

# UNIVERSITY OF KENTUCKY

COLLEGE OF AGRICULTURE

Extension Division

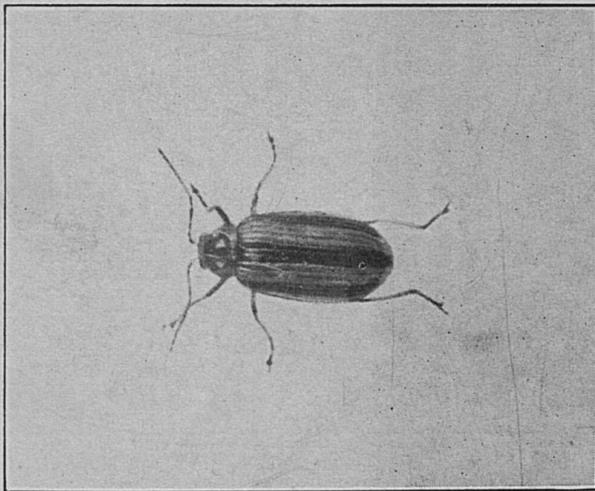
THOMAS P. COOPER, Dean and Director

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CIRCULAR NO. 262

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## THE STRIPED CUCUMBER BEETLE



Adult beetle. Enlarged.

Lexington, Ky.

December, 1932

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## CIRCULAR NO. 262

### The Striped Cucumber Beetle

By H. H. JEWETT

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This little yellow and black beetle is, perhaps, the most persistent and destructive insect pest with which the grower of melons and cucumbers has to contend. It may begin its attack even before the seedlings have appeared above ground, and continues thru the growing season. Many remedies have been proposed for its control, some worthless or of little value, but experiments and the experience of growers have shown that the persistent use of arsenical dusts or sprays is effective. Dusts are preferred because they are easier and quicker to apply, and the necessary equipment is simpler and less costly than that for spraying. The cost of insecticides for dusting is greater than for spraying, because more material is used in dusting than in spraying, but the saving in time and labor makes dusting the cheaper method. The choice may depend on the equipment at hand, however, and the experience of the operator.

#### THE KIND OF DUST

A mixture of one pound of calcium arsenate with 20 pounds of landplaster is recommended. The arsenate may be used at the rate of one pound to 15 pounds of landplaster without injury to the plants, but the weaker mixture is preferred because it is more economical. A mixture of one pound of lead arsenate with 10 pounds of landplaster may be used, but calcium arsenate is preferred.

Landplaster is pulverized gypsum. It can be obtained from the larger dealers in agricultural supplies. Builder's plaster, obtainable from dealers in builder's supplies, serves as well. If it contains hair, this must be sifted out. Hydrated lime should not be substituted for landplaster, because it injures the foliage.

#### HOW TO MIX THE DUST

Into a dishpan or similar shallow vessel, put 20 pounds of landplaster, spreading it evenly over the bottom. On this, spread evenly a pound of calcium arsenate. Stir slowly and deeply for 5 minutes. Do not try to mix a larger batch in this way, because of the difficulty in making a uniform mixture.

Another way, applicable to a larger quantity, is to put the ingredients into a barrel or drum which is then closed and rolled for a distance of 400 to 500 feet. The container should be raised on end at intervals of about 50 feet. The use of a drum revolved mechanically is still better. The mixing should be finished in 10 or 15 minutes.

#### HOW TO APPLY THE DUST

Dusting should begin when the soil over the middles of the hills begins to heave, before cracks form, and should be repeated every three days and after each rain. At least 10 dustings should be made, tho as many as 21 have been found to pay. The number depends largely on the weather. The dust should be directed to the center of the hill and around the base of the stems, besides covering the foliage. Each dusting requires 20 to 70 pounds of dust per acre, depending on the size of the vines.

Any simple dusting apparatus may be used, but a dust gun which delivers the powder in puffs, rather than in a continuous stream, is best. The dust may even be sifted on from a sack of open weave or from a perforated can.

#### HOW TO SPRAY

A mixture of  $11\frac{1}{2}$  lbs. of calcium arsenate or lead arsenate,  $11\frac{1}{2}$  lbs of hydrated lime and 50 gallons of water may be used as a spray. The same system as to time and manner of application should be observed as in dusting.

#### GENERAL RECOMMENDATIONS

*Plant an Excess of Seed.* By planting an excess of seed, the attack of the beetles is distributed and the chance for getting a

stand of plants is increased. The seed should be planted as early as is consistent with good practice for the locality.

*Stimulate Plant Growth.* Application of manure or fertilizer is important to promote rapid and vigorous growth. Healthy rapidly growing plants have a better chance to withstand beetle attack than weak plants.

*Clean Culture.* Injury from the cucumber beetle and other cucurbit insects may be reduced by clean culture. After the crop has been gathered, the remnants should be collected and burned, care being taken to destroy as many as possible of the beetles that have collected on the old fruits. Where all the growers in a neighborhood see that the remnants of the cucurbits are destroyed in the fall, the number of beetles will be greatly reduced. The beetles collect on these remnants in the fall and it is likely that most of those that survive the winter have had opportunity for late feeding on cucurbits and have gone into hiding places not far from their last food supply.

*Early Care of Plants.* The fields should be examined daily for beetles in the spring. This is necessary because the beetles usually appear suddenly and great damage may be done before the plants can be protected properly. If there is a crust on the soil when the young plants are emerging, it should be broken and fine earth should be placed about the stems. Breaking the crust is necessary because if it is not done the beetles crawl down around the young plants and may destroy or injure them.

*Have Insecticides on Hand.* The grower should procure his insecticides before the time of his actual need for them because they may not be readily obtainable from his local dealer.

#### HABITS OF THE INSECT

*Food Plants.* The beetle feeds upon many different kinds of plants, but those of chief importance are the cultivated cucurbits. Cucumbers and cantaloups seem to be more severely injured than other members of this family. Beans are subject to attack from the beetles and may be injured to a considerable extent. The beetles readily eat the flowers of a great many plants and

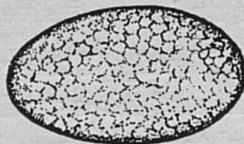
may be found in season on aster, goldenrod, ragweed, chokeberry, juneberry, cherry, hawthorn, apple, rose and other plants.

*Nature of the Injury.* In the spring the beetles attack the young cucumber or melon plants just as they are emerging from the soil and may ruin the entire planting by gnawing the surface of the stems. Blossoms also may be eaten so badly that they fail to produce fruit. The beetles attack the fruits and disfigure them by eating portions of the rind. The adult also acts as a carrier of the cucurbit wilt organism. The wilt disease may be the cause of very serious loss if it becomes established in a field of melons or other cucurbits.

The larvae or worms injure the older plants by eating into and burrowing into the main root and underground part of the stem. They also injure the parts of the plant that rest upon the ground, and may bore into the rind of the fruit where it is in contact with the soil. Injury to the root and underground stem undoubtedly causes the wilting and dying of many vines.

#### THE DIFFERENT STAGES OF THE BEETLE

*Egg.* The egg is light yellow to orange colored, depending somewhat upon its age. It is about one-fortieth of an inch long and about one-seventieth of an inch thick, or about half as wide as it is long. Its surface when viewed under rather high magnification is covered with a sculpturing of hexagonal pits.



Egg of the striped cucumber beetle. Enlarged.

*Larva.* This is a slender, white, worm-like grub with a dark brown head and anal plate, and a lighter brown thoracic plate. The newly hatched larva is about one-sixteenth of an inch long and the full-grown larva about three-tenths of an inch long. It has three thoracic or true legs and an anal proleg.

*Pupa.* The pupa is white or slightly yellowish, nearly the same color as the larva. It is thickest toward the front end,

tapering toward the rear. The eyes are large, black and rather prominent. There are some small, bristly hairs on the body and



Larva of the striped cucumber beetle. Enlarged.

a pair of black, spine-like bristles on the posterior end of the body.

*Adult.* The adult beetle is about one-fifth of an inch long and about half as wide. It is yellow above with the head black



Pupa of the striped cucumber beetle. Enlarged.

and black stripes lengthwise on each wing cover. The under side of the abdomen is black. The antennae are mostly black and the legs yellow with the feet and knees black. In newly transformed adults the color and markings are much lighter.

#### LIFE HISTORY

The beetle appears in the spring and feeds upon some of its host plants until its more favored food plants are available. Its migration to cucumbers, cantaloups and watermelons takes place in May or early June, generally within a very short time, so that the young seedlings may be destroyed before the presence of the beetle is suspected.

The female beetles place their eggs in the soil about the base of the plants and stems or under clods or in cracks in the soil. The female may produce a large number of eggs, over 1500 has been reported for a single female. The eggs hatch in one

or two weeks, the period being affected by the temperature and humidity of the environment.

The larval period lasts two to five or six weeks, depending upon temperature. The larvae may be found in the soil around or boring into the main root or underground part of the stem or under those parts of the vines and fruits that come in contact with the soil. When the soil is moist or wet, the larvae may be found near the surface or on the soil.

When full-grown, the larva goes down into the soil for an inch or more and constructs a little cell. It then contracts and becomes much thicker and remains in this condition for two to five days, when it pupates. The pupal period ranges from five days to two weeks or longer.

The entire period from egg-laying to the appearance of the adult may be five or six weeks or longer. In the extreme south this period may be a little less than four weeks.

# University of Kentucky---College of Agriculture

EXTENSION DIVISION

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Circular No. 262, Revised

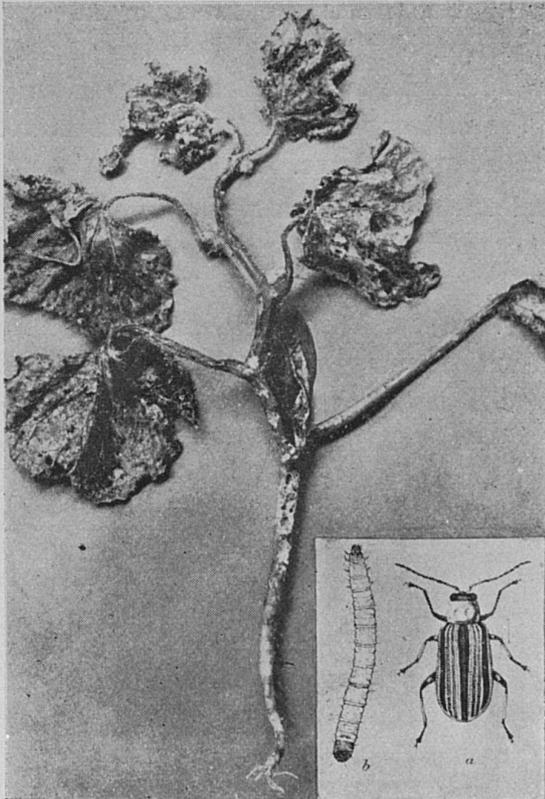
February, 1935

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## STRIPED CUCUMBER BEETLE

By W. A. PRICE

The striped cucumber beetle, sometimes called the striped bug, melon bug or "cuke bug," is found thruout the State of



Plant Injured by Striped Cucumber Beetle.  
(a) Adult Beetle. (b) Immature Form.  
After Chittenden and Jones.

Kentucky. It is, as the name implies, a striped, hard-shelled insect. The general color is yellow and there are three black stripes on the back. It is about one-fourth inch in length.

The winter is passed in the adult stage and the beetles are among the first insects in spring to start feeding on green plants in the field. As soon as their favorite food plants, such as squash, beans, melons and cucumbers appear above ground, they transfer their attacks to them. So eager are they to feed on these plants that they often burrow into the ground to meet the young plant coming thru the soil.

The injury to the seedling and leaves is shown in the accompanying illustration. Entire stands of these crops sometimes are destroyed in a few days by the beetles. In addition to the damage to the plants by feeding, the insects spread a disease among the plants, known as mosaic or wilt, that is as destructive as the feeding habits of the beetle.

The insects breed in the ground, selecting, where possible, rich, damp soil. The immature form, or larva, feeds on the underground portion of the plant, becoming full grown in five or six weeks. There are two or more generations per year and the beetles of the last generation feed on the flowers and fruits of the crops mentioned above.

To control the pest, use a well-mixed dust made of one part of calcium arsenate and 15 parts of gypsum or land-plaster. The latter will have hair in it when received from a builders supply company. It should be screened before using. The dust can be applied with a gunny sack. Since the beetles often attack the plant before it comes thru the ground, the first application should be made before the plants can be seen. Additional applications should be made at three- or four-day intervals, until the plants are beyond the critical stage. Often 15 to 20 treatments are necessary.