VERMONT FOOD SYSTEM PLAN PRODUCT BRIEF

farm to plate
STRENGTHENING VERMONT'S FOOD SYSTEM

VERMONT
AGENCY OF AGRICULTURE, FOOD & MARKETS
www.Agriculture.Vermont.gov

PRODUCT:
Bees and Honey

What's At Stake?

The pollination services of wild and managed bees are critical for the production of our food crops. However, managed and wild bees are in decline, due to a multitude of interacting stressors including pests and pathogens, habitat loss through land use change, and exposure to pesticides. Bee losses threaten biodiversity, food security, and the agricultural economy. Vermont has an active community of beekeepers that manage numerous county beekeeping clubs and provide honey and other value-added products to stores throughout the state. Vermont is also home to several world-famous beekeepers and queen breeders. However, for the past decade, Vermont beekeepers have lost one-third of their colonies each winter. To ensure adequate pollination of our food crops and the protection of Vermont's honey and beekeeping industry, Vermont needs an integrated support system that mitigates current threats to wild and managed bees and provides education to consumers.

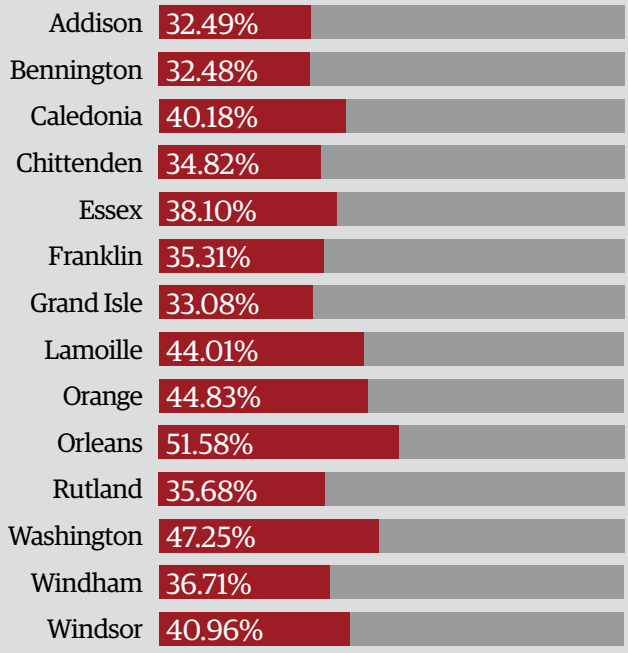
Current Conditions

Pollinators, including bees, contribute more than $24 billion to the U.S. economy through their vital role in the production of fruits, nuts, and vegetables.[1] Vermont has 14,553 hives producing an estimated 727,650 pounds of honey annually.[2] These bees and beekeepers face significant challenges. Since 2006, Vermont beekeepers have lost an average of 33% of their honey bee colonies each winter and in 2018-2019, Vermont's average annual colony losses ranked third-highest nationally.[3] Key threats facing bees are pests and pathogens, land use change (e.g., development), and pesticide application. To combat high colony losses, beekeepers need bees that are healthy, pathogen-resistant/tolerant, and adapted to Vermont's climate and long winters. However, thousands of colonies are imported to Vermont each year after participating in large pollination events where the risk of disease transmission is heightened.

The high value of honey makes it a target for economically motivated adulteration (EMA)—the intentional adulteration of food crops for economic advantage. Honey fraud worldwide has resulted in a downward pressure on pure honey prices due to an oversupply of product, with most notable price drops in the US market.[4] Some states have created standards of identity for honey. Here in Vermont, no such standards currently exist, leaving Vermont beekeepers and consumers unprotected from adulterated "honey" products. Honey adulteration and its impact on the honey market is a critical issue for Vermont beekeepers and of importance to the regulating Vermont Agency of Agriculture, Food and Markets (VAAFM).

Colony Losses by County, 2017

Statewide, annual colony loss for 2016-2017 was 38.6%. Colony losses were spatially clustered with loss greatest in the northeastern region and lowest in the western region of the state ($p < 0.001$).



The most common causes of colony loss reported by beekeepers included Varroa, starvation, and swarming, however most beekeepers report 'other' reasons. Only one third of Vermont beekeepers reported monitoring their Varroa mites while two thirds reported treating for Varroa mites. 23% of Vermont beekeepers reported using no treatments in their hives. Vermont beekeepers who used miticides reported significantly fewer losses ($p = 0.003$).

Bottlenecks & Gaps

- Most beekeepers are small-scale and lack the resources for marketing local honey.
- Honey fraud has resulted in a downward pressure on honey prices due to an oversupply of product in the marketplace.
- Laws regarding the importation of honeybees into Vermont could be strengthened.
- The one Vermont apiculturist, who is responsible for helping mitigate the spread of pests and pathogens in Vermont's bees, supports all Vermont beekeepers through education, field inspections, and enforcement.
- There is a lack of long-term data on bee losses in Vermont. It is important to understand these losses and the relationship to habitat loss, pesticide use, pests and pathogens, and honey bee management practices.

Opportunities

- Consumers recognize the critical role honeybees play in pollination and our food supply. A consumer education program can capitalize on that interest to boost local honey sales.
- Expanded in-state laboratory services, along with use of USDA laboratories, could offer pest and pathogen diagnostic services for Vermont beekeepers.
- Vermont employs a Pollinator Health Specialist who serves as a full-time apiculturist during the bee season and is collaborating with the Vermont Beekeepers Association. Increased collaboration with UVM researchers and Extension staff would help to achieve research and education goals.
- VAAFM has begun collecting data on colony losses and pest/pathogen management, helping stakeholders to understand patterns of bee health over time and the relationship to beekeeping management practices.

Recommendations

- Vermont laboratory services could be improved, with additional state-level funding to the University of Vermont Bee Lab and Extension, to ensure the future of pollinator research, education, and outreach collaborations between UVM and VAAFM. Cost: $85,000 per year.
- Vermont should conduct a study to investigate the prevalence of adulterated and mishandled honey on the shelves of Vermont retail stores. Results should be published in aggregate and used to launch a consumer education program. Cost: $18,000.
- The Vermont Beekeeping Association and VAAFM should develop a honey certification program that defines quality standards for authentic local honey and entitles participating beekeepers to branding that signals an authentic quality product to consumers, thereby promoting the sale of certified honey products. Collaborate with the maple industry and their expertise in natural sweetener promotion to develop Vermont honey quality standards and public education initiatives. Cost to develop program: $19,000. Annual maintenance: $3,000.
- Enhance bee forage across the Vermont landscape through state-level incentives for land uses that support pollinator habitat. In 2019, the Vermont Center for Ecostudies began the Vermont Bee Survey which can be used to inform habitat incentive programs. For example, Vermont's Use Value Appraisal Program could be adjusted to provide tax incentives for landowners who conserve and develop pollinator habitat.
- Protect the efforts of Vermont's beekeepers to maintain healthy bee stock adapted to Vermont's climates, through increased state resources to support a robust apiary inspection program and laws governing the importation of honey bee colonies.

Farm to Plate is Vermont's food system plan being implemented statewide to increase economic development and jobs in the farm and food sector and improve access to healthy local food for all Vermonters.

The Vermont Agency of Agriculture, Food & Markets (VAAFM) facilitates, supports, and encourages the growth and viability of agriculture in Vermont while protecting the working landscape, human health, animal health, plant health, consumers, and the environment.

This brief was prepared by:
Lead Authors: Samantha Alger, *UVM, Vanasse Hangen Brustlin* | Jack Rath, *Vermont Beekeepers Association, Northeast Center for Beekeeping*
Contributing Authors: Andrew Munkres, *Lemon Fair Honeyworks* Scott Wilson, *Heavenly Honey Apiary* | Bill Mares, *Mares Apiaries* | Ross Conrad, *Dancing Bee Gardens* | Charles Mraz, *Champlain Valley Apiaries* P. Alexander Burnham, *UVM* | Brian Voight, *UVM*.

For end notes and data sources, and to read other food system briefs, visit vtfarmtoplate.com/plan