Horticulture & viticulture

Growing almonds (Nonpareil) in New South Wales: preparing for a changing climate

NSW almond growing regions will likely continue to experience high to very high suitability for almond production 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 increasing 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 determined climate change impacts for extensive livestock, broadacre cropping, marine fisheries, forestry, horticulture and viticulture, and important cross-cutting biosecurity risks to inform sound planning, risk management and adaptation decisions.

Almonds in NSW

NSW produces an average of 23,000 tonnes of almonds a year. The NSW almond industry has grown substantially in recent years, from 1.88 million trees in 2016 to 5.83 million trees in 2020 (Source: NSW DPI).

Nonpareil is the most commonly planted variety of almond. The main NSW almond growing regions are shown in Figure 1.

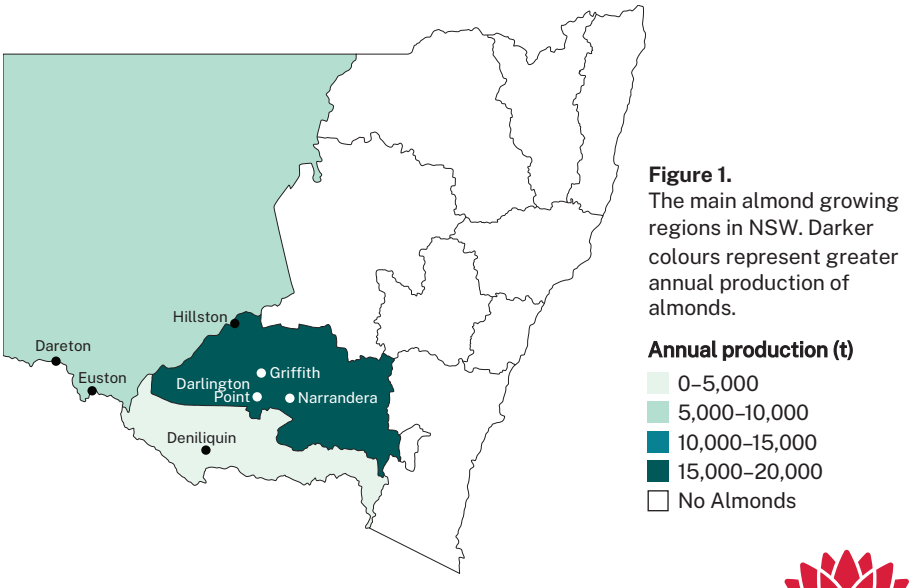

Figure 1.
The main almond growing regions in NSW. Darker colours represent greater annual production of almonds.

NSW GOVERNMENT

Climate and the almond industry

All almond growing regions in NSW are expected to continue to have very high climate suitability for growing almonds by 2050 under a changing climate, except for the Griffith region. This region is likely to increase from high to very high suitability. Climate change risks to the NSW almond industry affect the phenophases of the almond lifecycle in different ways.

Climate change risks to the NSW almond industry include:

Extreme heat: Increased hot days, combined with water stress, may affect kernel filling and reduce nut size and quality.

Frost: Reduced incidence of frost will decrease its adverse effects on almond buds during flowering and budburst phenophases.

Climate impacts: what to expect

Bud initiation determines the potential productive capacity of an almond tree. All growing regions are expected to maintain current high levels of climate suitability, except Hillston, which may experience only moderate levels of climate suitability under the higher emissions scenario (*moderate confidence*).

Dormancy is important for optimal flowering and fruit production. All growing regions are likely to maintain very high climate suitability (*high confidence*).

Bud burst marks the start of the growing season. The Dareton and Euston growing regions are expected to maintain very high climate suitability. An increase in climate suitability is projected at Darlington Point, Deniliquin, Griffith and Narrandera due to reduced frost incidences (*moderate to high confidence*).

Flowering and pollination phenophases are particularly sensitive to frost. All growing regions are likely to maintain very high climate suitability (*moderate to high confidence*).

Fruit set and early fruit growth are important to crop yield and quality. All growing regions are expected to maintain very high climate suitability (*moderate to high confidence*).

Kernel filling may be affected by an increase in extreme heat days. Darlington Point, Deniliquin, Griffith and Narrandera are likely to maintain very high climate suitability (*moderate to high confidence*). Dareton, Euston and Hillston growing regions may see a decline from very high to high climate suitability (*moderate to high confidence*).

Hull split and harvest may be affected by changes in summer rainfall and increased humidity in some northern growing regions, increasing the risk of hull rot and affecting the timing of hull split and harvest. Despite this, all almond growing regions are expected to maintain very high climate suitability (*moderate confidence*).

Almond quality

The level of kernel staining in all growing regions is projected to remain similar to historical levels (*moderate to high confidence*).

Irrigation water requirements

are likely to increase for all almond-growing regions in the future (*moderate to high confidence*).

How to adapt

Adapting to extreme heat
Applying kaolin clay spray to almond trees can reduce the effects of sunburn and the temperature of sprayed surfaces.

Adapting to increased irrigation water requirements
Industry may need to consider changing irrigation practices, upgrading water infrastructure or adopting new technologies.

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.

FOR MORE INFORMATION

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

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