

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

3.1.5 SUB-MODULE 5: BEE FORAGE / BEE PLANTS

Introduction

Honey bees depend on a number of plants for nectar, pollen and propolis. They make honey from nectar while pollen is fed to brood as a source of protein. Propolis is used to seal any unwanted openings in the hive.

Importance of bee plants

Knowledge of bee plants is important because it helps the beekeeper in the following ways:

- Provides information on the food resource of bees
- To determine geographical distribution of the honey sources
- To know plants that are toxic to bees and man.
- To know the blooming period so as to time honey flow seasons
- To identify bee attractant plants species like *Oscimum*
- Gives knowledge on plants that have adverse effects on bee products e.g. Aloe, Euphorbia and sisal.
- Understand some plants which are repellents to bees e.g. Mexican marigold (*Tagetes minuta*) puff ball (*Walburgia longimanii*) etc.
- Understand some of the plants with attractive flowers, yet bees do not benefit due their morphology or lack of nectar. e.g. Nandi Flame, Bougainvillea and *Lantana camara*.

Major bee plants

These provide nectar and pollen for bees. They range from cultivated crops, exotic and indigenous plants. The following are some of the examples of such plants.



Callistemon citrinus -bottle brush



Acacia senegal (nectar and pollen)

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(Nectar and pollen)-exotic indigenous



Sunflower (nectar and pollen)



Cultivated Cucumber-nectar

Pollination services

As bees gather pollen and nectar from plants, they cause pollination of plants. Pollination, therefore, is the transfer of pollen grains from the anther to the stigma of a flower. There are two types of pollination: (i) Self-pollination: Within the same plant (flower) or within two flowers of the same plant. (ii) Cross-pollination: pollination between two close flowers of the same species borne by two different plants.

Factors affecting pollination

- The colour of the flowers brightness creates attractiveness to the bee (insect). Petals (corolla) portray the brightness. Other parts of the flower can become coloured while the flower (corolla) is not attractive.
- Nectar: All flowers with fused corolla secrete nectar, which attracts insects (bees) hence promote pollination.
- Scent: Some flowers emit a sweet scent which attracts bees from a distance. Emissions from other plants are offensive and irritating to humans, but are immensely liked by pollinators.
- Inflorescence: Individual flowers of some plants e.g. Acacia and Sunflower are inconspicuous so they are massed together into a dense inflorescence, which evidently become much more showy and attractive. Dense inflorescence has the very advantage of closeness so every chance of being pollinated exists. Other plant species are also pollinated by zoophily i.e. birds, squirrels, bats and snails. Birds and squirrels pollinate plants like *Erythrina abyssinica*, Bombax (*Ceiba pentandra*), Rose apple and cape chestnut, *Calondedrum capense*. Others include *Syzygium cuminii* and *Bignonia* spp.

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Importance of pollination

Pollination will not happen in some plants e.g. Cucumber, and castor oil without the aid of the honey bees and therefore fruit may be deformed due to lack of fertilization. Many crops produce more and better-quality fruit when cross pollinated than when self-pollinated. Farmers can reap more benefits by keeping bees in big plantations by hiring out bees for pollination in addition to the honey crop. Advantages of honey bees as pollinators:

- Honeybees visit more flowers than other insect pollinators because the pollen and nectar collected is for their own sustenance, brood rearing and food storage; whereas other insects collect pollen and nectar for their own use on the spot.
- Honeybee's population at any one time is bigger in comparison to other insects; with the exception of butterflies and locusts which may have bigger but very destructive populations.
- Honeybees are more manageable. Beekeepers may practice migratory beekeeping; that is honeybee colonies can easily be placed anywhere when they are needed.
- Fidelity to species. Normally honeybees work on a particular species of flower in a restricted area thoroughly rather than moving about from one kind of flower to another.
- Honeybees can communicate accurately the smell, distance and direction of food sources.
- Honeybees have special body adaptations e.g. cubacula and plumose hairs by means of which they can carry pollen. They also have honey sacs for carrying nectar.
- Honeybees are efficient pollinators because the bees collecting pollen must contact anther and stigma and they work faster than nectar gatherers. Therefore, we can conclude that honeybees are better pollinators.