

Orchard Tasks

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budgeting nitrogen application. During your program development, remember the “four R’s”; apply the Right Rate (match demand with supply), apply at the Right Time (apply when the trees are active, and focus most of your N application on kernel filling, when N is in greatest demand), apply in the Right Place (ensure delivery to the active roots, and do what you can to manage variability across the orchard), and use the Right Source (understand the leaching and decomposition characteristics of the N you select).

Secondly, remember how much actual nitrogen, potassium, and phosphorous are consumed per 1000 pounds of dry (CPC) weight; 28, 25, and 3, respectively. Hence, a 4000 pound pistachio crop is only consuming about 112 pounds of actual N per acre, plus another 25 pounds for tree growth. Occasional soil sampling to determine your nitrate nitrogen levels in the root zone will also help guide you in balancing your nitrogen applications.

We presently think 10-15ppm nitrate

nitrogen is a reasonable soilresidual amount, and 25-30ppm is high. I strongly suggest you sample to see what levels you have both in your soil, and in your water source. A 10ppm nitrate nitrogen level in your water equals 27 pounds of actual N applied per acre-foot!

Crop Quality for 2016? If growers want to maintain the critical overseas markets, they must commit themselves to the **industry goal of producing a high quality, safe product.** Navel orangeworm, aflatoxin, and food safety should be ever-present on your minds. Where does quality begin? **AT THE FARM!** Commit yourself to this, and keep the pistachio demand high! Crop size for 2016 is anybody’s guess, but I believe we have the potential for 700 million pounds. With crops of that size, we cannot have ANY grower, investor, or absentee landlord disconnecting from our industry’s commitment to quality. Please think of this when you consider ignoring your PCA’s pest management recommendations. Chuck Nichols writes an excellent market newsletter. Check it out at: <http://nicholsfarms.com/newsletters.php>. Happy Farming!

Walnuts

By Elizabeth J. Fichtner

The long-awaited El Niño has arrived, leaving a coveted layer of snow in the Sierras as we enter the 2016 growing season. Climatologists forecast wetter than average conditions to continue statewide through March, but still caution that a strong El Niño does not guarantee an end to four consecutive drought years. The current El Niño does, however, influence spring orchard management practices.



Disease Management. With bloom approaching in a rainy March, growers will want to be vigilant with management of walnut blight. The bacterial disease tends to be most severe on early-blooming cultivars. With Ivanhoe, an early-blooming cultivar, being relatively new to the industry, some new growers may “get caught with their plants down” (forgive the pathology humor) if blight management is not on their radar.

Blight-infected nuts may provide growers with two diseases for the price of one – blighted nuts are at higher risk of mid-season infection by canker fungi (ie. *Botryosphaeria*) than healthy nuts. UC Davis Plant Pathologist, Dr. Themis Michailides emphasizes that winter

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Figure 1. Burning pruning waste removes disease pressure around orchards (Photo: E. Fichtner).



removal of dead branches harboring *Botryosphaeria* or *Phomopsis* inoculum may reduce the inoculum load in affected orchards. Research conducted in his program also demonstrates that composting of pruning waste effectively eliminates *Botryosphaeria* inoculum, and may offer an alternative to burning.

Michailides' work also elucidated that infections may occur when spring rain events are coupled with warmer temperatures ($\geq 50^{\circ}\text{F}$), and pruning wounds may remain susceptible to infection for at least 16 weeks after pruning. Michailides cautioned that more rain after bloom may increase disease severity, but fungicide applications are likely most effective between late spring and summer. To review the latest information on bactericide and fungicide efficacy for blight and canker disease management, visit the UC Davis IMP website (<http://www.ipm.ucdavis.edu/PDF/PMG/fungicideefficacytiming.pdf>).

As the weather warms in March, walnut twig beetles emerge from burn piles and may transmit the fungal pathogen responsible for thousand cankers disease (TCD). Studies conducted in Tulare County by Dr. Elizabeth Fichtner, UCCE Tulare County, and Dr. Steven Seybold, US Forest Service, demonstrate that the walnut twig beetles will continue to emerge from infested logs for the duration of the walnut growing season. Consequently, log piles adjacent to orchards may serve as a reservoir of both the inoculum and the vector of TCD. Currently, burning is the only known method for immediate disinfestation of wood harboring walnut twig beetle (Figure 1).

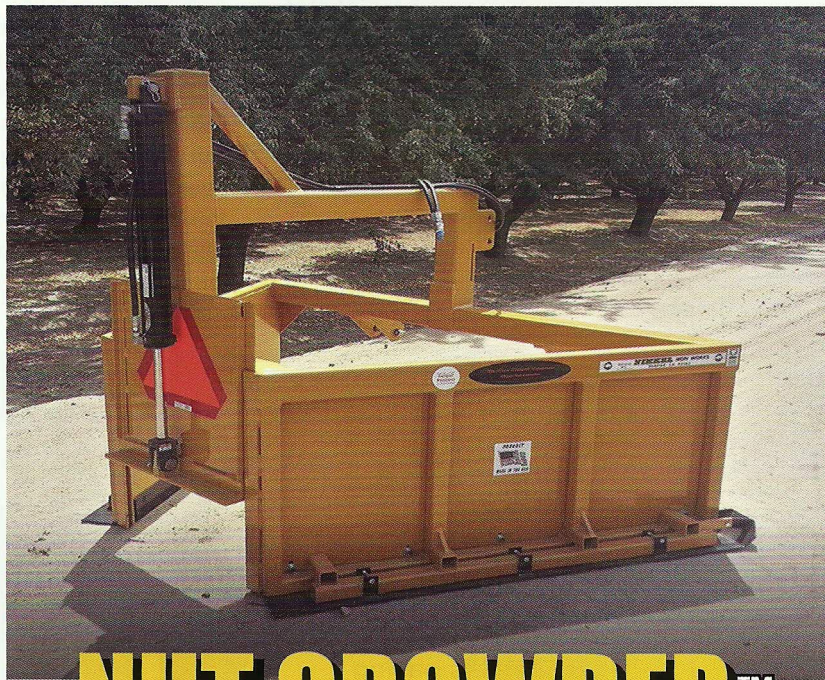
Nitrogen Management. As the orchard emerges from dormancy, many growers may be anticipating the first nitrogen (N) application of the season. In order to maximize N efficiency, remember that walnuts first rely
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on stored N that was absorbed during the previous season. The stored N is then redistributed to support the spring flush of growth prior to root absorption of N from the soil. Transport of N from the soil to the tree canopy is initiated after bud break and during pistillate flower maturation and leaf expansion in April.

Insect Management. During the delayed-dormant period, treat for European fruit lecanium scale and walnut scale, if needed. Scout for

European red mite, San Jose Scale, and Italian Pear Scale and treat if needed. For management strategies, visit the Walnut Pest Management Guidelines (<http://www.ipm.ucdavis.edu/PDF/PMG/pmgwalnut.pdf>).

If walnut mummies remain in the orchard, trees should be shaken and the orchard floor disced or flailed to destroy mummies by mid-March. The goal is to kill the overwintering larvae and reduce sources of food for first generation larvae later in the spring. Codling moth pheromone traps should be placed in the

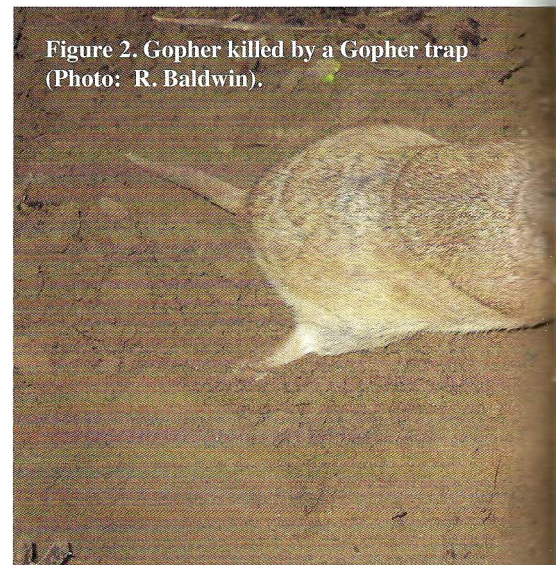


Figure 2. Gopher killed by a Gopher trap (Photo: R. Baldwin).

orchard by mid-March; moth emergence generally occurs around the time that early walnut varieties leaf-out. Traps should be checked twice weekly until biofix and weekly thereafter.

Vertebrate Management. Now is the best time to implement a pocket gopher management program, as moist soil conditions lead to greater mounding activity; the fresher the mounds, the easier it is to identify where the pocket gophers are currently found. During late winter, pocket gopher populations are also often at their lowest levels meaning less effort is needed to remove individuals from orchards. The best removal options include trapping (Figure 2), burrow fumigation with aluminum phosphide, and strychnine baiting.

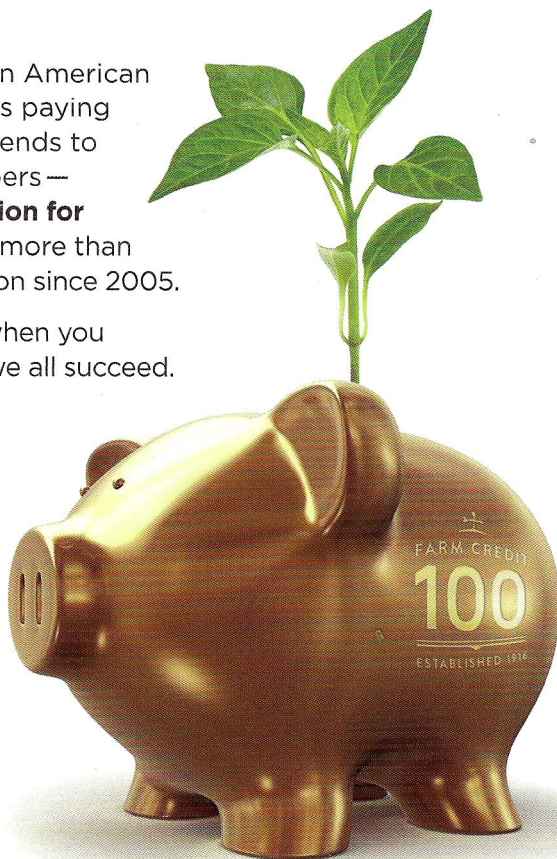
Ground squirrel management in springtime is strongly preferred as it targets the populations at their lowest levels. Burrow fumigation with aluminum phosphide, gas cartridges, and the Pressurized Exhaust Rodent Controller (H&M Gopher Control) are highly effective once ground squirrels emerge from burrow systems in late winter. Sufficient soil moisture is key for effective control with burrow fumigants.

As early spring approaches, growers may start to notice increased coyote activity in orchards, and the frustration of coyote damage to drip lines may begin. The breeding season generally runs from January through March, and pups are born after around a 2 month gestation period. Approximately 6-10 weeks after birth, pups will emerge from the den to embark on their first hunting excursions. Though some growers

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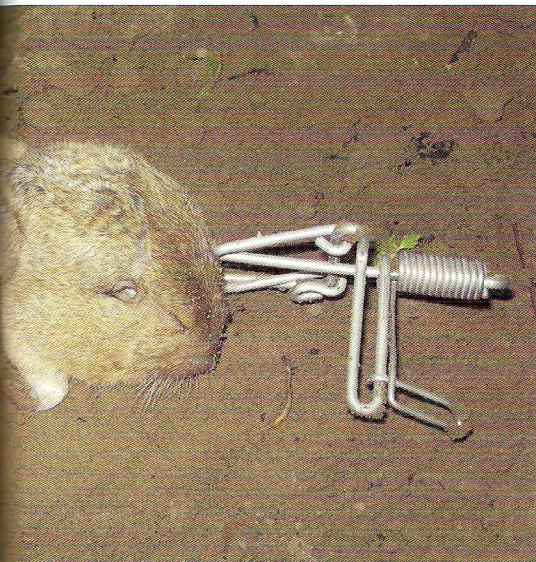
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provide buckets of drinking water to dissuade coyotes from damaging irrigation lines, the overall success of this technique may be limited. Mature coyotes and pups may be intrigued by the sound of water running through irrigation lines, and damage the lines in play rather than in thirst. For more information on regulations pertaining to coyote control, visit the California Department of Fish and Game website (www.dfg.ca.gov), and proceed to the link for non-game animals. In response to complaints of coyote damage, several counties have personnel to assist with assessment of coyote damage and humane removal of animals from coyote-impacted orchards. For more information on county-level support, growers should call their local Ag Commissioner's office.

Weed Management. March marks the beginning of the spring clean-up period in orchard weed management programs. It is time to evaluate the efficacy of the winter weed management program and plan for the future. Start by scouting the orchard floor to determine which weeds escaped winter management.

Take the time to identify the weed species present and prevalent in the orchard for the development of a thoughtful year-round management program tailored to each site. To ensure success, select herbicide chemistries appropriate for target weed species. A menu-driven weed identification tool is available at the Weed Research and Information Center (WRIC) website: <http://weedid.wisc.edu/ca/weedid.php>. Additionally, a list of

both preemergence and postemergence herbicides registered in California on tree and vine crops is available online: http://wric.ucdavis.edu/PDFs/T&V_herbicide_registration_chart.pdf. This table is updated yearly by Dr. Brad Hanson, CE Weed Science Specialist.

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Elizabeth J. Fichtner, is a UCCE Tulare County Farm Advisor, and Roger Baldwin, is a CE Wildlife Specialist.

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