



British Columbia 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. Most British Columbia blueberry growers bring in managed European honey bee hives for pollination. Wild bumble bees are also highly efficient pollinators of blueberries. Both wild and managed 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 may visit flowers at different times of the day or different times during crop bloom. They also work the flowers differently. For example, bumble bees “buzz,” or vibrate, blueberry flowers, which removes pollen more efficiently than honey bees, since honey bees can’t “buzz.” **Having a diverse set of pollinators in your fields helps ensure consistent pollination throughout the bloom season.**

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.



Wild bumble bees, like this *Bombus melanopygus*, are excellent blueberry pollinators and benefit from natural habitat around the farm. Photo: Elizabeth Elle.

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 provides food and shelter for the wild bees that pollinate your crops.** This is particularly important for 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

Honey Bees

(*Apis mellifera*) are commonly managed or rented for blueberry pollination. Honey bees are less efficient blueberry pollinators per visit than many wild species, but are easy to manage and transport, and provide many active pollinators per hive. Honey bees are social insects; on any given day, a 6-8 frame colony will have roughly 14,000 – 19,000 pollinating bees. Hives are typically placed at a rate of 2-6 hives/acre when the crop reaches 5-10% bloom, and are usually removed from fields at petal fall. They have a preference for cultivars with a wider floral opening, like Duke, over those with smaller flowers, like Bluecrop and Draper. It's easier for honey bees to forage for nectar on flowers with wider openings. Not all commonly grown cultivars have been evaluated for honey bee preference, but it's worth considering floral shape when thinking about your pollination needs.



Wild Bees

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

Bumble Bees

(*Bombus* spp.) are the most common wild pollinators of BC blueberries. They are more common on farms that have natural areas nearby, and farms with large numbers of bumble bees tend to have better fruit set. Bumble bees have the ability to "buzz" blueberry flowers to release pollen, like shaking salt from a salt shaker. This makes them more efficient blueberry pollinators per visit than honey bees. There are four main species of wild bumble bees that pollinate BC blueberries, and two species are starting to be commercially managed. 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.



Other Wild Bees

There are several other kinds of wild bees, including sweat bees, mason bees, and mining bees, that pollinate BC blueberry flowers in very small numbers relative to honey bees and bumble bees. 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.



Three Practices to Support Bees

1 Protect natural habitat around your farm and add additional flowering plants

Natural areas provide flowering resources and nesting sites that support wild bees. Flowering plants provide pollen and nectar for bees and their offspring. More diverse nutrition helps bees stay active and healthy.

2 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, use products registered for use in bloom, and avoid tank mixes. Whenever possible, select pesticides that are less toxic to bees.

3 Communicate with your beekeeper

Set up a contract to define the expectations of both parties and notify your beekeeper if you'll be spraying near hives.

Additional Resources

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

Blueberry Production Guide
<http://bit.do/bcprodguide>

Blueberry Pollination Management
<http://bit.do/bcpollguide>

Pollination Ecology Lab at SFU
<http://www.sfu.ca/people/eelle/>

Current Status of BC Pollinators
<http://bit.do/pollinatorstatus>

Pollinator Plants for the Maritime Northwest
<http://bit.do/NWplantlist>

How to Reduce Bee Poisoning from Pesticides
<http://bit.do/reduce-bee-risk>

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