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AN INNOVATIVE APPROACH TO POCKET GOPHER FUMIGATION

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The Botta's or Valley pocket gopher (Thomomys bottae), except possibly for the California ground squirrel, is the most damaging rodent to agricultural crops, ornamental plantings, turf, alfalfa, etc., in California. It is a solitary, antisocial animal that occupies its underground burrow system alone except during mating periods and before the juveniles leave the maternal nest at about 5 to 6 weeks of age. They disperse nocturnally to establish new tunnel systems or take over abandoned ones. In planted and irrigated areas where there is an abundant supply of desirable vegetation, there are generally two litters per year. Research indicates that only a few females reproduce the same year they are born. The main breeding season in the central California coast area is in December and January. Litters of five to six follow in 30 days.

The gopher is an industrious animal that can move more than a quarter ton of soil annually in tunnel systems that extend 100 feet or more. For digging tools, the gopher uses its protruding chisel-like incisors and the enlarged claws on its powerful forefeet. It is a true rodent whose incisor teeth continue to grow throughout its lifetime. It must gnaw frequently to keep them worn down to usable levels. It will travel considerable distances above ground when attracted to moist soils and a better food supply. On a golf course, it pushes up unsightly earth mounds that interfere with mowing and other maintenance practices. It pushes up fertile soil in sand traps to allow weed growth. It is known to cut underground electric wires that control automatic sprinkler systems and gnaw through plastic pipes.

At the Stanford Golf Course maintenance shop, we converted a rototiller to a "gopher gasser" by replacing the tines with wheels. The exhaust was lengthened several feet with a U-type pipe design with a hose adapter. This allows for air-cooling and prevents the hose from scorching. The wheels make the tiller self-propelled and it can easily climb a ramp into a pickup for long-distance moving. The tines can readily be replaced for tilling use.

We find that when a gas cartridge made by the U.S. Fish and Wildlife Service is first applied into the burrow opening followed by the carbon monoxide fumes, a high degree of control is obtained. A collar of soil is placed around the hose at the insertion point. The exhaust replaces the good air in the burrow system with the lethal carbon monoxide and the smoke fumes from the gas cartridge. The gases are rapidly forced into the far extremities of the runways as can be detected by slight smoke seepage. The motor is left running for several minutes. The rodents are exterminated underground and rarely have time to plug their burrows or escape to the surface. This method is also effective on ground squirrels where burrows exist in open areas and the soil is relatively moist to retain the toxic gases.

Advantages of this method are:

1. A high degree of control.
2. No hazardous residues remain.
3. No damage to vegetative roots.
4. More humane than traps or convulsive poisons.
5. No secondary effect to cats or dogs or other predators should a carcass be recovered and eaten.
6. No permit, certification, or license required by the user.
7. One to seven gophers (i.e., adult female with litter) can be eliminated by a single treatment.

*Editors note: Lloyd Plesse retired as Assistant Agricultural Commissioner of Santa Clara County several years ago, but remains active by pursuing a long-time interest in vertebrate pest control problems.