Controlling pocket gopher damage to agricultural crops

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Pocket gophers cause considerable damage to hay and grain crops as well as to cherry, apple, pear, and filbert orchards. Some of the losses are a direct result of feeding activities of gophers: Root-clipping apple and cherry trees, eating alfalfa hay and filbert nuts. Other losses result from tunneling and mound-building activities: Soil and rocks from mounds damage harvesting machinery and degrade quality of crops. This publication describes activities designed to reduce damages by pocket gophers to hay, grain, and orchard crops.

Pocket gophers are also a serious problem to homeowners and gardeners: Controls for gophers under these circumstances are outlined in EC 1115.

Damages to hay, grain, and orchards usually occur over larger acreages, calling for control methods that differ from those used by the homeowner and gardener.

Identify the pest

As with any control program, your first step is to ensure that you have properly identified the pest. Damages by other pests such as moles and mice may closely approximate those of gophers, but control methods for these pests are different and don't work for the pocket gopher.

Because the mole is also a burrower and mound builder, it's easy to make a mistake in identification.

Pocket gophers extend lateral (side) tunnels to the surface from their deeper main tunnels and push out the excess soil in flattened or fan-shaped mounds. These vary from 12 to 24 inches in diameter and 4 or more inches in height. The gophers then plug the surface opening through which this soil is pushed, leaving a noticeable dent or plug at one end of the pile (figure 1). The entire lateral may be backfilled to the main tunnel.

Moles. Mole mounds are the result of repeated eruptions from below and simply continue to grow or enlarge until the mole has disposed of the excess soil and moved on. Mole mounds are higher and generally rounder in shape than gopher mounds and look more like miniature volcanoes. No hole at the side of the mound is evident. However, if you place your finger in the middle of the mound and push it down in a circular fashion, you'll discover the mole's hole is in the...
Figure 2. Mound patterns, mole and pocket gopher

The pattern of mounds helps to distinguish gopher from mole activity. Gopher mounds tend to be clumped in tight groups; the mole's tend to be spaced in a line as single mounds (figure 2).

Meadow mice (voles). Another pest commonly misidentified with the pocket gopher is the meadow mouse or vole. These small animals girdle the base of cherry and apple trees, often killing the trees. A good clue is the presence of small tunnel systems at or just below the surface of the ground in the shelter of grass or weedy cover. Meadow mice have no mounds at the entrance of their open burrows, which are about the size of a 50¢ piece. The tooth marks of voles are very small and leave a fuzzy appearance on the bark of damaged trees. Pocket gophers will girdle but more often tend to clip off roots and rootlets. When the root system of damaged trees is exposed, the loss of roots and rootlets is very typical (figure 3).

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Figure 3.—Root damage by pocket gophers

Pocket gophers are classified as nongame wildlife under the Oregon Wildlife Codes, and they’re not afforded any specific protection. Furthermore, the wildlife codes permit a landowner or agent to control noxious animals on his or her property. Pocket gophers in Oregon are not protected under Federal regulations.
Control methods
Flood irrigation. Years ago, farmers flooded hay and grain crops requiring irrigation with a thin sheet of water in spring and at intervals throughout early summer. This forced pocket gophers to leave their burrow systems or drown—and resulted in nearly 100% control. Invasion from adjacent nonirrigated lands or reinvasion by animals forced to nearby higher ground is often a problem.

The advent of sprinkler irrigation increased acreages where irrigated crops could be grown, such as on hillsides and uneven lands, but pocket gophers aren’t flooded out under sprinkler irrigation, so this form of cheap control isn’t generally available.

In situations where you can use flood irrigation and pocket gophers are a serious problem, consider this method but give careful attention to control in surrounding areas, to prevent reinvasion.

Vegetation management. Studies have indicated that pocket gopher damages can be reduced by about 50% by applying herbicides that remove vegetation pocket gophers require for food. This option is limited to orchards and to noncrop areas close to hay and grain crops.

Other studies have indicated that removing existing crops (such as alfalfa), followed by deep tilling, will disrupt burrow systems, remove food, and result in a significant reduction in pocket gopher numbers in fields so treated.

When alfalfa fields begin to decline in productivity for one reason or another, plow them up and plant some alternate crop rather than keep them in alfalfa for a few additional years at greatly reduced yields.

Trapping. Techniques for trapping pocket gophers are outlined in EC 1115. In situations where infestations are limited to 5 or fewer acres, trapping might be an option. You could also trap as a followup to larger-scale poisoning operations, to remove pocket gophers that escaped or avoided the poison baiting.

Trapping is not recommended as the primary control method on large acreages because of labor requirements and the high potential for pocket gopher reinvasion.

Poison baiting. Because of constantly changing labels, laws, and regulations, Oregon State University can assume no liability for the consequences of use of chemicals suggested here. In all cases, read and follow the directions and precautionary statements on the specific pesticide product label.

The application of toxicants to control pocket gopher damage is generally recommended when larger agricultural areas (10+ acres) are heavily infested. A variety of toxicants are available in the form of poison baits, such as oats and wheat seeds, alfalfa pellets, seed mixtures, and dried fruits.

Toxicants currently registered by the U.S. Environmental Protection Agency and the Oregon Department of Agriculture include strychnine, zinc phosphide, and acute anticoagulants such as chlorophacinone.

Most commercially available baits have a seed base, but the pelletized alfalfa and grain-raisin-apple mixtures have been highly effective under some circumstances.

Pocket gophers are active year-round, but the best times for baiting coincide with the best soil conditions for applying baits. Gopher burrowing activity seems to increase in late winter and early spring when the soil softens, and this is a good time to begin baiting, just before the rains in early fall, the soil begins to soften again, and burrowing activity of pocket gophers increases.

Poisoning from adjacent nonirrigated lands or reinvasion by animals forced to nearby higher ground is often a problem. Consider this method but give careful attention to control in surrounding areas, to prevent reinvansion.

Use pesticides safely!

- Wear protective clothing and safety devices as recommended on the label.
- Wash or shower after each use.
- Read the pesticide label—even if you’ve used the pesticide before.
- Follow closely the instructions on the label (and any other directions you have).
- Be cautious when you apply pesticides. Know your legal responsibility as a pesticide applicator. You may be liable for injury or damage.
it occurs, bury baits promptly to avoid hazard to nontarget birds and mammals.

**Hand-baiting.** Hand-baiting is described in EC 1115 and is recommended only where infestations are localized on small (2 to 5 acres) areas. Hand-baiting is slow, requiring 7 to 20 hours to treat 1 acre.

**Probe-bait dispensers.** Probe-bait dispensers (figure 4) allow you to probe for runways and dispense the poison bait in one step. Their use is about twice as fast as hand-baiting. The probe-bait dispensers generally can operate only with grain baits. (Pelleted baits and baits containing raisins and dried fruits usually won't pass through the dispensing mechanism.)

Push the probe-bait dispensers into the ground in a circular pattern around fresh mounds as you seek the runways. Once you find a runway (the dispenser suddenly sinks 2 to 4 inches deeper in the ground), a twist of a lever dispenses a measured amount of bait into the runway. Place three to five baits in runways around each cluster of fresh gopher mounds.

**Burrow builder.** For situations where pocket gopher infestations are severe on 10 or more acres, the burrow builder (figure 5) is the most effective way to dispense baits.

The burrow builder is designed for use with a tractor of at least 25 horsepower and having a conventional three-point hitch. The device consists of a supporting frame, a depth-adjustable, burrow-forming torpedo at the end of a shank, a rolling coulter to cut surface trash and shallow roots ahead of the shank, a bait-metering device, and press wheels to drive the metering unit and close the knifelike slit made by the upper portion of the shank. The bait is dropped into the artificial burrow through a tube built into the shank.