

**Advisory on Good Beekeeping Practices (GBPs)**  
**[Prepared in consultation with AICRP (HB & P), ICAR]**

There is vast potential for beekeeping in the country. However, due to lack of knowledge, scientific beekeeping is not being practiced by the beekeepers. It is necessary for beekeepers to participate in the trainings / other capacity building programmes on the subject to gain scientific knowledge on the subject. Selection of good apiary site, good quality bees and proper management are the main keys for success of beekeeping. Always use recommended methods to control swarming, division of colonies, uniting of colonies, mass queen rearing, stopping laying workers, robbing, desertion, migration, and management of diseases, pest and enemies, etc. The following advisories should be kept in mind for effective and beneficial beekeeping.

**1. Selection of good apiary site**

Select apiary site by considering the following:

- (i) Apiary ground should be clean & free from dry leaves etc. to avoid fire during summer
- (ii) Apiary site should be away from power station, brick kilns, highway and train tracks
- (iii) Site should be open & at dry place having shade
- (iv) Site should be easily accessible by road
- (v) Fresh running water should be easily available near the apiary
- (vi) It should have natural / artificial wind breaks
- (vii) Site should receive early morning and afternoon sunshine
- (viii) Area should be rich in bee flora
- (ix) There should not be other commercial apiary within 2-3 kilometers from the apiary site
- (x) There should not be any source of stagnant / dirty water, chemical industry/ sugar mill, etc., nearby the apiary

**2. Selection of good quality bees**

Beekeeping can be done by domesticating two species of honey bees viz; *Apis cerena* and *Apis mellifera* depending upon floral conditions and capability of investments. However, success in both the cases depends on quality of bees, particularly queen. Therefore, the following should be kept in mind to select the bee colonies:

- (i) Buy disease free bee colonies from existing beekeepers after getting training on the subject.
- (ii) Select and multiply honey bee colonies only from disease resistant, high honey yielding, young, healthy and high egg laying capacity queen, etc.
- (iii) Keep colonies with good prolific queens
- (iv) Capture few bee colonies from their natural abodes in forests which may be used for further breeding/ multiplication to prevent inbreeding

### **3. Management of apiary**

#### **A. Placement of colonies in apiary**

- (i) Hives should be as per specification of BIS/ISI and should be of locally available seasoned light weight wood. Unseasoned and heavy wood should be avoided
- (ii) Avoid nailing the bottom board with the brood chamber
- (iii) Restrict number of bee colonies in a apiary from 50-100
- (iv) Keep row to row and box to box distance as 10 and 3 feet, respectively
- (v) Avoid over- stocking of colonies in the apiary

#### **B. Inspection of colonies**

- (i) Adopt general colony and personal hygiene in the apiary like cleanliness in the beehives including cleaning the bottom board, top cover, etc. frequently
- (ii) Check the colonies periodically for any abnormalities or changes in behaviour of bees
- (iii) Inspect colonies on clear sunny days preferably at temperatures between 20 and 30°C
- (iv) Do not inspect colonies in cold, windy and cloudy days
- (v) Use smoker when needed to subdue the bees
- (vi) Use protective dress and veil while inspecting colonies
- (vii) Handle colonies gently, avoid jerks
- (viii) Avoid crushing bees as it could lead to stinging
- (ix) Isolate the diseased colonies from healthy ones.
- (x) Handle diseased and healthy colonies separately

#### **C. Provision of fresh water in the apiary**

Ensure availability of fresh water preferably in shallow containers near the apiary to maintain a healthy apiary. Water is needed for the following

- (a) Maintenance of adequate humidity in a colony to ensure proper incubation of eggs
- (b) For feeding bee bread by nurse bees, the mixture of honey and pollen of certain consistency is required for which water is needed
- (c) When temperature in the apiary increases beyond 37°C, water is used by bees to evaporate and cool the colony

#### **D. Dearth period management**

- (i) Provide 50% sugar syrup to the colonies during dearth periods when honey stores in the colonies is not adequate and nectar is not available in the area. The syrup should be prepared by boiling clean water in the vessel and sugar added with slow stirring for few minutes. Cover the vessel with lid and let it cool. Feed cooled syrup.
- (ii) Sugar syrup should be kept in such a way that the bees should not drown in it. This should be ensured by using shallow vessels with straw to facilitate easy feeding
- (iii) Do not prepare the feed in open in the apiary and avoid dripping on the ground to prevent robbing by bees and ants
- (iv) Feed the colonies in the evening preferably after sunset
- (v) Feeding should be given to all colonies in the apiary at one time
- (vi) Do not feed colonies with honey or syrup mixed with honey
- (vii) Pollen substitute comprising of fat free soyabean flour (3 parts) + Brewer's yeast (1 part) + skimmed milk powder (1 part) + sugar (22 parts) +honey (50 parts) made in the form of patties should be provided when pollen stores in the colonies is not adequate and pollen is not available in the area
- (viii) Provide fresh water near the colony in shallow vessels
- (ix) Extra frames should be stored in air tight chambers and fumigated with sulphur powder regularly
- (x) Old and dark combs should be discarded

#### **E. Care during honey extraction**

- (i) Use honey extractor, containers and other bee hive tools /equipments made of stainless steel / food grade plastic. Don't use tins & containers made of other degraded material
- (ii) Wash all the equipments / containers etc. thoroughly with warm water before honey extraction
- (iii) Extract honey from super chambers only
- (iv) Select frames only with 75% sealed cells with ripened honey for extraction
- (v) Cover the entrance gate of the colony with small branches or twigs to avoid robbing

- (vi) Extract honey in a closed room and not in the open to avoid robbing
- (vii) Do not leave super and brood frames, after extraction of honey open in the apiary;
- (viii) Do not spill honey in the apiary

## **F. Care during migration**

- (i) Migrate colonies during non-availability of flora to areas with abundant flora.
- (ii) Before migration survey the area to assess the availability of the flora to locate the colonies
- (iii) Ensure honey extraction before migration
- (iv) Close the entrance gates of the colonies in the evening after all worker bees are inside the colony
- (v) Pack the colonies internally and externally before migration to avoid jerking
- (vi) Colonies in the vehicle should be packed in such a way that the entrance side should face the front side of the vehicle
- (vii) Start migration late in the evening and ensure the colonies reach the destination within 10-12 hrs. the next day morning and entrance gates are opened after landing in the new location
- (viii) If the destination is far away, keep colonies by halting at an appropriate place in day time and open the entrance gate and repeat the process of migration
- (ix) Avoid jerking in the way while transporting bee colonies

## **G. Seasonal management of apiary**

### **a) Summer Management**

- (i) Keep the colonies in thick shade
- (ii) Regulate the microclimate of the apiary by using wet gunny bags over top cover and sprinkling water around the colonies in the apiary during noon hours.
- (iii) Provide proper ventilation in the colony by widening the entrance gate of the colony, providing additional gates to multi chambered colonies, placing thin small stick pieces between two adjacent chambers for the passage of fresh air, reducing the number of frames by 1 and allow 9 in the chamber
- (iv) Provide fresh water in/near the apiary

### **b) Monsoon management**

- (i) Clean and bury deep the debris lying on the bottom board

- (ii) Keep the surroundings of the colony clean by cutting the unwanted vegetation which may hamper free circulation of the air
- (iii) Provide artificial feeding (sugar syrup and/or pollen substitute) as per requirement of the colony
- (iv) Check the robbing within the apiary
- (v) Unite weak/laying worker colonies
- (vi) Control predatory wasps, ants, frogs, lizards in the apiary

**c) Post monsoon season management**

- (i) Provide sufficient space in the colony
- (ii) Strengthen the colonies to stimulate drone brood rearing
- (iii) Control ectoparasitic mites, wax moth and predatory wasps
- (iv) Extract autumn honey before the winter sets in

**d) Winter management**

- (i) Examine the colonies and provide winter packings in weak colonies specially in hilly areas
- (ii) Feed sugar/pollen substitute to weak colonies as stimulative feeding to provide energy and initiate brood rearing
- (iii) Shift the colonies to sunny places
- (iv) Protect the colonies from chilly winds by using wind breaks
- (v) Unite the weak colonies with stronger ones

**e) Spring management**

- (i) Unpack the colonies, clean the bottom board, replace the worn out hive parts and provide sufficient space
- (ii) Provide stimulative sugar/pollen substitute to increase brood rearing
- (iii) Equalise the colonies
- (iv) Extra frames should be raised by providing comb foundation sheets
- (v) Replace the old queens with new ones through mass queen rearing or divide the colonies
- (vi) Manage the colonies in such a way to prevent swarming
- (vii) Monitor regularly for ectoparasitic mites and adopt control measures
- (viii) Extract honey frequently during this season

**H. Protecting colonies from pesticides**

- (i) Persuade the farmers not to use pesticides or use selective pesticides that are less harmful to bees at recommended concentrations
- (ii) Avoid the use of dust formulations as they are more harmful to bees than spray formulations
- (iii) Prior information about spraying would help in reducing poisoning of bees
- (iv) Avoiding spraying of pesticides during flowering of the crop and peak foraging time of the bees would help in reduction in the mortality of foraging bees
- (v) Spraying may be done in the evening after sun set when bees do not forage
- (vi) Colonies may be temporarily shifted if heavy spraying schedule is fixed
- (vii) If shifting of the colonies is not possible, feed with 200 ml sugar syrup and close the gate by using wire screen for the day of spraying

## **I. Management of Honey Bee Diseases**

Honey bees could be affected by diseases and the real cause of abnormality or any disease present in the honey bee broods need to be ascertained before taking up any control measures. It is best to contact the researchers/scientists/beekeeping experts at the nearest centre or university or Government department working on honey bees. After the exact diagnosis of the causal agent of the particular disease, the guidelines/ recommendations given by the expert should be followed in true letter and spirit. However, general advisory for the management of common diseases of honey bees is given below:

- (i) Select good site to locate the apiary preferably in an open, dry place with shade.
- (ii) Adopt general colony hygiene in the apiary like cleanliness in the beehives including cleaning the bottom board frequently.
- (iii) Select and multiply honey bee colonies only from disease resistant stocks.
- (iv) Keep colonies with good prolific queens.
- (v) Create broodlessness in colony for at least 15 days by enclosing the queen in a queen cage.
- (vi) Check the colonies periodically for any abnormalities or changes in behaviour of bees.
- (vii) If you observe any colonies with disease, isolate them from healthy ones. Handle diseased and healthy colonies separately.
- (viii) Keep the colonies strong by adding sealed brood comb or worker population only from healthy colonies and also by providing adequate food during dearth periods.

- (ix) Prevent robbing, drifting, absconding and avoid migration of bee colonies when you notice disease symptoms.
- (x) Follow 'Shook Swarm' or shaking method to remove contaminated combs completely by transferring entirely new combs in one operation to the colonies with disease symptoms. Destroy the removed combs by burning.
- (xi) Sterilise the combs and equipments by any one of the following methods:
  - a. Disinfect the empty combs and equipments with 80 per cent acetic acid @ 150 ml per hive body in piles for few days at a protected place. Air the treated materials before use.
  - b. Dip the contaminated equipments and combs in soap solution containing 7 per cent formalin for 24 hours. Then wash the treated material with water, dry and use.
  - c. Disinfect the combs with UV rays in protected chambers/UV chambers, where possible.
- (xii) Use of antibiotics to control honey bee diseases is likely to result in contamination of honey causing problems in export of honey.