



**Testimony of Bayer  
before the  
Horticulture, Research, Biotechnology and Foreign Agriculture Subcommittee  
of the House Agriculture Committee**

**Current Research and Application of Management Strategies to Control Pests  
and Diseases of Pollinators**

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My name is Dr. David Fischer and I am providing this testimony as the Director of Pollinator Safety, on behalf of Bayer. I have been involved in the field of environmental toxicology and risk assessment for 27 years; published more than 20 peer-reviewed scientific papers and have supervised hundreds of studies evaluating the effects of crop protection products on pollinators. I have led or participated in numerous scientific forums on bee health research and am responsible for the management of Bayer's Bee Care Center in North America.

Bayer welcomes the invitation to appear before the United States House of Representatives Subcommittee on Horticulture, Research, Biotechnology, and Foreign Agriculture, to review current research and management strategies regarding insect pests and pollinators. For more than 25 years, Bayer has been committed to environmental stewardship and the protection of beneficial insects. We recognize the importance of honey bees to agriculture and fully support collaborative efforts to promote pollinator health and sustainable agricultural practices.

Of the many insect pollinators, none is more valuable to agriculture than the honey bee. The value of these insects (as measured by crop yield and quality) has been estimated at \$15-20 billion annually. Honey bees are important not only because they are efficient and general pollinators, but also because their colonies can be managed and moved wherever needed, which is especially useful given the demanding requirements for pollination services in American agriculture. The utility of these pollinators is not without its challenges, however. Commercial beekeepers have the difficult job of maintaining colony health over diverse geographies, often while facing unfavorable environmental conditions.

The number of honey bee colonies in the U.S. steadily declined from a peak of 5.5 million in 1950, primarily due to a reduced post-war need for honey as a sugar replacement and a decreased interest in beekeeping. Since the late 1990s, the number of managed colonies has stabilized at around 2.5 million – more than half of which are needed annually to pollinate the California almond market. Although colony losses of 15 percent are not unusual following the winter season, bee losses in the U.S. have averaged around 30 percent in recent annual surveys. Fortunately, beekeepers have been able to build up their colony numbers to meet crop pollination demands, but such losses highlight the need for more effective measures to promote bee health.

The first step in addressing this problem is the recognition that no single factor is solely responsible. Most scientists and bee experts believe that numerous stressors can negatively impact honey bee health – including parasitic mites, diseases, adverse weather, habitat loss, crop and hive protection products, nutritional deficiencies, and hive management practices. It is important to note that not all factors have equal significance to colony health, nor can the effects of some be realistically mitigated (e.g. adverse weather). It is equally important to understand that the solution to bee health requires a comprehensive approach.

Knowing the factors that affect bee health is crucial, but determining the relative importance of each is even more significant, as it provides a clear roadmap to effective management. A broad stakeholder group, including members of the crop protection industry, are working with our



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regulatory agencies to improve our understanding of pollinator risk assessment, particularly as it relates to agricultural insecticides. Contrary to the opinion of some anti-pesticide groups, extensive research has shown that these products do not represent a long-term threat to bee colonies. Comprehensive reviews of studies and databases comprising 15 years of research were recently published by a diverse group of researchers and directly challenge unsubstantiated claims against pesticides as a significant cause of colony decline.

Despite the absence of a clear connection to colony health, our industry will continue to work with regulators to avoid unwanted pesticide exposures, through effective product labeling and the implementation of meaningful stewardship actions that help minimize harmful interactions. We believe these measures have been quite successful, as the number of pesticide exposures to foraging bees is relatively rare, especially when considering the many millions of acres that are treated each year. Although any loss of bees associated with agricultural production is of concern, it is important to remember that infrequent accidental exposures are not indicative of the general health of honey bee colonies.

If the use of agricultural pesticides is not a major factor, then what is responsible for the decline seen in honey bee health? We may be closer to understanding this phenomenon than some might think. Large multi-factorial field research studies conducted in the U.S., Canada, Belgium, France and Germany all report that poor bee health correlates well with presence of parasitic mites and bee diseases. Correlation does not mean causation, but it does provide a useful map in attacking this important problem. This is especially significant when considering the biology and impact of the Varroa mite parasite on honey bee colonies in North America.

The Varroa mite is an exotic parasite introduced to North America during the 1980s. It feeds on honey bees and reproduces in the developing bee brood, while transmitting serious diseases. Immediately following its introduction, the number of colonies in Canada and the United States dropped precipitously, as beekeepers struggled to find a way to manage this destructive pest. A primary method of controlling Varroa infestations is through the use of miticides applied directly to the hive, but proper monitoring and timing are crucial. Though the use of miticides can be effective, resistance management and the lack of suitable alternative methods remain a concern among beekeepers.

The U.S. Department of Agriculture (USDA) and the Agricultural Research Services (ARS) have been at the forefront of this issue. The 2013 report from the National Stakeholders Conference on Honey Bee Health provided a comprehensive assessment of the most important factors affecting colony health. Of particular concern, as noted in the report, is the recognition of the Varroa mite as the "single most detrimental pest of honey bees" and one most closely associated with overwintering colony decline. Recent scientific research has shown that the winter survival of honey bee colonies is largely dependent on the level of Varroa infestation and the higher colony losses seen in recent annual surveys appear to support this conclusion.



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Understanding the impact of this parasite and how best to manage its destructive potential remains a critical knowledge gap in our effort to improve honey bee health. As a follow up to the stakeholder report, the USDA recently sponsored a Varroa Summit, providing a forum for international experts to discuss areas of research that one day may provide relief for one of the most persistent problems facing our nation's beekeepers. Our success in combating this pest will only come from a continued focus and cooperative effort among all bee stakeholders.

Although the effects of the parasitic Varroa mite and its associated diseases are among the most significant threats to honey bee health, other factors require serious attention. Recently, representatives from our industry participated in a meeting with the Administration's Office of Science and Technology Policy (OSTP) and Domestic Policy Council (DPC) to discuss federal initiatives on pollinator health and areas of potential collaboration with agricultural interests. Part of this discussion centered on initiatives by the Natural Resource Conservation Service (NRCS) to promote increased forage options for commercial beekeepers, as well as the management of public land to increase available forage for pollinators.

Initiatives aimed at Varroa mite management and increased forage options for bees can have a positive impact on pollinator health and sustainability. However, more research is needed to fully evaluate the effectiveness of these measures, especially under real-world conditions. To accomplish this objective, engagement by all agricultural stakeholders is essential.

As a leader in the agricultural industry, Bayer is committed to finding solutions to improve honey bee health. Bayer's **Bee Care Program** was established to bring our experience and knowledge of bee health under one coordinated initiative. This effort includes the following:

- The **North American Bee Care Center** is a \$2.4 million state-of-the-art facility that opened on April 15 at our Research Triangle Park, NC, headquarters. The center brings together collaborative research and education resources fully dedicated to bee health, housing a full laboratory and research apiary, honey extraction and workshop space, along with offices, meeting rooms, and interactive displays for pollinator research, education and training.
- Bayer has developed a new seed application technology to help reduce potential exposure to honey bees during seed planting. This **Fluency Agent** has been shown to significantly reduce dust and insecticide exposure when compared to the standard lubricants used by farmers to improve flowability and planting uniformity.
- As part of our commitment to research and stewardship, Bayer developed a **Sentinel Hives Program**, which is designed to monitor the health of selected colonies in North America associated with agricultural production. Working collaboratively with beekeepers, this ongoing initiative will evaluate best management practices to improve colony health.
- Bayer's novel "**Varroagate**" technology represents a potential new tool to aid beekeepers in managing destructive Varroa mite populations through an innovative means of limiting varroa infestations resulting from mites carried by foraging bees to the hive.

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- Bayer has trained more than 350 of its employees in North America as “**Bee Care Ambassadors**” to promote bee health awareness in their local communities.
  - Our scientists collaborate with other researchers and participate in major scientific forums to remain current on the latest advances, as well as identify areas of fruitful bee research.

Other companies in our industry are engaged in similar activities, working with multiple stakeholders to promote bee health. Because of the inherent complexity and broad ramifications associated with pollinator health, state and federal government will continue to play a critical role in helping to support both bees and agriculture. Our industry is committed to stewardship and the protection of beneficial insects and we look forward to working with our government agencies in measures that protect bees and ensure agricultural sustainability.

Honey bees and crop protection products are both critical to modern agriculture. Although many issues associated with honey bee health are not new, the demand for pollination services has never been greater. It is only through a collaborative effort involving government, university research, private industry, commercial beekeepers and farmers that we can hope to protect this vital resource and ensure that American agriculture remains the envy of the world.

Thank you once again for the opportunity to address this committee.