

## Honeybee and Beekeeping in India

Nadeya Khaliq\*

High Mountain Arid Agriculture Institute (HMMARI) SKUAST –K Leh

ARTICLE ID: 54

### Abstract

Honeybee, (tribe Apini), also spelled honey bee, any of a group of insects in the family Apidae (order Hymenoptera) that in a broad sense includes all bees that make honey. In a stricter sense, *honeybee* applies to any one of seven members of the genus *Apis*—and usually only the single species, *Apis mellifera*, the domestic honeybee. This species is also called the European honeybee or the western honeybee. Honeybees are special gift to mankind because beekeeping can be done for both their pollination services and their cherished products such as honey, beeswax, propolis, bee venom, etc. These products have their widespread use in different small and large scale industries in India. In this article, we discussed about the brief description about the honey bee

**Key words:** Honey bee, Pollination, Beekeeping, Species etc

### Introduction

Beekeeping is an agro-based subsidiary as well as whole time economic activity which is highly suitable and fits aptly as component of “Diversification in Agriculture.” They are economically important because of their role as pollinators of numerous agricultural crops, honey producers, and producers of various hive-related commodities (e.g. beeswax, propolis, royal jelly) in nearly all countries of the world bees and their products are not only well known and have wide consumer preference, but provide sustainable rural and non-rural people. Bees also offer a large potential with minimal investments. All honeybees are social insects and live together in nests or hives.. The only bitter part of beekeeping is the bee sting. Bees also offer a large potential with minimal investments. The honeybee is remarkable for the dancing movements it performs in the hive to communicate information to its fellow bees about the location, distance, size, and quality of a particular food source in the surrounding area. Honey bee is a widely distributed flying insect known for its ability to collect nectar from flowers and produce honey.



Honey bee species in India:-Rock Bee (*Apis dorsata*), Little bee (*Apis florea*), Indian hive bee/Asian bee (*Apis cerana indica*), European bee (*Apis mellifera*)

### **Biology and Society**

Honeybees have three developmental stages (egg, larvae and pupa) and an adult stage. In adult stage there are three castes (single queen, hundreds of drones and thousands of workers). The queen is a fertile, functional female that can produce males and females, the worker is an unfertilized female capable of only producing males (due to the haplodiploid sex determination system found in honey bees) and the drone is male. The food they are fed during larval stage decides their caste; queen larvae is fed with royal jelly by nurse bees throughout its larval period.

In a bee colony there are two types of female bees, the queen (fertile female) and the worker (sterile female) bees and then there is the male referred to as the drone. Queen bees are raised from the same eggs as worker bees, but are provided with a specialized food known as royal jelly. There is one queen bee per colony and her main function is to lay eggs. The queen bee produces the most eggs in the first year of her life. Laying rates are in around 2500 to 3000 per day. A worker bee can carry out the activities like collect nectar and pollen, make honey and wax, feed the queen, and tend to eggs, building and repairing the comb, cleaning, temperature control within the colony and guarding the entrance to the hive. Drones have the sole task of mating with the queen bee. If foraging conditions are good in terms of abundant flowering plants and good weather the bee colony will develop. Bees will build the comb from the top of the hive downwards and will increase brood (eggs) production. Shortage of food, excessive disturbance and bad management will cause the bee colony to leave the hive. This is called absconding.

### **Honeybee Foraging**

India is a vast country with different climatic zones providing rich flora for honeybees. By foraging, honeybees collect pollen and nectar where pollen is a protein source and nectar is carbohydrate source which together fulfills their nutrient requirements. As the honeybees have division of labour, foraging will be only performed by the forager bees. Among the foraging bees, there are two types: nectar collectors and pollen collectors.

### **Beekeeping Equipment**

Traditionally beekeepers in India used to practice beekeeping in baskets, wooden logs, underground beehive, clay pots for keeping stingless bees, etc., but the Langstroth bee space (1851), Johannes comb foundation (1857) and honey extraction techniques by Frang von Hruschka concepts had a great impact on beekeeping in India which made a dramatic change and urged the beekeepers of the subcontinent to switch over to movable frames, as beekeeping with movable frames is user-friendly and also the modern beekeeping equipments make work easy for commercial handlers.

### **Honeybee Hive**

A beehive is a place in which a single colony of honeybee exists containing and performing various functions for their livelihood; it contains various parts like hive stand, bottom board, brood chamber, super chamber, inner and outer cover. The hive stand consists of a wooden pole or iron stand fixed to the ground; it may be of single legged made up of PVC (polyvinyl chloride) or iron or four-legged stand made up of iron. Types of Beehive There are different types of hives used in India such as Langstroth hive for *A. mellifera*, BIS hive (Bureau of Indian Standards) for *A. mellifera* and *A. indica* and Newton hive and Marthandam hive for *A. cerana*.

Other Beekeeping Equipments :- Smoker, Honey Extractor, Comb Foundation Sheet, Decapping Knife, Hive Tool, Bee Veil, Gloves, Bee Brush, Feeders, Queen Cell Protector, Dummy or Division Board

### **Honey**

Honey is the substance made when the nectar and sweet deposits from plants are gathered, modified and stored in the honeycomb by honeybees. Quality of honey varies depending upon the types of floral and extra floral nectar. The honey gathered can be classified as uni- and multifocal. Honey is harvested in two ways: in case of *Apis dorsata* by squeezing the combs which contains some impurities like pollen and larva, but in case of domesticated bees (*A. mellifera* and *A. cerana*) honey is extracted with honey extractor without impurities using centrifugal force.

### **Beeswax**

Beeswax is the creamy coloured substance used by bees to build the comb that forms the structure of their nest. Very pure beeswax is white, but the presence of pollen and other substances cause it to become yellow. Beeswax is produced by all species of honeybees. Wax

produced by the Asian species of honeybees is known as Ghedda wax. It differs in chemical and physical properties from the wax of *Apis mellifera*, and is less acidic. The waxes produced by bumblebees are very different from wax produced by honeybees. Pure waxes from different species of stingless bees are also very different from the other types of beeswax. It is much darker in colour – dark brown, and when it is warmed, it stretches without breaking. It is also sticky and much more difficult to break than beeswax from *Apis mellifera*.

### **Bee Venom**

The main components of bee venom are proteins and peptides. Bee venom is present in the venom sac and will be injected using sting. The bee venom can be collected using venom extractor which possesses mild electric current, and the bees get irritated with this current so they try to sting, and the venom will be collected in the bottom glass plate.

### **Propolis**

Propolis is used in construction and adaptation of honey bee nest and also to cover the cracks and crevices of the hive; it is a sticky dark-coloured material. The colour of the propolis may vary in temperate climates; it ranges from a light yellow or brown to a dark-brown colour, often with a reddish hue. Propolis tends to become darker the longer it is in the hive

### **Royal Jelly**

Royal jelly is a milky white cream. It is strongly acidic and rich in protein, sugars, vitamins, RNA, DNA and fatty acids and is secreted by the nurse bees at the age of 3 days. Beekeeping in India 52 6–12 days. It is also a very nutritious food for human beings as it increases vigour and vitality. Royal jelly is rich in amino acids such as alanine, arginine, aspartic acid, glutamic acid, glycine, isoleucine, lysine, methionine, phenylalanine, tryptophan, tyrosine and serine. Eight of the essential amino acids required for human beings are present in royal jelly. Besides this, it also contains vitamins A, B and C, iron, copper, phosphorus, silicon and sulphur.

### **Pest and Predators of Honeybee**

These include minute mites to gigantic bears, in fact bears are very much fond of honey. Major opponents in this category include wax moths, birds, mites, ants, hive beetles and bears.

**Conclusion:-**

Pollination is vital to life on our planet. Bees and other pollinators have thrived for millions of year, ensuring food security and nutrition, and maintaining biodiversity and vibrant ecosystems for plants, humans and the bees themselves.

