

flies; and in late summer, long-legged harvestmen, which are related to the spiders but are often confused by casual observers with the long-legged crane flies, which are not beneficial.

There are also lacewing flies, many kinds of beneficial wasps, and a host of other creatures, such as those commonly known as chalcid flies, ichneumon flies, scorpion flies, and hover flies. Some insects belong to the bee group and they or their larvae prey on garden pests. There are also predatory kinds of thrips, earwigs, and slugs, which attack their fellows or other plant eaters.

Some garden creatures have a less obvious value. They assist in pollinating flowers or are useful in hastening the decay of garden rubbish by the deposition of their eggs or their maggots or the spores of bacteria or fungi on it. The beneficial effect of earthworms in improving soil drainage and aeration, though sometimes overrated in the home garden, is well known.

The mantids, commonly called praying mantids from the way they stand and hold their saw-edged forelegs when waiting for their prey, are of doubtful value. They will as readily catch and eat garden friends such as bees, as destroy plant eaters.

Injury caused by insect pests is one of the reasons for some home gardeners' lack of success. It is important, therefore, to be able to recognise insect pests. That is the first step in control. Appropriate control measures can then be used before infestation becomes severe.

Aspects of Pest Control

Almost all the substances used to control insect pests in the garden are poisonous to humans. They should be labelled clearly and when not in use they should be corked or lidded and kept locked away securely.

Quite small amounts of undiluted materials such as HETP, TEPP, malathion, lindane, and nicotine sulphate can have very serious results or even cause death if ingested or deposited on mucous tissue where they may be readily absorbed by the body.

The need in vegetable production to resort to the use of the formidable array of insect poisons now available has been said to be an indication of man's failure to work in harmony with nature. This is not true, as in most gardens only a few of the substances are needed and in many gardens throughout New Zealand no spraying is needed. Competent entomologists have claimed that over 95 per cent. of the hundreds of thousands of classified insects are beneficial or at least not harmful to man.



Grey aphids (magnified) on cabbage.

[Green and Hahn]

Control of insect pests consists not only in the use of poisonous sprays, dusts, and baits, but in tidiness, in good husbandry, that is the growing of vigorous crops, the destruction of insect breeding places, and care in the introduction of new material to ensure that it is free from pests and their eggs.

When used at the recommended dilutions in the open air most insecticides are safe if ordinary common-sense precautions such as avoidance of inhalation or bodily contact with fumes or spray are practised. Some people are more sensitive than others to particular substances and if appreciable spray residues come in contact with the bare skin or fumes have been accidentally inhaled resulting in headache or giddiness, it is advisable to go inside and lie down, calling a doctor promptly if symptoms warrant it.

Generally a hot, still day gives the best kill with spraying or dusting. For nicotine sulphate particularly the temperature should be not less than 60 degrees F. An alkaline substance such as soap or lime, preferably hydrated lime, should be added to the nicotine.

Produce from plants that have been sprayed with poisonous substances which leave residues that persist for some time, such as DDT or arsenate of lead, should not be harvested until at least 3 weeks after the spray was applied. With nicotine sulphate an interval of at least a week is recommended. A day or two is enough where only TEPP or HETP has been used.

It is advisable to use only materials that have been certified by the Plant Diseases Division of the Department of Scientific and Industrial Research, as such materials have been submit-

ted for test by the manufacturer or his agent and have proved satisfactory for the purpose for which they were certified. They should be applied at the recommended strength through good spray equipment.

The spray should preferably be driven under as much pressure as is practicable through a small aperture so that the object to be sprayed is enveloped in a wetting mist without excessive run-off and consequent waste of spray material.

Most of the insect pests likely to be found in the home vegetable garden are dealt with in alphabetical order in the following section. It will be concluded in the home garden notes in next month's issue.

Aphids

Aphids are among the commonest pests of the vegetable garden. They are variously known according to their colour or characteristics as plant lice or green fly, black fly, grey aphid, root aphid, or woolly aphid. Almost all plants are liable to be attacked by one or more species, all of which are characterised by sucking mouth parts carried at the end of a rostrum or finger-like prolongation on the under surface of the head.

The rostrum is used to puncture the plant surface and, as the creature sucks the plant juices from beneath the surface of the plant, stomach poisons (such as arsenate of lead) sprayed on the surface are ineffective against it. Aphids may be winged or wingless and are usually about the size of a small pinhead. They cause curling and distortion of the leaves, stunting, and wilting in hot weather when they are numerous. They also spread disease.

The black aphids which commonly attack beans can often be controlled