

**SOME ASPECTS OF
BEE'S LIFE**

3rd Sem (SEC-A)

**Sudeshna Ghoshal
Dept. of Zoology, VJRC**

BEE PASTURAGE : are group of plants that are visited by bees either for NECTAR or POLLEN

Bees travel 2 to 3 km distance to collect pollen and nectar, particularly at **honey flow period**

Nectar foragers

- Lapping tongue is used for collection
- Pass it to hive bees for honey production

NECTAR SOURCE PLANTS

- Tamarind
- Neem
- Soapnut tree
- Eucalyptus etc.

Pollen foragers

- Bring pollen via pollen basket
- Dislodged it via middle leg into the hive

POLLEN SOURCE PLANT

- Maize
- Tobacco
- Millets like- Tenai, Varagu, Ragi
- Coconut
- Roses
- Pomegranate • Castor • Date palm etc.

BEE POLLEN - is a ball or pellet of field-gathered flower pollen, a bee product

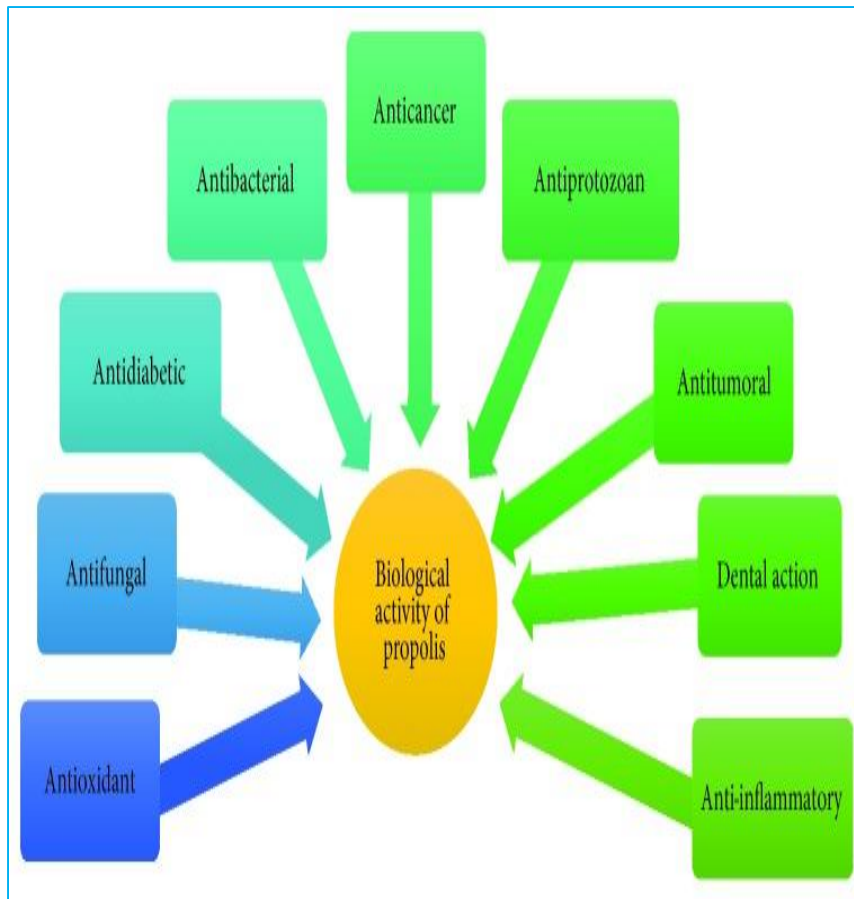
- Foraging bees bring pollen back to the hive
 - pass it off to other worker bees who dampened the collected pollen with saliva and fragmented it into cells
 - surface of the collected pollen is then covered with a thin layer of honey and wax
- It consists of simple **sugars, protein, minerals and vitamins, fatty acids**, and a small percentage of other components
 - also called **bee bread**, or ambrosia, and stored in brood cells,
 - is the primary source of **protein** for the hive

PROPOLIS **and** ROYAL JELLY another Bee products

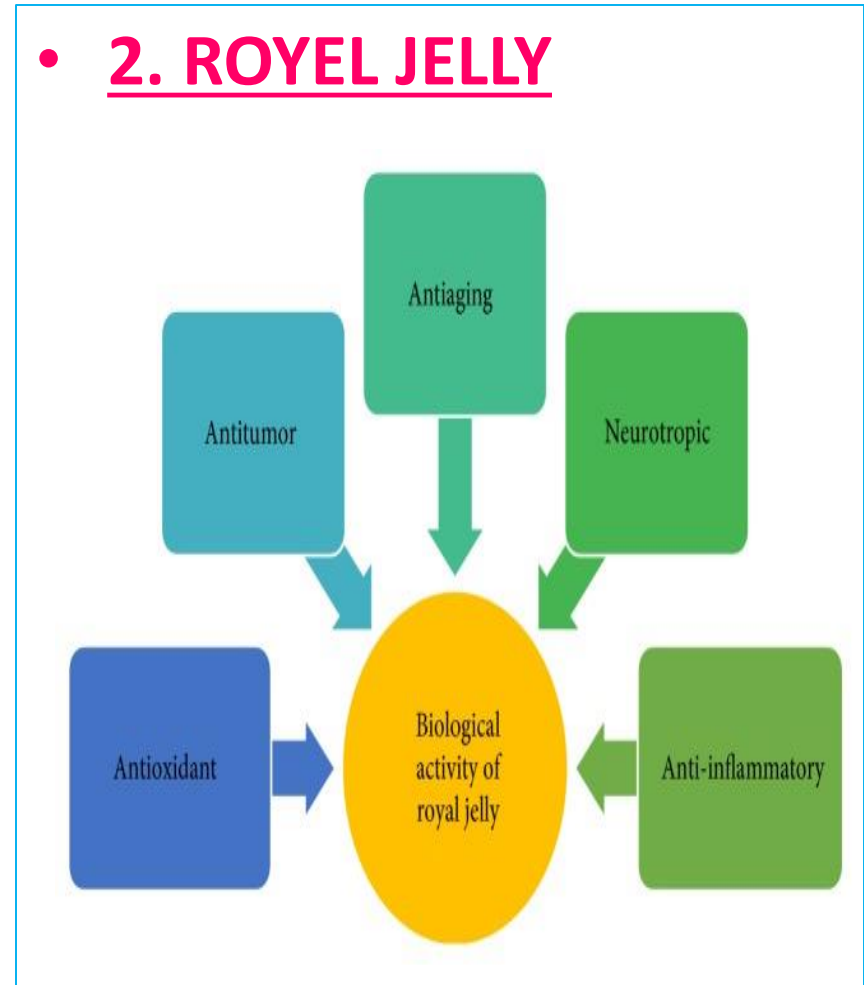
- Propolis – “bee glue” is a **black and brown** colored resinous substance, gathered mainly from **buds** and **bark** of trees and **wounds** of woody plants.
 - Repair and reconstruction of the beehive,
 - preventing weathering,
 - maintaining internal temperature (35°C) and aseptic internal environment of hive.
- Royal jelly - is a protein and fatty acid-rich excretion from the hypopharyngeal and the mandibular gland of worker bees
 - One-third of royal jelly is made up of proteins and sugars in a ratio of 1:1, and the rest consists of water and fatty acids
 - Serve as food for queen for their entire life

BIOLOGICAL ACTIVITIES of Bee products

1. PROPOLIS



2. ROYEL JELLY



ROUND DANCE

- food is nearby
- performs a round dance by travelling in circles once to left and once to right.

WAGGLE DANCE

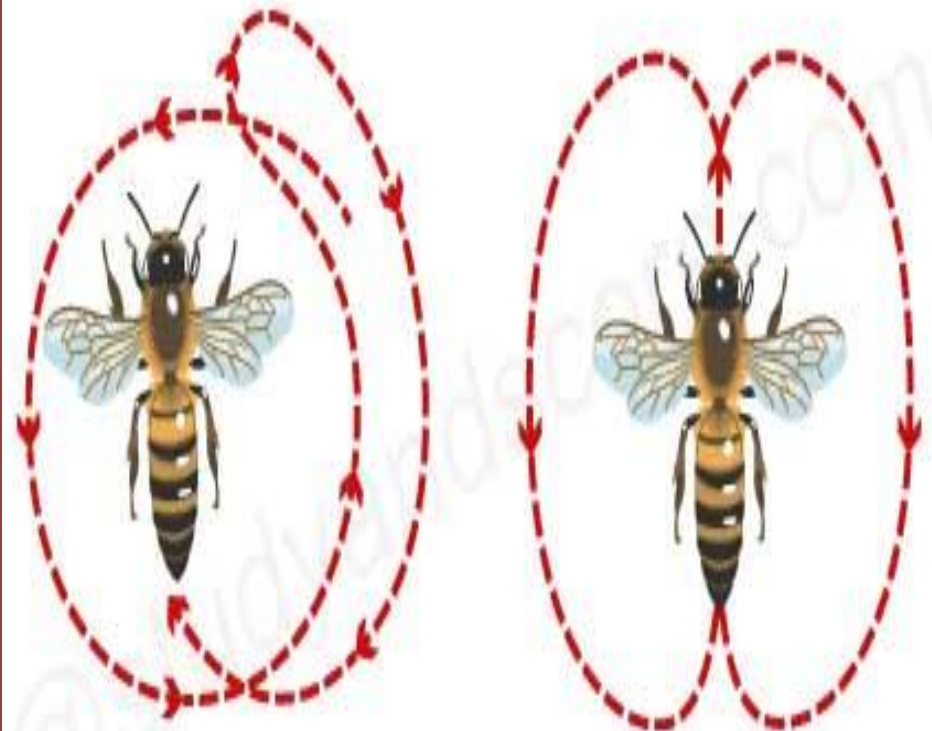
- When the food is far away ,more than 100 meters , bee performs a waggle dance.
- involves the shivering of the abdomen in side-side motion.
- During this dance the bee forms a figure eight.

DIRECTION OF FOOD

- Running vertically up to the hive - food is in the same direction of the sun.
- Running vertically down the hive - food is present in opposite directions to the sun.

BEE DANCE

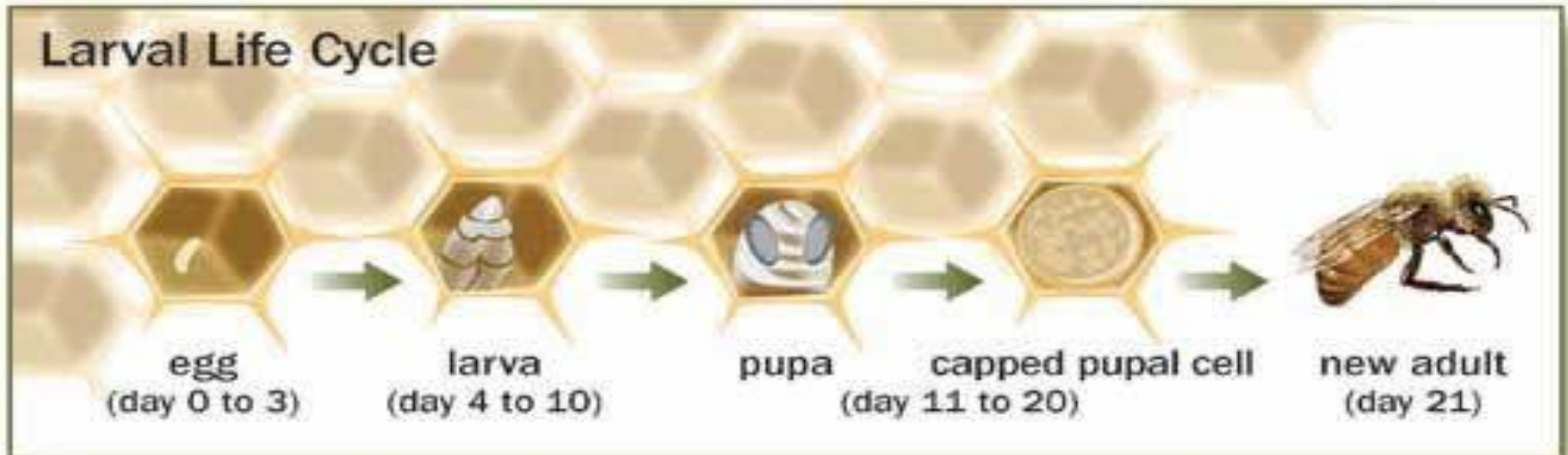
interesting behavioral action of
Worker bee



Round dance

Waggle dance

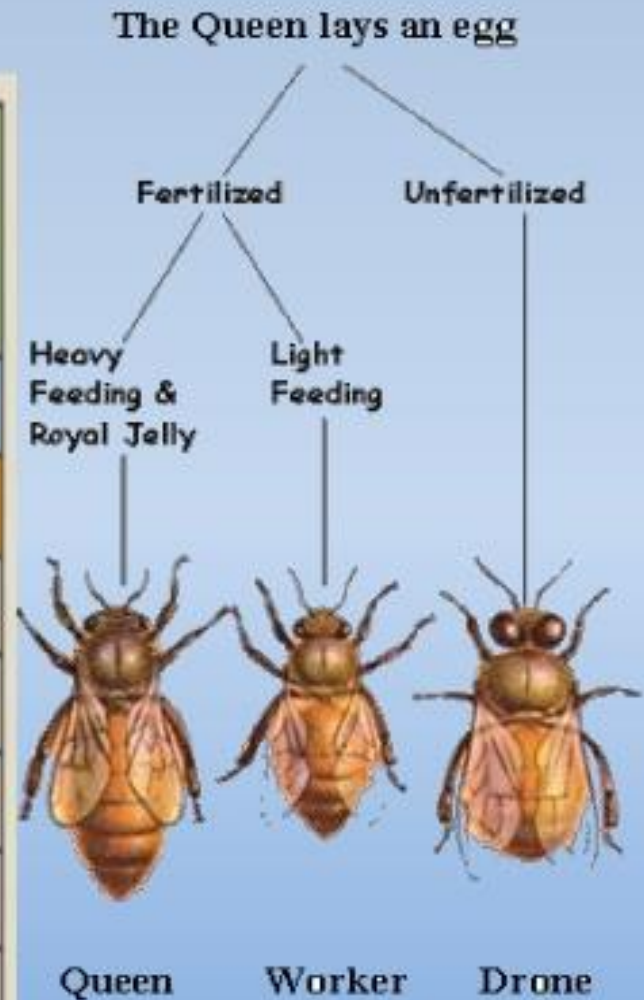
LIFE CYCLE STAGES OF HONEY BEE (in brief)



Honey Bee Development

Stage	Days After Laying Egg		
	Worker	Queen	Drone
Hatching	3	3	3
Cell Capped	8	8	10
Pupa	11	10	14
Adult	20	15	22.5
Emerges From Cell	21	16	24

Stages of Development



Type of Development

Visit the life of the Worker Bee

Day 1-2

- **Cell cleaning** - Brood cells must be cleaned before the next use - cells will be inspected by the queen and if unsatisfactory will not be used. Worker bees in the cleaning phase will perform this cleaning, if not clean worker bee must do it again.

Day 3-11

- **Nurse bee** - Feed the worker larvae, worker jelly, secreted from the same glands that produce royal jelly.

Day 6-11

- **Advanced Nurse** - Bees Feed royal jelly to the queen larva. Drones receive worker jelly for 1 to 3 days at which time they are moved to honey and pollen.

Day 12-17

- **Wax production** - Build cells from wax, repair old cells, and store nectar and pollen brought in by other workers. Early in the worker's career she will exude wax from the space between several of her abdominal segments. Four sets of wax glands, situated inside the last four ventral segments of the abdomen, produce wax for comb construction.
- **Honey sealing** - Mature honey, sufficiently dried, is sealed tightly with wax to prevent absorption of moisture from the air by workers deputized to do same.
- **Drone feeding** - Drones do not feed themselves; they are fed by workers.

Day 12-17 Continued

- **Queen attendants** - Groom and feed the queen. They also collect QMP (Queen Mandibular Pheromone) from the queen and share it with the bees around them who also share it spreading its effects through the hive.
- **Honeycomb building** - Workers will take wax from wax producing workers and build the comb with it.
- **Pollen packing** - Pollen brought into the hive for feeding the brood is also stored. It must be packed firmly into comb cells and mixed with a small amount of honey so that it will not spoil. Unlike honey, which does not support bacterial life, stored pollen will become rancid without proper care and has to be kept in honey cells.
- **Propolizing** - The walls of the hive will be covered with a thin coating of propolis, a resinous substance obtained from plants. In combination with enzymes added by the worker this will have antibacterial and antifungal properties. Propolis is also used to close off excessive ventilation and entrances.
- **Mortuary bees** - Dead bees and failed larvae must be removed from the hive to prevent disease and allow cells to be reused. They will be carried some distance from the hive by mortuary bees.
- **Fanning bees** - Worker bees fan the hive, cooling it with evaporated water brought by water carriers. They direct airflow into the hive or out of the hive depending on need.

Days 18 - 21

- **Guard Bees** - protect the entrance of the hive from enemies.
- **Soldier bees** - Soldiers hang around near the entrance and attack invaders. They work in concert with entrance guards.
- **Entrance guard bees** - These inspect incoming bees to ensure that they are bringing in food and have the correct hive odor. Other bees will be rejected or attacked with soldier bees.
- **Outside guard bees** - Outer guards may take short flights around the outside of the hive in response to disturbances.
- **Water carriers** - When the hive is in danger of overheating, these bees will obtain water, usually from within a short distance from the hive and bring it back to spread on the backs of fanning bees.

Days 22 - 35

- **Foraging bees** - The forager and scout bees travel (2 to 5 miles) to a nectar source, pollen source or to collect propolis.
- **Die in field** - The life span of worker bees depend on the time of year. Most worker bees live about 28 to 35 days. However, workers that are reared in September and October can live through the winter.

BEE BOX FOR ARTIFICIAL BEE REARING



HONEY COLLECTION FROM BEE BOX

