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Vineyards and Wineries in North and South Dakota

A STATUS AND ECONOMIC CONTRIBUTION REPORT

Authored by: Brigid Tuck, Extension Center for Community Vitality, and William Gartner, Department of Applied Economics



IN PARTNERSHIP WITH: NORTHERN GRAPES PROJECT



Department of
**APPLIED
ECONOMICS**

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May 2014

Authored by: Brigid Tuck and William Gartner

Partners/Sponsors:

Northern Grapes Project

Special Thanks To:

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South Dakota Specialty Producers Association
South Dakota Winegrowers Association
Tim Martinson, Senior Extension Associate, Cornell University
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Table of Contents

1. NORTHERN GRAPES PROJECT	1
2. VINEYARDS AND WINERIES IN NORTH AND SOUTH DAKOTA: EXECUTIVE SUMMARY	2
3. SURVEY METHODOLOGY AND RESPONSE RATES	3
4. VINEYARD CHARACTERISTICS	5
Vineyard Operations	10
Marketing and Grape Utilization	13
Future Plans	16
Grape Varieties	18
5. WINERY CHARACTERISTICS	25
Grape Acquisition	31
Winery Sales and Production	33
Winery Marketing and Collaboration	38
Future Plans	43
6. ECONOMIC CONTRIBUTION OF VINEYARDS AND WINERIES IN NORTH AND SOUTH DAKOTA	45
Direct Effects	45
Indirect and Induced Effects	46
Total Economic Effects	46
Cold-Hardy Related Economic Effects	47
7. SUMMARY AND CONCLUSIONS	48
8. APPENDIX ONE: PARTICIPATING INDUSTRY ASSOCIATIONS	50
9. APPENDIX TWO: COLD-HARDY GRAPE DEFINITION	51
10. APPENDIX THREE: WINERY TOURIST AND EXPENDITURE CALCULATIONS	52

NORTHERN GRAPES PROJECT

The emergence of cold hardy wine grape cultivars (primarily *Vitis riparia*) in the 1990s created a new and rapidly expanding industry of small vineyard and winery enterprises in states across New England, northern New York, and the Upper Midwest. While the North American ancestry of these cultivars confers exceptional climatic adaptation and disease resistance, other challenges to production, processing, and marketing have slowed their successful commercialization in regional and national markets. Because their growth habit and fruit composition differ from traditional grape hybrids (i.e. *Vitis vinifera*), new viticulture and enological practices are needed. Marketing tools are also required to educate consumers unfamiliar with the grapes and the wine styles they produce. Consequently, the long-term viability of these new businesses requires coordinated research and extension to optimize viticultural, enological (winemaking), business management, and marketing practices. To meet the needs articulated by industry stakeholders, the United States Department of Agriculture funded the Northern Grapes Project.

The Northern Grapes Project brings together researchers, Extension specialists, and industry professionals from 13 states to address viticultural, enological, business management, and marketing issues related to growing cold hardy grapes. 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).

This document reports the results of the baseline survey for vineyards and wineries in North and South Dakota. It also quantifies the economic contribution of the industries. North and South Dakota are included in this report together given the relatively low number of wineries and vineyards in each state. Individual state reports would not feature enough survey responses to publish.



VINEYARDS AND WINERIES IN NORTH AND SOUTH DAKOTA: EXECUTIVE SUMMARY

- In spring 2012, grape growers and winery owners in 13 states were surveyed under the Northern Grapes Project. Questions asked pertained to sales and production (wineries and vineyards), growing practices (vineyards), and operating practices (wineries). The goal was to establish industry baselines and quantify the economic contribution of the industries. This report presents the results for North and South Dakota.
- In 2011, the total economic contribution of the grape growing and winery industries in North and South Dakota was \$26.4 million. This includes 665 jobs and \$8.8 million in labor income. Vineyards contributed \$880,000 to the total, wineries \$11.6 million, and winery tourists \$13.9 million.
- Cold-hardy grapes contributed \$16.8 million in economic activity to the economy of North and South Dakota in 2011. The industry was responsible for the creation of 460 jobs and \$5.6 million in labor income.
- Cold-hardy grapes figure prominently into the grape growing industry in North and South Dakota. Grape growers report 96 percent of the grapes they plant are of the cold-hardy varieties defined in this report. There are indications the vineyard industry may be slowing its growth in the Dakotas.
- Vineyard concerns include pests/insects and disease. Interestingly, North and South Dakota vineyard operators are more concerned about government policies and regulations than their counterparts in other states.
- Wineries in North and South Dakota appear to operate differently than their counterparts in other Northern Grapes project states. North and South Dakota wineries all report producing fruit wines which is unique to those states. Typically, only a few wineries in each state report producing fruit wines. That fruit wine production is reflected throughout the industry, with wineries reporting buying fewer grapes per winery, producing more labels of wine other than red and whites, and producing non-alcoholic items for sale.
- There appears to be significant room for the winery industry to develop and mature in North and South Dakota. Currently, over 90 percent of a winery's sales are derived from wine sales. Seventy-eight percent of wineries operate a tasting room, but only 38 percent charge for a tasting and only 13 percent offer food service. North and South Dakota wineries also demonstrate lower rates of collaboration with other organizations.
- It appears there will be continued growth in the number and size of wineries in the Dakotas. Perceived challenges to the industry include government policies and regulations and sales.



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 using the open links, and the response rate. Minnesota has the highest membership totals.¹ South Dakota had the highest response rate.

The North Dakota Grape and Wine Association, the South Dakota Specialty Producers Association, and the South Dakota Winegrowers Association provided e-mail contact for their memberships. In total, 68 invitations to participate in the survey were sent to potential North and South Dakota growers and wineries. Of those, 25 individuals responded, for a response rate of 37 percent.

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%

¹ Responses were categorized by state the grower or winery owner indicated as the state in which their operation is located.

Vermont	47	18	38%
Wisconsin	476	97	20%

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 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.

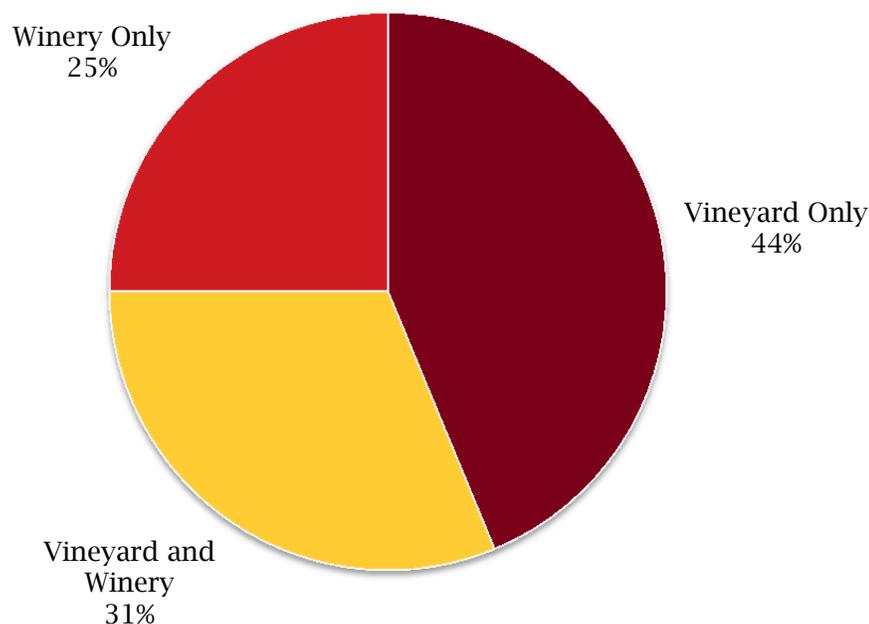
The first survey question asked “Are you associated with...1) a vineyard (past, present, or future), 2) a winery, 3) both, or 4) other. Those responding “other” were directed to the end of the survey.

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.

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.

Survey participants could be vineyard operators, winery operators, or operators of a joint vineyard-winery business (see chart 1-1). Forty-four percent of survey respondents in the Dakotas operate a vineyard only. Another thirty-one percent operate a joint vineyard and winery operation. One-quarter operate a stand-alone winery. In total, the survey includes 9 wineries and 11 vineyards.

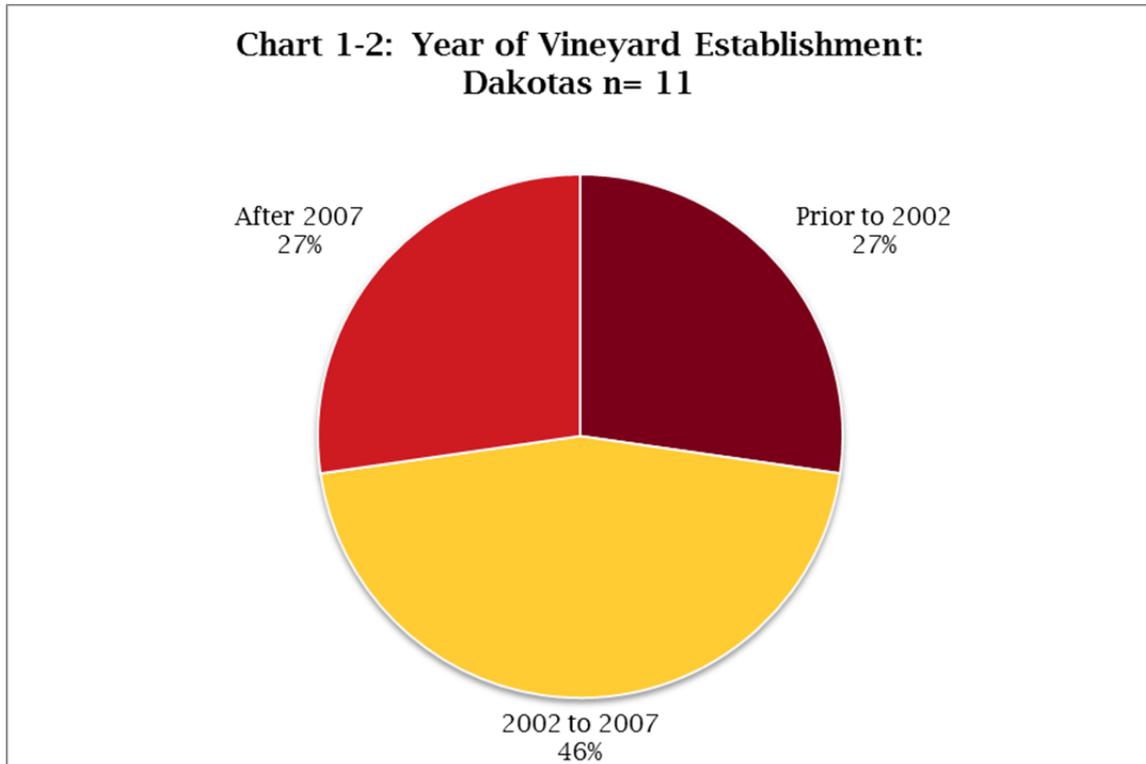
Chart 1-1: Are You Associated With? Dakotas



VINEYARD CHARACTERISTICS

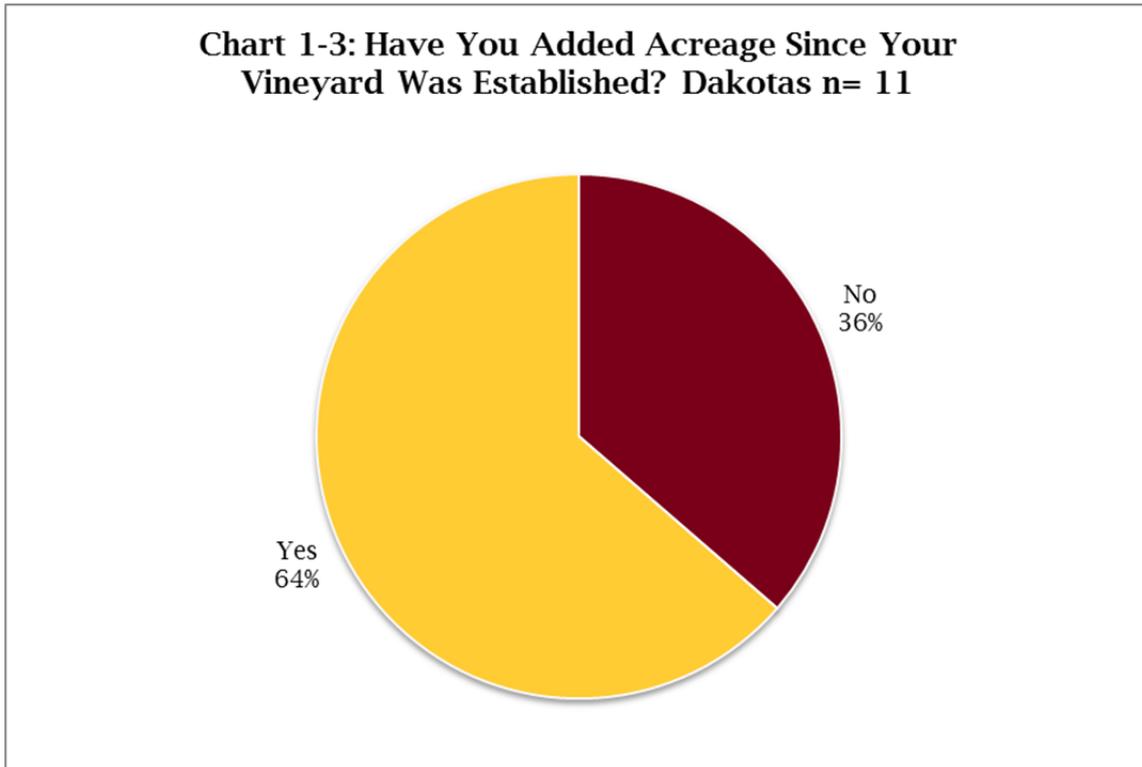
Eleven respondents indicated they owned and operated a vineyard in North or South Dakota. The National Agricultural Statistics Service reports 79 vineyards in the two states.² Therefore, the response rate for this study is 14 percent.

The Northern Grapes Project baseline survey results reinforce the observed trend of rapid growth in the grape growing industry in the Dakotas (see chart 1-2). Nearly one of every two responding vineyards was established between 2002 and 2007. The survey results indicate a tapering of growth in the Dakotas, with just over a quarter of vineyards being planted since 2007.



² Number of vineyards is from the 2007 Census of Agriculture. This is the most current data available. While individual states may have new estimates, the research uses the USDA data to provide consistency across all reports.

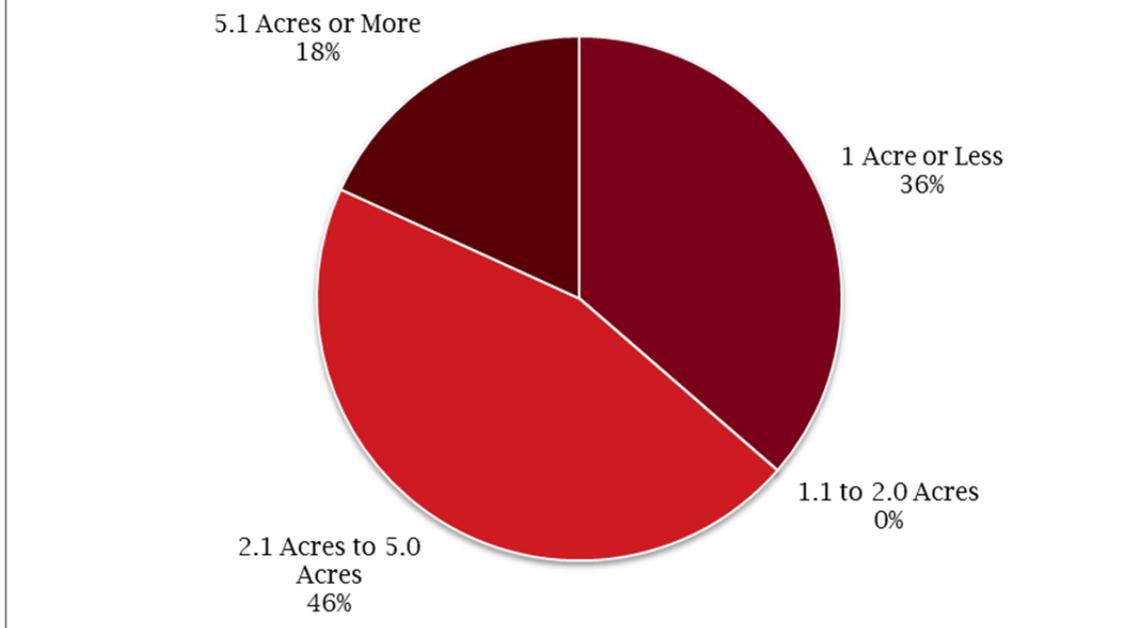
In addition to new vineyards being established, current vineyards continue to expand their planted acreage. Sixty-four percent of responding vineyards indicated they had planted additional acreage since the original founding of their vineyard, chart 1-3.



Vineyards in the Dakotas average 3.6 acres in size. Nearly half of the responding vineyards are between 2.1 and 5.0 acres in size. Just over one-third of vineyards are less than 1 acre in planted size. No vineyards between 1.1 and 2.0 acres responded to the survey (chart 1-4). As is consistent with the two previous charts, the larger vineyards were planted prior to 2006, giving them time to expand their acreage.

The survey results, extrapolated out to the entire population of vineyards, indicate there are 280 acres planted in grape vines in the Dakotas. Survey results show that 96 percent, or 271 acres, of the planted vines are of the cold-hardy varieties defined in this study. The varieties classified as “cold-hardy” for purposes of this report are listed in appendix two.

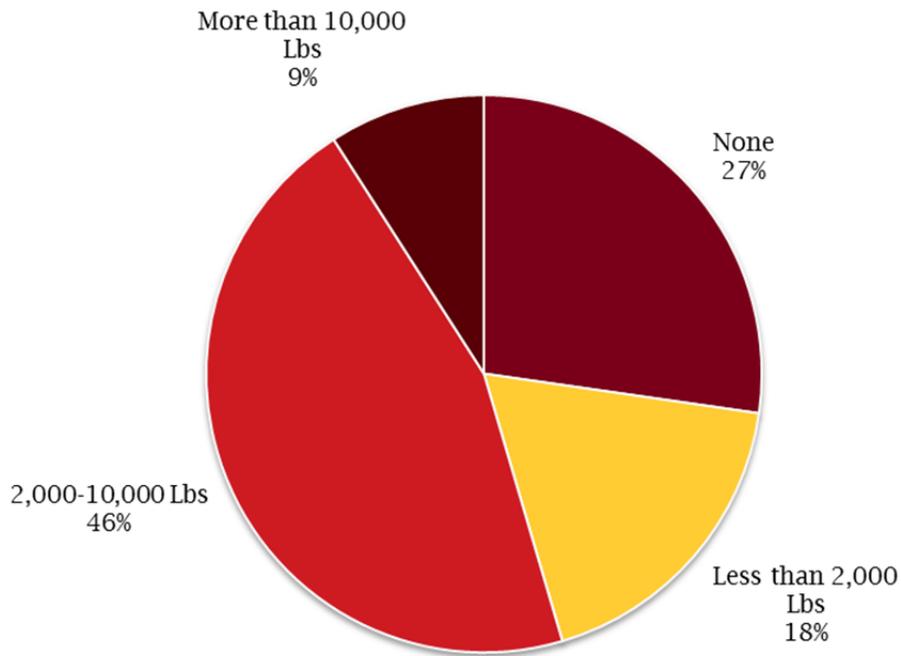
Chart 1-4: What is the Total Planted Acreage of Your Vineyard? Dakotas n= 11



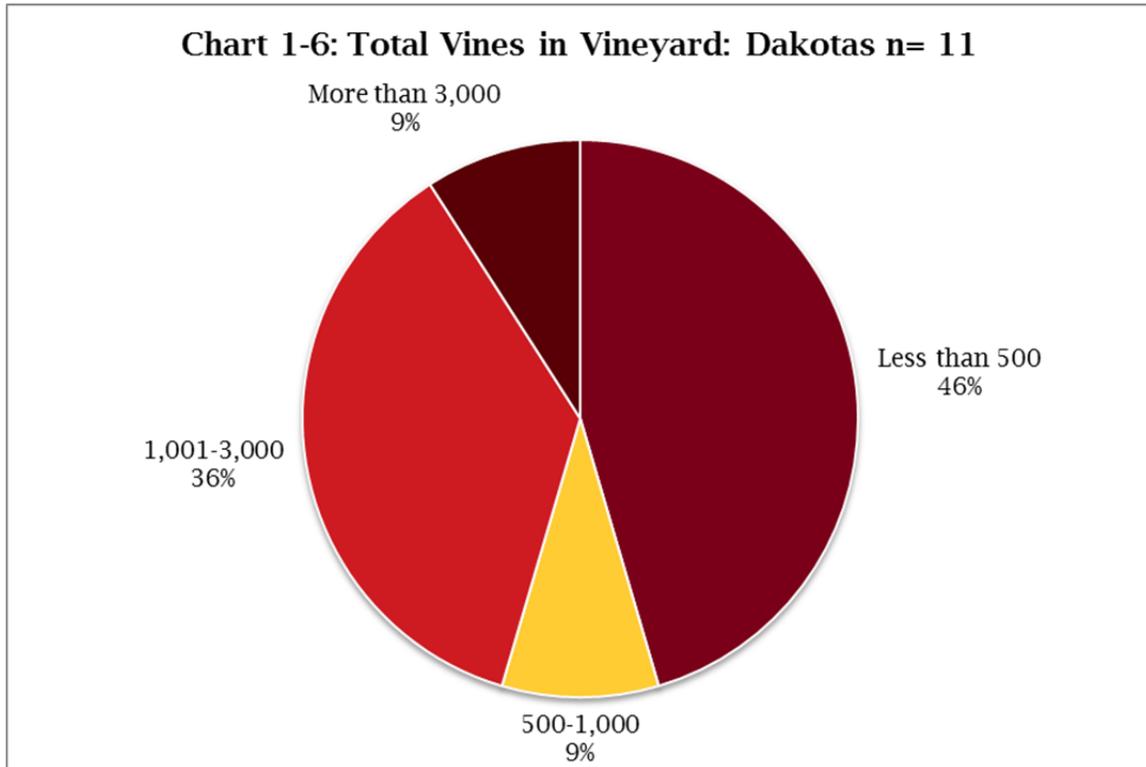
Vineyard production reflects the age of vineyards and the size of vineyards in the survey population, see chart 1-5. Twenty-seven percent of the vineyards surveyed indicated they did not produce any fruit in 2011. As depicted in chart 1-2, 27 percent of vineyards were planted after 2007, which means they likely have not reached maturity yet. Therefore, it is not surprising they have not produced harvestable fruit.

Survey results, extrapolated to represent all growers in the state, reveal North and South Dakota grape growers produced approximately 385 tons of fruit in 2011. Average yield on producing acreage was 1.6 tons per acre in 2011. This yield is lower than expected. It may be that the acreage is just coming into production and has yet to reach its full production potential. Multiple growers also indicated their crops were affected by hail and frost during the growing season, which may have reduce yields.

Chart 1-5: Vineyard Production: Dakotas n= 11

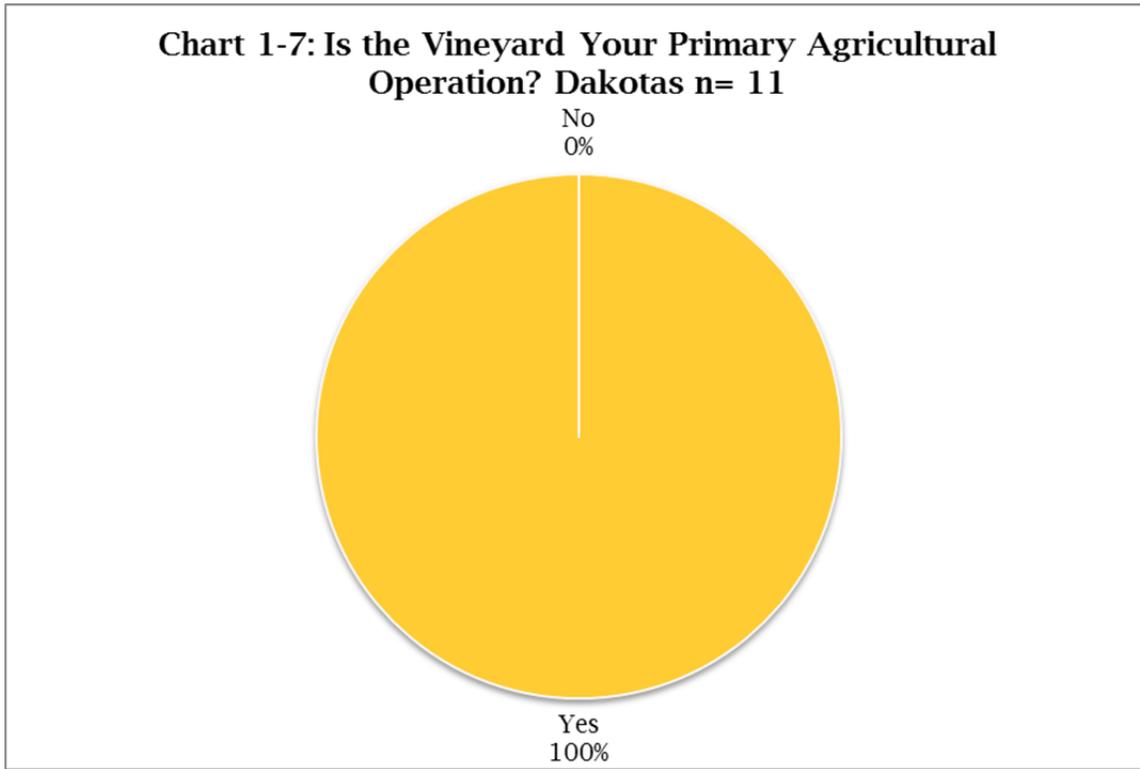


The average participating vineyard has 1,450 planted vines. Forty-six percent of vineyards have less than 500 vines in the ground and 36 percent have 1,001 to 3,000 vines in the ground, as shown in chart 1-6.



Vineyard Operations

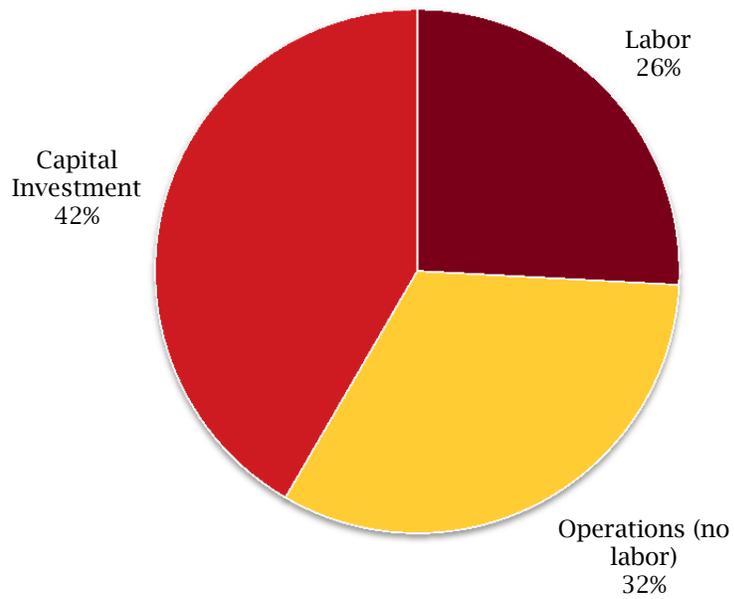
All of the vineyards operate as stand-alone agriculture enterprises (see chart 1-7). None of the vineyards are operated as commercial nurseries.



The average responding vineyard in North and South Dakota spent \$6,640 to operate in 2011. Of these, vineyards made \$3,880 of expenditures for operations (including \$1,700 of labor payments) in 2011. Operating expenses include fertilizers, fungicides, cover crops, water, fuel, overhead costs, marketing, and taxes. Responding vineyards also spent an average of \$2,760 on capital investments, including trellis systems, tractors, crushers, pick-ups, ATV's, and other equipment.

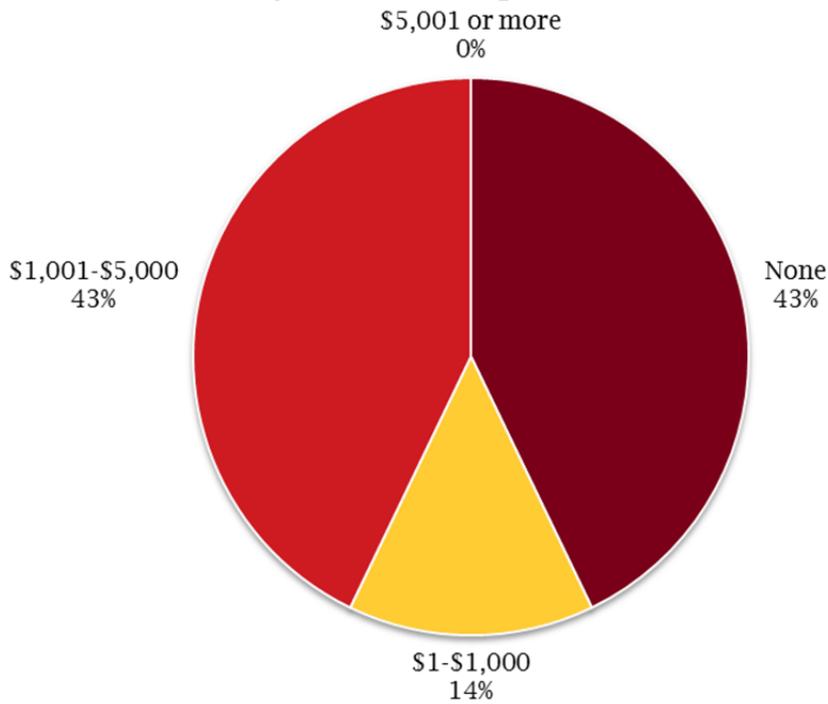
In total, vineyards in the Dakotas spent \$525,000 in 2011. Of this, \$306,400 was spent on operating expenses (includes labor) and \$218,400 on capital expenditures. Vineyards spent \$135,600 of the total operating costs on labor expenditures, see chart 1-8. Forty-two percent of a North or South Dakota vineyard's annual expenditures were spent on capital investments, 26 percent on labor, and 32 percent on operations.

**Chart 1-8: Vineyard Expenditures by Category:
Dakotas n=11**



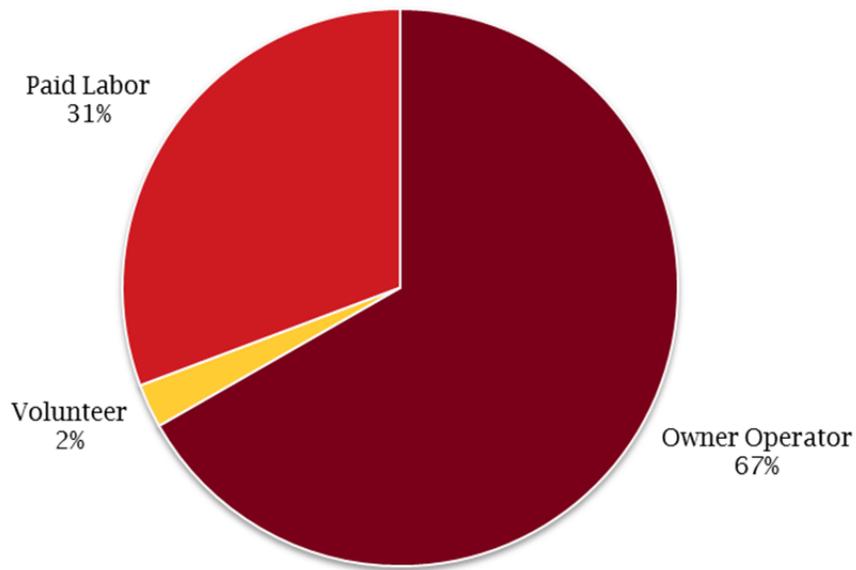
Of the 7 vineyards that responded to the detailed questions regarding labor expenditures, 43 percent reported no expenditures for labor (chart 1-9). This is primarily because the owner/operator did all the labor or the vineyard used volunteer or family labor to complete the vineyard tasks.

Chart 1-9: Vineyard Labor Expenditures: Dakotas n= 7



As shown in Chart 1-10, the majority of labor for the responding vineyards was provided by the owner/operator (67 percent). Thirty-one percent of labor was supplied by paid employees. Only two percent of labor was provided by volunteers, which is lower than in other Northern Grapes project states.

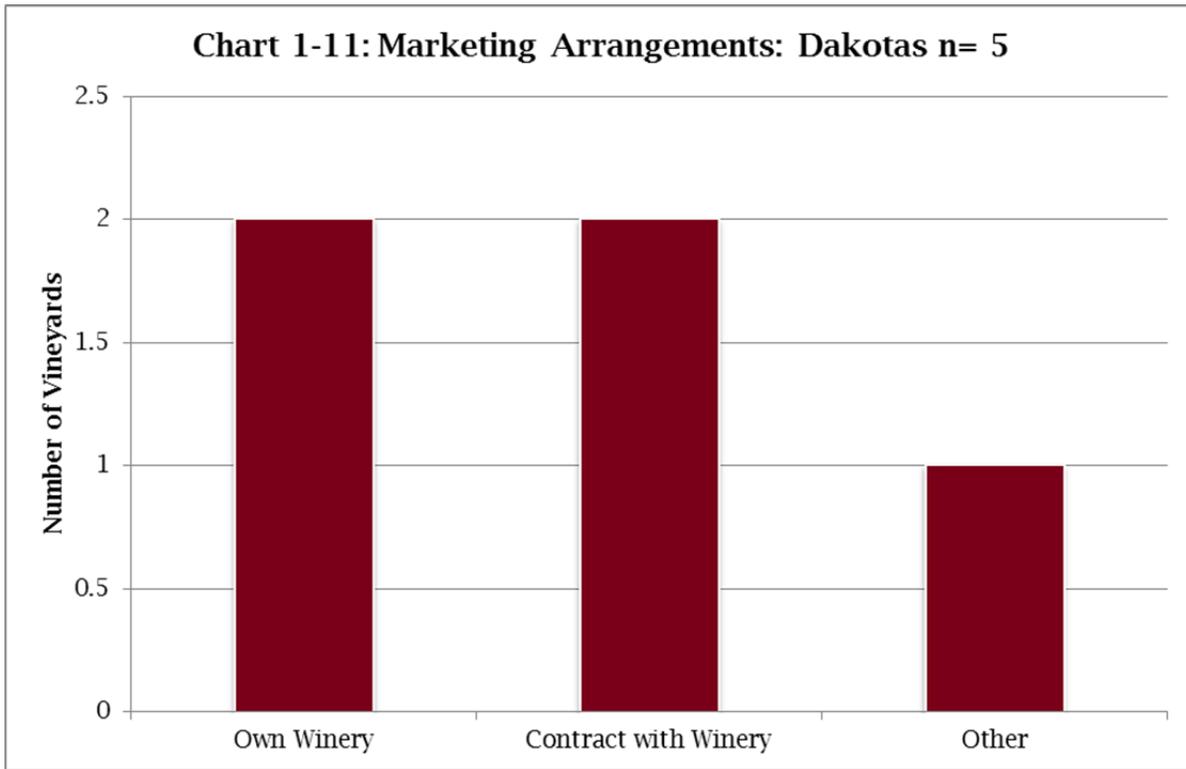
Chart 1-10: Hours of Labor by Category: Dakotas n= 5



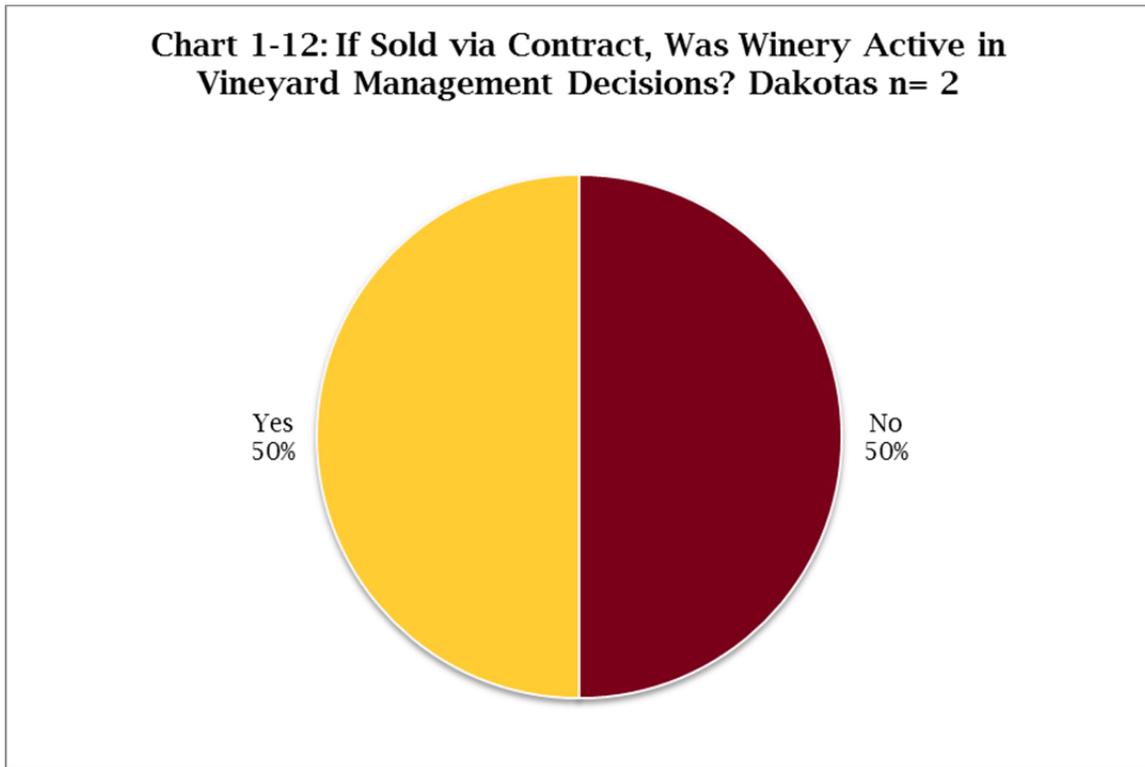
Marketing and Grape Utilization

Grape growers were asked which market arrangements they used to sell their grapes (chart 1-11). They could select more than one choice. The most commonly used methods, selected by 2 growers each, was to sell to their own winery and contract sales to wineries. No growers indicated using a broker or networking to sell their grapes.

Chart 1-11: Marketing Arrangements: Dakotas n= 5

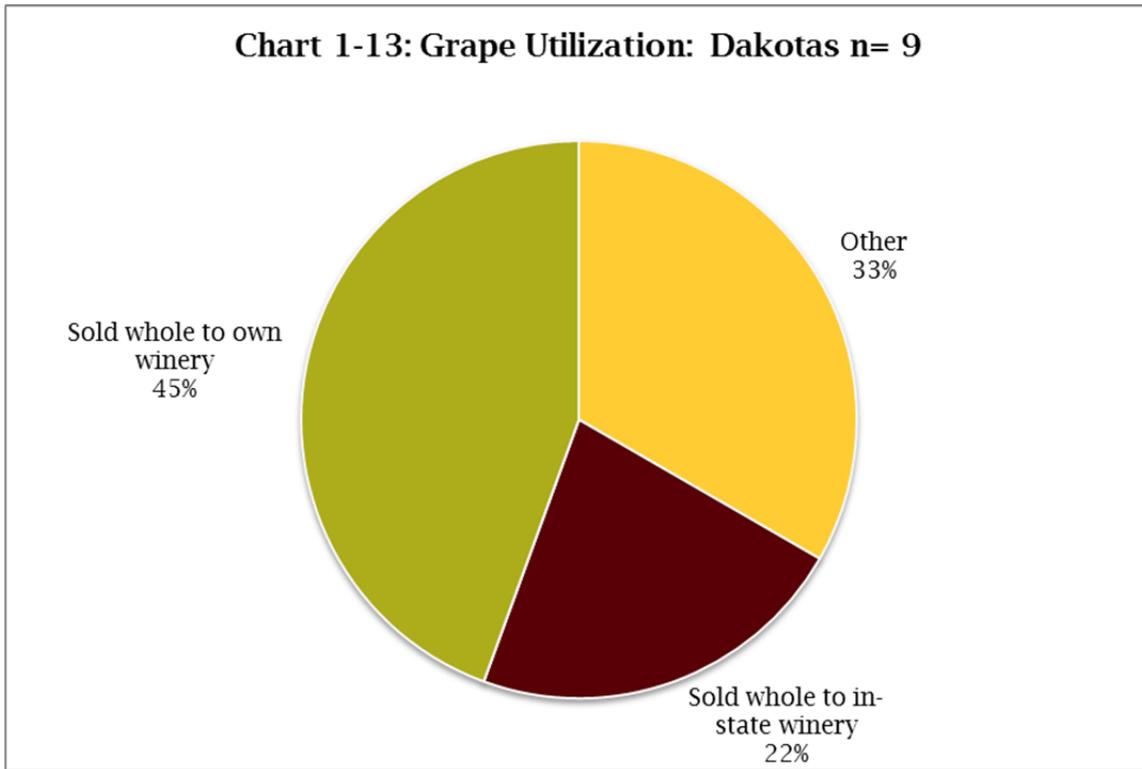


Growers that contract with wineries to market their grapes are interacting with the winery to make management decisions, as shown in chart 1-12.



The most common arrangement for responding vineyards is to sell their grapes in a whole berry format (see chart 1-13). Forty-five percent of vineyards sold their grapes as whole berries to their own winery. Twenty-two percent sold their berries whole to an in-state winery. This reinforces the knowledge that grape growing and wineries are often local operations, working and contributing to the communities in which they are located. None of the responding grape growers reported selling out of the state. “Other” uses included personal use or a lack of harvest.

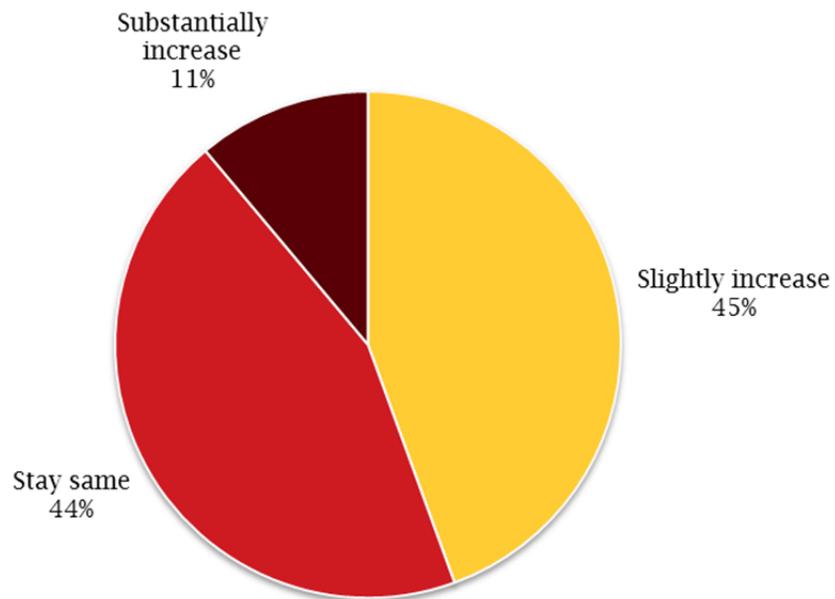
Chart 1-13: Grape Utilization: Dakotas n= 9



Future Plans

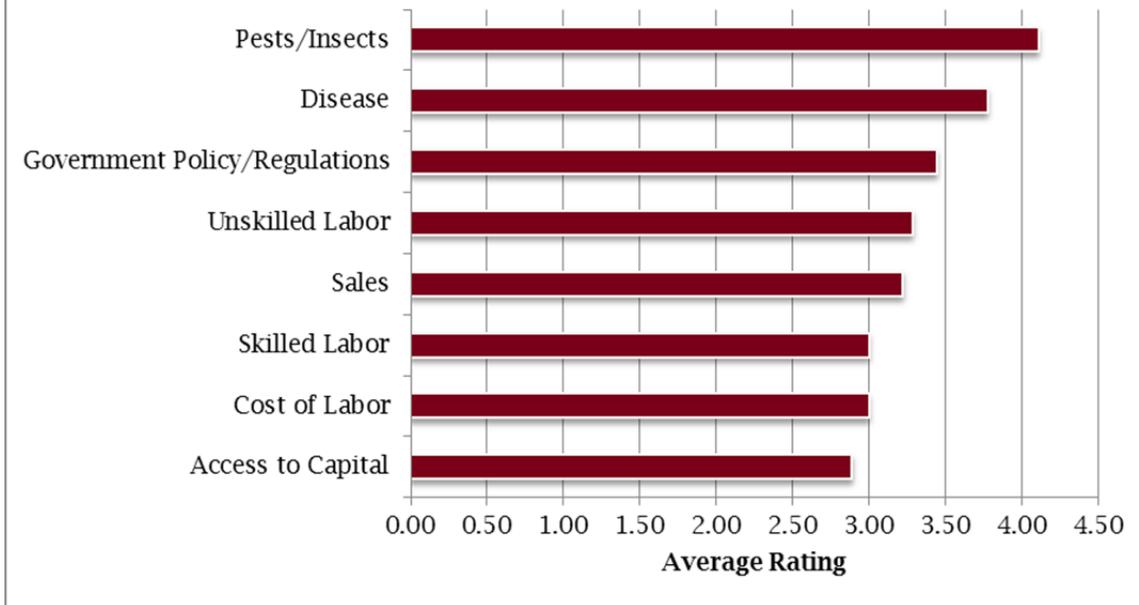
As discussed earlier, the rapid growth in the number of vineyards appears to be slowing in the Dakotas. Current vineyard owners appear to be reflecting this trend. While over 55 percent of vineyards plan to expand in the next 2 years, the majority are planning for slight increases. Nearly half of vineyards plan to stay the same size. None of the vineyards plan to decrease in size, see chart 1-14.

Chart 1-14: Over the Next Two Years, My Vineyard Will... Dakotas n= 9



Grape growers responding to the survey indicate that the biggest challenges to their vineyard operations are related to pest/insects and disease, as depicted in chart 1-15. When asked to answer the question “the following is a challenge to the growth and development of my vineyard”, using a scale where 1 equals “strongly disagree” and 5 equals “strongly agree”, grape growers gave pest/insects an average score of 4.11 and disease an average score of 3.78. Access to capital and cost of labor do not seem to be significant issues for the responding growers in the Dakotas.

Chart 1-15: The Following is a Challenge to the Growth and Development of my Vineyard: Dakotas (1=Strongly Disagree, 5=Strongly Agree)

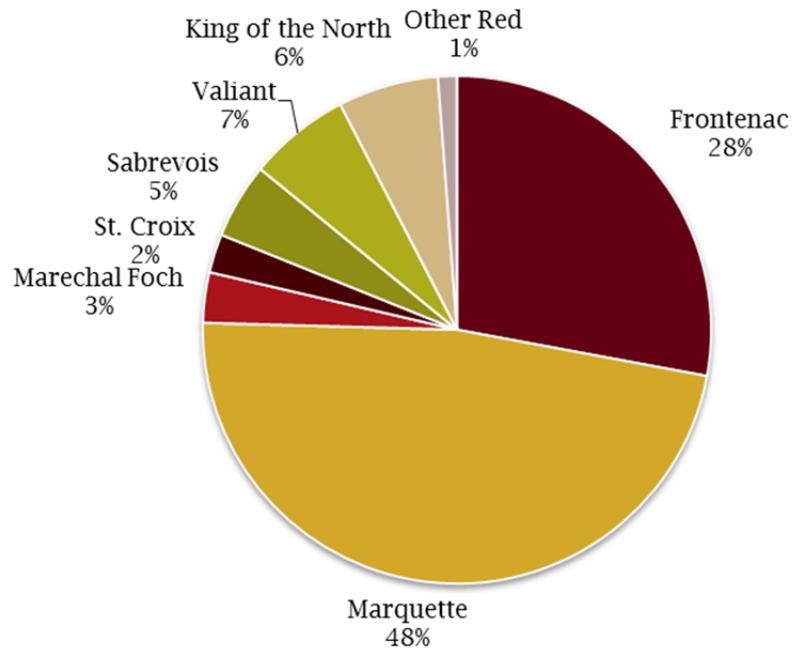


Grape Varieties

Survey participants reported 9,620 planted vines in their vineyards. Of these, the majority (96 percent) are planted in cold-hardy varieties. Of the cold-hardy varieties, 6,241 vines are red cultivars. The remaining cold-hardy vines, 3,028, are white cultivars. Chart 1-16 depicts total reported planted vines of cold-hardy red varieties. Marquette grapes comprise 48 percent of the total planted cold-hardy red varieties. Frontenac grapes comprise 28 percent of red cold-hardy plantings. The Marquette grape was released in 2006. It appears North and South Dakota vineyards are rapidly adopting the new variety.

Table 1-2 reports the number of reported planted red cultivar vines by age. These figures represent only what the vineyards who answered the survey reported. Responding vineyards reported 607 red cultivar vines are older than 10 years of age, 2,593 are between 4 years and 10 years of age, and 3,041 are younger than 4 years old. Vines younger than 4 years of age have yet to reach maturity and produce a full crop. Vineyards in the Dakotas appear to be continuing to plant red cold-hardy grapes. As the younger vines reach maturity, production of red varieties will double.

Chart 1-16: Total Planted Cold-Hardy Vines, Red Varietals: Dakotas



Further, the table reflects the adoption of the Marquette grape variety observed in other Northern Grapes Project states. Ten years ago, there were no Marquette vines in the ground. Within the last four years, the responding vineyards alone report planting 1,380 vines.

Table 1-2: Planted Vines of Cold-Hardy Red Varieties by Responding Vineyards, by Age, North and South Dakota

Variety	Vines, Younger than 4	Vines, Between 4 and 10 Years	Vines, Older than 10	Total
Baltica	0	0	0	0
Beta	0	0	0	0
Frontenac	980	456	306	1,742
GR-7	0	0	0	0
King of the North	250	150	0	400
Leon Millet	0	0	0	0
Marechal Foch	50	150	0	200
Marquette	1,384	1,582	0	2,966
Petite Pearl	0	0	0	0
Sabrevois	150	150	0	300
St. Croix	50	102	1	153
Valiant	102	3	300	405
Other Red	75	0	0	75
Total	3,041	2,593	607	6,241

The totals in this table are for responding vineyards only and do not represent the total industry in North and South Dakota.

Table 1-3 lists the estimated number of planted acres of cold-hardy red cultivars in North and South Dakota. These numbers have been extrapolated to represent all vineyards in the Dakotas. In North and South Dakota, there are an estimated 74 acres of grapes planted in cold-hardy red varieties. The Marquette grape is planted on 35 of those acres.

Table 1-3: <u>Estimated</u> Planted Acres of Cold-Hardy Red Varieties for <u>All</u> Vineyards in North and South Dakota	
Variety	Total
Baltica	0
Beta	0
Frontenac	20.7
GR-7	0
King of the North	4.7
Leon Millet	0
Marechal Foch	2.4
Marquette	35.2
Petite Pearl	0
Sabrevois	3.6
St. Croix	1.8
Valiant	4.8
Other Red	0.9
Total	74.1
The totals in this table have been extrapolated to represent all vineyards in North and South Dakota.	

Chart 1-17 illustrates the total planted vines of cold-hardy white varieties. Brianna (38 percent) and La Crescent (31 percent) are the most commonly planted vines by the reporting vineyards.

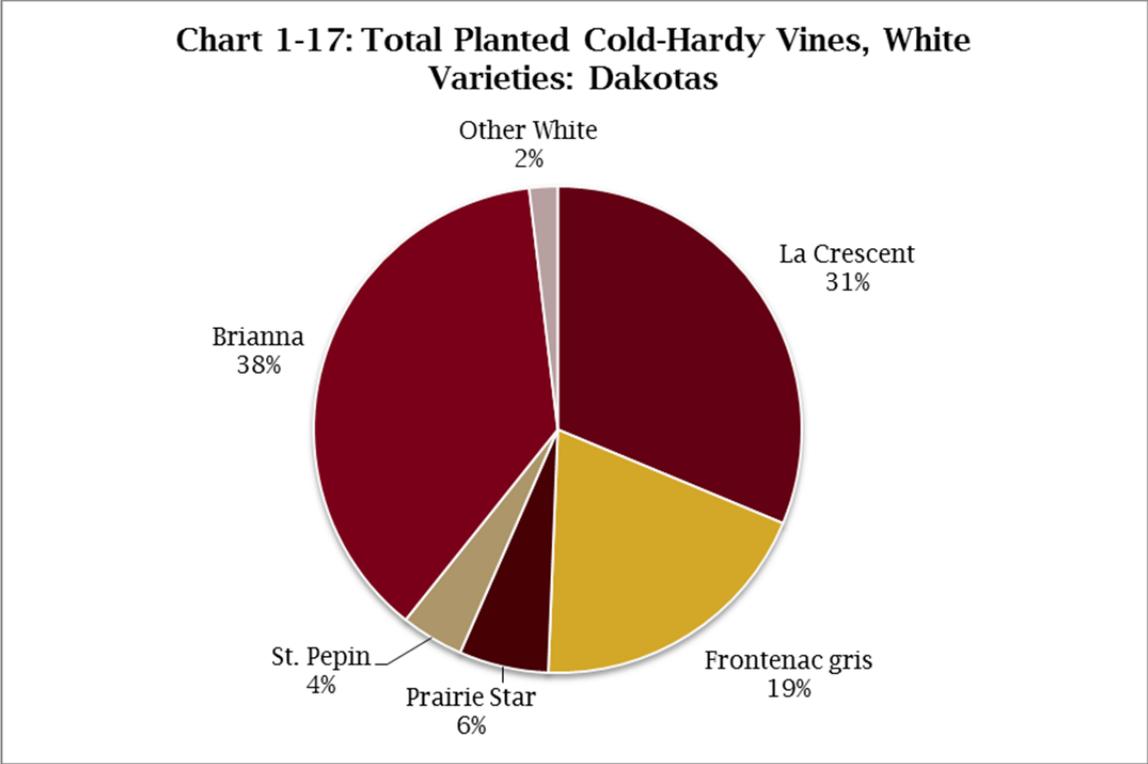


Table 1-4 reports the total reported planted vines of cold-hardy white cultivars. These figures represent only what the vineyards who answered the survey reported. Responding vineyards report 1 vines older than 10 years in the ground, 1,434 vines of age between 4 and 10 years, and 1,593 vines younger than 4 years. Unlike the red varieties, it appears plantings of cold-hardy white varieties have increased in the last four years.

Table 1-4: Planted Vines of Cold-Hardy White Varieties by Responding Vineyards, by Age, North and South Dakota

Variety	Vines, Younger than 4	Vines, Between 4 and 10 Years	Vines, Older than 10	Total
Brianna	350	782	0	1,132
Edelweiss	0	0	0	0
Espirit	0	0	0	0
Frontenac Blanc	25	0	0	25
Frontenac Gris	355	231	0	586
Kay Gray	0	0	0	0
La Crescent	675	272	0	947
La Crosse	0	0	0	0
Louise Swenson	3	4	0	7
Petite Amie	0	25	0	25
Prairie Star	60	120	0	180
St. Pepin	125	0	1	126
Other White	0	0	0	0
Total	1,593	1,434	1	3,028

The totals in this table are for responding vineyards only and do not represent the total industry in North and South Dakota.

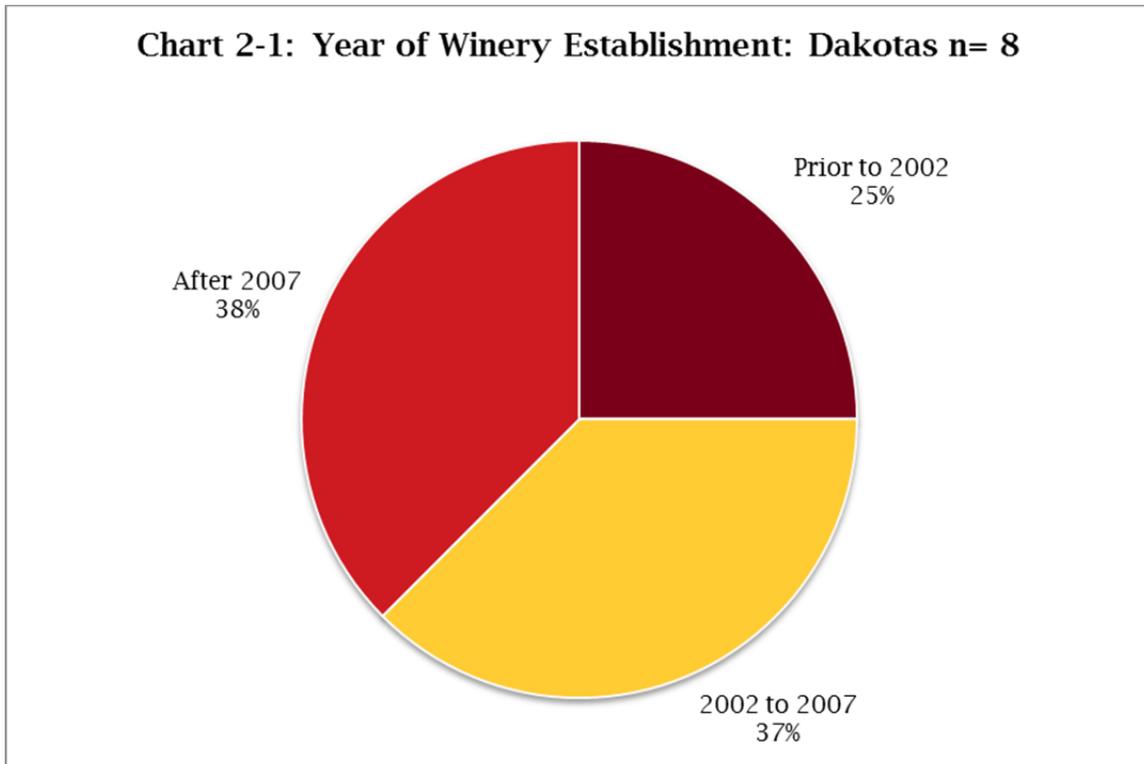
Table 1-5 lists the estimated number of planted acres of cold-hardy white cultivars in North and South Dakota. These numbers have been extrapolated to represent all vineyards in the Dakotas. Brianna is planted on 13 acres and La Crescent on 11 acres.

Table 1-5: <u>Estimated</u> Planted Cold-Hardy Acres of White Varieties for <u>All</u> Vineyards in North and South Dakota	
Variety	Total
Brianna	13.4
Edelweiss	0.0
Espirit	0.0
Frontenac Blanc	0.3
Frontenac Gris	7.0
Kay Gray	0.0
La Crescent	11.2
La Crosse	0.0
Louise Swenson	0.1
Petite Amie	0.3
Prairie Star	2.1
St. Pepin	1.5
Other White	0.0
Total	35.9
The totals in this table have been extrapolated to represent all vineyards in North and South Dakota.	

WINERY CHARACTERISTICS

Nine North and South Dakota wineries responded to the Northern Grapes Project survey. According to the Alcohol and Tobacco Tax and Trade Bureau (TTB), there were 36 licensed wineries in the Dakotas.³ Based on these statistics, the response rate for this survey was 25 percent. However, not all respondents reported being licensed at the time of the survey. Our dataset may include new wineries still in the start-up phase.

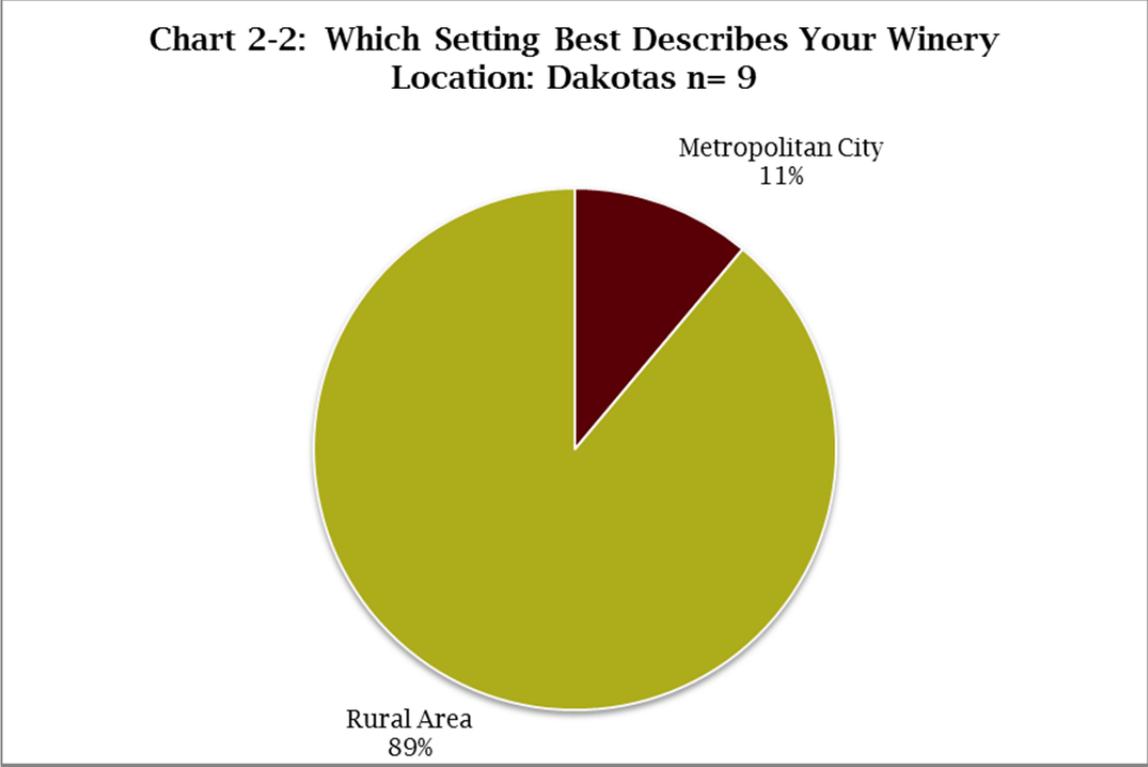
As shown in chart 2-1, growth in the number of wineries in the Dakotas continues. Approximately one-quarter of wineries existed prior to 2002.⁴ Since then, the industry has added 3 new wineries per 5 year time period. Some of this growth may be explained by the domestic winery bill that passed in North Dakota in 2001, paving the way for the establishment of wineries in 2002.



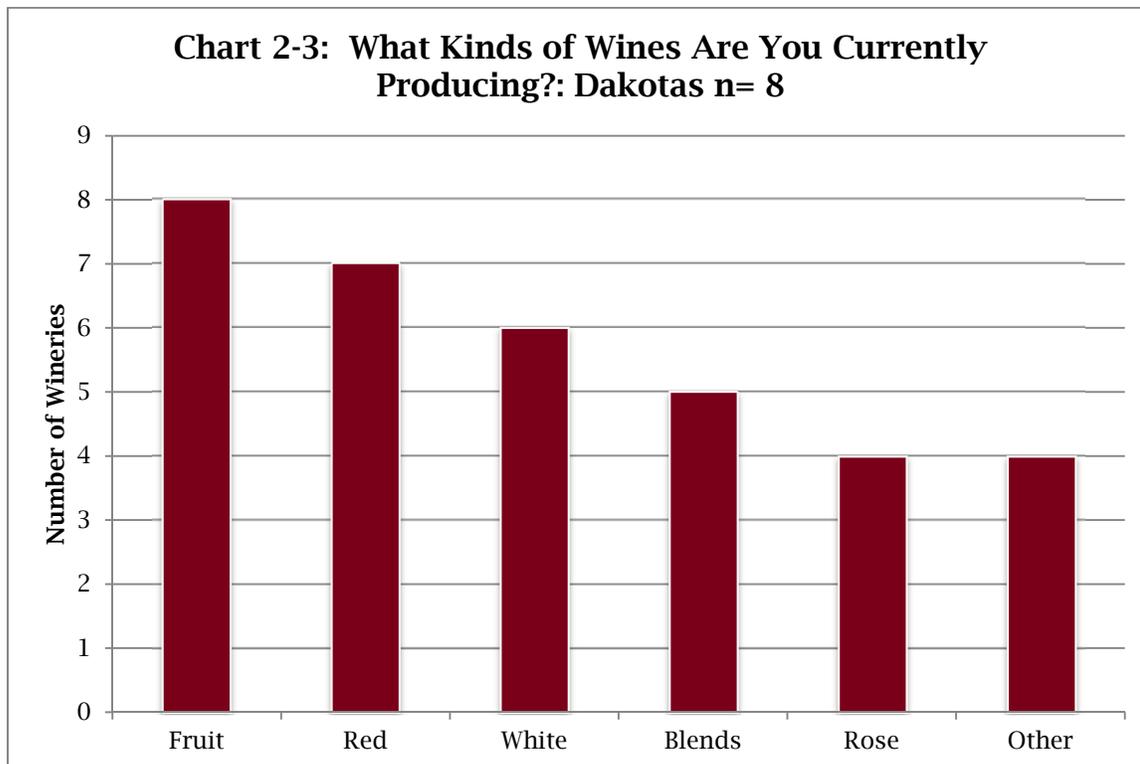
³ The number of wineries in each state was taken from a publication by WineAmerica. The publication uses data from the United States Alcohol and Tobacco Trade and Tax Bureau for 2010. This data is the basis of calculations because it provides consistency and uniformity across all states in the Northern Grapes Project study area.

⁴ The domestic winery bill was passed in 2001 in North Dakota, therefore, legally there were no wineries prior to 2002.

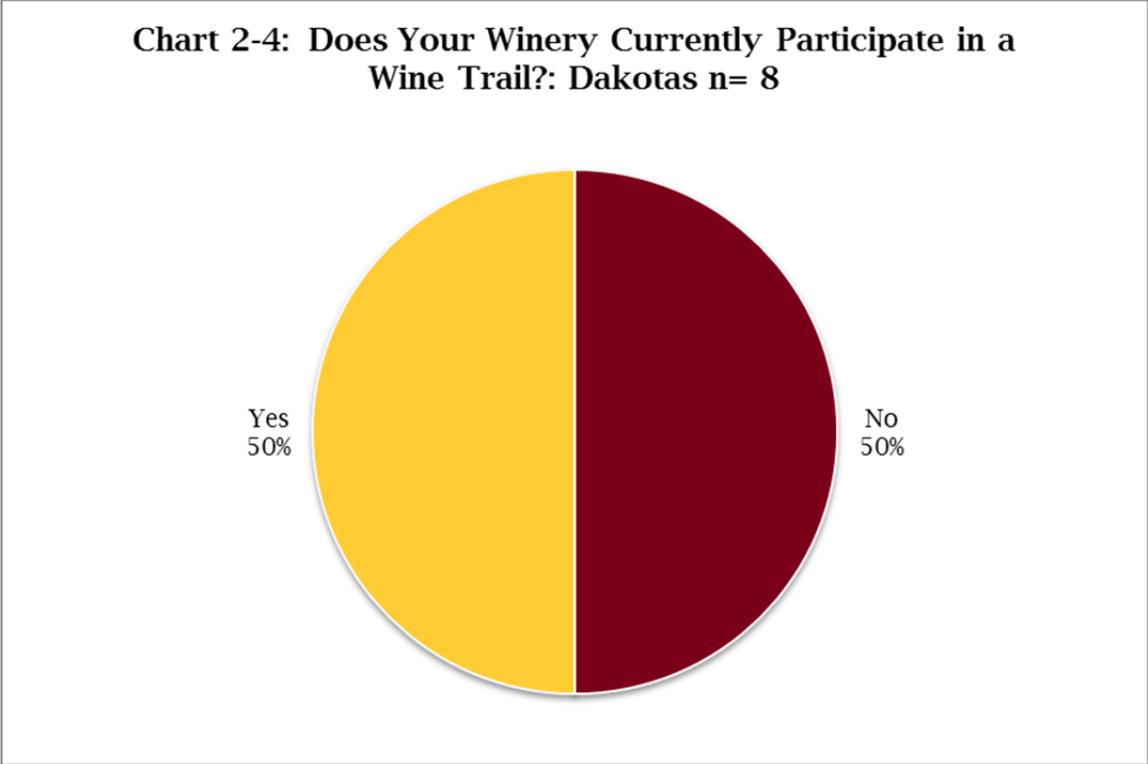
The majority of North and South Dakota wineries (89 percent) are located in rural areas, outside of cities and urban centers, see chart 2-2. One responding winery is located in a metropolitan city.



All the responding wineries from North and South Dakota are producing fruit wines, see chart 2-3. Wineries are also commonly producing red wines and white wines. In comparison to other states in the Northern Grapes project, North and South Dakota are more frequently producing fruit wines. In most participating states, only a fraction of wineries produce fruit wines. Study results show wineries in the Dakotas produced 202,800 gallons of wine in 2011 or an average of 5,600 gallons per winery.

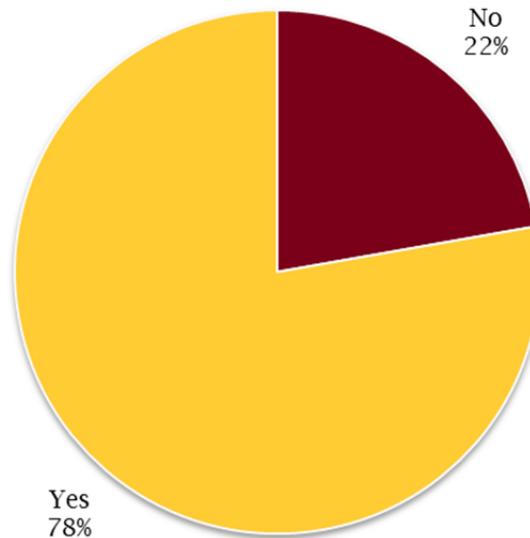


Half of wineries in North and South Dakota currently participate in a wine trail. See chart 2-4. Wine trails are one method wineries use to draw visitors to their tasting room. Since the majority of wineries in the Dakotas are in rural areas, the need to participate in a wine trail may be higher. This may be one area of further development for the winery industry in the Dakotas.

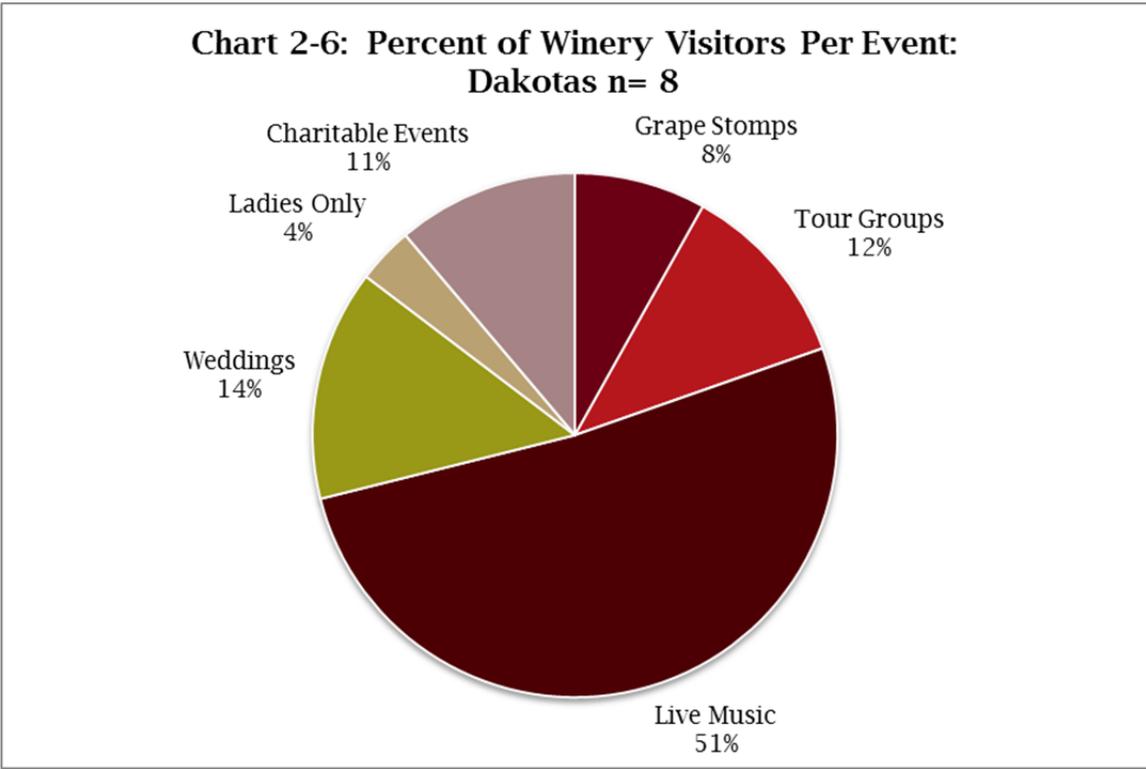


The majority of North and South Dakota wineries (78 percent) operate a tasting room in conjunction with their winery, see chart 2-5. Only 38 percent of wineries charge for tastings. Thirteen percent of the wineries offer food with their wine service. These percentages are much lower than other states in the Northern Grapes project. This may be another area of future development for the winery industry in the Dakotas. On average, each winery served 13,400 tasting room customers. Wineries estimate that 26 percent of their tasting room visitors are repeat customers.

**Chart 2-5: Does Your Winery Operate a Tasting Room?:
Dakotas n= 9**



Wineries also reported on events held at their winery in 2011. Specifically, wineries were asked to report how many people attended the following types of events: grape stomps, wine-making classes, tour groups, live music, weddings, ladies-only events, charitable events, and other events. In total, the responding wineries (8) hosted 14,800 guests at winery events, roughly half who were from outside the local area. The breakdown of which events these guests attended is shown in chart 2-6. Live music events accounted for over half (51 percent) of winery visits. Weddings and tour groups drew 14 percent and 12 percent of visitors respectfully.

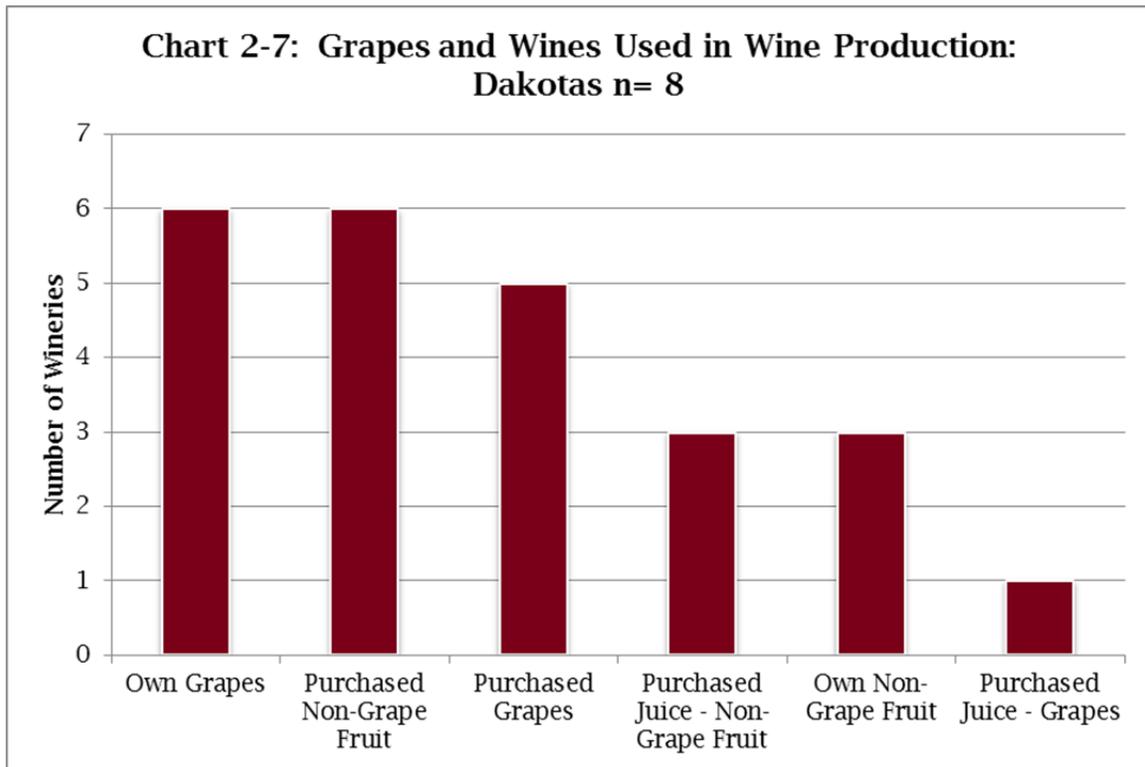


Grape Acquisition

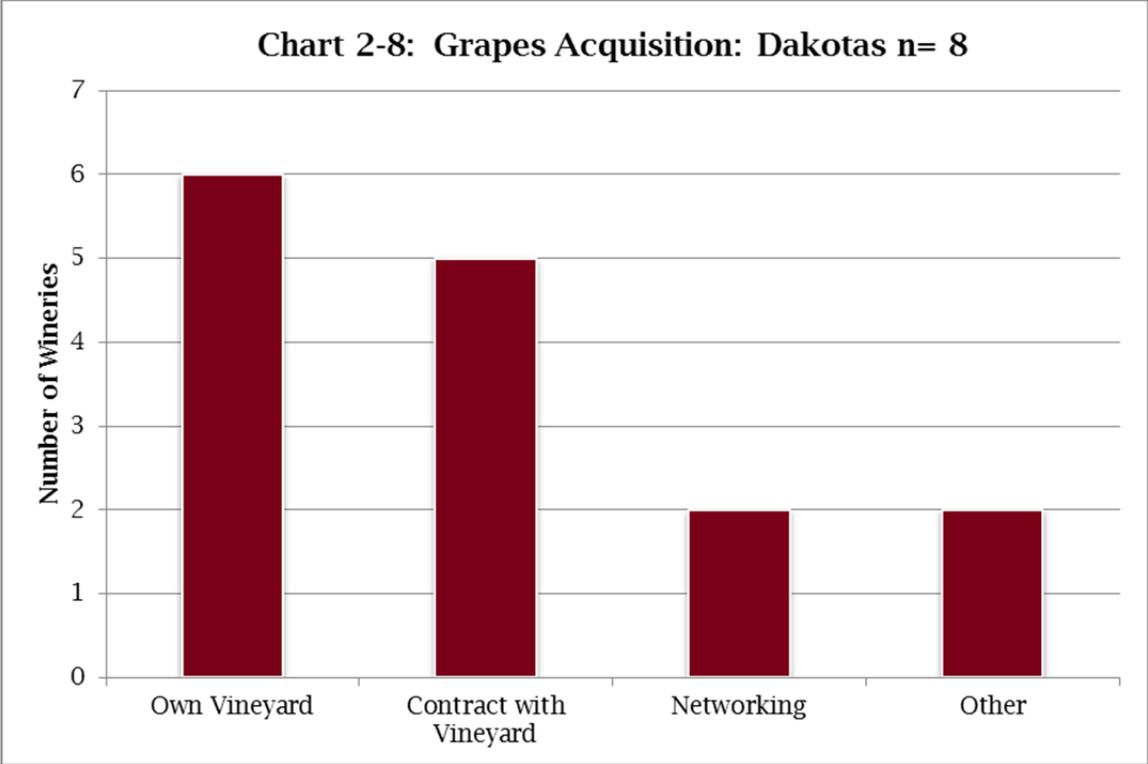
Wineries in North and South Dakota purchased \$645,000 of grapes in 2011, from their own vineyards and from other vineyards. On average, each winery spent \$17,900 to buy grapes. This is lower than wineries in other Northern Grapes project states. Since many wineries in the Dakotas are producing fruit wines, their reliance on grapes may be lower than in other states. Sixty-three percent of the grapes used by these wineries were cold-hardy varieties.

Both North and South Dakota have regulations in place regarding the amount of fruit used in wine production that must be grown locally. In North Dakota, the law requires at least 10 percent of ingredients (measured by volume of wine produced) must be grown and produced in the state. The percent of local ingredients increases each year of licensure. In the sixth and subsequent years, the percentage is 51 percent. In South Dakota, the law essentially states the majority of ingredients grown or produced must be from within the state. However, there is an exemption available on a year-by-year basis if there is not enough fruit available.

As shown in chart 2-7, the most common method of acquiring grapes by responding wineries is to purchase grapes from their own vineyards. A significant number of wineries (6) indicated they purchase non-grape fruit juice. This is consistent with the relatively higher production of fruit wines in the Dakotas.

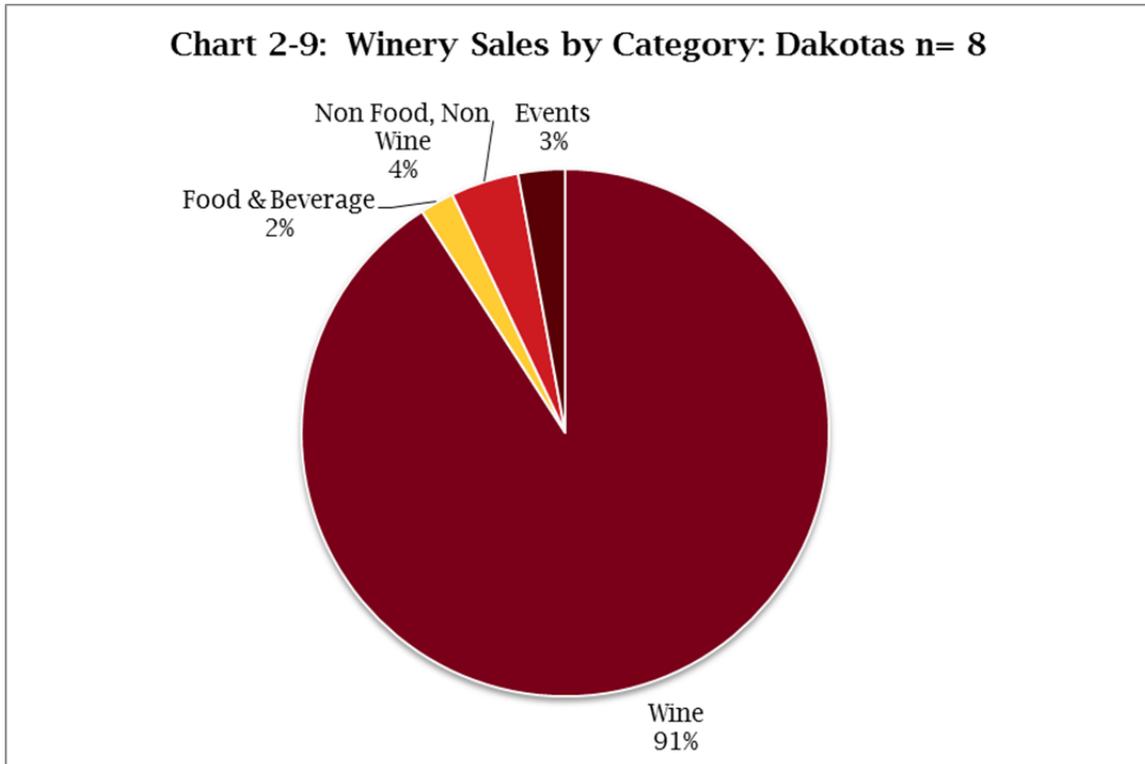


As depicted in chart 2-8, wineries primarily acquire their grapes from their own vineyards. Those who purchase grapes use a combination of contracts with vineyards, networking, and other options. Purchasing grapes via a broker or the open market are not used as an acquisition tool by these wineries. Those responding “other” indicated they were buying few grapes and mostly fruits.



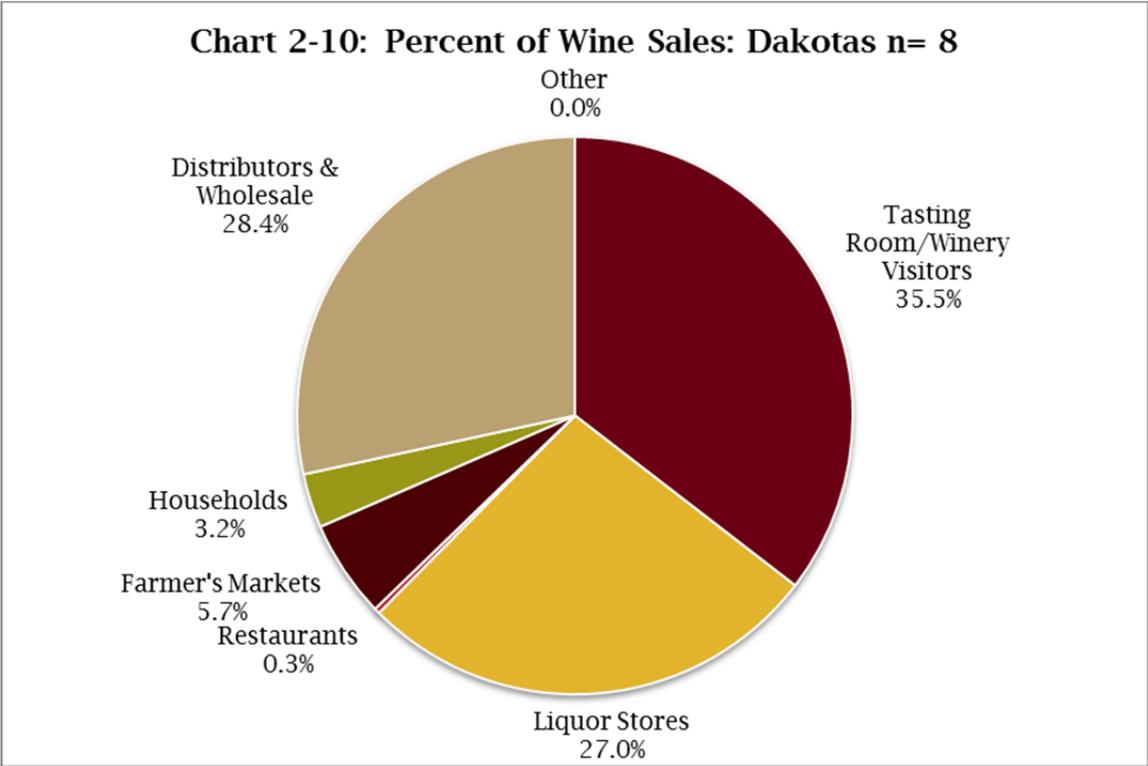
Winery Sales and Production

In total, wineries in North and South Dakota had sales of \$8.6 million in 2011, an average of \$239,000 per winery. Of total sales, \$5.4 million were generated from wines crafted from cold-hardy grapes. Wine sales, including bottles sold and tasting room fees, are the primary source of revenue for wineries, accounting for 91 percent of all sales (see chart 2-9). Wineries produced, on average, 5,600 gallons of wine.

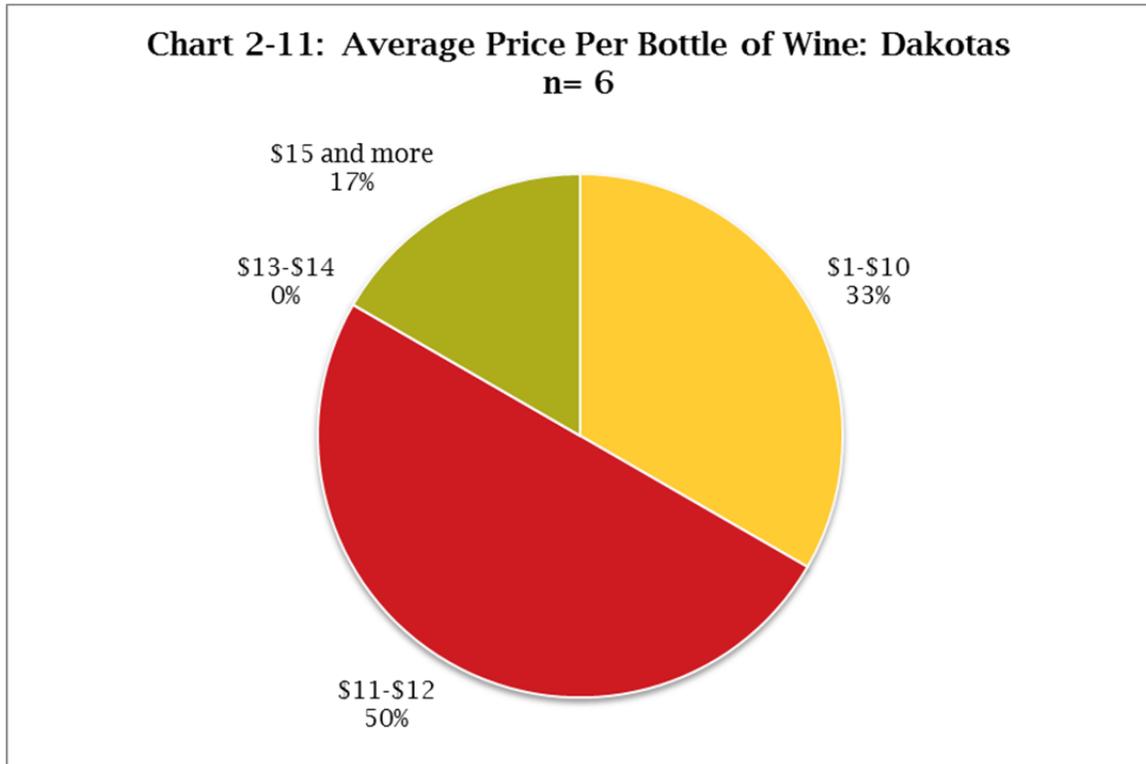


Wineries in North and South Dakota sold an estimated 2.3 million bottles of wine in 2011 or an average of 63,600 bottles per winery. As shown in chart 2-10, just over one-third (35 percent) of winery sales in the Dakotas are through the tasting room. Twenty-eight percent of sales are through distributors and wholesalers and 27 percent through liquor stores.

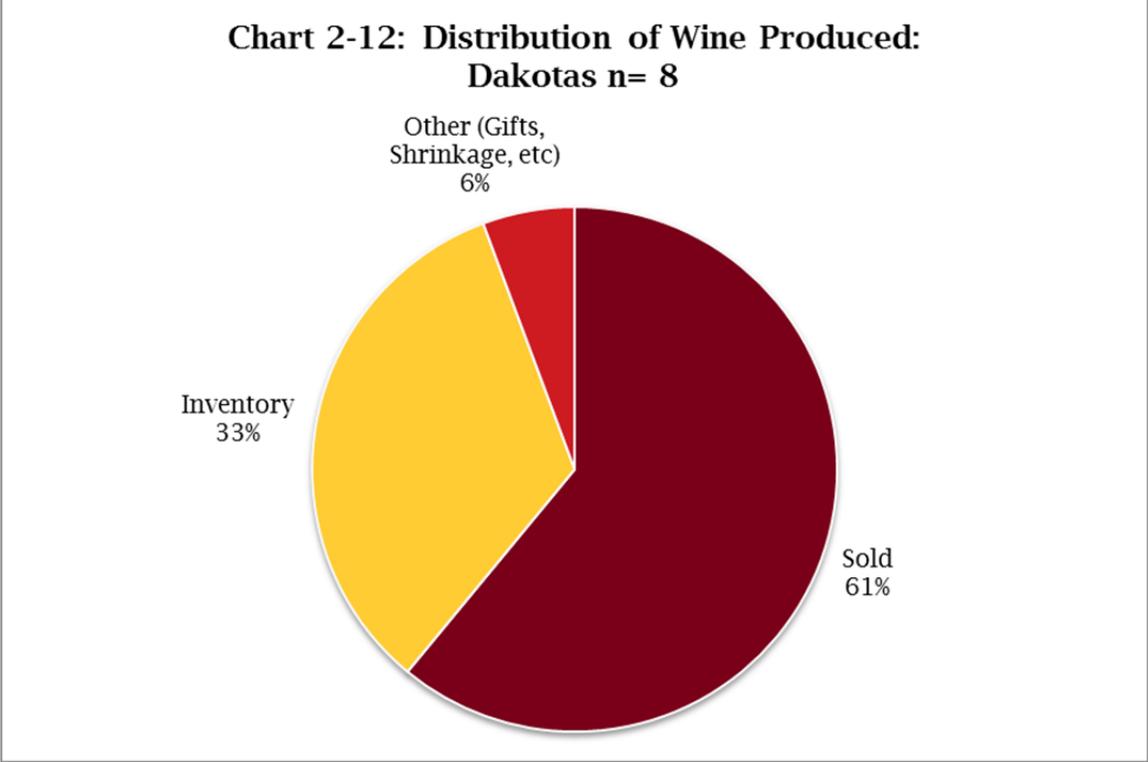
These percentages are higher than other states in the Northern Grapes project. This may partially be explained by regulations in place in each state. After this survey was conducted, North Dakota passed a direct retail bill for wineries. Prior to the implementation of this bill, any winery selling wine other than through their tasting room had to go through a distributor.



North and South Dakota wineries reported the average price per bottle of wine sold was \$12 in 2011. Chart 2-11 shows the distribution of average wine sale prices. Half the wineries sold their bottles of wine for between \$11 and \$12 per bottle. One-third of wineries sold their bottles for a price between \$1 and \$10.

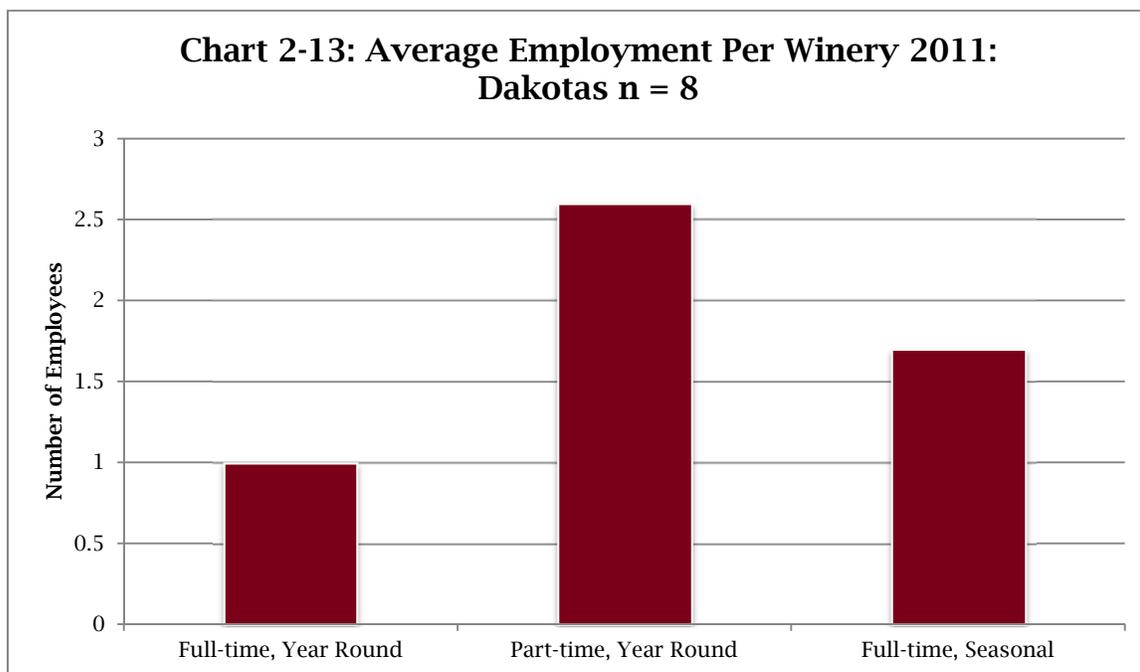


As mentioned, the average responding winery produced 5,600 gallons of wine. The majority of the wine (61 percent) produced was sold, see chart 2-12. Wineries put 33 percent of the gallons of wine produced into inventory. A small percent (6 percent) of wine produced was utilized in other ways (e.g. gifts, donations, shrinkage, etc.). The percentage of wine going into inventory is higher in the Dakotas than in other Northern Grape project states.



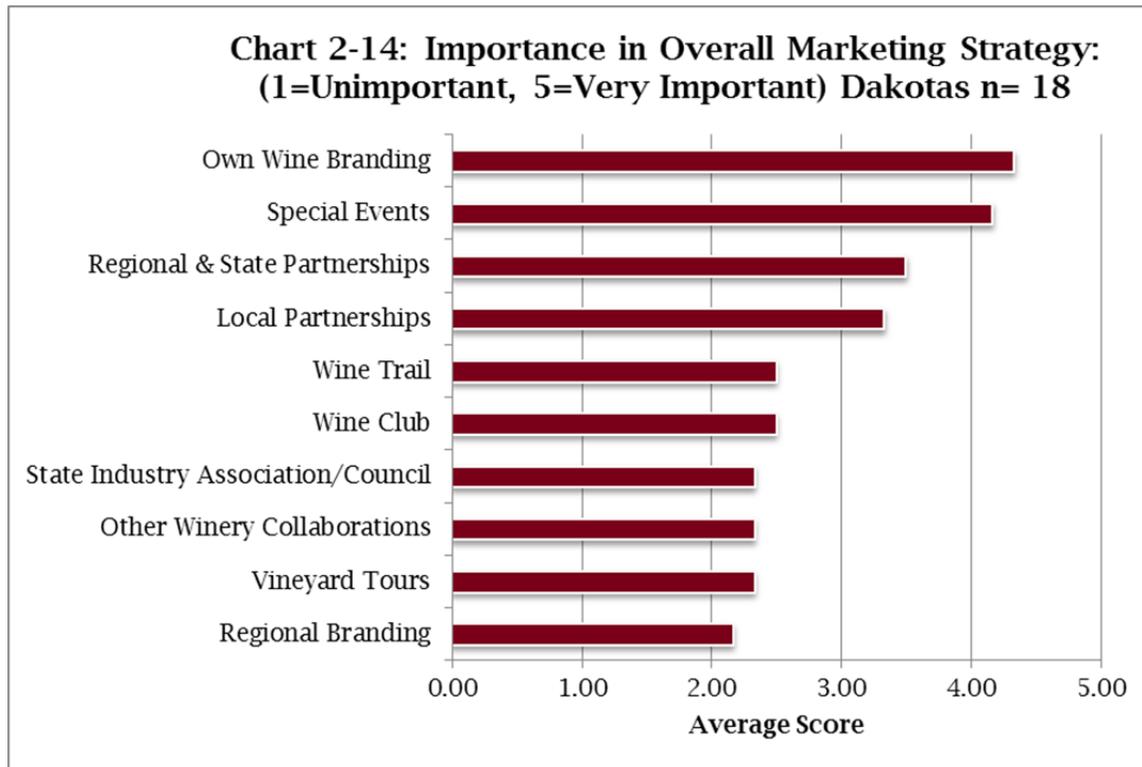
Wineries in the Dakotas employ 190 individuals. On average, each winery employs 5 individuals; 1 full-time year-round person, 3 part-time, year-round people, and 2 full-time, seasonal people, see chart 2-13.

In 2011, North and South Dakota wineries paid more than \$2.0 million in labor income (includes wages, salaries, and benefits) with an average of \$56,900 per winery.

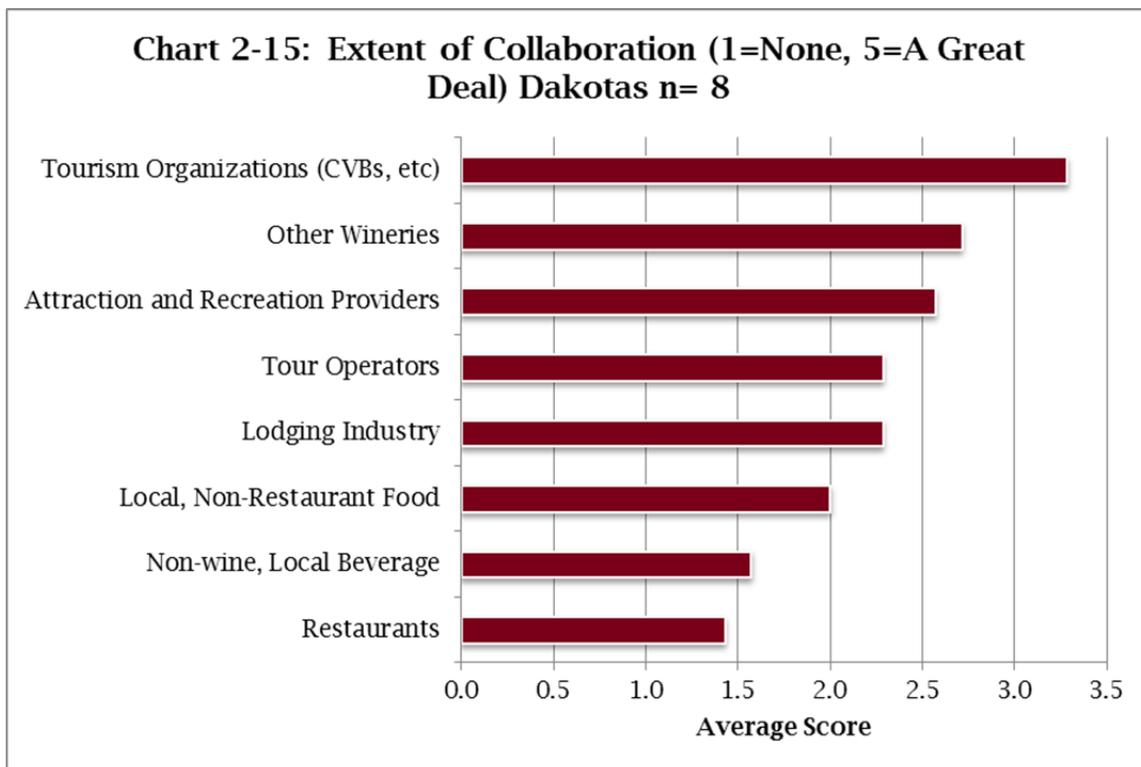


Winery Marketing and Collaboration

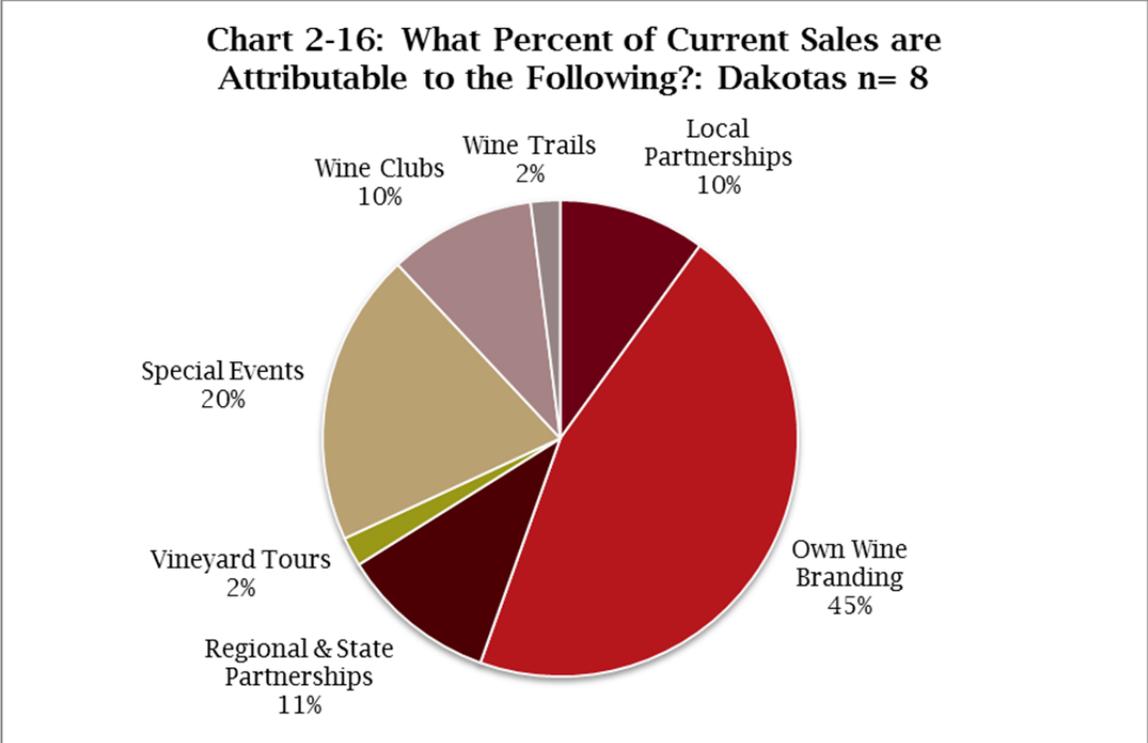
Wineries were asked to rate a list of marketing strategies on a scale where 1 indicated the strategy was “unimportant” for their marketing and 5 indicated it was “very important”. As shown in Chart 2-14, winery owners believe that branding their own wine is the most important marketing strategy they can employ, assigning it an average score of 4.33. Special events were also assigned relatively high scores. A score below three indicates the strategy is of little to no importance to winery owners. It is of note that regional branding received an overall score of 2.17, which indicates wineries in North and South Dakota do not find value in regional efforts.



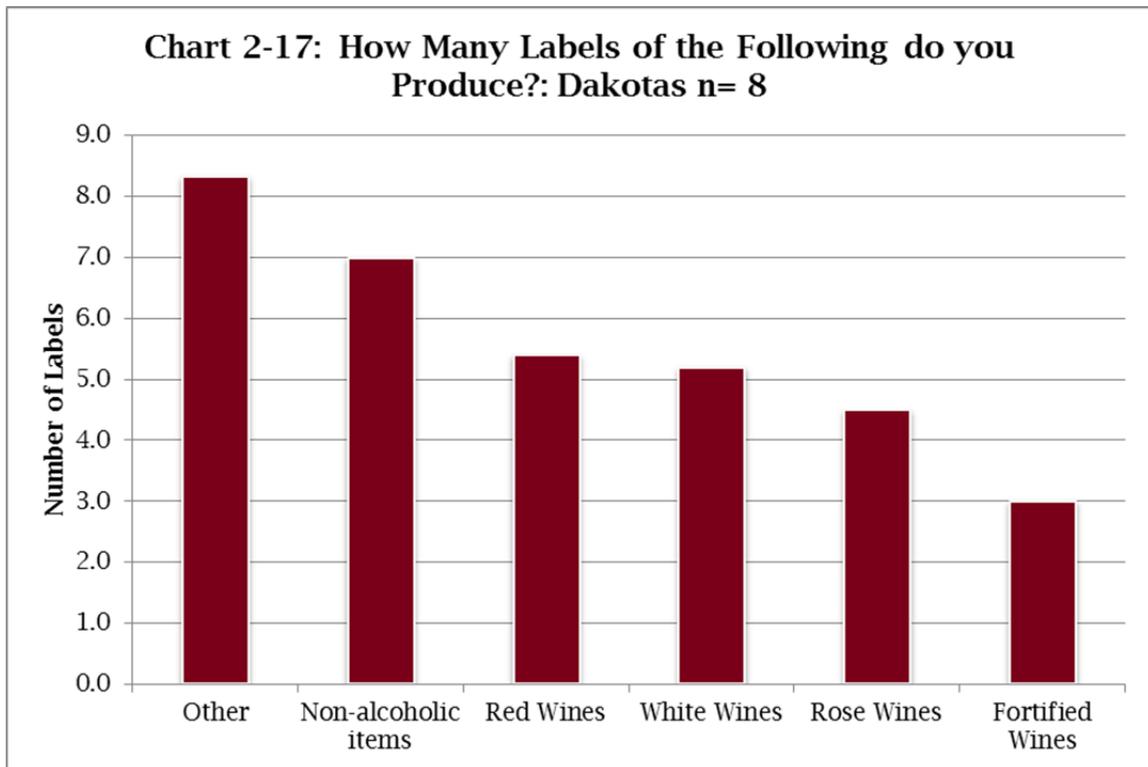
Wineries were also asked about their current collaboration efforts. They were asked, on a scale where 1 equals “none” and 5 equals “a great deal”, “to what extent do you currently collaborate with the following entities?” The highest level of collaboration is between tourism organizations and wineries, as shown in chart 2-15. All other overall scores fall well below 3. This indicates there is significant room for increase collaboration efforts in the Dakotas.



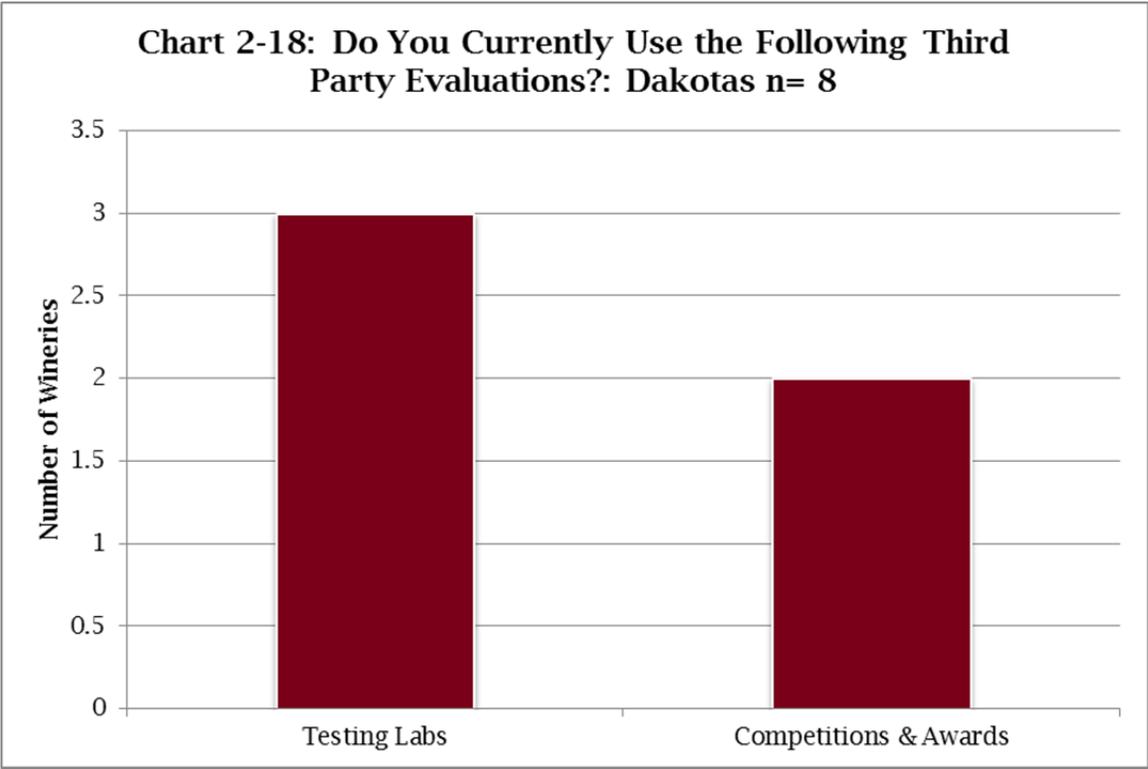
Wineries were then asked how various marketing arrangements influenced their sales. Wineries indicated that their own wine branding efforts drove the largest share (45 percent) of their sales. Special events drive an estimated 20 percent of sales and regional and state partnerships 11 percent. Chart 2-16 illustrates this point.



North and South Dakota wineries report producing, on average, 8 labels of “other” wines. Since fruit wines were not listed, it is likely the other category reflects the fruit wines. Wineries in the Dakotas report producing more non-alcoholic items than in other Northern Grapes project states. On average, each winery is bottling 5 labels of white wines and 5 bottles of red wines, as shown in chart 2-17.



Testing labs are the most commonly used type of third party evaluations, as reported by the responding wineries. Wineries are also using testing labs for third party evaluations. No wineries report using quality alliances. See chart 2-18.



Future Plans

Winery owners were asked directly about future plans for their establishment. The results, shown in chart 2-19, indicate the potential for continued growth in the industry, as 91percent of the wineries plan to expand in the next five years. Continued growth also indicates a continued need for successful business planning.

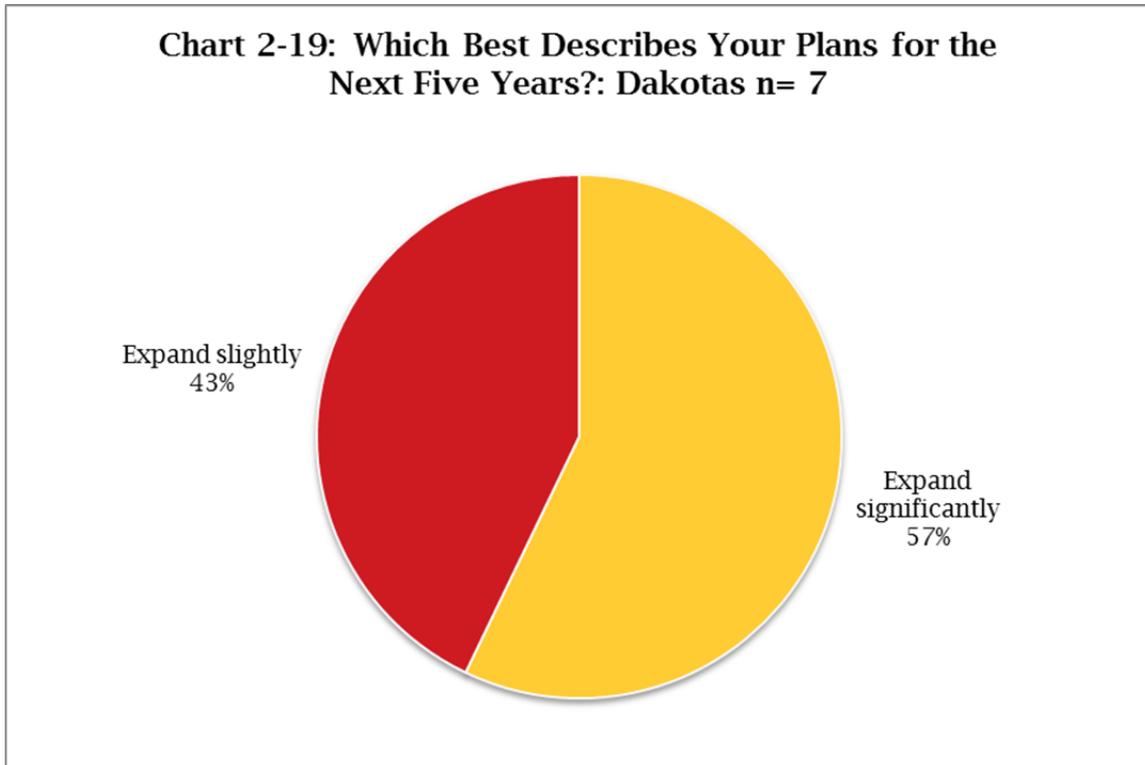
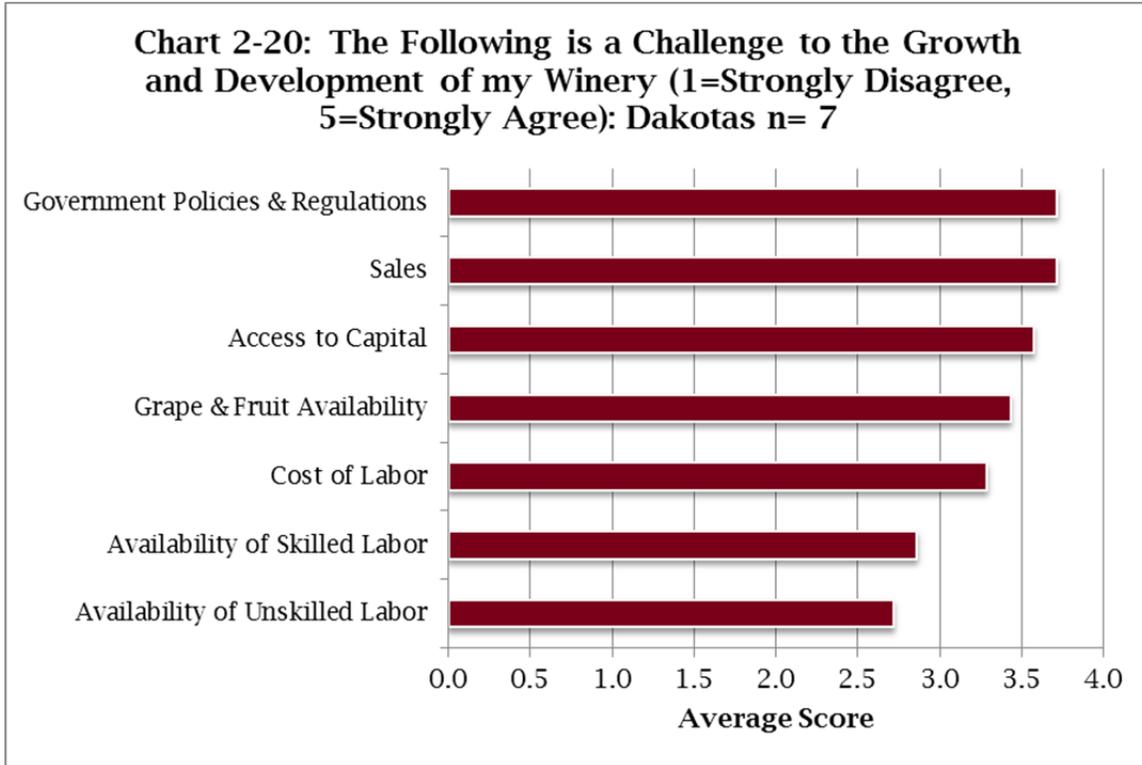


Chart 2-20 depicts winery owners' responses to a question about the challenges to the growth and development of their winery. On a scale where 1 equals "strongly disagree" and 5 equals "strongly agree", wineries were asked to rate a list of issues in relation to each as a challenge to the growth and development of their winery. Wineries rated government policy and regulations and sales as the biggest threats to their wineries. Availability of labor (both skilled and unskilled) received the lowest average ratings.



ECONOMIC CONTRIBUTION OF VINEYARDS AND WINERIES IN NORTH AND SOUTH DAKOTA

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 grape growing and winery industries in North and South Dakota, the first step is to measure the direct effect of the industries. In other words, producers were asked to report how much they spent in 2011. Researchers used data gathered in the Northern Grapes Project baseline study for this purpose. 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 (36 in North and South Dakota) and vineyards (79 in North and South Dakota) to determine the total direct effect for the state.

Wineries and vineyards contribute to the economy of North and South Dakota through three primary methods. One, vineyards make purchases for inputs and for labor. Two, wineries make purchases for inputs and for labor. Three, wineries attract visitors, typically through tasting rooms. These tourists make purchases during their visit which stimulate economic activity in the state. The direct contributions of each of these components are shown in table 3-1. These are the direct effects of the grape growing and winery industries in North and South Dakota.

North Dakota and South Dakota vineyards, in 2011, spent \$525,000 within the state to operate. This included \$136,000 of payments to their 80 employees. This equates to an average wage of \$1,700 per employee. In this study, one job is treated as one job, regardless if the job is full-time, part-time, or seasonal. In fact, participating vineyards report that the majority of their employment is part-time, seasonal employment, particularly at harvest time.

North and South Dakota wineries, in 2011, spent \$8.0 million within the state for their operations. Of this, \$2.1 million went to their 190 employees. Total winery sales, as mentioned in the winery summary, were \$8.6 million in 2011. Of this, \$645,000 in purchases was for grapes. Since grape sales are included in the vineyard impact, they are excluded here to avoid double counting. Wineries also rely on part-time employment. On average, each winery employs 1 full-time, year-round person and 3 part-time, year-round people, as shown in chart 2-13.

Finally, winery tourists in 2011 spent \$8.6 million during winery visits. These expenditures supported 180 jobs in North and South Dakota which in total amounted to \$3.1 million in labor income. A winery tourist was defined as a person who indicated the winery was a primary motivator of their trip to the winery. The number of winery visitors was extrapolated from winery responses regarding the number of tasting room customers in 2011. For a more in-depth explanation of the process used to calculate the number of winery tourists, please see appendix 3.

Table 3-1: Direct Economic Effects of Vineyards, Wineries, and Winery Tourists, North and South Dakota, 2011

	Vineyards	Wineries	Winery Tourists
Output	\$525,000	\$7,960,000	\$8,620,000
Employment	80	190	180
Labor Income	\$136,000	\$2,050,000	\$3,080,000

Estimates by University of Minnesota

Indirect and Induced Effects

Now that the direct impacts of vineyards, wineries, and wine 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 modeling software and 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 the 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 grape growing and winery industries in North and South Dakota was \$26.4 million. This includes 665 jobs and \$8.8 million in labor income, as shown in table 3-2.

Table 3-2: Total Economic Effects of Vineyards, Wineries, and Winery Tourists, North and South Dakota, 2011

	Vineyards	Wineries	Winery Tourists	Total
Output	\$880,000	\$11,550,000	\$13,920,000	\$26,350,000
Employment	125	330	210	665
Labor Income	\$250,000	\$4,090,000	\$4,440,000	\$8,780,000

Estimates by University of Minnesota

Vineyards in the Dakotas contributed \$880,000 to the state economy in 2011. This included payments to workers in the amount of \$250,000. The vineyard industry contributed to the employment of 125 people.

Wineries in the Dakotas contributed \$11.6 million in economic activity to the state in 2011. Wineries generated employment for 330 workers who received \$4.1 million in labor income.

Winery tourism also contributed significantly to the North and South Dakota economies. Spending by tourists visiting wineries in the Dakotas generated \$13.9 million in economic activity. This includes \$4.4 million in labor payments and 210 jobs.

Cold-Hardy Related Economic Effects

Surveyed grape growers report 96 percent of the grapes grown in the Dakotas are of cold-hardy varieties (see appendix 1 for a definition of cold-hardy). Wineries indicate 63 percent of the grapes used in wine are from the cold-hardy cultivars. In 2011, cold-hardy grapes contributed \$16.9 million to the output of the economies of North and South Dakota including \$5.6 million in labor income. They contributed 460 jobs, as shown in table 3-4.

Table 3-4: Total Economic Effects of Vineyards, Wineries, and Winery Tourists Derived from Cold-Hardy Grapes, North and South Dakota, 2011				
	Vineyards	Wineries	Winery Tourists	Total
Output	\$840,000	\$7,270,000	\$8,770,000	\$16,880,000
Employment	120	210	130	460
Labor Income	\$240,000	\$2,580,000	\$2,800,000	\$5,620,000
Estimates by University of Minnesota				

SUMMARY AND CONCLUSIONS

In spring 2012, grape growers and winery owners in 13 states were surveyed under the Northern Grapes Project. Questions asked pertained to sales and production (wineries and vineyards), growing practices (vineyards), and operating practices (wineries). The goal was to establish industry baselines and quantify the economic contribution of the industries. This report presents the results for North and South Dakota. The results for the two states are presented together due to the relatively low, but growing, number of wineries and vineyards in the two states.

In 2011, the total economic contribution of the grape growing and winery industries in North and South Dakota was \$26.4 million. This includes 665 jobs and \$8.8 million in labor income. Vineyards contributed \$880,000 to the total, wineries \$11.6 million, and winery tourists \$13.9 million.

Cold-hardy grapes contributed \$16.8 million in economic activity to the economy of North and South Dakota in 2011. The industry was responsible for the creation of 460 jobs and \$5.6 million in labor income.

Cold-hardy grapes figure prominently into the grape growing industry in North and South Dakota. Grape growers report 96 percent of the grapes they plant are of the cold-hardy varieties defined in this report. There are indications the vineyard industry may be slowing its growth in the Dakotas. Nearly half the vineyards in operation were established between 2002 and 2007. Since 2007, only one-quarter of vineyards have been founded. While 56 percent of current vineyard operators plan to expand in the next two years, 44 percent plan to stay at their current size. Of all vineyard expenditures, approximately 42 percent are on capital improvements.

There appears to be an interesting split in vineyard size in the Dakotas. Just over one-third of vineyards are less than 1.0 acre size. The remaining responding vineyards were all larger than 2.0 acres. Eighteen percent of responding vineyards are 5.0 acres or larger. This issue could be further explored. Is the industry trend either to be a smaller (less likely to be commercial) vineyard or a larger, commercial vineyard? Typically, there are more vineyards that appear in the middle range. This observation may also be related to the age of vineyards. Older vineyards have had time to establish and potentially expand. In fact, the larger responding vineyards were established prior to 2007.

Vineyard concerns include pests/insects and disease. Interestingly, North and South Dakota vineyard operators are more concerned about government policies and regulations than their counterparts in other states.

Wineries in North and South Dakota appear to operate differently than their counterparts in other Northern Grapes project states. North and South Dakota wineries all report producing fruit wines which is unique to those states. Typically, only a few wineries in each state report producing fruit wines. That fruit wine production is reflected throughout the industry, with wineries reporting buying fewer grapes per winery, producing more labels of wine other than red and whites, and producing non-alcoholic items for sale.

There appears to be significant room for the winery industry to develop and mature in North and South Dakota. Currently, over 90 percent of a winery's sales are derived from wine sales. Seventy-eight percent of wineries operate a tasting room, but only 38 percent charge for a tasting and only 13 percent offer food service. North and South Dakota wineries also demonstrate lower rates of collaboration with other organizations. Increasing those relationships may help drive additional sales. Finally, of note, wineries in North and South Dakota sell a higher percentage of their wine

through distributors, wholesalers, and liquor stores than in other states, perhaps due to state regulations, which have changed since the winery survey was conducted.

It appears there will be continued growth in the number and size of wineries in the Dakotas. All of the current wineries plan to expand in the next 5 years. The number of wineries being established is holding steady. Perceived challenges to the industry include government policies and regulations and sales.



APPENDIX ONE: PARTICIPATING INDUSTRY ASSOCIATIONS

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

- Connecticut Vineyard and Winery Association
- Illinois Grape Growers and Vinters 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
- North Dakota Grape and Wine Association**
- 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

Defining a cold-hardy grape is not as straightforward as one might imagine. What is considered cold-hardy in one region may not be considered cold-hardy in another. 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
Other red Swenson
Petite Pearl
Sabrevois
St. Croix
Valiant

Table A-2: Cold-Hardy White Varieties

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

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.

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. In the Dakotas, the spending profiles from the 2012 South Dakota Information Center Intercept Report were used. Total per person spending was estimated at a conservative \$62 per day.

The winery tourist economic impact calculations are arguably the most complex of this report. Future research into the economic impact of wineries and vineyards in North and South Dakota would be greatly enhanced by 1) doing tasting room customer surveys in the Dakotas and 2) developing a spending profile specifically for North and South Dakota winery visitors.