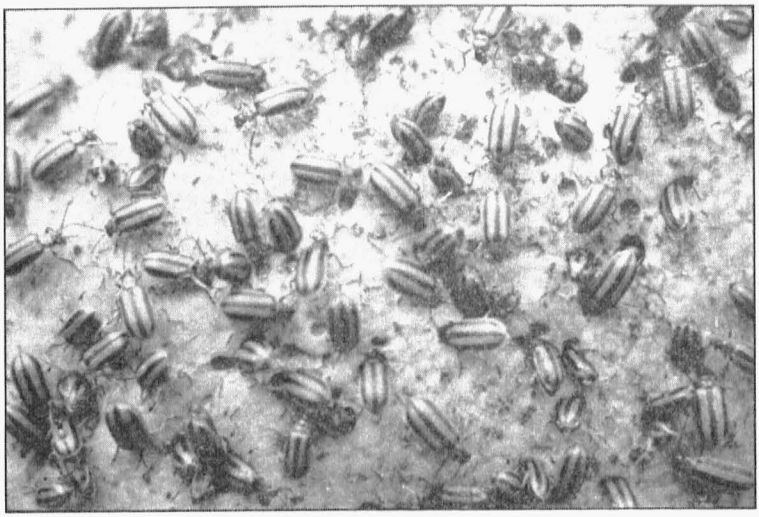
A WARTIME PUBLICATION

UNIVERSITY OF MISSOURI COLLEGE OF AGRICULTURE
AGRICULTURAL EXPERIMENT STATION
M. F. MILLER, *Director*

CIRCULAR 226 Columbia, Mo. APRIL, 1942

Controlling Garden Insects

LEONARD HASEMAN



Striped cucumber beetles feeding on frosted pumpkin before going into winter quarters.

The success of the victory garden movement will depend a great deal on the effective control of the insect pests and plant diseases. Frequently, 20 per cent of the value and 100 per cent of the joy of gardening disappear down the hungry throats of insects. One is apt to lose much of his gardening enthusiasm when he finds his potatoes stripped, cabbage shredded, roasting ears wormy, and tomatoes wilted.

Garden Insects and How They Work

All of the harmful insects which attack the roots, stems, leaves, fruits, seeds, and other parts of garden crops, feed either by chewing off and swallowing portions of the plant or by piercing the soft parts of the plant and sucking the sap. For controlling the chewing insects, usually a poison such as lead arsenate is applied to the crop,

which kills when the insect swallows the poison along with its food. For combating the sap-sucking pests, as a rule, a contact insecticide such as nicotine sulphate is applied, which kills by touching the pest's body. Cabbage worms and Colorado potato beetles represent the chewing insects, while plant lice and squash bugs represent the sap feeders.

Garden Spray and Dust Mixtures

Some gardeners prefer to use dust applications, while others prefer sprays. The most commonly used poison spray for chewing insects includes 3 pounds lead arsenate to 100 gallons of water, or 1 tablespoonful to a gallon. If paris green or calcium arsenate is used, include only one-half the amount per gallon and add an equal amount of lime to prevent foliage injury. On leafy vegetables, the newer pyrethrum or derris sprays should be used as directed on the package. If desired these insecticides may be applied as dusts rather than as sprays. A standard lead arsenate dust consists of one part lead arsenate to five parts of either flour, lime, or gypsum, and in case of paris green or calcium arsenate use one part to ten parts of hydrated lime. Apply derris and pyrethrum dusts as directed by the manufacturer, since there are a number of different commercial brands on the market. In some cases, cryolite is found desirable for chewing insects.

For controlling plant lice and other soft-bodied sap-sucking insects, a spray consisting of 1 tablespoonful of 40% nicotine sulphate to 1½ gallons of soapsuds is most generally used. However, one of the commercial derris or pyrethrum preparations diluted as recommended on the package may be used with good results. If a dust application is preferred, use one of the pyrethrum, derris, or nicotine dusts. A nicotine dust can be made at home by thoroughly mixing lime and nicotine sulphate in a tight syrup pail or similar container with a few pebbles added for agitation. One ounce of 40% nicotine sulphate in one pound of lime will kill aphids, and 2 ounces of the nicotine to a pound of lime will kill more resistant garden insects. Local stores can usually supply these insecticides, or they can be ordered from the manufacturers.

Garden Sprayer or Duster

While in an emergency one may use a sprinkling can to apply spray solutions, or an improvised pepper box or cloth bag to apply dust insecticides, a regular sprayer or duster is desirable. For the home garden, secure one of the small hand dusters or sprayers. For a larger acreage, one of the bellows or fan-type dusters, or a compressed air type sprayer, or a small wheelbarrow sprayer will give better results. Sprayers and dusters can usually be secured from local hardware or general stores.

Control Measures

In the actual work of protecting garden crops from insects, the grower should, first, prevent the pests from carrying over in large numbers in or near the garden, and second, control them when they attack the crops. Keeping down weeds, disposing of crop residues and other litter, plowing or spading the garden in the fall or early winter, will all help to reduce insect carryover in the garden. To supplement such controls, however, the gardener should be prepared to spray or dust the crops immediately insect pests appear.

It is impossible to consider all the important garden insects in this brief report, and the following more harmful pests have been selected for discussion. Control practices similar to the ones recommended for these insects may be used for the numerous other less common but frequently equally destructive pests.

Colorado Potato Beetle.—This small, round, hard, black and yellow striped beetle and later its tightly-stuffed, pink or orange grub with black spots, usually attack potatoes as soon as the plants come up. To prevent injury, keep the foliage well covered with a standard lead arsenate or paris green spray or dust, or frequent applications of derris or pyrethrum may be used.

Blister Beetles—Two or three different kinds of these slender, long-legged beetles appear in droves during midsummer, devouring the foliage of potato, tomato, and other garden crops. The most effective remedy is to drive them from the garden and check frequently to make sure that they do not return. Dusting with pyrethrum, derris, cryolite, or one of the arsenicals may help repel them, but they strongly resist poisons.

Flea Beetles.—These small, jumping beetles, the size of a pinhead, may attack most all garden crops, especially early in the season. Frequent dusting or spraying of infested crops with the same insecticides suggested for blister beetles will help.

Cucumber Beetles.—These two small beetles, one spotted and the other yellow and black striped, may quickly kill the young plants of cucumber, squash, and related crops. To protect these crops, keep the young plants and all new growth well covered with lead arsenate, calcium arsenate, or cryolite, until vines are well developed. A few hills may be protected by covering them with small cheesecloth tents or with fine screen wire cones until the plants begin to vine.

Bean Beetles.—Both the spotted bean leaf beetle and the bean ladybird beetles may do much damage by eating holes and skeletonizing the leaves. To protect beans, spray or dust frequently with one of the derris or pyrethrum preparations, or with cryolite or calcium arsenate, being sure to hit the underside of the leaves.

Bean Weevils.—The destructive work of this pest shows up in the dry beans, but it begins its attack in the green beans in the garden. To prevent damage, plant beans late where they are grown for use as dry beans, and fumigate infested dry beans in a lard pail or a small tight box as soon as they are hulled, using 1 tablespoonful of carbon bisulphide to each bushel of seed. After treatment, store beans in a tight container in an unheated room.

Cutworms.—To prevent these slick, dull-colored caterpillars from cutting off young cabbage, tomato, and other plants early in the season, broadcast poison bran bait over the ground just before dark, using about a gallon of bait to a garden 100 feet square. To prepare, mix dry 10 pounds bran and ½ pound paris green or powdered white arsenic, and moisten with about 1½ gallons of water to make a moist, mealy mash. This bait can also be used for armyworms, and if scattered at daybreak it is also effective for grasshoppers. Paper collars 2 inches high placed around the stems of plants as they are transplanted will also protect them.

Cabbage Worms.—To protect cabbage and related crops from caterpillars, preferably dust with lead arsenate before heads form, and with pyrethrum or derris after heads start to form.

Corn Earworm.—This caterpillar bores into green or ripening tomatoes as well as into the tips of roasting ears. In garden or small acreage field plantings, damage by this pest can be reduced by injecting into the tip of the ears, as soon as silks begin to wilt, indicating that pollination has been completed, a few drops of white mineral oil containing 1 part pyrethrum extract to 20 parts of the oil. A small oil can is satisfactory for applying the oil. A second treatment which has given fair results is the use of a small tablet of hexachlorethane pushed down in at the tip of the ear. These tablets can be secured from insecticide dealers in proper size and shape for use. Dusting with lead arsenate two or three times after green tomatoes are well formed will reduce damage by this worm in tomatoes. Dusting and spraying the silk of corn ears have not proven effective.

Plant Lice.—The small, sap-sucking aphids attack all kinds of garden crops but are especially serious on cucumbers, cabbage, turnips, and leafy vegetables. Dust or spray with nicotine, pyrethrum, or derris as soon as they appear on the crop.

Squash Bug.—This pest of squash and related crops is difficult to control, but early hand destruction of the adult bugs and their conspicuous eggs, followed by frequent dusting with concentrated pyrethrum preparations may protect these crops quite well.