

**Geology and Wine 10. Use of Geographic Information System Technology to Assess Viticultural Performance in the Okanagan and Similkameen Valleys, British Columbia**

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**SUMMARY**

The complex geological history of the Okanagan and Similkameen valleys in British Columbia has created a wine growing region with diverse bedrock, soils, terrain and climate. Although wine grapes have been grown in the area for many decades, a recent conversion of vineyards to predominately *Vitis vinifera* varieties, and subsequent world recognition of wine quality, suggests that there is further potential to improve wine quality through fine-tuning of grape varietal choices and vineyard management techniques. A geographic information system (GIS) application has been developed to study the relationships among site conditions, management practices and vineyard performance including fruit and wine quality. The production area was divided into six regions based on landform and climate: 1. Kelowna, 2. Penticton 3. Vaseaux - Oliver, 4. Golden Mile, 5. Black Sage - Osoyoos, and 6. Similkameen. The compliment of grape varieties planted varies among the regions. Comparisons of regional patterns of varieties planted, and medals received, have revealed significant regional differences in varietal suitability. Although the majority of vineyards are sited on coarse-textured soils, comparisons of the distributions among soil textural classes of all and medal-winning vineyard blocks has revealed that quality wine grapes are grown on a broad range of soil types within and among the six regions studied. Loamy soils appear to be especially suitable for producing quality wine grapes in the Okanagan and Similkameen valleys.

## **Use of a Geographic Information System to Study Mesoclimate Variation in Okanagan Valley Vineyards**

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A geographic information system (GIS) has been constructed to study relationships among site conditions, management practices and wine grape quality in the Okanagan Valley in British Columbia. Most vineyards in the valley are sited on, or surrounded by, rough terrain which is suspected to cause variable mesoclimates that affect vine development and fruit maturation. A study was conducted to characterize mesoclimate variation and determine the relative effects of insolation and elevation on temperature variation. Temperature was monitored in two vineyards with a network of temperature sensors. Insolation was calculated as a function of slope, aspect and solar angle. Variation in temperature within the vineyards was as high as 8EC and was unrelated to insolation. Temperature appeared to be affected most by air movement influenced by terrain within and surrounding the vineyards. Basic composition of fruit from the sensor sites was examined to determine the degree to which fruit maturation was affected by temperature and insolation. Initial results indicate that insolation is less important than temperature in affecting fruit development.