



## Vegetable Crops Update

**Fusarium wilt of tomato** is not a new problem in our production system; I have seen the disease in each of my ten years in this area, but it is a problem which has gotten significantly worse in the last couple years. Our current problems are with race 3 of the pathogen (*Fusarium oxysporum* f. sp. *lycopersici* or FOL for short), to which most commercial varieties are susceptible. Most of our commercial processing tomato varieties are resistant to races 1 and 2, but only a small handful are resistant to race 3. Research funded by CTRI is underway at UC Davis, looking at the extent to which FOL is seedborne as well as looking at the extent to which the pathogen colonizes resistant varieties and non-hosts. This season, UC farm advisors are conducting variety trials at five locations throughout the valley, evaluating resistant varieties (including a tolerant variety) and looking at rates of disease, yield and fruit quality. This effort is also supported by CTRI and is being conducted with the generous cooperation of the seed dealers. One thing that seems apparent if you look at the distribution and severity of Fusarium wilt in San Joaquin County is that it is much more severe in the Delta. In the Delta, we have often observed where Fusarium wilt reaches a very high incidence in just a couple to a few years. My suspicion is that the lower pH of our Delta soils may be more conducive to disease development. The effect of acid soils on Fusarium has been well documented in other systems. I am not suggesting that we try to amend our peat soils to adjust the pH up, as the amount of lime required would not be feasible, but I think it may be worth bearing in mind that sites with lower pH may see more severe Fusarium problems. Symptoms of Fusarium wilt can sometimes be confused with Fusarium crown and root rot (caused by a different Fusarium) – so ID can be important if you are going to rely on variety resistance or tolerance – as resistance or tolerance to one Fusarium does not mean resistance or tolerance to the other.

**Spotted wilt virus** is becoming much less of a problem now that the great majority of our processing tomato varieties are resistant to TSWV. However, there are still some common varieties which are susceptible. Also, many popular fresh market varieties of tomatoes and bell peppers are not resistant (although there are a few resistant varieties for each of these crops). We are conducting surveys in local pepper fields to trap virus vectors and look for virus symptoms in the crop. Our lab does have a “quick test” for spotted wilt, so if you need an ID, we can run a test within minutes (it can even be done in the field). Identification is particularly important because early symptoms of spotted wilt can easily be confused with curly top virus or other problems.

**Powdery mildew of tomato** is a continuing area of research for us, both in local field trials and in cooperation with UC Davis researchers that are looking at the frequency of fungicide resistance among our local pathogen populations. As I reported in the fall newsletter, we now have another species of mildew in tomatoes (*Oidium lycopersici*). This new mildew appeared in San Joaquin and Contra Costa counties last year and caused problems earlier in the season than we have typically observed with mildew. In the earliest planted tomatoes, it was even noted in late May! That may mean that we will no longer have a “mildew-free” period in early summer as we have enjoyed in the past. We’ll be watching to see what happens... If you observe mildew in tomatoes, I’d appreciate hearing from you, especially if it is early in the season. For chemical control, our trials have shown the best success with sulfur dust, Quintec, Priaxor, Quadris Top and Quadris. Once Luna Sensation and Aprovia Top receive registration for California tomatoes, those two fungicides will also be very good options. Note that Quintec should not be applied to fruit for the fresh market, as fruit in trials have shown damage under some conditions. As usual, read all labels before making a recommendation or application.

**Nutrient and irrigation management.** In other areas of research, we are evaluating decision support software for nutrient and irrigation management in processing tomatoes, the use of surface renewal evapotranspiration stations from Tule Technologies (which measure crop water use in a field), and the use of NDVI “greenness” meters (using a handheld Trimble Greenseeker as well as aerial imagery). For more on these technologies or our evaluations, please contact me.

Brenna Aegerter, Vegetable Crops Farm Advisor

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## Joe Grant: Changing Lanes

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On July 1<sup>st</sup>, I will retire from UC Cooperative Extension and begin a new chapter in life. Nearly thirty years ago I was issued a key to the old UCCE building on Wilson Way. Nowadays at the Ag Center, we use electronic key cards instead of metal keys, but I still feel the honor and privilege when I swipe my card as I did on that first day when I unlocked the door.

University colleagues and I have worked hard over the years to bring science-based solutions to bear on problems and challenges faced by San Joaquin County fruit and nut growers, packers, handlers, and consultants. We have had a few victories, including discovering the causes of - and conquering - cherry buckskin disease, developing chemical thinning guidelines now used widely for apples, increasing nut set and orchard profits through the use of ReTain to manage pistillate flower abortion in Serr and Tulare walnuts, finding novel ways of managing codling moth and other pests, and successfully moving new walnut rootstocks and varieties out of the lab and greenhouse and into the field.

Any success that I and others have achieved in advancing San Joaquin County orchard profitability and sustainability would not have been even remotely possible without the guidance, generosity, trust, and patience of the many cherry, walnut, and apple growers, farm managers, packers, and PCAs who have contributed their time, resources, and expertise as project cooperators over the years. To list them all would make for a list longer than the editorial guidelines of this newsletter allow. But to all of you with whom I've had the honor and pleasure of working these past three decades, I want to say "thank you" from the bottom of my heart. The work we've done together has been great, but it is the memory of you, our friendship, and interactions I will treasure most when I think about my time in service to San Joaquin County.

Refilling my position will likely take at least a year and likely longer. The process used by Cooperative Extension to fill positions is a competitive one: all requests to fill Advisor positions – in pomology, viticulture, family nutrition and consumer science, agronomy, natural resource protection, and youth development - go into a large pool and are then evaluated, ranked, and filled based on available state and University funding. High priority positions are filled; others are put into a queue for future re-submission and consideration. Positions approved for filling then enter a recruitment and selection process, which takes another 4-6 months.

County Director Brent Holtz and I, with input from others, recently prepared and submitted a position request. Your input on the importance of this position to your livelihood and success is important and powerful, especially when funneled through commodity groups like the California Apple Commission, California Cherry Board or California Walnut Board; local businesses like pesticide

and fertilizer suppliers, packers, and handlers; and grower groups like Farm Bureau. At some point this summer, there will be an opportunity for growers and allied industry and industry stakeholders to provide written input into the process. Our office will keep you posted on this.

I am not going away completely. After a short hiatus, I hope to return to work on a limited-time basis to see that critical research trials and selected other activities continue until a new person is found to carry on. I also look forward to continuing engagement in walnut and cherry research through connections with the California Walnut Board and California Cherry Board.

Joe Grant, Pomology Farm Advisor

## Alternative Forages: How Does Sorghum Fit Into California Dairy Systems?

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We've received a grant to look at the viability of sorghum silage in California dairy systems. This summer, we are looking to work with dairies that are growing sorghum for silage. Below you will find the goals and objectives of the project; to make it simple, I've included what we're looking to do in this first year:



We're looking for 20 dairies to participate this summer. This entails:

- Filling out a sorghum silage management survey – information from field to feed-out
- Allowing us to come sample at harvest and again sometime during feed-out. We'll be looking at nutritive value, physical characteristics, as well as fermentation characteristics of the silage.

The project's overall goal is to determine the value of sorghum as silage in California dairy farms. Specific objectives are to:

- Determine water use and water use efficiency of select sorghum varieties grown for silage per unit of feed energy;

- Evaluate sorghum silage for use by California dairy farms, including cultivar selection, irrigation water allocation, harvest and ensiling practices, as well as the ensiling characteristics and nutrient profile of the silage;
- Determine quantity of manure nutrients (i.e. N, P, K) that should be applied to a sorghum crop;
- Conduct a feeding study with lactating cows to determine maximum inclusion rates of the most promising sorghum silages without compromising animal performance and health.

If you are planning on growing sorghum this summer and would like to participate, or would like to learn more about the project, please contact **Jennifer Heguy** at [jmheguy@ucdavis.edu](mailto:jmheguy@ucdavis.edu) or (209) 525-6800.

Jennifer Heguy, UCCE Dairy Farm Advisor

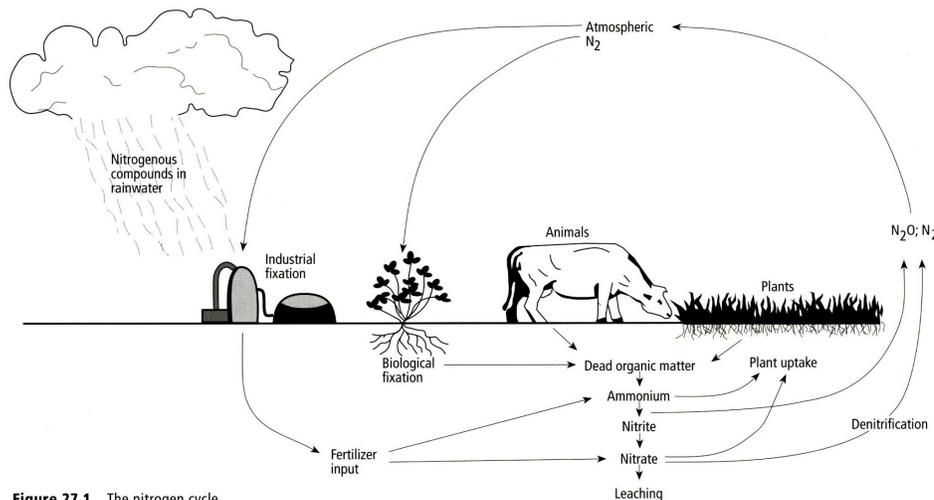
## Nitrogen Efficiency in Almond Production

Nitrogen is the most important element we can apply to our tree fruit crops. Almond growth and productivity depends on the availability and uptake of nitrogen. Most fertilizer recommendations are based on making nitrogen available to our trees so that a nitrogen shortage does not limit tree growth or productivity. Unfortunately, a recent report commissioned by the State Water Resources Control Board, conducted by a team of UC Davis researchers, has shown that many of our wells are contaminated with excess nitrogen, and that agricultural fertilizers and dairy waste are the most likely source (<http://groundwaternitrate.ucdavis.edu/>). Efficient nitrogen management will become increasingly important in the future as we collectively try to reduce groundwater contamination while keeping our orchards productive. Nitrogen usage should be based on an individual orchard's cropping history (previous yields) and leaf and water analysis to determine nitrogen availability and potential sources. See the nitrogen usage chapter 27 in the UC Almond Production Manual #3364 (Figure 27.1) and the interactive

"Nitrogen Fertilization Recommendation for Almond" model by Dr. Patrick Brown, UC Davis, at <http://fruitsandnuts.ucdavis.edu/index.cfm>. This model can be used to calculate both the timing and rate of fertilizer applications required to maintain optimum yield. Site specific information is required in order to accurately project the nitrogen requirement for orchards.

A removal and replacement rate of 60 lbs N per 1000 lb nut meat yield is suggested by Dr. Brown when estimating annual N demand from a crop load. Dr. Brown is currently leading a research effort, near Belridge in Kern County, to determine more accurately efficient nitrogen use in productive almond orchards (<http://ucanr.org/sites/scril/>). In this study, applications of 275 lbs fertilizer N produced 3500-4500 lbs of Nonpareil nut meats/acre in 2009-2011. A higher rate of 350 lbs N/acre/year did not produce more nuts than the 275 lb N rate. Lower rates of 125 and 200 lbs N/acre/year produced good yields but significantly less than the 275 lb N/acre/year rate. Dr. Brown carefully points out that you can't expect to increase yields by increasing nitrogen application rates, that nitrogen applications should replace the N removed in last season's crop.

Some groundwater has elevated nitrogen levels and you should take into consideration any nitrogen found in well water in developing your fertilization program. Several years ago the well water at my family's' farm tested at 50 ppm nitrate ( $\text{NO}_3^-$ ). If I applied 3 acre feet of water per season with this water I would apply approximately 92 lbs N per acre. This figure can be determined by multiplying mg/l or ppm of nitrate by 0.61 to get pounds of actual nitrogen per acre-foot of water (refer to UC pub #3364). If the lab analysis reports nitrogen levels in nitrate-nitrogen ( $\text{NO}_3\text{-N}$ ), then multiply the nitrate-nitrogen value by 2.72 to get pounds of actual nitrogen per acre-foot of water. For example, if your orchard produced 3,500 pounds of kernel meats last year, you would determine that 210 pounds of nitrogen was removed with the crop and needs to be replaced. But if your irrigation water has 50 ppm nitrate then you may only need to apply 118 pounds of nitrogen per acre to your orchard (210 lbs orchard nitrogen minus 92 pounds found in the water).



Mature trees need more nitrogen in early spring during periods of active shoot growth, leaf activity, and photosynthesis when temperatures are between 70-80°F. Shoot growth is vital for canopy development and for the creation of fruiting positions (buds). Almond nuts and shoots use most of the season's nitrogen (80% of annual demand) between bloom and mid-June. Dr. Brown's group recommends delivering fertilizer N at four different timings and amounts through the season – February or March (20% of total annual N input), April (30%), June

Figure 27.1 The nitrogen cycle.

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(30%) and September - October (20%). Nitrogen use efficiency has increased dramatically (75-85%) in Dr. Brown's studies where nitrogen is applied at the time of peak tree demand and uptake. I know many growers that "spoon feed" their trees with small injections of nitrogen and other liquid fertilizers into their irrigation systems. I would prefer to see you add a little bit of nitrogen with every irrigation from March to July, rather than applying large doses periodically through the season (just as people prefer three meals a day over one big one). Fertigation delivers fertilizer to active roots. It is important that irrigation deliver only needed water because excess water could dilute or leach the nitrogen applied past the root zone. In orchards with flood or solid set sprinkler irrigation systems, the nitrogen should be applied down the tree rows and not broadcast down the row middles. Dormant winter applications of nitrogen should be avoided as well as applications during hull split (July), which can aggravate hull rot and delay harvest. Deciduous almond trees absorb no nitrogen between leaf drop and leaf out.

I have seen many young trees burned by too much nitrogen, especially if liquid fertilizers like UN-32 (urea ammonium nitrate 32%) or CAN 17 (a clear solution of calcium nitrate and ammonium nitrate) are used in single applications. These liquid fertilizers are very effective and easy to use but it doesn't take much to burn young trees. I do not recommend using liquid fertilizers on first leaf trees; I prefer to see triple 15-15-15 (15% Nitrogen - 15% Phosphorous - 15 % Potassium) fertilizers used on first leaf trees. I like to see granular fertilizers placed at least 18 inches from the trunk. With micro-sprinkler and drip irrigation systems, liquid nitrogen fertilizers can be used very efficiently and easily by growers. But be careful; I know several farm managers who will not allow more than 10 gallons of UN-32 per acre per application on mature almond trees. UN-32 contains 3.54 pounds of actual nitrogen per gallon. If you put out 10 gallons of UN-32 per acre, you added 35.4 lbs of nitrogen per acre. If you have 120 trees per acre and do the math, you come up with 4.72 ounces of actual nitrogen per tree – almost 5 ounces! I recommend not applying higher rates than this per application. I have seen nitrogen burn occur more often during hot summer temperatures when trees have elevated transpiration rates and obviously faster nitrogen uptake rates than what would have occurred at a cooler time of the year.

Young almond trees don't require as much nitrogen as older trees. I like Wilbur Reil's (UC Farm Advisor Emeritus) rule of "one ounce of actual nitrogen per year of age of tree for the first five years". That rate can be applied several times per season, but never more than that at any one application. Thus, a first leaf (first year in your orchard) almond tree should not receive more than one ounce of actual nitrogen per any application. A five year old almond tree should not receive more than 5 ounces of actual nitrogen per one single application. The University of California only recommends one ounce of ac-

tual nitrogen per one year old tree over the course of the season, but many growers and PCAs feel that this rate is not enough for the growth they desire. So, if you must put out five ounces of actual nitrogen per one year old tree, do so in five applications and not all at once!

Brent Holtz  
Almond Farm Advisor and County Director

## Spider Mites in Almonds: Monitoring and Management

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May is the month that growers and pest control advisors (PCAs) start focusing on mite sampling in almond orchards. There are three species of spider mites (Pacific spider mites, twospotted spider mites, and strawberry spider mites) that can cause economic damage in almonds during the growing season. Although brown mites and European red mites are often present in the orchard as well, their populations remain below the damaging level in most cases. In fact, these two mite species serve as the food source for mite predators during the time of the year (spring to early summer) when spider mites are not abundant in the orchard.

All three species of spider mites are similar in appearance (adults are green or greenish yellow; females have large and visible black spots on their body), life cycle, feeding habit, and nature of damage to the plants, therefore, the same control measures work for all three species. Early in the season (i.e. late April-May), mites appear on tree leaves that are interior and close to the trunk, and later spread to the entire canopy as the population increases. Mite feeding on leaves results in stippled leaves, which advances to yellow leaves, leading to dropping off leaves in severe cases. The presence of webbing covering leaves and twigs indicates a high degree of infestation. Mite feeding on leaves affects the photosynthetic process, with eventual impact on tree health and productivity. Mite damage in the current year may translate into a reduction in tree growth and yield in the following years. Temperature plays a significant role in mite reproduction. Therefore, the maximum population increase occurs in the summer months (June-September). Spider mites can complete their life cycle within 7-10 days, and can have 8-10 generations per year. We do not know what level of mite population or injury results in significant yield loss in almonds. Not all levels of mite infestation warrant management intervention.

Monitoring orchards for spider mites, along with predator activities, is critical for making management decisions. A high predator-mite ratio does not require treatment intervention in almond. Spider mites do well under high temperature and low humidity conditions. Thus, water-stressed trees and trees adjacent to dirt roads are often at risk of infestation, so early sampling should fo-

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cus on those areas of the orchard. Sample at least once every two weeks during the early portion of the growing season (May-June) and weekly after that until August. If the orchard has a history of heavy mite infestation and the orchard is water-stressed, monitoring every few days may be necessary.

#### **Mite monitoring:**

UC IPM Guidelines provide a protocol for mite monitoring in almonds.

1. Dividing orchards into sampling areas is helpful to determine whether spot treatment is sufficient. Within each sampling area, sample 15 random leaves from each of a minimum of 5 trees. Sample leaves should represent both the inside and outside of the canopy. Examine both sides of the leaves with a hand lens, looking for spider mites and eggs, western predatory mites and eggs, six spotted thrips, and other predators. A picture guide of mites and mite predators is available from: <http://www.ipm.ucdavis.edu/PMG/C003/m003bpmmites.html>
2. Count the number of leaves from each tree with pest mites or their eggs, and the number of leaves with predators, then note this on the form (There is no need to count individual mites or predators). Download the sampling form here: <http://www.ipm.ucdavis.edu/PMG/C003/almonds-mites.pdf>.
3. Once you have sampled at least 5 trees (total of 75 leaves), compare your total to the numbers in the "Don't Treat" and "Treat" columns on the sampling form and make decisions based on it.

#### **Management:**

**Maintaining healthy trees.** Irrigating orchards properly to reduce water-stress is important to reducing overall mite populations in the orchard. Also, ways to minimize dusty environment (by oiling or watering the dirt roads) and maintaining a good ground cover in the orchard can minimize mite infestations. Properly irrigated orchards may not require treatment for mites in most cases, as almond trees can tolerate low to moderate mite pressure without affecting tree productivity.

**Insecticide program and natural enemies.** Another important aspect of effective mite control is careful planning of the spray programs targeting other insects. Use of broad-spectrum insecticides such as pyrethroids and organophosphates in "May spray" is highly discouraged because it can disrupt the natural enemies of mites, resulting in increased spider mite populations. There are reduced-risk and growth regulator-based insecticides that are soft on mite predators. These are available for spring and hull-split worm control. Although western predatory mites are an effective predator at reducing mite populations, their presence and abundance in almond orchards have been in decline. Western predatory mites are commercially available for augmentative release. Six spotted thrips is another effective predator,

especially in the later part of the season when there are abundant spider mites. Both nymphs and adults prey on spider mites. The spider mite destroyer is a black ladybird beetle predator. Both adults and larvae of the beetle feed on mites. Beetles can fly and thus can effectively concentrate in the area of the orchard with heavy mite pressure.

**Use of miticide.** If sampling warrants miticide treatment, there are several miticides available to use against spider mites in almonds. UC IPM lists at least 12 miticides and orders them for both efficacy and effect on beneficials. Each of the listed miticides also has comments about the products, regulatory caveats (if any), effects on beneficials, etc. This information is very helpful for making decisions and selecting products.

Jhalendra Rijal, IPM Advisor

## **Field Crops Observations**

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It goes without saying that this is a busy time of year. Winter crops are maturing, and summer crops are being planted. Over the last month or so, I've received some questions from the field from growers and consultants. A common theme has emerged – while winter and spring rains have been welcomed for improving our water situation, these wet conditions have resulted in some pest problems. I've written about these in my blog SJC and Delta Field Crops (<http://ucanr.edu/blogs/sjcfielddcrops/>). Some excerpts are below.

#### **Scouting in Garbanzo Beans:**

Ascochyta blight (*Ascochyta rabiei*, *Didymella rabiei*) is a particular problem in garbanzo beans in wet years, like what we've been having this year. Ascochyta blight can occur at any stage of growth and on any aerial part of the plant. Brown lesions on the stems can cause damping-off symptoms in seedlings or can cause stems to break. At the advanced stage of the disease, concentric circles of spores will form within brown leaf lesions, and these are a good diagnostic characteristic (Figure 1). These concentric circles can also be seen on seed pods (Figure 2), which can result in poor seed set, seed discoloration, and shrinkage. If these beans are used for seed, subsequent crops can get infected. Management of Ascochyta is through the use of tolerant varieties, crop rotations, certified disease-free seed, always using a seed treatment (such as Mertect), and foliar fungicides. Foliar fungicides, such as Headline or Quadris, should be applied at the first sign of the disease and reapplied if rainy weather is forecasted.

#### **Stem Nematode in Alfalfa:**

Stem nematodes (*Ditylenchus dipsaci*) can be a perennial problem in California alfalfa. They are a particular problem in the spring when the weather is cool. The alfalfa stem nematode lives and feeds in the stems and crown of the plant. When temperatures warm, they recede to the soil and go dormant until cool weather returns. Symptoms of infection include plant stunting, shortened internodes, and

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swollen buds (Figure 3), and white flagging where stems lack chlorophyll. They can cause complete plant die-back, leaving open areas in the field where weeds can become a problem. Identification of stem nematode can be done fairly easily under a dissecting microscope by cutting pieces of stems and the crown in a petri dish with water (Figure 4), but unfortunately, management of this pest is challenging. Varieties have varying levels of resistance, but even with a highly-resistant variety, it can be typical to have susceptible plants next to healthy plants within a stand. For this reason, in an area where stem nematodes are a problem, a grower should plant nothing less than a highly-resistant variety. It is important to plant clean seed. Using proper sanitation methods is also advised and would include not moving equipment and wastewater from infected to clean fields, and also not applying manure from cattle fed with infected stem nematode hay to clean fields. Stem nematodes have a limited host range, so rotating out of alfalfa for at least 2 years can help to reduce the problem, but longer rotations (4 years) might be advised under severe infestations. Rotation crops could include small grains, corn, or dry beans. There are no registered nematicides for stem nematode.

#### **Septoria Leaf Blotch in Wheat:**

Septoria Leaf Blotch (*Septoria tritici*, *Mycosphaerella graminicola*) symptoms include leaf lesions (Figure 5) and lesions on the glumes (Figure 6) if wet weather occurs after heading. It is a serious problem of wheat because, as lesions coalesce, particularly lesions on the flag leaf, it can reduce the photosynthetic capacity of the plant and reduce grain filling, thereby reducing yields. Septoria is most problematic in rainy years and in early-planted fields. Early-planted fields have a longer period of exposure if the disease is present on crop residues or volunteer plants. Crop rotation can help manage against Septoria in future plantings, but planting more tolerant varieties and properly-timed fungicide applications are also good management practices. Septoria ratings are not a regular part of the UC statewide variety testing program, but ratings are available in certain test locations and years. Please contact me if you are interested in these ratings. Fungicides, like Mancozeb and Propiconazole, should be applied between tillering and heading, with the purpose of protecting the flag leaf. Septoria only infects wheat, so other small grains like barley, oats, and rye are not affected by the disease.

*Information on products and practices is for educational purposes only and does not constitute an endorsement or recommendation by the University of California.*

Michelle Leinfelder-Miles, Delta Farm Advisor



Figure 1. *Ascochyta* blight on garbanzo bean leaves.



Figure 2. *Ascochyta* blight on garbanzo bean pods.



Figure 3. Shortened internodes and swollen buds of alfalfa with stem nematode.

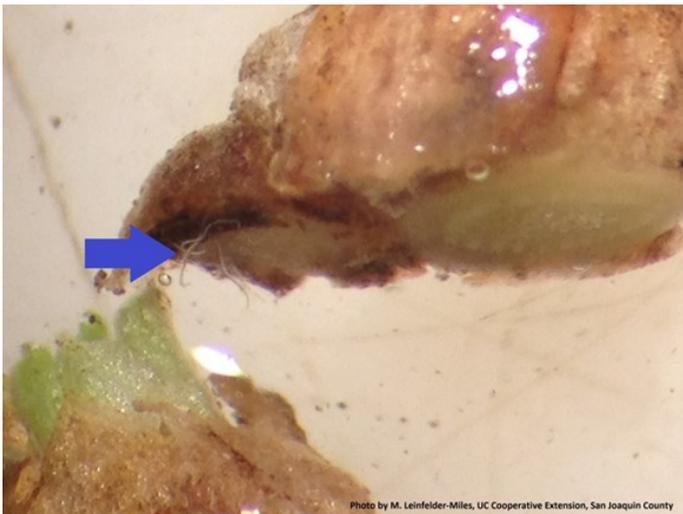


Photo by M. Leinfelder-Miles, UC Cooperative Extension, San Joaquin County

Figure 4. Stem nematodes emerging from an alfalfa stem under a dissecting microscope. The blue arrow indicates the almost-translucent stem nematodes.



UC Statewide IPM Project  
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Figure 5. Irregularly shaped leaf lesions of Septoria Leaf Blotch.



Photo by M. Leinfelder-Miles,  
UC Cooperative Extension, San  
Joaquin County

Figure 6. Septoria lesions on glumes.



## Announcements / Calendar of Events

### UC Davis Small Grains and Alfalfa/Forages Field Day

Wednesday, May 11, 2016

8:15am to 4:15pm (includes lunch)

UC Davis Agronomy Field Headquarters

Directions: The field day is located on Hutchison Road, just west of the city of Davis. Take Highway 113 north from Interstate 80, or take Highway 113 south from Woodland. Exit on Hutchison Road, and go west. Take a right at the first roundabout, left at the second roundabout, and the Agronomy Headquarters is about ¼ mile west in a clump of trees and buildings on your left.

Contact: Michelle Leinfelder-Miles, 209-953-6100,

[mmleinfeldermiles@ucanr.edu](mailto:mmleinfeldermiles@ucanr.edu)

### Almond Fumigant Field Day

Wednesday, May 18, 2016

9:00am - 11:00am

12700 El Capitan Drive, Ballico, CA 95303

The field turn-in is 900' EAST of El Capitan and Pepper Intersection (on El Capitan)

Contact: David Doll, 209-385-7403 or [dadoll@ucanr.edu](mailto:dadoll@ucanr.edu)

### Nickels Soil Lab Annual Field Day

Thursday, May 19, 2016

8:30am to 12:30pm (includes lunch)

RSVP to the UCCE Colusa Office at 530-458-0570

\$15 prepaid or \$20 at the door

Marine Ave, Arbuckle, CA

Contact: Franz Niederholzer, 530-458-0570 or [fjniederholzer@ucanr.edu](mailto:fjniederholzer@ucanr.edu)

### Nickels Soil Lab Organic Almond Field Day

Thursday, May 19, 2015

2:00pm to 5:00pm

Marine Ave, Arbuckle, CA

Contact: Franz Niederholzer, 530-458-0570 or [fjniederholzer@ucanr.edu](mailto:fjniederholzer@ucanr.edu)

### UC Davis Weed Day 2016

Thursday, July 7, 2016

7:30am to 4:30pm (includes lunch)

Buehler Alumni Center, UC Davis

Please see [http://wric.ucdavis.edu/events/weed\\_day\\_2016.html](http://wric.ucdavis.edu/events/weed_day_2016.html)

for the agenda and registration information.

### Diagnosing Herbicide Symptoms 2016

Friday, July 8, 2016

8:00am to 5:00pm (includes lunch)

Bowley Plant Science Teaching Center, UC Davis

Please see [http://wric.ucdavis.edu/events/diagnosing\\_herbicide\\_symptoms\\_2016.htm](http://wric.ucdavis.edu/events/diagnosing_herbicide_symptoms_2016.htm)

for the agenda and registration information.

## 2016 California Leopold Conservation Award Seeks Nominees

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Are you a California farmer, rancher or forester committed to sound environmental stewardship? Know someone who is? Sustainable Conservation, Sand County Foundation and the California Farm Bureau Federation are seeking nominees for the 2016 California Leopold Conservation Award.

The award recognizes private landowners' commitment to responsible environmental stewardship and land management. It underscores the fact that many private landowners are on the front lines of conservation and should be recognized for protecting the environment. So often, voluntary conservation by private landowners provides the most effective, efficient and durable means of protecting land, air, water and wildlife.



2015 California Leopold Conservation Award recipients Jim and Mary Rickert of Prather Ranch.

As in past years, 2016 finalists will be selected in part based on their commitment to responsible and sustainable land management, the overall health of their land, implementation of innovative practices, and outreach and leadership in their communities. Award judges will evaluate nominees in two categories: Nurseries and Crops, and Livestock. The grand prize of \$10,000 will be presented at the California Farm Bureau Federation's annual convention in December.

Information about this year's award and a nomination form are available from this website: <http://leopoldconservationaward.org/wp-content/uploads/sites/5/2013/11/CA-2016-CFN.pdf>, or by contacting Sustainable Conservation at (415) 977-0380 x317. The deadline for nominations is July 8. More information about past winners and finalists is available from this website: <http://www.suscon.org/leopoldaward/index.php>.

## Grape Digest

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With the end of April, the seasonal rainfall total is above average and may have a chance to add a little more. This is not a drought buster in a complete sense, but it is very good to mitigate the dry conditions of the last few years. The current rainfall total is at 17.3 inches which is about 0.7 inches above the average for the period from 2001 to present.

This year's rainfall occurred in a fairly effective pattern to provide some deep soil moisture, with heavy rains in December and January, a very dry February, but very heavy rains again in March and finally a couple of light "irrigations" in April. Cherry harvest is under way so that almost guarantees a little more rain. The historical trend for California seems to be followed; there is no trend.

There is one curious fact that we all seem to have glossed over and forgotten. In 2013, the rainfall total for the season was 95% of average at 15.8 inches of rain, which is not a drought year to my untrained eye. So the four drought years actually amounted to three very dry years and one slightly below average year. When looking at the droughts of 2007-09, 1989-91, and especially 1976-77 it seems California alternates between flood and drought and maybe the current water crisis is more than just low rainfall.

With a somewhat recharged soil profile, most vineyards are not as stressed, and vine growth has been good. The overall crop may be a good sized one. Looking at Zinfandel vines the past week, there are many two cluster shoots and a fair number of three cluster shoots. It's a long way to harvest, but the potential for more clusters than there has been recently may be there. If set is good and berry development is good, it may add up to an above average crop, maybe.

There are an increasing number of irrigation services, soil moisture and vine water status technology, and some proven strategies, but in any case now is a good time to double check with some old fashioned assessment. A soil auger or even just a little digging with a shovel may help confirm how good a recharge the winter rains and irrigation may have done. It seems there is good deep soil moisture from the December/January rains and the "Miracle March" soaking, as evidenced by the strong bleeding of vines this year at pruning, the strong shoot growth and what seems to be good cluster counts initially.

Budbreak did occur about 10 to 12 days ahead of average, but a few days behind last year. The weather pattern this winter was one of very mild temperatures in February. Grapes require few chilling hours but a "good chill" did seem to help encourage strong and fairly uniform budbreak, since the drought began in 2012.

As spring unfolds and vine canopies develop, monitor soil moisture. It's good to remember in this dry period that cover crops, planted or resident vegetation, will use about 20% more water than clean cultivation, as indicated by work done by Terry Prichard.

Even with very warm temperatures, vineyards only use about 0.10 of an acre-inch of water per day at "full" or 100% ET" (evapotranspiration). This is equal to a very "seat-of-the-pants" 2 hours' worth of irrigation time per day of full ET, depending on emitter output and spacing. That use will increase as does the canopy. And as long

*(Continued on page 9)*

**Lodi Seasonal Rainfall (inches) 2001-16**

	<b>Total</b>	<b>% Avg</b>	<b>OctNovDec</b>	<b>Jan</b>	<b>Feb</b>	<b>Mar</b>	<b>Apr</b>	<b>May</b>	<b>Jun</b>
2001	16.6	100	3.6	3.6	3.7	1.9	3.7	0	0.1
2002	16.3	98	9.7	2.0	1.0	2.5	0.2	0.9	0
2003	15.2	92	8.7	0.6	4.7	1.1	0.1	0.1	0
2004	15.3	92	9.2	0.6	0.9	0.6	3.6	0.4	0
2005	23.1	139	10.4	3.2	3.3	3.5	1.4	1.3	0
2006	23.4	141	7.1	5.4	1.1	5.2	3.8	0.8	0
2007	12.1	73	4.6	0.3	4.3	0.6	2.3	T	0
2008	13.7	82	4.5	7.3	1.8	0.1	0	0	0
2009	15.1	91	4.0	1.9	5.3	1.9	0.7	1.3	0
2010	19.2	116	6.1	4.5	3.6	1.8	2.9	0.3	0
2011	26.3	158	12.1	1.4	4.1	5.8	0.2	1.4	1.3
2012	12.4	74	3.0	2.9	1.3	3.3	1.9	T	0
2013	15.8	95	11.0	1.6	0.3	2.1	0.6	0.1	0.2
2014	10.2	61	2.2	0.1	4.7	1.9	1.4	0.02	0.0
2015	13.2	80	9.2	0.0*	1.9	0.3	1.6	0.1	0.1
2016	17.3	105	3.9	6.2	0.6	5.3	1.3		
Average	16.6		6.8	2.6	2.7	2.4	1.6	0.5	0.1

(Continued from page 8)

as there is good tendril development at shoot tips, there is no lack of available water. All that considered, it's good to stay ahead of vine demand even if you are on a strict Regulated Deficit Irrigation (RDI) regime that uses much less than full ET. This helps avoid using deep soil moisture early in the season. That deep moisture is good to have available for late summer and early fall during hot spells.

The mild February with "bookend" wet months did seem to encourage one pest this year, gophers. Digging and living conditions appear to have been just right in this "Year of the Gopher." Owl boxes help, but I think a zero tolerance of mound presence is a safer strategy. Use owl boxes, but control any outbreaks of gophers, especially near cherry (gopher candy) orchards.

Vine mealybugs have not come on strong and early like last year. Keep an eye out for activity, and for associated ant activity, along drip hoses and vine trunks. One pest I have had a few calls on is the Little Bear beetle. It looks similar to the Hoplia beetle, but appears to only feed on leaves and not clusters. This insect is more often seen in the southern San Joaquin Valley, but is more active this year up north. No control is needed unless a concentration occurs on just a few vines.

Weed growth started out less than average, but good soil moisture and later rains encouraged germination and new strong growth, even where timings and applications

were perfect. Mare's tail and flax leaf fleabane and a few other tough weeds are taking advantage of good general control. Right now, all stages are present from rosette to three feet tall, with some bolting about to occur. Control these weeds BEFORE they seed. Effective weed control means not waiting for weeds to complete their growth cycle and set seeds of future problems. This year glufosinate (Rely and several other new generics) will be available. If you have had troubles with Horseweed or Fleabane, I have seen some effective "burn down" with combinations of glyphosate and glufosinate in ratios of 2 or 3 parts glyphosate to 1 part glufosinate, but check with your PCA. Also remember, no weed is resistant to cold steel.

Remember to submit your paperwork for the Irrigated Lands Regulatory Program. Check with the local water coalition on proposed changes. As the summer approaches, stay in touch with your grape buyer, so nobody is surprised. The good news is no new pests have been reported in fields around the County.

Good Luck in 2016. Thought for the day: *"The cultivation of the earth is the most important labor of man. Unstable is the future of the country which has lost its taste for agriculture. If there is one lesson of history that is unmistakable, it is that national strength lies very near the soil."* - Daniel Webster

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