



COUNTY OF SAN LUIS OBISPO

DEPARTMENT OF AGRICULTURE / WEIGHTS & MEASURES

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GROUND SQUIRREL MANAGEMENT

WHY CONTROL GROUND SQUIRRELS: Ground squirrels damage a wide variety of crops: including grain, fruits, nuts, and vegetable crops at the seedling stage. Young orchards can be damaged by gnawing of the bark. The ground squirrel's extensive burrowing can damage root systems as well as cause serious erosion problems.

Bubonic plague cases have been detected in ground squirrel populations as they act as host to plague-infected fleas. Never handle a dead or sick rodent. Extensive rodent die-offs (other than planned) should be reported to local health authorities.

FIRST FEW STEPS: The first step is to go out and survey the extent of your problem.

1) Have you correctly identified ground squirrels as the pest causing the problem? Ground squirrels may be confused with gray tree squirrels, which are classified as game mammals by California Department of Fish and Wildlife. California ground squirrels are about the same size as tree squirrels (1-1/4 to 2 pounds). The ground squirrel's base color is brown with gray flecked back and sides. Cheek pouches are membranous. An easy way to identify squirrels is when startled a tree squirrel will retreat up a tree and a ground squirrel will retreat into a burrow.

2) Survey the habitat. Ground squirrels live in underground burrows. The burrows are used for safety, shelter, and the rearing of young. Burrow openings average four inches wide, with above-ground interconnecting runways.

3) What kind of damage is occurring or expected? Crop loss, damage to irrigation systems, and undermining of roads, buildings and crop roots are typical of ground squirrel infestations.

4) Evaluate environmentally sensitive areas at the control zone. Take the time to survey for wildlife or domestic animals that could be affected by the proposed treatment. Take precautionary measures by buffering sensitive areas or informing nearby neighbors what you are doing.

5) Do your neighbors have ground squirrels which will re-invade your property? Talk to your neighbors about having a program that would coincide with yours.

DEVELOPING A CONTROL PROGRAM: Responsible management uses the most effective combination of tools for a given situation. The following are available options:

1) Habitat Modification: Develop an understanding about the surrounding habitat. Consider the presence of beneficial wildlife and their habitat needs, as well as the pest species. Altering the habitat can make an area less favorable for ground squirrels. Junk piles, pruning stacks, rock piles, and old equipment act as harborage; and should be removed.

Studies indicate that destroying the burrow systems after a control program detracts squirrel re-invasion of the area. The tractor should use a rippage blade 18 inches in depth. Shallow rototilling is ineffective.

Ground squirrels prefer to build burrow systems in areas with little vegetative cover. Thus, overgrazing will further the growth and establishment of ground squirrels in rangeland areas. An increase in the vegetative cover may not be entirely successful in the permanent reduction of established ground squirrel colonies. Cover may not be the only limiting factor as long as there is a food source nearby.

2) Encourage Predators: Many natural predators, such as coyotes, foxes, bobcats, badgers, hawks, and snakes, eat ground squirrels. Predators are beneficial in reducing ground squirrel numbers and preventing them from invading marginal habitats. Unwarranted reduction of predators should be avoided. The use of artificial perches and nests may be used to enhance raptor use of an area.

3) Trapping: Trapping can be successful in controlling ground squirrels in smaller areas or as a follow-up program. Live catch traps and a box-type squirrel trap are most effective when placed on the ground near burrows or runways. The traps can be baited with nuts, grains, or melon rinds. A conibear trap can be set directly over the burrow opening. Do not set conibear traps where children, pets, or non-target animals may get caught.

4) Shooting: Persistence is required. Shooting may be practical for small populations or can be used in conjunction with other control methods. Keep in mind that appropriate authorities should be contacted about the lawful/unlawful discharge of firearms within the county. Also be sure to follow regulations regarding the use of non-lead ammunition.

5) Fumigants: Fumigants offer certain advantages because they are selective and fast-acting. Fumigants should be used when the soil is moist and sealed, otherwise the gas will escape and be ineffective. Fumigants should not be used adjacent to structures.

The two types of fumigants available are gas cartridges and aluminum phosphide tablets/pellets. The gas cartridge is a mixture of chemicals, and when ignited gives off suffocating gas. Gas cartridges should not be used where a fire hazard exists, as smoke coming from the cartridge occasionally ignites dry foliage. Aluminum phosphide tablets/pellets generate a highly poisonous and flammable gas under the influence of moisture. Aluminum phosphide is a restricted material and requires a Private Applicator Certificate (PAC) and a Restricted Materials Permit from the county to use, purchase or possess this product. All pesticide label directions must be followed for treatment and retreatments.

6) Rodenticides: Anticoagulant baits are commonly used for ground squirrel control and are restricted to use by a Certified Applicator. Anticoagulants are multiple-dose rodenticides that require several feedings on 5 or more successive days, with no periods longer than 48 hours between feedings. Anticoagulants have two actions; they reduce the clotting ability of the blood and cause damage to the capillaries (tiny blood vessels).

WARNING: Anticoagulants have the same effect on nearly all mammals and many birds. They are a helpful tool when used properly; however, care must be taken to prevent non-target poisoning. Do not allow non-target species, including dogs and cats, to feed on bait or consume poisoned rodents (bait may remain in gut contents). Keep unauthorized persons and children out of treatment areas and storage sites. Seek medical or veterinary services if you suspect non-target poisoning has occurred. An antidote for anticoagulants is Vitamin K.

Use of bait stations: Certain baits are formulated for use in bait stations which should be placed in areas frequented by ground squirrels (near runways, burrows, etc.). Initial acceptance of the bait may not occur until the squirrels become accustomed to the bait station, which may be several days. There are different types of bait stations that can be used. Bait stations should be secured so they cannot be turned over. Always follow label directions.

Broadcast or spot treatment options: Some bait formulations are registered for ground squirrel control using a repeated spot treatment method (three to four applications every other day). The bait is scattered above ground near active burrows. Do not place bait in piles as this may attract non-target species and do not place bait down burrow holes. Scattering the bait above ground takes advantage of the ground squirrel's natural above ground foraging tendencies. Each bait treatment should be placed in the same area as previous baiting to allow multiple feedings to occur. Always follow label directions.

GENERAL GUIDELINES FOR RODENTICIDES: Purchasers and users of gas cartridges and anticoagulant baits must obtain an Operator Identification Number (OIN) from the Agricultural Commissioner's Office. The anticoagulant baits are Federally Restricted and also require a PAC. Aluminum phosphide is a restricted material and requires a PAC and a Restricted Materials Permit. PACs are provided to qualified growers after they have passed an examination. Permits and PACs are issued by appointment only. See the office locations listed at the end of this document.

As with all pesticides, read and follow all directions on the rodenticide label. It is unlawful to use a pesticide in conflict with labeling. Unlawful use is subject to enforcement action, such as Notices of Violation and/or fines.

ENDANGERED SPECIES CONSIDERATIONS: Several endangered species are located within San Luis Obispo County. It is the user's responsibility to carefully read the rodenticide label and follow the directions for use within endangered species areas. Refer to the department's handout on Endangered Species Considerations for additional information.

WHEN TO CONTROL: It is much easier, less expensive, and less time consuming to control a population before there is extensive damage. Many control methods are effective against ground squirrels only at certain times of the year. Ground squirrels have a specific life cycle, and knowledge of this is important when initiating control measures. The exact dates of changes within the life cycle will depend on the region, year, weather conditions, etc.

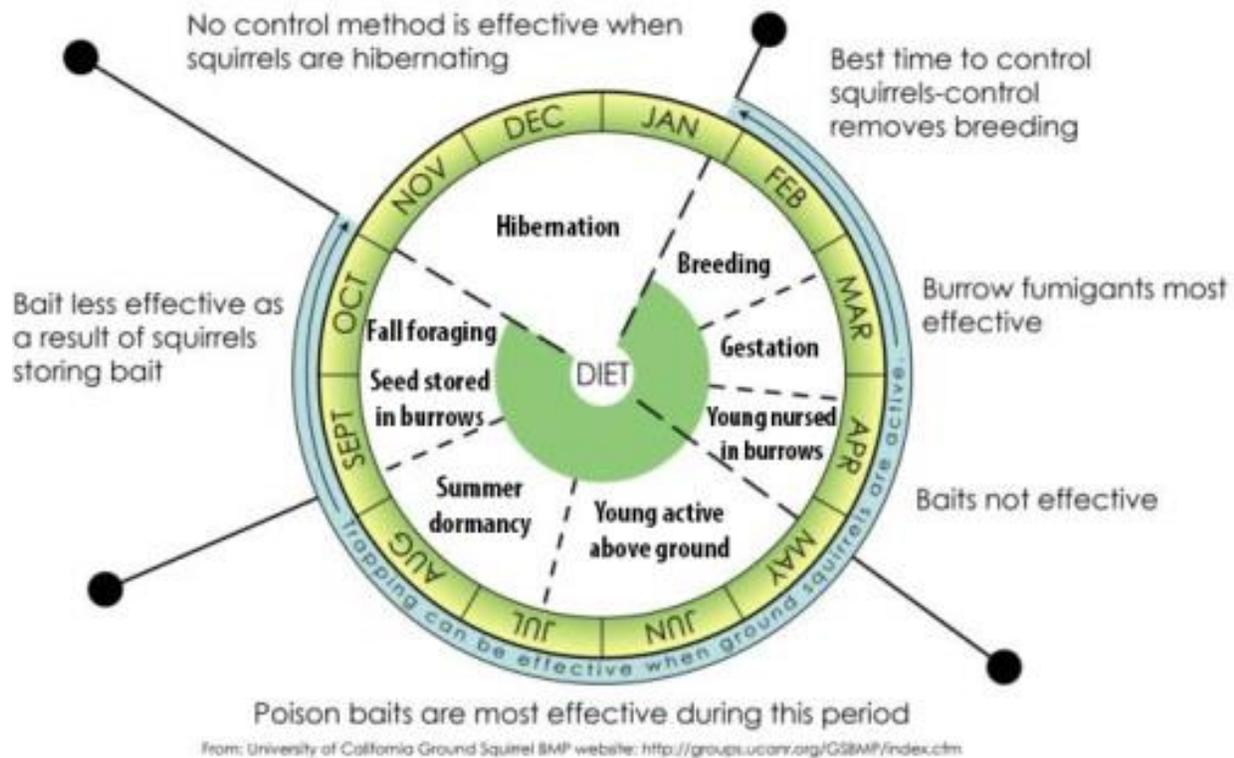
In colder regions, ground squirrels hibernate during the winter. Although some squirrels without a fat reserve may remain above ground, this is generally not the best time to initiate control. If you use fumigants, the animals hibernating may not inhale a fatal dose (respiration extremely slow/nest may be plugged off). Also, those squirrels remaining above ground feed chiefly on green foliage, and grain or pelletized baits may not be eaten.

Ground squirrels emerge during late winter, early spring and this is when breeding takes place. Fumigants can be effectively used after the ground squirrels have emerged from winter hibernation. The ground is usually moist from normal rainfall, making it an excellent time for using fumigants. The ground squirrel's normal diet is still chiefly green foliage, and grain or pelletized baits may remain uneaten.

After a gestation period of 25 – 30 days, a litter is produced averaging 7 – 8 young. The females spend a lot of time below ground while nursing their young and may not regularly feed above ground. The young remain underground until approximately six weeks, at which time they come out and feed with the adults. During late spring/early summer the ground squirrel's diet normally switches from green foliage to seeds and nuts. A bait program is most effective when the diet has shifted to primarily a seed diet and all ground squirrels are active above ground.

Ground squirrels are active until the hotter summer months, when there is a period of inactivity known as estivation, (this may not occur in the coastal areas). A control program will not be effective if some of the squirrels are estivating, so initiate control either prior to or after estivation. Ground squirrels will emerge as the summer-early fall temperatures cool.

California Ground Squirrel - Calendar of Management



MONITORING GUIDELINES: Ground squirrel control is usually NOT a one-time procedure. CONTINUE TO MONITOR THE SITE FOR RE-INFESTATION. Since ground squirrels are fair-weather, day-feeding rodents, observe the site during daylight hours when the ground squirrels would be most active.

ADDITIONAL INFORMATION ON GROUND SQUIRREL CONTROL: The following websites have additional information on ground squirrel control.

- [Ground Squirrel Management Guidelines--UC IPM \(ucanr.edu\)](http://ucanr.edu)
- [Ground Squirrel BMPs - Ground Squirrel Management for California](http://ucanr.edu)

OFFICE LOCATIONS

810 W. Branch
Arroyo Grande, CA 93420
(805) 473-7090
8:00 am – 4:00 pm

2156 Sierra Way, Ste A
San Luis Obispo, CA 93401
(805) 781-5910
8:00 am – 5:00 pm

350 N. Main St., Ste A
Templeton, CA 93465
(805) 434-5950
8:00 am – 4:00 pm