

Care of food-producing animals Part 4 of 4

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☀ Honeybees

Honeybees eat, digest, regurgitate and defecate. Defecation occurs during a “cleansing flight”, as the bees briefly exit the hive to eliminate waste, thereby maintaining a hygienic and bacteria-free home. The males copulate. All are complex bodily functions for such a tiny animal. [National Geographic](#) has classified honeybees as invertebrates, adhering to a herbivore diet. The habitat is a hive, populated by a colony, which has three classes of bees, each performing one or more specific tasks within an established hierarchy. Worker bees are non-sexually developed females, with an average size of 1-1.5 cm (~ a paperclip), an average life span of up to five years, and delegated duties of foraging pollen and nectar, building and protecting the hive, cleaning, and air circulation by beating their wings. The Queen Bee – one per hive – being fertile, needs to lay the eggs which will develop into the hive’s next generation of bees. She also produces and secretes chemicals which guide and regulate the behaviour of the other bees. [National Geographic](#) explains:

“If the queen dies, workers will create a new queen by feeding one of the female larvae an exclusive diet of a food called “royal jelly.” This elixir enables the worker to develop into a fertile queen.”

Drones, the male honeybees, must eat and mate with virgin queens. Often castigated as lazy, [Backyard Beekeeping](#) has come to the drone’s defense. “Larger than the worker bee and fatter than the slender queen, drones lack the stinger, pollen baskets, and wax-producing glands necessary to perform the worker bee’s tasks. Instead, a drone boasts much larger eyes and longer legs than females which enable him to quickly spot a virgin and securely grasp her in mid-flight for copulation — the perfect anatomy for his sole purpose.” A drone has a life span of 30-55 days; he dies following copulation; he is expelled from the hive each fall.

☀ Genetic diversity at its best

For a queen bee to be considered “well-mated” and capable of producing a thriving, healthy colony, she must mate with between 10-20 different drones. Left unmated, she will produce only unfertilized eggs, which become drones.

☀ Apiaries and honey production

The number of beehives worldwide in 2020 is an estimated [94 million](#), with approximately [1.9 million tonnes](#) of honey produced annually, led by China, Turkey and Argentina, respectively.

☀ Regulatory Oversight

In the USA, which produces 69,000 tonnes of honey annually, the USDA governs honey production. Since 2015, the focus of the Agency has expanded to research into the cause of [declining colonies](#), particularly critical [queen survivorship](#) issues, which are yet to be resolved. The USDA has identified as many as nine viruses, bacteria or conditions such as Colony Collapse Disorder, which are detrimental to honeybee colony health and longevity.

In Canada, the CFIA governs honeybee husbandry and honey production (12th worldwide, 35,000 annual tonnes of honey valued at C\$146 million). Like the USDA, the Agency has published [diagnostic and monitoring guidelines](#) on more than eight debilitating diseases. This initiative is part of the [National Bee Farm-level Biosecurity Standard](#) designed to protect three major types of bees: honey bees, alfalfa leafcutting bees and bumblebees.

In the EU, recent severe losses of all types of bees have prompted the European Commission to implement [steps to diagnose and prevent bees' mortality](#), particularly [honeybee colony mortality](#).

☀ Indirect value, yet priceless

All regulators cite the huge importance of honeybee pollination to the sustenance of agricultural crops. As summarized, quantified and put into context by the CFIA:

“In addition to the value of Canadian honey and bee products, many crops are reliant on pollination by managed bee species. Canada has seen rapid growth in pollination-dependent crops such as canola, fruits, and vegetables. The annual contribution of honeybee pollination to crop value is estimated at \$1.3 to \$1.7 billion annually, which is 10 to 20 times that of honey.” **FF**