



Alfalfa and Grass Hays

Alfalfa and grass hay acreage continues to increase due to the area's substantial dairy and recreational horse industry. Dairy cows require high protein alfalfa while the horse market prefers grass hay. Lower protein, high fiber grass hays are healthier for horses when their exercise is mostly casual riding. Both premium alfalfa and grass hays consistently maintain top prices and are worth the extra effort to produce.

Locally, the San Joaquin/Sacramento delta has seen a large increase in alfalfa acreage over the past decade. Water availability, coupled with the rich organic soils, is ideal for high yield. The delta breezes and cool evening climate also favor development of highly nutritional forage.

Hay crops benefit the environment in several ways. With no tillage requirement for 4-6 years, soil losses to wind erosion are stopped and subsidence, (the decomposition of organic material) is greatly reduced. Alfalfa also builds soil nutrition and provides good wildlife habitat.

Variety selection

The first step is to choose a variety with proven pest and disease resistance for the soil type and environment. Next, the dormancy of the variety is important for determining yield and quality. This dormancy decision is based on the market in which you intend to sell the hay. Selecting a low dormancy alfalfa (dormancy ranging from 3-5) will generally produce better forage quality having lower fiber and a higher nutrient value. High dormancy alfalfas (dormancy ranging from 6-8) have a longer growing season. They generally produce more yield between cuttings but are higher in fiber. High fiber hay is desirable for non-lactating cows and the horse market.

There is also a growing market for perennial grass hays. There are three popular grass hay types: Orchardgrass, Ryegrass and Fescue. Both Orchardgrass and Ryegrass make excellent horse hay and are often planted together as a mix. Fescue is gaining popularity

as seed companies make variety improvements for softer leaves and better palatability. Fescues are also more productive in warmer temperatures than are Orchardgrass and Ryegrass. Alfalfa Hay varieties are researched annually by UC and information can be accessed on the UC alfalfa website under variety performance. <http://alfalfa.ucdavis.edu/> Performance information for grass hays is less available. Some information for grasses can be accessed from proceedings of the Visalia 2005 Alfalfa Symposium (http://alfalfa.ucdavis.edu/+symposium/proceedings/asdf/alf_symp/2005/05-167.pdf).

Soil fertility and amendments before planting

Alfalfa does best in a neutral soil with a pH of 6.5 to 7.5. An acidic soil (pH below 6.0) inhibits nitrogen fixing *Rhizobium* bacteria from developing. Peat soils of the delta and red soils along the east side of the valley floor are often low in pH. Liming before planting is mandatory for correcting the problem. Once alfalfa has been planted, correcting the pH is both costly and inefficient. Soils above pH 7.5 indicate sodium, chlorides or other salt issues and require a strategy to leach out salts as well as a management plan to avoid salt buildup over time. Important preplant nutrients for alfalfa are phosphorus and potassium. Grass hays may require phosphorus at planting with nitrogen needed prior to summer irrigations.

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Seedbed preparation

Soil and seedbed preparation is important for alfalfa since the tap root can grow to a depth of 6 feet in prime soils. The majority of growth occurs in the first six months, so having a non-compacted soil is important early on. Plants growing into soil compaction develop a shallow root which leads to premature root disease problems. In this situation yields decline, but weeds will flourish, as does the cost of control.

Planting

Fall and spring months are optimum times to plant alfalfa and grass hays. The fall planting window from October to November offers ideal temperatures for germination and plant development before the cold winter conditions set in. March and April usually provide another opportunity for planting as spring temperatures and moist soils are favorable for stand establishment.

Irrigation and drainage

Water is essential for high yield but also the number one reason for alfalfa decline. Irrigation sets longer than 8 hours will encourage the development of Phytophthora root and crown rot diseases. This is a problem in clay soils that have a high water holding capacity. Land leveling a slope at 0.2 per 100 feet or greater will avoid standing water problems. Tail water management is equally important to remove water quickly during summer irrigations or winter rain events such as we experienced in the spring 2006.

Weeds and insect management

The hay market pays more for clean hay without toxic and low palatability weeds. Weedy hay is a price dropper, a sales stopper and a liability to the grower. Weedy hay will cause prices to fall 25 to 50% from top quality hay. In September 2006, the premium quality alfalfa delivered price was \$190/ton compared to low quality hay at \$115. Weedy hay fell below \$100 or was just unmarketable. Pest management requires monitoring year round in alfalfa. Weed problems in hay crops occur winter and summer. For a better understanding of pest management issues and guidelines for control go to <http://www.ipm.ucdavis.edu/> and select agriculture crops. UC-IPM has established pest management guidelines for most crops in California. If unable to access by computer, information can be obtained from any Cooperative Extension office.

Mick Canevari
Farm Advisor / County Director

UPCOMING EVENTS

November 8

Specialty Crop and Squash Field Day
Kearney Ag Experimental Station
8:30 - 11:30 AM
info: Mary Bejarano, 559-685-3303

November 29

Mechanical Pruning Field Meeting
info: Lodi-Woodbridge Winegrape Commission,
209-367-4727

December 6

California Asparagus Day
Radisson Hotel
Stockton
info: Brenna Aegerter, 209-468-9489

December 6&7

34th Annual Almond Industry Conference
Modesto Centre Plaza
info: 209-549-8262

December 7

High Density Olive Production Workshop
UC Cooperative Extension Auditorium
Stockton
info: Joe Grant, 209-468-9490

December 11 - 13

Western Alfalfa and Forage Conference
Reno, NV
Registration now open
info: Nikki Picano, 530-752-0070

December 12

Northern San Joaquin Valley Cling Peach Day
UC Cooperative Extension-Modesto
info: UCCE - Modesto, 209-525-6800

January 11, 2007

California Cherry Research Review
Hutchins Street Square
Lodi

Grape and Almond Seasons Draw to a Close

Grapes

The 2006 season continues the trend of 2005 with a blend of good and bad. The second wet spring in a row was followed by extreme heat in July. This year the hot spell lasted a record 11 days and hit at a bad time for several varieties, most especially Zinfandel. After the extreme heat, moderate temperatures prevailed for the rest of the season. Good soil moisture, good growing conditions, and an excellent bloom period resulted in good set with some tight clusters. The heat in July produced sour rot in susceptible varieties such as Zinfandel. The almost ideal bloom conditions did help Malbec and Merlot set some good crops along with Syrah.

This year's harvest started about normal, around the 13th of August. After last year's big crop most varieties and most vineyards took a year off and had slightly lower than normal crops, but surprisingly still good yields. Also as in 2005, moderate weather slowed the pace of harvest and the more normal yields allowed for a reasonable progression. Around mid harvest there was cool weather and a rain, so wineries waiting for flavor development have drawn the harvest out into late October, but the season is wrapping up closer to an average schedule. Mother Nature continues to accommodate the interest in longer 'hang time' this year as in 2005. Per acre yields are close to normal, but generally down 10 to 20 %. The total crop is still a big one owing to many new acres and maturing younger vineyards. There are exceptions, as with Syrah having more crop than last year, when it was lighter than most other varieties.

It is not a particularly "good Zin year", but there are always exceptions to the rule. Zinfandel seems to have suffered most from the excessive rains early and the hot weather late, even worse than last year. The ideal set conditions and July heat caused a lot of headaches for red Zinfandel growers as summer bunch rot (sour rot) was very common. There is still some very good quality Zinfandel to come from the vintage, but it was difficult.

Some early Botrytis rot occurred in Chardonnay, but dried up and was of little concern. Most other varieties seemed to "weather" this year's conditions a little easier. Syrah had a second high-quality harvest. In general flavors came on late, but quality will be good. The concern is with prices. Even with the average to below average yields there are unharvested blocks and "bargain" fruit being delivered.

Most vineyards, including Zinfandel, are not showing any maturity problems or excessive potassium deficiency and there seems to be less severe leaf roll virus

symptoms, although the cool, dry weather has encouraged some leaf reddening not related to virus. It appears most, but not all sites, have recovered from last year's huge crop load. If you do have specific questions give me a call.

Increased costs, more regulations, and tougher competition are still driving consolidation of growers and wineries, even with a fair amount of helpful people in Sacramento and Washington working on the problem.

As in 2005 Vine Mealy Bug (VMB) continues to find its way around the district. Be aware of the possibility of VMB popping up and keep a watchful eye out for sooty mold on vines or fruit. Also, be on the lookout for high ant activity and check near bird roosting sites in vineyards. Information is available at the LWWC office, our office and online at: ipm.ucdavis.edu or vinemealybug.uckac.edu

The Glassy Winged Sharp Shooter (GWSS) problem has not gone away, but the Ag Commissioner's office has been effectively monitoring and keeping it out of the county. Now for the fall checklist, which seems to get longer each year:

Fall Checklist

- If the soil is dry, a light irrigation to help maintain soil moisture is okay until significant rainfall has occurred.
- Little to no nitrogen should be applied now, but potassium now (or early next year) is okay. It won't move like nitrogen. Compost needs to be disked in to get full benefit.
- Make a note of any problem weed species that may be increasing.
- Mark any vines with excessive red leaves and/or leaf roll for possible removal.
- Renew your Ag Waiver Discharge membership.
- Update your air pollution mitigation plan if you have 100 acres or more in a single vineyard.
- Also, review your pesticide use reports and get everything up to date as there is continued interest to keep agriculture "accountable" for problems real and perceived.
- For VMB, Lorsban post harvest can help keep it checked until the summer control program. Be careful not to apply before a storm; especially near natural drains and waterways.

Almonds

The 2006 season was also a mixed bag, but less so than grapes. The Nonpareil crop looks good as the variety took advantage of a very good break in the rain with the approach of spring. The downside has been late varieties such as Butte, Padre, and Mission. They are slightly below average as their bloom occurred when rains resumed in late

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(continued from pg 3) February and early March. It looks like prices are slightly down from last year, but still good. Unfortunately many costs are up such as bees, fuel, labor and fungicide. There are also increased regulations in air and water quality. As in the grape sector, pressure continues to increase for consolidation of operations at all levels, even with lots of helpful people in Sacramento and Washington hard at work.

After a long drawn out bloom, the season progressed with relatively few problems and a little less incidence of "Lower Limb Dieback" compared to the last two years. That problem along with Bacterial canker continues to require more research for the long term. Insects and mites were not especially severe and Leaf-Footed Bug was not as much of a problem locally as it appears to have been in the South San Joaquin Valley.

The upside of 2006 has been continued increase of demand and recognition of the healthful benefits of almond consumption. Prices seem to be lower compared to last year, but may strengthen some more after harvest.

If you haven't attended the annual Almond Research Conference, think about checking in to catch up on the latest in research statewide and see some of the production and marketing offerings in the trade show portion of the meeting. Details and meeting announcements are on line at: www.AlmondBoard.com

Fall Checklist

- If the orchard didn't get a good irrigation after harvest or it has been a while since applied water, a light irrigation to help the fall rains soak in is okay.
- If water penetration has been a problem, a fall gypsum application or a fall lime application in low pH soils can help winter rains soak in.
- Little to no nitrogen should be applied now, but potassium can be applied now or early next year, as it won't move through the soil like nitrogen can.
- Pruning is okay, but not on young trees. In general less pruning is necessary than previously thought to keep production up. If the budget is tight, skip it entirely for a year.
- Mark trees or limbs needing to be removed, as they are more easily seen now than next spring.
- Note any problem weed species to make herbicide or weed control strategies.
- Review your delivery sheets and try to determine exactly what caused the damage (worms versus ants or shrivel or maybe just chipped nuts).
- Renew your Ag Waiver Discharge membership.
- Update your air pollution mitigation plan if you have 100 acres or more in a single vineyard.
- Also, review your pesticide use reports and get everything up to date as there is continued interest in making sure agriculture is held "accountable" for any and all problems real or perceived that could be traced back to orchard sites.

-Think about a dormant spray if it has been more than three to five years and worm or early season mites or possibly scale has become more evident. Although dormant copper sprays have never been proven to prevent Blast, there may still be some benefit to suppress an increasing incidence in your orchard. Remember to try to avoid dormant sprays just before a rain, especially near waterways or natural drains.

Paul Verdegaal
Farm Advisor

I know of no pursuit in which more real and important services can be rendered to any country than by improving its agriculture, its breed of useful animals, and other branches of a husbandman's cares. -G.Washington

DOCUMENTING MEETING ATTENDANCE

With the end of harvest one item that many be coming up for your attention is renewing your private applicator license, pest control operator license or your PCA license. Part of the process, besides actually attending the meetings, is to document the classes or meetings for your Continuing Education (CE) hours. Three ways that are possible include:

- 1) Join CAPCA, California Association of Pest Control Advisors- its costs \$125 per year, keeps a record of your Continuing Education hours with a year-end printout on the internet or by hard copy. The organization also offers online CE hours, besides sponsorship of meetings. See www.capca.com
- 2) Join PAPA, Pesticide Applicators Professional Association - it costs \$40 per year and provides an automatically updated record of your CE hours for you. They also sponsor meetings and have online opportunities to obtain CE hours. See www.papaseminars.com
- 3) Go to the DPR web site at www.cdpr.ca.gov. Then go to the site index to the left titled ' Index A-Z'. From there select C then select 'continuing education', then click on 'DPR approved classes'. With that you can see the display of all the classes from the current year by month or the archived years from 2002 to 2005. All the information you need to document your meeting attendance is there, **except for the meeting code**; that you will still need to get from the meeting sponsor listed on the DPR calendar. It is all free, but you need to do the work.

Many orchards, especially walnuts and cherries, have had heavy tree losses this spring and summer. Valley agriculture has reaped many benefits from the heavy rains of '04-05 and '05-06. The high rate of tree mortality in our orchards – due most likely to a combination of winter/spring root zone water-logging and increased incidence of Phytophthora root and crown rot disease – is certainly a down-side of these recent weather conditions.

The “first fronts” in combating soil saturation and infection by Phytophthora have long been and still remain 1) use of Paradox hybrid rootstock, more resistant to Phytophthora than black or English, 2) proper pre-planting site preparation (deep ripping, slip plowing, or backhoeing; grading & leveling of the site; and planting trees on raised berms), and 3) good irrigation system design, construction and operation. Tactics (2) and (3) are both aimed at avoiding prolonged periods of soil saturated conditions which kill roots directly and favor spread and infection by Phytophthora.

Phosphonates are a recent addition to the arsenal in the battle against Phytophthora. Phosphate fertilizers, which have been available for many years, are derived from phosphoric acid (H_3PO_4) and have no fungicidal activity. In contrast, phosphonates are derived from phosphorous acid (H_3PO_3) and were first found to have disease control properties in the mid - 1980s. When sprayed on foliage, injected into the water-conductive xylem tissue, or taken up by roots after chemigation through drip or microsprinkler systems, phosphonates move systemically through treated trees and their root systems.

The mechanism by which phosphonates suppress diseases caused by Phytophthora is poorly understood; there is evidence that phosphonates operate by directly suppressing the pathogen as well as by intensifying plant defense responses against the pathogen. Many phosphonate-based products are currently available but only a few companies have undertaken the time and expense to register these products as fungicides with US EPA and California Department of Pesticide Regulation. When choosing a product remember that, to be recommended and used legally, a product applied for the purpose of controlling pests (including diseases) must be registered as a pesticide with USEPA and CDPR.

Research with phosphonates in walnuts and other tree crops is still in the early stages, but there is mounting evidence that phosphonate applications help reduce Phytophthora losses in tree crops. Experimental methods used to apply phosphonates have included pressurized trunk injection, application through drip or other localized

irrigation systems, and foliar sprays. The results of these tests to date suggest:

- An effectively delivered phosphonate application can provide suppression for disease caused by Phytophthora for up to 3 to 5 months after application.
- Foliar phosphonate sprays have been effective in late spring, summer, and early fall, when leaves are in good condition and are actively exporting products of photosynthesis to the tree.
- Effective uptake of phosphonates applied through microsprinkler and drip irrigation systems appears to be limited to periods in summer when trees are using water rapidly.
- Foliar spraying probably is the most effective way to apply phosphonates in orchards, especially for single applications.

We will need more testing and commercial orchard experience with phosphonates to improve our understanding of the effectiveness, limitations and best uses of these materials. If we are lucky, perhaps we will be less pressed for a solution in the coming years by a return to more “normal” patterns of winter and spring rainfall less likely to promote Phytophthora outbreaks in orchards. In any case, coupled with use of resistant rootstocks and good soil/water management aimed at avoiding saturated conditions that favor Phytophthora, phosphonates look to be an effective tool to help reduce Phytophthora losses and increase orchard life and profitability.

Joe Grant
Farm Advisor

Year One in the Valley

October 1st marked the end of my first year as a vegetable crops advisor in San Joaquin County. Good grief, what a year! I learned a lot about all the ways that weather can wreak havoc with vegetable crops.

First there were the warm-then-freezing spring temperatures that fooled the asparagus crowns into making an early entrance into a miserably cold and wet season. The same temperatures also threatened tomato transplants that were hardening off outside of greenhouses that were crowded due to planting schedule delays by the rains. And then, when all those transplants made it into the ground - almost as if on cue, the heat and winds set in to torture those young, leggy things. But tomatoes are hardy and they also have a way of compensating for missing plants and the fields were looking pretty good. Then there was the July heat wave... the heat stress and the delay in fruit set were a blow to both fresh market and processing tomatoes, as well as many other vegetable crops.

In addition to the stress and fruit set problems we did have our fair share of diseases, including a rare appearance by southern blight (*Sclerotium rolfsii*), which isn't often seen here in tomatoes. It is a soil-borne disease which is exacerbated by high temperatures.

In late August we saw tomato powdery mildew begin to take off and then it just kept on going, was difficult to control, and exhibited symptoms different from what is normally seen – it was sporulating on the tops of leaves. Such powdery white sporulation is typical of powdery mildew diseases of other plants, but the tomato pathogen (*Leveillula taurica*) normally produces so few spores that they can be hard to find without the aid of a light microscope. Samples were sent to plant pathologist Dr. Michael Coffey at Riverside. Hopefully we can learn if this abundantly sporulating mildew is a different strain or perhaps just a fungus which was very content with the weather conditions.

In addition to powdery mildew, growers and PCAs battled stink bugs, worms, late blight, and a late resurgence of russet mite populations. We are seeing some tomato root damage and occasional vine decline from root knot nematode, even in resistant varieties. Could this be due to strains of nematodes that have overcome the resistance in tomato that we have long relied upon? Or is it due to a breakdown of the host resistance because of the high temperatures? It is known that the *Mi* gene conferring nematode resistance can break down at soil temperatures over 82° F. The CIMIS weather stations in Tracy, Lodi, and Manteca did record maximum soil temperatures of 82° F or greater for 2 to 4 days depending on the location. However, this is the soil temperature at a 6" soil depth under sprinkler-irrigated sod. Perhaps this differs from a tomato field. I'll keep you posted on this issue as we learn more.

Brenna Aegerter
Farm Advisor



Powdery mildew sporulating on the top surface of a tomato leaf.

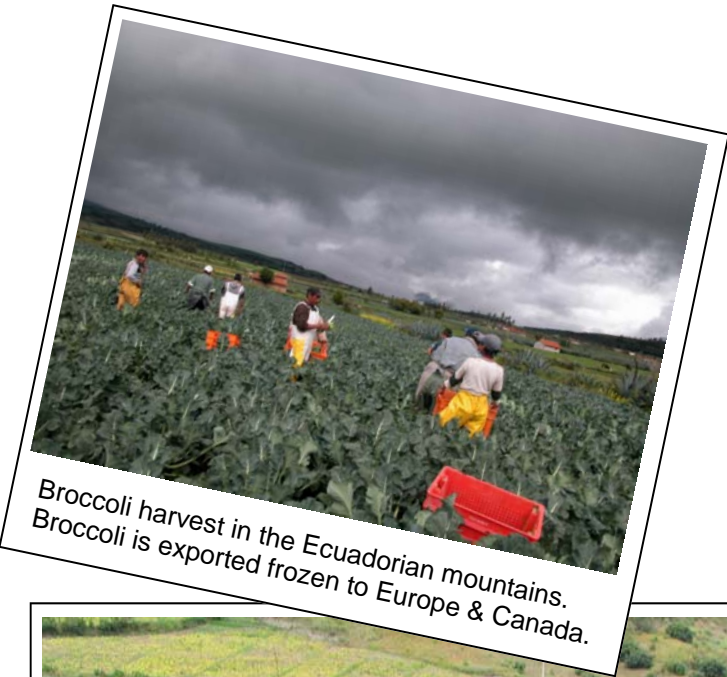


Late blight on immature fresh market fruit.



Galling on tomato roots caused by Root Knot Nematode.

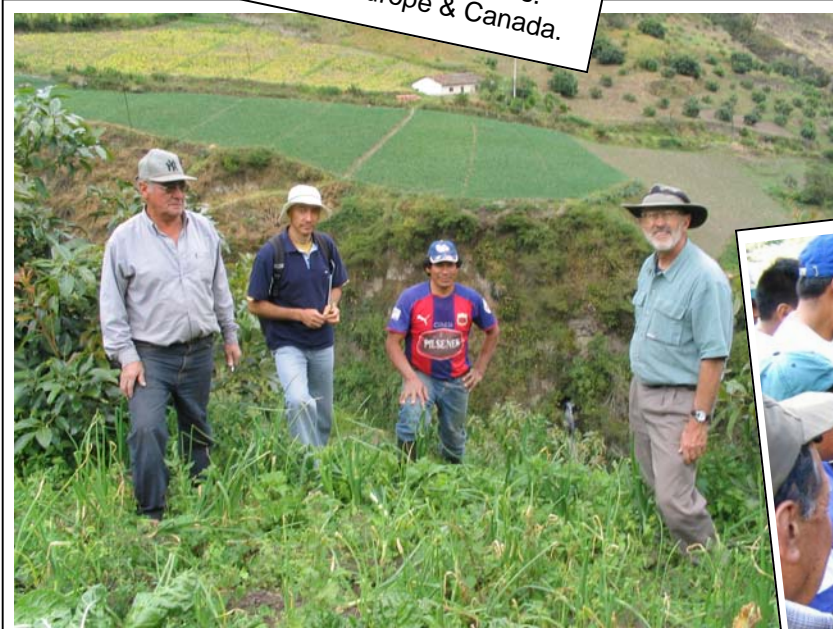
Photo Journal: Sabbatical in Ecuador



Broccoli harvest in the Ecuadorian mountains. Broccoli is exported frozen to Europe & Canada.



Spraying of a broccoli field for insect pests.



San Joaquin Farm Advisor Benny Fouche and local residents discuss irrigation in the province of Carchi, Ecuador. The elevation of this field is around 7800 feet.



San Joaquin Farm Advisor Benny Fouche plants an Haas avocado tree in a demonstration for local Ecuadorian farmers. These farmers are looking for specialty crops to increase their income.



A fascinating, entomological find, the guisanito--rolls its eyes, wiggles its antennae, announces free rides, and carries passengers to local fairs.

Our Small Farms farm advisor Benny Fouche spent six months in Ecuador on sabbatical. While there he helped a mountain farming cooperative establish better markets for their avocados in Columbia and advised them on other crops to supplement their income. Welcome back Benny!



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Notes from the Field

November 2006

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