

Research Proposal: Viticultural Terroir in Ashtabula County, Ohio

Prepared for: Applications in Cartography and Geographic Information Systems

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June 3, 2008

Summary

Problem/Objective

The first vineyard in what would become the State of Ohio was established in 1799 near Cincinnati (Gentile 1991). Since that time Ohio has seen its Wine Industry rise to continental dominance, falter to near-extinction, and, with the establishment of The Lake Erie American Viticultural Area (A.V.A.) in 1983, flourish once again (Atticks, 2000, Gentile, 1991). Ashtabula County has been important to this rebirth, with the first serious attempt at Vinifera-type (i.e. foreign) grape cultivation being made there in the early 1970's (Gentile, 1991). Chardonnay, Riesling, Gewurztraminer, Pinot Noir, and, to a lesser extent, Cabernet Sauvignon and Merlot grapes can all be found populating the county's vineyards (Atticks 2000).

What makes the Lake Erie A.V.A. and Ashtabula County such fertile ground for viticulture? Is there room for continued Wine Industry growth in Ashtabula County? The objective of this research is to approach these questions by:

- Identifying areas with geographic features that combine to provide ideal conditions for Vinifera-type grape cultivation.
- Analyzing and comparing the geographic distributions of ideal growing areas and existing vineyard locations.
- Analyzing and comparing the geographic distributions of ideal growing areas and potentially developable land in Ashtabula County.

Disciplinary Context

In his seminal work on the subject, James E. Wilson, geologist and former Vice President for Exploration and Production at Shell Oil, describes the notion of *Terroir* as:

"... a concept ... not easily grasped but includes physical elements of the vineyard habitat- the vine, subsoil, siting, drainage, and microclimate."

(Wilson, 1998)

In a broader sense, terroir refers to all aspects of the wine environment (Macqueen & Meinert, 2006). Obvious elements of this environment such as climate, geology, and landscape morphology along with more vague cultural elements such as regional expertise and proximity to historical markets and trade routes all come together to comprise the terroir of a place (Gentile, 1991, Sommers, 2008).

A growing body of work concerns the analysis and modeling of viticultural terroir using Geographic Information Systems. Vintners are using GIS technology for site-selection and to track information about their vineyards (Sommers, 2008). With their research, Bowen, et. al (2005) and Jones, et. al (2004) provide informative GIS-based examples of modeling and analyzing terroir production and potential.

In the United States much this work and research seems limited to the more well know wine centers of New York and the West Coast. Ohio and Ashtabula County could benefit from additional inquiry.

Data

The project will require data pertaining to:

- Soil: This data will be obtained from the Natural Resources Conservation Service's Soil Data Mart, where soil data is available at the county level.
- Topography: This data will be obtained in the form of a DEM(s) from the United States Geological Survey's Seamless Server.
- Climate: This data will be obtained from the NOAA's National Climatic Data Center for weather stations in and around Ashtabula County.
- Land Use: This data will be obtained from an online vendor in the form of a USDA-FSA Common Land Unit Dataset for Ashtabula County.
- Locational Data: Vineyard location data will be obtained either through use of remotely sensed imagery or GPS survey.

Research Methodology

The project will require the construction of a comprehensive Geodatabase that incorporates factors associated with the above data, specifically soil types (Soil), elevation, slope, and aspect (Topography), precipitation and growing degree days (Climate), land zoned for agriculture, farm/forest transition, and rural residential (Land Use), and vineyard locations (Locational Data). Ideal growing conditions for *Vinifera* grape

production will be defined using future research and consultation with Ashtabula County winemakers and growers.

The geographic pattern (if any) of vineyard locations will be described using a Nearest Neighbor spatial analysis. The geographic relationship (if any) between vineyard locations and the location of ideal growing conditions will be described using correlation analysis. Finally, potentially developable land with ideal growing conditions but not currently containing a vineyard will be identified.

Note: A great deal of this methodology relies heavily upon the methods laid out by Jones et. al (2004).

Research Plan/PPDAC

The following table provides a summary of the PPDAC of the project.

Phase	Description
Problem	Identify geographic features that contribute to Ashtabula County's wine industry and geographic potential for industry growth
Plan	Construct Geodatabase of Ashtabula's terroir and potentially developable land
Data	Soil, Topographical, Climatic, Land Use and Locational Data
Analysis	Nearest Neighbor analysis Correlation analysis
Conclusions	TBD

Bibliography

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