

host *Meloidogyne* spp. other than *M. hapla* so select carefully. However, all legumes such as alfalfa should be considered a good host for ring nematode. Avoid intercropping almonds and other *Prunus* spp. with alfalfa.

Sunflowers and safflower are of minimal concern with *Meloidogyne* spp. and *P. vulnus* but they will probably grow ring nematode. Crops like safflower render soils so dry that during the spring warming periods nematodes cannot find enough soil moisture to migrate to a root.

In summary, there are multiple factors to contend with when answering questions about intercropping. The safest answer north of Sacramento is do not replant the same intercrop or rotation crop two years in succession.



What Do New Changes in Aluminum Phosphide Labels Mean for Burrowing Mammal Control?

Roger A. Baldwin, UC IPM Wildlife Pest Management Advisor

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 ground squirrels and gophers 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 often becomes too time consuming for large acreage. 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 of 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. Recent studies on ground squirrels and gophers indicated excellent control for both species (reduction in ground squirrel population = 97–100%; reduction in gopher population = 100%). Aluminum phosphide is a restricted use material; specific guidelines 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 the use on 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 2 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 2 days after the final treatment.

Because of these changes, I have developed a questionnaire designed to develop accurate facts on various methods, including fumigation with 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. See if there is support 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 a much clearer picture of use patterns and importance of several methods, including aluminum phosphide, for controlling agricultural populations of burrowing pests in California. The survey can be accessed at the following web address:

<http://ucanr.org/sites/AluminumPhosphideSurvey/>

Two surveys are found at this website; one is for agricultural users, the other is for rodent control professionals who control burrowing mammals in urban/residential areas. Be sure you complete the appropriate survey. Once completed, the survey can either be: 1) saved and e-mailed to me, or 2) mailed to me via USPS. My e-mail address, mailing address, and phone number are provided at the end of this article. If you do not have internet access or have problems accessing the survey online, 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.

Roger A. Baldwin, Ph.D.
UC Kearney Agricultural Research & Extension Center
9240 South Riverbend Ave.
Parlier, CA 93648
Phone: 559-646-6583
E-mail: rbaldwin@uckac.edu



Herbicide-Resistant Weeds in California Tree and Vine Crops - Manager Perception Survey

Brad Hanson, UC Davis Cooperative Extension Weed Specialist

Purpose of the Survey

The goal of this survey is to determine grower, applicator, and pest control advisor perceptions and experiences related to herbicide-resistant weeds in perennial cropping systems. This research is being conducted as a part of a larger project (Evolution and Management of Herbicide Resistant Weeds) which involves several UC Davis, UC Cooperative Extension, and Fresno State University faculty.

Methods

We need your help to conduct a survey of at least 1,000 weed managers who work in California orchards and vineyards. In late 2010 and early 2011 we used a series of in-person surveys at grower meetings. To expand upon that technique, we developed this web-based survey which has a similar format and will be open from June 2011 through February 2012. Participation is voluntary, all data will be collected anonymously, and no personally identifying information will be kept or shared.

The survey is online at <http://ucanr.org/hrwsurvey>. The survey, which should only a few minutes to complete, includes a series of simple questions to gauge:

1. Demographics (respondent farming system, approximate acreage, and region)
2. Weed control practices used
3. Experience and concerns with herbicide resistant weeds

Impact on Weed Management

Once complete, the results of the survey will be presented to scientific and extension audiences and will be used to help develop future research directions and extension education programs to benefit growers and pest managers. Compared to annual cropping systems in other parts of the country, there has been very little research on understanding the production impacts, economic consequences, or management changes imposed by herbicide resistant weeds in the unique perennial cropping systems in California.