

# ROOT WEEVILS

## Their Control in Strawberry Fields



**This weevil and his several cousins do several thousands of dollars worth of damage to Oregon strawberry fields every year.**

Several kinds of root weevils attack strawberries. All feed on roots in the larval stage. Their life histories differ enough to affect control, especially of adults. Some species of "new" root weevils have become more abundant, and they are causing significant damage in commercial strawberry plantings. Thus, root weevil identification becomes important for effective control.

Common names have been given to most of these weevils and scientific names are also included here as an aid in identification. Most familiar of the weevils are the black or common strawberry root weevils belonging to the genus *Otiorhynchus*. Included in this genus are the black vine weevil (*O. sulcatus*), the rough strawberry root weevil (*O. rugosostriatus*), and the strawberry root weevil (*O. ovatus*). The gray root weevils, belonging to the genus *Dyslobus*, have been a pest of strawberries, particularly in hilly areas. The common species of *Otiorhynchus* and *Dyslobus* can be controlled effectively by pre-planting soil treatment with aldrin or dieldrin.

Of the "newer" weevils, the obscure root weevil (*Sciopithes obscurus*) has been particularly troublesome in the northern part of the Willamette Valley. In addition to the damage it does to strawberries, it frequently is found on cane fruits where feeding by adults results in "ragging" of foliage. It sometimes gets into harvested fruit and from there into processing plants, where it may become a potential contamination problem.

The woods weevil (*Nemocestes incomptus*) has caused damage to strawberries in hilly counties. Another species of *Nemocestes*, evidently *N. puncticollis* is the most common of the genus.

The ash gray weevil (*Peritelinus oregonus*) has occasionally caused serious damage to individual strawberry fields in the Willamette Valley. Severe leaf "ragging" by adult weevils is characteristic of infestations of this species.

The small crusted weevil (*Trachyploeus bifoveolatus*) has become increasingly abundant throughout the Willamette Valley and coastal counties in recent years. It has caused damage to strawberry plantings, and in a few instances has been troublesome in nurseries. Like some of the other weevils, it has the annoying habit of migrating into dwellings during the late summer and fall months.

## LIFE HISTORY

Adult weevils appear from February until late summer or early fall, depending on the species involved as shown in the chart. Emergence of adults may continue over a period of several weeks. Adults usually begin to lay eggs about three weeks after emergence. Adult weevils may remain active for several months.

## DAMAGE

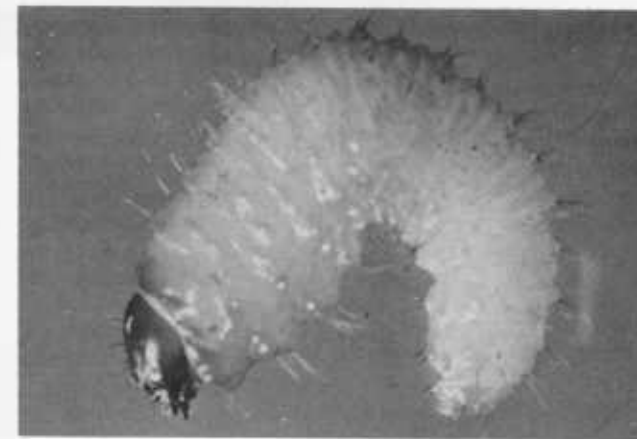
Young larvae hatching from eggs feed on the roots, causing serious crop damage. They may completely destroy small rootlets and sometimes feed into the plant crown. Larvae feed for a month or more, change into pupae, then emerge as adults. Adults feed on leaves, causing minor leaf notching as shown on the cover. Fresh leaf injury is a good indication of their presence.

## CONTROL

Root weevils belonging to the genera *Otiorhynchus* and *Dyslobus* can be controlled by using pre-planting soil treatments of aldrin at five pounds per acre. The insecticide is applied to the surface of the soil and immediately worked into the top six inches of soil by using a rotary tiller or discing. The field should be worked at least three times if a disc is used. Growers have been following this practice for a number of years, and it is still effective.

Control efforts against the "new" weevils are directed against adults, to kill them before they lay eggs. To prevent damage, growers should watch for the presence of these weevils. The chart on pages 5 and 6 indicates when the first adults appear. Damage frequently starts in only a small spot or portion of a field but may spread if left uncontrolled. If weak plants are seen, they should be dug and examined for root injury or larvae.

Adult weevils are sometimes difficult to find. It is not unusual for some species to become coated with mud or dust, making it difficult to locate them during the day when they hide under clods or old leaves. Most of the weevils feed during late evening or after dark. With the aid of a flashlight or other suitable light source they can be detected most easily at night.



Larvae of root weevils all look much alike; C-shaped, legless grubs. They damage plants by feeding on roots and crowns.

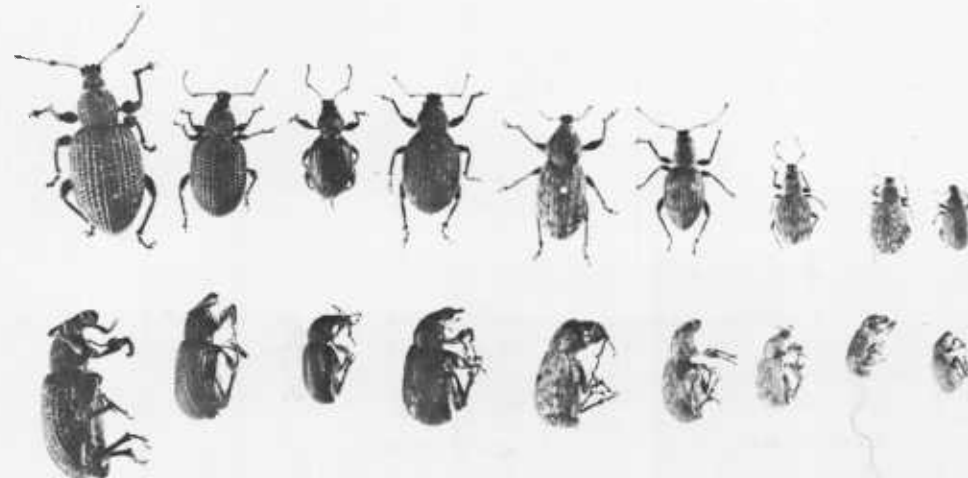
Sweeping plants after dark with an insect net is the best method of locating them.

If weevils are found, they should be identified and then controlled if necessary by using one of the insecticides as recommended in the chart. Insecticides should be applied with sufficient force and volume to insure their penetration into the plant crowns. Best control will be obtained if approximately 150 gallons of spray per acre is used. Since weevils are most active at night, spraying or dusting in late evening would be preferable where possible.

To avoid pesticide residues on fruit, it is important to observe the intervals between application and harvest given in the control chart.

Left to right:

1. Black vine weevil, *Otiorhynchus sulcatus*.
2. Rough strawberry root weevil, *Otiorhynchus rugosostriatus*.
3. The strawberry root weevil, *Otiorhynchus ovatus*.
4. The woods weevil, *Nemocestes incomptus*.
5. The gray root weevil, *Dyslobus decoratus*.
6. The obscure root weevil, *Sciopithes obscurus*.
7. The ash gray weevil, *Peritelinus oregonus*.
8. *Nemocestes puncticollis*.
9. Crusted weevil, *Trachyploeus bifoveolatus*.



## ADULT ROOT WEEVIL APPEARANCE AND CONTROL

| Weevils  | Description of adults  | Earliest appearance | Control  |
|--|--|---------------------|--|
| Black weevils<br><i>Otiorhynchus sulcatus</i><br><i>rugosostriatus</i> , <i>ovatus</i> | General color black, but individual beetles may appear light brown to chocolate color. <i>O. Sulcatus</i> , the black vine weevil, is the largest of this group. It sometimes has small patches of yellow scales on its back. Black weevils vary from 1/5 to 2/5 inch in length. | May                 | Pre-planting soil treatment of Aldrin 5 lbs./A.<br>As a post-harvest treatment use: Malathion 2 lbs./A.<br>Do not use chlordane after fruit begins to form or until after harvest is complete.<br>Do not apply malathion within 3 days of harvest. |
| Gray weevils<br><i>Dyslobus decoratus</i><br>and other species of this genus           | General color gray; <i>D. decoratus</i> , the decorated strawberry root weevil, is marked with whitish specks, others with a copper colored sheen. Adults are about 1/4 inch long.   | March               | Pre-planting soil treatments of aldrin or chlordane as suggested for black weevils give best control.<br>Malathion 2 lbs./A. will give partial control of adults.  |
| Woods weevil<br><i>Nemocestes incomptus</i><br>and other species of this genus         | Predominantly light or dark brown in color; <i>N. incomptus</i> is about 1/4 inch long, others are shorter. There are gray spots or patches on the posterior end of <i>N. incomptus</i> .  | Early August        | Post-harvest application of malathion 4 lbs./A.<br>Malathion at this rate may be used only as a post-harvest treatment when there is no possibility of fruit contamination.  |
| Obscure root weevil<br><i>Sciopithes obscurus</i>                                      | Predominantly gray; about 1/4 inch in length. There is a wavy brown line across the back near the posterior. Thorax is brown on top, gray on sides.  | First half of June  | Malathion 2 lbs./A., or Guthion 1/2 lb./A.<br>Do not apply Malathion within 3 days of harvest or Guthion within 5 days of harvest.   |
| Ash gray weevil<br><i>Peritelinus oregonus</i>   | Ash gray in color; about 3/16 inch in length. There is a wavy light brown line across mid-back and posterior. It is generally lighter gray, smaller, and appears more elongate than <i>S. obscurus</i> .   | Early May           | Malathion 2 lbs./A.<br>Do not apply malathion within 3 days of harvest.  |
| Crusted weevil<br><i>Trachyphloeus bifoveolatus</i>                                    | Small, black, about 1/8 inch long. Usually have dirt adhering to body giving them a crusty appearance.   | February and July   | Guthion 1/2 lb./A.<br>Do not apply Guthion within 5 days of harvest.   |

*This circular was prepared by R. G. Rosenstiel, associate entomologist, Agricultural Experiment Station, and Robert R. Robinson, Extension entomologist. Photos by R. F. Koontz, instructor in entomology, Oregon State University, Corvallis.*

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