Grasshopper

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Figure 1. Stunning, Pink Grasshopper Spotted in a Welsh Garden: 'Vivid Color'. Sources: Photo: Getty Images/Istockphoto and Kelly Wynne

Definition: Grasshoppers are the main representatives of both the Caelifera group and the (Figure 1) Orthoptera order. Some species do not have wings, however, those that have two pairs, the anterior ones being more rigid, called tegminas, and the posterior ones, broad and membranous. When at rest, the rear wings remain folded over the front ones. Colors, like green and brown. The well-developed hind legs are called saltatory. On its head you can see a pair of delicate and sensitive antennae, two compound eyes, three simple eyes, and chewing-type mouthparts, its abdomen has 11 segments [4-13].

Locusts are insects that can be found in different parts of the world: America, Europe, Western Asia, and North Africa. Although they have solitary habits, they tend to form large groups of locusts to attack crops. They feed on leaves from different types of trees or plants. Although they are known as pests that destroy crops, most do not cause this type of damage. The main animals that feed on grasshoppers are chickens, scorpions, frogs, rats, bats, spiders, and lizards [4-13].

Grasshoppers are also known for the sounds they make, as are the species of crickets and hopes. The sound is produced

in males, by conflict, that is, by friction between parts of the body, one against the other. In grasshoppers that have a stridulatory apparatus, they have 80 to 90 denticles located on the inner surface of the posterior femur. They may also rub in flight, with the upper surface of the costal margin of the wings rubbing against the lower surface of the tegmina [4-13].

Grasshoppers have three stages of development: egg, nymph, and adult. The eggs are laid one by one, gathered in a cluster, and grouped in a kind of bag that contains thirty to one hundred, depending on the species. Hatching takes place 20 to 40 days later, depending on climatic circumstances. Sometimes the eggs laid in the ground only open in the spring, and this will be the current case. After 5 molts, the insect has fully developed, is winged, and can reproduce. Both young and adult grasshoppers live in groups, and this results in the well-known invasions: those of new insects whose extensive columns descend from the hills where they were born; those of winged insects that, often coming from distant places, suddenly fall on crops [4-13].

The insects can also devastate alfalfa, corn, wheat, and barley crops and reduce habitat and food sources for the region's wildlife. Furthermore, they cause damage to fruit growing and beekeeping. Monitoring must be carried out in places where locusts with eggs have been recorded. Observe whether there are holes in the ground and confirm the presence of eggs (attention: sometimes there are signs that eggs have been laid, however, the eggs may not have been deposited). An adult grasshopper can lay more than once, approximately between 80 eggs and 120 eggs per clutch. Control at egg instar is generally complex. In most cases, laying sites must be identified for monitoring and early detection of births and subsequent spraying with insecticides registered on the Map. Only in specific situations can the soil be mechanically turned over to expose the eggs, causing loss of viability [4-13].

Some locust species can acquire gregarious and migratory lifestyle habits, forming so-called locust clouds. As they migrate to a place where they will feed and procreate, the crops that are in their path are quickly devoured. Locusts from the Acrididae family are being studied as a source of enzymes capable of metabolizing lignocellulosic substances and producing, from this process, ethanol, a biofuel of economic importance, with greater efficiency than other insects. In certain countries, grasshoppers are eaten as a good source of protein. In southern Mexico, for example, they are prized for their high protein, mineral, and vitamin content. Currently, a species of locust consumes crops in East Africa, the Middle East, and South Asia, threatening the food security of the world's population and is considered the most dangerous migratory pes (Figure 2) [4-13].

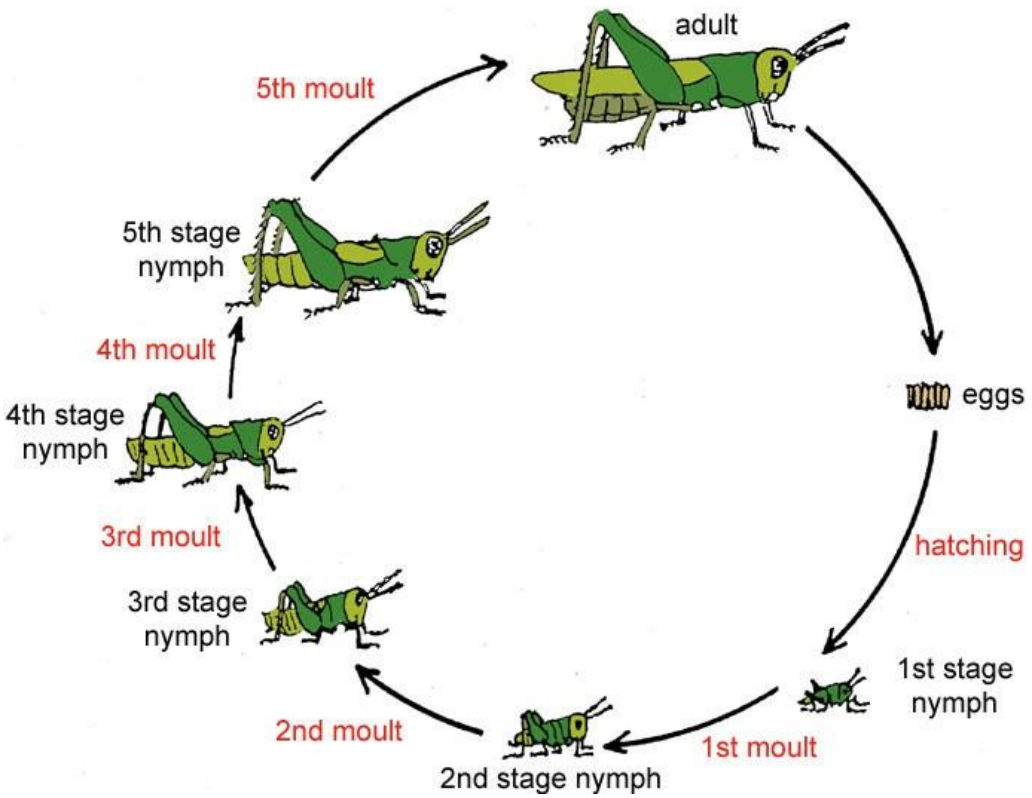

Figure 2. Life cycle of a grasshopper. Source: https://www.pinterest.com/pin/407505466260084491/.

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