Hazard of a neonicotinoid insecticide on the homing flight of the honeybee depends on climatic conditions and Varroa infestation

The paradigm for all toxicological bioassays in the risk assessment of pesticide registration reflects the principle that experimental conditions should be controlled to avoid any other factors that may affect the endpoint measures. As honeybee colonies can be frequently exposed to bio-aggressors in real conditions, often concomitantly with pesticides, co-exposure to pesticide/bio-aggressors is becoming a concern for regulatory authorities. We investigated the effects of the neonicotinoid insecticide thiamethoxam on the homing performances of foragers emerging from colonies differentiated by health status (infestation with Varroa destructor mites, microsporidian parasite Nosema spp. and Deformed Wing Virus). We designed a homing test that has been recently identified to fill a regulatory gap in the field evaluations of sublethal doses of pesticides before their registration. We also assessed the effect of temperature as an environmental factor. Our results showed that the Varroa mite exacerbates homing failure (HF) caused by the insecticide, whereas high temperatures reduce insecticide-induced HF. Through an analytical Effective Dose (ED) approach, predictive modeling results showed that, for instance, ED level of an uninfested colony, can be divided by 3.3 when the colony is infested by 5 Varroa mites per 100 bees and at a temperature of 24 °C. Our results suggest that the health status of honeybee colonies and climatic context should be targeted for a thorough risk assessment.

Read more at https://www.sciencedirect.com/science/article/pii/S0045653519303534
Penn State Professor Joins us as Native Pollinator Advisor

Margarita López-Uribe, Assistant Professor, of Entomology at Penn State University has joined the Pollinator Stewardship Council as our Native Pollinator Advisor.

“Declines in bee populations worldwide have raised concerns about the environmental and economic consequences of pollination loss in natural and human-dominated ecosystems. I am interested in understanding how environmental change (e.g. land use, climate) and management (e.g. beekeeping practices) drive changes in population demography and health of wild and managed bee species. My ultimate goal is to contribute with informed strategies for conservation and restoration of bee populations and the ecosystem services they provide.”

Dr. López-Uribe uses molecular ecology approaches to investigate how human-driven environmental change affects managed and wild bees. She is currently investigating the effect of beekeeping practices and agricultural intensification on the demographic stability and health of honey bee and native bee populations. Dr. López-Uribe is interested in using citizen science to engage the public into pollinator research and to increase awareness about the environmental problems bees are currently facing.

The Pollinator Stewardship Council is very pleased to have Dr. López-Uribe join us as we work to protect managed and native pollinators.

Learn more about Dr. López-Uribe at https://ento.psu.edu/directory/mml64 and at her lab https://lopezuribelab.com/
The Pollinator Stewardship Council, Inc. Board of Directors is now calling for a moratorium on the use and registration of the neonic class of pesticides for the protection of pollinators, the food web, and the biodiversity of the ecosystem.

Together, we make a difference. I will support the Board of Directors fundraising campaign of 25¢ per hive to secure a staff scientist, and legal advisor to be the voice for our managed and native pollinators.

Enclosed please find my tax deductible support of $___________

Name______________________________________________________________
Address______________________________________________________________
City______________________________________   State ____  Zip___________
Email______________________________________________________________

Please include this information with your check and mail to:
Pollinator Stewardship Council, 1624 Idlewood Ave., Akron, OH 44313

Together, we make a difference! Thank you!
Adverse Experience Reporting Program in Australia

The Adverse Experience Reporting Program (AERP) is a post-registration program that assesses reports of adverse experiences associated with the registered use of a veterinary medicine or agricultural chemical.

It is vital to record, assess and classify adverse experiences to detect uncommon events not evident during the initial registration process of a product. The program provides a means of facilitating regulatory action that may be necessary to assure the continued safety, quality and effectiveness of registered products.

Anyone can report an adverse experience to the AERP, for example—farmers, pet owners, gardeners, veterinarians or the general public.

The AERP assesses each report of an adverse experience it receives. It then classifies the relationship between the veterinary medicine or agricultural chemical product and the adverse experience. This classification may cause the APVMA to confirm the registration of a product as safe and effective, or to request some changes to how the product is manufactured, packaged or used (and corresponding changes to label instructions and warnings). On rare occasions, the APVMA may cancel the registration of the product and remove it from the market.

To learn how an incident is reported in Australia go to https://apvma.gov.au/node/311

If you have a pesticide incident to report in the United States you can report it to the:

National Pesticide Information Center http://npic.orst.edu/incidents.html Reports filed with NPIC are sent to the federal EPA.

You should also report it to your State Pesticide Agency, contact information for the states can be found at http://pollinatorstewardship.org/wp-content/uploads/2018/05/Quick-Guide-to-Reporting-a-Bee-Kill-Incident-Final-122316.pdf

However, in the USA, by law, States do not have to report any pesticide incident to the EPA. If you experience a pesticide related incident, you must report it to two places: your State and the EPA.
Research

Chlorinated Byproducts of Neonicotinoids and their Metabolites: An Unrecognized Human Exposure Potential?

This is the first known study to report neonicotinoid metabolites in drinking water, and builds upon our prior research\textsuperscript{28} and a subsequent publication from Canada\textsuperscript{46} demonstrating neonicotinoids in drinking water. We also show that neonicotinoids and their known metabolites can form transformation products during disinfection and/or lime softening (hydrolysis at elevated pH) at timescales relevant to water treatment / distribution. The mammalian toxicity of transformation products formed during water treatment processes remains unknown. It is possible that chlorination of neonicotinoids and their metabolites will impact receptor binding interactions and alter their bioactivity relative to that of the parent neonicotinoids or known metabolites, a scenario that requires further investigation. Several transformation products identified (CLO 239a, CLO 239b, CLO-THX-H 270, IMI 246, THX-H 248, DN-IMI 245 and DN-275 IMI 279) appear to lose the nitro-group through chlorination or hydrolysis, and/or gain one or more chlorines—both characteristics that may increase mammalian toxicity.\textsuperscript{3,4,25,29,31,47} Additional studies are needed to better assess temporal and spatial trends in metabolite occurrence / toxicity of chlorinated DBPs formed during drinking water treatment (including synthesized standards), especially in waters impacted by parent neonicotinoid insecticides. READ MORE https://pubs.acs.org/doi/pdfplus/10.1021/acs.estlett.8b00706

Pilot Study of Pesticides in Washington State Stream Sediments

The Washington State Department of Agriculture (WSDA) has been implementing an ambient surface water monitoring program in agricultural and urban areas since 2003. The program has grown to include 14 sites and tests for 122 pesticides during the growing season (March-October). The program’s goal is to assess the frequency and magnitude of pesticide detections in surface waters. . .

Of the 93 samples collected, 12 unique compounds were detected in 28 of the samples. The current use insecticide bifenthrin, the legacy pesticide DDT and its degradates DDD and DDE were the most commonly detected, accounting for 36% and 49% of the total detections, respectively. Bifenthrin, a pyrethroid, was found at or above levels considered toxic to benthic invertebrates in 13 of the 16 samples in which it was detected. . .

Nearly half of the detections were of legacy pesticides, such as DDT and its breakdown products. Bifenthrin and chlorpyrifos are currently used pesticides that have been found in the surface water. Of the 10 sampling events in which both water and sediment were collected, only one had one detection of the same pesticide in both matrices.

READ MORE AT https://agr.wa.gov/FP/Pubs/docs/741-PesticidesInSedimentReport.pdf
Glyphosate: Health Concerns About the Most Widely Use Pesticide

U.S. Right to Know
by Stacy Malkan

Glyphosate, a synthetic herbicide patented in 1974 by the Monsanto Company and now manufactured and sold by many companies in hundreds of products around the world, has been associated with various health concerns. Glyphosate is best known as the active ingredient in Roundup-branded herbicides, and the herbicide used with “Roundup Ready” genetically modified organisms (GMOs).

Herbicide tolerance is the most prevalent GMO trait engineered into food crops, with some 90% of corn and 94% of soybeans in the U.S. engineered to tolerate herbicides, according to USDA data. A 2017 study found that Americans’ exposure to glyphosate increased approximately 500 percent since Roundup Ready GMO crops were introduced in the U.S in 1996. READ MORE at https://www.cornucopia.org/2019/01/known-health-concerns-about-glyphosate-the-main-ingredient-in-roundup/?utm_source=eNews&utm_medium=email&utm_content=2.2.19&utm_campaign=RoundupMORE

Eating an organic diet for one week is enough to lower toxin levels, study finds

While most people know they “should” be eating organic because, well, that’s what the health world tells us, the price tag for organic items is often a huge deterrent for many healthy eaters.

With the knowledge that pesticides cover nearly every inch of conventional produce, many studies have backed the benefits of eating an organic diet — some going as far as to say it can prevent cancer.

A new study published Tuesday by researchers out of the University of California at Berkeley and the University of California at San Francisco found that after less than one week of eating organic, toxin levels in the body were dramatically lowered.

Researchers examined four families from different backgrounds who ate a conventional diet for six days, then an organic diet for another six. By testing their urine before and after going organic, researchers found huge drops in bodily pesticides — pesky chemicals that have been linked to cancer, hormonal imbalance, and neurological disorders and more, MindBodyGreen reports.

After six days on the organic diet, overall pesticide levels dropped 60.5 percent in both the adults and children, Civil Eats reports. Though the most notable statistic was a 95 percent drop in malathion, which is a toxin linked to brain damage in children.
This study provides important information to consumers seeking to limit their exposure to the hundreds of millions of pounds of pesticides and herbicides used in the U.S. today, the researchers explain. While the study reaffirms previous research, it also breaks new ground by testing for newer classes of pesticides that are now the most widely used to kill insects, namely neonicotinoids and pyrethroids, Civil Eats notes.

It’s also worth noting that researchers focused primarily on exposure, not health outcomes, when it comes to eating organic. Though aside from reductions in dangerous toxins within the body, going organic can boost the health of the planet. Organic farming is less pollutive of water, supportive of biodiversity, preserves quality of soil, and is generally more sustainable in the long run, MindBodyGreen notes.

If this study strikes a cord with you over concern for your health or the health of your family, the Internet is filled with tips for eating organic on a budget — that way price is no longer a deterrent. The Cornucopia Institute has a plethora of tips here, including shopping seasonally and buying in bulk. (Story from https://www.cornucopia.org/2019/02/your-pesticide-levels-can-drop-dramatically-by-eating-all-organic/)

HONEY Convention- March 22-23, 2019

Come join hundreds of beekeepers at HONEY Convention 2019! On March 22-23, 2019. Speakers include:

Dr. Huang
Harlen Breeden
Kent Williams
Dr. Jones
Michael Bush
Freddy Proni
Phil Craft
Michele Colopy

Over 30 more speakers will help you improve your beekeeping from getting started in beekeeping to advance topics such as queen grafting and the newest research in the field. There will also be hands on demos, live bee installations, competitions and 30+ vendors! Join us for 30 raffle drawings- to include an extractor, 2 full hives WITH bees and much more. Register today at honeyconvention.com.

Spring into beekeeping at the HONEY Convention March 22-23, 2019 in Knoxville, TN. The HONEY Convention at the Rothchild Conference Center in Knoxville, TN is just 2 hours from:

South Pittsburg, TN  Ellijay, GA  Cashiers, NC
Sequatchie, TN  Kennesaw, GA  Pisgah Forest Farms, NC
Murfreesboro, TN  Lawrenceville, GA  Brevard, NC
Tullahoma, TN  Acworth, GA  Shooting Creek, NC
Kimball, TN  Rome, GA  Cowee, NC
Morrison, TN  Winder, GA  Zirconia, NC
Lebanon, TN  Roswell, GA  Lenoir, NC
Jamestown, KY  Duluth, GA  Coburn, VA
Nicholasville, KY  Tilton, GA  Castlewood, VA
Glasgow, KY  Cartersville, GA  Woodstock, GA

Tickets are available online now at honeyconvention.com.
Strategic Planning for a Growing Beekeeping Association

As nonprofit member associations the main objective of the organization is to serve its members. Beekeeping has expanded, beekeepers are diverse, and the public looks to beekeepers to educate others, themselves, policy makers, and fellow stakeholders about the past, present, and future of beekeeping.

Strategic planning helps the beekeeping association look to the future, by examining its past and present. Strategic planning ensures there will be a future to the organization.

It is important for all organizations to invest the necessary time “in crystallizing its ideas, and articulating them on paper.” The vision statement develops through a process called strategic planning. According to a briefing paper by TCC group, a “strategic plan is a tool that provides guidance in fulfilling a mission with maximum efficiency and impact.” Strategic plans will define:

- Specific goals
- Action steps to accomplish goals
- Resources needed to meet goals.

Typically, strategic plans are “reviewed and revamped” every three to five years so the current Board understands the role of the organization, and to ensure they are serving their members based on current needs and issues.

Key to the success of a strategic plan is acknowledgement of it by the Board. If the Board does not participate in its development, and the Board does not take action with the strategic plan, then it will fail. Volunteer work is still work! It takes time, effort, thought, understanding, compromise, attention to detail, and a sense of humor. Leaders on the Board and within the membership are all responsible for ensuring the mission of the organization is met. “No organization exists in a static environment. Social, political and economic trends continually impact the demand for its offerings and services.” To develop strategy, the bee club leaders have to understand their past and present, as it affects the future of the association. Strengths, weaknesses, opportunities, and threats to the beekeeping association must be discussed, examined, and analyzed. It is important for bee club leaders to begin the strategic planning process as a group effort. No one should expect to just state, “this is what we should do;” as they will have to back up that idea with a proposal, a budget, a timeline, and be prepared to lead the project. Board members are supposed to work together. Bee club Boards are “little democracies,” so everyone has their job to do, and everyone needs to work together for the common good of serving the mission and the members of the beekeeping association.

2 Ibid., page 2
3 Ibid, page 2

“I’d like people to understand that hearing is not only for ears.”

Even on the quietest days, the world is full of sounds: birds chirping, wind rustling through trees, and insects humming about their business. The ears of both predator and prey are attuned to one another’s presence.

Sound is so elemental to life and survival that it prompted Tel Aviv University researcher Lilach Hadany to ask: What if it wasn’t just animals that could sense sound—what if plants could, too? The first experiments to test this hypothesis, published recently on the pre-print server bioRxiv, suggest that in at least one case, plants can hear, and it confers a real evolutionary advantage.

Hadany’s team looked at evening primroses (Oenothera drummondii) and found that within minutes of sensing vibrations from pollinators’ wings, the plants temporarily increased the concentration of sugar in their flowers’ nectar. In effect, the flowers themselves served as ears, picking up the specific frequencies of bees’ wings while tuning out irrelevant sounds like wind. READ MORE at https://www.cornucopia.org/2019/01/flowers-sweeten-nectar-on-demand/?utm_source=eNews&utm_medium=email&utm_content=2.2.19&utm_campaign=NectarMORE

Pollinator Week: How will you educate & advocate in your community

What are you doing for Pollinator Week?
June 17-23, 2019

- Invite the public to your club meeting
- Give a honey bee presentation to a Scout group
- Host an educational table at the zoo, conservatory garden, museum
**Organic Strategies for Community Environmental Health:**
Eliminating pesticides where we live, work, learn and play

Convened by Beyond Pesticides and the Children’s Environmental Health Center at the Mount Sinai Institute for Exposomic Research

The 37th Forum will be a two-day, multi-media event on April 5th and 6th, 2019. The Forum brings together keynote speakers, plenary discussions and workshops on science, policy, and action to protect the environment and people from toxic pesticides and advance policies and practices for healthy communities.

On Friday morning, we are offering a field trip where we will visit local sites of interest. If you would like to see organic management styles firsthand and discuss urban gardening challenges and successes, please join us! Together, we will meet the practitioners and community organizers engaged in the daily work of movement building. For more information and to register go to [https://www.beyondpesticides.org/programs/national-pesticide-forum/overview-201-(3543)]

---

**A Short Article on “Agriculture as the Solution to World Problems”**

**Agriculture as the Solution to World Problems**

Feb. 27, 2019

From Blue Dasher Farm, Dr. Jonathan Lundgren, Director/CEO [https://www.bluedasher.farm](https://www.bluedasher.farm)

Our planet faces numerous large scale and inter-related problems, including climate change, large scale land use change, invasive species, pollution, and human health problems. Alarmingly, we are currently undergoing widespread and major biodiversity losses across the planet. We often hear about pollinator declines, but the issue is much bigger than just a bee problem. Many habitats, and groups of plants and animals are undergoing range constrictions, displacements or complete extinctions in the U.S. and around the world.

Many of these problems are inherently linked to our food production system. Representing 34% of the land surface of our planet, agroecosystems (cropland and rangeland) are the largest biome on planet Earth. Because of the scale, it is arguable that decisions made on these agroecosystems affect nearly every other habitat and species on the planet either directly or indirectly.

But even diversity within agroecosystems is in steep decline. In the U.S., we have experienced major shifts and perturbations to our food production system since 2007; federal ethanol policies have been linked to these perturbations by mandating a market for corn grain-based ethanol. Soybeans are produced on a similar number of acres as before the EISA policy took effect, but nearly every other crop is planted on substantially less acreage than it was. What is replacing these crops? Corn has increased in acreage by 14% since 2007, and this single plant species is currently planted on 5% of the land surface of our country.
There are consequences to this simplification. Corn, soybeans, and cotton are planted on 9% of the land surface of our country. Three species where once there were hundreds. And the majority of acres of all three are genetically modified to resist pests. All are treated with herbicides. All are maintained with chemical fertilizers. And nearly all are treated with neonicotinoid seed treatments. These inputs are the only way that these simplified systems can remain productive. **We have replaced biodiversity with technology.**

I question this paradigm of food production. I question the simplification of our landscapes. I question the unnecessary use of insecticides and GM crops. And I question the use of corn for ethanol. As a result of this, everyone that I care about was attacked either directly or indirectly by my employers with the USDA. Our spirits were crushed. And I was punished for conducting science and publicizing results that questioned this paradigm. But in my exploration for answers, I have discovered something that is both amazing and gives me a tremendous feeling of hope. I have come to see that nearly every major problem that we face as society can be reduced or solved entirely through better management of our food production systems.

Conceptually, farm productivity and environmental health can be fostered with two simple concepts. Increase diversity. Reduce disturbance. Disturbance means things like reducing or eliminating tillage and pesticide use. Biodiversity can accomplish many of the things we rely on inputs for in our current paradigm. Fertilizer comes from animals and plant matter. Predators and competition are nature’s insecticides. Herbivores and competition are nature’s herbicides. The importance of plant diversity in and near farmland cannot be overstated.

Food production in nature’s image is not simply in my imagination. There are farmers, ranchers, and beekeepers around the country that are already making money by doing this, and they have become my friends (see a list of links at [https://www.bluedasher.farm/news/2019/2/27/a-short-article-on-agriculture-as-the-solution-to-world-problems](https://www.bluedasher.farm/news/2019/2/27/a-short-article-on-agriculture-as-the-solution-to-world-problems)). Although every region and farm operation differs in its circumstances, there are some key elements to ecologically based farming that are consistent. Don’t till the soil, or reduce your tillage substantially. Cover the soil with plants all the time. Integrate animals into cropland. Increase perenniality areas near farmland. So I don’t need a crystal ball to see the future of farming. I can go to the farms where the future is already happening.

But what is alarming is that science often doesn’t support these innovative producers. Quite the opposite. Because the farmers on the leading edge of regenerative agriculture are doing things on their farms that science says can’t happen. And when scientists can’t figure out how to produce crops ecologically on their research farms, the scientific data is thrown down as a hurdle that impedes innovation. Risk Management Agency struggles with insuring farmers that are trying to innovate agriculture by thinking outside the current paradigm. Farm Service Agency struggles to lend money to operations that are producing new products or old products in new ways, because state averages say that these strategies aren’t profitable under the current paradigm. Much of the infrastructure and science that is going on is intended to support the current monoculture-centric paradigm, when what we should be creating is an entirely new one.

We require a transformational shift in food production. And transformational changes do not come from the government and they do not come from large research institutions. Transformation of this nature comes from the bottom up. It comes from the farmers and the beekeepers and the ranchers themselves. And it is happening right now.

To support this incredible innovation, I have a vision for the future. A network of research, education, and demonstration farms across the country. This network would link the top agroecologists in the world with the leading producers in regenerative agriculture to create **centers for excellence** in biodiverse farming. This network could respond to local needs and circumstances to be as relevant as possible, while upholding the central philosophies and practices of regenerative agriculture. And this network of farms would also be learning centers where the next generation of students, farmers, and scientists can learn and see the new paradigm in food production. The first of this network is Blue Dasher Farm ([www.bluedasher.farm](http://www.bluedasher.farm)).

In summation, we can produce food **AND** conserve the environment. I have seen it. And I will devote the rest of my life to supporting it. It is the right thing to do and the right time to do it. **For links and resources go to [https://www.bluedasher.farm/news/2019/2/27/a-short-article-on-agriculture-as-the-solution-to-world-problems](https://www.bluedasher.farm/news/2019/2/27/a-short-article-on-agriculture-as-the-solution-to-world-problems)**
Our Members /Supporters

People and Pollinators Action Network  
http://www.peopleandpollinators.org/

Seib’s Hoosier Honey  http://www.seibshoosierhoney.com/
Strachan Apiaries  https://www.strachanbees.com/
Hackenberg Apiaries  http://hackenbergapiaries.org/


Old Mill Honey Co.
Wind River Honey Co.
Miksa Honey Farms
Sunshine Apiary, Inc.
Hiatt Honey LLC
Rick Smith
Bob McDonell
Headwaters Farm
Bret Adee
Robert Bergman
Charles Scott
Tom Sullivan
Brians Bee Haven
Acorn Beekeeping Equipment, LLC
Jubilee Honeybee Co., LLC
Joe Hurley
R.T. Marshall
Vincent Aloyo
Janet Katz
Lynn Sparks
Laura Wyatt
Sustainable Futures Fund
Scotts MiracleGro Foundation
International Mating Nucs
Mel Disselkoen
Ruby’s Apiaries
S & M Honey
Sammy Ramazani
The Studio Digital  http://www.thestudiodigital.com/
Beekeeping Insurance Services  http://www.beekeepingins.com/
Gene Brandi Apiaries
The Beekeepers of Indiana  http://indianabeekeeper.com/
The Organic View  https://www.theorganicview.com/
Bee Squared Apiaries  https://bethsbees.com/
Fleur-de-lis Apiary
John Accornero, Lee Albritton, Linda & Manley Bigalk, William Cannon
Amy Davis, Margaret Donharl, Sara Grimm, Lynn Hazelrigg
David Hill, Janet Hofman, Ray Hopper, Linda Howit, Eric Kimble,Leigh Wiley, Paula Breen, Bob Brandi,
Susan Rhodes, Janel Rogers, Wayne Ross, Susan Rudnicki, Kim Schneider, Jacob Troyer, Tom Theobald,
The Pollinator Stewardship Council, Inc. Board of Directors is now calling for a moratorium on the use and registration of the neonic class of pesticides for the protection of pollinators, the food web, and the biodiversity of the ecosystem.

Together, we make a difference. I will support the Board of Directors fundraising campaign of 25¢ per hive to secure a staff scientist, and legal advisor to be the voice for our managed and native pollinators.

Enclosed please find my tax deductible support of $__________

Name______________________________________________________________
Address__________________________________________________________
City___________________________________________________________ State ____ Zip___________
Email______________________________________________________________

Please include this information with your check and mail to:
Pollinator Stewardship Council, 1624 Idlewood Ave., Akron, OH 44313
Together, we make a difference! Thank you!

Your donations make a difference for honey bees and native pollinators.

Make your tax deductible donation today!