Notes with Answers for Entomology Module

Insect development

Describe gradual metamorphosis.

Insects that develop through gradual metamorphosis hatch from the egg into the nymph stage and gradually develop into their adult state by shedding their exoskeleton several times.

For insects that develop through gradual metamorphosis, how are immature insects and adults similar? How are they different?

Similar	Different
For insects that develop through gradual metamorphosis, immature insects look like adults. They have the same mouthparts, feed on the same foods, and live in the same environments.	*Young lack fully developed wings and are not sexually mature.*

List examples of insects that develop through gradual metamorphosis.

Grasshoppers, crickets, earwigs, aphids, scales, mealybugs, thrips

Describe complete metamorphosis.

Insect development with four distinct life stages: egg, larva, pupa, adult

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For insects that develop through complete metamorphosis, how are immature insects and adults different?

For insects that undergo complete metamorphosis, the immature will often look very different, live in different environments, and require different food.

List examples of insects that develop through gradual metamorphosis.

Beetles, butterflies and moths, flies, mosquitos, sawflies, ants, and bees

Beneficial insects

Describe the functions or roles of beneficial insects.

Beneficial insects provide useful products, pollinate plants, destroy harmful insects and weeds, enrich physical soil properties, recycle nutrients, are a food source for animals, have medicinal properties, and provide beauty.

Types of insect injury

Name and describe four types of injuries to plants by insects with chewing mouthparts.

Defoliation: The removal of leaf tissue or complete leaf loss.

Skeletonizing: Insect feeding in which the leaf blade is consumed, leaving the leaf veins intact.

Leaf mining: Insect feeds between the upper and lower leaf surface, leaving a discolored serpentine trail or blotch visible on the leaf.

Girdling: Stem and wood borer insects feed on the vascular tissue of the plant .

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Describe the possible symptoms from insects with sucking mouthparts.
Deformed fruit or foliage, burned or speckled tissue, stunting, yellowing, wilting. Most plant diseases are transmitted by insects with sucking mouthparts.

Insect management

What is an insect pest?
Insects whose populations are higher than we can tolerate due to damage.

How can knowing an insect's life cycle help in the management of a pest insect?
Understanding the life cycle will help determine the best timing to implement management strategies and which strategies are most effective.

How can knowing the type of mouthpart of an insect help in the management of a pest insect?
Learning the mouthparts can determine the technique that will be most effective in management.

How does using the IPM framework reduce consequences to beneficial insects?
By identifying the pest, learning its lifecycle, and the way it causes damage (sucking or chewing), we can be selective in our management techniques, rather than taking a reactive approach with nonselective sprays that could harm beneficial insects.