

APIS



Apicultural Information and Issues

From IFAS/University of Florida
Department of Entomology and Nematology

August 2000

Inside APIS:

High School Study

Follow-up to July *APIS* article on honey contamination. *Page 1.*

Referendum is Set

USDA-AMS will poll honey industry in September. *Page 2.*

Bee Botany Study

Significant plant diversity is found in southern Ecuador. *Page 2.*

Honey and Your Workout

NHB study reveals honey's benefits after exercise. *Page 3.*

Honey and Healing

Some honeys should also be found in the medicine cabinet. *Page 3.*

Florida Weather Forecasting and FAWN

New program clarifies weather and climate in Florida. *Page 4.*

Africanized Bees in Va.

A goat named Frank is the only casualty. *Page 4.*

APIS Volume 18, Number 8
ISSN 0889-3764

Copyright© M.T. Sanford "All Rights Reserved"

High School Study: Follow-up Comments

I RECEIVED CONSIDERABLE FEEDBACK concerning the high school study I reported on last month¹. Several readers questioned the results as reported. Jay Woods thought that the six-carbon sugar reported should be a 50/50 mixture of glucose and fructose and not as reported: "Sugars found in honey were mostly fructose (six carbon atoms) and sucrose (12 carbon atoms). The Michigan sample was 31 percent fructose, 55.1 percent sucrose and 13.9 percent sugars with 18 carbon atoms. The Arizona honey had slightly less fructose (30.2 percent), more sucrose (66.5 percent) and much less of sugars with 18 carbon atoms (3.3 percent)." John Harbo and James Kilty thought the sucrose content was too high as well.

ACCORDING to the Shrader Lab Report, "the LC/MS system distinguishes sugars by molecular weight. Based on the standards that were used, the sugars are reported here as fructose and sucrose. Other sugars of the same molecular weight were not resolved." Thus, it appears that all C6 (hexose) sugars were simply labeled as fructose (the glucose standard was not resolved, and this sugar was not reported). The same thing appears to be true for C12 sugars. All of this molecular weight were considered to be sucrose, which may account for a higher-than-expected percentage of that particular sugar.

Certainly, glucose content is a large part of any honey. Dewey Caron, in his new book, *Honey Bee Biology and Beekeeping* (Wicwas Press, Cheshire, Conn., 1999), says "Glucose is less stable (than fructose) and its molecules reform into more complex sugars, though in small amounts." He also says over a dozen other complex sugars besides sucrose have been identified that are changed to their simplest six-carbon form by the addition of the enzyme invertase.

Matt Higdon brought to my attention that the spelling of several pesticides was incorrect; thus, aldrin (not aldrene); dieldrin (not dieldrine); endrin (not endrine); and methoxychlor (not methyoxychlor). It was also pointed out that several of the chemicals mentioned have not been in use for a long period. Finally, David Green expressed his opinion that testing pollen would have yielded a more accurate reading for possible environmental contaminants. ■

¹ http://www.ifas.ufl.edu/~mts/apishtm/apis_2000/apjul_2000.htm#2

Referendum on the Honey Research, Promotion and Information Order Set for September 5 - 29

AT LONG LAST, the U.S. Department of Agriculture Agricultural Marketing Service (AMS) has announced the dates for the next referendum on the Honey Research, Promotion, and Information Order. Eligible honey producers, producer-packers, handlers, and importers will be polled September 5–29, 2000. AMS will mail the ballots, voting instructions, and a summary of the amendments to all known current producers, producer-packers, handlers, and importers who produced, handled and imported honey or honey products during 1998 and 1999 and are not exempt from assessments. Eligible voters who do not receive a ballot should contact Kathie M. Birdsell, Referendum Agent, Research and Promotion Branch, Fruit and Vegetable Programs, Agricultural Marketing Service, USDA STOP 0244, Washington, DC 20250-0244; toll-free phone: (888) 720-9917; fax: (202) 205-2800; e-mail: Kathie.Birdsell@usda.gov.²

According to the release, “The voters will decide whether the following amendments should be made to the order: (1) require the board to reserve 8 percent of its funds annually for beekeeping and production research; (2) allow the board to develop recommendations for purity standards and an inspection and monitoring system to enhance the image of honey and honey products; (3) add two handler-importers to the board; (4) decrease the assessment honey producers pay from 1 cent per pound to 0.75 cent per pound; (5) add an assessment of 0.75 cent per pound to be paid by handlers; and (6) increase the assessment paid by importers from 1 cent per pound to 1.5 cents per pound on imported honey and honey products.” The proposed amendments to the order and referendum procedures will be published in the Aug. 7 *Federal Register* and posted on the AMS website³.

Since its inception in 1986, the honey industry has continued to support the Order and the organization that administers it, the National Honey Board. In the last referendum, it was approved by 82 percent of those voting (August, 1996). At that time, I provided a summary of the Board’s activities and mandates⁴ and a look at its self-evaluation⁵.

Opposition for the referendum this time around has been vocal in some sectors of the industry. The major complaint appears to be with section number two above, where the board will be asked to develop recommendations for purity standards, as well as an inspection and monitoring system, as part of an overall quality assurance initiative. I discussed that issue in some detail in the November 1999 *APIS*⁶. At that time I concluded, “Thus, there is evidence suggesting the best way to increase honey consumption is to make it more special, and the only way to prove to potential consumers that this is so is through rigorous testing. That is the vision of those who would make quality assurance part of the National Honey Board’s new mandate.”

MANY in the industry believe that beekeepers simply can’t afford to pay for the National Honey Board’s activities, which don’t appear to directly affect prices. They also say that the Board should promote U.S. honey, and not have a program that they claim caters to imports. Latest data from the Board’s website in fact show that imports are increasingly paying a greater share of assessments. From 1988 through 1999, import assessments grew from \$515,000 to \$1,743,200, whereas the domestic figures remained more or less steady, ranging from a high of \$2,527,111 in 1988 to \$1,864,590

last year. Thus, for the first time last year both import and domestic figures were close to parity⁷. This is before the sixth item in the referendum above kicks in, hiking the importers’ contributions to 1.5 cents per pound.

Whether the industry can afford to pay for the Board’s efforts is a decision that rests in the hands of each voting entity paying assessments. A follow-up question might be: Where would the industry be without the Board’s programs? A look at the future of food and diet in the lives of U.S. consumers suggests that the honey industry might well be greatly handicapped without a scientifically qualified promotional voice as the information revolution matures. This especially applies to industrial uses⁸ and those large-scale users who consult the honey hotline, the Board’s web site⁹ and look to areas such as the HAACP program for guidance¹⁰. In addition, the Board provides funding for study in many areas, such as the effects of adulteration in the marketplace¹¹, honey use in various food products and other areas, such as workout enhancement reported elsewhere in this issue. Finally, the Board delivers programming that beekeepers can employ directly to help their operations, such as the Pride Program, shelf talkers, label advice, recipe brochures, and production and price information¹². ■

Bee Botany Study in Southern Ecuador

A PROJECT (No. 409) under the auspices of the Banco Internacional de Desarrollo (BID) in southern Ecuador is about to publish the results of a several-year study concerning nectar and pollen production potential. This encompasses several sectors in the provinces of Loja and Zamora Chinchipe. Ecuador is known for its extreme biodiversity, and the results here appear to corroborate that concept. The following number of species and families of plants were encountered: 59 species representing 28 families (La Argelia sector); 41 species representing 19 families (El Tundo); 31 species representing 17 families (El Pangui); and 30 species representing 17 families (San Roque). In all sectors, the family Asteraceae accounted for the most species, followed by Mimosaceae. Other families well represented were Myrtaceae, Rutaceae, Solanaceae, and Verbenaceae among others. Most important plants were *Eucalyptus globulus* and *Eucalyptus citriodora* (La Argelia), *E. citriodora* (El Tundo), and *Pollalesta discolor* in both El Pangui and San Roque. The study incorporated pollen collection and characterization, colony weight and honey production, and finally pollen analysis of honey produced. ■

Honey Can Help Your Workout

THE NATIONAL HONEY BOARD funded the following study, reported on the Medscape website¹³.

ORLANDO, June 22, 2000 — A research study presented today at the annual National Strength and Conditioning Association meeting suggests that combining honey with a protein supplement may boost post-workout recuperation and favor better blood sugar maintenance after exercise. Protein supplements are widely used to increase one's intake of dietary protein, which increases among individuals engaged in intense activities such as weight training, running, step aerobics and many competitive sports. Previous studies have shown that a combination of carbohydrates with a protein supplement can boost muscle energy recuperation and may favor better response to training.

"We were pleased to find that powdered honey promoted favorable changes in post-exercise markers of metabolism equal to that of the current standard, maltodextrin," says Dr. Richard Kreider, lead investigator of the study and Director of the Exercise and Sport Nutrition Laboratory at the University of Memphis. "We also found that the group receiving honey as the carbohydrate source did not display the typical drop in blood sugar 60 minutes after taking the other forms of carbohydrates. These findings support our previous study on honey."

THE CURRENT STUDY involved a group of 39 weight-trained athletes both male and female. Subjects underwent an intensive weight lifting workout and then immediately consumed a protein supplement blended with either sugar, maltodextrin or honey as the carbohydrate source. Only the honey group maintained optimal blood sugar levels throughout the two hours following the workout. Additionally, subjects taking honey showed favorable changes in a hormone ratio that indicates a positive muscle recuperative state. "Our data suggest that honey functions well in all of the aspects associated with post-workout recuperation and energy repletion. In addition, honey appears to stand out as perhaps a better source of carbohydrate to ingest with post-workout protein supplements. These findings support our previous study presented at the annual Experimental Biology meeting in April,"

added Dr. Kreider. "In addition to promoting muscle recuperation and glycogen (carbohydrates stored in muscle) restoration, honey-protein combinations also seem well suited to sustain favorable blood sugar concentrations after training."

This study is the second of a series of studies funded by the National Honey Board at the University of Memphis Exer-

cise and Sport Nutrition Laboratory. Located in Longmont, Colo., the National Honey Board is a nonprofit organization that develops research and consumer information programs to increase the demand for honey. The study was done in collaboration with IMAGINutrition, a nutritional research and technology think tank located in Aptos, Calif. ■

Honey and Healing: Not All Honey May Be Therapeutic

THERE HAS BEEN a raft of publicity recently about use of honey as a healing and anti-septic agent. A particularly heart-wrenching story is that of Jem Bonnievale, "who was 15 when he contracted meningococcal septicemia caused by an infection of *Neisseria meningitidis*. By the time the British teenager reached the hospital, he had multiple purple patches on his legs and fingers, which rapidly progressed to tissue death. Both legs were amputated below the knee as well as fingers on both hands. He endured multiple skin grafts and suffered for months with nonhealing infected sores. His case was extreme and difficult to treat because of the severe pain it caused. 'I can't even begin to explain how painful it was just to have a small piece of dressing changed. The nurses tried everything to make it easier, like changing the dressing in the bath, but it was agony,' said Jem. Over the next six months the success of the grafts was variable, and the sores showed heavy growth of *Pseudomonas* and *Staphylococcus aureus*. All traditional treatments were tried without success.

"When nothing else had any effect on the chronic infected sores, clinical nurse Cheryl Dunford and her colleagues turned to honey. Dressing pads impregnated with sterilized active manuka honey from New

Zealand were applied to one leg and a traditional dressing to the other leg. Within a few days, the honey dressed leg showed a reduction of wound bacteria. Both legs were then treated with the honey dressings. Within 10 weeks, all lesions were healed. Jem was released from the hospital, fitted with artificial legs and is getting on with his life."¹⁴

This and other reports refer to the work of Dr. Peter Molan at Waikato University with manuka honey. Dr. Molan is now convinced that honey belongs in the medicine cabinet, as well as in the kitchen. Honey has been used for centuries as a healing substance, but only now is it becoming more recognized as good medical practice. Honey is effective for a number of reasons, Dr. Molan says, including its acidity and hygroscopicity, which provide unfavorable environments for bacterial growth. Diluted honey also produces small amounts of bactericidal hydrogen peroxide. All honey is not created equal, however, and certain types such as "active" manuka from New Zealand¹⁵ and perhaps honeydew from central Europe are more effective for infections. In general, honey is a good wound and burn dressing because it keeps the skin moist and supple and is easy to wash off. This means less *Continued next page*

² <http://www.ams.usda.gov/news/217-00.htm>

³ www.ams.usda.gov/fv/rpb.html

⁴ <http://www.ifas.ufl.edu/~mts/apishtm/apis96/apoct96.htm#1>

⁵ <http://www.ifas.ufl.edu/~mts/apishtm/apis95/apfeb95.htm#nh>

⁶ <http://www.ifas.ufl.edu/~mts/apishtm/apis99/apnov99.htm#2>

⁷ http://www.nhb.org/domestic/PROD_ImpDomComp1.gif

⁸ <http://www.ifas.ufl.edu/~mts/apishtm/apis99/apjun99.htm#2>

⁹ <http://bee.airoot.com/beeculture/digital/1999/column10.htm>

¹⁰ http://www.ifas.ufl.edu/~mts/apishtm/apis_2000/apapr_2000.htm#5

¹¹ <http://www.ifas.ufl.edu/~mts/apishtm/apis99/apoct99.htm#3>

¹² <http://www.nhb.org/domestic/index.html#Production>

¹³ http://www.cbs.medscape.com/medscape/p/G_Library/

¹⁴ <http://www.eurekalert.org/releases/zfp-hah073100.html>

¹⁵ <http://www4.wave.co.nz/~bennett/index.html>

Continued trauma when changing bandages and noticeably less scarring. Unfortunately, the natural properties of honey as a healing substance can be damaged, especially through heating, which destroys

enzymes. Thus, honey from a supermarket, which has been heated and heavily filtered to increase shelf life, may not be as therapeutic as that taken directly from the comb with minimal processing. ■

Florida Weather Forecasting and FAWN

THE FLORIDA Agricultural Weather Network (FAWN) has a new face on the World Wide Web¹⁶. The site aims to provide:

1. Real time weather data for a wide range of uses, including helping growers anticipate freezing events;
2. Information on climate variability, its impacts on agriculture, and climate prediction information tailored to Florida's unique needs;
3. Management decision aids to help farmers and ranchers use climate and weather information more effectively and remain highly competitive; and
4. Educational materials on weather and climate.

One specific area will be historical and current information on the El Niño and La Niña phenomena. In the November 1999 *APIS* I reported on a publication titled *El Niño, La Niña and Florida's Climate: Effects on Agriculture and Forestry*, published by the Florida Consortium, made up

of the universities of Florida, Miami and Florida State¹⁷. Copies are available from Dr. James Jones¹⁸, PO Box 110570, Gainesville, FL 32611.

The FAWN site is much more dynamic. For example, one can select from any weather station in the state and graph precipitation and minimum and maximum temperatures¹⁹.

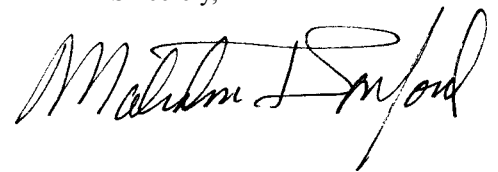
This site is part of the Florida First Initiative, a project that joins highly successful research and extension efforts. Originally, FAWN was an extension program to provide timely information on weather to assist growers in freeze protection. The research team and the Florida Consortium of Universities was funded by the National Oceanic and Atmospheric Association (NOAA)²⁰ to assess climate variability impacts on agriculture in the southeastern United States, and to determine how to use climate forecasts three to six months in advance. ■

Africanized Bees in Virginia

WAS IT A COLONY of Africanized honey bees that stung a goat named Frank to death? The incident happened in southwest Virginia July 5, 2000, and James Downey, Frank's owner and a former beekeeper, was stung more than 35 times as well. The July 8 *Washington Post* reported him to say, "They killed some goat, a powerful old goat. I don't know how much more killer they got to be."²¹ A post to the Internet newsgroup sci.agriculture.beekeeping indicated they were indeed identified as Africanized.

So the questions remain: How did they get to Virginia, and what to do about it? The former is more answerable. James Fischer²² writes that it is likely the bees (indeed confirmed as Africanized) traveled by rail from the Southwest. Clifton Forge, a major freight rail nexus, is very near the area of the incident (Low Moor, Va.). The latter question is the most interesting for now. I have seen little coverage of the incident since the first reports, suggesting the whole thing has blown over and the only casualty was a poor goat named Frank. Nevertheless, this is another example of how this insect continues to surprise beekeepers, regulators and the general public and probably will continue to do so in the future²³. ■

Sincerely,



¹⁶ <http://fawn.ifas.ufl.edu>

¹⁷ <http://www.ifas.ufl.edu/~mts/apishtm/apis99/apnov99.htm#3>

¹⁸ jjones@agen.ufl.edu

¹⁹ <http://fawn.ifas.ufl.edu/enso.html>

²⁰ <http://www.noaa.gov/>

²¹ <http://washingtonpost.com/wp-dyn/articles/A3506-2000Jul8.html>

²² jfischer@supercollider.com

²³ <http://www.ifas.ufl.edu/~mts/apishtm/apis99/apmay99.htm#1>

APIS, a monthly newsletter, is celebrating its 18th year of service to beekeepers. For subscription or other information, please write, phone, fax or e-mail.

Malcolm T. Sanford
P.O. Box 110620, Building 970
University of Florida
Gainesville, FL 32611-0620

Phone: (352) 392-1801, Ext. 143
Fax: (352) 392-0190
Internet: MTS@GNV.IFAS.UFL.EDU

Back issues are available on the World Wide Web:

<http://www.ifas.ufl.edu/~mts/apishtm/apis.htm>.

For an electronic subscription, send a subscribe message to:

listserv@lists.ufl.edu.

The Cooperative Extension Service, Institute of Food and Agricultural Sciences, is an Equal Employment Opportunity - Affirmative Action Employer authorized to provide research, educational information and other services only to individuals and institutions that function without regard to race, color, sex, or national origin.