



BEE COLONY STRENGTHENED BY AVAILABLE BEE FLORA AND UTILISATION OF ORCHARD CROPS BY BEES

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Abstract

Among the honey bees *Apis cerana indica* and Dammer bee are the most relevant to the domestication. The normal be colony collapsed over the year may be due to pests and diseases. This type of symptoms are *i.e.* Colony Collapse Disorder (CCD). Honey bee need flowering plants for their pollen and nectar collection and satisfied with the bee flora. The most favourable orchard trees are mungo, guava, ber, jamun, banana etc. Similarly, the field crops like cotton, sunflower, cucurbitaceous flowers are favoured by them.

Key words : Blooming plants, blooming period, enhancement of pollination, Colony Collapse Disorder. drone, queen, worker bee identification.

Introduction

Pollination is a simple process involving transfer of pollen from anther to the stigma of the same or different flower. Pollination which not only enhance the productivity of agricultural crops, but also help in conservation of plants more than 50% of the existing species of plants propagated by seeds are dependent upon insects for adequate pollination. In India, 50 million hectares of land is under bee dependent.

Bee keeping (or) apiculture is the maintenance of honey bee colonies commonly in hives by humans. A bee keeper/Apiarist keeps bees in order to gather honey bee wax to pollinate crops (or) to produce bees for sale to other beekeepers.

Well known honeybees found every where namely *Apis florea*, *Apis cerana Indica*, *Apis dorsata*, *A. mellifera* and *Trigona irridipennis*. However, *A. cerana Indica* and *A. mellifera* are reared in hives in India.

Honey bees and flowering plants have been considered as an example for a co-evolution and mutualism. Honey bees need flowering plants for nectar and pollen as source of food and flowering plants need honey bees for pollination. Bee keeping is entirely depending on the types of flowering plants available in any given area.

There is a need to understand honey bee plant relationship to study food preferences of honey bees and pollination requirement.

Experimental study

(Important plants related with bee pollination with their blooming months)

1. Gram	<i>Cicer arietinum</i>	February
2. Eucalyptus app		February – March
3. Shishem (<i>Dalbergia sissoo</i>)		April
4. Sunflower	<i>Helianthus App</i>	April – May
5. Redgram	<i>Cajanus cajan</i>	September– October
6. Maize	Lea Maize	May – July
7. Cucurbits		May – October
8. Orchard crops (citrus, guava)		May – October
9. Mango		March to May

A list of flowering plants known to be visited by the bees was drawn up. Only plants found within a 1 km² of the apiary of the foraging honey bees in an area were sampled because honey bees effectively utilise the plant resource within 1 Km radius.

Normally bee keepers use three types of hives for example traditional hives, topbar and langstroth hives. Newton's bee hive model normally adapted by the honey bee keepers. In Marthandam and Kanyakumari bee keepers generally used Newton bee hive types and rearing the Inidan honey bees.

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Some of the materials we usually for rearing bees

Newton's bee hive consisting the (Brood frame, Brood chamber, following parts like super frame, super chamber) and must wear Bee veil (bee helmet), gloves for our protection. Indian honey bees are the most favourable bees adapted by the bee keepers.

How the bee colonies disappear/Collapsed

The colony collapsed over the year may be due to autumn collapse, disease, spring dwindle and fall dwindle disease (death bees).

Spring dwindle implies a gradual decline of colony population whereas, we are seeing a rapid collapse. This is usually, we called colony collapse disorder.

A colony of honey bees comprises a cluster of several no. of workers bees around 60,000 (sexually immature females) and depending on the colony population a season of year, a few to several hundred drones (sexually developed males).

A colony normally has only one queen, whose sole function is egg laying. The bees cluster loosely over several wax, combs, the cells of which are used to store honey and pollen (protein food) and to rear young bees to replace old adults.

Seasonal bee colony strengthening with forage availability

The colony strength as well as honey bee products mostly depends on the availability and type of bee flora to level of colony management practice (Bista and Shivakoti, 2001).

The bees foraging at least 1.5 km from their colonies, and the proportion of foragers flying to one field declined, approximately linearly, with radial distance (Osborne, 2007). Hence, apiary site should be near by the good honey bee forage plants in order to obtain good honey bee products and colony strength (Jacobs *et al.*, 2006).

Conclusion

Increase in yield due to bee pollination and installation of 3 – 5 bee colonies of *Apis cerana indica*/acre of crop field.

(a) Sunflower seed yield	—	79%
(b) Mustard seed yield	—	55%
(c) Sesanum seed yield	—	15%
(d) Safflower seed yield	—	64%
(e) Cotton seed yield	—	18%
(f) Coconut seed yield	—	40%
(g) Gourds seed yield (Cucurbitaceous)	—	20%

Pollinator

Pollination among agricultural and orchard they need to be conserved and augmented and supplement with domesticated honey bees. The colony strength and bee hive products mostly depends on the availability of bee flora. Authors identified many bee flora and investigated many pests and diseases attacked by pests.

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References

- Mohapatra, L. N., Sontakke and N. Ransingh. Working in O.U.A.T., Bhubaneswar (Orissa Review).
- Sivaram, V. Dept of Botany, Bangalore University, India.
- Suryanarayan, M. C. (1986). Honeybee-flower relationship. *Bulletin of Botanical Survey of India*, **28(1-4)** : 55-62.