Pollinator Health Fund

A Foundation for Food and Agriculture Research Initiative

The Pollinator Health Fund is a major new initiative from the Foundation for Food and Agriculture Research (FFAR). Established in response to the increasingly visible agricultural issue of declining pollinator health, this program focuses on applied research that addresses the social and economic realities faced by beekeepers, farmers, ranchers, private businesses and others engaged in working toward addressing this problem.

The Pollinator Health Fund will bring together major stakeholders from the academic, nonprofit, public and private sectors to explore how to improve pollinator health by:

- Understanding Multiple Interacting Stressors
- Best Management Practices and their Application
- Technology Transfer
- Outreach and Education

The Crisis in Pollinator Health

On June 20, 2014, President Obama issued a Presidential Memorandum calling for a Federal strategy to promote pollinator health. Acknowledging the critical role pollinators play in economic and daily life, the President urged Federal departments to address devastating pollinator losses by creating the Pollinator Health Task Force. This Task Force, representing a broad swath of Federal organizations, the Environmental Protection Agency (EPA), the U.S. Department of Agriculture (USDA), the Department of State (DOS), and the National Science Foundation (NSF), has established three specific goals for addressing pollinator health:

1. Reduce honey bee colony loss to no more than 15% during winter
2. Increase the Eastern population of the monarch butterfly to 225 million butterflies
3. Restore or enhance seven million acres of land for pollinators.

Total US managed honey bee colonies Loss Estimates
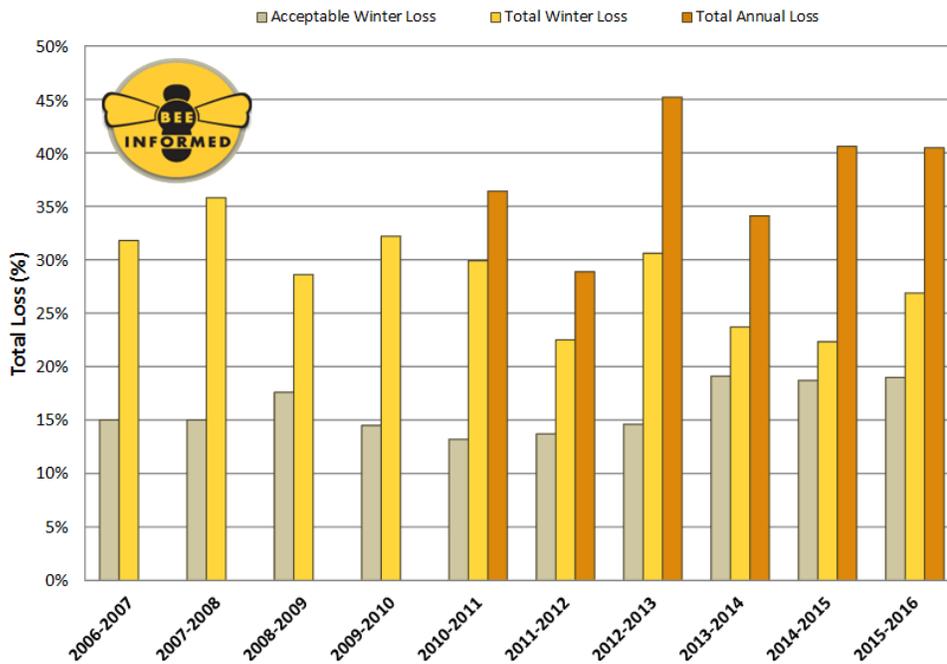
Source: The Bee Informed Partnership

Interventions like the Pollinator Health Task Force, and now the Pollinator Health Fund, highlight the importance of promoting pollinator health. As an essential component of natural and agricultural ecosystems, pollinators, such as birds, bees, bats, butterflies, moths, beetles and other animals, are needed for fruit and seed production. Globally, 70% of crops used for human consumption rely on pollinators.[1] The ecosystems and natural habitats surrounding these crops depend on pollinators as they sustain the continued growth and development of natural plant-life.

If pollinator decline continues, it could be detrimental to the environment and agricultural output, as pollinators contribute over $200 billion to crop production[2]. Previous research has identified many potential causes of this rapid decline, ranging from the use of insecticides to climate change; yet, how those stressors interact with each other is still an active area of research. Beekeepers, growers, and land managers need new scientifically-grounded information and technology to modify their current practices; without such information, and subsequent application, pollinator populations, their habitats, and global crop production will become increasingly vulnerable.

About the Pollinator Health Fund

The Pollinator Health Fund will focus on identifying applied research projects that contribute to understanding and improvement of pollinator health while addressing the social and economic realities faced by beekeepers, farmers, ranchers, private businesses and others. By establishing a $20 million dollar fund, $10 million from FFAR and the remaining 50% from other external funders, FFAR will address four areas crucial to better understanding the decline in pollinator health and how to effectively address it:

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[1] Klein A.M., Vaissière B. et al. 2007. "Importance of pollinators in changing landscapes for world crops". Proceedings of the Royal Society B: 274, 303–313.

[2] Gallai et al. 2009. Economic valuation of the vulnerability of world agriculture confronted with pollinator decline. Ecological Economics 68: 810-821.

Research Areas

1. **Understanding Multiple Interacting Stressors**

   No single factor is responsible for pollinator losses. Pests, pathogens, land use, agrochemicals, nutrition, interspecific interactions, and climate change are just a few of the factors affecting pollinator health. The character of these factors and how they interact will be influenced by the biotic and abiotic environment that pollinators experience. Studies that inform management for pollinator health must take into account interacting stressors. The focal stressors for a given project should vary according to their relative importance in a region, cropping system, operation size, etc.

   Proposed Metrics: Use of data or research outcomes in the development of best management practices or technology; citation of published results; pollinator health metrics at the individual and/or colony and population level.

2. **Developing Best Management Practices and their Application**

   Best management practices guide beekeepers, growers, and land managers on how to improve the health of pollinators. These practices can range from integrated pest management regimens to seed mixes that provide forage for managed and native pollinators. While there are many sets of best management practices available for pollinators, very few have been scientifically vetted through applied research studies to ascertain which practices are best, under what circumstances, and with what expectation of pollinator survival and productivity.

   Insights from experience can inform experimental management practices, but developing a mechanistic understanding through science will allow users to tune these management practices to a variety of agricultural systems and operations. Studies to develop best management practices should be interdisciplinary, accounting for the biological, social, and economic dimensions of efforts to improve pollinator health. They also must engage private partners to test practices in real world situations. For habitat restoration best practices, ties to private, local, state, and federal conservation incentive programs are strongly encouraged, as well as an assessment of multiple benefits from restoration practices.

   Proposed Metrics: Proportion of end users adopting best management practices; pollinator health metrics at the individual and/or colony and population level.

3. **Accelerating Technology Transfer**

   The technology that could improve the health of managed and native pollinators ranges from improved agricultural machinery to novel pest control strategies to selectively bred lines of parasite-resistant bees. Promising preliminary work has been done in government and university research facilities. This priority area seeks to fund two lines of inquiry: the promising technological advances that are ready to move from the preliminary research to the at-scale field testing phase, as well as a limited number of high-risk projects that have minimal preliminary data but potential for grand impacts on pollinator health. Projects should involve industry partners with an interest in taking developed technologies to market while providing social and economic analyses of the adoption potential for the new technology.

Proposed Metrics: Number of patent applications; proportion of end user community interest in adopting technology; pollinator health metrics at the individual and/or colony and population level.

4. **Enhancing Outreach and Education**

   Everyone from home gardeners to commercial farmers have the opportunity to improve pollinator health through individual actions. Activities like planting pollinator gardens in urban areas, training future pollinator taxonomists, and coordinating land management activities with beekeeping schedules can have an impact on pollinator health. This priority area seeks to promote innovative outreach and education projects. These projects should reach new demographics and communities to raise awareness around pollinator health and encourage the adoption of activities that promote pollinator health. Programs should assess efficacy of education and outreach methods to allow for recommendations for improvement.

   Proposed Metrics: Number of individuals receiving education or training related to pollinator health; adoption rates of relevant BMPs; change in attitudes/actions related to pollinator health.