



Jon Pollard, head vineyard manager at Gusbourne Estate. Images supplied

Vineyard Management



Why climate smart vineyards are the future

From canopy balance to soil function, **Simone Madden-Grey** looks at how winegrape growers in the UK are adapting everyday vineyard decisions in response to increasing variability, as more familiar seasonal patterns give way to less predictable conditions.

Weather fronts blowing in from the Atlantic or the North Sea are nothing new for growers in the United Kingdom. What is new, however, is the impact climate change is having on vineyard management.

Wine production in the United Kingdom continues to expand rapidly with more than a third of total hectares under vine located in South East England across the neighbouring counties of Kent and West Sussex. Speaking with vineyard managers and consultants, it becomes clear that climate change is affecting a remodelling of traditional vineyard practices to support vineyards of the future. “We’re thinking much more about vineyards in terms of how they can be climate smart,” said consultant Dr Alistair Nesbitt, CEO of Vinescapes.

Field Notes

- Climate variability is reshaping seasonal decision-making
- Harvest timing is becoming less predictable year to year
- Frost risk remains a key site-selection consideration
- Disease pressure is increasing in wetter, more variable seasons
- Canopy management is critical for balancing vigour and fruit exposure
- Soil health is central to improving vineyard resilience
- Cover cropping practices are increasingly data- and site-specific

The challenge

Irregular rainfall, increased heat and the movement of harvest dates continue to test growers. “Where I’ve seen the biggest change in the 20-odd years I’ve been here has been weather reliability becoming more sporadic. We’ve had high levels of precipitation that don’t seem to align themselves with the old-world order of seasonality that we’re used to,” said Jon Pollard, head vineyard manager at Gusbourne Estate, where he works on vineyards in Kent and West Sussex.

Unpredictable seasonal milestones also mean that calculating harvest dates is increasingly uncertain. “Generally speaking, there’s a very close correlation between flowering date and harvest date but the trend is gradually decreasing. Where it would have been about 105

days, 10-15 years ago, it is now more like 102 days,” said Matthew Strugnell, consultant and consultant chair of the WineGB Viticulture Working Group.

Frost management is becoming an increasingly important feature of site selection. At Balfour Winery in Kent, maximising passive protection is a key part of the selection criteria for new sites, particularly because an inversion frost layer is now more prevalent. Previously the planting ceiling for prospective sites would have been around 100 metres according to Fergus Elias, Director of Wine. Now, it has increased to 118-120 metres.

Sugar levels in berries are also moving higher and with it comes a review of traditional picking dates. Referencing his time as head of viticulture at Ridgeview Wine Estate in East Sussex, Strugnell said, “For sparkling wine production, the target would have been around 10.5% natural alcohol. We had growers where we had to make sure they picked before they exceeded that. It’s now becoming



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Jon Pollard

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more of a problem that we don't go too far beyond that point."

At the National Institute of Agricultural Botany (NIAB) in Kent, where a range of technical and commercial services are provided to the seed, horticultural and agricultural industries, as well as to government, Dr Belinda Kemp, viticulture and oenology research leader, also attributed a shift in berry development to climate change. "The yeast assimilable nitrogen (YAN), protein concentrations, and the acidity levels are quite different from year to year," said Dr Kemp. Acid composition, specifically the malic to tartaric acid ratio, has become less predictable and malolactic fermentation less reliable.

In response to these challenges, building resilience in the vineyard using canopy management and soil health remediation were uniformly identified as strategies for managing the effects of a progressively unreliable climate.

Canopy management

Heightened disease pressure is a factor of increased rainfall, humidity and ill-timed heat spikes. While powdery and downy mildew are not new, the appearance in recent years of downy mildew at flowering and at fruit set is a concern. Canopy management, pruning, earlier leaf removal, and vine vigour are all used to combat mildew.

At Balfour Winery, leaf stripping occurs regularly throughout the growing season, starting early at flowering. "It's all about keeping the airflow, making sure you get that spray penetration and making sure you build a healthy canopy, which has enough light on the fruit. It's a careful balance," said Elias.

While managing the vineyards at Ridgeview Wine Estate, Strugnell observed that vine vigour appeared to have an effect on resilience to downy mildew. Echoing this sentiment, wine sustainability consultant Anne Jones

said, "It's about getting the vine and the vigour in the right balance, particularly with the canopy that's enabling better natural resistance."

Land management

Science and new technology facilitating biological soil activity monitoring are leading to a reassessment of the impact above ground activities have on soil health and vine resilience.

For Pollard, "the science has very much led that [relationship] with regards to how we treat the soil and look after the soil structure." The symbiotic relationships with the soil microbiome and above ground activities very much shape the approach for how, when and where the soil is disturbed at Gusbourne. Summing up, he attributes increased resilience and consistency in vine formation during the growing season, at least in part, to improved soil health.

Drawing on her experience working with WineGB and as development director for

the Regenerative Viticulture Foundation, Jones echoed this sentiment, “As a general proposition, in viticulture over the last 15-20 years we’ve begun to understand that if we just focus on what’s above ground, we’re only focusing on half of what we’re trying to achieve.”

Cover crops

For growers in South East England there have been mixed results with cover crops, further reinforcing the link between bespoke application and meaningful data collection.

Trials have been running for the last 3-4 years at Balfour where the focus has been on water retention and nitrogen-fixing. “You need time,” said Elias, “You need 3-5 years of data and if you haven’t got that, there’s no point.”

Getting the crop to take can be challenging, especially with climate change impacting traditional seasonality. Where establishing cover crops routinely occurred in spring and autumn, today’s schedule is more flexible and driven by soil moisture and temperature.

Sowing techniques have moved away from traditional methods that disturb the soil structure and this has increased interest in direct seed drills. However, avoiding sowing methods such as cultivation or making a fine tilth seedbed can mean the rate of establishment is slower. Nevertheless, at Gusbourne, the benefits aside from preserving soil structure, include lower costs for time and labour.

Finally, when selecting the seed mix, Dr Nesbitt said it is also important to consider the wider ecosystem.

“More often than not, we want to make sure that a good proportion of whatever is going in is native and beneficial, to complement the natural environment and provide beneficial ecosystem services in vineyards. In doing so, we can help boost wider beneficial habitats.”

Agility

Extending the idea of a climate smart vineyard beyond the physical boundaries of the vineyard itself has potential for reframing warming temperatures as a

market opportunity for wines from the United Kingdom. If executed well, the ability to respond to the current market preference for lighter red wine styles, and still and sparkling rosé wines could be optimised.

Portfolio expansion beyond sparkling wine is, however, not without challenges. “When you bring in elements or change the cultural practices for red wine [production], then your phenolics and tannins change and I think it makes it challenging from a vineyard manager’s point of view to manage a vineyard according to weather and wine style,” said Dr Kemp.

In this way climate change is pushing the business model away from the traditional structure of distinct roles and responsibilities, to one of collaboration. If collaboration is successful, the business embeds agility into the model, increases the capacity to respond to market preferences and promotes economic sustainability. **GW**

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