
Lowbush Blueberry Fact Sheet

Use of Honey Bee Colonies for Pollinating Wild Lowbush Blueberries

Successful pollination of wild lowbush blueberries depends upon both natural and management factors. Natural factors include populations of native pollinators, field locations, topography, elevation, diseases, insects and climatic factors such as precipitation, temperature and wind. Management factors such as planting tree lines for wind protection, use of certain fertilizers, and the introduction of managed pollinators, may contribute to greater yields. At present, honeybee colonies are the most widely used managed pollinators, followed by alfalfa leafcutting bees. Bumble bees may also have potential as introduced pollinators. Introduced pollinators must be carefully managed to provide maximum benefit to blueberry fields.



Tips For Successful Management of Honey Bee Colonies in Lowbush Blueberries

1. Colony Preparation

Only healthy strong colonies should be used for pollination purposes. Each of these colonies should be contained in at least two brood chambers, and should meet the following minimum standards:

- a) 20,000 worker bees
- b) one young productive queen
- c) four full frames of brood (total area = 6400 cm²)
- d) two full frames of honey and pollen (total area = 3200 cm²)



2. Transportation of Colonies and Pollination Time Periods

- a) colonies should be moved at night, with as little jarring and disturbance as possible. All hives should be well secured while being transported to and from blueberry fields. When moving colonies from one field to another, a small colony should be left in the first field to collect stray workers left behind.
- b) colonies should be initially moved into fields at approximately 25% bloom.
- c) colonies should remain in the field for at least 5 good flying days after introduction. A 'good' flying day is one with sunny daytime temperatures above 18° C and light winds.
- d) colonies should be moved at least three miles (5 km) from one field to another (as the bee flies), to prevent bees from returning to their original hive location. Bee loss by moving colonies short distances causes severe damage to the hive.
- e) return bees to the beekeeper as soon as possible, so that the beekeeper gets the largest possible honey yield. Keeping bees in fields after bloom is almost finished is of no benefit to the blueberry producer and is definitely of no benefit to the beekeeper.
- f) hives are generally heavier following the pollination period; thus, those transporting hives from blueberry fields should ensure that loaded vehicles do not exceed highway weight restrictions


3. Numbers of Colonies in Fields

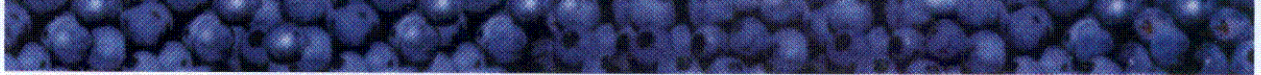
The number of colonies to place within a field depends upon several factors, as well as beliefs of individual producers. Factors such as field size, location, slope, wind, and amount of shelter and bee forage other than blueberries will influence pollination.

We suggest the following:

- a) place more colonies in larger fields, and in fields that have excellent plant cover (i.e., more than 80%), or historic high yields.
- c) we recommend two to five colonies per acre in most fields, especially those with greater than 90 % cover and an average historical yield of 2,500 pounds or more per acre.
- d) fewer colonies may be placed in small fields which are isolated from others and are surrounded by woodlands. When considering this option, the field history becomes important.

4. Arrangement of Colonies in the Field

- a) if possible, place single colonies along tree lines or in sheltered places, preferably with entrances facing south easterly. This will protect the hives from wind and allow workers to begin foraging earlier on sunny days.
 - b) all colonies (single, pallets, or trailers) should be placed in hollows or protected areas of wind swept fields, in order to reduce the harmful effects of high winds.
 - c) avoid placing colonies on exposed hill tops if at all possible, as well as locations that are subject to flooding.
 - d) if colonies are not on pallets or trailers, they should be elevated to 4-6 inches above the ground, to ensure an unobstructed hive entrance.
 - e) clear access to worker bees returning from foraging is essential. Grass, weeds and other debris should be removed from around hive entrances, and palletted hives should be staggered to allow free access to worker bees.
 - f) electric fences may be erected around honey bee colonies to protect them from damage by bears and other predators, such as skunks.
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5. Use of Insecticides When Honey Bees are in the Field

If at all possible, avoid applying insecticides to blueberry fields when honey bees are present. If use of insecticides cannot be prevented, it is advisable to move colonies away during and for two days following the application period. Extreme care should be taken to ensure that insecticides are not applied directly on colonies. Always consult with the beekeeper to determine how to manage colonies if pesticide applications are to be made.

6. Maximizing Economic Use of Honey Bee Colonies

To maximize pollination efficiency and minimize costs, try co-ordinating the use of colonies by placing them in early blooming fields first and then moving them to later blooming fields. Some points to consider:

- a) inform the appropriate beekeeper(s) of your intentions ahead of time.
- b) make sure that you move the bees at least three miles (5 km), as the bee flies, from one field to another.
- c) observe the suggestions in section 2. (above) when moving colonies.
- d) the beekeeper may expect a greater rental fee if colonies are used in more than one field, or if hives are kept longer than three weeks.





7. Co-operation Between Beekeepers and Blueberry Producers

Proper communication between the beekeepers and the blueberry producers is very important. The terms of the agreement to provide and use honey bees should be as clear as possible for both. Some important factors to consider include:

- (a) request bees well ahead of the bloom period, preferably in the fall or early winter, to allow the beekeeper to properly prepare the hives
- (b) provide a clear agreement concerning the numbers of hives requested, the length of time in the field, and the amount of hive movements expected during the bloom period.
- (c) agree on a rental price and conditions that both blueberry producer and beekeeper must meet.
- (d) consider using pollination agreements (available from WBPANS and NSBA) to address responsibilities of producers and beekeepers (i.e., who is responsible for damage to hives, etc.).

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