your *Lake County* HORTICULTURAL NOTES

MAY 1994

! ! MARK CALENDARS ! !
(contact us)

MAY 11	**GRAPE GROWERS INFORMAL GET-TOGETHER** 11:30 a.m. - 1:00 p.m. (bring your lunch) Borenbega Boat Storage contact Bill Pickering at 277-0645 or UCCE
JUNE 30-JULY 2	45th Annual Meeting American Society for Enology and Viticulture, Anaheim

WALNUT PRODUCTION ON MARGINAL SOILS

At the 1994 Lake County Walnut Update held April 15 in Lakeport, Glenn County Farm Advisor Bill Krueger discussed a trial being conducted at UC's Nickels Estate field station in Arbuckle. The station is devoted to studying crop production on marginal (Class 2-4) soils.

This trial was started 8 years ago in order to compare:

- Chandler and Howard varieties; each planted on
- Paradox and Northern California Black (NCB) rootstocks. Each combination was either
- slipplowed or not slipplowed

Spacing is 12' x 18' (Bill indicated 12' x 22' would have been preferable for equipment ease). Trees were planted carefully, keeping the crown and upper roots high to reduce potential waterlogging problems. Roots were treated with the biological crown gall preventive Galltrol (Norbac is an alternative product); this is especially crucial with Paradox, which is prone to crown gall. Mature tree height is 25'. Cisco and Franquette were planted as pollenizers. Trees are drip irrigated and fertilized 5 times per year through the drip.

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After 8 years, the main result has been the absolute superiority of Paradox over NCB. In 1993, the average yield of the Paradox plots was 5,180 lbs. per acre (2.6 tons) versus 3,708 lbs. per acre (1.8 tons) for NCB. This corroborates local observations that Paradox, whether irrigated or non-irrigated, thrives better on marginal soils than NCB. Barring any disputing data, Paradox should be the rootstock of choice for Lake County growers needing to replant or interplant trees on more difficult soils (shallow, heavy, rocky, etc.) and under more stressful conditions (i.e. low water, minimal pruning, etc.).

Surprisingly, there were no statistical yield, nut size or quality differences between varieties. In fact, Howard yields were somewhat higher than Chandler despite being grafted to seedlings one year after the grafted Chandler trees were planted. The higher yields may indicate a more precocious bearing habit versus the more vigorous Chandler.

There were also no differences between slipplowed and non-slipplowed plots. The researchers involved (who besides Bill included Farm Advisors John Edstrom of Colusa and Wilbur Reil of Yolo) thought that the drip irrigation limited the root system to the upper soil levels thereby negating slipplow effects deeper down. However, Howard on NCB did better when slipplowed, perhaps due to an overall vigor "boost" for the weakest variety rootstock combination.

Some key take-home points for Lake County growers are:

1) Regardless of variety, PARADOX ROOTSTOCK IS PREFERRED for all but the best conditions (and even then should be strongly considered);

2) Drip irrigation can be used successfully to establish and maintain a walnut orchard. Switching a mature orchard to drip from a high-volume sprinkler or surface system will require much care. The same applies going from dryland to irrigated.

3) With Paradox it is critical to apply Galltrol or Norbac to tree roots immediately before planting to reduce potential crown gall infection.

4) Howard may have potential as a moderately vigorous, late-blooming, lateral-bearing variety when planted on Paradox. It also appears to have a slightly shorter growing season than Chandler, which may be helpful in years of early fall rains or freezes.

Other topics covered at the meeting included the UC breeding program, California's competitiveness in the global walnut market, Walnut Marketing Board efforts and an overview of local problems - frosted scale (page 4), walnut husk fly and nutritional problems.

ROOTSTOCKS FOR SAUVIGNON BLANC IN LAKE COUNTY

At the 1994 Lake County Winegrape Seminar held April 12 in Kelseyville, data from the Sauvignon blanc rootstock trial at Kendall-Jackson Vineyards in Lakeport was presented. This trial was the first of several currently ongoing. It was planted in 1987 by Chet Hemstreet and Jim Wolpert. Soil type is Clear Lake adobe clay. It is a quadrilateral trellis, 6' x 10' spacing. Irrigation was originally overhead sprinklers but was converted to drip in 1991. It is the only UC-conducted, replicated Sauvignon blanc trial in California.

Cropping data has been taken since 1990 and includes yield, pruning weights, number of shoots per vine, number of clusters per vine and relevant fruit maturity indices (i.e. °Brix, pH, TA).

After four harvests, results have been consistent and clear-cut. The two most productive rootstocks at this particular site are 5BB Kober and Teleki 5C. Yield performance is due to higher shoot numbers, more clusters and heavier clusters. The least productive rootstocks are 110R, 3309C, 101-14 Mgt and St. George. 420A and AXR#1 (the 'control') fall in the middle (Table on page 4).

It is unsurprising that 5BB and 5C should do well and 110R poorly. The former are V. berlandieri x V. riparia crosses which do best on moist, fertile sites. 110R is a berlandieri x V. rupestris cross. It does well on hillsides or dry sites receiving little supplemental irrigation but poorly under wetter conditions. 3309C, 101-14 Mgt are riparia x rupestris crosses whose vigor lies somewhere inbetween. St. George is pure rupestris. It is also suitable for drier rather than fertile, irrigated sites. AXR#1, of course, is V. vinifera x rupestris and susceptible to phylloxera.

As stated above, the data from this trial is the first quantitative assessment of rootstock performance under Lake County conditions. In the next several years, data for similar Cabernet Sauvignon and Zinfandel trials will be obtained. With this information, Lake County growers will be able to make informed decisions on which rootstocks to use on various growing sites.

For a broad look at the rootstock situation in California, contact me for a copy of the excellent series of articles, *"Use of Phylloxera-Resistant Rootstocks in California; Past, Present and Future"*, published in Grape Grower Magazine, January-April 1994.

Effect of rootstocks on yield components (4-year average, 1990-93) of Sauvignon blanc, Lakeport, CA.

Rootstock	Yield (lb · vine^{-1})	Yield (ton · acre^{-1})	Yield: pruning wt ratio	Cluster number (vine^{-1})	Cluster wt (g)	Berries/cluster	Berry wt (g)
5BB Kober	32.3 a	11.7[z]	6.9 c	132 a	109.8 a	83.7 b	1.37 ab
5C Teleki	30.8 ab	11.2	7.3 c	126 ab	107.0 ab	82.0 b	1.40 a
420A Mgt	27.8 bc	10.1	8.5 b	120 bcd	103.5 ab	86.7 ab	1.26 c
3309C	24.3 cd	8.8	6.9 c	109 de	101.1 bcd	81.0 b	1.27 c
101-14 Mgt	24.6 cd	8.9	6.1 c	107 e	102.5 abc	81.4 b	1.33 b
110R	24.0 d	8.7	10.8 a	112 cde	96.4 cd	93.3 a	1.27 c
AXR#1	28.4 b	10.3	9.5 b	123 abc	102.3 abc	80.4 b	1.20 c
St George	24.4 cd	8.9	7.3 c	114 cde	94.9 d	82.7 b	1.27 c
F probability, main effects or interactions							
Rootstock (R)	0.0025		0.0001	0.0029	0.028	0.044	0.0034
Year (Y)	0.0001		0.0001	0.0001	0.0001	0.0001	0.0001
R x Y	0.0005		0.23	0.0094	0.0074	0.059	0.0004

[z]Calculated at 726 vines per acre (10 ft x 6 ft, row x vine).

STATUS OF FROSTED SCALE IN WALNUT

After four years of steady, unchecked build-up, this year many Upper Lake growers finally bit the bullet and applied delay dormant treatments for frosted scale. Though parasitism is evident, it has been inadequate to suppress the scale population.

Treatments included summer oil, dormant oil alone, dormant oil plus diazinon, or Supracide, mainly based on grower philosophy after weighing several factors - phytotoxicity potential of oil, desire for rapid and complete kill, economics and regard for aphid and mite predators more likely to be disrupted by Supracide.

Most growers have informed me that to varying extents, all options have reduced scale populations thus far. Nymphs grew rapidly in March and untreated orchards are now loaded with frosted females bearing eggs. There is one generation per year and growers should watch for the emergence of the new generation of nymphs sometime in May. They will settle on leaves to feed before returning to one-year-old twigs this fall.

The last 1994 treatment window will probably be during May when the numphs crawl out from under the females (which then die) and settle on the leaves. Before treating, growers should:

1) observe parasitism (round holes in the old scales or nymphs that have turned black and are slightly humped);

2) if using Supracide or diazinon, consider the possibility of spider mite and walnut aphid resurgence due to predator/ parasitoid disruption by scale (oil use will more likely cause phytotoxicity);

3) tree vigor and yield and

4) economics of the application (i.e. cost of custom application, material, etc.).

For further information on frosted scale, or assistance in identifying parasitized scales, give me a call and I'll be glad to come out and work with you on this vexing problem.

IRRIGATION TECHNOLOGY VIDEO AVAILABLE TO BORROW

Contact our office if you are interested in viewing a videotape of an irrigation tour held in July 1993. The tour was sponsored by the California Energy Commission and UCCE offices in Glenn, Tehama and Butte Counties. Though crops differ from Lake County's, the general principals apply anywhere. Subjects include:

- controlled-rotation full coverage Nelson sprinklers
- buried versus above ground drip (olives)
- drip irrigation injection set-up (almonds)
- sprinkler with a throw distance between minisprinklers and full coverage types (almonds)
- effect of switching from drip to microsprinklers on a tight soil (almonds)
- microsprinklers for gravelly soils (almonds)
- injector system for injecting potassium in microsprinklers (almonds).

NEW REPORT EXPLORES COMPETITIVE CHALLENGES TO WALNUT INDUSTRY

A new University of California report examines the current status and future prospects of the state's unique and historic walnut industry. The product of a year-long research project, the report focuses on growth potential in the walnut industry, threats to its resources and trends in the global marketplace.

"The Walnut Industry in California: Trends, Issues and Challenges" is one of the Competitive Edge series published by the UC Agricultural Issues Center examining the outlook for important California crops. Other reports have dealt with the beef, dairy, rice and canned fruit industries.

The new publication points out that California walnuts still maintain their leading role in global and domestic markets, but that growers are under increasing pressure from loss of farmland

to urbanization and from environmental regulations. Within the industry, there is a significant difference in farm size, with more than one-third of all walnut growers farming 30 acres or less and only 12 percent with 100 acres or more.

Meanwhile, the marketplace is changing, with even more emphasis on sales of shelled walnuts and a growing dependence on exports, which now account for nearly 35 percent of production. It is crucial to maintain California's reputation for high quality and reliable deliveries, the AIC report says.

Lead author of the publication is Janine Hasey, UC Cooperative Extension farm advisor in Yuba and Sutter counties. Jerry Siebert, UC Extension economist, developed the section on marketing and trade.

Contact our office for order forms for this and other Agricultural Issues Center publications or order directly from the Agricultural Issues Center, UC Davis, Davis, CA 95616-8514. Request Publication #CPE-5. The price is $15.00. Checks should be made payable to UC Regents.

MAY CHECKLIST (contact me for further details about any of the following):

Young Trees and Vines

* WEED CONTROL!!! (but watch herbicide phytotoxicity)
* Remember, young plants need more frequent, lighter irrigations than established ones, but watch excess moisture which reduces vital oxygen in the root zone
* A little fertilizer to push growth should be applied after growth begins.
* Begin to train the leader in 1-year-old walnuts; stake up wind of tree to avoid rubbing trunk and limbs. Pinch back competing laterals.
* Remove suckers when about 6-12" long. In walnuts, tear out or spray shears with Galltrol between cuts to prevent crown gall infection.
* Vertebrates can kill young plants in a hurry! Keep the area around trees trash and weed-free.

All Crop Stages

* Plan for bloom-time petiole analysis in grapes. If needed, foliar zinc should be applied before bloom.

* Spring is ideal to apply foliar zinc to pear and walnut.

  - Walnut - 1 lb. 36% $ZnSO_4$/100 gal. water
    apply just as leaves turn green
    repeat 1-2 times at 2-3 week intervals in severe

  - Pear - 4-5 lbs. 50% basic $ZnSO_4$/100 gal. water
    2-4 weeks after bloom. Additional applications may be needed if symptoms persist.

* N uptake is optimal <u>during</u> the growing season - but avoid <u>too much</u>.

Pear trees "woke up" with a bang this spring, and so far the crop is FULL. Many Walnut trees were still in bloom when the rains hit April 23-25; we will learn of any detrimental effects later this month. Grapes are mainly in budbreak to early shoot growth and so far so good (watch for mildew).

Sincerely,

Rachel

Rachel Elkins
Farm Advisor

Cooperative Extension
U.S. Dept. of Agriculture
University of California
Oakland, CA 94612-3560

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