

LECTURE 2.

Insect dominance

Insects are the most dominant species on the earth as they originated on earth 480 million years ago. Among 1.7 million living species, 0.95 million species are insects.

Insect Order Number of species

Coleoptera (Beetles and weevils) 3,50,000

Lepidoptera (Butterflies and moths) 1,60,000

Hymenoptera (Bees, wasps and ants) 1,20,000

Diptera (Flies and mosquitoes) 1,20,000

Hemiptera (Bugs) 98,000

Orthoptera (Grasshoppers, crickets and locust) 20,000

Measures of dominance:

1. More number of species
2. Large number of individuals in a single species: e.g. Locust swarm comprising of 10⁹ number of individuals, occupying large area.
3. Great variety of habitats
4. Long geological history

Reasons for dominance:

There are several structural, morphological and physiological factors responsible

for insect dominance. They are:

1. Capacity for flight

2. More adaptability or universality

3. Smaller size: Majority of insects are small in their size conferring the following

physiological and ecological advantages.

4. Presence of exoskeleton: Insect body is covered with an outer cuticle called

exoskeleton which is made up of a cuticular protein called **Chitin**. This is light in weight

and gives strength, rigidity and flexibility to the insect body.

5. Resistance to desiccation: Insects minimise the water loss from their

body surface

through prevention of water loss (wax layer of epicuticle, closable spiracles, egg shell)

conservation of water (capable of utilizing metabolic water, resorption of water from

fecal matter, use less quantity of water to remove the nitrogenous waste)

6. Tracheal system of respiration: This ensures direct transfer of adequate oxygen to

actively breathing tissues. Spiracles through their closing mechanism

admit air and

restrict water loss.

7. Higher reproductive potential: Reproductive potential of insect is high

eg. Egg laying capacity (fecundity) of queen termite is 6000 - 7000 eggs per day for 15

long years. Short development period e.g., Corn aphid produces 16 nymphs per

female which reaches the adulthood within 16 days. Presence of special types of

reproduction other than oviparity and viviparity like Polyembryony, Parthenogenesis and Paedogenesis

Sources

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