



# Highbush blueberries

*Vaccinium corymbosum*,  
and others

## Mating & Breeding System

*Vaccinium* is a large genus of plants with many cultivated species (including cranberry). While lowbush blueberries are a very important crop in other parts of Canada, in Ontario the majority of cultivated blueberries are highbush species (*V. corymbosum*, also *V. australe*, *V. atrococcum*). Blueberry flowers are bell-shaped and pendant and, in general, bees are the only insects that can pollinate them due to the flowers' need for "buzz pollination". In order to achieve pollination, a pollinator must grasp the stamens with its mandibles and rapidly vibrate its flight muscles in order to free the pollen through small pores in the anthers. Not all bees are capable of this type of action, and those that cannot buzz pollinate are ineffective pollinators for this crop. Honey bees are able to "drum" on the anthers with their legs and collect some pollen, but they gather far fewer grains than bees that buzz pollinate. Some varieties (i.e., Bluecrop) are self-compatible and do not show a significant gain from cross-pollination. This may not be true for all varieties, and more testing is needed to identify which varieties perform best with a pollinizer variety nearby. Cross-pollination is likely the rule, as male and female structures tend to mature at different times within a given flower, and the pendant form of the flower discourages selfing via wind or gravity.

## Pollination, Quality & Yield

Benefits of insect pollination include more flowers producing marketable fruit and larger berries, although this observation does not hold across all varieties. It is the quantity of pollen delivered by pollinators that improves fruit set, fruit weight, and number of viable seeds, and it does not seem to matter if the pollen is from the same flower or a different flower in at least some cultivars. Some cultivars are *parthenocarpic*, which means they produce fruit without pollination (the berry is seedless). Many of these berries are not marketable. Total fruit set is improved whether wild or managed bees are present, and increases with increasing bee abundance.

## Pollination Recommendations

Honey bees are not capable of buzz pollination and generally do not seek pollen from blueberry. Thus, any pollen collected or transferred by honey bees is incidental to their nectar foraging activities. Recommended stocking rates for honey bees depends on the variety of blueberry (from 1 to 7.5 per hectare), and hives should be placed at 5-25% of full bloom. Bumble bees and other species of wild bees are the most effective pollinators of blueberry. Numerous wild bee species are often active in



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## Pollination Recommendations (cont.)

highbush blueberry fields during bloom. Wild pollinator activity may be concentrated along field edges, because they only travel a short distance from their nesting habitat. In a small field, wild bees can provide most of the pollination needed. In large fields with a lower ratio of edge habitat to field area, wild bees play a smaller role. These larger fields are typically supplemented with honey bees. Blueberry growers are encouraged to provide alternate forage for wild bees, particularly plants that flower before and after the blueberry, at the edges of fields and even in the middle of large fields. Artificial nesting sites such as bundle of reeds, drilled wooden blocks, and untilled dry soil can increase wild bee populations in the long term.

## References

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