Lighter pruning lessens bunch rot of Chenin blanc grapes

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Leaving up to 60 nodes at pruning reduced bunch rot in both spur- and cane-pruned Chenin blanc vines.

The rapid increase in Chenin blanc wine grape plantings in the past decade attests to the variety's popularity among California growers and vintners. The vines respond in growth and vigor to good soil conditions and produce fairly consistently—often at 8 to 10 tons per acre in the San Joaquin Valley. However, susceptibility to bunch rot is a concern each year as the fruit approaches harvest. The medium to large clusters tend to be compact, sometimes excessively so, providing an ideal environment for the initiation and spread of rot.

Growers usually spur prune Chenin blanc, retaining two to three nodes per spur. A few Chenin blanc vineyards are cane pruned, but this has not appeared to be advantageous, because a normal crop can be achieved with spur pruning. However, a suggestion that cane pruning might reduce bunch rot prompted a study of pruning methods in Chenin blanc. Effects of several levels of cane and spur pruning on vine yield, fruit quality, and bunch rot were of principal concern.

A vigorous, cordon-trained, 6-year-old Chenin blanc vineyard near Five Points in western Fresno County was chosen for the 2-year study. The treatments were:

- Cordon trained, spur pruned—40 nodes per vine, typically 16 spurs of 2 or 3 nodes
- Cordon trained, spur pruned—60 nodes per vine, typically 24 spurs of 2 or 3 nodes
- Head trained, cane pruned—40 nodes per vine, typically 2 canes of 12 to 15 nodes plus renewal spurs
- Head trained, cane pruned—60 nodes per vine, typically 4 canes of 12 to 15 nodes plus renewal spurs

Head training was achieved by cutting cordons back to within 8 to 12 inches of the stakes. The two-vine plots were replicated eight times in a randomized complete block design. Percent bud emergence and cluster count data were taken each spring. Fruit data at harvest included berry weight, degree Brix, titratable acidity, pH, weight and percentage of rotten clusters, and total weight.

Cluster count

Spur pruning with 60 nodes gave the highest cluster count per vine in 1976, followed by 60-node cane pruning. The 40-node pruning gave the lowest cluster numbers regardless of pruning method. Cluster numbers per node were reduced only in the 60-node cane pruning.

In 1977, on the other hand, there were no differences in total clusters per vine because of the compensation effect of fewer clusters produced per node in both 60-node pruning treatments.

Fruit composition, bunch rot and yield

The 60-node treatments tended to produce smaller berries in both years. The difference was significant in cane pruning in 1976 and in spur pruning in 1977. Pruning treatment did not affect fruit composition (°Brix, titratable acidity, and pH) in either year.

In 1976, the 40-node spur pruning produced the highest percentage of clusters with rot. Overall bunch rot incidence was even higher in 1977 and with striking differences due to pruning treatment. Here, both spur and cane 40-node pruning treatments had a higher percentage of rotten clusters.

Pruning treatment did not affect total yields. However, the weight of fruit as rotten clusters was greater with the 40-node spur pruning than either of the 60-node pruning treatments in 1977.

Summary

An important finding in this study was that leaving a larger number of nodes at pruning reduced bunch rot in both spur- and cane-pruned vines. The reduced bunch rot was apparently due to less compact clusters, as shown by the lower berry and cluster weights in the 60-node treatments.

There did not appear to be any advantage in cane pruning over spur pruning to reduce rot except at the 40-node level in 1976.

The pruning treatments did not affect total yield or grape composition, which suggests that the vineyard was not overcropped at the high 60-node pruning level. The 60-node vines compensated by producing fewer clusters per node, presumably because of a lower percent bud break; these clusters were also lighter in weight due to smaller berries and possibly a lighter fruit set.

Thus, the grower of Chenin blanc grapes should prune at a high enough level to minimize bunch rot without sacrificing vine vigor or grape composition by overcropping. Chenin blanc vines apparently can avoid overcropping to some degree by self-adjusting crop load when more nodes are retained. Part of this adjustment is from the lighter weight clusters, which are less subject to bunch rot.

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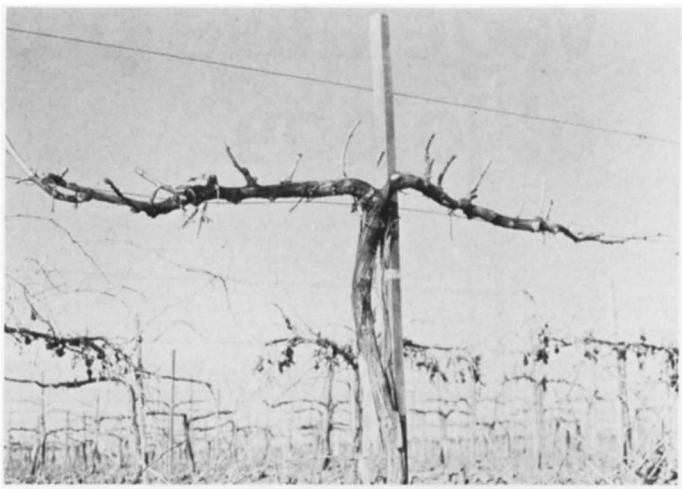
TABLE 1. Chenin blanc Cluster Counts, Treatment Averages

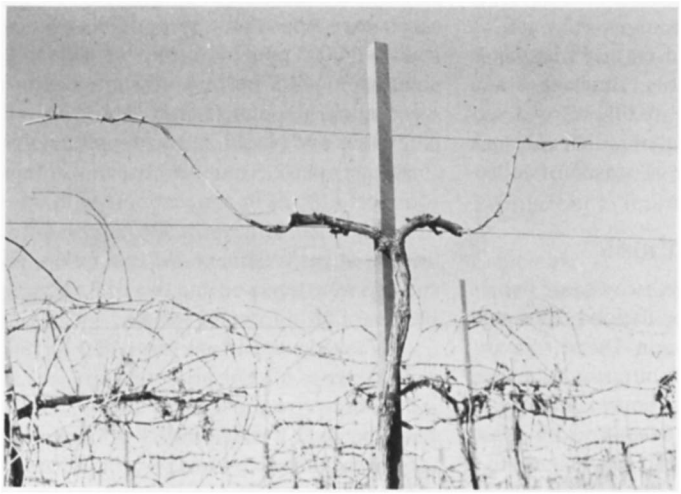
Year	Pruning method	Nodes per vine	Clusters per vine*			Clusters per node*
			Total	From nodes on spurs and canes	From latent and base buds	
1976	spur	40	85.7 ab	nd†	nd	2.14 b
		60	125.3 c	nd	nd	2.09 b
	cane	40	79.8 a	nd	nd	1.99 ab
		60	101.7 b	nd	nd	1.70 a
1977	spur	40	72.7 a	55.9 b	16.8 a	1.82 b
		60	75.4 a	59.9 b	15.5 a	1.25 a
	cane	40	63.3 a	44.5 a	18.8 a	1.58 b
		60	74.7 a	59.2 b	15.4 a	1.24 a

*Duncan's multiple range test: numbers followed by the same letter within a column of each year's data are not significantly different at the 5 percent level.
†nd = no data.

Cordon-trained, spur-pruned vine; 40 nodes per vine.



Cordon-trained, spur-pruned vine; 60 nodes per vine.



Head-trained, cane-pruned vine; 40 nodes per vine.

Head-trained, cane-pruned vine; 60 nodes per vine.

TABLE 2. Fruit Quality and Harvest Data, Treatment Averages

			Berries*				Clusters*				Yield per vine*		
							Weight per cluster						
Year	Pruning method	Nodes per vine	Weight per berry	°Brix	Titratable acidity†	pH	Sound	With rot	All	With rot	Sound clusters	Clusters with rot	Total
			g				*lb*	*lb*	*lb*	%	*lb*	*lb*	*lb*
1976	spur	40	1.49 b	18.5 a	0.72 a	3.55 a	0.70 b	0.52 a	0.63 b	21.0 b	46.0 a	8.0 a	54.0 a
		60	1.37 ab	18.6 a	.73 a	3.51 a	.45 a	.54 a	.47 a	11.3 a	53.0 a	6.4 a	59.4 a
	cane	40	1.48 b	18.5 a	.73 a	3.55 a	.63 b	.59 a	.63 b	10.5 a	45.4 a	5.2 a	50.6 a
		60	1.34 a	18.3 a	.73 a	3.50 a	.48 a	.56 a	.50 a	9.7 a	45.7 a	5.1 a	50.8 a
1977	spur	40	1.79 b	21.2 a	.61 a	3.64 a	.63 b	.41 a	.53 a	42.8 b	26.1 ab	12.7 b	38.8 a
		60	1.67 a	22.1 a	.57 a	3.68 a	.53 a	.39 a	.49 a	26.6 a	29.4 b	7.9 a	37.3 a
	cane	40	1.72 ab	21.3 a	.60 a	3.66 a	.58 ab	.42 a	.51 a	40.4 b	22.0 a	10.9 ab	32.9 a
		60	1.66 a	21.3 a	.62 a	3.61 a	.52 a	.40 a	.48 a	24.7 a	29.1 b	7.4 a	36.5 a

*Duncan's multiple range test; numbers followed by the same letter within a column of each year's data are not significantly different at the 5 percent level.
†Titratable acidity as tartaric, grams per 100 ml.