

An Review of Importance of Apiculture and its Rearing and Processing

Sajal Saha¹, Deepa Bhadana²

¹PhD Researcher Scholar, Nagaland Central University, SASRD, India

²PhD Research Scholar, Chaudhary Charan Singh University, Meerut, India

Corresponding author: [sajalsaha169\[at\]gmail.com](mailto:sajalsaha169[at]gmail.com)

Abstract: *Beekeeping also known as apiculture is an interesting profitable and an ideal agro based traditional cultural enterprise. Bee keeping providing good beneficial supplementary income to the people in the rural areas. The nutritional structural composition of honey is almost closer to edible fruits. Honey bees also play a crucial role in environmental prospect like production of honey and other products they provided but they are also vital as pollinators of agricultural and horticultural crops.*

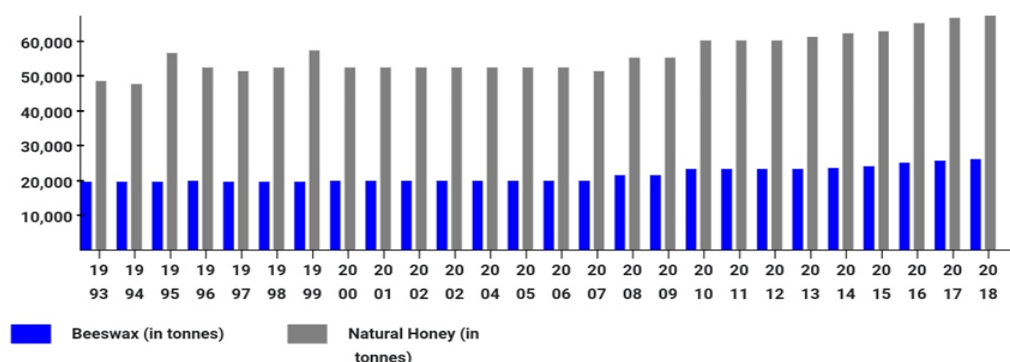
Keywords: Apiculture, Agriculture, pollination, processing

1. Introduction

Apiculture is outlined because the scientific management and study of honey bees. it's derived from the Latin word "apis" that means bee and "culture" that means rearing. Cultivation in Asian country has been started in ancient Vedas and Buddhist scriptures like Rig Veda, Atharva Veda, Upanishads, Bhagavad Bhagavadgita and Vinaya Pitaka, Abhidhamma Pitaka and jataka tales. the popular epic Sanskrit literature describes a "Madhuban" that has cultivated by Sugriva. numerous rock paintings qualitative analysis to Mesolithic and post Mesolithic era ar found within the Madhya Pradesh and pachmarhi regions. The paintings primarily depict honey assortment activities within the wild from honey combs of genus *Apis dorsata* *Apis mellifera* bees. Unsuccessful makes an attempt of scientific cultivation were created within the West Bangal and Punjab regions throughout 1883-84 to stay genus *Apis cerana*. the primary undefeated try was created by Reverend Newton in Kerala once he developed a specifically designed hive and began coaching rural folks throughout 1911-17 to reap honey from cultivation. the look became popularly called "Newton hive". Right smart cultivation activities were preoccupied in Travancore areas in 1917 and in Mysore

areas in 1925. The activities gained impetus in Madras regions in 1931, Punjab in 1933 and in Uttar Pradesh in 1938. All Asian country Beekeepers Association was fashioned throughout 1938-39 and therefore the 1st cultivation analysis Station was established in Punjab in 1945 by the Indian Council of Agricultural analysis. Cultivation was enclosed in a very syllabus by the Agriculture school, Coimbatore in 1931. Bee keeping is taken into account because the fifth input for agricultural development. Initially, the cultivation trade was below the All Asian country cloth and Village Industries Board that was reborn to cloth and Village Industries Commission (KVIC) in 1956, that successively was below the Ministry of trade. In 1962, Central Bee analysis and coaching Institute was established by KVIC at Pune. The assembly of honey in Asian country accrued considerably towards the late Nineties. Seventieth of honey production comes from informal segments. As major bourgeois of honey, Asian country falls behind China, Argentina, Germany, Hungary, Mexico and Kingdom of Spain. In 2005, India's honey exports reached a price of US\$ twenty six.4 million. sixty six % of this was consumed by NAFTA countries.

Annual Production of Beeswax and Natural Honey



Source: UN Food & Agricultural organization, FAOSTST

Volume 11 Issue 3, March 2022

www.ijsr.net

Licensed Under Creative Commons Attribution CC BY

Objective of Bee-keeping:

- Bee-keeping provides property support choices for economical, vulnerable communities as a result of its following attributes:
- Provide employment, food and money financial gain while not possession of land.
- Non extractive and property.
- Most suited enterprise once disasters happen.
- Require very little investment and infrastructure.
- Hive merchandise are low volume, high price with sensible shelf life.
- Most engaging enterprise to earn foreign modification.
- Enhance productivity levels of agriculture, agriculture and fodder crop through impregnation service.
- Help in overcoming the issues of deficiency disease and human health.
- Bee impregnation is significant for all times on earth in terms of multifariousness conservation.
- Provide effective linkage to alternative farming system with positive ecological consequences.

Organization of bee keeping

Types of honey bee:

- Apis dorsata (Rock bee)
- Apis florea (Little bee)
- Apis indica (Indian bee)
- Apis mellifera (European bee)

Castes of honey bee:

Honey bee may be a social insect. Basically, each honey bee colony includes of one queen, many hundred drones and several other thousand employees castes of honey bees. Queen may be a fertile and practical feminine wherever as a employee may be a sterile feminine and therefore the drone may be a male bee insect

Queen:

Every colony contains a queen that is that the mother and solely sexually developed feminine. All the members of colony area unit the product of queen, in order that it's known as mother queen. She mates with the drone, the male bee, within the air once or a lot of in her life time and lays eggs throughout her life. A well developed queen measurement 15-20mm long. She lays a pair of to 2000 eggs per day and regarding 15lakh eggs area unit arranged in her life time. A queen live for two to five years and once it's weak or unable to put eggs it's replaced by one among the girl queens.

Worker:

They area unit underneath developed females that are made from the inseminated eggs however stay sterile thanks to non availableness of royal-jelly. It's smaller in size than queen and has sting on the terminal finish of abdomen. They are hind legs are changed for spore assortment. They are play necessary role of maintenance comb, collect honey from flowers, guard the colony against enemies, maintain the temperature of hive and watch out of queen and feeding of royal-jelly.

Drone:

It is haploid, fertile male. The males area unit larger than employees and area unit quite abuzz. They're unable to assemble food, however eat vicariously. They're stingless and their main perform is to fertilize the feminine (queen) the quantity of drones during a colony varies from 200-300, however throughout dangerous season they're driven out. The drones develop pathogenically from un-impregnated eggs.



Fig: Life cycle of honey bee

	EGG	LARVA	PUPA	Total
Queen	3 days	5-½ days	7-½ days	16 days
Worker	3 days	6 days	12 days	21 days
Drone	3 days	6-½ days	14-½ days	24 days

Fig: Newton hive

Source: Saharanpur KVK Center

Equipments used in bee keeping

Queen Excluder:

This consists of a frame fitted with a aluminous wire web assembled along zero.15 inches apart. It is utilized for preventing the queens entrance from the brood chamber to the super chamber. The holes within the web don't cause any inconvenience to the employees to submit to it.

Comb Foundation:

It is a sheet of bee wax on either side of that precise form of various cells of the comb is created earlier. The sheet is move the dimensions of hanging frame and is fitted within it. It will be used for many years.

Bee gloves:

They are animal skin gloves utilized by beekeepers to shield their hands from sting of bees.

Bee veil:

A bee veil could be a covering to shield the keepers face from the sting of bees. It's created of fine web, typically glossy through that bees cannot pass.

Smoker:

It is a tool utilized by keepers to subdue the bees if irritated throughout hive inspection. The materials use for manufacturing smoke square measure something like rotten wood, chips, wood latches, waste papers etc.

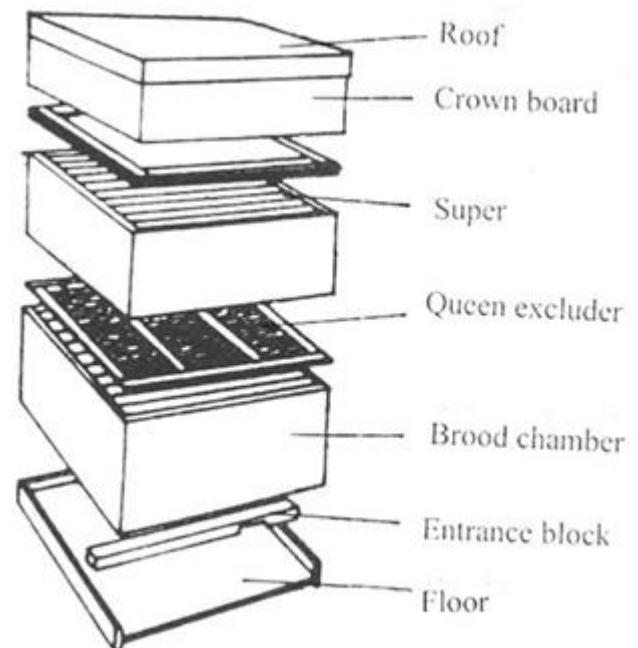


Fig: A modern bee hive

Hive tool:

It is a flat, slim and long piece of iron that facilitate in scraping the dirty materials deposited by the bees particularly bee glue and superfluous items of comb on the inner walls of the hive.

Uncapping knife:

It is an extended, broad iron piece that helps in removing cap of the hive for examination at regular intervals.

Bee brush:

It is an outsized brush usually used to brush aside bees from honey comb significantly at the time of extraction.

Queen introducing cage:

It is a pipe created of wire web through that the queen cannot pass, each the pipe square measure opened. This toll is employed for keeping the queen in remission within the hive for regarding twenty four hours, in order that she gets at home with the hive further because the employee bees. When swing the queen within the cage each the ends of the pipe is closed with "queen candy" (made by kneading fine granulated sugar with very little honey). Currently the cage is place within the hive. In regarding twenty four twenty four time a hole is created in candy because of intake of candy by employees further as queen, there by emotional the queen. If the bees fail to eat the candy at intervals forty eight hours, the queen ought to be un-leash directly.

Feeder:

During drought and lack of natural food these area unit fed with artificial food. Sweetener area unit taken within the bottle is place over the frame of brood chamber to stop the bees from sinking within the syrup. This instrument is employed for extracting honey from frame with none destruction to the comb. It's a drum created of metal, having many pockets round the rotating wheels. The collected honey is taken out from the drum through the outlet at rock bottom. When extraction of honey the comb and frame area unit used once more.

Hive entrance guard:

During swarming season a tool the same as the queen excluder is place before of the hive entrance that prevents the escape of queen.

Collection:

For assortment of bees, spring is that the best season as swarming happens during this season. As swarm is collected from branches of trees, comer of homes, or from cavities. The bees area unit place in artifact bag and now the mouth of the bag is closed. The collected bees area unit then un-harness within the hive. Before cathartic the bees, the queen is placed within the hive in a very "queen introducing cage. Then syrup is given to the bees as a man-made diet. Among twenty four hrs the queen and also the employee get acquainted to every different also because the hive. during this method they establish the colony. For few days, hive entrance guard is employed to stop escape of queen. Major activities of honey bee.

Swarming:

During spring and summer once conditions area unit favorable and food is obtainable in masses, the bees multiply greatly with the result the comb becomes thronged and also the bees begin to create preparations for swarming.

Migration or absconding:

The following area unit the most reasons for the migration of bees:

- 1) Scarcity of food Un-favorable setting
- 2) Destruction of combs by man or different animal When they migrate from one place to a different place they take all honey nectar with them from the previous comb. however on disturbance they fly to avoid wasting their life and can come back to same place when it slow. Then they begin to look an appropriate place.

Honey process:

The process of honey could also be terribly easy e. g within the case of hobby operation, or extraordinarily complicated involving in an exceedingly flock of technology tailored to every individual honey kind. Most process but involved with liquefying and straining honey each of this operation need some application of warmth to the honey. the warmth has the twin result of removing crystallization in natural honey, to cut back the consistency. Each of those things need providing a product that may be clean and any processed for cream honey and simply fill into jars as liquid honey.

Processing

- Raw honey to be hold on in chamber of capability (100).
- Boiling of honey (indirect means so flavor and medicative worth remains intact).
- Boil it 10-15min honey to be un-leash in macro filter.
- Then, to small filter (60-700C).
- Then to wetness reduction chamber or to the most tank.

Bee products:

The most vital half plays by bees is that the production of honey that may be a nourishment of high food worth.

Honey:

It is a sweet, viscous, edible fluid obtained by honey bees from nectar and spore secreted by plants. once the bee sucks the nectar from the flower it passes them to its honey sac wherever it gets mixed with its acid secretion. The particular method of honey formation isn't doable to enumerate very well. However, it's believe that the cane sugar of the nectar is born-again into dextroglucose and levulose within the honey sac by the action of bound enzymes. Once regurgitation it finally changes into honey that is hold on within the hive for future use.

Bee wax:

It is a wax of high freezing point (about 1400F) secreted by wax glands of employee bees. it's used within the construction of hive. This wax is employed by persons for many functions like producing of cosmetics, cold creams. Shaving creams, polishes, candles, ointments, lipsticks, lubricants, in modeling works etc. it's additionally by beekeepers within the formation of comb-foundation bases for contemporary bee live.

Royal jelly:

Royal jelly is that the secretion of hypo tubular cavity secretor of staff bees commonly of 5-15 days archaic. It's fed to queen throughout their faunal life and adult lives and additionally fed to young staff and drone larva. Secretion is wealthy in vitamin-B additionally contains Vit-C however lacks in Vit-E. It additionally contain a substance 10-hydroxy decenoic acid, that exhibit opposing organic phenomenon activity against several bacterium and fungi.

Marketing:

Marketing of honey is finished typically within the native market.

The rate of honey it depend upon the standard and therefore the size of the bottle.

2. Conclusion

In India about 16 lakh people are engaged in beekeeping. Beekeeping generally means honey production, but a beekeeper can produce other commodities for sale and generate income. These include queen rearing, package bees, pollen collection, wax, royal jelly, bee venom and renting colonies for pollination. The honey itself can be sold in bulk or can be bottled for retail selling. Further it can be produce as comb honey or creamed honey which is sold at a higher price. Honey can also be used in the production of alcoholic drinks. The production and marketing strategies would depend on the type of operation and the kind of colony to be used. The most significant feature of beekeeping industry in India is the export of honey to other country which started at a reasonable scale in 1995-96. It is apparent now that there is a great potential of beekeeping in the country and world market is ready to purchase any amount of honey from India.

References

- [1] Ghosh, GK (1994). *Beekeeping in India*. APH Publishing. ISBN 9788170246442
- [2] Rakesh Kumar Gupta; Wim Reybroeck; Johan W. van Veen; Anuradha Gupta (2014). *Beekeeping for Poverty Alleviation and Livelihood Security: Vol.1: Technological Aspects of Beekeeping*. Springer. pp.14–15. ISBN 9789401791991
- [3] "Honey production: Browse data – FAOSTAT Domains /Production/Livestock Primary; Item: Honey, natural; Beeswax; Area: India; Year: as needed". *United Nations, Food and Agriculture Organization, Statistics Division (FAOSTAT)*.2018. Retrieved 6 May 2016
- [4] Trade Information Brief – Honey" (PDF). *SADC Trade*. Archived from the original (PDF) on 21 April 2015. Retrieved 6 May 2016.
- [5] Crane, Ethel (2013). *The World History of Beekeeping and Honey Hunting*. Routledge. ISBN 9781136746697.