

PROJECT COMPLETION REPORT:

August 17, 2010

Nebraska Wine Quality Assurance Program Feasibility Study

Project Duration

April 30, 2010- June 30, 2010

Under Supervision of:

Nebraska Department of Agriculture

Submitted by Stephen Menke, Ph.D.

Submitted to: Nebraska Grape and Winery Board

Nebraska Wine Quality Assurance Program Feasibility Study

Table of Contents

Title Page	1
Table of Contents	2
RFP	3-4
Project Proposal, Menke	5-6
Project Initiation and Completion Steps	
Announcement of Project	7-10
Background and Vision Meeting	
Summary	11-12
Meeting Content, Colorado, Menke	13-39
Meeting Content, Ohio, Steiner	40-61
Meeting Content, Ontario, Pavan	62-77
Announcement of Survey and Tour	78
Nebraska Quality Assurance Study Survey	79-80
Results of Nebraska Quality Assurance Study Survey	81-83
Project Summary Steps	
Comments on Survey	84-85
Tasting Notes and Comments	86
Project Summary Recommendations	87-

Nebraska Grape and Winery Board
Wine Quality Assurance Program Feasibility Study
Request for Proposal

In order to increase the quality and improve Nebraska's grape and wine industry, the Nebraska Grape and Winery Board (NGWB) is looking into the establishment of a Nebraska Wine Quality Assurance Program. Under this program, Nebraska wines would be graded against a rating system that is based on industry standards to identify the best estate-grown wines in Nebraska. Wines that meet or exceed program criteria would be designated as *Nebraska Quality Wines*. A seal of distinction would be developed that would create awareness of Nebraska Quality Wines with consumers while promoting the best of the Nebraska wine industry. The purpose of this program would be to spur investment in new vineyards in Nebraska with high quality wine grapes, encourage consumers to try Nebraska wines, and help consumers develop an appreciation for quality wines that are produced on Nebraska soil. However, before embarking on implementation of such a program in Nebraska, the NGWB is jointly working with the Nebraska Department of Agriculture (NDA) to obtain bids from potential subcontractors who would be able to develop a Wine Quality Assurance Program Feasibility Study to determine the cost of establishing such a program in Nebraska.

Sealed bids will be accepted by NDA until the close of business on **February 28, 2010**. Bids must be sent to NDA either by mail or email. Bidders must submit one original bid along with the number of feasibility studies they have conducted and / or a description of their experience in the grape and / or wine industry or a similar agricultural field. Bidders must also include a copy of their company's policy for a drug-free workplace and a detailed description of the steps to perform to develop this study. For each step, bidders must identify the estimated number of hours, cost per hour, total cost, and projected timeline.

Once all bids are obtained, they will be competitively ranked and scored by the Board. The bids will be ranked against the evaluation criteria established in this RFP. The evaluation criteria and respective points for each are as follows:

- a. Subcontractor's background and ability to perform the study in a timely manner (25 points);
- b. Subcontractor's proposed approach from which to perform and carryout the study (25 points);
- c. Subcontractor's total cost to perform the study (50 points).

The applicant with the highest combined score will be awarded the bid. The successful vendor will enter into a fixed price per hour for actual work performed, not exceeding a total dollar amount of **\$10,000**. The vendor selected to perform this study must have it completed by **June 30, 2010**. There will be an option to amend the contract, based on availability of funding, for additional work within the scope of the agreement entered into. Please submit sealed bids by **February 28, 2010**, either by mail or email to:

Casey Foster

Nebraska Department of Agriculture

P.O. Box 94947

Lincoln, Nebraska, 68509

casey.foster@nebraska.gov

For questions regarding this RFP, please contact Casey Foster at 800-422-6692.

Proposal: Nebraska Wine Quality Assurance Program Feasibility Study

Scope of Proposal

Determine type and cost of establishment of a Nebraska Wine Quality Assurance Program. Such a program will place emphasis on raising wine product quality, with the resulting quality recognition spurring greater investment in Nebraska vineyards and wineries.

Applicant Background and Qualifications

Stephen Menke, 3138 North Drake Court, Grand Junction, CO 81504

- Private consultant for wineries and wine organizations
- Associate Professor of Enology, Dept. of Horticulture and Landscape Architecture, Colorado State University-Western Colorado Research Center.
- worked extensively in extension programs to wine industry, with emphasis on wine quality improvement, in AZ, IL, PA, and CO
- Performed similar feasibility study, in conjunction with Pennsylvania Wine Marketing and Research Board, Pennsylvania Wine Association, and Penn State University.
- Designed and established PA Wine Quality Initiative
 - facilitated creation of the PA Sensory Wine Quality Standards Panel and designed standards
 - facilitated creation of and trained panelists for the PA Sensory Wine Quality Assurance Testing Faults Panel, which acts in conjunction with the PA Sensory Wine Quality Assurance Hedonistic Panel to yield a composite score for Pa wines submitted for appraisal
 - organized first PA Sensory Wine Quality Assurance Composite Testing Panel, which tested and reported scores to wineries for use in their quality assurance efforts
 - trained and mentored replacement facilitator, and collected data assessing reliability of first three composite testing panels
- Designed and established CO Wine Quality Initiative, in conjunction with Co Wine Marketing Development Board
 - currently training panelists for CO Sensory Wine Faults panel
- performed research on sensory component profiles of wine cultivars, including Chardonal, Frontenac, Chambourcin, and Rkatsiteli

Proposed Scope of Work and Timetable and Deliverables

March 1-April 30, 2010

Industry Facilitation Process (24 hours personnel time for meeting)

-Background presentation to NE wine industry

-compare existing systems of formal wine quality assurance, with speakers and/or program outlines from other states and countries (Canada, Colorado, Ohio, Missouri, New Jersey, Pennsylvania, etc.)

-Facilitation session to assess industry quality assurance desires, costs, and recommendations for possible directions

Cost:	-travel, lodging, and fees for facilitator and 2 speakers	\$2500
	-room rental and food for 35 attendees	\$ 500

April 30-May 30, 2010

Industry quality assurance survey and buy-in tour (32 hours personnel time for tour visits)

-Dr. Menke and 2 NGWB board members visit as many vineyards and wineries as possible in 4 days, taste wines, and ascertain level and type of commitment to potential quality assurance systems, with industry members personally supplying lodging and meals.

-from visit consultations, develop survey form and send to rest of industry and stakeholders

Cost:	- car and gas cost for 2000 miles	\$1000
	-lodging and meals for 3 people for 4 days	\$1380
	-survey development, distribution, and results analysis	\$ 500

May 30- June 30, 2010

Draft Report and Recommendations (32 hours personnel time for documents)

-Dr. Menke and NGWB board members report and quality assurance plan outline

Cost:	-4 days of Dr. Menke's time	\$1600
	-printing and distribution of report	\$ 300
Total Cost:	(88 hours personnel time + travel and supplies costs)	\$7780

Nebraska Wine Quality Assurance Program Feasibility Study

The Nebraska Department of Agriculture announces the creation of a project, titled, “Nebraska Wine Quality Assurance Feasibility Study”. This project is funded through wine industry levies to the Nebraska Grape and Winery Board. The project will be overseen by Dr. Stephen Menke, Associate Professor of Enology at Colorado State University and a native of Cozad, NE. The Nebraska Winery and Grape Growers Association will be a cooperator. The aim of this project is to explore wine quality assurance programs that currently exist in other regions, and then to decide if one of these programs or a novel program should be implemented by the Nebraska wine and grape industry. The project will include a facilitated background and analysis meeting for the Nebraska wine industry on May 22, 2010 titled “Workshop on Quality Assurance for Nebraska Wines”. Any resulting recommendations or directions, for a wine quality assurance program, will be vetted by the Nebraska wine industry. This vetting process will utilize an industry-wide “Quality Assurance Discussion Tour”, June 3-6, 2010, consisting of on-site winery visits, as well as use of an industry survey. A final report will be delivered by June 30, 2010.

Study Rationale and Performance Limitations

The study will be performed in three parts. The first part will be a workshop, “Workshop on Quality Assurance for Nebraska Wines”, to determine several things. The first workshop item is to understand why an industry might want to implement a quality assurance program. The second workshop item is to review presently operating wine quality assurance programs and assess how and why they were set up and the costs and effectiveness of these programs. The third workshop item is a facilitated group assessment of what the needs and desires and possible forward actions should be for a Nebraska version of a wine quality assurance program.

The second part is hands-on, and involves taking the proposals from the workshop, and vetting them against the situations, needs, and desires of individual wineries. This will be accomplished by a “Quality Assurance Discussion Tour”, consisting of visits to as many Nebraska wineries as possible. The on-site survey will include confidential tasting of wines and discussing positive and negative attributes and their origins, and discussing the wine quality assurance proposals from the workshop with winery owners and personnel. This will give a snapshot of current state of the wines and the perceptions of the wineries of the Nebraska wine industry. All participating and non-participating wineries and vineyards will also be asked to complete and submit a confidential survey. The intense scheduling requires extraordinary cooperation of the wineries, but is needed to accomplish the study by June 30, 2010.

The third part is a project summary report, including proposals from the meeting, anonymously condense the information from the tour and survey into confidential statistics and impressions, give some possible recommendations for feasibility and methodology of a Nebraska Wine Quality Assurance Program, and review the budget and expenditures of the project.

Nebraska Wine Quality Assurance Program Feasibility Study

Workshop and Tour

Dates and Locations

May 22, 2010	“Workshop on Quality Assurance for Nebraska Wines” Kearney, NE Holiday Inn
June 3-6, 2010	“Quality Assurance Discussion Tour” 20 on-site winery visits across Nebraska

Registration

Free: email your attendance to stephen.menke@colostate.edu or call 217-721-4307 or mail to Stephen Menke, 3138 North Drake Court, Grand Junction, CO 81504 by May 18, 2010 for May 22 workshop and/or for June 3-6 tour

Agendas

“Workshop on Quality Assurance for Nebraska Wines”

8:00-8:30	Registration and Continental Breakfast
8:30-8:45	Welcome and Introductions
8:45-9:30	“Principles of Quality Assurance Programs” <i>Speaker: Stephen Menke, Colorado State University</i>
9:30-10:45	“The Ontario VQA” <i>Speaker: Angelo Pavan, Cave Spring Vineyard and Cellars</i>
10:45-11:00	Break and Refreshments
11:00-12:15-	“The Ohio Quality Wine Assurance Program” <i>Speaker: Todd Steiner, Ohio Agric. Research and Development Center</i>
12:15-1:30	Luncheon
1:30-4:30	Facilitated Forum on Nebraska Wine Quality Assurance
4:30-	Fellowship and departure

“Quality Assurance Discussion Tour” **

June 3 (Western NE)

7:00 8:15 am @ Prairie Vine, Mitchell

8:15-10:15 am, travel to Lewellen

10:15-11:30 @ 17 Ranch, Lewellen

11:30-1:00, travel to Paxton

1:00-2:00, lunch at Paxton

2:00-3:15 @ 5 Trails, Paxton

3:15-5:00 travel to North Platte and @ Feather River

5:00-6:30 travel to Farnam

6:30-8:30 supper at Farnam and @ 3 Brothers

8:30 9:00 travel to Lexington

June 4 (Central and Northeast NE)

7:00-8:15 @ Mac’s Creek

8:15-9:45 travel to Ravenna

9:45-11:00 @ Cedar Hills

11:00-11:30 travel to St. Paul

11:30-12:45 @ Miletta Vista

12:45-2:30 lunch and travel to Prairie Creek

2:30-3:45 @ Prairie Creek

3:45-6:15 travel to Pierce

6:15-7:30 @ Cuthills, Pierce

7:30-10:00 travel to Blair

June 5 (Northeastern and east Central NE)

7:00-7:30 travel to Big Cottonwood

7:30-8:45 @ Big Cottonwood
8:45-9:00 travel to Silver Hills
9:00-10:15 @ Silver Hills
10:15-11:30 travel to Soaring Wings
11:30-12:15 @ Soaring Wings
12:15-1:15 lunch at Springfield
1:15-2:15 travel to Deer Springs
2:15-3:30 @ Deer Springs
3:30-4:15 travel to WindCrest
4:15-5:30 @ WindCrest
5:30-7:00 @ James Arthur
7:30- 8:45 @ WundeRosa

June 6 (Southeastern NE)

8:30-10:00 travel to Brownville
10:00-11:15 @ Whiskey Run
11:15-12:15 travel to Pawnee City
12:15-1:30 @ Schilling Bridge
1:30-5:30 lunch and travel to Superior
5:30-6:45 @ Superior Estates
Travel to Lexington and disperse

** Three locations that have no winery production facilities are not included, and one location is too remote from all other wineries along a daily tour path to be included.

Nebraska Wine Quality Assurance Study: Background and Vision Meeting

May 22, 2010, Kearney, NE

Facilitator and Documentation: Stephen Menke, Colorado State University Enologist

Attendees: 12 winery owners and personnel

Speakers:

Todd Steiner, Ohio Agriculture Research and Development Center, Enologist

Angelo Pavan, Cave Spring Winery, Owner/Winemaker,

Stephen Menke, Colorado State University, Enologist

The meeting was brought to order by Dr. Menke. He gave the background of the NE Wine Quality Assurance Feasibility Study and its structure, including the May 22, 2010 meeting and the June 3-6, 2010 winery quality assurance discussion tour. Dr. Menke also gave a talk on the nature of Quality Assurance and a general review of various wine quality assurance systems in use in the world and in North America. These include: 1) mandatory government systems, based on terroir, like France, Italy, Germany, and Canada; 2) voluntary systems tied to ability to sell passing wines in certain venues, like New Jersey State Wine Festival; 3) voluntary systems that aim for raising quality by setting fault-free standards, like PA and CO. He gave a review of the system he helped start in PA and now in CO, which consists of sensory evaluation of bottled wine by both a hedonistic panel (cumulative experience of experienced judges) and a quantitatively trained sensory faults panel (trained to standard ranges for each fault chemical), with a combined score from both panels and the passing score set at 65%. Samples are given comments by judges, which are confidentially available to the submitting winery. Chemical testing is voluntary and done by each winery.

Todd Steiner gave the history and current state of the Ohio Wine Quality Assurance Program, which is a voluntary system that consists of chemical evaluation of wines for BATF legal standards plus voluntary sensory evaluation of wines that are immediately ready for bottling by a hedonistic panel, with a passing score set at 75% and with a promotion campaign for passing wines.

Angelo Pavan's presentation detailed the history and current state of the Vintner's Quality Alliance in Ontario and British Columbia, which requires a terroir standard of grape cultivars by region and passage of a fault-free standard by sensory panels, in order to sell in the VQA system, the venue with the overwhelming majority of sales.

After lunch, a needs and visioning session was held. Needs for quality assurance that were identified included: 1) branding mechanism for NE wines; 2) motivate grocery stores and liquor stores to sell NE wine; 3) provoke customer excitement about NE brand and wines; 4) eliminate flawed wines and establish baseline standards that are measurable and publicized; 5) educate new wineries and existing wineries on ways to maintain and improve wine quality; 6) provoke commitment of legislators by showing industry is raising its standards; 7) prepare quality wines that will meet desires of new demographics of wine consumers, 8) encourage market growth by raising wine quality standards.

The vision session came to these conclusions: 1) now is the time to get legislative efforts behind a quality assurance program; 2) any QA system must be easy and affordable and readily accessible by all wineries; 3) training should be available for producers on methods of quality assurance in winery; 4) probably will want to start small or with pilot program; 5) a strong focus on wineries as part of agricultural development should be part of a quality assurance.

The group consensus was that some sort of pilot QA program should begin very soon. Suggestions for organization and implementation of pilot efforts to raise wine quality included: 1) a NWGGA competition by a highly qualified panel, with QA feedback by judges; 2) chemical and/or sensory testing costs are limited by available funding and high costs; 3) can UNL Food Science provide expertise to help with QA efforts; 4) should start with sensory evaluation and add chemical evaluation later; 5) sensory or chemical evaluations should include suggestions from results of evaluations; 6) should explore cooperative efforts with universities/colleges and industry from neighboring states; 7) the NWGGA should endorse and seek funds for the QA program from legislature (e.g., increased winery tax or fee dedications), based on how QA program will help industry grow and provide more jobs and increased tax revenue.

The group suggested that Dr. Menke's survey, to be distributed during the tour to the wineries, should be focused on the issues and solutions generated by the May 22, 2010 meeting.

The meeting was adjourned and the winery tour agenda was confirmed

QUALITY CONTROL ALLIANCES AND THEIR EFFECTIVENESS

By Stephen Menke, Ph.D., CSU Assoc. Prof. of Enology & Colorado State Enologist

History of Industry Quality Control

The term, "Industrial Quality Control" was reported by Holbrook Working, in the *Journal of the American Statistical Association*, Vol. 41, No. 233 (Mar., 1946), pp. 112-115, as being coined by President Roosevelt and the Society of Quality Control Engineers, as relating to the Office of Research and Development of the War Production Board, to describe the processes of analytical quality control as applied to the entire scope of an industry.

At that time, the quality control process was seen as a regulatory process to ensure critical war production goals were met. Today, we use it mostly in the context of either agencies responsible for health and welfare, like FDA or USDA inspectors, or of individual businesses that desire consistency of efficiency and quality in the manufacture and sale of their products, like the quality control and product development teams in food companies and the quality standards of fruit or vegetable or dairy cooperatives. Today the term "Quality Assurance" is also used as a synonym for "Quality Control".

Wine Industry Quality Assurance

In the wine industry, many countries have either voluntary or mandatory quality assurance systems that are industry-wide, but are far from uniform in standards and practices. The USA is a notable exception to the world norm of comprehensive wine industry quality assurance programs. However, some appellations and states have set up or are setting up wine quality assurance programs.

This lack of quality assurance for wine seems incredible to the rest of the food and beverage industry, and they wonder why the wine industry lags in this area. The main influences seem to be: 1) the largely natural viticultural methods and yearly crop cycles used; 2) the largely natural enology of fermentation and post-fermentation processing; and 3) the huge variation in grape varieties, wine styles, and aging variations that create many very specific and small market niches. This leads to a huge variety of wines sold every year, as compared to other beverage and food products. This means that process of quality assurance, in an economical production sense, is largely confined to preventing obvious faults from reaching the consumer.

However the wine industry has also developed a highly refined marketing system, one that attempts to define and compare the multitude of different wines produced each year. This marketing system has appropriated the words "quality" or "superior" or "world class" to describe particular sets of descriptive terms that denote comparative advantages of one wine over another. The problem is that, except for a very limited number of egregious and widely condemned odor and taste faults, there is seldom agreement on what the standards really mean for any specific application of the word "quality". In fact, the meaning is so unclear that most people think that awarding comparative medals in wine

competitions really denotes an empirical definition of “quality” based on strict standards, rather than being derived from a very unclear and shifting and very loosely defined group consensus of “quality”, based largely on non-repetitive and statistically unsound test panels.

So there is an obvious need for Quality Assurance in the wine industry. How do the various systems around the world and in the USA compare in methods and thoroughness? What are the costs and benefits of each system? How do mandatory and voluntary systems compare?

Comparison of Several Quality Assurance Systems

The quality assurance systems used in France, Italy, and Germany have many similar characteristics. They are all largely historically derived according to the concept of terroir, the sense that the location and characteristics of the vineyards and wineries are primarily responsible for the nature of the final wine products. These terroir definitions have become codified over many decades of adherence, with historical reputation and historical selling price of the wines being highly determinant of quality definitions. Standards are imposed largely according to the distribution of historical grape varieties and the winemaking practices and varietal blends applied to these varieties for each area. Hierarchical regional and national boards certify any changes in or application of quality definitions, and are responsible for helping to certify and market wines on the basis of classes of overall quality.

The Ontario Vintners Quality Alliance was developed in Canada as a mandatory system, and there are now several regional VQA systems in Canada. It was put in place to bring about improvement in the basic soundness of the wines for the marketplace, and is not as systematically classified as the European systems described above. It relies on a system of appellation designations with mandatory standards, at harvest, for each grape variety within such appellations and with mandatory chemical and organoleptic evaluation of wines that establishes lack of faults and presence of typicity for each wine varietal or blend to “pass” as a VQA wine. These organoleptic evaluations use an historically derived “consensus” of expert panels as a standard.

Several states have also established organoleptic quality assurance panels, which all rely on expert panels judging according to historical consensus standards, with a passing score needed to participate in industry festivals or to get a “quality” bottle seal for marketing. Sometimes, simple chemical testing is also done on the same wines the panels assess.

The Australian system relies heavily on intensive education of the industry to best practices that will assure wine quality, but organoleptic evaluation is still done by expert panels by historical consensus standards.

Pennsylvania is embarking on a Quality Wine Sensory Assurance Program that uses a combination of blind wine evaluation methodologies. This same system is now also being put into use by Colorado. The first methodology is a fault-free or faulted evaluation, determined by panels trained in quantitative fault detection by Quantitative Descriptive Analysis. This is then coupled with a sensory quality rating by a traditional “expert” or “hedonistic” panel, using historical consensus. Market wines from outside sources are also evaluated alongside local wines. The scores from the two panels are

combined to give a total score, with a pass/fail score point. Panelists from both panels are also required to make notes on each wine for use by the wineries. Results from individual wines are confidentially reported to the wineries, who then decide on how that specific information is used. Grouped anonymous data is kept and analyzed by the PSU Enology Educator. Wines with sensory “problems” are accompanied in the report of results with descriptive comments and suggestions for further evaluations and/or consultations. It is envisioned that aroma chemical analysis will eventually accompany the sensory analysis, as a further diagnostic and corroborative tool.

COLORADO QUALITY WINE AND GRAPE INDUSTRY PROGRAM

Part I. Purpose, Mission, Goals and Objectives of Colorado Quality Wine and Grape Industry Program

A. Statement of Purpose: Colorado Quality Wine and Grape Industry Program

The Colorado wine and grape industry, in order to improve its quality, consumer approval, and sustainability, will institute a Colorado Quality Wine Industry Program, the purpose being to produce wines and grapes that meet high quality standards, to benefit the consumer, the industry, and the State of Colorado.

B. Mission Statement : Colorado Quality Wine and Grape Industry Program

A high standard of wine and grape quality, through a rigorous Wine and Grape Quality Testing Program, will be a continuing mission of the Colorado wine and grape industry. To attain a public and market image of quality wines, from quality wineries and vineyards, the Colorado wine and grape industry must institute testable standards, that foster a culture of producing fault-free, commercially acceptable wines and grapes, and drive the industry to produce world class wines and grapes. Education and training of the industry and the public will be consistent with a wine and grape culture that is driven by the pursuit of high standards of quality.

C. Overall Planned Goals and Objectives for Implementation of the Quality Wine Industry Program:

1. Short Term Goals and Objectives

Goal 1: Establish and Implement Wine and Grape Quality Testing Programs

Initial efforts will be to put in place quality testing programs to eradicate faulted wines being "Made in Colorado" or to eliminate grapes raised of insufficient quality to generate high quality wine and other grape products

Objective A

Identify and enlist the assistance of a core group of geographically diverse winemakers and industry associates, who will research and recommend short-term and long-term assessment programs to achieve measurable Standards of Quality for Colorado Wine and Grapes, by means of a Wine and Grape Quality Testing Program.

Objective B

Taking these recommendations in Part I. B.1.a. as guidelines, establish a multi-stage Wine and Grape Quality Testing Program, with the aid of the CWIDB, CDA, CAVE, the CSU State Enology and Viticulture Educators, and private stakeholder entities.

a). Establish a trained body of wine quality screening panels, to identify wine faults and other attributes.

b). Establish a trained body of grape quality screening panels, to grade grape quality, on a non-price basis.

Goal 2

Educational programs will all contain sensory training and tasting components, to encourage critical tasting of all wines, at all levels of production, by all people involved in production and sale of grapes and wine

Objective A

Objective Certification courses in sensory training will be developed

Objective B

CSU Enologist and Viticulturist will strive to include sensory components in all educational workshops and meetings

Objective C

The CO wine industry will strive to implement sensory evaluation at all levels

Goal 3

The CO wine industry and CSU will encourage all Colorado winemakers and grape growers to participate in winemaking technical seminars and viticulture technical seminars, thereby increasing technical competency.

Objective A

CO Wine and Grape Educational Program will be implemented by CSU Enologist and Viticulturist, with consultation by industry advisory committees

Objective B

An industry funding mechanism will be established for scholarships and travel for industry members to educational meetings

Goal 4

CSU and the CO wine industry will encourage the production of a state-wide manual for enology best practices, and a state-wide manual of viticultural best practices that sustain winegrape quality.

Goal 5

The industry will establish an entity to fund and guide industry development, quality improvement, and marketing efforts

2. Medium Term Goals and Objectives

Goal 1

Establish an assessment and education process that will raise the production quality level of all Colorado wines to fault-free and commercially acceptable status.

Objective A

Establish Quality Wine and Grape Testing Programs for all Colorado wines and grapes, including the codification of Quality Standards and funding mechanisms.

Objective B

Establish Market Quality Standards for attributes of Wines of Merit, denoting superior achievement in the marketplace and by critical review, and use these standards to establish and implement Wine Market Quality Definition Panels.

Objective C

Grape growers and wineries will participate in and abide by the Quality Testing program, in order to promote continuous market enhancement of image and product value.

Objective D

Establish Grape Market Quality Standards Panels for attributes of Grapes of Merit and Vineyards of Merit, and establish Grape Market Quality Definition Panels to implement assessment of grapes and vineyards by such standards. Standards for Vineyards of Merit shall include consistent production of Grapes of Merit or Wines of Merit

Goal 2

The CO wine industry will cultivate advanced critical tasting of all wines and grapes, at all levels of production, by all people involved in production and sale of grapes and wine

Goal 3

The CO wine industry will expand participation by all skill levels of Colorado winemakers and grape growers in winemaking technical seminars and viticulture technical seminars, thereby increasing technical competency.

Goal 4

CSU and the CO wine industry will publish an advanced state-wide manual for enological best practices, and an advanced state-wide manual of viticultural best practices that sustain grape quality.

Goal 5

Establish a consumer and marketing research and feedback analysis program to evaluate effects of the Wine and Grape Quality Program

3. Long Term Goals and Objectives

Goal 1

The Quality Program long-term goal will be to consistently increase the number of distinctive, superior, “world-class” wines produced in Colorado and consistently raise the quality, image, niche market penetration, and overall market value of all Colorado wines in domestic and international markets.

Objective 1

Establish, within the Wine and Grape Market Standards Panels, standards for Wines of Distinction, Grapes of Distinction, Vineyards of Distinction, and Regions of Merit. Standards for Wines of Distinction must include origin from Regions of Merit. Standards for Grapes of Distinction must include consistent production of Wines of Merit from Vineyards of Merit. Standards for Vineyards of Distinction must include consistent production of Wines of Distinction or Grapes of Distinction. Standards for a Region of Merit must include consistent production of Wines of Distinction and Grapes of Distinction

Objective 2

Establish standards for Regions of Distinction, a definition combining terroir and superior market quality. Such standards must include elevation of a Region of Merit , by virtue of the majority of vineyards within the Region of Merit producing Wines of Distinction and Grapes of Distinction.

Part II. Specific Structure of the Quality Wine Industry Program and the Wine and Grape Quality Testing Program

A. Responsible Entities

The Wine Industry Quality Program initial goals and objectives will be set up under the direction of the Colorado Wine Industry Development Board.

An entity shall be designated by the Colorado Wine Industry Development Board for establishment of the Wine Quality Standards Panel and the Grape Quality Standards Panel, and for the implementation of these standards by Wine and Grape Quality Testing Programs

B. Fees and Expenditures

All fees or subsidies, for the activities of all Quality Standards Panels or Quality Testing Panels and their members, will be set, collected, and reimbursed by the entity designated by the Colorado Wine Industry Development Board.

C. Development of Standards

Sensory Quality Standards and Chemical Quality Standards shall be developed by a Wine and Grape Industry Quality Standards Panel, using established scientific analytical methodologies. The Wine and Grape Industry Quality Standards Panels shall consist of diverse members, selected from all parts of the wine and grape industry, and from educators, researchers, and consumers, in the following proportions. The Standards Panels alone determine the standards used by Quality Testing Panels. The Standards Panel cannot collect fees or pay expenses, and members of the Standards Panel cannot concurrently be members of any Quality Testing Panel.

D. Implementation of Standards

Quality Standards shall be implemented by Quality Testing Panels. The Quality Testing Panels shall consist of members who have undergone a certification process that ensures scientific objectivity to standards set by the Wine and Grape Industry Quality Standards Panel. The Wine and Grape Industry Quality Standards Panel shall have final approval over any certification, training, standards, and Quality Testing Panel members, that are used in the Wine and Grape Quality Testing Panels.

E. Definition of Standards

1. Define sensory standards for Fault-free Quality Testing Panels

- a) Definitions for Samples and Methodology
- b) Definitions of Fault-free Status
- c) Definitions of Reports
- d) Responsibility, Training, and Certification of Panels

The Wine Quality Testing Panel is charged with determining a status of Fault-free for any particular wine submitted to said panel for approval, using definitions supplied by the Wine and Grape Quality Standards Panel. The basis for this status is a minimum aggregate score, as defined by the Wine and Grape Quality Standards Panel. This score will define a consensus of the Wine Quality Testing Panel. Said panel shall meet quarterly to determine the Fault-free status of all wines submitted by commercially licensed wineries since the last meeting of said

panel. Said panel shall publish only those wines determined to achieve Fault-free status, not the wines declined from this status nor the wines submitted for panel approval. Panel members may also serve on Wine Quality Standards or the Preferred Quality Panels, but not concurrently.

The Wine Quality Testing Panel members shall undergo an initial calibration training regimen to assess the ability of each member to calibrate to each of the definitions of sensory minimum thresholds and maximum sensory limits for tainting compound, and the proscribed ranges therein. As well, a re-calibration session shall be performed by the panel, immediately preceding each quarterly status approval session. These calibration training sessions and re-calibration exercises shall be according to recognized industrial and research statistical sensory methodology. Specifically, calibration standard samples will be standard wines that have been infused with specific and progressive levels of the compounds defined as testable attributes by the Wine and Grape Quality Standards Panel and such calibration standards shall be assessed as blind samples in a specifically defined physical environment and systematic methodology, as set by the Wine Quality Standards Panel.

Wine shall be conferred the status of Fault-free only when it meets the following criteria, defined by the Wine and Grape Quality Standards Panel, as within defined sensory ranges for the following attributes: fermentation in bottle of non-sparkling wines, visual precipitates or haze, taint from cork, taint from volatile acidity, taint from oxidative processes, taint from sulphur dioxide, taint from reduced sulphur compounds, designated taints derived from metabolic actions of microorganisms or post-fermentation chemistry.

The initial training of Wine Quality Testing Panel would consist of training sessions, with curriculum developed and delivered by trained sensory science personnel from Colorado State University or other designated personnel, followed by a practical testing of members for performance in identifying attribute levels in blind samples in a standardized testing environment. The test would determine initial panel member suitability for each defined attribute. Panel members would pay the cost of this sensory certification, and receive proof of initial certification of completion of training jointly from entity implementing the testing program and Colorado State University. This certification would be recognized as the minimum training for membership on any Wine Sensory Quality Testing Panel by the Wine Quality Standards Panel. Specific additional training and periodic re-certification may be required, if so determined by the Wine Quality Standards Panel, to serve on specific Wine Sensory Quality Testing Panels.

F. Reporting by Testing Panels and Use of Test Reports

Reports from the Quality Testing Panels shall be kept in two forms. A confidential report, with individual submitter identification of analysis results, shall be available only to the submitter or to the

submitter's confidential designates. In addition an anonymous data set shall kept for grouped analyses by the Colorado Wine Industry Development Board or its designates.

Part III: Within the Colorado Quality Wine and Grape Industry Program:

Mission, Goals, Objectives, Structure, and Implementation of Wine and Grape Quality Testing Programs

A. Mission of Wine and Grape Quality Testing Programs

The Wine and Grape Quality Testing Programs will establish reliable standards for quality testing of wines and grapes, such that all wine and grapes will be free from market quality faults and will also have reliable measures for further increases in market quality standards, such that development of the Colorado wine and grape industry will be driven by ever higher quality grapes, wines, and wine growing regions.

B. Wine and Grape Quality Testing Programs Short, Medium, Long-range Goals

Short Range Goal

The Quality Program initial goal will be to strive to eradicate faulted wines being "Made in Colorado", and to establish standards for marketable attributes of wine and grapes

Medium Range Goal

The Quality Program medium-term goal will be to establish and codify an assessment and production process that will raise the quality level of all Colorado wines and grapes, to fault-free and commercially acceptable status.

Long Range Goal

The Quality Program long-term goal will be to consistently increase the number of superior, "world-class" wines produced in Colorado and consistently raise the quality, image, and market value of all Colorado wines in domestic and international markets.

C. Objectives of Wine and Grape Quality Testing Program

Initial Objective

The Colorado Wine and Grape Quality Testing Program will develop scientifically analytical quality standards for wine and grapes, through creation of standards by a Wine Quality Standards Panel and a Grape Quality Standards Panel..

Short Term Objective

The Colorado Wine and Grape Quality Testing Program will implement scientifically analytical quality standards for wine and grapes. Standards will be mandated by the Wine Quality Standards Panel and the Grape Quality Standards Panel. These standards will be applied by Wine Quality Testing Panels and Grape Quality Testing Panels to all wine and grapes submitted. This will involve voluntary submission of wines, for physical, sensory and chemical analyses, to the Wine Quality Testing Panels. It will also involve the voluntary submission of wine and grapes to a Grape Quality Testing Panel.

Reports of these Wine and Grape Quality Testing Panel analyses will be confidential to the submitting parties, unless they choose to release them. They will contain specific feedback recommendations from the Quality Testing Panel, to maintain or improve wine quality for both the consumer and the producer. Anonymous grouped statistics and recommendations will be made publicly available by the entity implementing the testing programs. Private and public recommendations will involve technology, education, and research, in collaboration with the Pennsylvania Wine Marketing and Research Board, the entity implementing the Wine and Grape Quality Assessment Program, and the Colorado State University Enology and Viticulture Programs.

Medium Term Objective

The effects of Wine and Grape Quality Testing Panels analyses will be continually assessed by grouped statistical analysis of test data and by research on market performance of tested wines. This will foster a culture of producing fault-free, consumer-favored wines, and to strive to produce superior “world-class” wines.

Long Term Objective

The Wine and Grape Quality Testing Panels, using analyses to standards, when partnered with application of technology, education and research, will promote a wine and grape culture that is driven by the pursuit of high standards of quality, to the benefit of the consumer, the industry, and the Commonwealth.

D. Implementation of Quality Wine and Grape Testing Program Objectives

1. Implementation Schedule

a. Short term Implementation

1). Fault-free Wine Sensory and Chemical Quality Standards Developed

- a) Pilot Wine Sensory and Chemical Quality Standards Panels selected, trained, and activated
- b) Pilot Wine Sensory Quality Testing Panels trained
- c) Pilot Wine Sensory Quality Testing Panels activated

2). Voluntary Price-Independent Grape Quality Standards

a) Pilot Grape Quality Panels

b) Pilot Grape Quality Testing Panels

b. Medium term Implementation

1). Permanent Fault-free Wine Sensory Quality Testing Panels

2). Permanent Price-Independent Grape Quality Testing Panels

3). Evaluate Wine Quality Improvement and Sales Advantage

4). Evaluate Grape Quality Improvement and Sales Advantage

5). Develop Quality Standards for Market Quality Testing Panels

c. Long term Implementation

1) Develop Quality Standards for Wines of Merit, Vineyards of Merit, Wines of Distinction, and Vineyards of Distinction

2). Use marketing research and internal evaluation of testing program, to determine effectiveness of Quality Testing Panels on wine and grape quality, on consumer sales, and on industry sustainability

3). Define relationship between wine quality, wine attributes, and market niches

2. Process of Implementation of Short Term Testing Program Objectives

a. Develop and Implement Wine Quality Standards Panel and Pilot Wine Quality Testing Panels

1). Selection of Wine and Grape Quality Standards Panel

a) CWIDB search committee selects panel nominees

b) Panel members approved by PWMRB from nominees

2). Quality Standards Panel Develops Wine Quality Sensory Standards

a) Definitions for Samples and Methodology

b) Definitions of Fault-free Status

c) Definitions of Reports

d) Definitions of Training of Panels

3). Implement Pilot Wine Sensory Quality Testing Panel

- a) Train and Certify members of Panel
- b) Carry out Panels
- c) Collect and distribute Reports

b. Develop and Implement Grape Quality Standards Panels and Pilot Grape Quality Testing Panels

1). Develop chemical and sensory standards for Grape Quality Testing Panels

- a) Definitions for Samples and Methodology
- b) Definitions of Quality Status
- c) Definitions of Reports
- d) Training of Panels

2). Implement Pilot Grape Quality Testing Panels

- a). Select and Certify Grape Quality Testing Panels
- b) Carry out Grape Quality Testing Panels
- c) Collect and Distribute Reports

c. Convert Pilot Wine and Grape Quality Testing Panels to Permanent Panels

3. Process of Implementation of Medium Term Testing Program Objectives

a). Develop and Implement Market Quality Attributes Testing Panels

1). Refine sensory standards for Wine and Grape Quality Standards Panel

- a) Definitions for Samples and Methodology
- b) Definitions of Market Quality Attributes
- c) Definitions of Reports
- d) Training of Panels

2). Implement Permanent Wine Market Quality Testing Panel

- a) Certify members of Market Quality Panel

- b) Carry out Market Quality Panels
 - c) Collect and distribute reports
- 3). Implement Permanent Grape Market Quality Testing Panel
- 1) Certify members of Market Quality Panel
 - 2) Carry out Market Quality Panels
 - 3) Collect and distribute reports

b. Develop Market Assessment Program

- 1). Wine Quality Testing Panel
- a) Compare sales data over time
 - (1) to same wine with or without certification
 - (2) to similar non-certified wines in same market
 - (3) to all wines in same market
 - b) Compare Consumer Evaluation Panels over time
 - (1) to same wine with or without certification
 - (2) to similar non-certified wines in same market
 - (3) to all wines in same market
- 2). Grape Quality Testing Panel
- a) Compare sales data over time
 - (1) to same grapes with or without certification
 - (2) to similar non-certified grapes in same market
 - (3) to all grapes in same market
 - b) Compare Winemaker/Grower Evaluation Panels over time
 - 1) to same grapes with or without certification
 - 2) to similar non-certified grapes in same market
 - 3) to all grapes in same market

c. Develop and Implement Quality Standards for Wine of Merit, Grape of Merit, and Vineyard of Merit

- 1). Analyze progress of Quality Testing Program wines
 - a). toward internal standards
 - b). Analyze sales fitness of Quality Testing Program wines to defined customer niches
 - c). Analyze sales fitness of Quality Testing Program wines against competitors in defined customer niches and overall market share
1. Use Progress Analysis to define Standards for Wine and Grape and Vineyard of Merit
 - a) Wine varieties
 - b) Wine Style
 - c) Export definitions
2. Implement Wine and Grape and Vineyard of Merit Testing
 - a) Wine varieties
 - b) Wine Style
 - d) Export definitions

4. Process of Implementation of Long Term Program Goals

a. Perform Market Assessment Programs on Wine of Merit and Grape of Merit Certifications

- 1). Correlate merit quality certification to sales performance
- 2). Correlate merit quality certification to market niche performance
- 3). Correlate Vineyards of Merit with sales and market niche performance

b. Use Assessment Analysis to Develop Regions of Merit

- 1) Correlate Vineyards of Distinction with region
- 2) Region with majority of Vineyards of Merit becomes a Region of Merit

c. Use Assessment Analyses to Develop Wine of Distinction, Grape of Distinction, and Vineyard of Distinction

- 1). Develop quality and market standards for designation of Wine of Distinction, Grape of Distinction, and Vineyard of Distinction status
- 2). Implement programs for Wine of Distinction, Grape of Distinction, and Vineyard of Distinction

d. Perform Market Assessment Programs on Wine of Distinction and Grape of Distinction Certifications

- 1). Analysis of progress of Distinction wines and grapes toward internal standards
- 2). Analysis of sales fitness of Distinction wines and grapes to defined customer niches
- 3). Analysis of sales fitness of Distinction wines and grapes against competitors in both defined customer niches and overall market share

e. Use Assessment Analyses to Develop Region of Distinction Program

- 1). Correlate Vineyards of Distinction to Regions of Merit
- 2). Region with majority of Vineyards of Merit becomes a Region of Merit

f. Use Assessment Analysis to Establish Regional Reputation

OVERVIEW:

First 10 Years of 20 Year Quality Wine Industry Program Schedule

Year 1 →2008

Research and Establish Form of Industry Quality Program and Quality Testing Regimens

Year 2-5→2009-2012

Establish Wine Sensory Quality Standards Panel and Pilot Wine Sensory

Quality Testing Panels (Fault Free →Silver Quality Assured Sticker)

→ Establish Permanent Wine Sensory Quality Testing Panels

→ Establish Statistical Analysis of Fault Free Wines

→ Establish Wine Market Quality Panels (Market Standard → Gold Standard Sticker)

→ Establish and Implement Standards for Wine Chemical Quality Testing Program

Year 6-9 → 2013-2016

Establish Grape Quality Standards Panel & Pilot Marketable Grape Quality

Testing Form

Establish Permanent Marketable Grape Quality Testing Form

→ Establish Statistical Analysis of Market Quality Wines

→ Establish Market Assessment Program for Fault-free Wines and Marketable

Grapes

Year 10 → 2017

Define Standards for Wines of Merit (Merit Standard → Crown Quality Classification Seal)

→ Establish Wines of Merit Testing

Proposed Sensory Standard Attributes for Fault Free/Market Status

-All Fault attributes will be given an acceptable, physically measurable upper limit and a lower detection threshold, as determined by training to chemical sensory standards.

-All Preferred Attributes will be determined by initial consensus of Expert Panel and then a Descriptive Profiling Scale of Relative Intensity will be developed, which will then give lower thresholds and upper limits to Preferred Attributes, excepting Impression Attributes

Fault or Flaw Attributes

Proposed Optional Physical/Chemical Testing Form

Organic acids profile	TCA complex	Brettanomyces complex
ATA complex	Polyphenolic profile	MO selective plating

Estimated Minimum Costs of Short-Term Goals

I. Estimated Minimum Costs of Wine Quality Program, Fault-Free Panels

Wine Quality Standards Panel (initial cost)

--no cost

Wine Quality Standards Panel (annual review costs)

--5 members x 1 meeting x \$200/member travel and accommodations = \$1000/yr

Wine Quality Testing Panel, Sensory Evaluation

--10 members x (3 x 1 testing days) x \$300 member travel and accommodations = \$9,000/yr

Total Sensory Panel cost/yr = \$10,000+

--for 200 samples = \$50/sample → paid part or none by members

Chemical Evaluation @ TTB certified Lab

--\$120/sample → paid part or full by member

II. Estimated Minimum Short Term Cost of Grape Quality Program

Grape Quality Standards Panel (initial cost)

--5 members x 2 meetings x \$250/member travel and accommodations and overhead = \$2500

Grape Quality Standards Panel (annual review costs)

--5 members x 1 meeting x \$250/member travel and accommodations = \$1250/yr

Grape Quality Standards Site Inspection Costs

--Conform to Standards form signed by designees, as certified by Wine and Grape Quality Standards Panel x \$.50/form x 2500 forms = \$1250/yr

--On-Demand Winegrape Standards Certified Quality Arbitrator

- \$300/inspection, charge divided equally between grower/supplier and winery

Grape Quality Must Testing Panel

--(\$50/sample) – (50%/sample member share) x 300 samples = \$7,500/yr

Total Minimum Short Term Cost of Grape Quality Testing Panels = \$12,500/yr 1 and \$10,000/each year after year 1

Medium Term and Long Term Quality Assessment Costs Much Greater and Additive

Quality Assurance Hybrid Scoring: Certified Faults Panel and Hedonistic Panel

Rationale: The training of the members of the Certified Faults Panel gives them the ability to quantitatively determine levels of fault chemicals, to a statistically valid degree, within a wine context. The selection and training of the members of the hedonistic panel gives them the ability to render a globally knowledgeable comparison with market standards, though not a statistically valid one. We have tested a hybrid score that allows disqualification of a wine by either an insufficient combined score from the two panels, or by a disqualifying score by the Certified Faults Panel.

Results: After two blind evaluation sessions, comprising 57 and 40 wines, respectively, we have found that the scores from the Fault Panel, Hedonistic Panel and Combined Panel Score are correlated well at the 99% confidence level, and very well at the 95% confidence level. However, the variance within each panel was higher than desired, and more care needs to be taken to ensure that any variability in training is addressed.

Faults Panel Scoring

Any given fault is judged on a scale of 0-3 points deducted by each panelist; 3 points deducted is a disqualifying fault (wine not marketable) for that chemical, for that panelist. For the six faults, with a total of 12 deductible points, a cumulative score of 7 points or more deducted is a disqualification, for that panelist. If any chemical fault character is deducted 3 points by a majority of panelists, or if a majority of panelists deducts 7 points, the wine is automatically disqualified, even if the hedonistic panel score is high enough to yield a passing hybrid score. The panel members' scores are averaged and that score is combined with the hedonistic score to give a composite score.

Hedonistic Panel Scoring

Wines are judged on a standard 20-point modified Davis scale, and each wine is given a score out of 20 possible points. There are no automatic disqualifications on the hedonistic score.

Composite Score

Combined Score = [Hedonistic score + (12-Fault points deducted)]

Highest Possible Combined Score = 32

Pass set at 70% = 14.0 = Bronze in most competitions

Fail \leq 22.40 points

Pass \geq 22.40 points

Nebraska Grape and Winery Board

Stephen Menke, 217-721-4307

stephen.menke@colostate.edu

Dear Nebraska wineries,

One of the documents you received in this packet outlines the “Quality Assurance Discussion Tour” planned for June 3-6. In it is a detailed agenda and a rationale for doing this very compressed tour, which forces many of you into a strict schedule for receiving on-site visitors in that time period. Prior to this tour, you will have either attended the “Workshop on Quality Assurance for Nebraska Wines” or you will have received a summary of it from us, as well as a survey to fill out. We are appealing to you, as an owner or winemaker, to please participate in person in these on-site visits. However, if you cannot, at least please leave a filled survey, as well written comments for us on your perception of a quality assurance program and arrange for someone to give us a tasting of your wines.

Thanks you so very much,

Stephen Menke.

Mark a Choice:

I/we, as owner, manager, or winemaker can be present for the tour at the agenda time

I/we, as owner, manager, or winemaker cannot be present for the tour at the agenda time, but will provide a survey, comment , and tasting for the visit

I/we, as owner, manager, or winemaker can neither be present for the tour at the agenda time, nor provide a survey, comment or tasting

Nebraska Quality Assurance Study Survey

June 2010

All survey respondents will remain unidentified and all answers will be grouped anonymously

- 1) (Circle one) **At what production level is your winery?**
 - a. <500 cases (< 1200 gallons)
 - b. 500-1000 cases (1200-2400 gallons)
 - c. 1000-5000 cases (2400-12000 gallons)
 - d. > 5000 cases (> 12000 gallons)
- 2) (Circle one) **What percentage of each year's production is sold within 12 months?**
 - a. 90-100%
 - b. 75-90%
 - c. 50-75%
 - d. < 50%
- 3) (Circle one) **What percentage of your present bottled inventory is older than 2 years from time of fermentation?**
 - a. < 10%
 - b. 10-20%
 - c. 20-40%
 - d. > 40%
- 4) (Circle one) **What do you think is the single greatest source of wine quality problems in Nebraska wines?**
 - a. There are no serious problems in Nebraska wine
 - b. Grape ripeness and/or overall quality at crush
 - c. Microorganism contamination at some point from crush to bottled wine
 - d. Winemaking skills
 - e. Degradation of bottled wine during storage
 - f. Inability of wine to age properly, even during good storage conditions
- 5) (**Circle** all applicable answers and **put X** by most common problem and **put Y** by the most serious problem) What are the types of wine problems you have seen in your wines or other Nebraska wines?
 - a. Cloudiness or sediment in bottle
 - b. Corked bottles
 - c. Oxidation
 - d. Volatile acidity (vinegar or fingernail polish smell)
 - e. Reduced sulfur odors (rotten eggs, onion, garlic, natural gas, burnt rubber, etc.)
 - f. Odors from *Brettanomyces*, *Lactobacillus*, mold, wild yeasts, or other microorganisms
 - g. Geranium odor
 - h. Other (specify) _____

- 6) (**Circle one**) When would you like to see a Nebraska Wine Quality Assurance Program put in place?
- Never
 - When the industry is much bigger and can better afford it
 - In the near future
 - Immediately, w/limited resources and gradually expand it
 - Immediately and with all possible available and/or obtainable resources
- 7) (**Put a number from 1 to 8 by all answers, using each number only once, in order of importance from 1 to 8**) What do you think are the best tools for wine quality assurance in Nebraska?
- Begin with a Nebraska-wide competition, with Governor's Cup awards and detailed judging notes given to the entrants, and then use any funds generated to pay for more advanced quality assurance tools and promote winning wines
 - Obtain funds to hire an enology faculty, with industry outreach and research duties, at some University of Nebraska campus
 - Obtain funds to hire industry consultants for all wineries
 - Require grapes to be tested for quality standards before entering winery
 - Obtain funds for a compulsory evaluation of all commercial bottled wines by a hedonistic panel and/or a panel trained to quantifiable standards, with detailed notes by the panels given to the entrants
 - Obtain funds for chemical analysis of bottled and/or bulk wines
 - Obtain funds for part of a voluntary evaluation of all commercial bottled wines by a hedonistic panel and/or a panel trained to quantifiable standards for wine faults, with detailed notes by the panels given to the entrants
 - Obtain funds for part of a voluntary evaluation of all commercial wines just prior to bottling by hedonistic panel and/or a panel trained to quantifiable standards, with detailed notes by the panels given to the entrants
- 8) (**Circle one**) How often should wines be evaluated?
- Never
 - Once a year
 - Several times a year
- 9) (**Circle one**) Given that testing/evaluation of wines costs from \$35 to \$100 per sample, what share would you pay for your wine samples under a voluntary system?
- Nothing
 - \$10 per sample
 - \$25 per sample
 - \$50 per sample
 - Full cost of the test/evaluation

Survey Comments

- Question 1: If the winery size needed to generate sales sufficient to pay a minimum living wage to an owner is about 1000 cases, then about 70% of NE wineries can be said to be somewhat self-sufficient, but only a few are able to support a family
- Question 2: About 70% of NE wineries are selling between 50% and 90% of their inventory within the first year after fermentation
- Question 3: All NE wineries are carrying from 10%-40% of wine that is greater than two years old after fermentation
- Question 4: Roughly equal parts of quality problems are attributed to grape quality at crush, winemaking skill levels, and microorganism contamination
- Question 5: Greater than 70% of the winemakers listed oxidation, cloudiness, and volatile acidity (in that order) as problems in NE wine. The most common problems were cloudiness, oxidation and volatile acidity (in that order), but the most serious problems were listed as reduced sulfur, volatile acidity, and oxidation (in that order)
- Question 6: The overwhelming majority want to start a wine quality assurance program immediately, but start with limited resources and gradually expand
- Question 7: No strong preference for any one type of quality assurance was noted. However, five types of voluntary programs were close in preference ranking (in this order): **g**) Obtain funds for chemical analysis of bottled and/or bulk wines; **f**) Obtain funds for part of a voluntary evaluation of all commercial bottled wines by a hedonistic panel and/or a panel trained to quantifiable standards for wine faults, with detailed notes by the panels given to the entrants; **a**) Begin with a Nebraska-wide competition, with Governor's Cup awards and detailed judging notes given to the entrants, and then use any funds generated to pay for more advanced quality assurance tools and promote winning wines; **b**) Obtain funds to hire an enology faculty, with industry outreach and research duties, at some University of Nebraska campus; **h**) Obtain funds for part of a voluntary evaluation of all commercial wines just prior to bottling by hedonistic panel and/or a panel trained to quantifiable standards, with detailed notes by the panels given to the entrants. The least preferred types were compulsory (in this order) **c**) Obtain funds to hire industry consultants for all wineries; **d**) Require grapes to be tested for quality standards before entering winery; and **e**) Obtain funds for a compulsory evaluation of all commercial bottled wines by a hedonistic panel and/or a panel trained to quantifiable standards, with detailed notes by the panels given to the entrants.

Of interest is the fact that almost 1/3 of respondents felt that grape quality was a major problem in NE, yet very few wanted compulsory testing of grapes for quality. It is unclear if the word “compulsory” slanted this result or whether respondents are averse to any type of grape evaluation at harvest.

Question 8: About half want a quality evaluation done once a year and about half want it done several times a year. It is unclear if perception of total cost influenced this answer.

Question 9: Only 25% indicated they would either pay none or pay all of the cost of evaluations; about 75% indicated they would pay between \$25-\$50/sample tested

Tasting Notes and Winery Presentation

Dr. Menke made tasting notes at the 20 wineries visited. These tasting notes have not been shared with anyone, but the notes from each winery are available to that winery, if said winery desires them. He used these notes to give an overall quality evaluation to the NE wines tasted.

His general conclusions are as follows: 176 wines were tasted. He evaluated 13 wines as superior (7.5%) of which 6 were fruit wines; 28 wines were excellent (16%); 53 wines were good, but had insufficient character definition(30%); 39 wines were without flaws but very lacking in character (22%); 28 wines were somewhat flawed but salable (16%); 15 wines were seriously faulted and not salable (8.5%).

This distribution is similar to most other states in terms of superior and of unsalable wines. However, the ratio of excellent wines to good wines with insufficient character could be much better, and is mostly attributable to unripe fruit and insufficient success in blending. Also, the ration of good wines of insufficient character to unflawed wine very lacking in character needs to be changed. Most of this is due to lower quality or unripe fruit, improper attention to winemaking particulars, and improper blending. Too many wines have flaws in what are otherwise good wines, especially oxidation, volatile acidity, and reduced sulfur. This is due to improper attention to winemaking particulars or insufficient sensory training.

Most of the faulted and unsalable wines had excess volatile acidity or oxidation, while some had odors or tastes from lactic bacteria, Brettanomyces, or surface yeasts. These denote insufficient sensory knowledge of faults and/or lack of attention to winemaking particulars.

Fruit wines seemed to be the most consistent wines overall. White wines seemed to have more consistent character definition than reds, but the wines with the most potential for developing outstanding character definition were red blends.

Winery presentation was excellent across the state. Some winery locations were spectacular, and all wineries seemed to have a well-defined local identity. Wineries were uniformly friendly and put customers at ease and most had wonderful social areas for customers. Cleanliness was very good at the vast majority of the wineries. Marketing and sales success were generally good, but most wineries seemed to be underperforming in sales and marketing, though isolated or sub-optimal locations play a large part in sales ability.

Project Summary and Recommendations

A good 'thumbnail sketch' of the quality issues for Nebraska wineries was obtained by this feasibility study.

The first part, the "Workshop on Quality Assurance for Nebraska Wines", though only attended by about 1/3 of Nebraska wineries' representatives was very successful. Three speaker presentations and other handouts informed the industry well about the range of wine quality assurance programs available and the pros and cons and costs of each. The vision session that followed the speakers was spirited and focused both on the needs and desires of the industry and the possibilities for a quality assurance program that fits the industry. The participants decided that for a variety of quality and marketing and industry image reasons, a quality assurance program should be commenced sooner rather than later, and that it must be both readily available to all and start modestly, to be most effective. Participation probably would be voluntary. Various options for funding each type of program were discussed. A summary of this meeting was prepared by the participants and Dr. Menke and this summary guided the questions on the survey of the wineries prepared by Dr. Menke.

The second part, the "Quality Assurance Discussion Tour", involved a tour of as many wineries as possible (20). The aim of this tour was to deliver the content and summary conclusions of the meeting, as well as a survey for the wineries to assess their interest and buy-in for a Nebraska wine quality assurance program. Dr. Menke had advised the wineries that he would also be tasting as many wines as possible and forming impressions of the wines and the overall state of the industry. While visiting and tasting, Dr. Menke also consulted on many issues of wine production, wine quality, and winery marketing. This may have been extremely valuable, as most wineries expressed great pleasure that both each winery and the entire industry were getting a thorough review all at one time, and that a sense of the degree of quality in the wines and quality needs would become available.

Of the 22 surveys delivered or sent, 18 were returned. Dr. Menke analyzed the background meeting, the surveys, and the winery visits, and came to several conclusions:

- 1) Almost all wineries expressed a desire to participate in some form of quality assurance program, both for personal reasons and to advance the whole industry
- 2) Almost all wineries noted common wine problems in the Nebraska wine industry, attributed mostly to uneven fruit quality, winemaking skill needs, and microorganism contamination. The most common flaws in the survey were lack of visual clarity in bottled wine, oxidation of wines, volatile acidity in wines, and reduced sulfur in wines. This is echoed by Dr. Menke's tasting notes.

- 3) Most wineries wanted a voluntary program, with wines evaluated 1-3 times a year, at a cost of \$25-\$50 per sample. Almost any of the voluntary quality assurance program choices were acceptable and the compulsory ones were not acceptable. Of the acceptable choices, a narrow preference either for chemical evaluation or for sensory evaluation panels was shown. A marked preference for a modest program that could be expanded with the industry was noted. A third possibility, a statewide wine competition with comments by a wine sensory panel, which could then develop over time into a sensory evaluation panel, was also popular.
- 4) A great desire for more intensive extension aid for enology was expressed, but how to accomplish this was uncertain without a significant financial investment that is not readily available from either the industry or the state government, or from cooperative efforts with neighboring states.

Personal Recommendations by Dr. Menke

- 1) Provide scholarships, to industry personnel from Nebraska Grape and Winery Board (NGWB), to train sensory panelists in Quantitative Faults Analysis, with this pool of panelists to be available for wine sensory panel evaluations of bottled or bulk wines.
- 2) Develop a state-wide commercial wine competition that uses trained sensory panelists to give feedback to wineries and winemakers and to promote an image of striving for high quality in Nebraska wines.
- 3) Use the inception of these wine quality assurance efforts to persuade the state to not only allow the grape check off and the license fees to continue to go to the NGWB, but to eventually stabilize and enhance the wine and grape industry development by use of a portion of excise taxes on all wines sold in Nebraska.
- 4) As money allows, set up a robust wine evaluation regimen, with both sensory and chemical analyses, for both bottled wine and wine bulk containers and for grapes delivered to wineies, that will allow all faulty wine to be avoided or remedied before the point of sale. Use this regimen to encourage ever greater quality efforts for wineries and grape growers and to enhance the branding of Nebraska wine as high quality and unique to its terroir.