

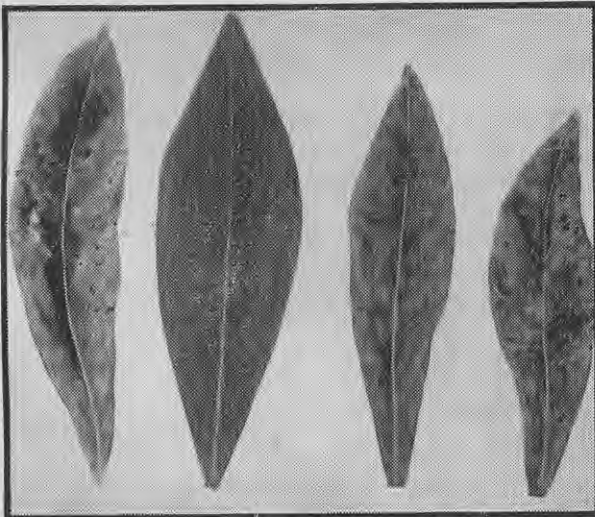
Shrivelled gladiolus corm affected with fusarium rot.

diseases affecting the flower garden are bulb rot (*Bacterium hyacinthi*), which is confined mainly to hyacinth, and blast disease (*Pseudomonas syringae*), whose hosts are lilac, rose, dahlia, flowering cherry, and plum.

Thoroughness of Spray Application

Thoroughness of spray application is a factor of considerable importance in pest and disease control. It is necessary to obtain complete coverage of all parts of a plant with the material used; otherwise the effort and expense are more or less wasted. Partial coverage gives only a low percentage of control and untreated plant parts remain to further the ravages of the pest or disease.

Some gardeners are careless when mixing chemicals for use in sprays. Quantities should be measured accurately according to the recommendations. Haphazard mixing is unwise, as besides being uneconomical and inefficient it is liable to cause plant damage which may be more severe than that caused by the actual pest or disease. Adhering to the recommended amounts is an important



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Cucumber mosaic of daphne leaves with healthy leaf second from the left.

factor in pest and disease control and the prudent gardener benefits both economically and in the degree of control gained.

Wetting Agents and Activators

With plants which have waxy or smooth leaf surfaces such as carnations and succulents, it is necessary to add a wetting agent to the spray mixture. The action of the agent is to break down the surface tension of the water globules, thus spreading the spray mixture evenly over the leaf surface and preventing excessive run-off.

Casein powder or a detergent is a useful wetting agent that may be recommended.

Materials such as nicotine sulphate are very stable in their make-up and therefore require an activator to liberate the fumes that kill insect pests. Soft soap or summer oil is used for this and as the latter is in itself an insecticide, the combined effect of the two materials will prove still more effective.

To be most efficient nicotine sulphate, even with an activator added, must be used when temperatures are high. Below 70 degrees F. its efficiency is very much reduced.

Natural Enemies of Insect Pests

Even with a system of garden hygiene eliminating possible breeding grounds and the modern insecticides and control methods, insect pests would be increasing if not preyed on by certain beneficial insect parasites. Birds also play a big part in keeping down the populations.

A number of parasites have been selected by entomological research as a means of pest control and have proved to be of great value to horticulture generally. However, regardless of the efficiency of these parasites, they will not gain complete control of their hosts. Unfortunately, a large number of them are killed each year, mainly by the indiscriminate use of D.D.T., which is not very selective in the insects it kills, and, by gardeners

who do not realise that they are disposing of beneficial insects. Of these garden allies the ladybird is perhaps the best known; both larvae and adult feed upon aphides and scales. Lacewings, hover flies, and tachinid flies are equally important, their larvae destroying such pests as aphides and caterpillars. The ichneumon fly also destroys many destructive caterpillar pests. The common hedgehog is another garden ally; being a night prowler, it disposes of numerous nocturnal pests which attack the flower garden such as slugs, snails, earwigs, and cutworms.



A gladiolus plant completely ruined by thrip damage.

Quantities of Spray Materials

Quantities of materials required to make 4 gallons of spray are:—

D.D.T.: $\frac{1}{2}$ oz. 50 per cent. wettable powder or 1 fl. oz. of emulsion.

Arsenate of lead: 1oz. plus 2oz. of hydrated lime.

Nicotine sulphate: $\frac{3}{4}$ to 1 fl. oz.

H.E.T.P.: $\frac{1}{4}$ to $\frac{3}{8}$ fl. oz.

Lindane: 16 per cent. material 1oz.; 25 per cent. material $\frac{3}{8}$ oz.

Winter oil: 1 pint 12 fl. oz.

Summer oil: 8 fl. oz.

Activator for nicotine sulphate: 2oz. of soft soap.

Bordeaux mixture: Summer strength, 4oz. of bluestone plus $5\frac{1}{2}$ oz. of hydrated lime.

Bordeaux mixture: Winter strength, $6\frac{1}{2}$ oz. of bluestone plus $5\frac{1}{2}$ oz. of hydrated lime.

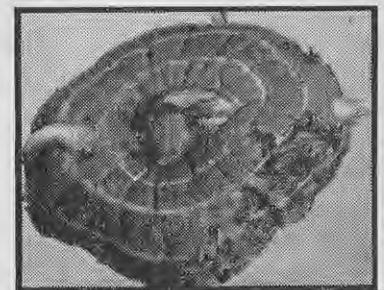
Copper oxychloride: $3\frac{1}{2}$ oz.

Colloidal sulphur: $1\frac{1}{2}$ oz.

Lime sulphur: $4\frac{1}{2}$ fl. oz.

Thiram: $1\frac{1}{2}$ oz. 50 per cent. wettable powder.

Cheshunt compound (at maker's recommended strength).



Gladiolus corm affected with hard rot.