In 2006, the higher prices for almond pollination attracted more beekeepers to California so the supply of honey bees was much better and beekeepers also did a better job of Varroa control.

Although the blue orchard bee will never replace the honey bee as a primary pollinator, it could enhance almond grower's pollination options and may help improve nut set and yield when spring pollination temperatures are cooler.

A "How to" handbook has been published.by the blue orchard bee experts from USDA Logan Bee Biology. To order the book "How to Manage the Blue Orchard Bee as an Orchard Pollinator" by Bosch and Kemp (Sustainable Ag. Network Handbook series 5) you can contact the publisher at the following address: Sustainable Agriculture Publications, PO Box 753, Waldorf, MD 20604-0753,Telephone: (301) 374-9696,Fax: (301) 843-0159.
Or visit:
http://www.sare.org/publications/index.htm#books

For more information, a Blue Orchard Bee meeting is scheduled for December 7th in Butte County (see the attached program).

An assessment of multiple approaches for controlling gophers

Roger A. Baldwin, UC Wildlife Pest Management Advisor, Kearney Agricultural Center

Pocket gophers cause extensive damage to many crops throughout California. Many tools are available for controlling gophers including trapping, fumigation with aluminum phosphide, poison baits, and the use of a gas explosive device. Trapping gophers has been a common method for controlling gophers for many years. However, a new trap called the Gophinator (Trapline Products, Menlo Park, CA) is now available that may increase efficiency of trapping. Additionally, combining aluminum phosphide fumigation with trapping may increase effectiveness, as gophers will occasionally spring traps without getting captured. In these situations, gophers often become trap shy and are much more difficult to capture. Treating these tunnel systems with aluminum phosphide shortly after trapping could remove these individuals from the population thereby increasing gopher control in vineyards. Poison baiting with strychnine, zinc phosphide, and anticoagulant baits (e.g., chlorophacinone and diphacinone) has often been used to control gophers. Efficacy of these treatments has varied widely, although strychnine baits reportedly are most effective. Gas explosive devices have been used to control a number of burrowing animals, although no scientific studies on gophers have been reported. These devices combust a mixture of propane and oxygen within tunnel systems, thereby killing gophers through concussive force while also destroying the burrow system. All of these methods are currently allowable techniques for controlling gophers in California, although the efficacy and efficiency of these approaches, particularly in comparison to one another, remain unclear.

To better address these issues, I established a replicated trial at Laguna Ranch, Sebastopol, CA, from 6 April – 8 May, 2009, to estimate the efficacy and efficiency of these approaches. Three study blocks were established ranging from 21–31 acres in size. Plots of all three treatment types (trapping + aluminum phosphide, baiting with strychnine, gas explosive device [Rodenator®]) and a control were established within each block. Based on absolute indices (number of sites with any gopher sign after treatment/number of sites with any gopher sign before treatment), Rodenator® control ranged from 0–55%, baiting control ranged from 30–56%, and trapping + fumigation ranged from 74–90%. Relative index values (number of gopher mounds and feeder holes after treatment/number of gopher mounds and feeder holes before treatment) mirrored absolute indices, with substantial reductions in gopher sign for all trapping + fumigation plots (range = 91–96%); only 2 of 3 baiting (range = 22–81%) and Rodenator® (range = 0–86%) plots indicated substantially reduced gopher sign. Index values did not differ for control plots for either absolute or relative indices. Therefore, observed differences within and across treatments did not appear to be an artifact of natural variation in gopher populations over the sampling period.

The time required to apply each treatment was relatively similar between baiting, trapping, and Rodenator® treatments (90–106 seconds); fumigation treatments were substantially longer (260 seconds). Total costs for each treatment were

$7,568, $6,338, and $4,532 for baiting, Rodenator®, and trapping + fumigation, respectively.

To be effective, control measures need to result in a minimum of a 70% reduction in plots with gopher activity; values of 80–90% are preferable. Trapping + fumigation met this minimum criterion in all three plots, and met the more rigorous criterion in 2 of 3 plots. Even the one plot that fell short of an 80% reduction in plots with gopher activity yielded a 92% reduction in overall gopher activity. In addition to being more efficacious, trapping + fumigation was also more cost effective. Therefore, trapping + fumigation appears to be an effective method for controlling gophers. Baiting and Rodenator® treatments did somewhat reduce gopher activity in most plots, but these levels of control fell well below the minimum threshold for effectiveness (70%). As such, growers may realize short-term benefits from control, but will have to apply equal effort for control the following year. More effective control measures (80–90%) should reduce the cost of control in subsequent years.

Although absolute values were lower than desired for baiting and Rodenator® treatments, relative index values indicated a substantial reduction in gopher activity for 2 of 3 plots for both baiting and Rodenator® treatments. Therefore, an additional round of treatments could have resulted in greater absolute control values, although additional treatments would add additional costs to control efforts. This is of note, as baiting, and in particular, Rodenator®, treatments have the potential for slowing reinvasion rates due to the destruction of gopher burrow systems by the Rodenator®, and due to residual bait remaining in vacated gopher tunnel systems. However, given that these treatment types were already more costly than trapping + fumigation, a relatively high reduction in reinvasion rates would be required to offset these costs. These reinvasion rates are starting to be assessed. Initial results have hinted that Rodenator® treatments may in fact be reducing gopher populations several months post-treatment, although several more sampling periods will be required to determine if this is in fact the case. Presently, trapping + fumigation appears to be the most effective and efficient method for gopher control.

37th Annual Almond Industry Conference

This conference, scheduled for December 9th and 10th in Modesto will offer almond production related topics that will directly impact growers' decisions and activities in the orchard and market place.

Almond production related presentations include:

- Pollination update
- Balancing insect management with environmental concerns
- Field update on food safety research and GAPs
- Almond irrigation world roundup
- Disease management update
- Variety development, evaluation, and selection: balancing field performance and market potential

For a complete agenda summary of each presentation, visit almondboard.com/conference and click on the Agenda tab.

Online conference registration began on October 1st. After November 23rd all registration for the conference will occur on site. Take advantage of this opportunity to be updated on progress that the almond industry's production research program has made.

Progress on controlling almond scab

Recent results of Butte County work by Dr. Jim Adaskaveg, UC Riverside plant pathologist, cooperating with a local grower, PCA and Farm Advisor have shown that a late January delayed dormant application of copper and oil has been the most effective treatment in reducing the production of scab spores from the overwintering twig lesions. Finally, a good reason for using a dormant copper application!

Scab twig lesions often sporulate in April triggering disease outbreaks when spring rains occur. These dormant applications delay and reduce the spore production from these twig lesions. Spring sprays in March and April only focus on protecting the leaves, fruit, and young twig tissues from new infections but don't affect the spore formation on the current twig lesions.