

NUT GROWING

VULNERABILITY RATING
(Low—High)



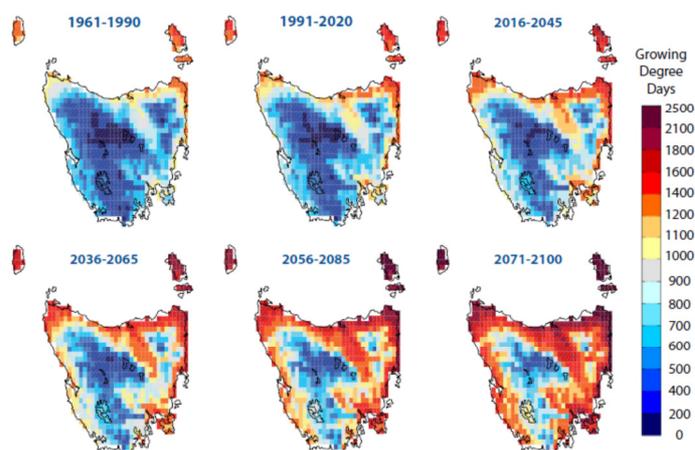
PROGNOSIS

The vulnerability of nuts to the significant reduction in projected chill hours will place substantial pressure on nut growing in the region. In dealing with changes to chill hours and increased rainfall in the region nut growers may be required to invest in crop protection infrastructure which may not be viable for all.

THE FUTURE OF NUT GROWING IN THE CRADLE COAST REGION

The main nuts grown in the CCNRM region are chestnuts, hazelnuts and walnuts. Nut growing in the CCNRM region is concentrated in the Kentish, Latrobe, Devonport and Central Coast LGAs.

The entire Cradle Coast NRM region is projected to have an increase in temperature of 2.6 to 3.3°C, which is similar to the rest of the state¹. Temperature changes in the region could have implications for the key growth stages of nut crops.



Rainfall in the nut growing region of the Cradle Coast is projected to increase in summer and winter by up to 10% and slightly decrease in spring but little change is expected during autumn¹. The increase in rain during summer could cause crop loss due to increased risk of rots and moulds². Annual rainfall suitable for hazelnut production is between 750 and 1200mm.

Figure 1. Annual growing degree days under the A2 emissions scenario. Source: Holz et al., 2010.

¹ Holz et al., 2010

² Luedeling et al., 2011

Irrigation is required during low rainfall and drought seasons³. Hazelnuts are most vulnerable to water stress between October and February. Dry autumns are essential for harvest³.

Another major contributing factor to nut growing is the number of growing degree days (GDD). Growing degree days, also referred to as growing degree units, is a measure of the heat required to grow and ripen crops¹. This is especially relevant to hazelnuts which require greater than 720 GDD and do best at 920 GDD². Under climate change the number of GDDs are projected to increase across the region (Figure 1).

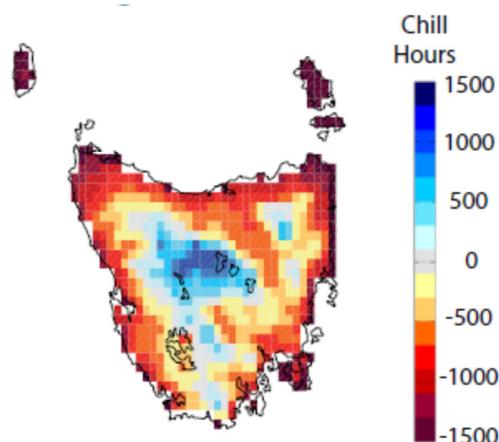


Figure 2. Change in annual chill hours under the A2 emissions scenario for 1961-1990 to 2071-2100.

The most detrimental climate impact on the productivity of current cultivars and viability² is likely to be the projected changes in winter chill hours. Chill hours, or chill units, are a measure of a plant's cumulative exposure to chilling temperatures which, for the model used¹, do not occur below 0°C or above 9°C. Hazelnuts require more than 1500 chill hours between May and September to overcome dormancy of flower and leaf buds³. Under the A2 emissions scenario chill hours at low altitudes are expected to decrease significantly (Figure 2). Chill hours, or chill units, are a measure of a plant's annual cumulative exposure to chilling temperatures which, for the model used¹ does not occur below 0°C or above 9°C. At Spreyton chill hours are projected to decrease by around 40% by 2085¹ which will add significant pressure on fruit growers to manage their crops.



ADAPTATION OPTIONS FOR NUT GROWERS

For nut growers to continue to prosper under a changing climate there are several adaptation pathways;

- ⇒ Investigating the potential to introduce new varieties of nuts capable of growing in warmer conditions.
- ⇒ Use of chemical dormancy breakers to combat decreasing winter chill.
- ⇒ Managing increasing summer rainfall and the risk of diseases through crop protection.

³ Kerslake, F, 2012

- ⇒ Continued management of frost risk, frosts are likely to occur earlier each season than in the current climate.
- ⇒ Understanding and managing disease and considering the introduction of disease resistant crops.
- ⇒ Exploring the potential for land use change which may arise in areas currently limited by temperature.

REFERENCES

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Images: Kerslake, F., 2012, Hazelnut growing in Tasmania, Wealth from Water factsheet, Tasmanian Institute of Agriculture



Australian Government

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