3.1.3 SUB-MODULE 3: COLONY AND PEST/PREDATOR MANAGEMENT

Introduction

Honeybee management is the art and skill of keeping bees for maximum production of bee products and services (pollination). Production of bee products is attained through the natural instincts of the honeybee colony and the adaptation of management techniques to specific situations. Therefore, beekeepers should observe, understand and exploit behavioural aspects of the bee colonies. To understand and manage honeybees, one must be familiar with the development and activities of the colony and seasonal changes that take place. Colony management is the rearing of bees for maximum production of bee products and services. The Key aspects of colony management include;

Inspection

Hive inspection should be done at least once a month in order to get acquainted with your bees. This will enable you to know:

- When the colony needs a new queen
- The colonies with cool temperament
- Productive colonies
- Colonies with less tendency of swarming
- Performance of the queen.
- Presence of pests, predators and diseases
- Whether the honeybee colonies need supplementary feeding
- When to make a division
- When to harvest the honey.

The findings of the inspection inform the decision to make e.g. a week colony requires feeding, whether to do colony division, harvest etc. The beekeeper is required to be in a bee suit and have a lit smoker, hive tool and bee brush.

Inspection procedure

- Approach the hive from the back (away from hive entrance)
- Smoke the hive through the entrance
- Lift the lid and smoke onto the bars/frames
- Remove the top bar/frame and inspect
- Once the inspection is completed replace the lid or cover.

During the inspection, the beekeeper is advised to have an assistant.

Hive inspection-courtesy of NBI

Stocking of hives

This can be done through:

- Natural occupation/let alone method-the hives are left alone in the open and bee swarms naturally occupy the hive
- Trapping of swarms
- Bait the hives or the catcher boxes
- Set the hives/catcher boxes strategically during swarming season
- Check for occupation periodically
- Occupation may take days or weeks
- Block the catcher box entrances before moving the trapped swarms to the desired site
- Division of colony.

Dividing a strong colony to produce two can also be done for the purpose of:

- Controlling natural swarming
- Increasing number of bee colonies

Seasonal management

Honey bees in tropical climates needs a managerial programme during these four periods.

Dearth Period. This is a time of the year when nectar and pollen are not available to the bees. Egg- laying activities may therefore decrease or stop due to the fact that there is no food to feed the brood. The earth period may be caused by:

- The prolonged dry season will not permit flowering
- Very heavy rains, which prevent bees from foraging.
- The combination of prolonged dry season followed by very heavy rains.
- Very cold weather which prevents bees from going out to forage; instead they cluster to produce heat. In hot areas, put the hive under shade so that bees have time to search for their food source instead of wasting time trying to cool the hive. Shelter hives to keep them dry where rains are heavy and provide proper ventilation. Enhance pest control measures since the colonies are most vulnerable at this time. Provide water if there is scarcity and feed the colony if necessary.

Build-Up Period. This is a time when bee plants start flowering and bees start to bring in pollen and nectar. At first, the bees will bring only enough for egg laying by the queen. During this period all the stores are used for comb building, egg - laying and brood rearing. At this time, there should not be less than two top bars full of honey so that the queen may lay eggs to maximum capacity and brood rearing may not drop. Feed any colony that runs short of food. The more stores of honey, the greater the number of foraging bees that would be available to collect the crop thus the bigger the harvest. At the onset of the build-up period, the following should be done:

- Remove all combs which are wrongly built.
- Check that the brood is in compact blocks on the combs. This indicates a good queen
- Merge queen less and small colonies in to medium - sized ones.
- Help the bees to expand their brood nest by putting an empty top bar in between the brooding bar and the top bar containing honey and pollen.
- Look for hiding places for small hive beetles and wax moth larvae, which the bees cannot remove
- Merge queen less and small colonies to medium-sized ones.
- Help the bees to expand their brood nest by putting an empty top bar in between the brooding bar and the top bar containing honey and pollen.

Honey-Flow Period. Bee plants are in full bloom during this period. Bees bring in nectar and pollen in greater quantities for their daily requirement and therefore utilise the period for storing. There will be a daily increase in stores if the colony was properly prepared in the build-up period. Otherwise, the colony will use the honey flow period to build-up instead of collecting excess nectar and pollen. At this time the queen should be restricted to the brood area (by using a queen excluder) to leave the other combs to be used for storage. In case of a Langstroth hive, give extra supers when the colony is ¾ full. They will serve both for the distribution of the colony population, which will control swarming, and to store excess food. In the case of a Kenya Top Bar Hive, harvesting can be done to create space. This period is the peak of all preparations because maximum storage of honey is the beekeeper's goal of the craft.

Harvest Period. The honey harvesting period starts about ten days after blooming. By then the honey is ripe and ready for harvesting. There is always a danger of bees consuming the stores if harvesting is delayed.

Colony feeding

The natural food of the honeybee consists of nectar, honey, pollen and water. It is normally not necessary to feed bees when pollen and nectar are abundant. Feeding should be avoided because it can result in storage of sucrose instead of nectar. However, under certain conditions, feeding is necessary to sustain the bee colony. These conditions are as follows.

New colonies

A new colony that has entered a hive by itself, been transferred from a catcher box or made by division or package bees will develop much faster if it is fed. About two litres of sugar syrup should be given for 2-3 weeks.

Drought

Conditions under severe drought conditions, colonies may be fed to prevent them from absconding or migrating. The amount to be fed requires considerable experience and knowledge of both the bees and local conditions so that the sugar is not wasted.

Stimulative feeding

If it is known that a honey-flow will begin at a certain period, the bees may be fed, up to two months before flowering to stimulate brood rearing so that the adult bees reared will be ready to forage in the field when the flowering period starts. When stimulative feeding is done bees will store more surplus honey because they do not have to build up their numbers for the honey flow. Feed two litres each week, however, this amount can be increased with time to keep pace with the increased number of bees.

Sugar syrup feeding equipment

The Feeder Box -The feeder box is exactly the same length as the top bar of a Kenya top bar hive. It is shaped like a hive, both sides covered with a hardboard. There is a slot on either side of its upper part where bees enter to get to the syrup. The opening on the top frame is used to pour the sugar syrup and to prevent bees from drowning, pieces of straw or small sticks are used as floaters. One empty top bar is removed and replaced with the feeder. The feeder can be left in the hive for several days. Always inspect the colony being fed and do not leave stale or fermented syrup in the hive as this will affect the bees, and they could even abscond. When all the feeding is done remove the feeder box and replace the top bar or frame.

Cans or Pails -Cans or pails of sugar syrup are placed on top bars or the frames within the brood chamber. A super without frames is then placed on top of the brood chamber and the hive cover placed over it. The cans or pails containing sugar syrup can also be placed on top of the hive; however, this will encourage robbing.

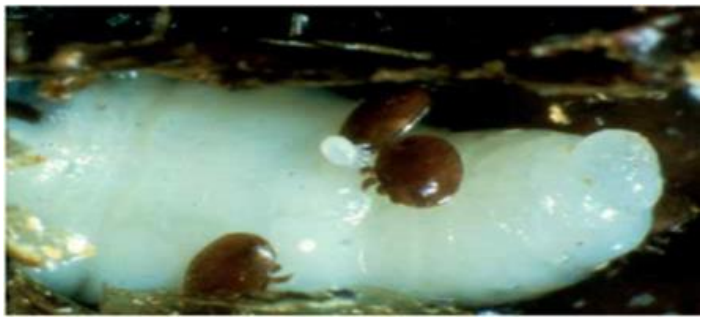
A plastic bag feeder -The plastic bag encloses much of one or two frames in the out edge of the brood nest, bees feed from the upper opening just like they do from a feeder box. Bees can also be fed by pouring the sugar syrup directly to the cells of empty combs in to the brood chamber

Bee pests and predators

There are quite a number of honey bee pests and predators that directly affect the honeybee colonies and thus affect the production of both hive products. There are no identified honey bee diseases in Kenya but a number of them are experienced in other parts of the world. These pests could be insects, reptiles, amphibians, birds and mammals.

Insects -The most troublesome of these pests include beetles, safari ants, sugar ants, termites, varroa mites/bee-louse and pirate wasps


Varroa mites



Feeds on haemolymph of all the life stages of honey bees

Mites are found on the body of the adult bees, in the brood cells or on the debris from the hives

- Control -On adults use the icing sugar technique.
- Check mites in sealed cells and check on the body of the bee
- Control -Alcohol wash.
- Use a sticky bottom board.


The sticky board traps the mice/louse when they drop onto it.

- Reptiles-lizards and snakes. Feeding on bees eventually leads to absconding.
- Control a) Maintenance of clean apiaries b) Constant hive inspections to chase away such pests

- Amphibians- Frogs and toads. Sit the hive entrance and feed on bees directly.
- Control a) Avoid hanging hives in swampy areas. b) Constant hive inspections to remove such pests
- Birds - e.g., European Bee Eater (*Merops apiaster*)- Feed on bees as they fly out of hives

Control-Chase or scare the birds away from the apiaries.

Honey Guide Indicator. Feed on bees as they fly out of hives. Lives symbiotically with the honey badger. It's a minor pest.

- Mammals-man and Honey badger (*Mellifera capensis*) are the greatest pests for bees
- The honey badger- Feed on honey and brood b) Destruction of hives.

Honey badger

- Control -a) Suspending hives by use of hanging wires. b) Fencing the apiaries with thorns and chicken wire meshes c) Use of a strongly built bee house. d) Railing of trees or hanging posts with a slippery metallic material e.g. tin.