



# Vermont Blueberry Pollination



## Blueberries Require Pollination



Highbush blueberries need pollination in order to produce large, marketable fruit. Cross-pollination allows for better fruit set, berry size, and earlier ripening. Although some Vermont blueberry growers use managed European honey bee hives for pollination, **many different types of wild bees, particularly bumble bees and miner bees, are abundant and efficient pollinators of Vermont blueberries.** All of these different kinds of bees visit blueberry flowers to collect pollen and nectar to feed their young.

## Integrated Crop Pollination: combining strategies to improve pollination

Combining different bee species and pollination management strategies can help growers ensure reliable pollination. Different species of bees visit flowers at different times of the day and may be active at different times through the bloom season. **Having a diverse set of pollinators in your fields can help ensure consistent pollination from the beginning to the end of crop bloom.**

Cool, rainy, and windy spring weather can lead to poor pollination. **When multiple pollinator species are active, more flowers are likely to be visited on poor weather days.** Large-bodied bees, such as bumble bees, stay more active under cool and cloudy conditions than honey bees and can help pollinate the crop in variable spring weather.



Pollination is essential for blueberry production. **On the left,** a blueberry cluster that was enclosed in a mesh bag during bloom to exclude pollinators. **On the right,** a blueberry cluster that received pollination. Photo: Julianna Wilson.



Rufus Isaacs

Both wild and managed bees benefit from access to flowering plants that provide them with abundant and diverse sources of pollen and nectar. **Maintaining natural habitat around your farm can help ensure that food and shelter are available to the bees that pollinate your crops.** This is particularly important for wild bees with long flight periods, such as bumble bees, which are active from early spring crop bloom through the summer. If natural habitat is limited around your farm, consider planting or encouraging a mix of flowering shrubs, trees, and wildflowers to provide season-long blooms that will sustain your local wild bee populations.

# Meet the Pollinators

## Wild Bees

There are many different types of wild bees that are active pollinators of Vermont blueberries. Research is ongoing on the relative contributions of these different groups to Vermont blueberry pollination.



**Bumble Bees** (*Bombus* spp.) are highly efficient blueberry pollinators, and the most common wild bees visiting Vermont blueberry flowers. Ten species of wild bumble bees that have been found visiting Vermont blueberry flowers, including six of the top ten most abundant bee species in VT blueberries. Like honey bees, bumble bees are social insects. A single colony of bumble bees has around 25-400 bees. Because of their large body size, bumble bees can fly in cooler and rainier conditions than honey bees, making them ideal pollinators in typical early spring weather. Bumble bee colonies remain active throughout the summer, and benefit from flowering habitat that blooms continuously from spring through early fall.



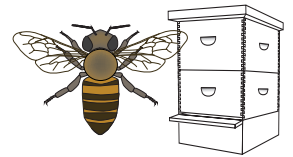
**Miner Bees** (*Andrena* spp.) are solitary bees that nest in the soil. Most miner bees are dark colored with some pale yellow hair, and are about the size of a honey bee or smaller. Several species of miner bees are excellent and abundant pollinators of blueberries and other Vermont spring fruit crops. These bees are generally only active in early spring, when blueberry and other fruit crops are blooming.



**Other Wild Bees** There are many other kinds of wild bees, including sweat bees, mason bees, and plasterer bees, that pollinate blueberry flowers. Some of these bees live in the soil, while others live in aboveground cavities and tunnels excavated from plant stems (including old blueberry canes) and wood. For more information on the biology and conservation of wild bees, visit <http://bit.do/beebasics>.

## Honey Bees

(*Apis mellifera*) can be managed or rented for blueberry pollination. Honey bees are less efficient blueberry pollinators per visit than many wild species, but can be managed and transported among different crops. Honey bees are social insects that provide many active pollinators per hive; on any given day, a 6-8 frame colony will have roughly 14,000 – 19,000 pollinating bees.



# Three Things that Bees Need

## 1 Food (Pollen, Nectar, and Clean Water)

Maintain natural habitat around crop fields and add additional flowering resources, including spring-flowering trees and shrubs, to provide food for wild bees. Flowering plants provide pollen and nectar for bees and their offspring. More diverse nutrition helps bees stay active and healthy to pollinate fruit crops.

## 2 Shelter (Nesting and Overwintering Sites)

Natural areas with flowering resources also provide nesting and overwintering sites that support wild bee pollinators. Protect these areas from disturbances such as mowing, disking, and tilling. Consider leaving patches of bare ground to encourage belowground nesting.

## 3 Protection from Pesticides

Minimize pesticide risks to pollinators. Use integrated pest management (IPM) to make targeted pest management decisions. Avoid spraying during crop bloom. If sprays are needed, spray after dusk or before dawn when bees are not active in the field, and avoid tank mixes. Whenever possible, select pesticides that are less toxic to bees.

## Additional Resources

**Integrated Crop Pollination**  
<http://projecticp.org>

**UMass Blueberry Management Guide**  
<http://bit.do/umassblueberries>

**UVM Extension: Berry Production**  
<http://bit.do/uvmberylinks>

**Farming for Bees**  
<http://bit.do/farmingforbees>

**USDA-NRCS New England  
Pollinator Handbook**  
<http://bit.do/pollinatorhandbook>

**Pollinator Plants for  
New England**  
<http://bit.do/NEplantlist>

**Minimizing Pesticide Risk to  
Bees in Fruit Crops**  
<http://bit.do/E3245>