A “terroir” is a wine grape production region, sharing a similar landscape, soil type, climate, grapes, vine management, and wine making tradition, which combine to provide a unique set of wine characteristics.

**Selected Elements of Terroir: Landscape, Climate, and Soil**

**Landscape**
When choosing a site for a vineyard, water and air drainage are the two most important considerations. Evaluation of the landscape and soil determines whether the site is suitable for a vineyard or if modifications are required. Soil scientists often look at:

- **Slope:** how steep is the hill?
- **Air drainage:** how does the air move over the landscape and between the vines?
- **Curvature:** what is the shape of the slope?
- **Aspect:** what direction is the slope facing?
- **Permeability:** how well can water move through the soil?
- **Penetration resistance:** how well can the roots penetrate the soil?

While wine grapes can grow well in many soil types, an ideal vineyard soil has a thin layer of topsoil and well-drained subsoil, which prevents root rot.

**Climate**
Wine grapes can grow in many climates. When choosing a grape variety, it is important to understand the landscape geography and micro-climates within a site. In general, extreme heat or cold harms the vines and excess precipitation or humidity causes plant diseases. Identifying weak areas can help plan for better management during the growing seasons.

**Keeping Frost at Bay**
Frost can be very damaging to grape buds, fruit, and vines, so viticulturists must be aware of this risk. It is essential that the landscape enable some mixing of air layers to prevent frost from settling on the vines during cold nights. Sites that are slightly elevated drain cold air, which collects in depressions on the landscape.

**Water Availability and Drainage**
Water drainage is critical; deep, well-drained soils help buffer the effect of heavy rainfall without reducing nutrient availability to the plant.

**Soil**
The soil pH (acidity level) is determined in part by the rocks (parent material) from which the soil comes; acidic soils have toxic levels of Al (aluminum). Wine grapes require significant quantities of K, N, P, Ca, and Mg from the soil during the growing season.

- **What is the soil pH?**
- **What amendments can we use to adjust soil pH?**

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