

# UPDATES ON HONEY BEE HEALTH PROGRESS



Dear friends,

Cliché but true, time flies when having fun and making a difference in honey bee health. Since the groundbreaking Honey Bee Health Summit two years ago, I have had the pleasure of partnering with new, like-minded people, companies and organizations that historically have never worked together, collaborating to improve honey bee health and change the world. This is fun and confirming for me.

The overarching message that came out of the Honey Bee Health Summit was....we need to do this again. We need to maintain these contacts, we need to build personal and business relationships and have the opportunities to sustain them. This message was heard loud and clear. We at Monsanto acted on this call by proposing and supporting the creation of the Honey Bee Health Coalition in 2014.

Since then, the beekeeping industry, ag industry, environmental NGO's, government, and many others that support honey bee health, have continued to come together with the realization that the best way to make a difference is to identify shared goals. The progress that has been made already, by working together towards achieving our shared goals, has been amazing.

The purpose of this newsletter is to highlight some of our progress and to hopefully encourage more fun dialogue and collaboration. Going forward, this newsletter will be sent out twice a year. In the meantime, please let me know if you have any questions about the work being done or if you have ideas for what you'd like to see in future newsletters. Feel free to contact me at (314) 277-1537 or [gerald.w.hayes.jr@monsanto.com](mailto:gerald.w.hayes.jr@monsanto.com).

Thank you,  
Jerry Hayes  
Monsanto Honey Bee Health Lead

## MILESTONES

**June 2013**

[Honey Bee Health Summit](#)

**October 2013**

[Monsanto Announces Clinton Global Initiative Commitment to Action on Honey Bee Health](#)

**June 2014**

[The Keystone Center Announces a New Honey Bee Health Coalition](#)

**July 2014**

[Jerry Hayes speaks at the Aspen Ideas Festival about the importance of bee health for agriculture](#)

**October 2014**

[Honey Bee Health Coalition Releases 'Bee Healthy' Roadmap to Improve Honey Bee Health](#)

## HIGHLIGHTS

### New Honey Bee Health Coalition to Address Honey Bee Health Challenges

Following the 2013 Honey Bee Health Summit convened in St. Louis by the Honey Bee Advisory Council and Project Apis m., Monsanto formalized its pledge to work on improving honey bee health by making a [Clinton Global Initiative Commitment to Action](#). As a part of this commitment, the [Honey Bee Health Coalition](#) was formed by the [Keystone Policy Center](#) (formerly The Keystone Center) to bring together beekeepers, farmers, researchers, government agencies, agribusinesses, conservation groups, manufacturers and consumer brands, and other key partners to explore solutions to honey bee health.



More than 30 organizations and agencies form the [Coalition](#), with the goal of reversing recent declines in honey bee health and ensuring the long-term health of honey bees and other pollinators. The Coalition is focusing on accelerating collective impact to improve honey bee health in four key areas: forage and nutrition, hive management, crop pest management, and outreach, education and communications. The Coalition believes that more can be accomplished through collective action than any one group can achieve on its own.

### Honey Bee Health Coalition Priorities



#### Forage & Nutrition

Ensure honey bees have access to a varied and nutritious diet throughout their lives



#### Hive Management

Put the best available tools, techniques and technologies in the hands of beekeepers so they can better manage their hives



#### Crop Pest Management

Control crop pests and safeguard pollinator health



#### Outreach, Education & Communications

Work together to improve honey bee health

## LOOK US UP

8/14/2015

University of Florida  
Bee College

8/16/2015-8/18/2015

Colorado State  
Beekeepers  
Association

9/15/2015

Savannah  
Beekeepers  
Association

9/26/2015-9/29/2015

Clinton Global  
Initiative Annual  
Meeting  
[Learn More](#)

9/15/2016

Virginia Beekeepers  
Association

Information on  
Monsanto's honey bee  
health initiatives are  
also available on the  
[Honey Bee Health](#)  
page on Monsanto's  
[website](#). We'd love to  
see you in person soon  
as well!

The Coalition has made quick progress: it issued a [Bee Healthy Roadmap](#) outlining a holistic strategy for tackling the multi-factorial issue of declining honey bee health; launched a new [website](#); launched strategies in forage and nutrition, including recommendations regarding USDA conservation programs, endorsements for public-private forage projects, and pre-competitive dialogues on nutrition supplements; and is in the process of executing Bee Understanding, a pilot job swap program to create shared understanding between players across the food chain that will be filmed and shared broadly upon completion. The Coalition also made [recommendations](#) to President Barack Obama's [Pollinator Health Task Force](#) on improving forage and habitat for honey bees and other pollinators through the USDA conservation programs, public-private partnerships and research. On May 19, 2015, the Pollinator Health Task Force released the [National Strategy to Promote the Health of Honey Bees and Other Pollinators](#), which highlighted the importance and benefits of public-private partnerships to improve pollinators' health and habitats. Notably, the Strategy identifies several partnerships that are making significant contributions to pollinator health, including the Honey Bee Health Coalition. The Coalition provided this [response](#) to the Strategy.

## Honey Bee Advisory Council News

In 2012, Monsanto joined forces with beekeeping experts to form the Honey Bee Advisory Council (HBAC). The HBAC brings together thought leaders on honey bee health in the academic, non-government organization (NGO), private and government sectors. Through the counsel of these experts, Monsanto has learned a great deal about the complex challenges facing beekeepers. In fact, the HBAC guides the direction of Monsanto's efforts to address honey bee health issues. This year, we are excited to welcome the newest member, Mr. Pete Berthelsen, director of Habitat Partnerships with Pheasants Forever, to the HBAC!



Members of the HBAC include:

- Diana Cox-Foster, Ph.D., professor, entomology, Penn State University
- David Mendes, commercial beekeeper and past president of American Beekeeping Federation
- Gus Rouse, honey bee queen breeder and owner of Kona Queen Hawaii, Inc.
- Dennis vanEngelsdorp, Ph.D., assistant research scientist, entomology, University of Maryland
- Larry Johnson, row crops grower and commercial beekeeper
- Pete Berthelsen, director of Habitat Partnerships, Pheasants Forever

## Advances in Honey Bee Health Research



Over the past two years, Monsanto has continued to invest in the research and development of products capable of addressing the most pressing threats to honey bee health. We are also working to develop analytics to help better understand and measure hive health. Here are a few highlights of the research taking place at Monsanto:

### From the lab to the field

Currently in the first phase of development, Monsanto's BioDirect™ Bee Health product<sup>1</sup> aims to improve the health and survival of honey bees by managing *Varroa* mites and the viruses they transmit. While the initial results of research under controlled laboratory conditions are promising, field testing in bee hives is essential to demonstrate meaningful, real-world results. This year, subject to regulatory approval, we hope to be able to perform field studies at several locations in the U.S. as a part of our commitment to develop a safe, effective and sustainable BioDirect product to help bees and beekeepers. Because this product has not been approved by the U.S. Food and Drug Administration, no claims or representations concerning the product's use can be, or are being, made.

### Field analytics to evaluate bee health

It is now generally understood that many factors interacting in complex ways can impact bee health. Some of the identified factors are pests and pathogens, such as *Varroa*, bee viruses, Nosema, beekeeping practices, hive nutrition, extreme weather and other environmental conditions, like pesticide exposure. In this multi-component system, precise, objective methods to estimate hive strength and status are essential in order to measure and interpret hive health.

To meet this need, we have developed and are continuing to improve scalable, field-ready analytical tools that allow us to estimate colony health without disrupting the bees.

### Peer-reviewed scientific report on colony loss predictive model

A recent study by Monsanto scientists published in the PLoS Pathogens journal confirmed that *Varroa destructor* and bee viruses are significantly correlated with colony losses. To get a better understanding of the multifactorial nature of colony losses over the last decade, our team of researchers performed a large-scale controlled field trial, in which different bee pathogens, bee populations, and winter weather conditions were monitored at three locations across the U.S. The comprehensive dataset allowed us to develop a model of colony losses and to show that the levels of *Varroa destructor* and bee viruses may explain up to 70 percent of colony losses, further supporting the claim that insufficient control of the virus-vectoring *Varroa* mite will result in increased hive losses. The predictive model also indicated that a combination of stressors, rather than a single factor appears to impact hive health.

The full study "Prospective Large-Scale Field Study Generates Predictive Model Identifying Major Contributors to Colony Losses," April 2015 can be accessed [here](#).

<sup>1</sup> BioDirect™ is a Monsanto technology platform that may enable the development of future products. The information presented herein is for educational purposes only, and is not and shall not be construed as an offer to sell or a recommendation to use any product for any purpose whatsoever. Commercialization of any products that may be derived from BioDirect™ technology is dependent on multiple factors, including the successful conclusion of the regulatory process. Animal health products must be approved by the U.S. Food and Drug Administration, the U.S. Department of Agriculture and/or other regulatory before they may be sold or marketed.

Please visit our Honey Bee Health page for additional information on Monsanto's honey bee health initiatives.

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