

INSECT PESTS AFFECTING THE FLOWER GARDEN, AND METHODS OF CONTROL

Insect pest	Hosts	Control
Aphides (many species)	Flowering annuals, perennials, and shrubs	Spray with nicotine sulphate plus activator. H.E.T.P. or lindane
Army worm	Dahlia and salvia	Spray with D.D.T. or arsenate of lead
Brown beetle (adult of grass-grub)	Lily, rose, and many other shrubs	Spray with D.D.T. or arsenate of lead
Bronze beetle	Rose and many shrubs	Spray with D.D.T. or arsenate of lead
Bulb mite	All bulbs	Destroy badly infested bulbs; hot water treatment
Bulb flies	Iris, narcissus, and lily	Destroy badly infested bulbs; hot water treatment. Spray plants with D.D.T.
Cyclamen weevil	Cyclamen, begonia, and gloxinia	Apply arsenate of lead or paris green baits to the soil around plants. Water with D.D.T.
Cutworm	Flowering annuals and perennials	Apply arsenate of lead or paris green baits to the soil
Cherry slug	Flowering cherry and plum	Spray with D.D.T. or arsenate of lead
Diamond-backed moth	Stock	Spray with D.D.T. or lindane
Earwig	Flowers of many plants	Apply poison baits or traps at base of plant
Fuller's rose weevil	Rose and flowering annuals	Spray with D.D.T., arsenate of lead, or lindane
Grass-grub, subterranean grass caterpillar (porina)	Lawns and many plants	Apply D.D.T., arsenate of lead, or lindane to the soil
Green vegetable bug	Flowering annuals and perennials	Spray with D.D.T. or H.E.T.P.
Leaf roller	Geranium, rose, chrysanthemum, and many other plants	Spray with D.D.T., arsenate of lead, lindane, or D.D.D.
Looper caterpillar	Dahlia, salvia, and geranium	Spray with D.D.T., arsenate of lead, or lindane
Leaf miner	Cineraria, dahlia, and chrysanthemum	Destroy infested foliage; spray with lindane
Leaf hopper	Flowering annuals and perennials	Spray with D.D.T. or nicotine sulphate plus activator
Leaf and bulb eelworm	Chrysanthemum and bulbs	Hot water treatment
Magpie moth	Chrysanthemum, cineraria, salvia, and geranium	Spray with D.D.T. or arsenate of lead
Mealy bug	Ferns and succulents	Spray with nicotine sulphate plus activator, D.D.T., or summer oil. Paint insects with methylated spirit
Millepede	Seedlings and many flowering plants	Spray infested area with nicotine sulphate plus activator or dust areas with lindane; use traps
Red spider mite	Carnation, gladiolus, violet, and shrubs	Spray with nicotine sulphate plus summer oil or H.E.T.P.
Root eelworm	Chrysanthemum, begonia; many plants	Destroy infested plants; sterilise soil where practical
Slugs and snails	Seedlings and many flowering plants	Apply metaldehyde baits to the soil
Slaters (woodlice)	Seedlings of many plants; ferns	Apply poison baits to the soil or dust infested areas with D.D.T.
Springtails	Seedlings of many flowering plants	Soak infested areas with nicotine sulphate plus activator
Scales (many species)	Rose and many other shrubs	Spray with summer oil or winter oil on deciduous shrubs in dormant season
South African weevil	Carnation and gerbera	Spray with D.D.T. or lindane
Thrips	Dahlia, gladiolus, rhododendron, etc.	Spray with D.D.T. emulsions or nicotine sulphate plus summer oil
Vegetable weevil	Gerbera	Spray with D.D.T. or arsenate of lead
White fly	Begonia, chrysanthemum, and coleus	Spray with D.D.T. Fumigate under glass with nicotine sulphate
White fringed beetle	Ranunculus, anemone, and flowering annuals	Spray with D.D.T., arsenate of lead, or lindane
Wireworm	Bulbs and many flowering plants	Apply lindane to infested areas. Thorough cultivation and hand picking

open surfaces are left exposed, especially where large branches are cut off. These open surfaces can be points of entry for disease organisms. An example is the disease known as silver leaf (*Stereum purpureum*), which is a wound parasite attacking many trees and shrubs in the flower garden. Large wounds should therefore be protected by coating the exposed surface with a protective covering such as petroleum seal or a bitumastic paint. When pruning is being done the cuts should be made as close as possible to the standing part to encourage rapid healing; stumps of branches should not be left.

Control Measures

The success of measures used to combat pests and diseases depends on several factors.

With insect pests the gardener must first determine what type of insect he has to combat, and then use a specific material or method.

Many people become disheartened and wrongly blame a material for not doing its job when they see a pest apparently thriving despite their efforts to control it. They may not have used the correct insecticide or may not have used it as directed. For

instance, an insecticide such as nicotine sulphate is practically useless unless an activator is added to the diluted material already prepared for spraying; also results are disappointing if the same material plus activator is used when temperatures are lower than 70 degrees F. It is also used mainly for sucking insects such as aphides and thrips and is not very effective against most chewing insects, such as caterpillars and beetles.

To combat chewing insect pests a stomach poison is necessary, and of these arsenate of lead is popular, though some of the newer chemicals are more efficient. Most gardeners should be able to distinguish the different types of insect pests and apply the specific control measures.

Insect pests can be divided largely into two groups: One containing the sucking insects such as aphides, thrips, scales, and red spider mites, and the other chewing insects, caterpillars, which are the larvae of moths and butterflies, beetles, weevils, and certain underground pests such as wireworms and slugs.

Of the former group perhaps aphides rank as the most important, for besides the injury they cause to plants they are the main transmitters of virus diseases. This group can be controlled by the use of sprays containing chemicals which kill by contact or fumigation. Such materials include nicotine sulphate, winter and summer oils, D.D.T., B.H.C., and H.E.T.P., the last two being newer introductions.

The chewing insect group may be controlled by stomach poisons: These include arsenate of lead, D.D.T., and paris green applied to the foliage of plants as sprays or dusts or to the soil as baits for soil pests.

Diseases

Diseases are divided broadly into three groups: Fungous (the largest group), virus, and bacterial diseases. Fungous diseases (which include some of the most important plant diseases) are probably the most common in home gardens. A number of these fungous diseases can be controlled by sprays containing sulphur in the form of lime sulphur or colloidal sulphur used separately or in combination, or copper in the form of Bordeaux mixture or copper oxychloride. Among a few which cannot be controlled by the use of sprays are sclerotinia (*Sclerotinia sclerotiorum*), with its wide host range; also silver leaf, which is an internal parasite of many shrubs. Damping off wilt (*Pythium ultimum*) of seedling plants can be minimised by soil sterilisation, which will also kill most other soil fungi such as verticillium wilt (*Verticillium* sp.) and fusarium wilt (*Fusarium* sp.).

The rust fungi, of which there are several species attacking plants in the flower garden, are recognised by brownish orange pustules on the under sides of leaves causing malformation, eventual yellowing, and death. Most of the species can be controlled by spraying infested plants with lime sulphur or colloidal sulphur.

Mildews are important fungous diseases attacking many plants in the flower garden. Among the plants