

Ex No: 11

Date:

STUDY OF VARIOUS INSECT POLLINATORS

Objective:

To understand the role of insects as pollinators, scavengers and weed killers in nature

Role of pollinators:

Pollination refers to the transfer of anther to stigma in flowering plants for sexual reproduction.

Insects and in cross-pollination in fruits, vegetables, ornamentals, cotton, tobacco, sunflower and many other crops.

Insect pollination helps in uniform seed set, improvement in quality and increase in crop yield.

Entomophily refers to cross pollination aided by insects

Pollination classes

Melittophily

Cantharophily

Mycophily

Sphigophily

Psychophily

Phalaeophily

Type of insects

Bees

Beetles

Syrphid and Bombylid flies

Hawk moths

Butterflies

Small moths

1. Honeybees as pollinators

All bee species aid in pollination

Value of honey bees in pollination is 15-20 time higher than that of the honey and wax it produces.

Table 11.1: Per cent increase in yield due to bee pollination

Mustard	-	43%
Sunflower	-	32-48%
Cotton	-	17-19%
Lucerne	-	112%\$
Onion	-	93%
Apple	-	44%
Cardamom	-	21-37%

2. Hoverflies *Syrhus* sp. (Syrphidae : Diptera)

Brightly coloured flies

Body is striped or banded with yellow or blue

Resemble bees and wasps

Larval stage predatory, adults are pollinators

Crops pollinated – carrot, cotton, pulses

3. Carpenter bee, *Xylocopa* sp. (Xylocopinae : Anthophoridae)

Robust dark bluish bees with hairy body

Dorsum of abdomen bare, pollen basket absent

Adults are good pollinators

Construct galleries in wood and store honey and pollen

4. Digger bees, *Anthophora* sp. (Anthophoridae : Hymenoptera)

Stout, hairy, pollen collecting bees

Abdomen with black and blue bands

5. Fig wasp, *Blastophaga psenes* (Agaonitae : Hymenoptea)

Fig is pollinated by fig wasp only. There is no other mode of pollination. There are two types of fig Caprifig and Symrna fig.

(i) Capri fig

It is a wild type of fig-not edible

Has both male and female flowers

Pollen is produced in plenty

Natural host of fig wasp

(ii) Symrna fig

It is the cultivated type of edible fig

It has only female flowers

Pollen not produced

Not the natural host of fig wasp

In fig wasps males are wingless, present in caprifig and females winged. Female wasp lays eggs in caprifig, larvae develops in galls in the base of the flowers. Male mates with female even when the female is inside gall. Mated female wasp emerges out of flower (capirfig) with lot of pollen dusted around its body. The female fig wasp enters Smyrna fig with lot of pollen and deposits it on the stigma. But it cannot oviposit in the ovary of symrna fig which is deep seated. It again moves to Capri fig for egg laying. In this process Smyrna fig is pollinated. Caprifig will be planted next to Smyrna fig to aid in pollination.

6. Oil palm pollinating weevil : *Elaeidobius kamerunicus* (Curculionidae :

Coleptera)

Aid in increasing oil palm bunch weight by 35 per cent and oil content by 20 per cent.

7. Other pollinators

Butterflies (eg (*Deilaphila* spp.) and moths (*Acherontia* spp.)

Ants, flies, stingless bees, beetles *etc.*