

Sustainable Agricultural Livelihood Restoration, Rehabilitation and Resilience in Kenya Training Manual

3.1.4 SUB-MODULE 4: BEE BEHAVIOUR

Introduction

Honeybee behaviour is a phenomenon portrayed by honeybees in the course of their daily activities in a colony. Some are genetically influenced while others are dependent on external stimuli. It is very important for a beekeeper to understand and utilise behaviour patterns presented by bees for better management.

The following are bee behaviours important in management of the honey bee:

Defence

Stinging should be considered as a defensive behaviour instead of a form of aggression. Bees normally react in a definite pattern of behaviour to specific stimuli associated with an intruder. Guard bees stay at the entrance watching for any enemy that dares provoke the colony. Once one attacks many others follow. They do this to protect the brood and honey by stinging. Once the sting is deposited, alarm pheromone is suddenly liberated from the stinging apparatus. It lingers at the stinging site after the bee has departed, thus exciting further stinging responses. Colony defence behaviour is one of the most significant kinds of activity not only because bees are able to protect themselves very effectively but also because stinging behaviour is one of the greatest deterrents to keeping bees. Beekeeping can be pleasurable through understanding of stinging behaviour and can reduce

Scouting

This refers to a situation where scout bees leave the hive in search of new food sources or nesting sites. Worker bees scout for food outside the hive in all directions. The ones that find good forage go back to the hive and relay this information to the rest of the colony through a series of dances which recruit foragers to gather food for the colony until the source is exhausted. Bees scout for new nests in preparation for swarming.

Swarming

This is a natural way by which honeybee colonies multiply or reproduce thus increasing their numbers. An increase in bee population causes overcrowding in the hive and thus the worker bees feel the need for rearing additional queens in preparation to divide and depart. Honey Bees usually swarm after flowering seasons. Swarming is uneconomical to a beekeeper since part of the colony is lost. A swarm consists of a queen, a large number of worker bees and a few drones.

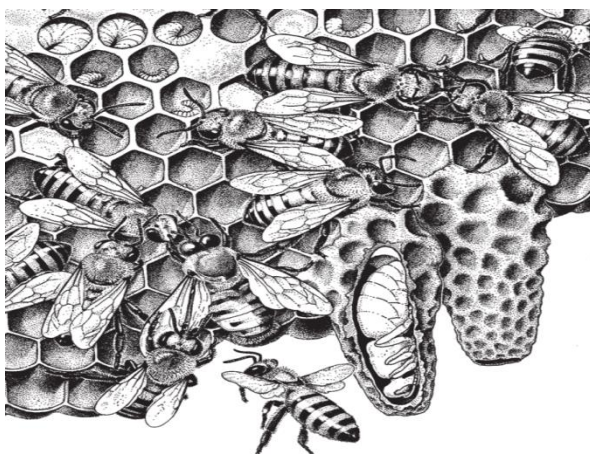
Sustainable Agricultural Livelihood Restoration, Rehabilitation and Resilience in Kenya Training Manual



A swarm of bees

Causes of swarming:

- Overcrowding as a result of increase in the number of bees leading to high temperature, high humidity, high carbon dioxide concentration and poor ventilation in the hive.
- Hereditary. Certain bee strains in the tropics have an inherent tendency to swarm
- Effects of the season – During the honey flow period, most of the comb cells are filled with honey thus reducing space in the hive.
- Signs of swarming - Building of swarm cells along the edges of the combs, Clustering of bees at the entrance of the hive, Presence of many drone cells and drones, Increased aggression – bees become more defensive and sting a lot, rocking movement of the bees, Bees produce a hissing sound.



Swarm cells along the edge of comb

Sustainable Agricultural Livelihood Restoration, Rehabilitation and Resilience in Kenya Training Manual

Control measures

- Making Divisions – this reduces the population of the bee colony thus creating more space in the hive
- Destroying swarm cells so as to stop the emerging of new queens.
- Switching positions of weak colonies with stronger ones so that the weaker colonies can receive the field bees from the stronger colonies.
- De-queening and re-queening. This involves the introduction of a queen with a less swarming tendency
- Clipping the wings of the queen as a temporary measure.

Once the honeybee swarm leaves the hive, they cluster either on a tree branch or a post and only stay for a few minutes or hours. During this period worker bees scout for a better place, if there is an empty hive or catcher box, they would occupy it; if not, they take off to an unknown destination. Such swarms can be trapped by farmers when spotted using a catcher box or a net since such bees are usually not aggressive.

Supersedure

This is a natural behaviour of replacing a queen with a new one in a bee colony.

Causes of supersedure.

- Failing queen due to old age, injury, sickness
- Death of the old queen
- Accidental loss of queen. Signs of Supersedure
- Presence of queen cells on the surface of a comb
- Egg laying pattern of queen is irregular
- Weak colony
- The activities of the bee colony are reduced
- Workers start to lay eggs.

This kind of behaviour (i.e., natural replacement of a queen) is acceptable and the beekeeper is advised not to destroy the supersedure cells since making a queen in such conditions is acceptable.

Signs of supersedure

- Irregular egg laying pattern of the queen
- Weak colony.
- Reduced hive activities.
- Supersedure cells on the surface of combs.

Sustainable Agricultural Livelihood Restoration, Rehabilitation and Resilience in Kenya Training Manual



Superseded cells on surface of cob

Absconding

This is a sudden departure of the whole colony of bees from a hive. It is caused by

- Due to pests, predators, diseases
- Shortage of food and water.
- Unfavourable weather conditions – floods, high temperature
- Poor management aspects e.g., over-harvesting, mishandling.
- Effect of fire and chemicals.

There are no obvious prior signs but on opening the hive the beekeeper is likely to see an intact brood nest and food stores.

Control measures

This can be achieved by adoption of proper management practices that address the causative issues. The beekeeper must create conducive environmental conditions and protect the bee colonies from physical and chemical disturbances.

Migration

This is a seasonal movement of the whole colony from one region to another due to adverse weather conditions. Migrating bees normally follow specific routes. Migration is caused by:

- Scarcity of bee forage (nectar and pollen) and water
- Genetic factors.
- Seasonal weather variations.

Sustainable Agricultural Livelihood Restoration, Rehabilitation and Resilience in Kenya Training Manual

Control measures

- Improvement of environmental conditions e.g., planting trees, provision of water
- Practicing migratory beekeeping.
- Feeding bees during adverse conditions.
- Selection of bees with less migratory tendency.