuesday evening with a Welcome to California reception and concludes on Saturday evening with the annual ABF and AHPA banquets. In between are four days packed with the top industry speakers; tours on Thursday afternoon and evening to the University of California Bee Biology Facility in Davis and on Friday afternoon and evening to the California operation of Mann Lake Ltd. and the Hedrick Ag History Center; the largest U.S. beekeeping trade show ever; and opportunities to learn new techniques at interactive workshops, to exhibit your best honey and beeswax in the American Honey Show, to expand your horizons at the parallel Friday and Saturday program for sideliners, and perhaps most enjoyable of all to meet new beekeepers people you don't usually see at the convention you usually attend.

Watch for the developing details to be posted on the AHPA and ABF websites: www.americanhoneyproducers.org and www.abfnet.org. Ask to be put on the pre-conference mailing list by contacting ABF at 912-427-4233 or email: info@abfnet.org or email: brownhoneyfarms@hotmail.com. ABF members will receive the mailing without request.

To reserve a hotel room for the Conference, call the Doubletree at 916-929-8855 or 800-222-8733. The group rate is \$95 for up to four persons per room. There are a limited number of rooms available at the Doubletree, but a nearby hotel will house the overflow.

SOURCE: ABF Newsletter Sept/Oct 2007

GENETIC SURVEY FINDS ASSOCIATION BETWEEN CCD AND VIRUS

September 6, 2007. A team led by scientists from the U.S. Department of Agriculture's Agricultural Research Service (ARS), Pennsylvania State University (PSU), and Columbia University (CU) has found an association between colony collapse disorder (CCD) in honey bees and a honey bee virus called Israeli acute paralysis virus, according to a paper published in the journal Science this week.

ARS entomologist Jeffery S. Pettis, research leader of the agency's Bee Research Laboratory in Beltsville, Md.; Diana L. Cox-Foster, a professor in the PSU Department of Entomology; and W. Ian Lipkin, director of the Center for Infection and Immunity at the Columbia University Mailman School of Public Health, led the team that did genetic screening of honey bees collected from 30 colonies with CCD and 21 colonies with no CCD from four locations in the United States.

The genetic screening allowed the researchers to identify pathogens to which the sampled honey bees had

been exposed. In total, the honey bees—both CCD and non-CCD honey bees—were found to harbor six symbiotic types of bacteria and eight bacterial groups, 81 fungi from four lineages, and seven viruses.

The search for potential pathogens was done using a new means of sequencing the genetic material from the healthy and unhealthy bees. This technology, termed high-throughput sequencing, allows for an unbiased look at DNA from all the organisms, bacteria, fungi and viruses present in the bees. Then the DNA sequences are searched against known genomic libraries for best matches. This gives a very precise picture of the organisms present, at least to the family or genus level. Often specific species can be identified, and unknown organisms—if present—can also be catalogued for further study. The sequencing work was led by Michael Egholm, vice president of 454 Life Sciences Corp. of Branford, Conn., followed by a large group effort to further identify specific groups of microorganisms.

The only pathogen found in almost all samples from honey bee colonies with CCD, but not in non-CCD colonies, was the Israeli acute paralysis virus (IAPV), a dicistrovirus that can be transmitted by the varroa mite. It was found in 96.1 percent of the CCD-bee samples.

This is the first report of IAPV in the United States. IAPV was initially identified in honey bee colonies in Israel in 2002, where the honey bees exhibited unusual behavior, such as twitching wings outside the hive and a loss of worker bee populations. IAPV has not yet been formally accepted as a separate species; it is a close relative of Kashmir bee virus, which has been previously found in the United States.

"This does not identify IAPV as the cause of CCD," said Pettis. "What we have found is strictly a strong correlation of the appearance of IAPV and CCD together. We have not proven a cause-and-effect connection."

Even if IAPV proves to be a cause of CCD, there may also be other contributing factors—which researchers are pursuing—that stress the bee colony and allow the virus to replicate.

The next step is exposing healthy hives to IAPV and seeing if CCD develops.

CCD became a matter of concern in the winter of 2006-2007 when some beekeepers began reporting losses of 30 to 90 percent of their hives. While colony losses are not unexpected during winter weather, the magnitude of loss suffered by some beekeepers was highly unusual. The main symptom is finding no or a low number of adult honey bees present with no dead honey bees in the hive. Often there is still honey in the hive and immature bees (brood) are present.

Pollination is a critical element in agriculture, as honey bees pollinate more than 130 crops in the United States and add \$15 billion in crop value annually. There were enough honey bees to provide pollination for U.S.

agriculture this year, but beekeepers could face a serious problem next year and beyond if CCD becomes more widespread and no treatment is developed.

More information about CCD can be found at www.ars.usda.gov/is/br/ccd/.

ARS is the U.S. Department of Agriculture's chief scientific research agency.

SOURCE: Article by Kim Kaplan on the USDA ARS web site

BRIEFING PAPER: COLONY COLLAPSE DISORDER AND ISRAELI ACUTE PARALYSIS VIRUS

By Diana Cox-Foster, Dennis VanEnglesdorp, and Jeff Pettis

A recent publication in *Science* established a link between a new virus, Israeli Acute Paralysis virus (IAPV), and CCD colonies. Of those colonies that suffered from CCD, all had IAPV present while healthy colonies did not have IAPV. Additionally, the research found that IAPV was present in bees imported from Australia and in royal jelly from China. Operations with CCD and sampled in the study had either imported Australian bees directly or had been closely associated with colonies that had Australian bees. We also know that IAPV has been previously found in Israel, suggesting that this virus maybe more widely spread globally. No one knows where its origins are at this point in time.

Does this prove that IAPV causes CCD? No, what this article and research to date points to is that IAPV could be involved in CCD and more work is needed to prove or disprove this idea. We can conclude, however, IAPV appears to be a very good marker for CCD and its detection may aide in defining CCD.

So where did the IAPV in the U.S. come from? It is not clear at this point but certainly Australian package bees are a likely source. Additional sampling in the U.S. and Australia is needed to be certain. We have begun discussions with Animal Plant Health Inspection Service (APHIS) and Australia with our concerns about package bees. Contacts have been made in Australia for additional samples and we are seeking the help of the Apiary Inspectors of America to gather additional samples here in the U.S. Samples are needed from colonies that appear to be suffering from CCD as well as samples from colonies that were established from Australian packages this past year.

What if I have Australian package bees in my beekeeping operation, what should I do? The recommendations for dealing with CCD remain the same (see MAAREC website); 1) keep Varroa under control, 2) treat for Nosema if present, 3) do not re use equipment from dead hives.

What else can I do now to further protect my bees from decline? We still don't know all the factors involved in CCD but there are no treatments for viruses; your best defense is a healthy well fed colony.

Are we sure if IAPV is causing CCD? No, we believe it is a marker and maybe involved in CCD but may be working in conjunction with other stressors like Varroa, pesticides, or poor nutrition.

Why would IAPV not be causing problems in Australia? At least two explanations are plausible, Australia does not have Varroa to vector and activate IAPV and it may have co adapted to bees stock in Australia. If the virus has adapted to Australian stock then we may want to look at Australian bees as part of our breeding programs. Along is same line, a research group in Israel believes this that some bees in Israel have incorporated part of the DNA of the virus into their bee DNA and this DNA incorporation is offering resistance to the colony. IAPV has been linked to some colony losses in Israel. While the DNA incorporation idea is novel and somewhat controversial, it does offer hope as a means of combating IAPV or other virus problems. We do believe that breeding bees for increased resistance to Varroa and pathogens such as IAPV is an answer.

How can we maintain strong colonies? Do the things you know how to do; reduce Varroa, treat for Nosema if needed, and feed when needed. If IAPV is causing a problem with bees in the U.S. then strong colonies are our best defense

Efforts continue to try and understand the key components involved in CCD. Currently we are initiating experiments to try to determine if indeed IAPV is a causal agent in CCD. We will be exposing healthy, IAPV-free colonies to IAPV in conjunction with other pathogens, pesticides, or nutritional stress to see if we can get the colonies to develop CCD symptoms and collapse. Likewise, we are trying to determine methods that will work for treating equipment from dead out colonies. Others in the working team are asking about many other aspects, such as pesticides, etc. In collaboration with all, we hope to be able to answer many questions concerning CCD and bee health and deliver methods for mediation or prevention of the problems in bee health.

SOURCE: ABF Newsletter Sept/Oct 2007

U.S. BEEKEEPER GROUPS ASK SUSPENSION OF IMPORTS AFTER SCIENTISTS SAY CCD MAY BE LINKED TO VIRUS FROM AUSTRALIA

The U.S. national beekeeper groups have asked USDA to suspend the importation of honey bees from other countries. The request came after scientists announced their determination that Colony Collapse Disorder (CCD) might be linked to a virus imported with Australian bees.

In letters to Cindy J. Smith, administrator of USDA's Animal and Plant Health Inspection Service, the American Beekeeping Federation and the American Honey Producers Assn. asked that imports of honey bees and royal jelly be suspended until scientists determine that restarting imports would present no hazards to U.S. honey bee health.

Some state beekeeper associations were considering sending APHIS their own requests for a ban. Several Members of Congress have weighed in against the imports. The most outspoken has been Sen. Bob Casey (D-PA).

The possible link of CCD and the Israeli Acute Paralysis Virus (IAPV) was revealed in articles by Science magazine in its online edition, Science Express, on Sept. 6, and in its print edition on Sept 7. The authors of the scientific report have been careful to say they have not proven that IAPV causes CCD, nor that the Australian imports introduced IAPV to the United States.

IAPV was first reported in Israel in 2004. At press time, it was not clear how long the virus has been known in Australian bees, but Australian bee experts say no ill effects of the virus have been seen there.

The U.S. researchers reported in Science that IAPV was found in all of the four CCD-affected apiaries in their test and in the one sample from a healthy package of Australian bees, but in neither of the two non-CCD apiaries tested. They also tested royal jelly imported from China and found IAPV in two of those samples.

"Either [the packages from Australia or the royal jelly from China] may have served as potential points of entry into the U.S., with the Australian packages being more likely," Diana Cox-Foster said in an email message to industry leaders. Dr. Cox-Foster, of Penn State University and the lead researcher on the project, noted: "Further research is required to say exactly from where the virus originated and how it spreading and changing (mutating) as it moves."

Looking ahead, Dr. Cox-Foster said, "The next phase of research needs to test whether or not IAPV is a direct causal agent of CCD or just a really good marker for CCD [an organism found only in CCD colonies]. In either case, we do believe that detection of IAPV will be important in determining the probability that colonies are apt to undergo CCD and that this will enable closer monitoring of bee health."

While limited tests of samples that were taken prior to the start of Australian imports in February 2005 have not found IAPV, researchers want to conduct more comprehensive tests, both on historic samples and on current colonies to determine whether IAPV was already in the U.S. or is a recent phenomenon. ABF President Danny Weaver and Dr. Jeff Pettis of the Beltsville Bee Lab, in Australia for Apimondia, helped to put into place a cooperative agreement under which U.S. and Australian researchers would collect and share samples from colonies in both countries.

"We also do not believe that IAPV can be acting alone to cause CCD, but rather that the virus requires additional triggers," Dr. Cox-Foster pointed out. "Other pathogens (such as Kashmir Bee Virus, *Nosema apis*, and *Nosema ceranae*) may be important in triggering CCD, but by themselves are not the cause of CCD. Also environmental chemicals (pesticides, herbicides, fungicides) and/or nutritional stress may also act as triggers. Of course, the varroa mite may also help to stress colonies and allow for onset of CCD; however, our data clearly demonstrate that varroa, tracheal mites, and nosema do not underlie CCD by themselves."

As to why the Australians have found no ill effects of IAPV, the researchers point to the absence of Varroa in that country.

Dr. Cox-Foster two of her fellow researchers, Dennis VanEnglesdorp of Pennsylvania Department of Agriculture and Dr. Pettis, prepared the briefing paper, "Colony Collapse Disorder and Israeli Acute Paralysis Virus," [previous article], to help beekeepers understand the findings.

SOURCE: The Speedy Bee Newsletter Vol. 36, No. 8, August 2007

PROPOLIS TO MAKE JUMP FROM HEALTH TO FOOD PRESERVATIVE?

By Stephen Daniells

Propolis, the waxy resin collected by honey bees and currently marketed for its health benefits, could also find use as a natural food preservative, suggests new research.

Suspicion over chemical derived synthetic preservatives has pushed food makers to source natural preservatives such as rosemary extract instead.

"It may be concluded that, the ethanolic extract of propolis tested, in the performed experimental conditions may successfully inhibit the *E. coli* development in vitro, at safe levels for human consumption and, consequently, they could be useful as ground fresh beef natural preserver or as unspecific antibacterial food preserver," wrote lead author Enzo Tosi in the journal *Food Chemistry*.

Tosi and his co workers from Argentina's National University of Technology looked at the effect of Argentinian propolis extracts against *E.coli*, and thereby as a preservative for foods.

"Most propolis components are natural constituents of food and recognized as safe substances," added Tosi.

The researchers report that an average minimum inhibitory concentration of 14.3 mg soluble compounds per millilitre of the most active propolis was capable of inhibiting *E. coli* populations of up to 10,000 cells per millilitre.

Such an extract was said to be composed of 32% total soluble compounds, comprising 8% galangine, 7% caffeic acid, 5% quercetin, 2% coumaric and 9% non-identified phenolics compounds.

"From the consumer standpoint, a safe dose for human consumption would be 1.4 mg/kg body weight/day, or approximately 70 mg/day in adults," said the researchers. "Suitable levels of propolis as food preserver must be established by a consumer acceptance test by a trained tasting panel."

Further research is clearly necessary, and variations over local and botanical factors may limit the applicability and sustainability of this novel preservative.

"The propolis extracts tested, may successfully inhibit the *E. coli* development in vitro, and consequently may be useful as natural food preserver," concluded the researchers.

It is reported that propolis contains about 180 different compounds and the waxy resin has previously been linked to improvements of general health, skin health, and oral health.

From *Food Chemistry* (Elsevier) via FoodNavigator.com April 26, 2007

SOURCE: The Speedy Bee Newsletter Vol. 36, No. 7, July 2007

HELPING BEEKEEPERS BEAT AMERICAN FOULBROOD

By Alfredo Flores, ARS

American foulbrood (AFB) caused by the spore-forming bacterium *Paenibacillus larvae* is the most serious infectious disease of honey bees. Infected bee colonies must be burned, and that is costly for beekeepers.

Since the 1950s, the only treatment approved for use in the United States to prevent AFB has been the antibiotic oxytetracycline (OTC), sold under the brand name "Terramycin." But there have been several reports over the past few years of loss of effectiveness of OTC.

Dan Murray, a molecular biologist in the ARS Honey Bee Research Unit at Weslaco, Texas, has figured out why, after so many years, the AFB bacterium has suddenly developed resistance to OTC. Murray, assisted by ARS molecular biologist Katherine Aronstein, discovered in *P. larvae* a natural plasmid dubbed "pMA67" that contains an OTC resistance gene. Plasmids are small DNA molecules containing up to several dozen genes that bacteria pass on when they reproduce.

This is the first report of any tetracycline resistance gene being found in any *Paenibacillus* bacteria.,

Among 35 *P. larvae* strains tested from across the United States and 1 from Canada, all 21 OTC resistant

strains possessed this plasmid and all 15 OTC sensitive strains did not.

"This finding was unexpected," says Murray." "Other scientists have found plasmids in various AFB bacterial strains, but none of them conferred antibiotic resistance. This plasmid is significant because it has rendered useless what until very recently has been the only effective preventive treatment for AFB."

Fortunately, ARS scientists at Beltsville, Maryland, have recently shepherded approval by the Food and Drug Administration of a new antibiotic against AFB called "tylosin"

There are two likely reasons for the relatively rapid spread of OTC resistance: First, bees from broad geographical areas are brought together when beekeepers rent out their hives to agricultural producers for pollination. That means the bees can spread OTC resistant bacteria to bees they wouldn't normally encounter. Second, based on its DNA sequence, plasmid pMA67 is thought to have the ability to transfer to other bacterial cells in a process called "plasmid mobilization." This means that, in addition to passing the plasmid and its OTC resistance genes on to their descendants, bacteria can physically transfer a copy of the plasmid to other bacterial cells they come in contact with. It is the same phenomenon largely responsible for spread of antibiotic resistance among disease causing bacteria in humans. OTC resistance in *P. larvae* presumably began when, at some point, pMA67 was transferred from some other bacterial species into *P. larvae*.

"This is strong evidence for a mechanism behind OTC resistance in an important honey bee pest," says Jay D. Evans, an ARS researcher at the Bee Research Laboratory in Beltsville, Maryland. "OTC resistance has arisen in many treated populations, and it will be interesting to explore the role played by this plasmid and possibly others in generating resistance."

Antibiotic resistant strains can be detected in the laboratory with standard microbiological procedures and assays. This discovery resulted in a DNA based method of detecting antibiotic resistant *P. larvae* and may also lead to better strategies for combating other infectious agents of honey bees.

This research is part of Crop Production, an ARS national program (#305) described on the World Wide Web at www.nps.ars.usda.gov.

K. Daniel Murray is in the USDA ARS Honey Bee Research Unit, 2413 E. Hwy. 83, Weslaco, TX 78596; phone (956) 9695012, fax (956) 969 5033, e mail dmurray@weslaco.ars.usda.gov.

SOURCE: Agricultural Research/July 2007

NEW BACTERIUM MAY HOLD PROMISE FOR SMALL HIVE BEETLE CONTROL

A bacterium discovered by Agricultural Research Service (ARS) scientists that is toxic to Colorado potato beetle also has been found to be toxic in varying degrees to gypsy moth, small hive beetle and tobacco hornworm.

Microbiologist Phyllis Martin, molecular biologist Dawn Gundersen Rindal, and entomologist Michael Blackburn at the ARS Insect Biocontrol Laboratory, Beltsville, Md., and chemist Jeffrey Buyer at the Sustainable Agricultural Systems Laboratory in Beltsville found and described the new bacterial species, *Chromobacterium suttsuga*, now called *Chromobacterium subtsugae* sp. nov. The group then found that the bacterium displayed toxicity to Colorado potato beetle.

The findings were published in the May issue of the International Journal of Systematic and Evolutionary Microbiology.

Soil rich in decomposed hemlock leaves, collected from the Catocin Mountain region in central Maryland, was the source of the new species. The team isolated the microbe by suspending samples of forest soil in water and then plating it directly on growth medium that doesn't contain glucose. Bacteria in the samples initially formed small and cream colored colonies, which gradually turned to light-to-dark violet from the center of the colony outward.

Fifty percent of small hive beetles died within five days when fed a pollen-based diet containing the bacteria, and the survivors weighed only 10 percent as much as small hive beetles that weren't exposed to the bacteria. Tobacco hornworm and gypsy moth weren't killed by the bacteria, but their weights were drastically reduced due to feeding inhibition. Weights of tobacco hornworms that were fed the bacteria laced diet were drastically reduced 24 milligrams for bacteria treated insects compared to 119 milligrams for insects that didn't eat the bacteria. Gypsy moths eating the bacteria weighed 40 percent less than gypsy moths that weren't fed the bacteria.

Martin and her colleagues will work to isolate the toxin from the bacteria. Insects usually develop resistance to toxic substances, so it is important to identify new toxins.

In previous studies conducted by Martin, *Chromobacterium subtsugae* sp. nov. was also found to be toxic, in varying degrees, to western corn rootworm, southern corn rootworm and diamondback moth.

ARS is the U.S. Department of Agriculture's chief scientific research

SOURCE: American Bee Journal, July 2007

'APITHERAPY NEWS' BLOG HAS INFO ON MEDICINAL USE OF BEE HIVE PRODUCTS

(JULY 24, 2007) — Billed as “The Internet's Best Source of Information about the Medicinal Use of Bee Products,” the Apitherapy News blog has the latest information about the therapeutic use of honey, bee venom, bee collected pollen, propolis, beeswax, and royal jelly.

Recent Apitherapy News headlines have included:

- * American Reporter Tries Bee Venom Therapy
- * US Approves Manuka Honey Wound Dressings
- * Bee Pollen Extract May Help Treat Prostate Cancer
- * Royal Jelly Components May Help Regulate Immune System

“Apitherapy” is the use of bee hive products to maintain good health and in the treatment of a variety of medical conditions. Propolis is a resinous substance collected by bees from plants and trees and is used to coat the inside of the bee hive and the honeycomb cells with an antiseptic layer. Royal jelly is a substance produced by young worker bees and fed to queens.

Along with the latest scientific research, Apitherapy News also provides information about companies offering Apitherapy products and about upcoming Apitherapy related events and conferences worldwide.

For example, on December 7-9, 2007, the Romanian Apitherapy Society will host its first International Apitherapy Symposium.

Apitherapy has been used for thousands of years to treat a variety of medical conditions and has recently gained popularity worldwide as ongoing research points to its effectiveness. Bee hive products are particularly useful in the developing world because their low cost and wide availability.

For more information on Apitherapy, go to: www.apitherapy.com or www.apitherapy.org

SOURCE: *American Bee Journal*, September 2007

COOKING WITH HONEY

Tips from the American Honey Producers Association
(www.americanhoneyproducers.org/)

For best results, use recipes developed using honey.

When you substitute honey for granulated sugar in recipes:

- * Substitute honey for up to one-half of the sugar. With experimentation, honey can be substituted for all the sugar in some recipes.



* Reduce the amount of liquid in the recipe by 1/4 cup for each cup of honey used in baked goods.

* Add about 1/2 teaspoon baking soda for each cup of honey used in baked goods.

* Reduce oven temperatures by 25 degrees to prevent over browning of baked goods.

For easy removal, spray measuring cup with vegetable cooking spray before adding honey.

Honey adds a sweet, smooth and distinctive taste to recipes. Honey also absorbs and retains moisture. These qualities retard drying out and staling of baked goods.

A 12 ounce jar of honey equals a standard measuring cup.

Because of its high fructose content, honey has a higher sweetening power than sugar.

HERBED TURKEY BREAST For a Mini Thanksgiving Feast Makes 6 servings

Ingredients:

½ c honey
¼ orange juice
2 T butter or margarine, melted
1½ t sage, dried
1 t thyme, dried
1 clove garlic, minced
¾ t salt
¼ t pepper
1 boneless, skinless turkey breast, about 2 lbs.

Directions:

Preheat broiler. Position oven rack 6 inches from heat source. Combine honey, orange juice, butter, sage, thyme, garlic, salt and pepper. Place turkey breast on rack set in broiler pan. Brush with some of honey mixture. Broil, brushing frequently with remaining mixture, turning turkey once, until no longer pink inside, about 40 minutes. Let stand 5 minutes before slicing.

Note: Honey should not be fed to infants under one year of age. Honey is a safe and wholesome food for children and adults. More details

Respectfully submitted,

A handwritten signature in black ink that reads 'William Michael Hood'.

William Michael Hood
Extension Apiculturist

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