

New Vineyard Practices Producing 2-5 Tons Per Acre 18 Months After Planting

Graham Due



Harvesting two to five tons per acre on 18-month-old vines is no longer a freak occurrence, but is being achieved repeatedly by some Australian growers.

In The Vineyard

These returns translate into an enormous financial benefit to vineyard owners. By saving an entire year of development costs, investment is greatly

reduced and cash flow drastically improved. Lower investment and quicker cash returns means the all-important return on investment ratio is increased for the life of the vineyard.

One way of looking at the benefit is to realize that the same financial resources can be used to plant larger vineyards, and returns are increased proportionally over the following years. The benefit of earlier cash returns is the icing on the cake.

Rick Goode, an accountant who specializes in advising vineyard investment projects, says a typical vineyard involves an initial outlay of about A\$16,000 per acre under normal establishment practices. The first surplus comes in the fourth year and is about A\$2,000 per acre. By the tenth year the surplus is about A\$16,000 per acre.

Using the latest vineyard development techniques, the initial outlay is increased by A\$800 per acre but the first surplus comes a full year earlier, at about A\$2,500 per acre. After 10 years, the surplus is at A\$24,000 per acre, 50% more than it would be under traditional establishment practices.

Critics claim, however, that forcing young vineyards into early production has been a cause of restricted spring growth and a contributor to the decline of young vineyards in various parts of the world. On the contrary, growers report that vines established using the new methods continue to perform well over many years. According to proponents, vines at six months of age have the same physiological "capacity" as much older vines. That is the key to success.

How It's Done

Soil must be prepared so that it has very low mechanical resistance to root growth. Frequent training is necessary to ensure that side shoots are discouraged and the main stem is not left to support itself against wind. Close planting is also critical to the success of the technique. Practitioners recommend 1,200 vines per acre to produce a five ton per acre yield at 18 months. Adequate water is essential, but the root zone must never be saturated. Young roots need a lot of air; ideally, soil moisture should be maintained just below field capacity.

Difficult Soil Responds

David Bruer operates a nursery, vineyard and winery in an area called Langhorne Creek, some 40 miles southeast of Adelaide on Australia's southern coast. He began using this technique four-and-a-half years ago. Bruer claims to have produced a crop of about two tons per acre just 18 months after planting. His skill with the technique has increased each year to the point that he has just picked five tons per acre from year-and-a-half old vines.

Bruer said the soil at his vineyard is difficult: an old pasture with only eight inches of silty clay loam over a clay hardpan. To make matters worse, it has been compacted to a high bulk density from many years of neglect.

Soil Resistance is Key

Bruer called on Alfred Cass, now recognized as an authority on vineyard soil preparation, for help in dealing with his troublesome soil. Cass said that of all the soil parameters a grower can measure, the one most indicative of early vine growth is "penetration resistance" which, he explained, is the pressure of the soil against the growing root. Cass' research has shown that penetration resistance must be as low as possible - preferably under 150 psi.

Roots will not grow into soil in which penetration resistance is over 300 psi. Below 150 psi, roots grow freely, enjoying easy access to all the nutrients and water stored in the soil. He said this lets vines grow fast and strong and makes them able to resist drought and shoot burn during heat waves.

Bruer's rips his soil to a minimum depth of three feet at about three miles per hour to achieve optimal penetration resistance. He then rips to a depth of 3'6" along the row to ensure moisture content.

Bruer uses a plow with a two-foot-wide wing which further lifts and shatters the soil. Because his vineyard has shallow topsoil, Bruer gathers it into the undervine area creating a bank about a foot high. This gives him the added advantage of better soil aeration and higher soil temperatures in the spring.

Another grower, Geoff Hardy, plows in much the same way, though his vineyard has less need of banks.

A vineyard management contractor and grower, Hardy operates throughout the Adelaide region, at Langhorne Creek as well as areas like McLaren Vale (about 20 miles south of Adelaide) and the Adelaide Hills (about 20 miles to the east).

He said he regularly crops vines after 18 months. Hardy, like Bruer, is adamant about low penetration resistance. "it is

vital that the vines get a good root run in those first few months." Both Hardy and Bruer use organic matter heavily. Hardy adds about 15 tons per acre of deep litter fowl house waste, but says many there are many good sources of organic soil enhancers.

Some growers say gypsum, sometimes as much as five tons per acre, is a necessary addition to certain soils requiring stabilization of clay aggregates. It also helps prevent recompaction during the rainy winter season. By the spring of planting, soil penetration resistance should be about 150psi over a section three feet wide and three feet deep centered on the vine rows.

Mandatory Intensive Training Period

Australian growers have never used stakes. Rather they train vines up a string. There is one post per three or four vines, and the fruiting wire is strained to about 300 lbs. Training string is tied to the vine at the bottom; it and a wire at the top are stretched tight. Growers say this saves the cost of a stake, and the strong, tight trellis is ideally suited to machine harvesting. Even without a stake these growers are able to machine harvest after just eighteen months.

The vine must be visited frequently to train the shoot to the string and to ensure it is well attached and not flapping around in the breeze, Hardy says. He adds that many trials with trees as well as grapes show substantial growth increases in cases in which the shoot is well-supported.

Bruer said he saves on training by using rigid, self supporting grow tubes (no stake is needed) to train the vines. "Anyone not using them is just throwing money away," he claims, attributing his large growth increases in part to the tubes.

Hardy first used grow tubes on a big job last year. "People are getting used to them now," he says. The tubes are installed at the same time the vines are planted. The vines are debudded so that only one shoot grows, and that means the vine needs no attention whatsoever until it exits the grow tube. The tubes are not touched until they are removed, either in mid-summer or fall.

The two growers said that vines planted this way are very vigorous and grow extremely fast – as much as two inches per day.

They reach the wire at three or four feet after only three to four weeks and continue growing along the wire quickly. Because they are so vigorous, these vines go dormant very late and are exposed to some risk of fall frost.

By late winter, the vine is in the same condition as traditionally planted vines a full season older, the growers claim.

Hardy's cordon is over 80 percent filled-Bruer boasts 97 percent. "We're going to improve on that," he said. The root system extends down to three feet. He said these vines can sustain a crop of about three kilograms each, though in some cases it may be necessary to cluster thin to reduce the crop level. Depending on planting density, this gives yields in the range of two to five tons per acre, Bruer says.

Profit Enhancing

These results are far better than those reached by standard Australian practice and have been achieved even by novice growers.

Bob Morton works fulltime as a bank manager and planted last spring for the first time in his life. His vineyard, about

100 miles north of Adelaide, is in an old vineyard area near the town of Clare.

"This is the best young vineyard I have ever seen," claims Anthony Koerner, Morton's vineyard management contractor who has several years experience in the area. After eight weeks the vines had nearly covered the wire and by the end of the season the cordon was fully established. By winter, there were three laterals over two feet long.

Morton said he expects to harvest over two tons per acre next fall – 18 months after planting, a result far better than he dreamed of and something he appreciates as only a bank manager can.

Graham Due, holds a degree in Oenology and has worked in vineyards in Australia and Bordeaux. He has written several articles on winemaking in Tokaj, a statistical study of the effects of temperature on grapevine development, adaptation in wine tasting, how to take advantage of the different characteristics of grape varieties, the electrical properties of plant roots and aspects of the plant hormone theory in plant physiology.



Growers inspect a vineyard in which a vineyard development technique enabled harvesting on 18-month-old vines. The vineyards shown here, in an area called Langhorne Creek in Australia, were planted six months before the photo was taken.



The same vineyard at Langhorne Creek, shown here at 8 months after planting. The vines were first harvested about the time the photo was taken.



The Langhorne Creek vineyard at 54 months (four and a half years) of growth. Some critics argue that vineyards on which an early harvest development technique is employed do not produce well over a long period.