BASALT TERROIR

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Regions where wine grapes are cultivated in basalt-derived soils include the Canary Islands, Mt. Etna, Israel's Golan Heights, the Deccan Plateau of India, southeastern Australia, and the U.S. Pacific Northwest. In some of these regions, humid conditions and high degrees of weathering have produced vineyard soils that are rich in clay and iron. Although somewhat poorly drained, these soils generally have a high cation exchange capability that enhances the absorption of nutrients. Higher soil iron content has been shown to directly translate into higher grape iron content. Concentrations of iron and other soil-derived nutritive elements may indirectly affect wine quality through an ability to catalyze, inhibit, or alter the synthesis of organic compounds within the grapevine or during the winemaking process. The influence of basalt on viticulture in the weakly weathered soils of arid or volcanically active areas is related more to their thermal and hydrologic properties rather than their chemistry. For instance, rocky dark colored soils warm more quickly and to higher temperatures and radiate heat to grape clusters.

The Columbia Basin is perhaps the largest viticultural region in the world with basalt bedrock. However, the region's vineyards have traditionally been planted in thick silt loam soils derived from Pleistocene glacial outburst floods. These soils are chemically more similar to granite than basalt. In recent years, vineyards have expanded into areas with soils composed of basalt-cobble alluvium that are chemically and texturally distinct from the surrounding silt-loam soils. Wine critics quickly recognized that the wines produced from this new terroir were also quite distinctive. Vineyards in the Columbia Basin are presently being developed on steep hillsides where thinner flood-derived soils permit grapevine roots to encounter the underlying fractured and weathered basalt. In some areas, the soils and underlying bedrock are being mechanically disintegrated and homogenized (ripped) to create a hybrid soil of loess mixed with crushed weathered basalt. Chemical analyses of these soils show large increases in calcium relative to the unripped soil due to the introduction of caliche from the weathered basalt. The concentrations of other nutritive elements appeared to be optimal for vine growth.