

Notes on winegrape hardiness work

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Project aim: Build hierarchical models of winegrape (*Vitis vinifera* subsp. *vinifera*) hardiness that best predict hardiness when compared to other major modeling options.

1 Work done to date

Carl Bogdanoff (AgCanada) has been collecting hardiness data for 7 years across several varieties and several vineyards (super cool data!) and has fit a model of hardiness for Chardonnay (he worked on this for several years) and now a model of Merlot (just completed, following his general design of the Chardonnay models). Since the summer Lizzie has *slowly* been trying to translate the models from Excel to R (see `..\analyses\hardiness_stab.R`).

Meanwhile other labs have worked on this too. We should check out work by Londo (led mostly, I believe, by his former student Kovaleski) and Markus Keller's group. Also, check out the French group of Charrier.

2 Next steps

1. Finish translating Carl's models from Excel to R (keep Carl and Lizzie in the loop).
2. If possible, code up models from Kovaleski work and Markus Keller (and Charrier if there is a published model), then compare all THREE modelling approaches using comparison metrics **including cross-validation**.
3. Code up a hierarchical modeling approach that includes the basics for hardiness but allows variation across varieties and vineyards.
4. If all goes well, project to future!