COOPERATIVE EXTENSION **UNIVERSITY OF CALIFORNIA**

TREE AND VINE NOTES

DECEMBER 2001

7th Annual North San Joaquin Valley Cling Peach Day
14 December 2001
Stanislaus County Agriculture Center

7:45-8:30 Registration and coffee provided by **Yosemite Farm Credit**
8:30 Program:

Fruit bruising studies – Dr. Carlos Crisosto

Update on Stanislaus & Merced County research trials
- Preplant and post-plant treatments in a replanted orchard
- Rootstock trial
- Guess the cause of the mystery spot & win a free donut!
- Blossom spray thinning

Roger Duncan & Maxwell Norton

Mechanical harvest evaluation – Scott McRitchie

Break – refreshments provided by **Yosemite Farm Credit**

Industry meeting – Cling Peach Advisory Board & CA Canning Peach Association

Harvest date prediction model – Dr. Ted deJong and Donna Seaver

12:15 Lunch hosted by the **Cling Peach Advisory Board**
One hour of continuing education credit applied for.

Anthrax By Brent Holtz, UCCE Madera County

Anthrax is an acute infectious disease caused by the spore-forming bacterium *Bacillus anthracis*. Anthrax most commonly occurs in hoofed mammals and can also infect humans. Symptoms of disease vary depending on how the disease was contracted, but usually occur within 7 days after exposure. The serious forms of human anthrax are inhalation anthrax, cutaneous anthrax, and intestinal anthrax.

Initial symptoms of inhalation anthrax infection may resemble a common cold. After several days, the symptoms may progress to severe breathing problems and shock. Inhalation anthrax is often fatal. The intestinal disease form of anthrax may follow the consumption of contaminated food and is characterized by an acute inflammation of the intestinal tract. Initial signs of nausea, loss of appetite, vomiting, and fever are followed by abdominal pain, vomiting of blood, and severe diarrhea.

Direct person-to-person spread of anthrax is extremely unlikely, if it occurs at all. Therefore, there is no need to immunize or treat contacts of persons ill with anthrax, such as household contacts, friends, or coworkers, unless they also were exposed to the same source of infection. In persons exposed to anthrax, infection can be prevented with antibiotic treatment.

Early antibiotic treatment of anthrax is essential–delay lessens chances for survival. Anthrax usually is susceptible to penicillin, doxycycline, and fluoroquinolones. An anthrax vaccine also can prevent infection. Vaccination against anthrax is not recommended for the general public at this moment but perhaps could become a possibility. More information can be found on Anthrax at the Center of Disease Control website, www.cdc.gov.

Navel Orangeworm in Pistachios and Almonds By Brent Holtz, UCCE Madera County

Many of my pistachio growers reported increased levels of NOW last season. With such increases in NOW being reported, perhaps we should review the best strategies for its control. Orchard sanitation is a major part of a successful almond pest management program. Implementing this cultural practice will significantly reduce orchard navel orangeworm (NOW) populations, in turn reducing our reliance on insecticides at hull split and disruption of biological control.

The goal of orchard sanitation is to reduce the overwintering of NOW in the orchard by reducing their source of food. In fact, studies have shown good orchard sanitation to be quite successful with reductions in NOW populations ranging from 50 to 80 percent. If sanitation is not accomplished what is the impact on NOW population? NOW overwinters and spends its first generation in spring in mummy nuts. Therefore, from November to June, mummy nuts provide the food source for the developing worms. Studies have shown that one mummy can provide enough food for twelve worms. In Kern County it is common to find orchards with 400 to 1,000 mummies per tree. If we assume an 18 percent infestation with two worms per nut, we would have between 10,800 to 27,000 worms per acre. If this population is not managed though sanitation, the new crop will face egg laying females in the thousands to millions.

Sanitation should begin with mummy removal by February and mummy destruction by mid March. Shaking and poling must be complete prior to bud swell. This is important to reduce the loss of buds, a problem more evident in Merced and Thompson varieties as the fruits and buds are closer together. Varieties with a more open suture harbor the greatest populations of NOW, therefore these varieties should be tackled first to ensure one has ample time and weather to achieve good sanitation.

Shell hardness, seal, time and duration of hull-split all influence susceptibility placing Merced, Thompson, Nonpareil, Fritz, Ruby, Butte, Price, Mission, and Carmel from most to least susceptible. This does not mean other varieties should not be sanitized. In fact, all varieties should be sanitized because NOW can over winter using the hull as a food source as well. Although time before the deadline is reached there are some biological reasons to accomplish sanitation earlier outside of the meteorological aspects we have touched on.

A top notch program would begin with early shaking and hand poling to maximize the help of birds and *Goniozus* for the remainder of the winter and early spring. Remember the most effective sanitation is achieved one or two days after a rain or foggy morning which soften the fiber and increases the weight of the nuts. The berms should then be blown placing all nuts in the centers. Discing or flail mowing the centers should finish the job. I have observed some orchards where ruts have developed in the centers resulting in an uneven surface. Time should be invested to correct this problem, thus maximizing mummy destruction via mowing. Quality control is the next; all orchards should be walked counting the total number of mummies per tree. The total number of mummies per tree can be accurately quantified by counting mummies on 20 trees per every 10 acres. This may sound time consuming however, it is time well spent. Our goal is two mummies per tree.

Winter sanitation is most effective when carried out on an area-wide basis. This is to say that the maximum benefits of winter sanitation will be realized when both you and your neighbors clean your orchards.

Bud Failure Plagues Carmel and Nonpareil by Brent Holtz, UCCE Madera County

Non-infectious Bud Failure or crazy top is dramatically worse this year in many Carmel orchards in Madera County. Bud Failure is more common in the Carmel variety, but Nonpareil, Merced, Price, Thompson, Mission, and Harvey also have well documented cases of bud failure. (In a previous newspaper article I reported that Monterey and Butte can also be affected--but bud failure has not been documented in Monterey and Butte, sorry for the scare!) Crazy top is a genetic disorder which appears when portions of the affected tree bloom but do not leaf out. The first obvious manifestations of Bud Failure appears in spring when vegetative buds on vigorous shoots of the previous year's growth fail to emerge. Often the buds on the basal part of a shoot are unaffected whereas buds on shoots produced as later flushes of growth are severely affected. These patterns of bud failure develop because the growing points in lateral vegetative buds died the previous summer and fall. Flower buds are usually unaffected and develop normally even when on the same node with a severely necrotic bud. In some years flowers on Bud Failure-affected branches may set profusely and produce nuts even though few leafy shoots are present. In other years the number of flower buds can be severely reduced, indicating that Bud Failure reduces flower initiation and fruiting wood. In Bud Failure affected trees the time of bloom is often delayed.

Researchers at UC Davis who have studied Bud Failure have shown that symptom development is different in California depending on the location of the orchards. Bud Failure was found to develop more frequently and severely in locations with higher average summer temperatures, with the rate of Bud Failure directly proportional to average temperatures above 80 degrees. If the average critical temperatures were above 90 degrees trees had a much greater chance of developing Bud Failure.

What do growers do once Bud Failure symptoms appear? Pruning can do little to permanently eradicate Bud Failure. Symptoms and yields will fluctuate yearly depending on temperature patterns during the previous summer as well as on the amount of new growth. Because yield depends on vigor, growth reduction is not a viable control option. By avoiding moisture stress, particularly in midsummer, the grower may keep symptoms from worsening. In general, no program of management to date has consistently controlled Bud Failure symptoms once they have developed.

After symptoms appear a grower may consider several options. If young trees between the ages of two and four years old are already showing Bud Failure I would recommend removing them. The decision to replace a tree involves evaluation of the potential yield loss, the time required to bring replacement into production, and the projected life of the orchard. Replacement is expensive and effective only if the new trees planted do not also get bud failure. The earlier that symptoms appear in an orchard or tree the more severe Bud Failure will ultimately be, with a greater potential for yield loss. Usually nurseries will replace trees without cost if symptoms show in the first 4 years (may vary depending on nursery). Tree replacement is most effective when the orchard is one to three years of age. At this age tree replants usually have no problems establishing.

If symptoms first appear in a tree when it is five to six years old, and if they appear mostly in the upper parts of the canopy and not in the main framework of the tree, yield may not be seriously reduced. As the age of a tree in which symptoms appear increases the need to replace it decreases and the cost of replacing an older tree may not be recoverable with the remaining life of the orchard. Thus with older trees, I would not bother to replace them for cost of tree replacement and loss of yield during replacement will not be offset by improved yield. If a grower wants to replace bud failure affected trees with other varieties, Sonora and Monterey are choices recommended by Mario Viveros (Kern County Farm Advisor) because they are good producers which bloom with Nonpareil, and Sonora will harvest with Nonpareil and Monterey will harvest with Carmel.

Long term control of Bud Failure in the almond industry will mean selecting propagation bud wood from sources with a low potential of showing Bud Failure. Researchers feel confident that they will some day develop trees lines which will be free of this genetic disorder. At the moment the best tree line that we have for Carmel is "FPMS #1."

Winter Kill on Walnuts Wilbur Reil, UCCE Solano/Yolo Counties

It is still fall so why should I discuss winter kill in walnuts? Waiting until winter to do something is too late. About the only thing to do then is watch the limbs die unless you want to rush out and paint all the limbs and even this doesn't always help. The time to take action to prevent winter kill is now during the late summer and fall.

Damage can occur on both young and old trees although young trees although young trees are generally the most susceptible. Winter kill damages young trees that are growing very vigorously late in the fall. It also occurs on trees that are too dry. Generally it does not occur on trees that are hardened off and then watered properly in late fall. On mature trees the orchard is hardened off at harvest. Young trees should also be hardened off in mid to late September. Usually withholding irrigation water until all terminal growth ceases and no more reddish leaves are emerging is sufficient although full coverage irrigation systems may require a slightly longer, drying period. Water should not be withheld until older leaves turn yellow and drop. After hardening the tree off, resume a normal irrigation program. If the weather is dry like it usually is in the fall this may require more than one irrigation so that the tree has sufficient moisture and is not stressed.

Prevention of winter kill is therefore a two phase management program. Harden the tree off by stopping new terminal growth in late September then provide adequate moisture before the first freezing weather of the winter. Winter kill is usually most severe when warm weather extends into late fall with no freezing weather followed by a sudden cold spell of freezing weather. The freezing weather does not have to be very cold. I have seen damage at about 28F on very dry trees. The onset of cold weather needs to be sudden. Once the trees have experienced a few freezing nights they are quite capable of withstanding temperatures in the teens without damage. Winter kill occurs during the early or first freeze of the fall and usually on stressed trees or extremely young succulent growing trees. Protecting walnut trees at this time will prevent or greatly minimize winter injury.

SJV VITICULTURE TECHNICAL GROUP Wed 23 January
The next meeting of the SJV Viticulture Technical Group will be Wednesday 23 January 2002 from 10:00 to Noon at the CSU Fresno Viticulture Research Center in Fresno. There will be two discussion topics: The roles of vine water status and berry size in the phenolic composition of Cabernet Sauvignon grapes and wines by Gaspar Roby from UC Davis. The second topic will be the role of mechanical and minimal pruning systems in reducing Eutypa dieback disease and bunch rot by Dr. Sanliang Gu, CSUF and Maxwell Norton, UCCE. A no-host lunch and discussion will follow. To reserve a spot call Rob Roy at rroy@wecon.com or 559/442-4912. Parking will be available across the street from the VERC on the south side of Barstow Avenue in lots R & N.

San Joaquin Valley Grape Symposium **Wednesday, January 9, 2002**
C.P.D.E.S. Hall W. Jefferson Avenue - Easton, California

7:30 a.m. - 8:30 am. Registration - Coffee, juice, and donuts available
Delayed Spring Growth in Grapevines
New Herbicides for Vineyard Weed Management
Overview of Pierce's Disease and Glassy-Winged Sharpshooter: What We Have Learned in Kern County
Root Autonomy During Localized Irrigation Events
The Affects of Grapevine Viruses on Growth and Production
Update on DOV Production Using a Traditional Trellis
LUNCH - Catered by Dino Petrucci of Madera

To register send a check payable to UC Regents for $8 for the meeting & proceedings only or $20 for the meeting, proceedings and lunch to Stephen Vasquez, UC Cooperative Extension, 1720 South Maple, Fresno CA 93702
For more information call 559/456-7285

WINEGRAPE PRODUCTION SHORT COURSE 12-14 February 2002
This course which is held at UC Davis always sells out so enroll early.
Topics cover: rootstocks, varieties, training, pruning, trellising, canopy management, irrigation, nutrition, grafting, mechanization, cover crops, frost protection, diseases and pests. To enroll or to get complete information 800/752-0881 or go to: www.universityextension.ucdavis.edu

Guide May Help Develop Share Lease Arrangement

Steve Sutter, UC Area Farm Advisor

An intricate decision in developing a share lease arrangement is division of income and expenses between tenant and landlord. It's crucial both parties understand both their own contribution and income share -- and their partner's.

With complete understanding between parties, a lease that's "fair" to both landlord and tenant can be formed. As used here, fair means each party's income share is proportional to his/her respective resource contributions to the farm operation.

To start in developing a fair share lease arrangement, calculate the value of contributions being made by each party. Calculations for an example wine grape operation is shown in Figure 1.

Once the value of resource contributions for each party is gauged, sharing of cash expenses and production from the rented operation can be specified. Determine the proportion of the total value of contributions contributed by tenant and landlord. Then share expenses and production in the same proportion.

Contributions included in calculations include land, buildings, permanent improvements, orchards, vineyards, power, machinery, personal property tax, labor, management, and other resources or inputs. Include land and buildings in the contribution calculations at fair market value based on agricultural use.

Interest on land, building, vineyards, and orchards should be credited to the landlord at rates reflecting current rates of return on these investments. The landlord should be credited for any contribution of real estate taxes.

Most farm businesses include improvements. So, the landlord must be compensated for depreciation, repairs, and insurance required on them.

In some arrangements, tenants provide machinery and power. So, they must be compensated for equipment ownership costs, including interest, depreciation, repairs, taxes and insurance.

The value of labor and management contributed to the operation by the tenant and landlord must be figured. A wage rate must be determined reflecting the value of "raw" labor contributions.

Finally, a management contribution is included based on relative amounts of management provided by tenant and landlord. In the example, management return is computed as 10 percent of the estimated gross return, and allocated between tenant and landlord based on their respective contributions.

Adjustments for cash rent paid to the landlord by the tenant for housing or other facilities must be reflected in the computation.

Finally, the total value of contributions provided by the tenant and landlord is determined by summing the value in each category. The value of contributions for the entire farming operation is determined, and the relative proportion provided by the tenant and landlord calculated.

Note in the example the tenant is contributing about 59 percent of resources and the landlord 41 percent. So, cash expenses and production should be shared in these proportions to mirror an equitable division of expenses and production between them.

If higher land productivity is being contributed by the landlord, her/his proportion of the contributions would increase. An equitable arrangement would result in the landlord sharing a larger proportion of production and cash expenses. Likewise, more machinery or labor provided by the tenant results in the tenant getting a larger share.

Although Figure 1 illustrates computations of interest, depreciation, and repairs on major asset categories, other accounting and farm management references, including UC "cost studies" may be useful. The chart is simply a guide in aiming at contribution shares.

Figure 1. DEVELOPING OR TESTING YOUR CROP RENTAL ARRANGEMENT

EXAMPLE WINE GRAPE OPERATION			*Contribution*		*Each Party's*
Item	*Land Cash or Value*	*Rate*	*Value of Annual*		
Tenant	*Owner*		*(Percent)*	*Contribution*	
Land and Buildings					
1. Interest (3-6 percent of valuation)	**$420,000**	**6%**	**$25,200**	**0**	**$2**
2. Real estate tax			**5,280**	**0**	**5,**
Buildings, Fences, and Other Permanent Improvements					
3. Depreciation (4-10 percent of replacement value)	**5,000**	**4%**	**200**	**0**	
4. Repair (2-4 percent of replacement value)		**3%**	**150**	**0**	
5. Insurance		**0.5%**	**25**	**0**	
Power and Machinery					
6. Interest (8-10 percent of new cost plus salvage value ÷ 2)		**111,600**	**7%**	**4,883**	**$4**
0					
7. Depreciation (10-14 percent of new cost less salvage value)			**10%**	**8,370**	**8,370**
0					
8. Repair (4-6 percent of new cost)		**4%**	**4,464**	**4,464**	
9. Insurance		**0.5%**	**349**	**349**	
Orchards and Vineyards					
10. Interest (5-9 percent of cost ÷ 2)	**503,040**	**7%**	**17,606**	**0**	**17**
11. Cost Recovery (3-7 percent of replacement value, or according to practice)		**3%**	**15,091**	**0**	**15**
12. *Personal Property Taxes*		**0.5%**	**2,151**	**0**	**2**
Labor and Management					
13. Operator labor 12 months			**20,000**	**20,000**	
14. Management (10 percent of estimated gross revenue)	**$546,000**		**54,600**	**54,600**	
15. *Cash Rent* (paid by land owner to tenant)			**0**	**0**	
16. *Subtotal* - major contributions (add lines 1 through 15)			**158,369**	**92,666**	**65**
Other Cash Expenses (specify)					
17. _____					
18. _____					
19. _____					
20. _____					
21. _____					
22. *Total Expenses (add lines 16 through 21)*			**$158,369**	**$92,666**	**$65,**
23. *Percentage of Total Contributions*				**59%**	**4**

Rates and values are for illustrative purposes only. Figures vary with time and circumstance.