

## BENEFITS AND VALUE OF INSECTS

Insects must be studied carefully to distinguish the beneficial from the harmful. People have often gone to great trouble and expense to destroy insects, only to learn later that the insect destroyed was not only harmless but was actually engaged in saving their crops by eating destructive insects.

Insects are beneficial to the gardener in several ways:

1. Insects aid in the production of fruits, seeds, vegetables, and flowers by pollinating the blossoms. Most common fruits are pollinated by insects. Melons, squash and many other vegetables require insects to carry their pollen before fruit set. Many ornamental plants, both in the greenhouse and out of doors, are pollinated by insects (chrysanthemums, iris, orchids and yucca).

2. Parasitic insects destroy other injurious insects by living on or in their bodies and their eggs. Insects also act as predators, capturing and devouring other insects.

3. Insects destroy various weeds in the same ways that they injure crop plants.

4. Insects improve the physical condition of the soil and promote its fertility by burrowing throughout the surface layer. Also, the dead bodies and droppings of insects serve as fertilizer.

5. Insects perform a valuable service as scavengers by devouring the bodies of dead animals and plants and by burying carcasses and dung.

Many of the benefits from insects enumerated above, although genuine, are insignificant compared with the good that insects do fighting among themselves. There is no doubt that the greatest single factor in keeping plant-feeding insects from overwhelming the rest of the world is that they are fed upon by other insects.

Insects that eat other insects are considered in two groups known as predators and parasites. Predators are insects (or other animals) that catch and devour other creatures (called the prey), usually killing and consuming them in a single meal. The prey is generally smaller and weaker than the predator. Parasites are forms of living organisms that live on or in the bodies of living organisms (called the hosts) from which they get their food, during at least one stage of their existence. The hosts are usually larger and stronger than the parasites and are not killed promptly but continue to live during a period of close association with the parasite. Predators are typically very active and have long life cycles; parasites are typically sluggish and tend to have very short life cycles.

## PEST CONTROL WITH A MINIMUM OF CHEMICALS

Home gardeners often use more pesticides per square foot in gardens than farmers use in fields. The "if a little is good, more will be better" attitude leads to a serious misuse of pesticides. Overuse of pesticides has a number of adverse effects. Food products may contain unsafe pesticide residues if improperly treated with pesticide. Beneficial insects,

earthworms, birds, and pets may be harmed or killed along with harmful insects if pesticides are carelessly used. Each time gardeners spray, they expose themselves to the possibility of inhalation or absorption of the toxin. Careless use of pesticides near water may contaminate water supplies. Misuse of pesticides can lead to the development of chemical resistance in the target pest. Finally, the use of pesticides can lead to outbreaks of secondary pest species.

Growing public concern over the use and misuse of pesticides has led increasing numbers of home gardeners to seek means of natural pest control. Although some people do not have the time or knowledge to practice all available alternative methods for controlling pests, there are many cultural practices which will help reduce losses. Because the gardener does not have to live up to perfect market standards, pesticide use may be reduced to a minimum with a little research and effort. If the choice is between minor insect damage and a pesticide application, consider accepting the visible blemish that can be removed. Proper soil preparation, careful plant selection and good garden practices can be combined with biological and mechanical controls to reduce the need for chemical pesticides.

Temperature, humidity, precipitation and natural enemies all influence insect populations. In some years, troublesome insects may not be numerous enough to significantly damage plants. In other years, large insect populations may cause serious damage or completely destroy host plants.

Effective control of specific insects must be preceded by proper identification of these insects. Once an insect's identity is known, you can learn about its life cycle, seasonal cycle, habits and host plants, and thus exercise more effective control measures.

Several control methods are often combined in order to minimize damage by insect pests. Since insect control methods vary in their effectiveness, you may wish to select alternative methods to correspond with differences in plant growth and productivity, insect damage, weather conditions and cultural practices. Various control methods will now be considered.

#### Resistant Plant Varieties

Use available plant species or varieties which are resistant to, or at least tolerant of, insect activity. Insect resistance in plants frequently is interpreted as meaning "immune to insect damage." Actually it is a term for distinguishing plant varieties which exhibit less insect damage when compared to other varieties under similar growing and pest population conditions. Some varieties may be less "tasty" to insect pests, or may possess certain physical or chemical properties which discourage insect feeding or egg-laying, or may be able to support large insect populations without suffering appreciable damage.

Before buying seeds or plants, check seed catalogs for information or resistant varieties which will grow well in your area. Examples of vegetable varieties that grow well in Texas and have shown resistance to specific insect pests are listed in Table 3. Some varieties may be resistant to insect attack but may be subject to certain other restrictions such as soil pH, drainage or temperature. Your experience with different varieties will indicate the ones best suited for your garden.