



Florida Blueberry Pollination



Blueberries Require Pollination



Blueberries need to be cross-pollinated with another cultivar of the same species (rabbiteye or southern highbush blueberry) in order to produce fruit. **Cross-pollination allows for better fruit set, berry size, and earlier ripening.** Most growers bring in managed European honey bee hives or commercial bumble bees for pollination. Several types of wild bees are also effective and abundant pollinators of Florida 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

Having many different species of pollinators can help ensure reliable pollination. Different species of bees tend to visit flowers at different times of the day and are active at different times throughout the bloom season; having a diverse set of bees active in your fields can ensure consistent pollination from the beginning to the end of crop bloom. Honey bee abundance and wild bee diversity are both important contributors to southeastern US blueberry pollination.

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, including all three types of wild bees that visit Florida blueberry flowers, stay more active under cool and cloudy conditions than do 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.*



Katharina Ullmann

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 flowering and nesting resources are available to bees on your farm.** This is particularly important for longer-lived wild bees, 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 flowering shrubs, trees, and wildflowers that provide season-long bloom to support your local wild bee populations.



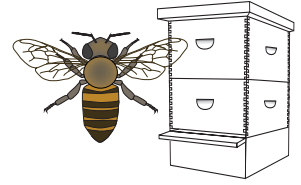
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Meet the Pollinators

Honey Bees

(*Apis mellifera*) are commonly managed or rented for blueberry pollination. Honey bees 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 two hives/acre when the crop reaches 5-10% bloom, and are usually removed from fields at petal fall.



Wild Bees

live on and near blueberry farms throughout the year. There are three main groups of wild bees that are common visitors to blueberry. Research on the relative contributions of these different groups to Florida blueberry pollination is ongoing.



17-21mm

Bumble Bees (*Bombus* spp.) are highly efficient blueberry pollinators. There are four species of wild bumble bees that are common visitors to Florida blueberries, and one species that is commercially managed. Like honey bees, bumble bees are social insects. A colony of bumble bees can have around 25-400 bees; however, during blueberry bloom, most wild colonies only have a single queen bee at work visiting flowers. Because of their large body size, bumble bees can fly in cooler conditions than can honey bees. Researchers are exploring the effectiveness of commercial bumble bees as an alternative managed pollinator.



15-16mm

Southeastern Blueberry Bees (*Habropoda laboriosa*) are solitary, ground-nesting bees that are effective and abundant pollinators of both highbush and rabbiteye blueberries. They look like small, fast-moving bumble bees with very hairy legs. The southeastern blueberry bee is not found on all Florida blueberry farms, but where it is present, it is typically both abundant and consistently active on blueberry flowers.



19-23mm

Carpenter Bees (*Xylocopa* spp.) resemble large bumble bees, but with shiny rather than hairy abdomens. Carpenter bees excavate nesting tunnels in wood. Like bumble bees, their large size allows them to visit flowers on cool, cloudy days. Carpenter bees often cut a slit in the side of blueberry flowers in order to access the nectar, allowing honey bees to do the same in later visits. Nectar robbing bees still transfer some pollen between flowers, meaning that this practice can contribute to rather than take away from total pollination; however, when nectar robbing by honey bees begins to approach half of all honey bee visits, blueberry seed and fruit set are reduced.

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 bloom. If sprays are needed, spray after dusk when bees are not active in the field, and avoid tank mixes. Whenever possible, select pesticides that are less toxic to bees. Always follow label directions.

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 Growth and Development
<https://edis.ifas.ufl.edu/hs220>

Bumble Bees of Florida
<https://edis.ifas.ufl.edu/in207>

Installing Pollinator Habitat
<http://bit.do/florida-habitat>

Integrated Pest Management for Florida Blueberries
<http://edis.ifas.ufl.edu/hs380>

Minimizing Bee Exposure to Pesticides
<https://edis.ifas.ufl.edu/in1027>

Florida Beekeeping Management Calendar
<https://edis.ifas.ufl.edu/in848>

Sample Pollination Contract
<https://edis.ifas.ufl.edu/aa169>