



Kelley Beekeeping

SERVING THE BEEKEEPER SINCE 1924

NEWSLETTER

~ *Monthly Beekeeping Information, News & Support* ~



Bee Health

Bee Better Certified Offers a New Approach to Protecting Pollinators

from Xerces Society

There is a relatively new certification program which enables farmers to show consumers they are farming in ways that benefit bees. In partnership with Oregon Tilth, the Xerces Society (www.xerces.org) launched The Bee Better Certified™ program in June 2017 and was developed with grant funding from the USDA.

"Bee Better Certified is working with conservation-minded farmers to meet a growing interest from consumers to know how their food choices impact bees," said Xerces Society Executive Director Scott Hoffman Black. "Many species of bees have suffered declines over the years, but by creating habitat and reducing pesticide use, Bee Better is generating meaningful
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From the Queen's Court

by Melanie Kirby



This is the **50th** issue I've compiled for Kelley Beekeeping, and I feel so honored to have reached this milestone! I could not have done it without all you readers and writing

contributors. Please know that this edition, as are all the others, is dedicated to you! I thought it would be interesting to revisit a few articles (with updates) that have been shared over the past 4 years as we embark on this fifth year of my editorship.

I will admit, that it wasn't until I got a little older (and hopefully wiser), that I developed an appreciation for history. As a youngster, history seemed so far removed and displaced. It was difficult to imagine what things had been like, and how they connected to present day (nonetheless how they lead to the future). But now, I am better able to step outside of myself and reflect on where I was and how it leads to where I am now. I also recognize that what actions I took then, and the actions I take presently, will lead to where I will go.

For we only know where we are going by where we have been. And as some say, things do seem to go in cycles or to repeat themselves.

For we only know where we are going by where we have been. And as some say, things do seem to go in cycles or to repeat themselves. For instance, the weather! Our world, our country, our rural, urban and wild lands, all experience distinct weather scenarios. In previous years, I would've used the word "pattern" instead of "scenarios." But more recently, the weather has seemed to be in a free form mode, not really following patterns.



The very first issue I put together for Kelley Beekeeping was in December of 2013. And that first issue included an article I wrote about the weather called, "To Weather the Weather." I was inspired to write it at the time because as beekeepers, pollinator enthusiasts, and all of us as stewards of these magnificent winged angels of agriculture, we are all at the mercy of the weather. With each location having distinct weather conditions and topographical influences such as mountains, coast lines, plains, prairies, hills, swamps, canyons, rivers, woods, forests, etc., our bees experience weather in very unique surroundings. Add to that latitudinal and longitudinal factors and we have ourselves a cornucopia of landscapes and climates.



For those who have been keeping bees for a while, we are well aware of the fact that not every season is the same, not every hive is the same, and that no book nor beekeeper can include everything thoroughly to convey just how much beekeeping is an artistic science AND a scientific art.

For those who have been keeping bees for a while, we are well aware of the fact that not every season is the same, not every hive is the same, and that no book nor beekeeper can include everything thoroughly to convey just how much beekeeping is an artistic science AND a scientific art. It takes multiple seasons to become proficient. I proclaim myself a student for life of this craft. I squeeze in a lot of reading and attend what meetings I can when I can to learn from others and to share experience.

We need quality mentors, as mentee numbers are increasing. And as we become more nuanced, we can become mentors to each other, share information, keep up with policy and concerns regarding current happenings, glean and research what works well for our bees, us and our communities.

This new year is what we will make it. As a community of beeps (bee people), let us be motivated to do what we can to better habitat, land stewardship, and our own hive management to support quality of life for our beloved bees. When we take care of them, they can take care of us.

Bee Caring,
- Melanie Kirby, Editor

Cover photo: A wintry blast from the past!

Melanie has been serving as the editor for 4 years. For the past 20 years, she has put her body and mind to the test as a dedicated field beekeeper and now researcher. She established Zia Queenbees Farm & Field Institute in northern NM in 2005 and is currently a graduate student at Washington State University Bee Lab. She can be reached at editor@kelleybees.com

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Q&A

Questions & Answers

by Dennis Brown

**Hi Dennis,
What do you think about
plastic telescoping tops?
Mike P.**

Hello Mike,
The plastic tops work well during the warmer months and you don't have to paint them and they last a long time because they never rot. However, the heat that is generated from the bees during the colder months will rise and cause condensation on the bottom of the plastic top and will sometimes rain back down on the winter cluster. It's usually the wet that kills bees and not the cold during the winter months.

Treated wood tops cause the same situation during the winter because the moisture cannot be absorbed on treated wood. You could use the plastic/ treated tops during the warmer months but should use wooden (untreated) tops during the colder months. I hope this helps.

**Enjoy your bees!
- Dennis**



Dennis Brown is the author of "Beekeeping: A Personal Journey" and "Beekeeping: Questions and Answers." Contact Dennis at: www.lonestarfarms.net.

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Editor@KelleyBees.com**

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Bee Health (Continued)

change on working farms, helping to preserve crop pollinators and the valuable services they provide to farmers.”

After initial piloting of the program with 13 farmers, the Xerces Society and Oregon Tilth now offer the program to farmers nationwide. By integrating flower-rich habitat on farms, the program encourages food provisions and nesting sites for honey bees, native bees, and other diverse pollinators. The program additionally requires participant farmers to eliminate or reduce the use of bee-harming pesticides.

Oregon Tilth reviews and certifies farms based on habitat quality and the amount of habitat created. Included in this certification process is the assessment and incorporation of integrated pest management (IPM) strategies focused on protecting crop pollinators.

“When Xerces approached us as a possible partner, it seemed like a great fit,” said Oregon Tilth Certification Director Connie Karr. “We knew our missions were aligned, and we could bring our certification expertise alongside their technical expertise in invertebrates to develop this standard together. It’s important to make sure a new set of standards is credible, valuable and achievable. By working together, we could achieve all those things.”

In 2016, with matching funds from the Xerces Society, the project received a \$350,000 USDA Conservation Innovation Grant Natural Resources Conservation Service (NRCS). This grant program aims to encourage collaborative next-generation conservation efforts through public and private advancement.

“About two-thirds of the country is privately owned, meaning the land management choices of our nation’s farmers, ranchers and forest landowners can have positive impacts from pollinators,” NRCS Acting Chief Leonard Jordan said. “We’re inspired by the

many men and women who step up and voluntarily implement conservation practices on their land, which benefits bees and other pollinators as well as our soil, water and air.”

The Bee Better program is open to all sizes and types of farms. Interested farmers can submit an application to Oregon Tilth. Once the farm is reviewed and certified, farmers are then able to use the Bee Better Certified seal on their farmstands. And, manufacturers who use Better Bee Certified ingredients can also use the seal on products.

Learn more about Bee Better Certified at <http://beebettercertified.org/>



Why Bee Better?

Bee Better Certified partners with innovative farmers and food companies to protect bees and other pollinators in agricultural lands. The Bee Better Certified seal gives consumers confidence that their purchasing decisions benefit pollinators, reward conservation-minded farmers, and incentivize the incorporation of pollinator conservation into product supply chains. Together we can make the world better for bees.

Behind the Bee

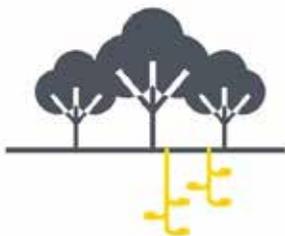
The Bee Better Certified™ Seal indicates that certified ingredients were grown in ways that support bees, butterflies, and other beneficial insects. Producers have made a commitment to provide habitat and mitigate impacts from pesticide use in accordance with standards developed by the Xerces Society. Certification is verified by Oregon Tilth, a leading third-party organic certifier.



Bee Health (Continued)

It Starts with Habitat

The first step to protecting pollinators is providing abundant sources of pollen and nectar throughout the growing season. We ask farmers to dedicate a minimum 5% of their land to habitat, which can be a mixture of permanent features, such as hedgerows, and temporary resources, including flowering cover crops.



Includes Nest Sites

Like us, pollinators need a place to call home. Farmers provide nesting sites by including plants with pithy-stems for cavity-nesting bees, undisturbed ground that provides cover for soil-nesting bees, and butterfly host plants so butterflies have a place to lay their eggs.

Protection from Pesticides

Prevention, mitigation and protection are all part of the Bee Better strategy for minimizing the exposure of pollinators to pesticides. A comprehensive pest management strategy includes monitoring, using non-chemical practices as a first line of defense, targeting pesticide use, and limiting or eliminating the use of high risk pesticides.



Better Managed Bumble Bees

Commercially bred bumble bees are often used in greenhouses for pollination, but can transfer diseases to wild bumble bee populations. Our standards require that managed bumble bees include only native species reared within their native range, and that they only be used in sealed, controlled environments.



Third-Party Verified

Farms are inspected by Oregon Tilth, a leading non-profit certifier, to ensure all conditions required by the Program Standards are being met.



Shop the Seal

By choosing the Bee Better Certified seal you can be confident that your purchasing decisions benefit pollinators and the farmers that protect them. Bee Better Certified™ producers have made a commitment to protect and expand habitat for pollinators, and mitigate impacts from pesticides, meaning the products you buy help protect bees, butterflies and other pollinators.



Bee Science

How Honey Bee Gut Bacteria Help to Digest their Pollen-Rich Diet

Note from Editor: Let us start this new year working on a puzzle together. For this month's Bee Science segment, I've included two articles on honey bee gut health. The first is about how honey bee gut bacteria helps bees to digest their diet. The second is about how gut bacteria in bees spread antibiotic-resistant genes to each other.

Summary: The honey bee gut is colonized by specialized bacteria that help digest components of the floral pollen diet and produce molecules that likely promote bee health. Researchers have now uncovered which bacterial species perform which specific digestive functions in the bee gut.

Lucie Kešnerová, Ruben A. T. Mars, Kirsten M. Ellegaard, Michaël Troilo, Uwe Sauer, Philipp Engel. **Disentangling metabolic functions of bacteria in the honey bee gut.** PLOS Biology, 2017; 15 (12): e2003467

DOI: [10.1371/journal.pbio.2003467](https://doi.org/10.1371/journal.pbio.2003467)

The honey bee gut is colonized by specialized bacteria that help digest components of the floral pollen diet and produce molecules that likely promote bee health. In a study publishing 12 December in the open access journal PLOS Biology, a group of researchers led by Philipp Engel at the University of Lausanne and ETH Zürich, Switzerland, have uncovered which bacterial species perform which specific digestive functions in the bee gut.

The authors measured the repertoire of simple chemical compounds -- the so-called "metabolome" -- from bee guts. They then compared the gut metabolomes of bees colonized with each bacterial species individually and in combination. By this method, the team identified what each bacterial species contributes to the bee digestion and the various strategies bacteria deploy to co-exist in the animal gut.

Of particular note, they identified one several species of the genus *Lactobacillus* that digests convert specific plant compounds called flavonoids -- abundant in pollen and recently linked to the health of mice and

humans through their breakdown by the gut microbiota. Another bee gut bacterial species, *Bifidobacterium asteroides*, triggered the production of bee hormones that can modulate the immune system and behavior of its host.

The gut bacteria in bees and their pollen-rich diet are known contributors to honey bees' health, and understanding the functions of the various bacteria could have implications for colony health as a whole.

"The next step is to understand how these functions impact colony's health so that one day we can apply our findings in apiaries."

"We took advantage of the key characteristics of the bee gut microbiota: its simplicity," says Philipp Engel, the corresponding author of the study. Contrary to human gut microbiota, the bee gut is composed of only a few bacterial species. This makes analyzing each member separately and determining its contribution to the overall metabolite changes in the gut feasible."

"We have identified many exciting metabolic functions of bee gut bacteria. The next step is to understand how these functions impact colony's health so that one day we can apply our findings in apiaries."



Bee Science (Continued)

Scientists Discover Gut Bacteria in Bees Spread Antibiotic-Resistant Genes to Each Other

Jane Ludvigsen, Davide Porcellato, Trine M. L'Abée-Lund, Gro V. Amdam, Knut Rudi.

Geographically widespread honeybee-gut symbiont subgroups show locally distinct antibiotic-resistant patterns.

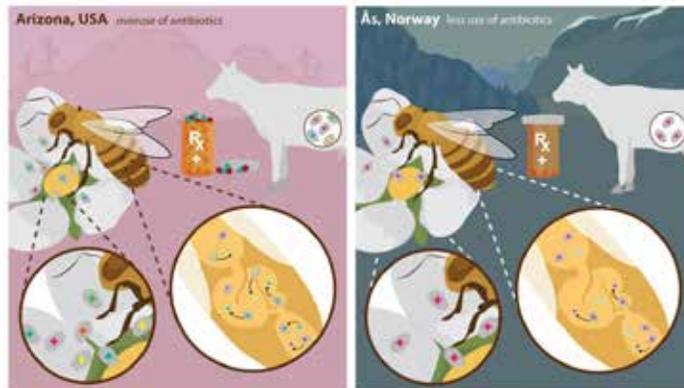
Molecular Ecology, 2017; 26 (23): 6590

DOI: [10.1111/mec.14392](https://doi.org/10.1111/mec.14392)

It's the kind of thing you might lose sleep over. How will humans survive serious infections in the future if we're running out of tools today to fight them? Antibiotic resistance among disease-causing bacteria is of global concern, as some last-resort drugs can no longer cure common illnesses such as urinary tract infections.

To make matters worse, researchers from Arizona State University and Norwegian University of Life Sciences have discovered that our very own gut bacteria may be perpetuating the resistance. Scientists uncovered this startling finding while investigating the microbial life in honey bee guts.

"To our surprise, we found that instead of one gut bacterium acquiring resistance and outcompeting all the other gut bacteria in honey bees, the resistance genes spread in the bacterial community so that all strains of bacteria survived," said Gro Amdam, a professor with ASU School of Life Sciences and co-author of the paper.



Antibiotic use in farming and human health leads to bacteria acquiring resistance (indicated by a + sign in the illustration). Overuse of antibiotics (USA) leads to more widespread and elaborate patterns or resistance (indicated by multiple colors of + signs). Restricted antibiotic use (Norway) leads to limited and less complex patterns of resistance.

Image Source: ASU Vislab

The finding was published in the journal *Molecular Ecology*.

In the study, scientists investigated gut bacteria in honey bees to explore the question, "What happens to gut bacteria when they are exposed to antibiotics over a long period of time?"

While honey bees have a simpler microbial

community in their guts compared to humans, they also have features in common.

"There is an important similarity between honey bee and human gut bacteria, in that some bacteria are in symbiosis with the host -- these are important for host health," said Jane Ludvigsen, a doctoral student with the Norwegian University of Life Sciences

and lead author of the paper. "The bacteria we investigated are symbiotic for the honey bee, and they each have important functions. Because they must all be there for the host to be well, we think this is the reason that antibiotic-resistant genes have spread to all."

Overuse of antibiotics

In this study, researchers focused on microbes that are resistant to tetracycline. In addition to use in human medicine, tetracycline is an antibiotic that has been widely used for decades to promote growth in animals -- often in chicken, cattle and pig farming. It's also commonly sprayed on plants, including apple
(CONTINUED ON PAGE 10)



Bee Science (Continued)

and pear trees, to prevent diseases such as fire blight, which can devastate crops. In the U.S., tetracycline has been used even on organic farms. In Norway, rules on antibiotic use in farming of any kind are much stricter.

The scientists compared the antibiotic-resistant genes in honey bee populations from Arizona and Norway. There were surprising geographic differences.

"In the bees from Arizona, we saw that even though they have not been in contact with tetracycline for many years, the resistance genes are still there," said Ludvigsen. "Also, in the Norwegian population, we found some antibiotic-resistant genes, but few.

"I think that if there are more resistance genes in the environment, more transfer happens. Also, if the bees are exposed to tetracycline in their environment, they may need to get and keep the resistance genes. Tetracycline is used still in the U.S., so that might be a trigger. That deserves further study, as it was not the focus of this paper."

When the research team studied the antibiotic-resistant genes in the Arizona honey bee population, they found six different variants of this genetic resistance -- each variant is the product of a mutation within the gene. In the bee population in Norway, the team found only one adaptation.

Amdam said one way to think about it is this: Tetracycline-resistant microbes are everywhere. They are in the dirt, on plants and animals, and even inside us. But given enough time, without exposure to antibiotics, some of this resistance should go away. One factor needed for antibiotic resistance to remain prevalent is to keep the selective pressure on. This is why Amdam and Ludvigsen say it's important to reduce or eliminate the use of antibiotics in both agriculture and farming, and limit unnecessary use in human health as much as possible.

Antibiotic-resistant microbes in humans

Many people believe that antibiotic-resistant

bacteria are mainly found in places such as hospitals. And although dangerous microbes can be found there, they are also found in our everyday environments.

"Our paper predicts that if there is already antibiotic resistance in your gut, then most or all of your gut microbes will also carry this resistance. Basically, we've become potent reservoirs for carrying antibiotic-resistant genes," said Amdam. "This is not good news from an epidemiological point of view. If our paper is right, then from what we see in the U.S. and Norway, you can keep accumulating multiple versions of antibiotic-resistant genes. If pathogenic bacteria pass through your body, they can also pick up this resistance."

The researchers say one next step could be to study how the bees' gut selects for certain kinds of bacteria, and not others. For example, in humans, we know that the immune system is involved in accommodating the "right" gut bacteria, but the role of the honey bee immune system is largely unknown.

In this study, researchers focused on microbes that are resistant to tetracycline. In addition to use in human medicine, tetracycline is an antibiotic that has been widely used for decades to promote growth in animals -- often in chicken, cattle and pig farming. It's also commonly sprayed on plants, including apple and pear trees, to prevent diseases such as fire blight, which can devastate crops. In the US, tetracycline has been used even on organic farms. In Norway, rules on antibiotic use in farming of any kind are much stricter. The scientists compared the antibiotic-resistant genes in honey bee populations from Arizona and Norway. There were surprising geographic differences. When the research team studied the antibiotic-resistant genes in the Arizona honey bee population, they found six different variants of this genetic resistance -- each variant is the product of a mutation within the gene. In the bee population in Norway, the team found only one adaptation.



Apitherapy

Herbal Infusions

by Bella Donna

As a beekeeper, herbalist, aromatherapist, and Integrated Holistic Healthcare Facilitator, you better believe I make full use of quality blended and infused honeys for myself and my clients. Between all of my work responsibilities, I still make time for watching and following my bees around as often as possible to observe their foraging habits while also looking for the healing property possibilities.

Here in the high desert of central Arizona, there is plenty blooming. For most of the year, forage is available for our sweet little friends. When there isn't, I buy them potted plants from the local nurseries, and feed them outside on warmer days with my fruit and veggie scraps, and citrus slices. When it's plentiful, people doing hive extractions give comb scraps from clean cutouts (yes, I understand the controversies of each of these and I do what I feel instinctually is best for my bees). I have managed to get bees through some winters with very little to no honey stores. It's been miraculous.

I like exploring where my bees are feeding to give me insights as to what healing properties they are incorporating into the honeys I harvest. After years of beekeeping and pollen testing, I have developed a 50% accuracy rate determining what nectars and pollens make it into the honey. But we never really know what types of pollen are in our honeys without pollen testing.

We all know that honey, when pure and clean, and unfiltered to lightly-filtered, has healing properties and abilities. We also know that plants and herbs have healing properties of their own. Studying aromatherapy decades ago taught me synergy- "When one plus one equals more than two."

It stands to reason then, that as a Holistic Practitioner, the use of the blending of honey

and herbs can be quite powerful. Here is an example: Living in the desert I have heard from indigenous peoples that historically, the prickly-pear fruit has been used for people with sugar imbalances. Through my continued herbalism studies, I've learned that cinnamon also helps with sugar imbalances. From a doctor friend, I learned that honey helps with sugar imbalances by providing a slow release of glucose in the brain and pancreas. And from my own experiences with clients, I've learned that the combination of the three-prickly-pear juice, cinnamon and honey, produces improvements in maintaining sugar levels of diabetics and people who are pre-diabetic.

I am not making a claim that eating prickly-pear, and cinnamon cures diabetes. I'm simply stating here what I've learned, seen, and have heard from clients on a daily regiment of honey. Just this week I got a text from a client who bought some of this special blend honey for her father who has been struggling with diabetes for years.

This is exactly what she wrote me, "My dad sends his gratitude for the honey. He started taking half teaspoon per day and his sugar went from 170 to 126 within two days." This is miraculously just one of hundreds of examples I hear about honey making a positive difference in a person's health.

Honey is most often thought of as a sweetener. In recent years in the U.S., it is finally being recognized again as a healing substance. I've been using it for decades with myself, my family, my children, and also recommending its regular consumption to clients and friends. It is amazing to me the results I see. And I predict as this becomes more mainstream, we will be seeing more of a demand for high-quality, pure, unfiltered honey... as well as a shortage.



Apitherapy (Continued)

As we're all seeing more of a demand for our honey and other bee products, we're also all ramping up our apiaries with hopes of providing more honey year after year. As such, it is imperative that we consider the quality of our honeys. Please be conscious of the use or non-use of chemicals in and around your hives. Please consider the amounts and times of year that you're sugar feeding. And newer, small-scale beekeepers, if you can find it in your hearts not to overly sweet-feed your bees and allow them take care of themselves, you will find yourself with stronger hives producing a high-quality, dare I say, "medicinal" honey that will be in high demand.

To quote American entomologist John Kefuss, owner and operator of one of the largest apiaries in the world near Toulouse, France, "My suggestion to beekeepers is that if you are not willing to pour a substance into a glass

and drink it, then maybe you should consider twice before feeding it to your bees."

BEE conscious, BEE thoughtful, BEE aware of where your honey is going, and why. And make it the best it can be. For the sake of your buyers, for their health, for your health, and ultimately, the health of your bees.

PRICKLY-PEAR, CINNAMON HONEY

Blend the following together with a hand mixer for as long as you can. The longer the blending, the creamier the blend becomes. Bottle and label.

2 cups high viscosity honey, the thicker the better, 18% or less

1 t. prickly-pear juice

1 t. organic cinnamon (Ceylon, True Cinnamon)

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Beekeeping 'Round the Globe

Sweet Progress Update

How beekeeping and entrepreneurship can empower Nicaragua's underserved women and children

Sweet Progress is a 501(c)(3) nonprofit charity that seeks to provide underserved women and their children with a means to entrepreneurship by teaching them beekeeping. The organization has a vision to help alleviate extreme poverty in Nicaragua through the creation and facilitation of a manageable honey-producing ecosystem.

Sweet Progress is different than many charities. To promote successful ownership, Sweet Progress encourages a business model with each cooperative. Each cooperative consists of 10-15 women within the same community. Sweet Progress grants micro-loans to each cooperative to cover equipment and education. The loans are paid back over a five-year period with no interest. For every \$100 loaned, the cooperative pays back a total of \$100 in honey at a rate of \$4/kilo.

Vincent Cosgrove, an American born entrepreneur is the founder and Executive Director of the organization. He explained that the Sweet Progress business model ensures access to resources not previously available without the usual stifling re-payment terms.

Cosgrove funded a team of 7 women to run the carpentry cooperative which builds hive and nucleus boxes. The establishment and productivity of these hives continues to expand through splitting of the hives each year. Lilliam Gomez, Coordinator of Social Programs for Sweet Progress and a long-time champion of women empowerment and opportunities for women with disabilities, created a way for disabled women who have been severely restricted by government and

social standing to also participate.

"Women with disabilities will earn the income and respect they so deserve from uniform and bee equipment production fabrication necessary for the beekeepers," Lilliam said.

Currently, Sweet progress has participants from over 16 communities that have taken part in thousands of hours of learning, coaching, and mentoring. In addition to beekeeping, the program also includes reforestation projects. Over 10,000 trees have been reforested through Sweet Progress as they plant 700-2000 bee friendly trees for each cooperative. Sweet Progress has also facilitated the planting of 9 new bio-intensive agroecology gardens.

Now that the program is producing honey, it presents a new challenge for Sweet Progress; selling the honey and by-products to the global market at better-than-fair-trade prices.

With 3,000 women entrepreneurs participating, each would only make \$2,217. Per the U.N. Human Development Index and 2013 Human Development Report, the Nicaraguan middle-class line is \$3,650. However, Cosgrove has a plan to boost the income for this community.

Working with a women's economic group, Cosgrove registered a company called Zeas Apicola LTDA to export the cooperatives' honey. Together, Cosgrove and Zeas Apicola deal directly with the global markets. Sweet Progress is in the end stages of exporting 57,000 bottles of raw honey to the United States. It is the first time a charity organization has connected a honey project to the global market.



Bee Thinking About To Weather THE WEATHER

by Melanie Kirby

**“Some are weather-wise,
some are otherwise.” —Ben Franklin**

This is a condensed reprint (with some updated additions) of the very first article I wrote for the Kelley Beekeeping newsletter back in December 2013. This reprint will not include all three parts as in the original. Next month, I'll share the forecasts for various regions of the U.S. and strategies for developing short and long-term management plans for the the 2018 bee season.

WHAT IS WEATHER?

And, can a Beekeeper learn to forecast as accurately as a Bee?

PART I



Humans have long been intrigued and fascinated with weather, for various reasons. Learning when and how to manage one's food, fiber, and shelter is a part of daily life for everyone- though not always on a conscious, subsistence level- thanks to intellect and stewardship. It is this same “intellect” that we possess, that got humans thinking ages ago of how to adapt to our surroundings. Learning to adapt to one's surroundings, one must learn about and experience one's environment, and reap the trials and tribulations of life in that spot.

Humans learned that as time passes, planting seeds in accordance with the calendar of the heavens, would encourage plants to grow. When plants can be grown, food can be produced, consumed and stored; and sustenance is provided for a myriad of creatures. Growing food, from the beginning of time so to speak, always coincided with this calendar of the heavens.

Just what is this “calendar of the heavens”? And how has it shaped and affected our beekeeping?

The “calendar of the heavens” is, simply put, the seasonal calendar. Historically, natives from various continents viewed the skies and learned to predict particular circumstances

based on routine observations of the “heavens”. The art of weather forecasting began with early civilizations using reoccurring astronomical and meteorological events to help them monitor seasonal changes in the weather. From the Mesolithic period to the Mayans, there have been ancient civilizations who invested time to record the passage of time. And, in a sense, it was this investment in

time they afforded to record the flow of time that makes us able to predict time.

How were they able to predict time and the seasonal scenarios that the passage of time manifested? By observing patterns, in the heavens and on Earth, societies were able to predict seasonal manifestations and to plan accordingly. By taking the time to observe, record and then predict, time could be saved, or “made”; and thus, activities of various sorts became more nuanced and efficient- including foraging and farming.



Bee Thinking About (Continued)

Making time is what beekeepers these days are desperate to learn. By better observing their locational circumstances and patterns, they are better able to predict and therefore become more nuanced and efficient in their management as well. Of course, predicting the weather based on fluctuating observations can be a challenge: that is what the calendar of the heavens proposes to rectify.

Today, the calendar of the heavens includes several records of time including the lunar and solar cycles and their establishment of the seasons. It is this depiction of the seasons that most affects the bees and the beekeeper. The bees live by the seasons and their keepers learn how to manage from season to season.

“Living by the seasons”...what exactly does that mean?

To live by the seasons means that one is subject to the fluctuations of weather through time. Weather through time AND space determines climate (and microclimates) as it is affected by topography. And, topography determines environment....and environment directly affects the bees. So, let's backtrack a bit and discuss what weather is and how it is predicted and how beekeepers can utilize predictions to determine efficient management techniques and protocols.

What is “weather” and how is it predicted? How do topographical influences create microclimates? Can beekeepers utilize predictions to determine efficient management techniques and protocols?

The bigger question is: Can we learn to weather THE WEATHER, as our bees have? If we take a glance at what has passed, we will have a forecast of what may be to come. This is a puzzle in itself ---as if the uncontrollable can indeed be predictable....

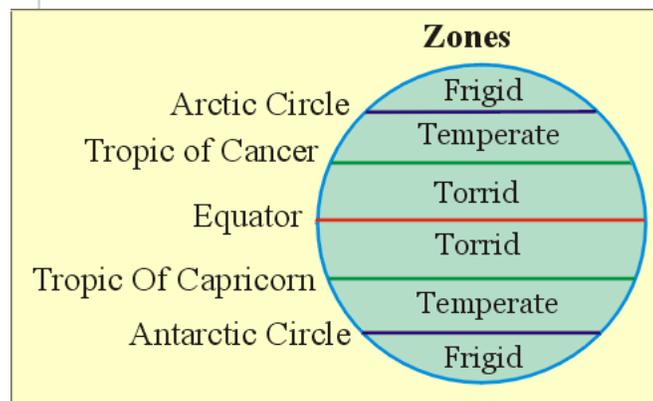
WEATHER:

“(noun) 1: State of the atmosphere at a particular place during a short period of

time. It involves day-to-day changes in such atmospheric phenomena as temperature, humidity, precipitation (type and amount), air pressure, wind, and cloud cover. Most weather occurs in the troposphere, but phenomena of the higher regions of the atmosphere, such as jet streams, and geographic features, most notably mountains and large bodies of water, also affect it.”
(Merriam-Webster online Dictionary)

Weather, a very dynamic phenomenon, surrounds us. It is constantly changing; directly affected by the sun and the moon, it, thus, directly affects life on our planet Earth. Weather affects life by determining the seasons and the seasons directly determine weather. Weather and seasons are virtually one in the same; coexisting as individual concepts but holding hands through the heavenly calendar of Mother Nature and Father Time. For an overview of the history of weather forecasting, visit: <http://earthobservatory.nasa.gov/Features/WxForecasting/wx2.php>

The ancient and well known Greek scholar Aristotle was one of the first to attempt to classify climate. He hypothesized that the earth was divided into three types of climactic zones (temperate, torrid, and frigid), with each one based on distance from the equator.



Source: <http://www.hellenicaworld.com>



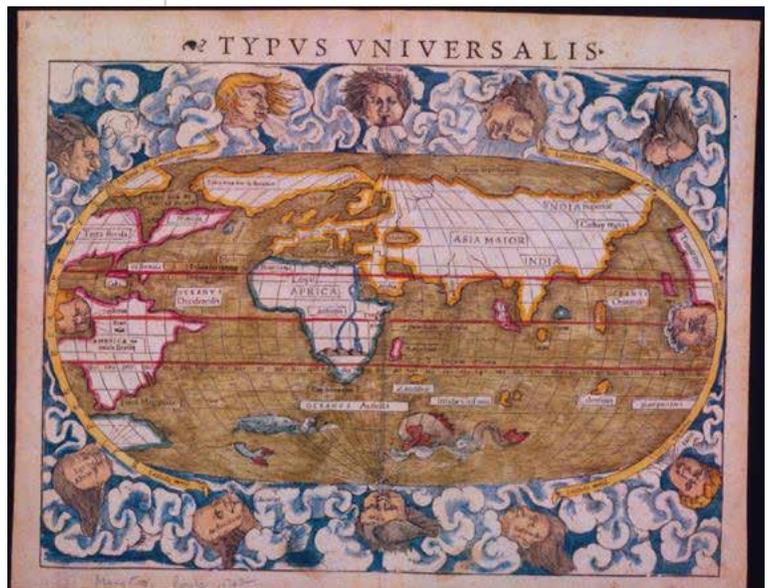
Bee Thinking About (Continued)

His book, "*Meteorologica*," is a philosophical treatise that includes his theories on the formation of wind, clouds, thunder, lightning, rain, hail, and hurricanes, which he wrote around 340 B.C.. Aristotle also wrote about topics such as astronomy, geography, and chemistry. His keen weather observations were considered by many to be an authority on weather theory for almost 2000 years. Despite some of his erroneous theories, we can still agree today that weather involves astronomy, geography and chemistry- especially when dealing with agriculture and farming.

From the Renaissance period through several centuries and into the late 1800's, various tools, such as thermometers and barometers, were constructed and implemented to decipher weather attributes. In today's world, there are intricate mapping systems and computer simulations based on information gathered from satellites and hundreds of ground stations. Although bees do not have these fancy mechanical and digital contraptions to observe the weather and the seasons, they do have their physiological counterparts.

Their antennae and other senses (such as smell, vision, vibration) help them determine their surroundings and environment. Bees also have a circadian rhythm that steers their internal "clocks." Bees are able to discern length of day and, thus, the seasons. Their ability to discern environmental conditions affects their behavior; and ultimately, calls upon their genetic history to manifest and display itself over time and through the seasons. Bees learn to weather THE WEATHER by enduring through it- allowing it to condition their habits, their patterns and their lifecycles. This determines their behavior at any given time.

Beekeepers learn to weather the weather by enduring through each season- allowing it to condition their habits, their patterns and their calendars, determining their behavior (or management) at any given time. Bees and their keepers learn to weather each other- forgiving novices their mistakes, and training developing stewards in the ins and outs of hive life and behavior. So, perhaps we aren't so different from the bees themselves after all: we hunker down in the winter and take time to keep warm; we get giddy in the spring and suffer from "fever" of activity as the weather warms.



Source: secretgardening.files.wordpress.com

In summertime, we hit our strides, buzzing along, procuring and gathering, refining and processing. And, in fall, we reap our harvests: the bees with the development of their "fat" wintering population, and we humans with pumpkin pie and all the fixins!

So perhaps, we are more like our bees after all. And like them, we learn from each season, from Mother Nature's dynamic manifestations through the passage of Father Time.

We, too, are like blades of grass, subject to life's indelible forces; learning to adapt and



Bee Thinking About (Continued)

accommodate. Bees steward their forage zones by assisting with cultivation; they mindfully pollinate chosen growths that then have a better potential of setting fruit and developing seeds to carry on their history. These seeds, well fertilized, lend to enhanced germination. Adapting from season to season while tending the crops benefits a myriad of organisms and promotes biodiversity of ecosystems. The bees are doing this, and we continue to learn from them.

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We've recently passed the Winter Solstice. Every year, December 21st marks this momentous occasion- the shortest day of the year. And then, the earth begins to tilt forward, and the days begin to lengthen. Bees around the nation are also going through their solstice. The thrill of next year's bee season is already in the air...until then, do your homework and keep warm and cozy if you are in the “frigid” zones. If you are in the “temperate” zone, well- you've better get your gear ready and start warming up for the seasonal race. And if you are in the “torrid” (tropical) zone, you best sharpen your hive tools- your bee season is starting.....NOW!

In next month's February 2018 edition, I'll share the year's forecast for each zone (as depicted by the trusty Old Farmer's Almanac) and discuss what this means for each region in this grand union of states and how we can interpret what management techniques can help us to help our bees.

Throughout this year, I'd like to highlight different regions and crazy weather stories involving bees. If you have an interesting weather story to share- Kelley Beekeeping welcomes stories of the trials and tribulations, the experience, humor, and, “I told you so's!”

Email them to editor@kelleybees.com

Melanie has been keeping bees professionally for over 20 years. She insists that the mystery is the allure and she admits she is a student-for-life of the bees, Mother Nature and her fellow beekeepers. In addition to pursuing a graduate degree at Washington State University Sheppard Bee Lab, she specializes in sharing quality queen stock, exquisite varietal honeys and enthusiasm for everything BEE!

We've got bees!

Pre-order your bees now
to be ready for spring!



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January 9–13, 2018
Grand Sierra Resort - Reno, NV



2018 American Beekeeping Federation Conference & Tradeshow

CELEBRATE the 75th Diamond Anniversary of the ABF at the 2018 American Beekeeping Federation Conference & Tradeshow, January 9-13, at the Grand Sierra Resort in Reno, Nevada. Discover the many facets of the ABF with four days of spectacular educational sessions, networking and fun.

SHINE BRIGHT IN RENO!

- Hear from experts, trendsetters & influencers.
- Learn best practices.
- Shop a tradeshow full of the latest beekeeping innovations.
- Showcase your skills in the 2018 Honey Show.
- Have next-generation fun at the Kids and Bees program.
- Network with 900+ fellow beekeepers

FUN FOR THE WHOLE FAMILY! In addition to family-focused conference activities, the Grand Sierra Resort features FunQuest, the largest arcade in northern Nevada, two laser-tag arenas, a bounce house, climbing apparatus, Grand Adventure Land Park, and a 50-lane bowling center.

75-YEARS STRONG! Make your plans today to join us in Reno for a brilliant conference and a celebration of the association's 75 years of accomplishments.

For more information and to register, visit:

<http://abfconference.com/>



[American Honey Producers Association](#)

The AHPA 49th annual convention will be January 9-13, 2018.

DoubleTree by Hilton San Diego Mission Valley

7450 Hazard Center Drive

San Diego, CA 92108

Tel. [1-800-222-8733](tel:1-800-222-8733)

request a reservation using the code AHP

Our trade show is one of the largest beekeeping trade shows in the country and it's a highlight for the convention attendees to come and meet new companies and see new products. We will have conference sessions on new research and hot topics within the beekeeping industry such as legislative changes, new science information, honey trade & adulteration issues, and honey market & pollination reports.



Dr. Michael T. Roberts—Keynote Speaker

Executive Director of the Resnick Program for Food Law and Policy, Adjunct Faculty
Michael T. Roberts is the founding Executive Director of the newly established Resnick Program for Food Law and Policy at UCLA School of Law. He is well versed in a broad range of legal and policy issues from farm to fork in local, national, and global food supply systems. He has recently authored the first major treatise on food law, titled, *Food Law in the United States*, published by Cambridge University Press. He is also co-editor of *Food Law & Policy*, a new casebook to be published by Wolters Kluwer. He has also written several other chapters and articles on food law topics.

For more information and to register, visit:

<https://www.ahpanet.com/2018-convention-trade-show?page=Resolutions>



Austin 7th Annual Beekeeping Seminar

Register at: <https://aabaseminar2018.eventbrite.com>

When: Jan. 27, 2018
Who: Austin Area Beekeepers Association
Where: Norris Conference Centers, 2525 W Anderson Ln #365, Austin, TX 78757
Cost: \$60

Why:

The mission of this daylong seminar is to educate people of all experience levels in sustainable science-based bee husbandry and to provide support to worthy bee charities. The lion's share of the proceeds are donated to the Texas A&M Honey Bee Lab, the Texas Beekeepers Association Queen's Program, the Texas Master Beekeeping Program and other bee charities.

Description:

This is a daylong seminar offering 5 different educational presentations running concurrently every hour throughout the day. This will provide many beginning and advanced subjects to choose from. A **separate beginner track** has been formatted covering a variety of startup topics for soon-to-be or very-new beekeepers. A beginner beekeeper will learn the fundamentals of honey bee biology and behavior, how to select the equipment you will need, where to buy bees, how to set up your apiary, how to light a smoker, feeding, the fundamentals of honey extraction, queen finding, requeening and annual management.

Other Sessions will include:

- Honey Bee Management 1 and 2
- Nutrition Management
- Honey Bee Biology and Behavior
- Top Bar Management 1 and 2
- Effective Varroa Management for Robust Populations
- Brood Disease and Pest Control
- Swarm Capture Techniques
- Raising Queens
- Simple Queen Cell Production
- Learn Honey Extraction Techniques
- How to Grow Your Apiary Business
- Successful Sales and Marketing
- How to plant Beescapes
- Bees as an Ag. Exemption
- Queen Finding and Requeening
- Honey Bee Reproductive Biology
- Making Splits
- Cut-Outs
- Equipment Building Workshop
- Smoker Lighting Demo
- What Every Beekeeper Should Know About Foraging
- Impact of Miticides on QMP
- Varroa Monitoring Workshop
- Honey Bee Health and Nutrition
- Preparing for a Honey Show

Presenters:

- Professor Juliana Rangel – Entomology at Texas A&M
- Mary Reed - Texas Apiary Inspector
- Mark Hedley - Owner of Spiral Horn Apiary
- Dan Aurell - Texas A&M Tech Transfer Team
- Ryan Giesecke - Trinity Valley Beekeepers President
- James & Chari Elam - Owners of Bluebonnet Beekeeping Supplies
- Dodie Stillman - Certified Texas Master Beekeeper
- Elizabeth Walsh - Ph.D. Student of Entomology at Texas A&M
- Tanya Phillips - Certified Texas Master Beekeeper
- Karl Acuri - Austin Area Beekeepers Assoc. (Co-Organizer)
- Becky Bender - Texas Master Naturalist
- Brandon Fehrenkamp - Owner of Austin Bees
- Pamela Yeamans – Certified Advanced Level Beekeeper (TMBP)
- Chuck Reburn - Certified Texas Master Beekeeper
- Ashley Ralph - Area Director Texas Beekeepers Assoc.
- Steve Butler - Owner of Company Bee
- John Swan - Owner of Wicked Bee Apiary
- Dennis Herbert - Past Pres. of the Bell-Coryell Beekeeping Assoc.
- Lance Wilson - Certified Master Craftsman Beekeeper (GMBP)

For additional information you can email Lance Wilson at lance@beekeepinghelp.com

This organization is non-profit and 100% of the proceeds of this event will be used to promote sustainable beekeeping practices and provide support to bee charities.



nmbeekeepers.org



NMBKA
New Mexico **Beekeepers** Association

2018 Beekeepers Annual Conference

Hive Mind: Decision-Making Secrets of Bees

February 2-3rd: Registration begins Friday at 12:00 pm



Tom Seeley, PhD Professor Cornell U, Biologist, Author, Follower of Wild Bees
"Survivor Population of Wild European Honey Bee Colonies in the Arnot Forest"



Joseph S. Wilson, PhD Assistant Professor, Biology, Utah State, Photographer
With co-author Olivia Carril, "The Bees in Your Backyard, Making Choices as a Single Bee"



Olivia Messinger Carril, PhD, Southern Illinois U, Author, Research Ecologist
With co-author Joseph Wilson, "The Bees in Your Backyard, Making Choices as a Single Bee"



Valerie Roybal, Artist, Curator, Beekeeper
"Cross Pollination of Ideas in Art and Science"



Wes Brittenham, Native and Adaptive Plant Specialist, Environmental Artist
"Plants for Pollinators – Bees and Beyond"



Susan Kent Reed, Children's Books Author, Retired Teacher, Urban Farmer
Introducing "Beatrice, the Hip Hop Bee"



Robert Heyduck, MS Agronomy, U of Nebraska, Medicinal Plant Specialist
"Oregano de la Sierra: Flavor, Beauty, Habitat Enhancement"



Ryan Hiles, NM Department of Agriculture, Invasive Pest Program Specialist
"New Mexico Apiary Updates"

Great speakers! Raffles! Honey! Vendors! and Time to connect!

Admission is \$30 for membership to the NM Beekeepers Association, or a donation.

South Broadway Cultural Center

1025 Broadway SE, Albuquerque, NM 87102



Workshop

11th Annual Intro to Bees and Beekeeping Workshop

The Dunn County Beekeepers are presenting an "Introduction to Bees and Beekeeping". The workshop is designed to provide the basic information necessary to start beekeeping in Wisconsin. Participants will be guided through their first year of beekeeping. The workshop is intended for those who have no experience with bees and beekeeping.

WHEN: Saturday, February 3, 2018, from 8:00 a.m. to 4:15 p.m.

WHERE: Menomonie Alliance Church, 502 21st St N., Menomonie WI 54751

COST: \$48.00 per person which includes meals, breaks, materials and course book.

\$8.00 for each additional family member,

OR \$25.00 for 4-H, FFA or Scout youth members

REGISTRATION DEADLINE: Saturday, January 27, 2018

The program is as follows:

- Introduction to Beekeeping as a Hobby
- Basic Beekeeping Equipment
- Basic Honeybee Biology and Diseases
- Starting Your First Honeybee Colony
- Lunch with Dunn County Beekeepers
- First Year Colony Management
- Round Robin Small Group Sessions

To attend the workshop, send a check and this registration form to:

Dunn County Beekeepers Attn. Mary Buschmann, N11901 130th St., Downing, WI 54734

Make check payable to: Dunn Co. Beekeepers

Or call 715-265-9284 for more information.



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UPCOMING EVENTS

JANUARY 2018

Kelley Beekeeping 101 & 201

Kentucky: Jan 6 & 20, 2018

For more information, visit: www.kelleybees.com

2018 ABF 75th Anniversary Conference & Tradeshow

Nevada: January 9-13, 2018

For more information, visit: abfconference.com

2018 AHPA 49th Annual Convention & Trade Show

California: January 9-13, 2018

For more information, visit: www.ahpanet.com

16th Annual Honey Bee Expo

West Virginia: January 27th, 2018

For more information, visit: movba.org

FEBRUARY 2018

5th Annual 2-Day Symposium

Virginia: February 2-3, 2018

For more information, visit:
halifaxbeekeepers.org

Intro to Beekeeping

Wisconsin: February 3, 2018

Tel: 715-265-9284

Free Beekeeping Course

North Carolina: February 3, 10, 17, 2018

For more information: mcdowellhoneybees.org

Big Bee Buzz

Oklahoma: February 23-24, 2018

For more information, visit: NEOBA.org

Nevada State Beekeepers Conference

Nevada: February 23-25, 2018

For more information, visit:
www.nevadastatebeekeepers.org

We'd love to share news of your upcoming events. Please send the event name, date, website and/or contact information by the 10th of each month for inclusion in the following month's issue.

Email information to: Editor@KelleyBees.com

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*Phone lines are open every Saturday. Except for the months of October, November and December whereas we will only be open the first Saturday of each month.