



Bumblebees for crops

A guide to biological pollination
with bumblebees



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Bumblebee Pollination Proper pollination is essential for optimal fruit set and maximum production. The window of opportunity for pollinating one individual flower is very limited. That's why it is extremely important to have pollinators in place when they are needed the most.

Thanks to Biobest's® extensive experience with bumblebee rearing, a high quality year-round supply of bumblebee colonies is guaranteed. With over 30 years experience, Biobest® bumblebees offer the best quality in the market to pollinate your crops.



BUMBLEBEE POLLINATION PER CROP

CROPS	BENEFITS OF BUMBLEBEES
Tomato (truss, beef, cherry, ...)	<ul style="list-style-type: none"> Higher yield per plant Larger fruits and higher fruit weight More seeds Better flavor Higher firmness
Blueberry	<ul style="list-style-type: none"> Higher yield per plant Larger fruits and higher fruit weight More seeds
Strawberry	<ul style="list-style-type: none"> Higher fruit weight More high quality fruits Reduced number of deformed fruit Brighter red color Higher firmness and increased shelf life
Blackberry/Raspberry	<ul style="list-style-type: none"> Higher yield per plant Larger fruits and higher fruit weight
Melon/Watermelon	<ul style="list-style-type: none"> Higher fruit set Reduced rate of flower abortion

And many more crops!



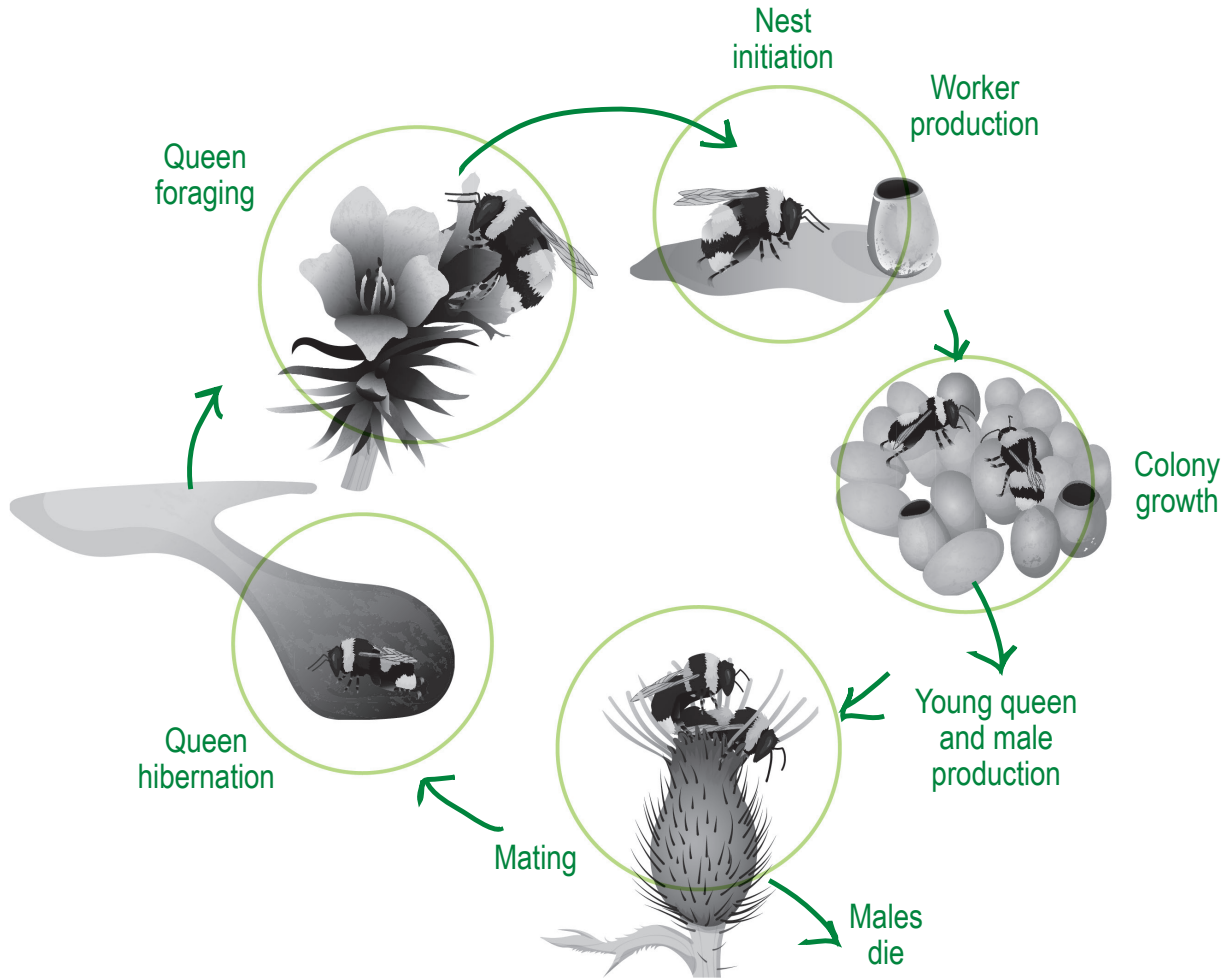
Advantages of pollination with Bumblebees

- Increased yield, better fruit set, uniform fruit weight and size and reduced deficit
- Reduced number of deformed fruit
- Bumblebees remain active at low temperatures and light intensities
- Bumblebees pollinate more flowers per minute than honey bees; they work longer, from dawn to dusk
- Provides weeks of high-performance pollination
- Bumblebees complement honeybee pollination

THE BUMBLEBEE LIFE CYCLE

With the arrival of spring, the life cycle of the bumblebee starts. A mated queen who hibernated all winter comes out of her hiding place. After looking for a nesting site and foraging for nectar and pollen, she initiates a new colony by laying her first batch of eggs.

The first eggs typically develop into workers. When these eggs hatch, larvae emerge. The larvae grow and molt a couple of times before they spin a cocoon. Inside the cocoons, pupae develop into bumblebees with hair, wings, and legs. The queen does all the foraging herself at the beginning, but will no longer leave the nest once the first workers emerge and take over the foraging. The workers will also take care of the brood so the queen can focus on laying eggs.



After the production of 150 to 400 workers, the bumblebee queen starts to produce young queens and drones (males). From that moment onwards the activity of the colony decreases. The old queen stops laying eggs and eventually dies. With a young, mated queen, who will again hibernate alone, a new cycle begins in a new hive.

DEVELOPMENT STAGES OF A BUMBLEBEE

Egg



Larvae



Pupae



Tomatoes

To check tomato pollination levels

Check the level of bite marks on recently closed flowers, but also on open flowers.



1. No bite marks; no pollination



2. Flowers are slightly marked; well pollinated



3. Brown marks; very well pollinated



OVER-POLLINATED FLOWER

4. Black marks; damage on the pistil possible; sign of over-pollination

> The majority of flowers should show brown marks as shown in image 3.

Success of pollination can be checked by the brown discoloration of the pistils.

If the pistils are not pollinated, they remain yellow to green.

In addition, when the flowers are regularly visited by bumblebees the anthers look brown and smooth.

Over-pollinated flowers will have damaged anthers.

Strawberries

POLLINATED FLOWERS

UNPOLLINATED FLOWER

