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Economic Contribution: Vineyards and Wineries of the North

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IN PARTNERSHIP WITH: NORTHERN GRAPES PROJECT
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NORTHERN GRAPES PROJECT

Successful viticulture research programs focused on the development of cold-hardy grapes promoted the emergence of new industries in states where grape growing and local wine making had previously been limited. Grape growers and wineries in these states, spanning from Nebraska in the west to northern New York and New England in the east, have rapidly adapted the new grape cultivars. As the number of vineyards has exploded, so has the number of wineries producing wines from these locally-grown grapes. The new industry faces challenges to production, marketing, and sales. These challenges are being addressed by the Northern Grapes Project. The Northern Grapes Project is funded by USDA's Specialty Crops Research Initiative Program of the National Institute of Food and Agriculture, project number 2011-51181-30850.

The Northern Grapes Project brings together researchers, Extension specialists, and industry professionals from 13 states to address viticulture, enological, business management, and marketing issues related to growing cold hardy grapes and producing wines made from these grapes. According to the grant application, after five years, the project teams intend to have accomplished the following goals: 1) production and sales of wines made from cold climate cultivars will have doubled, 2) improved quality resulting from better growing and winemaking practices will have improved customer retention and driven repeat sales, 3) enhanced breeding and cultivar evaluation will have resulted in an accelerated pace of cultivar release, 4) cold climate cultivars will establish unique regional marketing identities in their area, 5) wineries will have understood and applied business and tasting room management practices that drive sales and profitability, and 6) wineries and vineyards will have successfully transitioned from "startup" to "sustainably profitable."

To measure progress on these goals, one of the first tasks of the project team was to conduct a baseline survey. This survey, sent to grape growers and wineries in the participating states, gathered data on the current status of the grape and wine industry in general and on cold-hardy grape and wine production, specifically. Questions were asked pertaining to sales and production (wineries and vineyards), growing practices (vineyards), and operating practices (wineries).

The survey also included questions designed to measure the economic impact of the wine and grape industries. While similar studies have been conducted in selected states, each study has used different methodology, making it difficult to make comparisons and draw conclusions. This report will detail the economic impact of both 1) traditional wine grape and winery industries and 2) cold-hardy wine grape and cold-hardy winery industries in the participating states. In particular, the focus of this analysis is on wines produced from grapes grown within the each individual state. Therefore, the research is concentrated on "locally-sourced" wines or wines produced from grapes grown within each individual state.¹

This report is a companion piece to reports on the current status of wine grape vineyards and wineries in the project states. A report examining the industry and the economic contribution will be available for each participating state. To see the reports, please visit:

<http://www1.extension.umn.edu/community/economic-impact-analysis/reports/>.

¹ This distinction is of particular importance in New York and Michigan. Those states are home to established, industrial-sized wineries which source significant volumes of fruit and juice from out-of-state. This analysis includes wine produced from grapes and juice sourced from within the state, but not wine produced from grapes and juice sourced from other states. This is in keeping with the goals of this research project.



ECONOMIC CONTRIBUTION: VINEYARDS AND WINERIES OF THE NORTH: EXECUTIVE SUMMARY

- The Northern Grapes Project brings together researchers, extension specialists, and industry professionals from 13 states to address viticulture, enological, business management, and marketing issues related to growing cold-hardy grapes and producing wines from these grapes.
- In spring 2012, grape growers and winery owners in participating states were surveyed. Questions asked pertained to sales and production (wineries and vineyards), growing practices (vineyards), and operating practices (wineries). The goal was to establish an industry baseline. In total, 345 vineyards and 199 wineries provided full answers to the surveys. The focus of this study is on wine grape vineyards and wineries primarily using locally grown grapes and fruits in their production (i.e., locally-sourced wineries).
- In 2011, the *wine grape and locally-sourced winery industries* contributed \$1.5 billion dollars to the economy of the project states, including \$409 million of labor income. The industries generated 28,200 jobs.
- In 2011, the *cold-hardy wine grape and locally-sourced winery industries* contributed \$401 million to the economy of the project states, including \$130 million of labor income. The cold-hardy industries generated 12,600 jobs.
- Locally-source wineries generated \$926 million in economy activity and 13,500 jobs. Wines produced from cold-hardy grapes at these wineries contributed \$215 million of the output and 5,000 jobs.
- Winery tourists visiting locally-sourced wineries created \$470 million of economic output and 5,300 jobs in 2011. Of this, \$140 million of output and 1,700 jobs were as a result of visits to wineries utilizing cold-hardy grapes in their wine production.
- Wine vineyards were responsible for \$120 million of economic activity in 2011, including the creation of 9,400 jobs. Wine vineyards growing cold-hardy grapes generated \$46 million of the output and 5,900 of the jobs.
- Wineries are the primary driver of economic impact across the project states. Wineries provide the value-added to the wine grape and capture that value in their sales.
- Winery tourists account for a significant share of economic activity generated by the industry. Wineries are also unique in the sense that most of their sales originate from the tasting room. This requires wineries to attract customers to them, often to rural locations. This strategy drives a strong tourism-related industry.
- Cold-hardy wine grape vineyards and locally-sourced wineries remain a small portion of the total economic engine of the industries. However, survey results published in related Northern Grape Project publications document the recent growth of the industry. The results also indicate growth is expected to continue in the cold-hardy industry.



NORTHERN GRAPES PROJECT SURVEY

Survey Methodology and Response Rates

In early 2012, project researchers at the University of Minnesota sent a survey to grape growers and wineries in the participating states. Grower and winery lists were provided to the University of Minnesota by industry associations in each state (see appendix 1 for a list of participating associations). An email was sent to all members of these lists, resulting in 2,746 invitations to participate in the survey. Of these, 501 responded, for an overall response rate of 18 percent. In addition, links to the survey were available allowing individual growers and wineries not directly associated with an industry group, and thus not receiving a direct email invitation, to participate in the survey. These links were also announced during the Northern Grapes Project webinars. The survey links generated 110 responses. Therefore, in total, there were 611 total responses to the survey.

Table 1-1 lists the participating states, the number of wineries and growers invited based on the industry association lists, the number of respondents, and the response rate. Minnesota has the highest membership totals.² South Dakota had the highest response rate.

State	Total Number of Contacts from Industry Associations	Number of Responses	Response Rates
Connecticut	32	5	16%
Illinois	272	52	19%
Iowa	222	66	30%
Massachusetts	28	10	36%
Michigan	164	36	22%
Minnesota	1,012	167	17%
North Dakota	54	14	26%
Nebraska	172	46	27%
New Hampshire	51	14	27%
New York	202	32	16%
South Dakota	14	11	79%
Vermont	47	18	38%
Wisconsin	476	97	20%

² Responses were categorized by state the grower or winery owner indicated as the state in which their operation is located.

Not all of the survey responses were applicable to the baseline survey. Association memberships are generally open to all interested parties and therefore membership lists include individuals who may be considering grape growing or producing wine, or individuals who previously grew grapes or produced wines. The lists may also contain people associated with the industry in other capacities than growing and wine-making. Knowing this, the survey was designed to capture basic information on these individuals, even if they did not complete the full survey.

The first survey question asked “Are you associated with....1) a vineyard (past, present, or future), 2) a winery, 3) both, or 4) other. Those responding “other” were directed to the end of the survey. Thirty-eight respondents selected the “other” response.

Those responding “vineyard (past, present, or future)” were asked a follow-up question. Survey takers who indicated they grew grapes in the past or planned to grow grapes in the future were directed to the end of the survey. Twenty-three respondents are not currently growing.

The focus of the Northern Grapes Project is on commercial scale grape growers and wineries. Thus, grape growers were asked “Do you grow grapes for commercial sale or use? If you grow grapes exclusively for use in your own winery, answer yes”. Those responding “no” were directed to answer a series of questions about the size of their vineyard and then directed to the end of the survey. Seventy-three respondents indicated they were not commercial growers.

Finally, thirty-five responses were dropped because they did not answer enough of the questions to provide useful information. Table 1-2 shows how the responses were divided by these categories.

Table 1-2: Calculation of Total Useable Responses	
Total Responses	611
Non-Growers or Non-Winery Owners	38
Not Currently Growing Grapes	23
Non-Commercial Growers	73
Incomplete Responses	35
Useable Responses	442

Survey participants could be vineyard operators, winery operators, or operators of a joint vineyard-winery business. Over half (56 percent) of survey respondents operate a vineyard only. Among winery owners, it is more common to operate a combination of a winery-vineyard operation, with over one-third (35 percent) of survey respondents reporting this arrangement. Only 9 percent of wineries are operated independently of a vineyard. In total, the survey includes 193 wineries and 403 vineyards.

ECONOMIC CONTRIBUTION

The economic contribution of an industry is comprised of direct and secondary effects. Direct effects are economic activities generated by the industry itself. For example, spending by grape growers to purchase trellising supplies is a direct effect. Spending by wineries to purchase bottles is also a direct effect. Secondary effects are economic activities triggered by the initial spending. When a grape grower purchases trellising supplies, the manufacturer of the supplies must produce more, creating additional economic activity. When a winery buys bottles, the glass manufacturer must produce more, thus increasing output.

Direct Effects

In measuring the economic contribution of the wine grape growing and locally-sourced winery industries in the Northern Grapes Project states, the first step is to quantify the direct effect of the industries. To do this, researchers used data gathered in the Northern Grapes Project baseline study. The data collected in the study were used to derive averages per winery and per vineyard. These averages were extrapolated to the total population of wineries and wine grape vineyards in each state to determine the total direct effect for the state. The direct effect for each state was then summed to get the total direct effect of wine grape growing and locally-sourced wineries for all project states. For more detail on how this was done, please see the individual state summaries.³

The focus of this study is on wine grape vineyards and wineries primarily using locally-grown grapes and fruits in their production (i.e. locally-sourced wineries). Grapes grown for juice are not considered in this analysis. The distinction between locally-sourced and imported grapes is of most importance in New York where data limitations required the analysis to focus on grapes both grown and processed into wine in New York. In many Northern Grape Project states, the majority of grapes used in wine production are grown in the state. However, there are industrial-sized wineries in certain states that source a significant amount of grapes and juice from out-of-state. The focus of this research is on wines produced from grapes sourced in-state. This is in keeping with the focus of the research project.

Direct Effect of Wine Grape Vineyards

Wine grape vineyards in the Northern Grapes Project states spent \$68.6 million in 2011 (table 1-3). Fifty-five percent of those expenditures were for day-to-day operations, including wages, fertilizers, fungicides, cover crops, water, fuel, overhead, marketing, and tax preparation. The remainder (45 percent) was spent on capital improvements; including trellis systems, tractors, crushers, pick-ups, ATVs, and other equipment.

³ Exceptions were made in New York and Michigan. In each of those states, additional supporting data was provided by the United States Department of Agriculture. For more information, see the state summaries. Available at: <http://www1.extension.umn.edu/community/economic-impact-analysis/reports/>.



Table 1-3: Direct Impact of Wine Grape Vineyards: Northern Grapes Project States, 2011

	All Grapes	Cold-Hardy Grapes
Total Expenditures (millions)	\$68.6	\$25.1
Employment	5,731	3,480
Labor Expenses (millions)	\$16.9	\$5.8

Estimates by University of Minnesota Extension

Wine grape vineyards in the Northern Grapes Project states employed 5,730 individuals in a full-time, part-time, or seasonal capacity. Peak employment occurs during harvest season, when vineyards employ part-time, seasonal laborers. Vineyard employees were paid a total of \$16.9 million in 2011 or an average wage of \$2,950. While this number may appear low, in this analysis, one job is treated as one job, whether seasonal, part-time, or full-time. Therefore, wages earned for full-time workers are averaged with seasonal and part-time workers. Further, vineyard owners reported they often do not pay themselves a wage, but rather take the profit from the vineyard.

Given the history of grape growing and different climates in each state, cold climate (or northern) grapes are only a fraction of the total grapes produced in the participating states. According to vineyards responding to the survey, 28 percent of grapes they grow are of cultivars classified as cold-hardy cultivars.⁴ Thus, the direct effect of cold-hardy grapes is a fraction of the total effect of grape growing, as shown in table 1-3. In 2011, vineyards in the Northern Grapes Project states spent \$25.1 million to produce cold-hardy grapes including employing 3,500 workers.

Direct Effect of Locally-Sourced Wineries

Locally-sourced winery sales in the Northern Grapes Project states totaled \$492.9 million in 2011 (table 1-4).⁵ Total sales include wine sales, as well as tasting room fees, sales of other food and beverages, and sales of non-wine related items. Wineries in the project states employed 6,400 individuals, including full-time, part-time, and seasonal employees. The wineries spent \$77.1 million in wages and salaries on these employees or an average wage of \$12,100.

⁴ The percent of cold-hardy grapes as a percent of all grapes grown varies dramatically by state. It is as low as 1 to 2 percent in some states and as high as 99 percent in others.

⁵ The figure presented here is total winery sales minus an adjustment for the cost of grapes purchased. Including both vineyard sales and winery purchases of grapes would amount to double counting.

Table 1-4: Direct Impact of Locally-Sourced Wineries: All Northern Grapes Project States, 2011		
	All Grapes	Cold-Hardy Grapes
Sales Minus Grape Purchases (millions)	\$492.9	\$113.5
Employment (millions)	6,400	2,700
Labor Expenses (millions)	\$77.1	\$24.6
Estimates by University of Minnesota Extension		

Locally-sourced wineries in the Northern Grapes Project states use both cold-hardy and traditional grape varieties in the production of their wine. According to the wineries surveyed, 37 percent of the grapes used in their wine production were of a cold-hardy variety. Production of cold-hardy wines led to \$113.5 million of sales in the participating states in 2011 (table 1.4). Wineries employed 2,700 persons to produce cold-hardy wines and paid \$24.6 million in wages and salaries.

Direct Effect of Winery Tourists

Wineries also contribute to the economy through their role in tourism. Wineries host events and operate tasting rooms to attract visitors to their winery. When visitors come to the state or to the region to participate in a winery event or visit the tasting room, they spend additional dollars in the local economy. These expenditures also generate economic activity.

The Northern Grapes Project survey asked winery owners to estimate the number of tasting room customers they hosted on an annual basis. These estimates were factored into the calculation of the total number of winery visitors in each state. Event attendees were considered to be a subset of tasting room customers. Not all tasting room customers contribute to the economic impact of the winery. Only visitors who meet two qualifications generate new economic activity in the region. The qualifications are 1) must be from outside the study area and 2) must be visiting the area primarily as a result of the presence of the winery. These two criteria were applied to the total number of tasting room customers to determine the total number of tasting room tourists generating new economic activity. More information on the calculations and data sources is included in appendix three.

Visitor spending profiles were obtained from each participating state's official tourism bureau or other published source. Spending per person per day was used to calculate total spending by tourists.

In 2011, winery tourists in the Northern Grape Project states spent \$241.1 million while engaged in winery activities (table 1-5). Businesses providing goods and services to winery tourists employed 3,600 individuals and paid their employees \$133.3 million in labor income. Winery tourists visiting as a result of the production of cold-hardy grape varieties spent \$79.1 million.

Table 1-5: Direct Impact of Winery Visitors: Northern Grapes Project States, 2011

Millions	All Grapes	Cold-Hardy Grapes
Tourism Sales	\$ 241.1	\$ 79.1
Tourism Employment	3,600	1,134
Tourism Labor Income	\$133.3	\$26.6
Estimates by University of Minnesota Extension		

Indirect and Induced Effects

Now that the direct impacts of wine grape vineyards, locally-sourced wineries, and winery tourists are quantified, the data can be entered into an input-output model. Input-output models trace the flow of dollars throughout a local economy and can capture the indirect and induced, or ripple effects, of an economic activity. The input-output data from RIMS II (Bureau of Economic Analysis) was used in this report.

Indirect effects are those associated with a change in economic activity due to spending for goods and services. In this case, these are the changes in the local economy occurring because vineyards and wineries need to purchase inputs (trellises, bottles, etc.) and related services (viticulture support, label design, etc.). These are business-to-business impacts.

Induced effects are those associated with a change in economic activity due to spending by the employees of businesses (labor) and by households. Primarily, in this study, these are economic changes related to spending by vineyard and winery workers hired to perform vineyard and winery tasks. These are business-to-consumer impacts.

Total Economic Effects

The total economic contribution of an industry is calculated by adding the direct, indirect, and induced effects. In 2011, the total economic contribution of the wine grape growing and locally-sourced winery industries in the participating states was \$1.5 billion. This includes 28,200 jobs and \$408.5 million in labor income (table 1-6).

Table 1-6: Total Economic Contribution of Wine Grape Vineyards, Locally-Sourced Wineries, and Winery Tourists: Northern Grapes Project States, 2011 (millions)

	Wine Grape Vineyards	Locally-Sourced Wineries	Winery Tourists	Total
Output	\$119.9	\$926.0	\$469.4	\$1,515.3
Employment	9,400	13,500	5,300	28,200
Labor Income	\$32.8	\$234.0	\$141.7	\$ 408.5
Estimates by University of Minnesota Extension				

Total Economic Effects of Cold-Hardy Grapes

Cold-hardy grape and wines are a subset of total wine and grape production. In 2011, the total economic contribution of the cold-hardy grape growing and winery industry in the participating states was \$401.0 million. This includes 12,600 jobs and \$127.5 million in labor income (table 1-7).

	Wine Grape Vineyards	Locally-Sourced Wineries	Winery Tourists	Total
Output	\$45.5	\$215.1	\$140.4	\$ 401.0
Employment	5,900	5,000	1,700	12,600
Labor Income	\$11.8	\$72.2	\$43.5	\$ 127.5

Estimates by University of Minnesota Extension

The cold-hardy wine and grape growing industries accounted for a fraction of the total economic contribution of the industries in 2011. In conjunction with this economic contribution study, researchers also conducted a survey of grape growers and wineries in the project states. Those results indicate growth in the cold-hardy industry has been rapid (1 of every 3 wineries and vineyards established since 2007). Since maturity for a vine is 4 years, many of these vineyards and wineries have yet to reach full production, indicating in the short-term, capacity will increase. In the longer-term, wineries and vineyards indicate plans for continued growth and expansion. As a result, we predict the economic contribution of cold-hardy grapes will continue to grow.



SUMMARY AND CONCLUSIONS

In spring 2012, grape growers and winery owners in 13 states were surveyed. Questions asked pertained to sales and production (wineries and vineyards), growing practices (vineyards), and operating practices (wineries). The goal was to establish an industry baseline. In total, 345 vineyards and 199 wineries provided full answers to the surveys. The focus of this study is on wine grape vineyards and wineries primarily using locally-grown grapes and fruits in their production (i.e. locally-sourced wineries).

In 2011, the *wine grape and locally-sourced winery industries* contributed \$1.5 billion dollars to the economy of the project states, including \$409 million of labor income. The industries generated 28,200 jobs.

In 2011, the *cold-hardy wine grape and locally-sourced winery industries* contributed \$401 million to the economy of the project states, including \$130 million of labor income. The cold-hardy industries generated 12,600 jobs.

Locally-sourced wineries generated \$926 million in economy activity and 13,500 jobs. Wines from cold-hardy grapes produced at these wineries contributed \$215 million of the output and 5,000 jobs.

Winery tourists visiting locally-sourced wineries created \$469 million of economic output and 5,300 jobs in 2011. Of this, \$140 million of output and 1,700 jobs resulted from visits to wineries using cold-hardy grapes.

Wine vineyards were responsible for \$120 million of economic activity in 2011, including the creation of 9,400 jobs. Wine vineyards growing cold-hardy grapes generated \$46 million of the output and 5,900 of the jobs.

The results of this study highlight the importance of the wine grape growing and locally-sourced winery industries in the Northern Grapes Project states. This is the first study designed to examine the industry comprehensively and apply the same methodology to calculating the economic contribution of the industries in the project states. This analysis serves as a baseline for gauging changes in the industries over time.

The research reveals interesting findings. Wineries are the primary driver of economic impact across the project states. Wineries provide the value-added to the wine grape and capture that value in their sales. The wine grape and winery industries are fairly unique in their interdependence for continued growth and success. Winery tourists account for a significant share of economic activity generated by the industry. Wineries are also unique in the sense that most of their sales originate from the tasting room. This requires wineries to attract customers to them, often in rural locations. This strategy drives a strong tourism-related sector.

Cold-hardy wine grape vineyards and locally-sourced wineries remain a small portion of the total economic engine of the industries. However, survey results published in related Northern Grape Project publications document the recent growth of the industries. The results also indicate growth is expected to continue in the cold-hardy wine and grape growing industries for the foreseeable future.

APPENDIX ONE: PARTICIPATING INDUSTRY ASSOCIATIONS

The following industry associations/councils provided membership lists for the baseline and economic impact survey.

Connecticut Vineyard and Winery Association
Illinois Grape Growers and Vintners Association
Iowa Wine Growers Association
Lake Champlain Wines
Massachusetts Farm Wineries and Growers Association
Michigan Grape and Wine Industry Council
Minnesota Grape Growers Association
Nebraska Winery and Grape Growers Association
New Hampshire Winery Association
New York Wine and Grape Foundation
Northern Illinois Wine Growers
Scenic Rivers Grape and Wine Association
South Dakota Specialty Producers Association
South Dakota Winegrowers Association
Upper Hudson Valley Wine and Grape Association
Vermont Grape and Wine Council
Western Iowa Grape Growers Association
Wisconsin Grape Growers Association



APPENDIX TWO: DEFINITION OF COLD-HARDY GRAPES

For purposes of this study, researchers classified the following cultivars as cold-hardy. This was done in consultation with the Northern Grapes project advisory team which is comprised of growers in each of the states.

Table A-1: Cold-Hardy Red Varieties

Baltica
Beta
Frontenac
GR-7
King of the North
Leon Millot
Marechal Foch
Marquette
Petite Pearl
Sabrevois
St. Croix
Valiant
Other red Swenson

Table A-2: Cold-Hardy White Varieties

Brianna
Edelweiss
Esprit
Frontenac blanc
Frontenac gris
Kay Gray
La Crescent
La Crosse
Louise Swenson
Petite Amie
Prairie Star
St. Pepin
Other white Swenson

APPENDIX THREE: WINERY TOURIST AND EXPENDITURE CALCULATIONS

Three critical pieces of information are necessary to calculate the economic impact of winery tourists. First, researchers need an estimate of the number of winery visitors in a certain time period. Second, researchers need to know the motivations of these winery visitors and the number of visitors from outside the region (local area). Third, researchers need an average spending profile for each tourist.

For purposes of this study, the total number of winery visitors in each state was extrapolated from the winery survey. Winery owners were asked to estimate the number of customers their tasting rooms entertained in 2011. Event attendees (e.g. weddings, new release parties, etc.) are assumed to be a subset of the total number of tasting room customers. The average number of customers was then applied to all wineries. The exception here is New York. Due to concerns about low response rates, a secondary data source was used to measure the number of visitors.

Economic impact theory stipulates that impact is driven by dollars from outside the region. Local residents may visit a winery and spend money, but theoretically, they would have spent those dollars in the local economy on another leisure activity if the winery were not located in their community. The number of tasting room customers, therefore, has to be adjusted to represent only those from outside the community who have traveled to the area specifically to visit a winery. These visitors are hereafter referred to as winery tourists. Research on tasting room customers in Michigan (conducted by Michigan State researchers Don Holecek and Dan McCole as part of the Northern Grapes Project) indicates that approximately two-thirds (67 percent) of tasting room visitors are tourists.

Since economic impact theory further instructs that economic impact is only attributable to a business or an event if the business or event is the primary purpose for the tourism activity, the final number of winery tourists was calculated by estimating the number of tourists to the area due to the presence of the winery. If a tourist visits a winery while in town celebrating a wedding, the wedding is the primary purpose of the visit and should be credited with economic impact and not the winery. Tasting room research, conducted by Michigan State researchers, determined the winery itself was a driving factor in 49 percent of visits to the winery.

With the number of winery tourists quantified, researchers need to apply an average spending profile to determine total spending by winery tourists. For each state, spending profiles were obtained from a secondary data source, typically a recently published tourism spending profile commissioned by the state tourism association. For more on an individual state's source, please read the individual state summary, found at:

<http://www1.extension.umn.edu/community/economic-impact-analysis/reports/>.

The winery tourist economic impact calculations are arguably the most complex of this report. Future research into the economic impact of locally-sourced wineries and wine grape vineyards in Northern Grapes Project states would be greatly enhanced by 1) doing tasting room customer surveys in each individual state and 2) developing a spending profile specifically for each state's winery visitors.

