



# 4-H Study Materials for Entomology Contests

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## VI. Insect Importance and Management

Ninety-five percent or more of all insects are harmless or beneficial to man; however, some are harmful and compete with man by attacking or destroying his food, clothing, structures and domestic animals. Also, insects spread diseases affecting man and his animals. Man's goal is to develop ways to regulate harmful insects without endangering the beneficial species, creating human hazards, or damaging our environment. Several tactics for insect control have been developed, including:

- insect-resistant crops
- cultural practices
- biological control
- legal measures
- physical and mechanical controls
- chemical control

Rarely is a single tactic satisfactory in controlling a pest species. A combination of tactics is usually used for effective management. Using the best or most appropriate combination of control tactics is sometimes termed "integrated control" and has led to the concept of Integrated Pest Management (IPM).

Biological control is an important aspect of integrated pest management. Damaging insects are attacked by various other insects, spiders and other animals. These beneficial insects and spiders may act as predators which capture and consume or suck the body juices from other insects; examples are lady beetles, praying mantids, green lacewings, dragonflies, certain wasps, certain flies, certain bugs and others. Other beneficial insects are parasites; whereby some developmental stage, usually the larva, infests the host insect from which it obtains protection and nourishment, usually causing death of the host. Most parasitic insects that attack other insects belong to the orders Hymenoptera and Diptera. Some species attack host eggs, others attack larvae or nymphs, others attack pupae, and still others attack the adult. Entomologists are trained to carefully evaluate the impact of beneficial insects and spiders upon potentially damaging economic pests.

The significance of any insect to people in agriculture, medicine, etc. is of great practical importance. Not all insects are harmful; in fact, many are considered very beneficial. For this reason, people should know the difference between pest insects and beneficial insects. Also, some insects cannot be classified as either pest or beneficial. These insects are neutral or variable as far as people are concerned. Failure to discriminate among

these insects can lead to serious economic losses and other problems.

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