

Considerations for January/February, 2015

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I hope you all had a wonderful holiday season and a great start to the New Year. Although we like to think this is a "quiet" time of year, I often find many operations busy trying to wrap up many of the dormant season activities in preparation for bloom.

Delayed Dormant Pest Control. Delayed dormant provides an opportunity to control various insects and diseases. If increased scale and mite populations were observed in 2014 or in sampling of spurs, a treatment may be warranted. Low to moderate populations of these pests can be controlled by an application of 6-8 gallons of dormant oil, while moderate to high populations will need a combination of oil and an insecticide. If tree defoliation occurred in 2014 from the fungal disease scab, the addition of either copper or chlorothalonil will reduce populations, and will delay or prevent the disease from occurring in 2015. Please note that chlorothalonil and oil are phytotoxic to flowers and green tissues. If peach twig borer has been observed, the addition of *Bacillus thuringiensis* (Bt) as well as many other insecticides may be used for control in combination with the oil. More information on these pests and control can be found at ucipm.ucdavis.edu.

Protecting the crop from bloom and spring diseases. Almond blossoms and newly emerged leaves are sensitive to several different diseases. These diseases include brown rot, shot-hole, anthracnose, jacket rot/green fruit rot and leaf blight. All are more severe in wet weather when long periods of leaf-wetness occur. Although we tend to focus on diseases at bloom, infections will occur post-bloom when wet and mild conditions are experienced. Dew may also create conditions conducive for disease.

To prevent these diseases from occurring, most make use of fungicides. Fungicides work best as protectants, and need to be applied prior to infection. Coverage from a fungicide spray will last around two weeks unless significant rainfall occurs. In dry weather, a single application at full bloom or petal fall will usually be effective (i.e. full bloom 'Aldrich,' petal fall 'Nonpareil'). If applying prior to a rain event, applications will need a few hours to dry to prevent "run-off." In rainy weather, follow-up sprays will be needed every 7-10 days. Some varieties - such as 'Butte' and 'Carmel' - are more susceptible to disease and may require a spray even in dry weather, while others - such as 'Nonpareil' are quite tolerant and may not need a bloom spray. Orchard history, weather, and your comfort level should be the guidance in determining your bloom and springtime disease control strategy.

Included are the updated efficacy ratings and timings of various fungicides for bloom time diseases. Remember to rotate chemistries to avoid back-to-back applications of the same mode of action or FRAC group. There is a lot of information regarding bloom spray timings and diseases at www.thealmonddoctor.com and ucipm.ucdavis.edu.

Bacterial Spot Control for affected orchards. This is a new disease to orchards in California. Predominantly found in the northern San Joaquin Valley and severely affecting 'Fritz', this bacterial disease kills nuts leading to crop loss. Symptoms appear similar to leaf footed plant bug, but gumming is amber in color, which when scraped away, reveals a 1/4" lesion. Leaves can also be infected. It overwinters in orchards on infected mummies and will spread to the new crop when warm, rainy

weather occurs. Recent research has demonstrated that delayed dormant copper and mancozeb applications can reduce in-season infection rates. In season treatments with low doses of copper and mancozeb were most effective when timed around warm rain events. A recent study has shown a delayed dormant (copper-mancozeb) and a single in-season treatment (copper alone or copper+mancozeb) in mid-March timed before a warm rain event provided excellent control. Keep in mind that almond trees are sensitive to high rates of copper. More information can be found here <http://thealmonddoctor.com/2015/01/01/bacterial-spot-of-almond-management/>

Be Careful with Bees. There has been a lot of concern about honeybee health related to fungicide and insecticide applications within orchards. More is being learned every year about the impacts of pest management practices on hive health. Recently, The Almond Board of California released an excellent resource titled "Honey Bee Best Management Practices for California Almonds (<http://Almonds.com/BeeBMPs>)." This resource provides an overview of the research conducted and the recommendations generated from the results and conclusions.

The following is a brief overview of these practices that are associated with insect and disease control around bloom:

- Read the pesticide label carefully - including surfactants - and avoid any chemicals that indicate toxicity to bees;
- Avoid applying any insecticides during bloom until more is known. Treatments for peach twig borer should be considered prior to bee move in or after hive removal (i.e. delayed dormant, "May" spray);
- Avoid the fungicides Rovral, Captan, or Ziram. These fungicides negatively impact bee hive health;
- Apply fungicides later in the afternoon or evening when bees and pollen are less present. It is important to also not spray too late that the fungicide does not have a chance to dry before the next foraging day;
- Addition of adjuvants is not needed unless specified by the fungicide label. These compounds may harm bees by increasing fungicide activity;
- Cover or remove the bee's water source and avoid spraying the hive directly with any pesticides.
- More information can be found at Almonds.com/BeeBMPs.

Proper tree planting. When planting a new orchard, it is important to take the proper precautions to avoid tree loss. I have seen more orchards ruined by poor planting than by any other problem. Trees should be planted as soon as possible after arrival from the nursery. Prior to delivery, make sure the field is prepared, which includes ensuring that enough dissipation of soil fumigants has occurred, soil clods are broken down and workable, and large amounts of organic material (i.e. grass clippings, compost) are not present in the planting areas. Berms are recommended for most soils to prevent crown infections by *Phytophthora*. In soils with high infiltrations rates, they may not be needed. If planned, they should be pulled prior to tree planting. Do not pull berms as an after-thought; soil covering the graft union will increase the risk of *Phytophthora*.

To prevent root drying, keep the roots moist and cover with a tarp when being transported within the field. Do not prune tree roots unless they are broken. Although the efficacy is variable, tree roots should

be treated with Galltrol or similar product to prevent infection by crown gall. This is done by making a suspension of the provided bacteria with water and either dipping the tree roots into the suspension or spraying the suspension onto the tree's roots.

When planting, dig a large enough hole to fit the entire tree's root system without bending or wrapping. Forcing trees into planting holes causes "J-rooting," increasing the chance of crown gall and tree loss. Holes should be dug at the time of planting if possible, but if not, as close to the timing of planting to prevent "glazing" of the soil by the sun. If the holes are dug with an auger or prior to the planting day, slice the sides of the whole with a shovel to break any crust that may have formed. Plant the tree high enough so that the nursery soil line is just above the current soil line. Backfill the soil and compact gently around the tree's base to remove air pockets. Tank the tree in with 4-5 gallons of water to help settle the soil. Trees should be headed at 32"-36," staked, and side branches pruned. Fertilizers should not be applied until there is 4-6 inches of new growth. More information can be found at <http://thealmonddoctor.com/2010/12/27/proper-almond-tree-planting/>.

Herbicides. This is a good time to apply any pre-emergent herbicides. Orchard weeds need to be surveyed to determine any specific challenges. The pre-emergent product and burn-down partner selected should provide control for the whole spectrum of weeds within the orchard. Most pre-emergent products need to be "watered -in" with either an irrigation or rainfall in order to have efficacy. If applying a pre-emergent product after the trees become active (~early February) it may be of benefit to reduce the rate of pre-emergent to the lower end of the label rate to reduce the risk of crop injury. This is of more concern with low cation exchange capacity soils. More information on herbicide selection and orchard preparation can be found at <http://thealmonddoctor.com/2014/01/27/dormant-weed-control-tree-nut-crops-2014/> and <http://thealmonddoctor.com/2013/12/14/pre-emergent-herbicide-use-perennial-crop-orchards/>.

The final thought. Unless the rain begins to fall, we will be experiencing another year of severe drought. The prolonging of this natural disaster will lead to increased difficulty in finding resources for many farming operations across the state. During this time of hardship, it is important to keep an eye on your friends and family. The threat or loss of income or operation may create financial hardships in which they may feel there is no solution. If a friend seems unreasonably moody or withdrawn, talk with them and ask them how things are going. If you suspect problems, encourage them to find someone to talk to or get professional help. I am aware that this is not an easy subject to discuss and I hope it is premature. I, however, can't ignore the facts: suicide rates amongst farmers increase during droughts and periods of depressed pricing.