

How will climate change affect blueberries in NSW?

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Climate change is a key challenge facing all horticultural crops. As part of NSW Department of Primary Industries (NSW DPI) Climate Change Research Strategy, a project team has been assessing, through the use of models, the effect of future climate change on blueberry (Southern Highbush) production in NSW.

This project is called the Vulnerability Assessment and it aims to identify the climate change risks for a broad range of commodities (cropping, horticulture, livestock, forestry and fisheries) and how those commodities could be affected by temperature fluctuation, variations in seasonal conditions, rainfall and biosecurity risks. The blueberry model is one of 42 currently being developed under the Vulnerability Assessment project.

The project draws on expertise from the blueberry industry to develop models that will capture the effect that climate has on blueberry growth and Grey mould (*Botrytis cinerea*), a critical disease affecting blueberries. The model was developed and validated using historical data from 1970 to 2019.

Figure 1 shows the climate suitability for the Southern Highbush variety 11-11 based on historical climate data. This model assumes that the plants are field grown and receive adequate water throughout all stages of crop production and are not grown under protected tunnels.

The overall climate suitability for blueberries is strongly influenced by the climate conditions at the key phenological stages of flowering and fruit development.

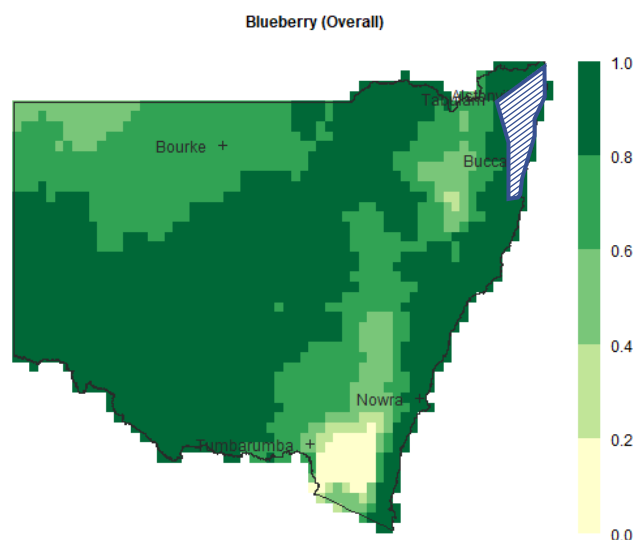


Figure 1. Mean historical (1971–2019) climate suitability score overall for Southern Highbush 11-11. The range in suitability is from 0 to 1, with 0 representing unsuitable and 1 representing ideal climate conditions. The areas labelled on the map indicate the locations that were used to validate the model. The blue-white striped polygon indicates where in NSW the Southern Highbush variety is currently grown. Source: NSW DPI.

The historical climate model shows that the climate is highly suitable (denoted by the dark green shading in Figure 1) for Southern Highbush blueberry production in the North Coast Local Land Services region, which is consistent with where the variety is currently grown in NSW (blue-white striped polygon). The pale yellow areas on the map have a very low climate suitability

and are determined as non-productive areas (e.g., Canberra, Great Dividing Range and Far North Western NSW) because frosts would frequently cause crop failures based on the historical climate data. Future analysis will build in climate projections for 2050 to estimate future climate suitability for blueberries.

By projecting to 2050, we will be able to provide timely insight to industry on the potential effects of climate change and possible adaptation priorities.

After examining the different future climate scenarios, researchers will investigate the adaptation options and report on how they may be able to mitigate any negative changes projected.

This will provide an important pathway for increasing the resilience of the blueberry industry to future climate change, as well as highlighting where opportunities for increased productivity might lie.

This work will help identify adaptation needs and priorities to guide research and development activities over the next 30 years.

In future issues of the Australian Berry Journal, we will report on future results for blueberries that include climate projections and their impact, changes in the climate suitability for Queensland fruit fly and any effects upon pollinators such as honeybees, and report on changes in blueberry crop water demand.

Acknowledgements

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