SUSTAINABLE CROP MANAGEMENT

TECHNICAL DATA SHEET

BUMBLEBEES

Bombus Impatiens

Bumblebees are important agricultural pollinators that belong to the Apidae bee family. Bumblebees are social insects that form colonies with a single queen. They have large round bodies covered in soft hair called pile, making them appear and feel fuzzy. Bumblebees collect pollen by stuffing it between the hairy receptacles on their hind legs. Bumblebees feed on nectar and pollen, using their long hairy tongues to lap up the liquid. They gather the nectar to add to the stores in their nest and the pollen to feed their young. They forage using color and spatial relationships to identify flowers to feed from.

Product Specifications

Item N°	Commercial name	Specifications
990090	Standard hive	• 150 workers • 8-12 weeks
990506	Medium hive	• 50-75 workers • 5-8 weeks
990293	Outdoor 4-Pak	• 1000-1200 workers • 5-8 weeks
990091	Turbo (GH Strawberry) Hive	• 200+ workers • 6-8 weeks

Storage

If hives must be stored, they should be stored in a cool area 55-59°F (13-15°C).

Features

- Increased yield, better fruit set, uniform fruit weight and size and reduced deficit.
- Bumblebees remain active on cooler and cloudy days even in light rain or wind.
- Bumblebees focus on the targeted crop.
- Bumblebees pollinate more flowers per minute than honeybees; they work longer, from dawn to dusk.
- Bumblebees complement honeybee pollination. Research shows that when bumblebees are around, honeybees become more efficient at collecting pollen.

Targets

Pollination of various in- and outdoor crops.

Crops

- Tomato and Cherry Tomatoes
- Sweet- and Hot peppers
- Melons and Watermelons
- Pumpkins
- Eggplants
- Cucumbers and Gherkins
- Blueberries and Cranberries
- Apples
- Cotton

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Mode of Action
Buzz pollination or sonication is a method used by bumblebees, to release pollen which is firmly held by the anthers of a flower. To release the pollen, bumblebees latch onto the flower and move their flight muscles vigorously causing the flower and anthers to vibrate, releasing the pollen. Pollination involving vibrations is called buzz pollination.

Rates
Rates may differ depending on crop and/or environmental factors.

Instructions
See hive instructions, included with your order.

Release conditions
The Biobest hive introduction schedule provides an overview of recommended start up and maintenance introduction rates. This is intended as a rough guide and adjustments will likely need to be made on an individual basis.
Hives should be introduced prior to flower crack. When possible, they should be introduced weekly to stagger the amount of hives and provide even pollination.

Monitoring
Hive activity can be determined by counting bumblebees arriving or leaving the brood. When watching the hive, a bumblebee should be seen at an average of .5-1 per minute. At certain times of the day, the rate of bumblebees can be much higher than 1 bee per minute. On the flip side, in mid-afternoon the activity rate could be less than average due to warmer temperatures. Most people choose to assess thier hives when activity is at its lowest. Hives are active from 46°F (8°C). Bumblebees begin working at sunrise and will be the most active a few hours later. When the sun sets the activity will stop for the night.

Life cycle and appearance
Fertilized queens hibernate under the ground during the winter months. In spring, they leave their hibernation site and establish a nest. After emergence of the first workers, the colony continues growing and eventually switches into the sexual phase. This is when young queens and males begin to emerge. These 'new' bees (once strong enough), leave the nest to find a mate. After mating, the young queen goes into hibernation and the process repeats itself.
Our hives contain one fertilized queen, and depending on the type of hive at least 50 adult and multiple immature stages of workers. The number of workers will continue to increase over the coming weeks.

Egg	Larva	Pupae	Newly emerged	Adult
The Queen lays approximately 8 eggs per wax cup.	In 3-4 days the eggs hatch into larvae.	About 7 days after hatching from the egg, the larvae spin cocoons around themselves and soon transform into pupae.	Bees will emerge approximately 22 days after the eggs were laid. The newly emerged bee is a silvery white color.	Approximately 3 days after emerging, the bees reach their full colour.