

THE GRANARY WEEVIL

By Virgene Link

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Keeping weevils out: It's nearly impossible to process and store grain products without some infestation.

Many people are starving in some parts of the world because the food they should have has been eaten by the granary weevil (*Sitophilus granarius*) or its close relative, the rice weevil (*Sitophilus oryzae*). The granary weevil is more common in the cooler climates, while the rice weevil is most abundant in the warmer climates. They both do well in heated buildings, and feed on many kinds of grain that are grown for food for humans and livestock.

Like other weevils, these also have a long slender snout with sharp jaws at the tip. They are small weevils, only about 1/8 inch body length. The female granary or rice weevil chews a small hole in a kernel of wheat, corn, rice or other grains and lays one egg in it. She then seals the opening with a glue-like substance. She can lay as many as 250 eggs in her lifetime of eight months! In a warm environment the weevil can complete its growth from egg to adult in four weeks. Do the math!--WOW!



The 1/8 inch long adult granary weevil likes to eat stored grain, such as these wheat kernels. Photo courtesy of Clemson University, USDA Cooperative Extension via Invasive.org.

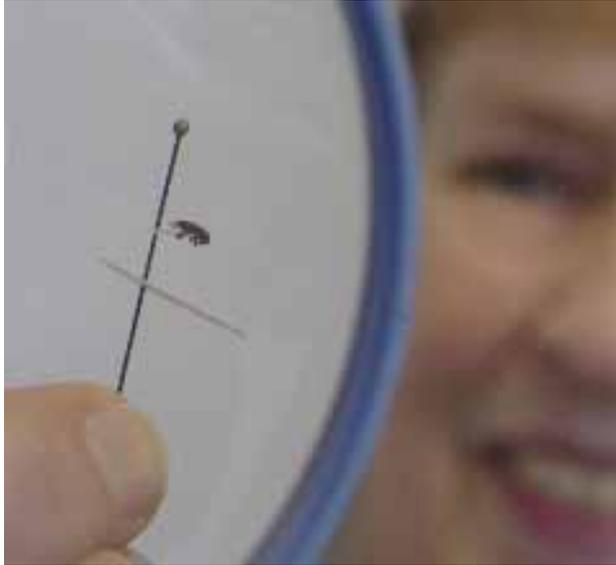
When he was a graduate student, entomologist Lloyd Eighme was employed as a research assistant in the Entomology department at Oregon State University. One of his assigned tasks was to maintain cultures of various pests of stored grain to be used in experimental work. He would inoculate a gallon jar of clean wheat with 50 granary weevils and it was heavy as he lifted it up on the shelf. Three months later, when he took the jar down to renew the culture it was as light as a feather. What had been solid kernels of wheat were by then just empty hulls.

Without proper storage facilities to keep the grain dry and clean, the weevils probably eat more of it than the people do. By necessity, many people become accustomed to eating food with weevils in it. It has been said that the way to tell when foreign service people need a furlough is if they refuse to eat their rice if it does not have a few weevils in it.

Both Granary weevils and rice weevils have been brought to the Master Gardener Clinic. People want to know where they came from, and how to get rid of them. It is nearly impossible to process and store grain products, even in our temperate, climate without some infestation by these tiny weevils, so you are likely to find them in your kitchen if you keep a package of flour or cereal on the shelf too long. They are most often found in whole kernel or coarsely cracked grains where they lay their eggs and multiply. In milling and storage areas the adult weevils may wander into flour and other cereal products, but are not as likely to survive and reproduce there.

Granary weevils do not have wings that are functional. Rice weevils do have wings and can fly considerable distances. For that reason, determining which species it is may help in figuring out where it came from and how to get rid of it. The rice weevil usually has two light spots on each wing cover and is slightly smaller than the granary weevil, which is uniform color. Their food habits and life cycles are essentially the same. One of the easiest and safest ways to kill granary and rice weevils is by heating the infested food to 130 degrees F for 30 minutes, or by freezing it at -1 degree F for at least 5 hours. You can eat it then if you want to, but maybe you would rather feed it to the animals, or add it to the compost.

Adapted from an article by Lloyd Eighme, Entomologist



Using a magnifier and a pin, Skagit County Master Gardener Virgene Link shows a tiny granary weevil (*Sitophilus granaries*) specimen. The 1/8 inch long insect likes to eat stored grain, even in your kitchen, and will happily munch on flour, rice, barley and even oatmeal. **Photo by Frank Varga / Skagit Valley Herald.**

More Information:

Prevention and Detection

1. Purchase dried foods in quantities small enough to be used up in a short period of time. Use oldest products before newer ones, and opened packages before unopened ones.
2. Inspect packages or bulk products before buying. Packages should be sealed and unbroken. Look for evidence of insects, including holes in the packaging or wrapping.
3. Store insect-free foods in tightly closed glass, metal, or heavy plastic containers. Refrigerate or freeze small amounts of highly susceptible foods.
4. Keep food storage areas clean. Do not allow crumbs or spilled food to accumulate. Remove and discard old, unused products and inspect the remainder. Thoroughly clean cracks and corners with a vacuum cleaner. Also check and clean areas where pet food and birdseed are stored. Washing with detergents, ammonia, or bleach will not prevent insect infestation. There is no evidence to prove that placing bay leaves or sticks of spearmint gum in a cupboard will prevent or deter stored food insect pests.

Pest Elimination

1. Locate the source of the infestation. Carefully examine all susceptible foods. Look at the top surface of the product with a flashlight or pour the package contents onto a cookie sheet.
2. Throw away all infested foods.
3. If infested material is to be salvaged (for example, birdseed) or if infestation is questionable, heating the infested food to 130 degrees F for 30 minutes, or by freezing it at -1 degree F for at least 5 hours.
4. Empty and thoroughly clean cabinets and shelves with a vacuum cleaner (especially cracks and corners) to pick up crawling insects and spilled or infested material. Empty the vacuum cleaner or discard the vacuum cleaner bag after use to prevent reinfestation. Washing shelves with detergent, bleach, ammonia, or disinfectants will not have any effect on insect pests.
5. Insecticide sprays are not recommended for controlling insects in stored food. Household insecticides have no effect on insects within food packages and any control is temporary unless the source is found and eliminated.
6. If insects are infesting ornaments or decorations made with plant products or seeds, place the items in a freezer for 4 days.

(Above courtesy of University of Minnesota Extension Service)

RESOURCES:

- 'Insect Pests of Stored Foods,' University of Minnesota Extension: www.extension.umn.edu/distribution/nutrition/dj1000.html
- 'Cereal and Pantry Pests,' Penn State University College of Agriculture: <http://ento.psu.edu/extension/factsheets/cereal-and-pantry-pests>
- 'Cupboard Beetles,' Arthur Antonelli, WSU Extension: http://king.wsu.edu/gardening/MGCD/Chapter_14/EB0973.pdf
- Washington State University Extension Publications, <https://pubs.wsu.edu/> (For more information about these weevils read EB 0472 and EB 0973.)