

MONTEREY COUNTY . . .

CENTRAL COAST

VINEYARD NEWS



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Demonstration of Vineyard Floor Management Alternatives

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A project was funded by the California Department of Pesticide Regulation Reduced-Risk Pest Management Grant program to evaluate various vineyard floor management practices and their effect on weed control, runoff, soil physical parameters, yield and quality of grapes, as well as the economics of production. To accomplish these goals a long-term research plot was established by cooperating growers in the Greenfield area. The site has relatively uniform soil and is planted to the cultivar Chardonnay on Teleki 5C rootstock. The soil type of the trial site is Elder Loam with gravelly substratum. A research team includes farm advisors Larry Bettiga, Richard Smith and Laura Tourte and Extension Specialists Clyde Elmore and Jeff Mitchell, U.C., Davis. The standard weed control practice (preemergence application of simazine+oxyfluorfen) that is commonly used on the vine rows in the Central Coast Region of California is being compared against two alternative weed control practices: 1) cultivation with a Clemens in-row cultivator and 2) 100% postemergence herbicide. Within each

weed control practice three cover crop practices are planted in the row middles: 1) no cover crop; 2) Merced rye; and 3) Trios 102.

Weed control data indicate that the standard weed control strategies provided excellent weed control of all weed species present at the site early and up to July. After this time, large numbers of yellow nutsedge emerged and became the dominant weed in the standard weed control treatment. The cultivation and postemergence treatments had a greater diversity of weeds but by mid-summer there were no differences in the number of weeds between the three weed control strategies. The preharvest weeding costs in 2001 for the standard weed control practice, cultivation and postemergence treatments were \$31.25, \$23.05 and \$22.47/A, respectively through late summer (table 1). Even though the alternative weed control practices compare favorably in terms of economics, they do not provide as good of weed control in the early season (tables 2 and 3). In addition, they had higher numbers

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of undesirable weeds such as horseweed, which could interfere with harvest operations. Cover crops did not provide less runoff than the bare treatment under the rainfall patterns that existed this year (table 4). This may be due to the small stature of the cover crops due to late establishment at the first significant rainfall in January. In addition however, the cover cropped area in this vineyard covers 33% of the vineyard floor and it is unknown whether this percent of cover cropped area can provide protection against runoff in high rainfall

events. Merced rye and Trios 102 triticale cost \$10.69 and \$15.49/A more, respectively, than the non-cover cropped treatment due to additional seed and mowing costs. Vine yields were not affected by weed control or cover crop practices (Table 5). There was a significant reduction in berry weight with the use of a cover crop. Fruit composition was not influenced by weed control practice. Bare middles had higher °Brix and titratable acidity than plots with a cover crop.

Table 1. Matrix of total estimated cost for vineyard floor management practices

<i>Cover Crops</i>			
<i>Weed Control Technique</i>	Bare	Merced Rye	Trios 102
Standard	\$42.26	\$52.95	\$57.75
Clemens Cultivator	\$34.06	\$44.75	\$49.55
Postemergence	\$33.48	\$44.17	\$48.97

Table 2. Total frequency of weeds on three evaluation dates

Weed Treatment	Cover crop	March 20	May 4	July 10
Clemens	Bare	27.0	10.1	26.6
	Rye	25.5	9.7	25.0
	Trios	27.0	8.4	18.5
Postemergence	Bare	32.5	8.3	22.7
	Rye	31.5	4.7	24.9
	Trios	33.5	8.6	20.7
Standard Practice	Bare	0.5	2.3	21.9
	Rye	0.0	1.0	19.3
	Trios	0.0	2.0	22.9

Table 3. Frequency of key vineyard weeds on three evaluation dates

Weed Treatment	March 20			May 4			July 10		
	Nut-grass	Malva	Horse-weed	Nut-grass	Malva	Horse-weed	Nut-grass	Malva	Horse-weed
Clemens	0.2	1.7	5.5	1.2	0.	0.8	9.4	5.4	0.6
Postemergence	0.0	3.3	8.3	1.2	3.0	2.0	11.4	7.3	3.2
Standard Practice	0.2	0.0	0.0	1.8	0.0	0.0	20.7	0.5	0.0

Table 4. Runoff in various cover crop treatments on five dates and rainfall preceding those dates

Cover crop	Feb. 22	Feb. 23	Feb. 27	March 5	March 6	Total
Rye	4.8	0.0	0.4	71.3	69.1	145.6
Trios 102	11.3	0.4	0.7	67.1	50.8	130.3
Bare	13.1	0.4	0.7	71.9	65.9	151.9
LSD (0.05)	n.s.	n.s.	n.s.	n.s.	12.2	n.s.
Rainfall	0.17	0.29	0.14	1.39	1.01	----

Table 5. Vine yield parameters and fruit composition

Weed Control Practice	Yield Kg/vine	Cluster/vine	Berry wt, g	°Brix	pH	Titrateable acidity
Standard	8.8	51	1.21	23.9	3.39	0.72
Clemens	8.5	49	1.20	24.0	3.40	0.69
Postemergence	9.0	49	1.22	24.1	3.40	0.71
LSD(0.05)	n.s.	n.s.	n.s.	n.s.	n.s.	n.s.
Cover Crops						
Bare	8.8	49	1.25	24.2	3.41	0.73
Rye	8.8	50	1.20	24.0	3.40	0.69
Trios 102	8.7	50	1.17	23.7	3.39	0.70
LSD(0.05)	n.s.	n.s.	0.05	0.4	n.s.	0.03

Upcoming Meeting Announcements

Pierce's Disease Control Research Conference

December 5-7, 2001 - San Diego

Program information on the web: www.cdfa.ca.gov/phpps/pdcp/gwSymposium.htm

Unified Wine and Grape Symposium

January 29-30, 2002 - Sacramento

Program information on the web: www.unifiedsymposium.org

Varietal Winegrape Production Short Course

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For registration information call: 1-800-752-0881

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