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THE

SWEETPOTATO

WEEVIL

How to control it

LEAFLET NO. 431
U. S. DEPARTMENT OF AGRICULTURE
For further information on the control of the sweetpotato weevil in your area, consult the State pest control official, your county agricultural agent, or a Federal or State plant pest control inspector in your area.

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This leaflet supersedes Leaflet 121, The Sweetpotato Weevil and How To Control It

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The sweetpotato weevil, a serious pest of sweetpotatoes, infests parts of seven southern States—South Carolina, Georgia, Florida, Alabama, Mississippi, Louisiana, and Texas.

Sweetpotato growers can prevent or reduce weevil damage by following recommended cultural and cleanup practices and by using insecticides.

States combat the weevil on a larger scale by maintaining quarantines to prevent spread of the weevil to uninfested areas and by carrying out area-wide control programs. The U. S. Department of Agriculture cooperates with States in both types of control effort.

DEVELOPMENT

The weevil can live and multiply in sweetpotato fields, in stored sweetpotatoes, and in certain fleshy-rooted morning-glories that grow wild along the South Atlantic and Gulf coasts.

It has four stages in its development—egg, larva (grub), pupa (resting stage), and adult.

A generation is produced in 1 month to 6 weeks in warm weather. In cool weather the weevil develops more slowly. Generations succeed one another as long as the weevil has food. In areas along the South Atlantic and Gulf coasts 6 to 8 generations may be produced in 1 year.

Egg

The female adult lays eggs in small shallow holes that she punctures in mature parts of the sweetpotato vine, in the plant stem near the earth, in the roots if she can reach them, or in stored sweetpotatoes.

Eggs are white and so small they cannot be easily seen. They hatch into larvae in about 1 week in warm weather.

Larva

The larva grows to about three-eighths inch long. It is white at first, later becomes cream colored. Its head is pale brown.

As the larva feeds it burrows into the stem or root, making a tunnel that becomes larger as the larva grows.

In 2 or 3 weeks (or longer at cool temperatures) the larva transforms into a pupa.
Pupa

The pupa is slightly smaller than the mature larva. Its partly developed snout, legs, and wings can be plainly seen, and it has conspicuous eyes. Legs and wings lie folded against or around the body.

In a week or longer the pupa turns into an adult weevil.

Adult

The adult emerges through a hole about the size of a match stem. It feeds on vines, stems, and roots.

The adult resembles a large ant. It is about one-fourth inch long. Head and wing covers are shiny blue black. The middle part of the body and the legs are bright orange red.

Adults may live as long as 8 months. They become inactive at low temperature, then active again when the temperature rises.

Adults have been known to fly over a mile in search of food. They probably can fly longer distances. They are seldom seen in flight, however, as long as food is plentiful.

DETECTION

You can detect weevil infestation without cutting into sweetpotato plants and without slicing the sweetpotatoes.

The punctures made by egg-laying females and the feeding punctures made by adults of both sexes are a sign of infestation. They are usually in clusters. To see what they look like, refer to the illustration on page 5, in which the punctures are designated by $f$.

Young larvae in a potato begin their tunneling in the punctured area, just beneath the skin. If you cut a punctured potato, you will find that the tunnels become larger as they extend inward. Each tunnel contains a larva or pupa unless the insect has completed its cycle in the potato and has emerged. Exit holes, another sign of infestation, are designated by $e$ in the illustration on page 5.

The main stems of weevil-infested sweetpotato plants become enlarged and pale. If you split stems that have this appearance, you probably will find larvae or pupae (or both), tunnels, and excrement.

DAMAGE

Most sweetpotato weevil damage is caused by the larvae as they feed on the sweetpotato roots.

Even a lightly infested sweetpotato is unfit to be eaten by human beings—both because of the presence of the larvae and because of a bitter flavor that develops. In a severe infestation, hundreds of larvae may feed on one sweetpotato.

The feeding of larvae and adults on aboveground parts of the plant apparently does not damage the plant enough to reduce yield.

The most damaging infestations occur in areas where winters are not cold enough to destroy all vegetation on which the weevil feeds. In these areas the weevil can breed throughout the year.

Heavy infestations occur every year in areas near the South Atlantic and Gulf coasts. In Florida, the weevil has nearly eliminated commercial sweetpotato production. Without an effective State-Federal
A, Weevil-infested sweetpotato and stem of plant; a, adults; b, larvae; c, pupa; d, larval injury; e, exit holes; f, feeding and egg punctures. B, Developmental stages. (A, about natural size; B, about five times natural size.)
control program, damage in commercial producing areas would greatly exceed that now being experienced.

CONTROL METHODS

Growers can prevent or greatly reduce weevil infestation by following the procedures outlined below.

Seed

Plant weevil-free seed. If possible, obtain seed from an unininfested area. If you cannot do this, examine carefully each sweetpotato chosen for seed; reject any that are weevil infested.

Store seed apart from other sweetpotatoes. Place seed in storage one layer at a time and cover each layer with 10-percent DDT dust. Use 1 pound of dust for each 6 to 8 bushels of seed.

Storage Places

Empty, clean, and treat all storage places in the spring at least a month before the new crop is planted in the field.

Treat storage places thoroughly with DDT dust or spray. Apply 1 pound of 10-percent DDT dust for each 1,600 square feet. Or apply DDT spray (made by mixing 8 pounds of 50-percent wettable powder in 100 gallons of water) at the rate of 1½ gallons per 1,000 square feet.

Plant Bed

Maintain a visible covering of insecticide dust on the plant beds from the time the stems of the first plants begin to show color until the beds have been destroyed.

Use 2-percent dieldrin or 2- to 2½-percent heptachlor dust (nongranular). Apply with an ordinary garden-type rotary duster, a bellows-type duster, or any other equipment that will distribute the dust and leave it in the proper position.

Make two or more applications as follows:

First application: When first plants begin to show color, apply dust on and around base of all plants that are up.

Second application: When all plants are up, apply dust to cover the soil next to all plants.

Other applications: After all plants are pulled, apply dust if it is needed to keep the soil covered. If plants are allowed to run to produce vine cuttings, dust at the time vines drop to the ground and start to run.

Planting in the Field

Plant sweetpotatoes in fields where sweetpotatoes have not been grown the season before. In preparing the soil, give the roots enough loose earth in which to develop; they should not become exposed above ground. If possible, use sweetpotato varieties that tend to develop deep beneath the surface. Plant cuttings instead of rooted plants whenever this is practicable.

After Planting

Apply 2-percent dieldrin or 2- to 2½-percent heptachlor dust (nongranular) to sweetpotatoes in the field. Make one heavy application to sweetpotatoes of deep-rooted varieties such as Porto Rico. Make two lighter applications to those of shallow-rooted varieties such as Goldrush.

For deep-rooted varieties, apply
the insecticides when the largest roots are 1/2 to 1 inch in diameter. Use 75 pounds of dust per acre.

For shallow-rooted varieties, apply dust as soon as the roots start to enlarge, then apply again 2 weeks later (or about the time the soil starts cracking because of root growth). Apply 40 pounds of dust per acre each time.

Apply the dust along the row in a strip 6 to 8 inches wide. Direct the dust to the surface of the soil under the foliage at the base of the plants.

Do not apply dieldrin within 21 days or heptachlor within 30 days before harvest.

Harvest

Examine each sweetpotato as you dig it. Feed all those that are weevil infested to livestock, or destroy them immediately.

After Harvest

Care of Field.—Immediately after harvest, collect and destroy all crop residue—stems, roots, and cull sweetpotatoes. Some of the uninfested residue may be saved to use as bait for adult beetles. Vines treated with dieldrin or heptachlor should not be fed to dairy animals or animals being finished for slaughter.

Place the bait material at intervals around the edges of the field, then apply dieldrin or heptachlor dust to the ground in a circle surrounding the bait. Do not apply dust to the bait. In about 30 days collect and destroy the bait.

Plow the field once or twice during the winter. Collect and destroy all sweetpotato scrap material that you unearth.

Destroy any volunteer sweetpotato plants as soon as they appear. If a new crop in the field makes this undesirable, apply dieldrin or heptachlor dust to the soil around the stems of the volunteer plants.

Dusting Harvested Potatoes.—Sweetpotatoes that are to be stored in quantity may be treated with DDT dust as a means of preventing or reducing spread of the weevil, but this should be done only if the sweetpotatoes will be washed thoroughly before they are eaten or offered for sale.

Just before storing the potatoes, dust each crate thoroughly with about 0.8 ounce of 10-percent DDT dust.

DDT will kill the newly developed adults before they can lay eggs. It will not kill larvae within the potatoes.

QUARANTINES

All the southern sweetpotato-producing States maintain quarantines to prevent the spread of the sweetpotato weevil. Spread may occur when sweetpotato plants, seed, or table potatoes are moved from infested to noninfested areas.

States that maintain quarantines permit the entry of sweetpotatoes from infested areas only after prescribed requirements are met.

STATE PROGRAMS

Most of the States infested with the sweetpotato weevil are engaged in programs to control it.

As a part of these programs, nonplanting zones 1/2 to 1 mile wide are
established around newly discovered infestations. All material on which the weevil feeds is removed from these zones in an effort to starve the weevil. Dieldrin or aldrin is used to kill weevils in this zone before the materials on which they feed are removed.

Precautions

Insecticides are poisonous. Handle them with care. Follow the directions and heed all precautions on the container label.

Dieldrin and heptachlor can be absorbed through the skin. After working with these materials, wash all exposed surfaces of the body with soap and water. Put on clean clothing.

Vines treated with dieldrin or heptachlor should not be fed to dairy animals or animals being finished for slaughter.

If you apply DDT to harvested sweetpotatoes, remove the excess residue by thoroughly washing them before they are sold or eaten. Do not feed DDT-treated potatos to dairy animals or animals being finished for slaughter.

Store insecticides in a dry place out of reach of children and animals.