

What do new changes in aluminum phosphide labels mean for burrowing mammal control?

An invitation to participate in a user survey

Roger A. Baldwin

The California ground squirrel (*Spermophilus beecheyi*) and pocket gopher (*Thomomys* spp.) are widely considered to be the two most damaging wildlife pests in California agriculture. Numerous techniques are available for controlling these rodents including trapping, anticoagulant baits, acute toxicant baits, and burrow fumigants. Trapping can be an effective method to remove small to medium size populations of gophers and ground squirrels, but that often becomes too time consuming for large acreage.



Fig. 1. The California ground squirrel (*Spermophilus beecheyi*) is a common pest in many crops including citrus. Ground squirrels live in open burrow systems as opposed to tree squirrels (*Sciurus* spp.) which live in the canopies of trunks of trees. Photo by Jack Kelly Clark, courtesy of UC Statewide IPM Program. Copyright, Regents of the University of California.



Fig. 2. The pocket gopher (*Thomomys* spp.) spends the vast majority of its time underground. However, you will occasionally see them aboveground when excavating new burrow systems. Photo by Jack Kelly Clark, courtesy of UC Statewide IPM Program. Copyright, Regents of the University of California.

Both anticoagulant (e.g., diphacinone and chlorophacinone) and acute toxicant baits (e.g., zinc phosphide) can be quite effective at controlling ground squirrels when used appropriately. These rodenticides are less consistent but can still be effective when baiting for pocket gophers. Baiting is typically considered the cheapest and least time-consuming method for controlling both gophers and ground squirrels. However, there are potential concerns for non-target poisonings when using rodenticides, which can limit their applicability in some situations.

Burrow fumigants, such as gas cartridges and aluminum phosphide, do not typically pose as great a concern for non-target exposure as baits and usually involve shorter application times than trapping. Aluminum phosphide is particularly effective at controlling gophers and ground squirrels, and recent studies showed a 97-100% reduction in a ground squirrel population and 100% reduction in a gopher population).

Aluminum phosphide is a restricted

use material; specific guidelines, such as filing a Notice of Intent, Pesticide Use Report, and Fumigation Management Plan, must be adhered to when using this material. Additionally, fumigation is generally only effective when soil is moist. Therefore, fumigation is restricted to late winter and spring or following irrigation. Nonetheless, aluminum phosphide fumigation is a very valuable part of an IPM program for controlling gophers and ground squirrels; its continued availability to growers is needed to maximize control efforts in many situations.

Unfortunately, recent changes in aluminum phosphide labels have been implemented due to the gross misuse of this product that led to the death of two young girls in Utah. These changes include the following:

1. Use is strictly prohibited around all residential areas, including single and multi-family residential properties, nursing homes, schools (except athletic fields, where use may continue), day care facilities, and hospitals.

2. The products must only be used outdoors for the control of burrowing pests, and are for use in agricultural areas, orchards, non-crop areas (such as pasture and rangeland), golf courses, athletic fields, parks, and other non-residential institutional or industrial sites.

3. Products must not be applied in a burrow system that is within 100 feet of a building that is or may be occupied by people or domestic animals. This buffer zone for treatment around non-residential buildings that could be occupied by people or animals has been increased from 15 to 100 feet.

4. When this product is used in athletic fields or parks, the applicator must post a sign at entrances to the treatment site containing the signal word **DANGER/PELIGRO**, skull and crossbones, the words: **DO NOT ENTER/NO ENTRE**, **FIELD NOT FOR USE**, the name and EPA registration number of the fumigant, and a 24-hour emergency response number. Signs may be removed two days after the final treatment.

5. When this product is used out of doors in a site frequented by people, other than an athletic field or park (such as agricultural fields), the applicator shall post a sign at the application site containing the signal word **DANGER/PELIGRO**, skull and crossbones, the name and EPA registration number of the fumigant, and

a 24-hour emergency response number. Signs may be removed two days after the final treatment.

It is highly possible that we could completely lose the use of aluminum phosphide in the near future if the regulatory agencies are not made aware of its importance as a burrow fumigant. Therefore, I have developed a questionnaire designed to gather data and opinions on the use of aluminum phosphide for controlling burrowing mammals in California. The information will be provided to registrants, the U.S. EPA, and others to help develop use policies, labels, etc.

My primary objectives are to:

1. Identify the level of use of aluminum phosphide for various burrowing mammals in agricultural areas prior

to the new aluminum phosphide label restrictions.

2. Identify how new aluminum phosphide label restrictions will alter use of a variety of control methods.

3. Identify the potential impact of the new aluminum phosphide label restrictions on burrowing mammal populations.

4. Determine if there is support by users of aluminum phosphide to further increase safety for residents and other public bystanders by requiring a new Certified Applicator Category for use of aluminum phosphide fumigants for burrowing pest control *IF* such a category would ease restrictions set forth in the most recent aluminum phosphide labels.

The data collected should provide



Fig. 3. Ground squirrel burrows are often located at the base of trees. These burrows cause many problems for citrus growers, including decreased stability of the tree and loss of irrigation water down the burrow, and they serve as a potential hazard to farm laborers and equipment. Photo by David Rosen, courtesy of UC Statewide IPM Program. Copyright, Regents of the University of California.

Aluminum phosphide application

All users should thoroughly read the entire label before using aluminum phosphide for burrowing mammal control. That being said, general guidelines for application are as follows:

- For ground squirrels, throw tablets far back into the burrow. Wad up a sheet of newspaper and place at the entrance of the burrow system. Then cover the newspaper and burrow entrance thoroughly with loose soil. All currently occupied burrows that are not known to be connected should be treated.
- Use a probe to find a gopher tunnel, then wiggle the probe to enlarge the opening. Once enlarged, drop the label-specified number of tablets into the tunnel, and seal up the opening with a rock or dirt clod to eliminate light from entering and the toxic gases from exiting the tunnel. Be careful not to bury the tablets with loose soil as this will render them ineffective. Typically, you treat each burrow system twice to maximize efficacy.



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a much clearer picture of use patterns and importance of aluminum phosphide for controlling agricultural populations of burrowing pests in California. The seven-question survey can be accessed at the following web address:

[http://ucanr.org/sites/](http://ucanr.org/sites/AluminumPhosphideSurvey/)

AluminumPhosphideSurvey/

Two surveys are found at this website: one is for agricultural users, and the other is for rodent control professionals who control burrowing mammals in urban/residential areas. Be sure you complete the appropriate survey. Once



Fig. 4. Burrow fumigation for ground squirrels (as seen in photo above) and pocket gophers can be a highly effective method to control unwanted populations. Photo by Terrell Salmon, UCCE Wildlife Specialist Emeritus.

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completed, the survey can either be: 1) saved and e-mailed to me, or 2) mailed to me via USPS. My contact information is:

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If you do not have internet access, give me a call or send a letter and I will mail a copy of the survey to you.

I must emphasize the importance of your participation in this survey if you use aluminum phosphide for burrowing mammal control. Data needs to be collected and subsequent results provided to the pertinent regulatory agencies to show the importance of aluminum phosphide for burrowing mammal control. Otherwise, there is a real possibility that we may completely lose aluminum phosphide for burrowing mammal control.

Dr. Roger A. Baldwin is IPM Wildlife Pest Management Advisor stationed at the University of California Kearney Agricultural Center in Parlier. ●



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