

# Facts & Figures About Canadian Apiculture

## In General:

- Apiculture is the science and art of raising bees.
- As of 2015, there are 8,533 beekeepers keeping 721,106 colonies of honey bees in Canada.
- Honey bees are vital for the pollination of fruit, vegetables and hybrid canola seed. Well pollinated crops produce more fruit and honey bees increase production by 2-8 times.
- The value of honey bees to pollination of crops is estimated at over \$4.4 billion annually.
- Canadian beekeepers produced 95.3 million pounds of honey in 2015.
- Alberta is the Canadian province with the highest production, at 42.8 million pounds in 2015.
- Average yields in 2015, were 145 pounds of honey per colony.



## You were asking about...Apiculture

### Housing: Where Do Farmed Bees Live?

The beekeeper bases the organization of the colony on the components of a beehive in nature. The bees are encouraged to build their comb in removable frames of plastic or wood for ease of inspection and manipulation.

Bees prefer hollow cavities as nesting sites, with an average nest cavity volume of 40 litres. This is the approximate volume of a standard hive body offered by beekeeping suppliers. The criteria for a nesting site include few and small entrances, shelter from wind, predators, sun and rain, preferably southern exposure and dryness (Winston 1992).

Inside the cavity, honey bees build their comb entirely out of beeswax secreted from the four sets of abdominal glands of the worker bee (Winston 1995). The wax is mixed with saliva and kneaded into the consistency at which it can best be molded (Winston, 1995). The comb

is formed and shaped by the workers into hexagonal cells, set back to back. The process of removing and manipulating each scale takes about four minutes, or 66,000 bee hours to produce 77,000 cells hanging vertical, honey bees build their cells horizontally. The vertically hanging combs are arranged in a parallel series and are placed a precise distance from the neighbouring comb. This space allows the bees to move between combs and to cluster to incubate the brood.

Honey is stored in the upper periphery of the nest, above a layer of pollen. The brood is surrounded by pollen on the frame for easy access. The brood is located in the centre of the nest where the temperature is most easily maintained at approximately 35C (Winston, 1995) All cells are re-used, being cleaned and maintained by the workers after brood emergence.

## Nutrition: What Do Bees Eat?

The diet of the adult honey bee consists of only two things: honey and pollen. Honey (or nectar, as it is originally returned to the hive before the workers modify it into honey) supplies the majority of the carbohydrate energy that workers need to perform daily activities. Pollen provides bees with all of their other nutritional requirements, including proteins, fats, vitamins and minerals. These dietary components are necessary for cell construction and metabolic processes and are an essential part of the brood food that nursing workers feed to developing larvae.

## Health Care for Bees

Every beekeeper must be aware of the health status of their colonies. Monitoring allows the beekeepers to make educated decisions about treatment options. The knowledge that a treatment is needed, the type of treatment required, the timing of the application and the efficacy of the treatment can be determined from health status reports.

Monitoring should be a routine practice for every hobby and commercial beekeeper. The parasitic mites, varroa mites and tracheal mites are the most pressing diseases which require attention. Nosema is another adult bee disease that beekeepers must be aware of. The most serious brood diseases include American Foulbrood (AFB) and European Foulbrood (EFB). Beekeepers who accept monitoring as part of their management regime will be on the leading edge in the industry.

## Neat Bee Facts

- There are three kinds of bees in a hive: Queen, Worker and Drone.
- Only the queen in the hive lays eggs. She communicates with her hive with her own special scent called pheromones. The queen will lay around 2,000 eggs per day.
- The worker bees are all female and they do all the work for the hive. Workers perform the following tasks inside the hive as a House Bee: cleaning, feeding the baby bees, feeding and taking care of the queen, packing pollen and nectar into cells, capping cells, building and repairing honeycombs, fanning to cool the hive and guarding the hive.
- Workers perform the following tasks outside the hive as Field Bees: Gathering nectar and pollen from flowers, collecting water and a collecting a sticky substance called propolis.
- Bees have two stomachs - one stomach for eating and the other special stomach is for storing nectar collected from flowers or water so that they can carry it back to their hive.
- The male bees in the hive are called drones. Their job in the hive is to find a queen to mate with. Male bees fly out and meet in special drone congregation areas where they hope to meet a queen. Male drone bees don't have a stinger.
- If a worker bee uses her stinger, she will die.
- Bees are classified as insects and they have six legs.
- Bees have five eyes - two compound eyes and three tiny ocelli eyes.
- Bees go through four stages of development: Egg, Larvae, Pupae and Adult Bee.

## APICULTURE TRIVIA

### Did You Know...

- Honey is 25 per cent sweeter than sugar because of its high fructose content.
- The colour of honey depends on the type of nectar collected by the bees.
- Most of the bees in a hive are female worker bees.
- A queen bee may lay as many as 2,000 eggs in a single day.
- Over 70% of our food crops need insects for pollination.
- Honey has natural preservatives and bacteria can't grow in it.
- A honeybee can fly 24 km in an hour at a speed of 15 mph. Its wings beat 200 times per second or 12,000 beats per minute.
- What takes the least amount of energy to make... chocolate, snacks or honey? Honey is the winner by a long shot.



## Neat Bee Facts continued...

- The bees use their honeycomb cells to raise their babies in, and to store nectar, honey and pollen.
- Nectar is a sweet watery substance that the bees gather. After they process the nectar in their honey stomach or "crop", this honey is then stored in honeycomb cells. Then they fan with their wings to remove excess moisture. The final result is honey.
- Bees are the only insect in the world that make food for humans.
- Honey has natural preservatives and bacteria can't grow in it.
- Honey was found in the tombs in Egypt and it was still edible! Bees have been here around 30 million years.
- A honeybee can fly 24 km in an hour at a speed of 15 mph. Its wings beat 200 times per second or 12,000 beats per minute.
- Bees have straw-like tongues called a proboscis so they can suck up liquids and also mandibles so they can chew.
- Bees carry pollen on their hind legs called a pollen basket. Pollen is a source of protein for the hive and is needed to feed to the baby bees to help them grow.
- A beehive in summer can have as many as 50,000 to 80,000 bees. A bee must collect nectar from about two million flowers to make one pound of honey. It requires 556 worker bees to gather a pound of honey. Bees fly more than once around the world to gather a pound of honey.
- The average worker bee makes about 1/12th of a teaspoon of honey in her lifetime.
- Bees have two pairs of wings. The wings have tiny hooks so they can lock together when the bee is flying. Bees communicate through chemical scents called pheromones and through special bee dances.
- Every 3rd mouthful of food is produced by bees pollinating crops. Flowering plants rely on bees for pollination so that they can produce fruit and seeds. Without bees pollinating these plants, there would not be very many fruits or vegetables to eat.
- The average life of a honey bee during the working season is about three to six weeks. There are five products that come from the hive: Honey, beeswax, pollen, propolis, and royal jelly.
- Beeswax is produced by the bees. Bees have special glands on their abdomen that secrete the wax into little wax pockets on their abdomen. The bee takes the wax and chews it with her mandibles and shapes it to make honeycomb.
- Propolis is a sticky substance that bees collect from the buds of trees. Bees use propolis to weatherproof their hive against drafts or in spots where rain might leak in.
- People have discovered the anti-bacterial properties of propolis for use in the medical field.
- Royal Jelly is a milky substance produced in a special gland in the worker bee's head. For her whole life the Queen is fed Royal Jelly by the workers.
- Although bears do like honey, they prefer to eat the bee larvae.
- Honey comes in different colours and flavours. The flower where the nectar was gathered from determines the flavour and colour of the honey.

## Apiculture Dictionary

- **Apiculture:** The science and art of raising bees.
- **Apiarist:** A beekeeper.
- **Bee suit:** A pair of white coveralls made for beekeepers to protect them from stings and keep their clothes clean. Most come with zip-on veils.
- **Beeswax:** A substance that is secreted by bees by special glands on the underside of the abdomen, deposited as thin scales, and used after mastication and mixture with the secretion of the salivary glands for constructing the honeycomb.
- **Colony Collapse Disorder:** A recently named problem where most of the bees in most of the hives in an apiary disappear leaving a queen, healthy brood and only a few bees in the hive with plenty of stores.
- **Honey:** A sweet viscid material produced by bees from the nectar of flowers, composed largely of a mixture of dextrose and levulose dissolved in about 17 percent water; contains small amounts of sucrose, mineral matter, vitamins, proteins, and enzymes.



 **Bee  
FACT SHEET**



## Apiculture: The Product

Without question, the first product most people associate with honey bees is honey. However, there are several others which may be harvested and contribute to the beekeeper's income. Wax, pollen, propolis, royal jelly can be either re-used within the apiary or utilized in the creation of value-added products. Bee venom can be collected for use in apitherapy.

Honey bees also provide pollination services. The value of pollination to agriculture has been estimated to be far greater than the value of hive products. Therefore it is important for beekeepers and growers to understand pollination and the importance of bees.

Another income avenue that a beekeeper has available is queen bee rearing. If beekeepers wish to increase the number of hives or replace an old queen, they may opt to purchase a new queen bee. Ontario has a program study queen bee rearing so that top quality queens are produced with beneficial attributes to the beekeeper.

### About Apiculture – Additional website links

Canadian Honey Council:  
Visit [www.honeycouncil.ca](http://www.honeycouncil.ca)

British Columbia Honey Producers' Association:  
Visit [www.bcbeekeepers.com](http://www.bcbeekeepers.com)

Alberta Beekeepers Association:  
Visit [www.albertabeekeepers.org](http://www.albertabeekeepers.org)

Saskatchewan Beekeepers Association:  
Visit [www.saskbeekeepers.com](http://www.saskbeekeepers.com)

Manitoba Beekeepers' Association:  
Visit [www.manitobabee.org](http://www.manitobabee.org)

Ontario Beekeepers' Association:  
Visit [www.ontariobee.com](http://www.ontariobee.com)

La Fédération des Apiculteurs du Québec  
Visit [www.apiculteursduquebec.com](http://www.apiculteursduquebec.com)

New Brunswick Beekeepers Association:  
Visit [www.nbba.ca/](http://www.nbba.ca/)

#### Sources:

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