

Project: Assessing frost risk on new vineyard sites

Background

Spring frosts are a constant risk to cool climate vineyards. Damage to young shoots as a result of spring frost can decimate the crop. While expensive frost protection systems are available, consideration needs to be given to the frequency with which frost may occur. The potential for damage in any season depends on the time of the frost and the phenological stage of development of the vine. While there is little information regarding the date of bud break in New Zealand, many regions have long meteorological records. These enable mean and seasonal variation in bud-break dates to be estimated using phenological models.

Key results from this year

Using a phenological model, the date of 50% bud break and the point at which vines become vulnerable to frost damage was assessed over 69 years using temperature data from Lincoln University. This was compared to the date of the last frost (chosen as an air temperature of -0.5°C). In 21 years, the calculated date of bud break was before the last frost and damage could be expected. Comparing the dates of bud break and the last frost suggest that, while a cool spring may result in later bud break, the date of the last frost is also later.

A method has also been developed using short-term spring temperature records to compare frost risk from new vineyard sites with those of the regional meteorological station.

Publications

Trought M. Assessing frost risk on new vineyard sites. Poster presentation at the

International Cool Climate Symposium for Viticulture and Oenology (ICCS), February 2006, Christchurch, New Zealand.

Howell G., Trought M., Friend A. and Dami, I. Keeping out the cold: frost damage prevention. Poster presentation ICCS.

Howell G., Pool R. and Trought M. Managing cold, frost and other weather-related grapevine damage - a review. ICCS.

Key funding source

- Marlborough Wine Research Centre

Key staff involved

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