



Search for a “Super-Paradox” rootstock

Is there a “Super-Paradox” walnut rootstock? The answer is, “yes” and “no”:

Yes, because new Paradox clonal rootstocks with improved resistance to some soil borne pests and diseases are currently under development and their commercial release is likely coming, and

No, because they are not available yet and must undergo further tests to rigorously confirm they will continue to perform well under orchard conditions.

UC researchers and farm advisors, in collaboration with California walnut nurseries, started the *Paradox Diversity Study* (PDS) in the mid 1990s. Initially, seedlings were grown from 36 Paradox seed sources provided by commercial nurseries and the UC Davis walnut breeding program. In 1998, trees grown from the seedlings were planted in four orchard trials in Kings, San Joaquin, Yolo, and Tehama Counties. The idea was to compare growth and nut production of seedlings grown from a wide variety of Paradox sources to see whether some were better than others. The identity of the seed source nurseries was kept confidential. The goal of the project was to compare the various black walnut species used as Paradox seed sources, not to compare nurseries.

The four PDS orchard trials are still ongoing. The plan is to monitor tree growth and yield at each trial through the 5th year of commercial production. Recent advances in genetic testing that allow precise identification of the black walnut parent(s) of Paradox seedlings are helping us understand why some Paradox sources may be better than others. Some clear winners and losers have already emerged; I will have more to report on the results of these trials when they conclude with this season’s harvest.

In addition to the seedlings used in PDS orchard trials, many more seedlings were grown from the nursery and UCD sources and subjected to lab and greenhouse tests in the hope of finding individual seedlings that might be resistant to Phytophthora root and crown rot, lesion nematodes or crown gall. Seedlings that survived these initial screenings were re-propagated as “clonal

selections” by laboratory tissue culture techniques. The “potentially resistant” clones were re-tested. (Like the genetic testing discoveries that furthered understanding of Paradox seed source parents, these tissue culture techniques that allow rapid multiplication of clonal trees are recent achievements that have accelerated the effort to develop superior Paradox rootstocks.)

Several clones survived these multiple rounds of testing and are being re-propagated by several nurseries and laboratories to create a larger supply for field testing, the next phase in the evaluation process. Among these are:

VX 211: considered lesion nematode “tolerant” because, unlike “regular” seedling Paradox, it survives and grows very vigorously in soils with high lesion nematode populations. VX 211 also has moderate resistance to Phytophthora.

RX1: moderately resistant to Phytophthora and is currently being tested for response to nematodes. RX1 has survived well in field tests.

WIP3: selected because it avoids blackline caused by the cherry leafroll virus. It is susceptible to Phytophthora and may perform more like an English seedling rootstock. It is being tested for response to nematodes.

Several small-scale orchard trials of these most promising clones are already underway, and more are planned for 2008 planting. Our hope is that these clones will continue to perform well in these trials and, if so, may become available from commercial nurseries as early as 2008 or 2009. Other clones with promising but, as yet, not fully confirmed levels of resistance to these soil borne pests have emerged from this effort, and are at an earlier stage of development than VX211, RX1, and WIP3.

Is there a “Super-Paradox”? Very possibly, yes, in the near future.

Joe Grant, Farm Advisor

Agricultural Discharges and Water Quality

Agricultural discharges of water (including irrigation and storm runoff) were essentially ignored by agencies charged with permitting and protecting California's surface waters – until recently. Other point source dischargers (industries and municipalities) have long been required to obtain waste discharge permits from the Regional Water Quality Board (RWQCB). Currently agricultural discharges are under a *Conditional Waiver*, which means individual landowners are not required to obtain discharge permits if they are a member of a Coalition group carrying out monitoring and reporting activities in compliance with RWQCB requirements.

When water monitoring results show a pollutant of concern at higher than accepted levels, an "exceedance" occurs, and a management plan must be prepared that considers all factors associated with the exceedance and sets priorities for addressing it. The plan must also determine the nature and extent of best management practices (BMPs) required to address the exceedance(s). The management plan is written by the coalition and must be approved by the Water Board.

Currently the San Joaquin and Delta Coalition has the results of two seasons of water monitoring. These show many exceedances requiring multiple management plans. Most likely the plans will include:

- using pesticide use reports to connect the specific pesticide applications to the time and location of the exceedance.
- providing crop specific management information (Best Management Practices, or BMPs) to growers to prevent future movement of pesticides into waterways where exceedances have occurred.
- evaluation by the Coalition of the effectiveness of management practices to achieve water quality objectives.
- imposition of additional restrictions if exceedances are not controlled.

The bottom line: Growers will be required to manage their operations so they do not cause or contribute to surface water pollution.

Terry Prichard, Extension Specialist
Mick Canevari, County Director

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Grapes/Almonds Crop Digest

January of 2007 began the year with dry and cold weather. Already a good storm from last week has helped begin to average things out. Over the last twenty years, it is not uncommon for a dry December or January to be followed by above average rainfall. Rain totals were about 4.5 to 5 inches, with slightly more in the south county. Last year we were about at 13 inches in the North County and 8 inches in the south. After the last few storms, rainfall totals are up, at over 7 inches. This January is the driest since 1889, but a few good rains may help catch up to almost normal; time will tell.

With budbreak, monitoring for Vine Mealy Bug should be one priority. There are some different control strategies, but all include starting early to address any infestation that may be new. If you have any questions call our office or Cliff Ohmart at the LWWC to answer your questions.

As the new season develops in almonds, be on the lookout for Lower Limb Dieback, where lower small branches may be dying back, but shade is not a problem. Research is ongoing and additional information and observations may help sort out what is actually happening.

A general reference that has just become available is the Integrated Viticulture web site at <http://iv.ucdavis.edu>. It was developed and will be maintained at UC Davis. It is intended to be a user-friendly source for all viticulture information available in the United States, including wine, table, juice and raisin grapes, as well as grape rootstock. It can be found online at <http://ngr.ucdavis.edu/>. Also up and running is the new Integrated Viticulture website. Over (continued on pg 3)

Ag Labor eSeminars

In a time of limited budgets and high gas prices, I wanted to let you know of a resource that your growers and producers may be interested in. I have been conducting a series of electronic or "eSeminars" on agricultural labor management topics. Future seminars in this series will range from employee selection to pay issues to conflict management. The eSeminars are presented in English. There is no cost to attend.

The next eSeminar in the series will be offered on February 28, 2007. Participants need to arrive at the virtual classroom at <http://breeze.ucdavis.edu/aglabor/> by 1 PM and check in. The 2-hour eSeminar begins at 2 PM and will conclude by 4 PM.

All you need to attend these seminars is a computer and an internet connection. If you have a computer microphone; that is also helpful in participating in on-line eSeminar discussions, but you can also join in via internet chat connection. Following is a brief summary of topics in this next eSeminar.

eSeminar: "Performance Appraisal: Improving Communication with Top Management"

This seminar will examine the use of the "negotiated approach" to performance appraisals. This technique is especially effective for appraising year-round management personnel (such as foremen and herd managers) at your farm enterprise and for helping reduce or prevent conflict at the farm. It encourages talking about things we normally do not talk about, and thus opens communication channels. It will also help the management team work from the same page and greatly increase work satisfaction and farm productivity. We will spend substantial time focusing on the power of positive praise and discussing why praise is such a critical employee motivator. People are often hesitant to give praise because of fear that those hearing it will think they have nothing to improve. The negotiated approach to performance appraisal permits you to praise while at the same time expecting top performance from your management and supervisory team members.

For details on accessing this eSeminar, or for a schedule of future eSeminar topics, contact me by email at gebillikopf@ucdavis.edu or by telephone, (209) 525-6800.

Gregory Billikopf Encina
Farm Advisor - Stanislaus County

(continued from Grapes/Almonds pg 2)

time it will bring together most links and information related to grape growing.

Besides being the driest January in a long time, it has been the coldest in quite awhile, with 25 days of minimums below 30° F. Most days have had lows in the twenties, but there were some lows between 13° and 19° F. You know it has been cold when the weeds start to die. The last time sow thistle, cheese weed and groundsel were stunted or killed by cold weather was in December 1990, when lows hit 11° F. Looking back over my field notes, I did see some minimums of 16° in December of 1999, but only a few days.

Chill hours have been more than adequate early on for the first time since 2000. Currently totals are above 990 as almond bloom begins. Chilling portions (a newer method of measuring chilling) are about 60 compared to 50 last year. A detailed explanation of chilling and actual data on chilling accumulation (in addition to general information on horticulture) is available at <http://fruitsandnuts.ucdavis.edu>. No matter how you look at it, the chilling is good and bloom should be strong, well-paced, and fairly uniform. The bee situation is tight and expensive, but may be tolerable.

Paul Verdegaal
Farm Advisor

"There seem to be but three ways for a nation to acquire wealth... the third is by agriculture, the only honest way, wherein man receives a real increase of the seed thrown into the ground, in a kind of continual miracle, wrought by the hand of God in his favor, as a reward for his innocent life and his virtuous industry." B. Franklin

[As spring arrives be aware of soil moisture conditions and plant use demands, but be careful about "getting too far ahead." If there are soil problems to deal with, such as pH or water penetration issues, soil amendments or physical mixing may be needed. After plant growth is well developed and temperatures have warmed up, macronutrients such as nitrogen or potassium can be effectively used. For vines the proper time is after bloom and for almonds it is after petal fall. With micronutrients, sooner is better than later, as early spring foliar growth is needed for effective uptake of nutrients such as zinc or boron. Besides the cost benefit to this timing, you will help avoid leaching of substances into ground water either by irrigation or rainfall and the attendant regulatory attention.]

Processing Tomato Variety Evaluation

The 2006 season presented many challenges to processing tomato growers. First there was the cold wet spring that delayed planting schedules, and then the extended heat wave in July that reduced fruit set. These setbacks resulted in delayed harvests, which in turn led to slowed fruit ripening, exposure to rain, and increased incidence of blackmold fruit rot and late blight.

Our early-maturity variety trial in the Brentwood area managed to avoid these ordeals. The trial was direct seeded in double rows on 66" beds. Soil type was a Capay clay. Spring rains, sprinklers, and furrow irrigation supplied water over the course of the season. The trial was seeded on March 27th and harvested on August 18th. Growth and fruit set were very good, with an average yield of 54.8 tons/acre. The six top-yielding varieties at this location were **Sun 6366** at 60.3 tons/acre, followed by **BOS 66508**, **HMX 5833**, **H 5003**, **APT 410** (standard) and **BOS 66509**.

Our mid-maturity variety trial was in the Tracy area and faced many of last season's weather challenges. The field was furrow irrigated and was on a Stomar clay loam. The trial was transplanted in single rows on 60" beds on May 24th. Thus it was within the window of plantings which were most impacted by the high temperatures in July. Fruit set was affected and harvest was delayed until October 13th, at which time there were still a fair number of fruit that were not fully ripe. Nematode damage to the root systems was present throughout the trial area. Notwithstanding these setbacks, average yield of all varieties was 38.2 tons/acre. The six highest-yielding varieties were **Sun 6368** at 45.5 tons/acre, followed by **DRI 8058**, **PS 384**, **U 886**, **PS 345** and **AB2** (standard).

These trials were conducted in collaboration with Janet Caprile, Farm Advisor in Contra Costa County, and Bob Mullen, Farm Advisor Emeritus in San Joaquin County. They have been great mentors for me - Thanks! And many thanks to our grower cooperators, Anthony Massoni & Paul Simoni, and Hal & Keith Robertson, and to CTRI and the participating seed companies for their financial support.

To obtain a copy of the full report, which includes more details about the trials, the fruit quality data, and all the varieties we tested:

- ✦ Call me at (209) 468-9489 and I will mail you a copy
- ✦ Come into the office and ask for the 2006 Processing Tomato Report
- ✦ View the report on our website at:
http://cesanjoaquin.ucdavis.edu/Vegetable%5FCrops/Research_Progress_Reports.htm

A UC Statewide Tomato Variety Evaluation Report is available from the UCD Vegetable Research and Information Center website (or I can mail you a copy): <http://vric.ucdavis.edu/veginfo/commodity/tomato/2006TomatoVarietyTrial.pdf>

Brenna Aegerter, Farm Advisor

This January, the University of California launched the new Year-Round IPM Program for tomatoes. These guidelines are organized in a user-friendly format by growth stage (e.g. bloom to early fruit set or first red fruit). It contains links to the UC IPM pest management guidelines, but also has information on a broad range of production practices. At each growth stage, it outlines the pests and diseases that might be present, as well as other considerations such

New Year-Round IPM Program



as variety selection, soil sampling, irrigation, fertilization, etc. Although this is a web-based program, there are many parts of it that are designed to be printed out and taken to the field (e.g. check lists, monitoring/sampling forms, and photo ID pages). Check it out!

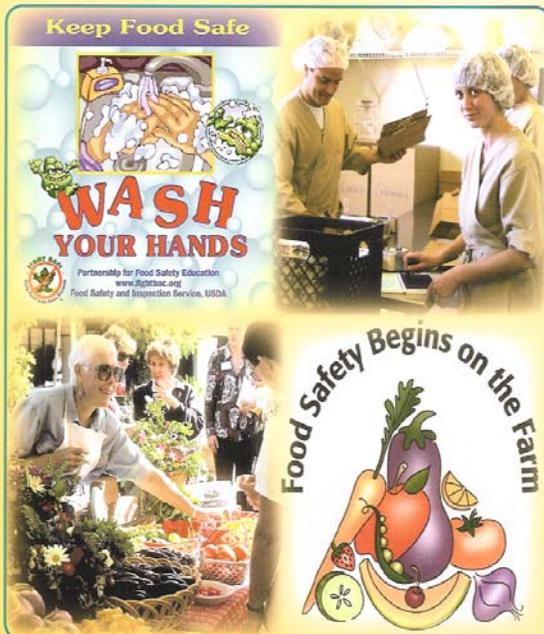
This resource is available online at:

<http://ucipm.ucdavis.edu/PMG/selectnewpest.tomatoes.html>

New “Food Safety at Farmers Markets and Agritourism Venues” Publication Available

Food Safety at Farmers Markets and Agritourism Venues

A Primer for California Operators



A publication of the UC Small Farm Center

If you are a seller at a farmers market or involved in other direct sales of agricultural products to consumers, you should come into our office and pick up a **free** copy of this brand new publication. This publication is designed to be a basic guide to understanding food-safety issues for farmers, ranchers and market managers. Produced in cooperation with the USDA Risk Management Agency and published by the Small Farm Center at UC Davis, this 36-page primer on food safety has lots of valuable information that will help you educate yourself and your employees

about food-safety concerns and regulations.

Topics include:

What is Food Safety

Types of Food Safety Hazards:
biological food safety, chemical food hazards, physical food hazards

Assessing Risks and Planning for Controls:

preventive strategies in the field, produce and other foods, value added and processed foods, other products, occasional events, handling money and equipment, customer education

Documentation and Liability Issues:

labeling, recordkeeping, liability insurance, regulatory exemptions for agritourism operations

Hazard Analysis and Critical Control Points (HACCP):

critical control points, HACCP flowchart, control points table

Self-Evaluation and Planning Worksheets:

self evaluation checklist, prioritizing actions worksheet, timetable for implementation

Food Safety Resources

As you are aware, public perception of food safety is at a very low confidence level after the problems with Salinas Valley spinach. While small scale producers at farmers markets have done an excellent job of keeping risk low for their customers, it never hurts to take preventative action. One problem or incident can devastate sales for a long time after the food illness outbreak has occurred and may effect all sellers of similar products in a large geographic area.

Benny Fouche
Farm Advisor

Consider Best Management Practices when Controlling Weevils in Alfalfa

The cold weather has extended alfalfa dormancy and slowed weevil hatch through January. February and March are two months when weevil feeding is greatest and control measures are needed.

Insecticide treatments made during this time of year can coincide with rain events that may move chemicals off site and into waterways. Irrigation water is also another avenue for chemicals to move off the fields during the summer.

As explained in the newsletter article, "Agricultural Discharges and Water Quality", there are pesticide monitoring sites located in rivers and streams throughout the county. These sites are sampled on a regular basis and analyzed for many insecticides used in alfalfa, including those to control weevil, aphid and caterpillars.

Water samples are routinely analyzed for organophosphorus (OP) compounds. These include chlorpyrifos (Lorsban), phosmet (Imidan), diazinon, malathion, and dimethoate. These active ingredients have extremely high aquatic toxicities and a high risk potential to move off site in irrigation water or during rainstorms. When an OP such as chlorpyrifos is applied, certain precautions need to be followed before and after application so it will not enter waterways. Pyrethroid insecticides commonly used in alfalfa, including lambda-cyhalothrin (Warrior), zeta-cypermethrin (Mustang Max) and cyfluthrin (Baythroid, Renounce), also have a very high aquatic risk and can move off site in soil particles. Preventing soil movement is especially important when using pyrethroid insecticides.

Special management procedures - referred to as BMP's or Best Management Practices - are recommended when using these pesticides. For example, a BMP may recommend no insecticide be applied at the end of a field where alfalfa has died out and only bare soil remains. Soil without any vegetation is subject to erosion and will likely carry pesticides offsite. Another BMP recommends against spraying OPs just before storm events, when rain water runoff is likely to occur and transport insecticides off site.

Spray applications made in close proximity to rivers, canals and drainage ditches have a high probability of contaminating water bodies when pesticides move along with the water or soil. In these areas, growers should discuss management alternatives with their pest control consultant or farm advisor and consider implementing a BMP that uses

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UPCOMING EVENTS

February 28

San Joaquin Valley Table Grape Seminar
Visalia Convention Center, 8 AM - noon
INFO: Judi Heidinger (559) 447-8350

March 4-6

California Farm Conference
Monterey, Best Western Beach Resort
INFO: www.californiafarmconference.com

March 8

Tri-County Walnut Institute
Modesto, Stanislaus County Ag Center
INFO: Kathy Anderson, (209) 525-6800

Tri-County Bean Production Meeting

Tracy, 8:30 AM - noon
INFO: San Joaquin CE (209) 468-2085

March 16 & 17

California Farm Succession Conference (Pt II)
Sacramento, Arden Hilton, 6 PM Fri & all day Saturday
INFO: Deborah Giraud, (707) 445-7351

March 22

Recent Advances in Viticulture & Enology
UC Davis, Freeborn Hall, 9 AM - 5 PM
course fee: \$220
INFO: V&E Extension (530) 757-8777

March 26

Fundamentals of GIS for Vineyard Mgmt
UC Davis, 1137 PES, 8 AM - 5 PM
course fee: \$275
INFO: V&E Extension (530) 757-8777
Intermediate course to follow on next day

April 11

Farm Day
Stockton, August Knodt School
INFO: Janet Dyk (209) 480-6104

an alternative lower risk product, safer application methods, and/or water containment system.

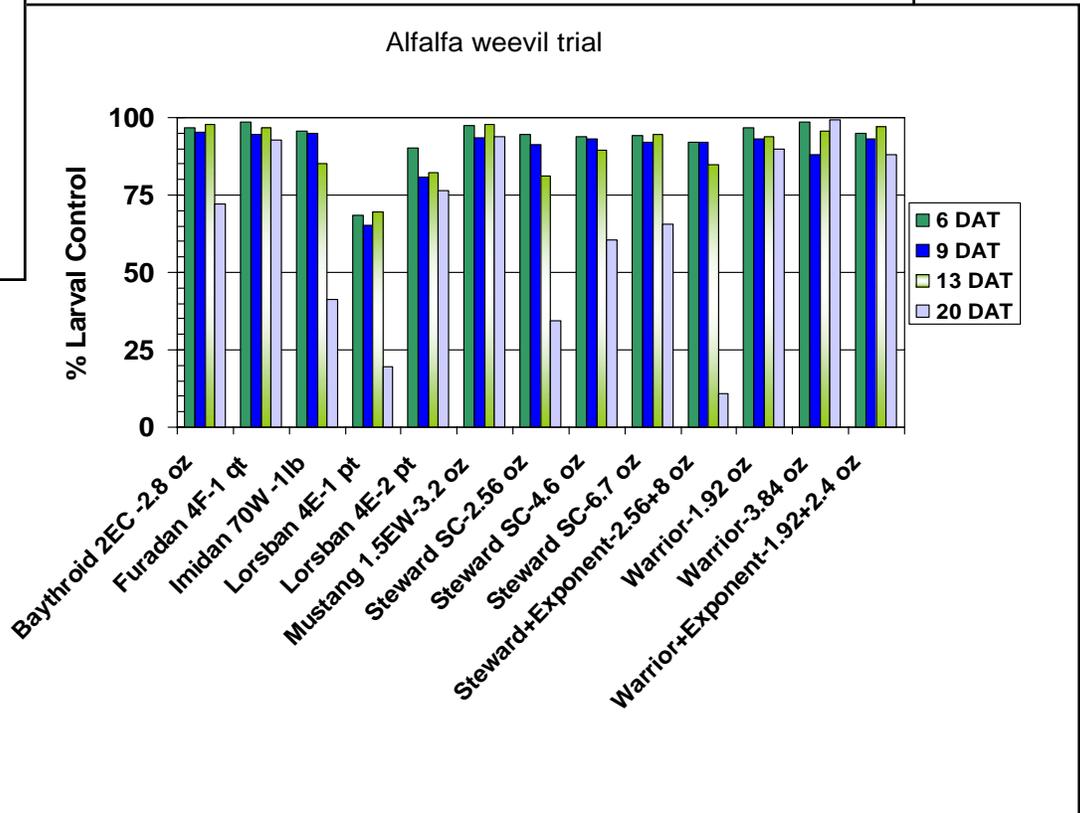
The UC IPM website includes pest management guidelines and BMPs for many crops and identifies high risk pesticides that may impact waterways. The website address is <http://www.ipm.ucdavis.edu>. Click on "Agriculture", then the crop of choice.

BMP's for pesticide use in alfalfa:

- Select an alternative chemical (Table 1) or non-chemical treatment when risk of off-site movement is high.
- Choose sprayers and application procedures that keep pesticides on target.
- Avoid spraying areas of bare soil or low plant population areas, with pesticides prone to cause water quality problems; consider over-seeding these areas with recommended forage grasses.
- Identify and take special care to protect sensitive areas (for example, waterways or riparian areas) surrounding your application site.
- Review and follow label directions for pesticide handling, storage, and disposal.
- Follow guidelines for re-entry times and pre- and post-harvest intervals.
- Consider water management practices that reduce off-site pesticide movement .
- Change irrigation sets before water reaches the end of the field.
- Install an irrigation recirculation or storage-and-reuse system.
- Use sprinklers rather than flood irrigation.
- Consider planting vegetative strips/grasses at ends of field and near ditches.
- Redesign inlets into tail water ditches to reduce erosion. Drain ditch should not be lower than furrows.

Mick Canevari
Farm Advisor / County Director

Table 1.
A wide range of insecticides is available for controlling alfalfa weevil larvae, with longevities from 6 to 20 days after application (San Joaquin County, 2004).





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Notes from the Field

February 2007

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For assistance regarding our programs, please contact us.