

## Vine Density by Nick Hoskins

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**Vine density** – Throughout New Zealand’s short history of grape growing, this subject has generated some serious debate. Economics, rather than fruit quality or vine longevity, seem to have driven most spacing decisions, but a more useful discussion might examine the ways in which those issues intersect.

Many early vineyards were planted on wide row spacing because it suited the tractors available at the time. In the mid- 1980s, Dr Richard Smart advanced the “big vine” theory, which postulated that vines planted at wide spacings allowed the grower to lay more buds per vine at pruning, which would “load” the vine and reduce vine vigour. Other viticulturists (many of whom had worked in Burgundian vineyards) were adamant that high vine densities would control vigour via root competition and produce better quality fruit.

**Vine balance** – Of course, in the 1980s, we were aiming for “perfect vine balance” in the belief that the vine would regulate itself and thus require less intervention from the grower in terms of manipulating shoot growth and fruit load. Nowadays, I think we all recognise that a certain amount of intervention is inevitable, and we are much more relaxed about controlling vine vigour with irrigation, shoot positioning, trimming and leaf plucking. We also recognise the benefits of regulating the crop load by fruit thinning. In turn, that has meant decisions on vine density now involve more consideration of variety, soils, climate, management and equipment available.

**Sauvignon’s spacing** – In general, Sauvignon Blanc growers managing large blocks prefer wide row spacing (somewhere between 2.5m to 3m), with plant spacing between 1.5m to 2m – that translates into 2660 to 1850 vines per hectare. These vineyards are run with lower labour inputs and are highly mechanised. The wide row spacing permits wider tractors that provide a more stable work platform. Sauvignon Blanc is a vigorous variety that is normally cane pruned. The wide vine spacing allows the grower to retain more buds per vine at pruning: higher shoot numbers per vine increase the fruit load and control vigour (in essence, Richard Smart’s “big vine” theory at work).

**Pinot’s spacing** – Sauvignon Blanc quality does not appear to suffer unduly from relatively high crop loads, provided canopies are well managed. Pinot Noir, however, is sensitive to crop load and in most instances shows a corresponding decrease in wine quality as yield per hectare increases. Pinot Noir growers tend to prefer higher planting densities, with row spacing generally ranging between 1.5m to 2.2m, and vine spacing between 0.9m to 1.5m – that translates into 7400 to 3030 vines per hectare. Some growers with high density plantings are producing higher yields per hectare without a subsequent drop in quality. For example, a high density planting of 7400 vines per hectare can be cropped at one bunch per shoot (100gm per bunch with 10 shoots, 1kg per vine or 7.4 tonne per hectare). A low density planting of 1850 vines per hectare would need to carry 4kg per vine – and that would affect wine quality.

**Old world, high density** – Last year, I toured a number of vineyards in France with Geoff Thorpe and Dr Rod Bonfiglioli. Throughout our travels, we pondered the question of vine density and vineyard longevity. We noted high density plantings, particularly in Burgundy, but also in Côte Rôtie, Condrieu, Hemitage and Châteauneufdu- Pape.

Many vines in these old vineyards were affected in varying degrees by one or more trunk diseases – we observed vines surviving with half the trunk dead or dying. In a low density New Zealand vineyard, this level of disease would soon render the vineyard uneconomic; but because these vines were only being asked to ripen 6 to 10 bunches, the French vineyard remained viable. The implications for vine age are obvious, and it’s difficult to see New Zealand’s low density plantings remaining economically viable for 30 or more years.

At the moment, growers are not necessarily rewarded for planting at higher densities. Contract growers are normally paid per tonne of fruit, with a limit or penalty applied if the vineyard produces more than the target tonnes per hectare. The present system does not recognise that a higher yield of the same quality is possible from a high density planting (at least in theory!).