



Managing Table Grape Canopies

Bill Peacock

Canopy management is an integral part of growing table grapes. Thinning and positioning shoots, throwing and cutting canes, pulling interior and exterior leaves have all been practiced by California table grape growers for the past 60 years. The type and extent of canopy work varies considerably and depends on the variety, trellis design, and vine vigor.

Shoot Thinning

Shoot thinning has two objectives: 1) adjust flower cluster numbers and 2) reduce shoot congestion in the fruiting zone. Shoots 6 to 12 inches long are thinned on spur-pruned table grape varieties. Shoot thinning is not required on some varieties, such as Emperor, which push very few latent buds and rarely require crop adjustment. Red Globe and Calmeria are usually not shoot thinned in order to increase shading and protect fruit against heat damage and sunburn.

Commonly, two shoots per spur are retained, and latent shoots are removed from older wood, arms, and cordons. Only sterile shoots should be removed during light crop years. The position of next year's spurs should be considered when shoot thinning. A fruiting arm that has grown too high can be lowered by leaving a latent shoot, thus allowing the pruner to lower the arm. Fruiting gaps along the cordon can be corrected by leaving latent shoots in appropriate positions.

Cane-pruned varieties are sometimes shoot thinned, especially when several canes are wrapped together on a single wire. Normally, only sterile shoots are removed along the canes to space shoots and relieve shoot congestion.

Early Basal Leaf Removal

Basal leaves and laterals are usually removed around the time of berry set. Leaves are pulled at this time on a number of table grape varieties including Flame Seedless, Ruby Seedless, Fantasy Seedless, Crimson Seedless, Christmas Rose, Exotic, and Ribier. Leafing early is most beneficial with high vigor vineyards on standard "T" trellises that tend to haystack the canopy. The amount of leafing ranges from a few basal leaves and side shoots (in moderately vigorous vineyards) to removal of all primary leaves and lateral shoots beginning at the base of the shoot and continuing to the node opposite the top cluster on each shoot (in vineyards with high canopy density).

Removing basal leaves increases light and reduces humidity within the fruit zone, and it facilitates manual operations such as cluster thinning and harvest. However, the benefits of leafing moderate to low vigor vineyards is questionable, and leafing any vineyard can increase fruit damage from heat and bird activity.

The cost of leafing increases the longer one waits. Leafing before bloom may cost only a third as much as leafing several weeks after berry set. Leafing late, two to four weeks after berry set, is expensive, and the sudden exposure of fruit increases the potential for sunburn and may even delay color development.

Research with Cardinal and Ribier, seeded table grape varieties, showed that leafing before bloom increased shot berries and reduced berry weight and packable yields, and to prevent this, leafing should be delayed until berry set.

However, results with Flame Seedless showed that leafing before bloom did not reduce berry weight or increase shot berries. Perhaps the application of gibberellic acid to Flame Seedless overcomes the negative impact from leafing before bloom and explains the discrepancy.

No basal leaves should be removed before veraison on varieties susceptible to heat damage or sunburn including Red Globe, Thompson Seedless, and Calmeria.

Leafing After Veraison

To develop full color, clusters of red and some black table grape varieties require light exposure two to three weeks before harvest. Light in the fruiting area is increased by throwing or cutting canes on the north side of the row. Leaves may also have to be removed from around clusters.

Varieties have different light requirements to reach color maturity. Emperor berries color poorly unless exposed to considerable light. Flame Seedless, Ruby Seedless, Red Globe, Christmas Rose, and Queen also need some increased light exposure to color but not as much as Emperor. With Flame Seedless ethephon largely substitutes for light, and little leafing, if any, is required with its use. The effect of light exposure, with and without ethephon, on color development of several red and black table grape varieties is shown in the table.

The degree of leafing must be based on canopy density and light penetration into the fruit zone. Even with varieties with a high light requirement, weak vineyards with a sparse canopy require little or no leafing since ample light penetrates the canopy to promote full fruit color.

The effect of light exposure, with and without ethephon, on color development of several red and black varieties

	Treatment			
	No light (bagged)		Light (normal exposure)	
	1. no ethephon	2. ethephon	3. no ethephon	4. ethephon
Red Varieties				
Cardinal	poor	good	good	good+
Emperor	poor	poor	fair	good
Flame Seedless	poor	fair	good	good+
Queen	poor	fair	good	good+
Tokay	very poor	very poor	fair	good
Ruby Seedless	poor	fair	good	good+
Black Varieties				
Barlinka	good	good	good	good
Blackrose	poor	poor	good	good
Exotic	fair	fair	good	good
Ribier	good	good	good	good

Source: Jensen et al. Color and maturity promotion in table grapes with ethephon. In: Proceedings of the University of California, Davis, Grape and Wine Symposium. A. D. Webb (Ed.). pp 118-121. University of California Press, Berkeley (1980).