

# FIELD NOTES

A QUARTERLY PUBLICATION OF COOPERATIVE EXTENSION

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## Meet The New Farm Advisor

Hello San Joaquin County! I am the new Environmental Horticulture Farm Advisor and I am honored to serve this county.



I am originally from the southern panhandle of Texas. My educational background is a combination of horticulture, plant physiology, deficit irrigation, and education. I will be addressing many environmental issues that cover the major issues of water quality and conservation, best management of pesticides and fertilizers, and the great potential for recycling green material within the landscape. Another area will be to help improve the production and marketing of ornamental plants to encourage high quality plant material for the San Joaquin County region.

My direct responsibilities are to serve the San Joaquin County public and private agencies within the landscape and nursery industry. My goal as an educator is to provide the latest research and technological information for a healthy landscape in the valley.

I will be sending out a newsletter on landscape and nursery management within the next month. If you want to be on the mailing list or have any questions, please contact me at 209-468-8090, [arbasinger@ucdavis.edu](mailto:arbasinger@ucdavis.edu).

Ashley Basinger, Horticulture Advisor

## Field Observations in Tomatoes and Peppers

Incidence of tomato spotted wilt virus (TSWV) has been higher on the east side of San Joaquin County this year, continuing the trend we saw last year when the virus was more prevalent in tomatoes and peppers than it had been in the past. Thrips pressure has been very high this year, contributing to the spread of virus from plant to plant. Since I have written about TSWV in this newsletter just last season, I won't go into detail, but you can see symptoms and learn more at the UC IPM website (<http://ucipm.ucdavis.edu>) or at the CTRI website (<http://www.tomatonet.org/ctri.htm>).

TSWV is not always a straightforward disease to recognize, as the symptoms can vary considerably with the variety and the stage of growth at which the plant became infected. While the ring spot symptoms on tomato fruit and on pepper leaves are a reliable character, these will not always be present, especially if the fruit developed before the plant became infected. However, I do have a quick test kit which can be used to verify TSWV, so feel free to bring samples to me if there is any question about the symptoms. This year, two research groups from UC Davis have projects studying this disease, its thrips vector, and the potential sources of the virus. Also currently underway is research by Fresno county farm advisor Tom Turini looking at various insecticides for management of the thrips vector. The outcome of these projects should help us in developing strategies to manage this disease.

This season we have also been seeing a somewhat in-

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creased incidence of Verticillium wilt caused by the fungus *Verticillium dahliae*. This is likely due in part to the cooler temperatures we have been enjoying, which unfortunately favor this fungal pathogen. In addition, we are probably seeing the result of microsclerotia (soil survival structures) of the newer race 2 of the fungus building up in the soil over the years. The cultivars we grow carry the "Ve" gene which confers some protection from this newer race, but not complete resistance. This means that plants are generally not killed, but they can be stunted and may suffer a reduced yield. No commercially available cultivars have resistance to race 2.

Verticillium wilt symptoms on tomato leaves appear as yellow areas that progressively turn to brown and then die. These yellowing areas are often v-shaped (wider at the margin of the leaf) and older leaves are the most affected. If you cut into the stem, especially toward the base of the plant, you will see a tan discoloration of the vascular tissue. This discoloration may be more pronounced at nodes where the stem branches. Symptoms are most noticeable during later stages of plant development when fruit begin to size. Recommendations for management of currently infected plants include supporting plant growth with more frequent irrigations and perhaps a later irrigation cut-off. To avoid future problems, it is recommended to rotate out of susceptible crops whenever feasible; non-hosts include small grains and corn. Although beans do not suffer from Verticillium wilt, there is evidence that beans may contribute to maintaining the disease in the soil.

Finally, I want to mention that I will be on maternity leave during September and October of this year. However, if you call our main number (209) 468-2085, your question will be routed to someone who can help you in my absence. Best wishes for a successful season!

## **2007 National Association of County Agents and Advisors Grand Rapids, Michigan**

This is the first year I have attended this conference that had over 1200 people attending. It was one of the largest conferences I have been to. It was very different than many of the professional societies in that the focus was on areas such as administrative skills, agricultural economics, agronomy, animal sciences, early career development, natural resources, and horticultural. Many of the extension programs sponsor only 1 or more people in each county and they cover a broader range of subjects that we do in California in the Central Valley. Besides enjoying the professional improvement aspects of the conference, I have to admit one of the main reasons I wanted to go to Michigan was to visit and tour the famous

blueberry growing regions just south of the conference headquarters.

One of the unique benefits that Michigan growers have is the Michigan State University Trevor Nichols Research Complex in Fennville, Michigan. This complex began with a private donation from a pear grower and has become one of the leading factors in blueberry production in the area. They maintain a large planting of blueberry varieties that allows them to work on pollination, diseases, insects and other key aspects of production. The station does not receive much funding from the University so they rely on federal grants and support from the pesticide industry to keep their programs relevant. They offer a certificate in Blueberry Scout IPM Training that involves ten day-long sessions, both lecture and hands-on, over the course of a year. This is a very popular course with growers, private consultants and farm workers wishing to become scouts and knowledgeable about all aspects of blueberry issues.

The first thing that you notice as you drive through this part of Michigan is that they carve out the blueberry fields from pine forests. Their soils tend to be sandy and well drained but with water tables not too far below the surface. Since their soils are naturally acidic, it's not hard for the growers to maintain the pH of the soil in the high 4's or low 5's. Many growers do not have irrigation systems, as they usually get summer rainfall. But many are now installing either drip or sprinkler systems to increase yields. Four or five tons per acre seems to be an acceptable yield in this area. The sprinklers also assist with frost protection in the spring. Michigan growers firmly believe in the benefits of honey bee pollination for blueberries, with most growers I talked to trying to keep around four hives per acre when the plants are in bloom.

The biggest change recently, besides the introduction of irrigation, is a move away from soil applied fertilizers to repeated foliar applications of major and minor elements. The MSU extension service has encouraged growers to switch to foliar applications because they believe that the acidic/sandy soils prevent the plants from obtaining adequate nutrients from what used to be an annual application of a complete fertilizer. Of particular concern is the availability of phosphorus, calcium and magnesium. Their high water table also makes them concerned about leaching nutrients into the many waterways and lakes in the area used for recreation and drinking water. Most growers also reduce application of water and fertilizer in mid-summer in order to harden their plants off for what may be a cold winter. Lows of 0°F can occur in Michigan winters; the wood is more susceptible to damage if it is soft and succulent. In terms of pests, weeds and Japanese Beetles were the most obvious when I was there but I am sure that with the summer rainfall, foliar diseases are also a major concern.

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Since some growers still have highly productive "Jersey" variety blueberries that were put in the ground 50 years ago, I have to say this gives me a lot of confidence in the long term viability of the plants. Most of the growers will tell you that five years ago they were only getting 50 cents a pound for their crop so the acreage was dwindling. Now they are getting close to \$2.00 a pound. Everyone is planting the fruit and there is a sense that at some point soon the price is going to fall again. While I was there the growers were harvesting their main variety, "Bluecrop" and anticipating the Elliot harvest to begin in September. While "Elliot" is known as a "sour" blueberry, the Michigan growers say there is a good price window in September so "Elliot" is still popular. Some growers have been planting "Duke," hoping for an earlier harvest, but spring frosts can present a problem for them if they try to get fruit too early.

Most fruit is mechanically harvested, especially because of the recent low prices offered to growers. Now that the price has come up, some growers are doing more hand harvest, but since they face all the same problems that we do with labor availability, minimum wage, and competition from other industries for the best workers, it's still a small part of the picture. I was told that it costs .50 cents a pound to harvest by hand, and 10 cents to harvest by machine. Since the bulk of the fruit is sold to processors for frozen blueberries, growers usually save money by doing a well timed machine harvest. There is a lot of consolidation going on in the packing sheds due to the food safety issues surrounding blueberries. Most growers with less than 50 or 100 acres simply cannot afford to maintain the high level of accountability and cost of equipment required to meet the new food safety and bio-security guidelines.

Other than labor problems and potential price collapse due to overproduction, the other issue that concerns Michigan growers is urbanization. Their farms are in a beautiful, rural setting within range of two large population centers, Detroit and Chicago. This has them worried about the prices of land and increase of new neighbors that do not understand farming and the need for pesticides to maintain high quality fruit.

In conclusion, Michigan growers are elated over the great prices they are getting now, but most are not borrowing heavily and are streamlining their operations in anticipation of overproduction of blueberries in the near future and a sorting out of the inefficient producers due to a return of low prices. I highly recommend that California blueberry producers pay attention to the experiences of the Michigan producers in making decision about the future of our own blueberry industry here.

## Crop Digest / August 2007 Grapes & Almonds

### Grapes

Summer has been about average in most respects, with the one exception being relatively low soil moisture after a low rainfall winter and spring. Color showed up in red varieties and the white varieties began to soften around Independence Day. Progress started slow and speeded up more recently. Harvest looks to be headed for a relatively average start date around August 10<sup>th</sup>, plus or minus a few days depending on site and winery needs. Yields look to be about average, maybe even slightly below in some sites and varieties. Initially there was concern about a huge crop from a high cluster count in early spring, but Mother Nature has a way of balancing out most years. This appears to be partly from poor berry development (shot berry), smaller berry size, and smaller than anticipated clusters. Fruit set and clusters seem especially variable this year. Zinfandel appears most affected along with Chardonnay, Merlot and a few others.

For many varieties such as Pinot grigio, Petite Sirah, Zinfandel, Colombard, Riesling, Sauvignon blanc, and the newcomer Pinot noir; demand is good and prices may improve slightly. Demand for Merlot and Cabernet Sauvignon is still a concern. Spring conditions were excellent, soil moisture was well below normal and the cold, very dry winter probably can be blamed for a crop that will harvest lighter than first appearance. Of course there are always exceptions and some varieties or sites look pretty good.

The late spring was dry and mild compared to 2005 and 2006. Hot temperatures this summer are less severe and came on gradually. There were still some yellow basal leaves showing up as vine water demand increased, especially with Zinfandel under deficit irrigation or on shallow soils. It seems to be related to water stress, as portions of the root zone dried out with no deep moisture. It was curious to see new shoot tip growth in many cases at the same time. The same type of symptoms occurred in 2003 and 2004, when rainfall was somewhat below normal. A brief hot spell helped bring all that on, but so far we are much cooler this year than the mind numbing 11 days of last July's heat wave.

Summer bunch rot should be less of a problem as long as current conditions continue. Managing irrigation for quality and reasonable yield is a fine line between providing enough water to keep the vines from being excessively stressed and too much water that might cause tight

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clusters, large berries and thin berry skins. The bottom line is moderate vine stress and water inputs as vines and growers experience "hang time".

Harvest appears on a relatively normal schedule, but may speed up with a smaller crop. Powdery mildew pressure has been moderate and only a few problems seem to be of limited concern. Insect pests and spider mite pressure appears to be average or light, but there have been a few problems from mites popping up.

Vine mealybug is still spreading through the county, so it is good to be aware of any new infestations, often indicated by sooty mold or excessive honeydew in clusters, spurs or cordons. A high degree of ant activity in and around vines can also indicate problem spots. Good places to begin looking before harvest are where birds tend to roost. Glassy-winged sharpshooter (GWSS) has been limited in spread and damage and has been kept out of our county, but another invasive species has appeared in California. The Light Brown Apple Moth (LBAM), originally from Australia and a resident of Hawaii for many years is now in California. It is very similar to Omnivorous leafroller (OLR) in appearance, in the number of host crops, and definitely in damage. The Ag Commissioner staff is working hard to monitor this potential threat. It is in most Bay Area counties, but is not here locally. Although, it is probably easily controlled, it could trigger restrictions on fresh produce movement. That might include wine grapes for shipping, but any fresh produce in the county could be affected, even if LBAM is found in a vineyard going to crush. Learn more about it at <http://www.ipm.ucdavis.edu/EXOTIC/lightbrownapplemoth.html> and be aware.

The dry and cold winter did seem to provide one benefit, which was less weed problems, but there is still concern about herbicide resistant horseweed (or marestalk) and flaxleaf fleabane. Two weed pests that seem to be continuing to take advantage of interest in more biodiversity, are puncturevine and starthistle. Many more roadsides, untended areas, and headlands now contain solid stands of this weed. Puncturevine has a good natural control in two species of puncturevine weevil (*Microlarinus* spp.), one that attacks the seed and one the weed's stem. But population levels have plummeted over the past few years because of successful eradication of puncturevines. There are some organic sellers of the puncturevine weevils, but they may be sold out. At this point if you are interested in buying a batch of weevils for augmentation you may have to surf the web. The weevils are present in many areas in low numbers. If there is a patch of puncturevine that doesn't get traveled through, letting bio-control work may help. But if there is any possible traffic through an infested area, herbicide is needed to prevent further spread.

There are more habitat areas and native or natural landscapes, less use of residual herbicides and more tolerance for weeds; it is more important than ever to monitor and to control some of the more noxious and troublesome weeds before they seed. Starthistle is also a growing problem along roadsides and requires attention or it will dominate mowed areas, row middles and habitats.

### Almonds

Hull split is progressing normally for Nonpareil and harvest is fast approaching. Prices are expected to be fair to good; demand seems to be ahead of supply to help strengthen the market.

Bloom started in late February and early varieties did get rained on. Bees were in somewhat limited supply, but the rain was brief enough and the rest of bloom weather was good. In spite of a less than perfect start, the Nonpareil crop looks pretty good, as the bees took advantage of breaks in the last winter rains. Later blooming Mission types had very good weather and the crop looks very good. With decent weather and increased acreage statewide, growers will provide another harvest of one billion pounds - the third in four years.

In spite of dry soil conditions, mite problems have been normal. Fortunately there are several miticides now available that provide a choice in various modes of action; a long awaited situation to help manage resistance and at the same time reduce overall chemical use. At the same time, temperatures have been more moderate this year and so water demand by trees has not been a problem. The deep soil moisture is minimal, so caution is required as harvest progresses.

Increased prices for pollination bees and higher pumping costs have made inputs for the 2007 harvest even more expensive. Remember that if you are using wells as an irrigation source, it may help to run a well water analysis for nitrate nitrogen to see if you can cut back on nitrogen fertilizer. That may help increase nitrogen efficiency, reduce environmental impacts, and provide a few dollars for other cost increases.

As mentioned last year, some weed pests are making a comeback such as puncturevine and horseweed or marestalk, along with flaxleaf fleabane. We have new materials to select from, but the best way to slow down resistance is to identify your pest (weed), use the appropriate herbicides, and rotate materials from year to year if possible; before noxious or problem weeds can set seed. Lower Limb Dieback on some varieties such as Padre is still around, but a little less obvious this year. The problem still seems to be associated with a species of *Phomopsis* and/or *Botryosphaeria*, but a clear understanding

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and control strategies are still elusive. In general, crop maturity seems to be catching up with long term averages. So it appears harvest may be about "on time" and little ahead of last year.

As of July 11th (twelve days earlier than 2006 and two days ahead of 2005) the Nonpareil at the San Joaquin Delta College Regional Variety trial was at 1% hull split. Whether normal or slightly delayed, it is important to monitor for ant problems and pick up quickly after harvest. The last few years have seen increasing ant problems, but some alternative bait materials are available that can help in choosing a good course of action. Be aware of a new invasive species, the Light Brown Apple Moth (LBAM). It is not a problem for almonds, but it has a very large host range of plants and if it is found in the county all fresh produce may be liable to restricted export. For information check out: <http://www.ipm.ucdavis.edu/EXOTIC/lightbrownapplemoth.html>

Good luck with harvest.

Paul Verdegaal, Farm Advisor

## Water Quality Update Survey of Irrigated Pastures and Meadows

Water is the lifeblood of irrigated pastures and meadows that provide critical green forage during the summer months. While the water applied is what provides the basis for pasture production, it is the water that runs off irrigated lands that is the focus of State and Regional Water Quality Boards and their staff.

UC researchers have collected water samples from many cooperating ranches with irrigated pasture and mountain meadow systems from Modoc to Stanislaus Counties. Sampling was conducted above and below these pasture systems throughout the irrigation season and replicated for statistical analysis. Sizes of the pastures sampled varied from 35 acres to over 600. A number of water quality constituents including sediment, nutrients, and *E.coli* bacteria were recorded.

Sediment, typically associated with soil erosion, is considered non-point source pollution when excessive fine

sediments are suspended or dissolved in water. Sediment in streams is usually measured as Total Suspended Solids, Turbidity, and Dissolved Organic Carbon. Highly turbid water can be damaging to aquatic habitat and site feeding fish, such as trout. High loads of sediment are sometimes linked to nutrients, bacteria, and aesthetics. Among the pastures surveyed there was little to no increase in sediments in samples taken upstream or downstream of the pastures.

Nutrients in water such as nitrogen (N) and phosphorous (P) can be derived from applied fertilizer, manure from livestock, sediment, or natural nutrient cycling associated with grassland communities. Excess N and P are related to algal blooms, which can be toxic to fish and other aquatic species as well as causing unsightly green water.

Nutrient data collected in this study indicated very low levels; often below the detection limits of the lab. Valley systems that receive ditch water from other users tended to be sinks for nutrients. N and P were used for forage production. This data indicated that, at least in the pastures sampled, very few pastures showed a problem with nutrient levels.

Bacterial contamination is often measured by counting coliform bacteria (Total Coliforms) of which *E.coli* is a specific coliform and comprises a small part of the larger Total Coliforms. Water quality standards are set for Total Coliforms. Only a small portion of the *E.coli* family (the pathogenic ones such as O157:H7) are pathogenic to humans and can make people sick. These standards vary based upon the intended use of the water (drinking, contact recreation, etc.). Coliforms are shed by all warm blooded mammals and may multiply by growth in feces as well as decaying plant material. Environmental factors, such as heat and drying, will also kill coliforms.

The *E.coli* story for pastures and meadows is more complicated than sediments and nutrients. Some pasture systems did show more *E.coli* downstream of the pasture/meadow than above it. In contrast, several pasture systems seem to function as filters, removing *E.coli* that was present in the water upstream of the ranch. Out of ten pasture systems surveyed in northeastern California, three showed a marked reduction in *E.coli* downstream of the pasture, four showed little change, while three had higher *E.coli* levels downstream.

The amount of runoff and how much fresh manure is on the pasture during irrigation may be key factors. Fresh manure is a source of *E.coli*. Irrigation water running across fresh manure has enough energy to carry even tiny particles off the field and into a stream or ditch. The opportunity for downstream *E.coli* contribution exists.

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Where little tail water escape occurs or where it percolates, the opportunity to move *E.coli* is much lower. Similarly, after the manure on the pasture is more than a few days old, much of the *E.coli* has perished, so viable *E.coli* would not be transported by runoff. Scheduling irrigation three or four days after cows have left the field may be a simple solution to reduce *E.coli* pollution, in some cases.

Warm productive environments of the foothills and valley may be more conducive to high counts of *E.coli*. Streams surveyed in valley regions had much higher *E.coli* in the tail water than in mountain regions. However, we are still reviewing the data from these sites compared to meadow systems. While concentrations were higher in the valley systems, typically there was less flow since runoff was being collected directly at the bottom of the field, while meadow systems runoff was being collected down stream of the meadow. This is important to consider since the amount of runoff may be small from the meadow, but entering a bigger water body may be giving a dilution effect. Another big difference between the valley and meadow systems is where the runoff ends up. Many ranches recover their tailwater and runoff does not leave the property.

The *E.coli* water quality constituent should be carefully considered. The standards used by Regional Water Quality Boards for *E.coli* or fecal coliform vary, and in many cases are easily exceeded. Sources of coliforms are ubiquitous. When cattle are a source of coliforms, there appears to be relatively straight-forward management alternatives for those who do need to reduce downstream pollution. These include:

Allowing the pasture to rest for a few days provides a kill step, reducing the amount of viable *E.coli* available for runoff.

Reducing the amount of runoff water or recycling the runoff on your property.

The use of vegetative buffers as filters can also greatly reduce the amount of *E.coli*, as well as other constituents, in the runoff.

From a research perspective, there are several questions that need to be answered. Some of the questions that are the basis for continuing UC research include:

- ✦ What is the practical effectiveness of certain practices such as buffer strips, or timing of irrigation to reduce the risk of bacteria being transported by irrigation water?
- ✦ Can we measure the impact of water quality management practices at the ranch scale? Will those activities make a measurable difference in the quality of water leaving the ranch?

- ✦ Do the indicator bacteria actually represent pathogenic bacteria in the water and therefore are the water quality standards meaningful from a public health perspective?
- ✦ What is the rate of pathogenic *E.coli* shedding on typical cow-calf operations?
- ✦ Can we distinguish *E.coli* from different animal sources via DNA tracking or other means?

We hope to conduct research to help answer these and other questions so we can continue to make productive use of irrigated meadows and pastures.

Theresa Becchetti, David Lile, Holly George, Don Lancaster, Josh Davy, Allan Fulton, Larry Forero, Morgan Doran, Hattie Brown, Rob Atwill, and Ken Tate

## Range Camp Update

The California-Pacific Section of Society for Range Management holds an annual Range and Natural Resources Camp every year for high school students. This year we had three students and one teacher from San Joaquin County attend. The San Joaquin RCD, San Joaquin-Stanislaus Cattlemen's Association, and the Center for Land Based Learning all sponsored the students. San Joaquin California Women for Ag and the Cal-Pac Board of Directors sponsored the teacher.

All three of the kids did not have background in range or ranching, but are from the city. The week gave them an opportunity to learn about ranching and natural resources, as well as possible job opportunities after college, and of course, to meet new friends. MySpace addresses were exchanged at the end of Camp! Arriving at the end of Camp, I had the pleasure of administering their tests - yes they are expected to learn something! Top campers are awarded a trip to the International SRM meeting this year in Louisville, Kentucky. But what I always look forward to is the "Town Council," where the kids put together everything they learned during the week in a proposal for how they would manage the ranch. The groups are always entertaining, and this year did not disappoint!

If you know of a high school student who may like to attend next year's Camp, please let me know! I can promise that it will be a worthwhile week.

Theresa Becchetti, Livestock Advisor

## Field Bindweed Control and Water Quality

Field bindweed (*Convolvulus arvensis*) is a serious noxious weed pest of California agriculture and is referred to as field or wild morning glory, creeping jenny and green-vine. It is a perennial plant with deep roots extending down to three feet which can grow for months without irrigation. It reproduces by seed or rhizomes. Heavy infestations in wheat can reduce yields by 30 to 40%. It is equally a problem in tomatoes, beans, alfalfa, and in almost all row crops with practically no herbicides that are effective to control it post-emergence. Bindweed is also a problem in young orchard plantings that are in full sunlight where it grows vigorously. Field bindweed can harbor potato virus X and tomato spotted wilt virus.

Bindweed is becoming a bigger problem throughout the county, spreading across old and new fields every year. Recommended control measures include summer fallow with cultivations or herbicide applications, and crop rotations that use selective post-emergence herbicides (2,4D in wheat, corn and Roundup Ready varieties). The use of glyphosate herbicide in the spring prior to planting or fall following harvest and before the first frost occurs offers a temporary reprieve.

Ineffective bindweed control using glyphosate has led to speculation that issues related to water hardness, pH, or the many different glyphosate brands and formulations on the market may be part of the problem. Poor water quality such as high pH and water hardness (calcium carbonate content) are known to bind the glyphosate molecule and reduce control. Throughout San Joaquin County, water quality varies, especially in areas of east and south county where total water hardness can be very high, exceeding 500 ppm from calcium carbonate.

In an effort to better understand glyphosate performance and water quality, we conducted a bindweed study this spring south of Tracy using different brands and rates of glyphosate, two surfactants, and two amounts of ammonium sulfate which are recommended by label. Limited in the space we had available, we selected only two brands of glyphosate commonly used, Roundup WeatherMAX 5.5SC and Buccaneer 4SC applied at different rates (Table 1). The water source was an agricultural well that typically has very hard water exceeding 450 ppm of calcium carbonate. Cations (Ca, Mg, Fe, Mn) react with glyphosate to form an insoluble salt which does not kill weeds. Studies have shown a 50% reduction in weed control with glyphosate using water hardness at 500 ppm.

Ideally, the spray solution pH when using glyphosate should be in the 4.0 - 5.0 range and water hardness as close to 0 as possible or at least below 100 ppm. Water hardness and pH testing was conducted in our lab to measure changes that occur when adding herbicide, surfactant or ammonium sulfate in the water (Table 2).

The herbicide treatments were applied on June 14 to a thick roadside population of bindweed at varying growth stages ranging from 30% without flowers, 50% flowering and 20% setting seed. Plants were healthy and growing vigorously.

### Summary

Both brands of glyphosate were effective in lowering the pH and water hardness of the spray solution to the recommended range when the rate of 2.0 lbs/A or higher was used. The addition of acidifiers, surfactants, and ammonium sulfate did help reduce the pH and hardness but not as much as did the herbicide. The acidifier lowered the pH more than it lowered water hardness. The ammonium sulfate however, lowered the water hardness more than lowering the pH.

Bindweed control averaged more than 90% for all treatments after six weeks. There were differences on how fast the burn down occurred depending on the rate but no differences from the surfactants and ammonium sulfate. The 4.0 lb rate has continued to be the best treatment to date and reached 90% control within two weeks which was twice as fast as the 2.0 lb rate.

The take home message is to know your water quality by testing after adding herbicides/surfactants to see if there is any improvement made. This will help you make the correct decision for your agricultural sprays in the future. Water quality also affects the efficacy of many insecticides. Water quality test kits are inexpensive for pH and hardness. The kits can be purchased at most stores carrying spa and swimming pool supplies or on line. Since this bindweed test is under a non-irrigated condition, plants are not re-growing as they would in an irrigated field but we will continue to observe these plots and monitor long term results.

Unfortunately, we have not discovered any new silver bullets to easily control field bindweed problems. In the long term, eradication will still require continuous treatments of herbicides or cultivations as plants re-grow until the carbohydrate reserves in roots are depleted and unable to propagate any new shoots or roots.

Mick Canevari, Farm Advisor

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Table 1. Control of field bindweed by glyphosate with various surfactants and acidifiers.

Herbicide Treatments	Rate, lb ai/a	% Control at	
		13 days	42 days
Buccaneer glyphosate No Foam A	2.0 lb 0.25 % vv	50	92ab
Buccaneer glyphosate Ammonium sulfate No Foam A	2.0 lb 2.0 % 0.25 %	45	93ab
Buccaneer glyphosate Ammonium Sulfate No Foam A	2.0 lb 4.0 % 0.25 %	60	97a
Buccaneer glyphosate BB5 Natural No Foam A	2.0 lb 0.21% 0.25 %	40	91ab
Roundup WeatherMAX glyphosate	2.0 lb	60	94ab
Roundup WeatherMAX glyphosate	3.0 lb	70	93ab
Roundup WeatherMAX glyphosate	4.0 lb	90	92ab
Roundup WeatherMAX glyphosate Ammonium sulfate	2.0 lb 2.0 %	45	85b
Untreated		12	40c

% Ammonium sulfate per 100 gallons water  
 No Foam A = Non Ionic Surfactant  
 BB5 Natural = acidifier/Buffer

Table 2. Changes in water hardness and pH with addition of glyphosate, ammonium sulfate, and other additives.

	pH	Hardness ppm
Grower Water	7.7	>450
Grower Water + Buccaneer (2 lb/A) + No Foam A	3 - 4	0
Grower Water + Ammonium Sulfate (2%) 15 lbs/100gal H2O	7	120
Grower Water + Ammonium Sulfate (2%) + Buccaneer (2 lb/A) + No Foam A	3 - 4	0
Grower Water + Ammonium Sulfate (4%) 30 lbs/100 gal H2O	6.0	100
Grower Water + Ammonium Sulfate (4%) + Buccaneer (2 lb/A) + No Foam A	3 - 4	0
Grower Water + BB5 (.21%)	4	180
Grower Water + BB5 (.21%) + Buccaneer (2 lb/A) + No Foam A	3	0
Grower Water + Roundup Weathermax (2 lb/A)	5	0
Grower Water + Roundup Weathermax (2 lb/A) + Ammonium Sulfate (2%)	4.8	0

Test strips for pH and total hardness manufactured by Industrial Test Systems, Inc.

## Interpersonal Negotiation Skills Seminar

The very thought of negotiating sounds intimidating, yet we are all experienced negotiators. Any time we come to an agreement on anything, we do so through negotiation. Some of this happens somewhat subconsciously, while other situations are difficult enough that much planning and effort are required. Nowhere is this truer than in interpersonal negotiation, especially if tensions are running high.

A free hour and a half seminar is now available for you to listen to in your pickup or at home, or share with your employees, as you see fit. The audio seminar is aimed at helping individuals improve their negotiation skills with a business partner, employees, and at home.

After downloading the audio seminar, it needs to be uncompressed (or unzipped), and it can either be listened to in the computer, MP3 player, or burnt into regular CDs (it will take two CDs, and choose the MUSIC option, rather than the data option when prompted). The only way to obtain these files is to download them directly from the Web. This is a public service of the University of California.

To download, click on the link within the yellow row, entitled, NEGOTIATION SKILLS AUDIO. <http://www.cnr.berkeley.edu/ucce50/ag-labor/7labor/13.htm>

Gregorio Encina Billikopf

## The Accommodating Syndrome

There are a number of competing influences that help mold our behavior. Forces that often clash are a desire to do our duty and the need to be liked and fit in. Youth often grow up in subcultures where succeeding is simply not fashionable. They quickly learn that achievement often brings envy and disdain. Stories abound of young people who have buried their talents so as not to appear too successful, talented, or intelligent in the eyes of their friends.

Sooner or later these individuals enter the workforce, where things are not much different. Individuals who are perceived as working too hard are often targeted for punishment by co-workers. When employees become supervisors, foremen, or crew leaders these challenges are

compounded. As supervisors, such individuals seek the approval of subordinates rather than their own supervisor. Even though the boss might clearly explain why a task needs to be done a certain way, when it comes time to explain it to the workers, this supervisor is more likely to just blame the change on management. I like to call such behaviors the *accommodating syndrome*. These supervisors want to be seen as one of the gang; to be liked by the subordinates. When a person decides to favor subordinates without regard to the situation, sooner rather than later she will hurt the enterprise. Such is the case, for instance, when she looks the other way at poor quality work or when his lack of loyalty is an example for all to follow.

Supervisors who yield to the pressures of the accommodating syndrome may be surprised to find out that in the long run they end up losing the respect of both the boss as well as the employees they manage.

Not for a moment am I suggesting that supervisors should only be concerned with the needs of the enterprise without regard to the employees. Such individuals are often autocratic and self-serving, prone to abuse of power and authority. They are willing to climb the organizational ladder at the expense of those they step over. Sometimes they work very fast to impress those in management, but then cannot sustain the pace they have set for themselves. Their loyalty is to themselves. It is not surprising that supervisors who only look at their own needs, or those of management, are greatly detested by employees.

Instead, what is needed is a supervisor who carefully seeks to understand the needs of both management and workers. It is clear to such individuals that effective policies must benefit both the enterprise and the employees if they are to be sustainable. This supervisor is loyal to both the worker and the organization. He is kind but firm—and above all, fair, honest, and full of integrity. Such a person is not afraid to take chances and help management or employees understand the valid concerns the other may have.

This foreman or crew leader does not take pleasure in the authority she has. Sometimes she will have to take flack from employees. With time subordinates will often come around and not only recognize that she acted fairly, but even defend her even when she is not around. Certainly, it takes time and effort to become such a supervisor. The good news is that at least some supervisors are able to leave behind the ugliness of the accommodating syndrome. If you have found such an individual among those who work for you, it is worth going out of the way to retain him.

Gregory Encina Billikopf

## Interstems not Effective in Improving Orchard Performance of Colt Rootstocks for Cherries

Despite considerable research, the causal agent of cherry stem pitting disease remains unknown. Of the rootstocks commonly used for cherries, Mazzard and Mahaleb are highly susceptible to cherry stem pitting, but Colt shows “field resistance” to the disease. We do not know the susceptibility of newer rootstocks in the Gisela Series to cherry stem pitting disease. In orchards where cherry stem pitting is present, planting (or re-planting) on Colt rootstock is the only available option for mitigating the risk of this disease.

As a cherry rootstock, Colt suffers from the disadvantage that it tends to produce very vigorous trees that are slow to come into production. This tendency is especially pronounced in orchards planted on fine textured soils (clays and clay loams), where Colt is often preferred as a rootstock because of its relative resistance to Phytophthora root and crown rot disease. On sandier soils, Colt is less vigorous, partly because it is somewhat sensitive to water stress. Even under these conditions, its vigor and productivity are still variable, at least compared to Mahaleb, the rootstock of choice in medium and light textured soils where risk of Phytophthora is low.

Interstems – in which a short length of a third compatible cherry species or variety is budded or grafted between the rootstock and the scion variety – have long been used by horticulturists to modify the growth characteristics of trees, and in some instances, overcome graft incompatibility between certain tree crop rootstocks and scion varieties. In 1999, we planted a trial in a Stockton area orchard to evaluate whether selected cherry interstems could be used to reduce the vigor and increase the productivity of Bing cherry trees on Colt rootstock. This would make Colt a more acceptable option in sites where its use was necessitated by the presence of cherry stem pitting or preferred because of Phytophthora.

Bing cherry trees on seven rootstock/interstem combinations were produced by a commercial nursery in 1997-98 and planted in the orchard in February 1999. The test planting was part of a larger commercial cherry orchard located northeast of Stockton. For statistical validity, trees were arranged in three-tree plots, replicated four times. Soil at the site is clay loam. The orchard was planted 13' by 18' and was sprinkler-irrigated.

Tree performance was evaluated by annual measurements of tree trunk circumference and fruit production. Trunk circumference is proportional to tree size and is an accepted way of comparing tree size differences.

In 1999 through 2007, trees on Colt rootstock and all interstem/Colt combinations were larger than trees on *P. mahaleb* (no interstem) and there were some small differences among Colt trees and Colt/interstem trees.

By 2006, many trees on Colt (Bing on Colt as well as interstem trees) had visible crown gall infections on crowns and/or large roots. These likely had some impact on tree growth in 2006 and prior, but this effect was assumed to be random and therefore equivalent among trial trees on Colt.

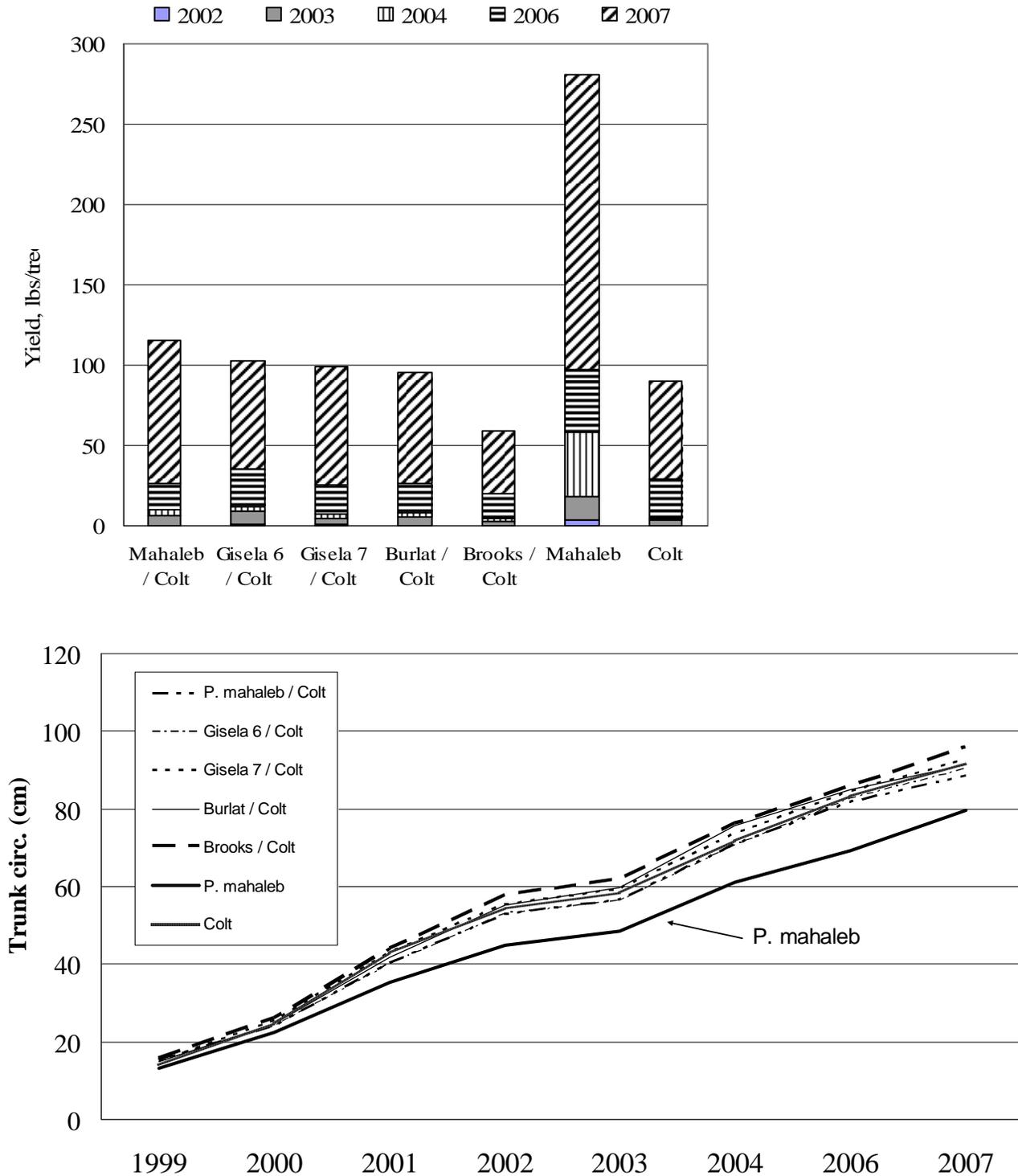
Most trees produced a few fruit in 2002 (fourth leaf) (Figure 1). Though yields were not great enough to warrant commercial harvest at the test site, trees on *P. mahaleb* (no interstem) significantly out-yielded trees on Colt and all interstem/Colt combinations. Cherry production by trees on *P. mahaleb* was much greater than trees on Colt and Colt/interstem combinations in 2002-2004 and 2006. Yields were not measured in 2005 due to extensive rain cracking. By harvest of 2007, all but six of the trees on *P. mahaleb* had declined in health and vigor to a point where growth and yield were not considered representative of healthy trees on this rootstock. These symptoms were not observed in prior years. The cause of this decline was not determined, but considered likely due to Phytophthora root and crown rot disease. Because of this, trunk circumference and yield data were recorded from the six remaining healthy trees (in two of the five original three-tree plots), and statistical comparisons of *P. mahaleb* to the other rootstock/interstem combinations could not be performed. As in previous years, however, yields from *P. mahaleb*-rooted were numerically much greater than Colt and all Colt/interstem combinations.

Under the soil and management conditions of this trial, these results show that there was no benefit from use of the interstems to moderate the vigor and improve the productivity of Colt. Cherry growers using Colt to reduce risk of tree decline and death from cherry stem pitting must accept the excessive vigor and lower/variable orchard productivity of Colt, or use other horticultural approaches (such as controlled deficit irrigation and summer pruning) to improve its orchard performance.

I am grateful to the California Cherry Advisory Board for helping to support this trial through its research grant program, and to grower Jeff Colombini and Lodi Farming, Inc. for their cooperation in hosting it.

Joe Grant, Pomology Farm Advisor

Figure 1. Productivity and tree size of Bing cherries on Mahaleb Colt and various Colt/interstem combinations 1999-2007.





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August 2007

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