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Climate Change Prompts Vineyard Yield Rethink

As vineyards get hotter, are growers on the right track chasing smaller yields?

How much is too much? How many tons per acre should end up in the fermenter? And is it even possible to make fine wine from a high-yielding vineyard?

The relationship between quality and quantity is one of those brilliantly geeky subjects that has no simple answer. I read with interest a recent piece by Alex Russan – it skilfully debunked the myth that there is no grey matter in the subject of grape yields and quality.

But give me a few minutes – I think I can potentially add something else to the discussion.

When I started writing about wine 12 years ago, chasing low – if not tiny – yields was still a badge of honor for many small wine producers. Some winemakers were coerced into it by law (growers in the Burgundy Grand Cru of Musigny can only harvest a maximum of 35 hectolitres per hectare), but others considered uneconomical yields an obligatory aspect of their marketing USP.

At the turn of the Millennium, the garagistes of Saint-Émilion would boast of picking only four or five bunches per vine. Above all, this firmament sought concentration and alcohol, which they insisted could only come from tiny yields. They achieved this with a swing to organic/biodynamic practices and a reduction in fertilizers/pesticides. The propagation of low-yielding clones, mixed in with endless shoot-thinning and the removal of bunches before harvest, ensured that their dreams were realized. Many critics loved them – the formulae seemed foolproof.

Of course, that was then and this is now. After many years of coveting tiny volumes, global warming is increasingly causing (some) growers to rethink their strategy. As ex-Torbreck winemaker David Powell once remarked: "There is so much crap talked about low yields. Some of Australia's worst vintages have come from low-yielding years. You get this pernicious mix of high alcohol but weak phenolic ripeness, not to mention cooked fruit and harsh tannins."

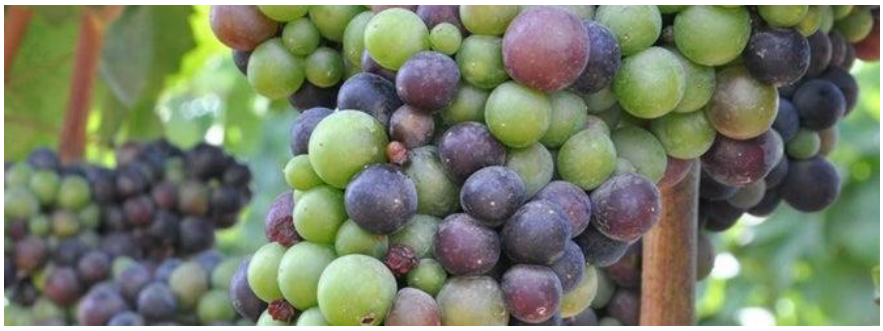
Indeed, the yield question was traditionally framed as "how much is too much?" Perhaps a better paradigm for today would be "how little is too little?"

Conversations with a variety of winemakers suggests that many are acutely aware of this growing problem. In 2017, central Tuscany endured a combination of frost, drought and heat like no other. This resulted in a small crop of concentrated berries, achieving yields unthinkable in the days of high-volume clones and soils pumped full of fertilizers. They should have celebrated, and yet many wines suffered from unwieldy tannins and cooked-fruit characteristics. Premium brands are uncomfortable about chasing higher yields, mindful of the stigma attached to such an approach, and the risk of affecting quality. However, neither are they satisfied with things as they stand.

"In a particularly favorable year, when everything from flowering to harvest works out perfectly, one can have excellent quality even above 50 hl/ha," explains Ornellaia's estate director Axel Heinz.

"The problem is that at the moment we have to choose how to adjust the crop level in July, however, it is impossible to know if the conditions later in the season will be perfect. This is where the complexities of yield come into focus; in a warm climate chasing small yields can accelerate ripeness, which is not necessarily favorable. To counterbalance the effects of climate change it is increasingly important to correctly manage everything that contributes to slow and even ripening: late-ripening varieties, drought-resistant rootstocks, and yes, we need to maintain adequate crop levels."

But what are adequate crop levels in lieu of a warming and capricious climate in coastal Tuscany? Heinz replies that Ornellaia typically seeks yields of between 30 and 45 hl/ha.



 | *Yield size has a bigger impact on red wines than whites.*

"Above that, you start to see quality decreasing, but below there is only a loss in volume but no gain in quality," says Heinz.

"The most sensitive variety is unquestionably Cabernet Franc, which quickly loses all of its qualities as soon as it is overcropped."

Andrea Franchetti, owner of Tenuta di Trinoro, takes a slightly different view.

"We should remember that low yields are a vital tool – they enable a winegrower to produce concentrated and profound wines from less-exalted vineyards," says Franchetti.

"You want to know why some winemakers produce bad, alcoholic and unbalanced wines? It comes from a lack of soil fertilization rather than simply chasing low yields – the 'stop fertilizing' school of thought started in the 1990s. I remain convinced that quality does not sit at more than six tons per hectare on very old vineyards or 2.5 on young vineyards."

Skin in the game

Franchetti adheres to a school of thought widely considered to be (almost) incontrovertible. He points out that red wine derives its color and flavor from its skins. Bigger bunches and berries therefore means a less favorable juice to pulp ratio, with a resulting nosedive in structure, color and flavor intensity. It is generally agreed, however, that white wines are less obviously affected by increased yields.

Yet even here, particularly in the context of a warming climate, we can find shades of grey. Is it better to harvest lower yields and then possibly under-extract for fear of absorbing too much aggressive tannin? Or to pursue higher volumes (and risk losing complexity/structure), but carry out a longer, more extensive maceration? Questions for wine geeks, sure, but issues which nevertheless directly affect the quality of what ends up in your glass of Super Tuscan.

Perhaps we should just defer to the experts on this one. Winemakers and growers in Napa have a minefield of experience in managing drought and heat – we can learn much from their experiences in balancing the twin desires for low (-ish) yields, while simultaneously avoiding monstrous alcohol.

"I think the story and solution to global warming is going to be much more complex than simply avoiding unnecessarily low yields," says Quintessa winemaker Rebekah Wineburg.

"I've noticed a significant difference in response depending on the soil type and vineyard trellis system, but also depending on vine age. It simply varies so much. That said, I do think that chasing low yields has not been the correct approach, or at least it has been an over-simplified approach, to achieving high quality. Equally, a high crop load acts as a sink for water and nutrients – in a hot and dry season the ability of the vine to find and transport that amount of water is limited. So in this respect, a lower crop load is more ideal in a drought situation."

Historically, there has always been a certain lack of nuance in the discussion around yield, and the relationship between quantity and quality. Even if vintage conditions were uniform over a 10 year period – yeah right! – there surely cannot be an immutable figure that achieves maximum quality. Neither is there a linear correlation between quality and yield from one year to the next. The subject is a paradise for enophiles who detest clarity and certainty.

"There is an undeniable relationship between quality and quantity, but from my experience this is a complicated relationship that negates a hard rule of thumb. Instead it is a relationship that depends on the site, variety, vine density, and season," observes Wineburg.

"Just remember that quality does not necessarily increase with decreased quantity. For example, Sauvignon Blanc vines need a crop load in order to produce quality wines, and a low-yielding year can produce wines on decreased quality, phenolic character, and excessive sugar/alcohol."

The only aspect which engenders a consensus is the subject of vine balance – specifically the need to ensure that the canopy- to-fruit ratio is maintained throughout the growing season. But as global warming becomes a perpetual concern, all else is up for fierce debate. There have been arguments about yield versus quality for decades; but, as things start to really hot up, expect more shades of grey than in a reproduction of Whistler's Mother.