Horticulture & viticulture

Climate Vulnerability Assessment
Wine Grapes — Warm Region Factsheet

Growing Chardonnay wine grapes (warm region) in New South Wales: preparing for a changing climate

Climate changes offer opportunities and challenges to growing warm region Chardonnay in NSW by 2050.

Developing industry-informed climate planning information

Climate change is altering the growing conditions for many agricultural commodities across NSW. Primary producers need evidence-based information about the changing climate and the risks and opportunities it may bring.

Through its Vulnerability Assessment Project, the NSW Department of Primary Industries is enhancing the resilience of our primary industries by providing information and data to help the sector better plan for, and respond to, climate change. The project has assessed climate change impacts for extensive livestock, broadacre cropping, marine fisheries, forestry, horticulture and viticulture, and important biosecurity risks associated with these industries to inform sound planning, risk management and adaptation decisions.

Wine grapes in NSW

NSW is the birthplace of wine grape production in Australia, with the first vines planted in the 1800s. Today, it is Australia's third-largest producing state, behind South Australia and Victoria.

Chardonnay represents approximately 70% of NSW's total white varietal crush (Source: Wine Australia). These are grown in both cool and warm climates across the state. Figure 1 shows key warm region wine growing sites which include Cessnock in the Hunter Valley, and Griffith and Dareton in the Riverina.

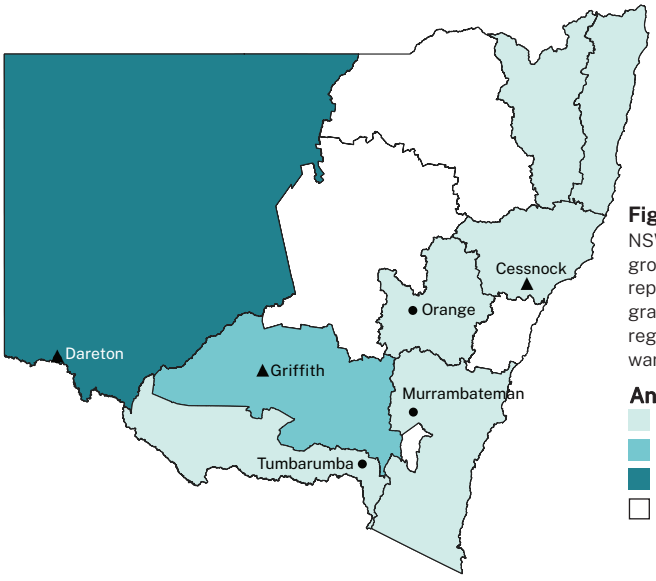

Figure 1.
NSW Chardonnay wine grape growing regions. Darker colours represent higher production of grapes. Circles indicate cool wine regions, and triangles show warm wine regions.

NSW GOVERNMENT

Climate and warm wine growing regions

Chardonnay wine grape warm growing regions in NSW are expected to remain highly suitable for the production of high-quality Chardonnay grapes by 2050 under a changing climate. Climate risks to the NSW Chardonnay wine grape industry affect the phenophases of the grape lifecycle in different ways.

Climate change risks to the NSW warm wine growing regions industry include:

Extreme heat: Increased maximum temperatures and hot days may affect sensitive phenophases, such as veraison and bloom.

Frost: Reduced frost risk will likely increase suitability in some regions, such as Griffith, Cessnock and Dareton, especially during budburst and shoot growth.

Climate impacts: what to expect

Dormancy in warm growing regions around Griffith and Cessnock is expected to maintain high climate suitability, and Dareton a moderate suitability. (*high confidence*).

Bud burst in warm growing regions around Dareton and Cessnock is likely to maintain very high climate suitability. An increase to very high climate suitability is projected for Griffith due to reduced frost. (*high confidence*)

Shoot growth and bloom in all warm growing regions is expected to maintain very high climate suitability (*moderate to high confidence*).

Berry development in all warm growing regions is expected to maintain very high climate suitability (*high confidence*).

Veraison in the warm growing region of Cessnock is expected to maintain high climate suitability. Dareton and Griffith may be adversely affected by an increase in high heat days, likely decreasing the suitability to low (*moderate to high confidence*).

Harvest, maturation, post-harvest and leaf fall in all warm growing regions is expected to maintain very high climate suitability (*moderate to high confidence*).

Wine quality

Warm winegrowing regions are expected to remain very highly suitable for sugar and acid quality (*high confidence*).

Irrigation water requirements

Irrigation water requirements are likely to increase for warm winegrowing regions (*low to moderate confidence*). The increase is likely to be greatest under the high emissions scenario.

How to adapt

Climate variability, pests and diseases all affect wine grape production. Understanding the likely impacts of climate change on each wine region will help with management, including identifying priority adaptation and mitigation strategies.

Adapting to extreme heat

Applying organic mulch to the under-vine area may improve soil moisture and temperature. The application of sunscreen products to reduce sunburn damage and anti-transpirants to maintain berry integrity and reduce water loss could alleviate some of the impacts. Installation of over-row netting could also be used to limit sun exposure under high temperatures. New varieties may cope better with higher temperatures but can take up to 30 years to develop and market. The wine industry may also need to improve water efficiency through changing irrigation practices, upgrading water infrastructure or adopting new technologies.

FOR MORE INFORMATION

Please get in touch with vulnerability.assessment@dpi.nsw.gov.au

This work has been produced by the NSW Primary Industries Climate Change Research Strategy funded by the NSW Climate Change Fund.

Methodology and data

Climate projections were sourced from Climate Change in Australia's 'Application Ready Data'. This dataset is comprised of projections from an ensemble of 8 global climate models, each presenting a plausible future climate. The models differ in their projections, giving rise to uncertainty in our modelling which is reflected in the confidence statements given in brackets in the text. Care should be taken when interpreting these results.

The Vulnerability Assessment Project is intended to highlight potential industry-or regional-level changes. Intermediate and high emissions scenarios were used in the assessments (RCP4.5 and RCP8.5), but these are not the only future scenarios possible. The inclusion of climate variables important to the commodities production was based on published research, expert knowledge and data quality and availability.

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