

CHAPTER 6

Apiculture

OBJECTIVES

At the end of the chapter, students should be able to:

â—† state the meaning of apiculture.

â—† list different types of bees.

â—† state the importance of bee-keeping.

â—† state the methods of bee-keeping and their equipment.

â—† state the precautionary measures in bee-keeping.

â—† prepare equipments for bee-keeping and produce quality honey.

Introduction

Bees are social insects like ants, wasps and termites. Each individual work together as part of a group and are governed by the demands of the colony, and ultimately by the queen. Bees are very important insects in the universe and they provide many useful services to mankind. Indeed, they have impacted on mankind both positively and negatively. Honey bees play a vital and indispensable role in agriculture as pollinators. The art of rearing bees is otherwise known as apiculture or beekeeping.

Meaning of Apiculture

Apiculture or bee-keeping is the science and art of management of honey bee colonies for pollination of crops and for honey and other useful products. It involves rearing of bees for honey and other benefits derived from it. Bees are reared in beehives in a place called apiary. Apiary is also known as bee yard.

Types of Bees and Their Characteristics

There are many different species of bees most of which are solitary while others are social. Social bees live together in colonies and the best known is the honey bee. The major types are:

(a) Indigenous bees

(b) Exotic bees

Importance of Bee-Keeping

Bee-keeping is very important because of the benefits derived from it. Some of the benefits of keeping bees are as follows:

i. Provision of honey: Through beekeeping we get honey which has value for its sweetening properties as food.

ii. Source of income: Honey obtained from bee-keeping serves as a source of income for the bee-keeper since it is a readily tradable commodity.

iii. Medicinal use: Honey has medicinal properties; hence it is used in curing ailments.

iv. Sources of raw materials: Beeswax which is a valuable by-product of honey production is used in the manufacture of candles, polish and adhesives.

v. Pollination: Honey bees are pollinators – this is their greatest value in agriculture when kept around cultivated crops.

vi. Employment opportunity: Bee-keeping generates a lot of employment opportunities especially in the area of manufacturing of hives and other equipments, hive product marketing and sales.

vii. Bee-keeping does not compete with any other agricultural crops and livestock; hence it can be practised alongside other forms of agriculture.

viii. It requires little land space and capital thus making it possible for peasant farmers.

ix. Field of study in agriculture: People now study apiculture in schools of high learning as a course or field.

x. Market outlet: The honey produced is sold in different market outlets, for example, at Nsukka and Umudike.

Bee Products and Their Uses

The following are the products from beekeeping activities: Honey, beeswax, propolis, royal jelly and bee venom. Honey is the main product.

6.5.1 Honey

This is a natural unrefined sweet, viscous juice usually collected in large quantities from the bee hive. It is produced by bees from the nectar of flowering plants. Honey consists, mainly of a mixture of two sugars – glucose and fructose. It has very small amount of other substances such as minerals, vitamins, proteins and amino acids.

Uses

It is useful to man as:

- â—† Food
- â—† Medicine
- â—† Raw material for pharmaceutical industries.

6.5.2 Beeswax

This is a creamy-coloured substance produced and used by bees to build honey comb. In the pure state, beeswax is white. Presence of pollen and other impurities makes it yellow. It is easily melted, soft and flexible.

Uses

Beeswax is used:

- â—† For the manufacture of candles, polish adhesives, cosmetics and ailments
- â—† For the making of bronze, brass and casting
- â—† As a water proofing agent for materials
- â—† For strengthening leather and cotton strings.

6.5.3 Propolis

Propolis is a plant secretion that bees obtain from trees and shrubs. It is the gum-like substance that bees use to seal up any cracks in the hive or to make an entrance smaller. It consists of waxes, volatile oils, pollens and vitamins. It has antifungal, antibacterial and antiviral properties.

Uses

- â—† Bees use propolis to seal cracks and smoothen rough places in the hive.
- â—† Man uses it in making paints, turpentine and vanishes.
- â—† It is also used as an ingredient in the manufacture of toothpaste, soaps and ointments.
- â—† It is also used in the treatment of sore throats and tooth ache.

6.5.4 Bee venom

Bee venom is the poisonous fluid located in the sting gland of workers. It is used as a defensive weapon.

Uses

- â—† Treatment of rheumatism and arthritis
- â—† Treatment of certain eye and skin diseases

â—† Relief of pain or as a de-sensitizer

6.5.5 Royal Jelly

This is a glandular secretion by adult worker bees to feed their larvae, particularly to develop queen bee larvae.

Uses

- â—† In feeding young queen bee
- â—† In pharmaceutical industries
- â—† In cosmetics as facial cream and skin condition
- â—† As fertility enhancing medicine when administered in the home.

6.6 Bee-Keeping Equipments

There are different equipments used in beekeeping. The equipment depends on the management methods embarked upon in the apiary. The equipment can be classified under the following broad headings.

- i. **Hives:** A bee hive is an apiary tool. It is any container provided by man for the bees. It provides a suitable home for a colony of bees. It also shelters the bees from adverse weather conditions and pest. There are different types of hives, e.g., Langstroth hive and top-bar hive.
- ii. **Smoker:** Smoker is a device for generating smoke to subdue bees. It is made of a can with small bellows attached to blow air into the bottom. It is commonly used during collection of honey from the hive to prevent bee sting.
- iii. **Hive tool:** This is a flat metal instrument scraper that enables the bee-keeper to work on the frame hives. It is used to pry open the bee hive, scraping off propolis, wax and cleaning the hive. It has a 'U'-shaped slot which is used for removing nails.
- iv. **Veil and Hat:** The veil and hat provide a protective covering to protect the eyes, head and neck from bee stings. It could be a piece of mosquito netting sown into a wide rimmed hat.
- v. **Gloves:** These are made from thin, soft and smoother leather. They are worn on the hands to prevent bee stings.
- vi. **Bee suit:** All-in-one overalls make the best bee suit. It must have a zip. It should be made of thick, light-coloured fabric.
- vii. **Honey press and extractor:** This is an equipment used for harvesting and processing the honey crop

Other equipments that are useful in beekeeping include:

- â—† Queen marking cages
- â—† Bee brush
- â—† Feeders
- â—† Solar wax melter
- â—† Equipment for colony protection

6.7 Precautionary Measures in Bee-keeping

In order to obtain good results from beekeeping activities, certain precautionary measures must be taken. These measures should be looked into at every stages of operation.

6.7.1 Proper Handling of Bees to Minimize Stings

It is important to handle bees properly because they have stinging propensity. The precautionary measures to minimise stings are:

- i. Locate apiaries far from human dwellings.
- ii. Put warning symbols near your apiary.
- iii. Avoid wearing perfumes or any perfumed products when you are to visit hives.
- iv. Do not wear black, red or woollen clothes. Wear light coloured clothes. Always wear protective clothing.

- v. Work when bees are flying since half the foraging bees will be out.
- vi. Do not stand in the flight entrance of the bees.
- vii. Work at the side or back of the hive.
- viii. Work quickly and smoothly. Use smoke lightly at the entrance.
- ix. Do not kill the bees.

6.7.2 Factors to be Considered in Choosing a Site for Apiary

An apiary is a place where bee hives are kept or where bees are reared. The following factors must be considered when choosing a site:

- i. Source of food: Bees need melliferous plants for nectar and pollen; hence there must be plenty of flowering plants and trees in the area.
- ii. The hives must be placed near a source of fresh water supply.
- iii. There should be adequate security against natural predators such as honey badgers, ants and human theft or vandalism.
- iv. It must be sited in an accessible area for the keeper to reach and work.
- v. It should be away from swampy lowland or in deep humid forest.
- vi. The apiary should be sited in a quiet, sheltered place because bees do not like noise.
- vii. Bees can be dangerous, so hives should not be placed too close to people, tethered livestock or caged poultry.
- viii. Apiary should be sited away from areas heavily sprayed with insecticides.
- ix. There should be adequate wind breaks to keep hives from being blown over in high winds and noontime shade during the dry hot season.

ACTIVITY

Visit a nearby apiary and study the activities of the bees. Identify the different bee-keeping equipments, and draw them.

SUMMARY

- â—† Bees are social insects like ants, wasps and termites. Each individual works together as part of a group and are governed by the demands of the colony, and ultimately by the queen.
- â—† Bees provide many useful services and have impact on mankind both positively and negatively.
- â—† Honey bees play a vital and indispensable role in agriculture as pollinators.
- â—† The art of rearing bees is otherwise known as apiculture or bee-keeping.
- â—† There are many different species of bees most of which are solitary while others are social.
- â—† Bee-keeping is very important because of the following:

- â— Provision of honey
 - â— Honey as source of income
 - â— Honey has medicinal properties
 - â— Production of Beeswax
 - â— Honey bees are pollinators
 - â— Bee-keeping generates a lot of employment opportunities
 - â— Bee keeping does not compete with any other agricultural crops and livestock.
- â—† The following factors must be considered when choosing a site.
 - â— Source of food for bees as they need melliferous plants for nectar and pollen.
 - â— The hives must be placed near a source of fresh water supply.
 - â— There should be adequate security against natural predators such as honey badgers, ants and human theft or vandalism.
 - â— It must be sited in an accessible area for the keeper to reach and work.
 - â— It should be away from swampy lowland or in deep humid forest.
 - â— The apiary should be sited in a quiet, sheltered place because bees do not like noise.

REVISION QUESTIONS

1. (a) Mention two types of bees.
(b) State five importance of keeping bees
 2. State four factors that must be considered when choosing a site for apiary.
 3. (a) What is apiculture?
(b) List four products of bees and state two uses of each.
 4. (a) Mention five equipments used in apiculture.
(b) State five precautionary measures in bee making.

OBJECTIVE QUESTIONS

Answers to Objective Questions

1. a 2. d 3. d 4. a 5. d