Appendix B
Project Management and Evaluation Plan and Timeline

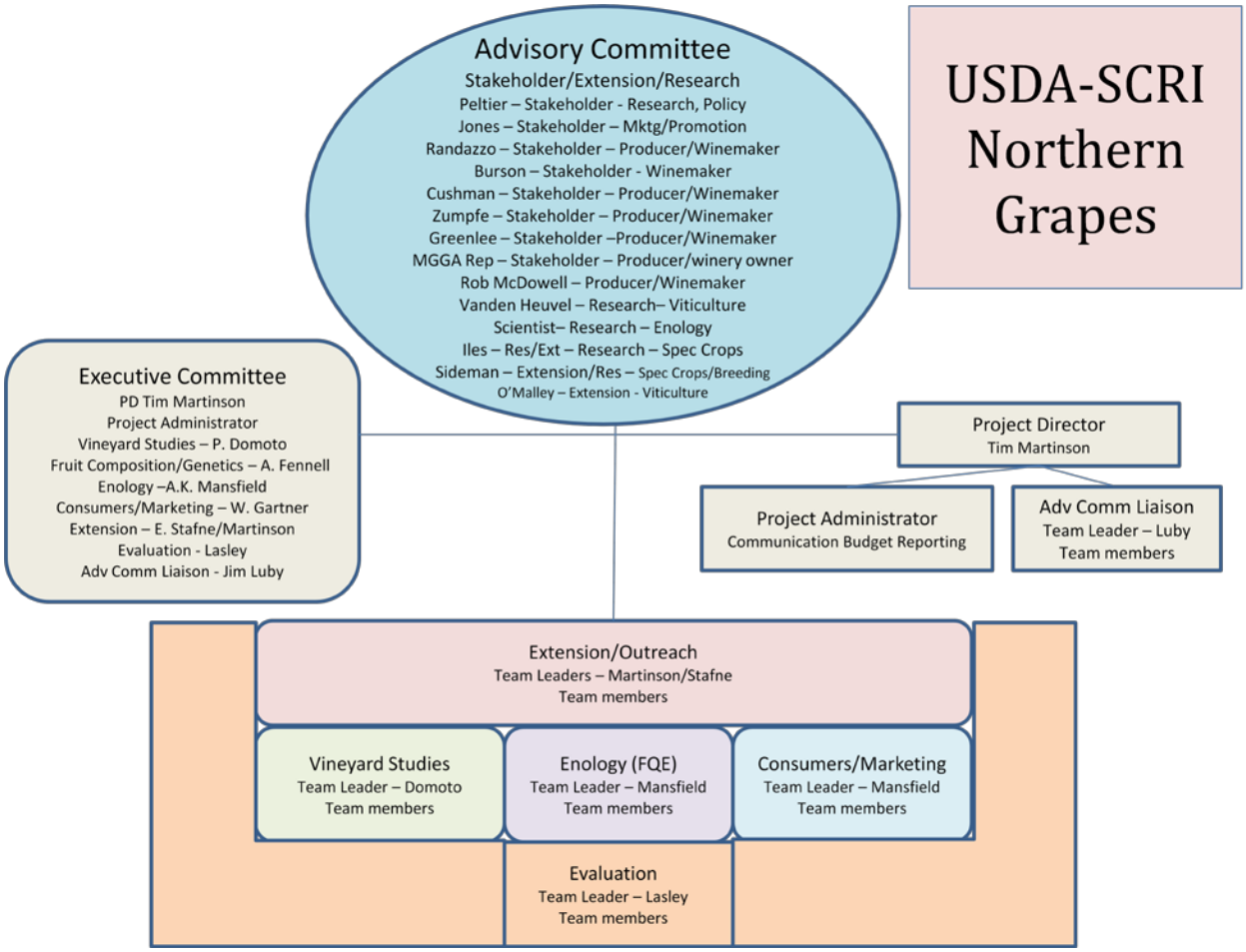
Northern grapes: Integrating viticulture, winemaking, and marketing of new cold-hardy cultivars supporting new and growing rural wineries.

Table of Contents

Appendix B: Project Management and Evaluation Plan and Timeline

Northern grapes: Integrating viticulture, winemaking, and marketing of new cold-hardy cultivars supporting new and growing rural wineries.

Management Structure



Management and Governance Plan. Northern Grapes will have an overall Project Director (Martinson) with a Project Assistant, an Executive Committee consisting of the Team Leaders for the eight major project components. The Project Advisory Council (PAC) will include individuals representing the Stakeholder, Scientific, and Extension sectors that will provide input, advice, and oversight, and extend the expertise of the Northern Grapes participants. The affiliations and qualifications of the Advisory Council members are listed in Appendix C.

Roles and Responsibilities. Martinson, as Project Director (PD) (25% time), will provide project oversight and coordination and be responsible for all reporting requirements. Jim Luby will serve as Co-PD to assist with overall project management and act as a Project Advisory Council liaison.

The Project Assistant (50% FTE) reporting to PD Martinson will be responsible for the day to day budgetary and organizational needs of the project; will assist in the quarterly reporting, monthly

conference calls, other progress reports, the *Northern Grapes* Workshops; and will create and curate a project organizational web site.

Because the project has multiple components, seven additional Co-PIs, along with PD, will serve as team leaders for major project components, forming with the PD the Executive Committee. These Team Leaders will provide hands-on management for achievement of objectives. To ensure cohesion, the Teams will interact under the coordination of the PD and guidance of the Advisory Council. Unanticipated changes in direction that arise during the proposed project will be discussed by the Executive Committee. Decisions on the use of the unallocated or flexible funds budgeted for this project will be made by consensus or majority vote of the PD and Executive Committee members.

Project Teams:

1. **Vineyard Studies**
   - **a.** *Leader:* Domoto
   - **b.** *Members***:** Berkett, Burrows, Domoto, Fennell, Nail, Read, Harbut, Iungerman, Hatterman-Valenti, Martinson, McManus, Nonnecke, Read, Rosen, Sabbatini, Shoemaker
   - **c.** *Activities:* Obj. 1a, 2a, 2b, 2c
   - **d.** *Institutions:* South Dakota State University (SDSU), North Dakota State University (NDSU), University of Nebraska (Lincoln), Iowa State University (ISU), University of Wisconsin, Illinois, Michigan State University, Cornell University, University. of Vermont, University of Massachusetts (Amherst), the Connecticut Agricultural Experiment Station.
   - **e.** *Comments***:** This is the largest team, with many field studies, for which consistency in data collection across objectives, sites, and years will be important. The team will meet to establish consistent data collection protocols for tasks common to vineyard studies. One investigator will lead each subobjective (1a, Martinson; 2a, Domoto; 2b, Rosen; 2c, McManus)

2. **Fruit Composition and Genetics**
   - **a.** *Leader:* Fennell
   - **b.** *Members:* Cai, Cook, Ge, He, Hegeman, Hemstad, Koziel, Luby, Vickers, Ye
   - **c.** *Activities***:** Obj. 1b, 1c
   - **d.** *Institutions:* SDSU, Iowa State, University of Minnesota (UMN)

3. **Enology.**
   - **a.** *Leader:* Mansfield
   - **b.** *Members:* Gerling, Cook, Dharmadhikari, Mansfield
   - **c.** *Activities:* Obj 3: 3a, 3b, 3c
   - d. *Institutions:* Cornell, UMN, ISU

4. **Consumers/Marketing**
   - **a.** *Leader:* Gartner
   - **b.** *Members:* Gartner, Gomez, Gustafson, Holecek, McCole, Gomez, Dharmadhikari

c. *Activities:* Obj. 4a, 4b, 4c, 4d
d. *Institutions:* SDSU, ISU, UMN.

5. **Extension/Outreach**
   a. *Leaders:* Martinson, Stafne (eXtension Grape Community of Practice)
   b. *Members:* Stafne (eXtension); State extension leaders: Nail (CT), Schloemann (MA), Berkett (VT), Gerling (NY), Sabbatini (MI), Cook (MN), Dharmadhikari (IA), Shoemaker (IL), Harbut (WI), Read (NE), Burrows (SD), Hatterman-Valenti (ND); Additional members: White, Mansfield, Gartner, Domoto, Hemstad
   c. *Activities:* All objectives; See extension plan
   d. *Institutions:* All institutions.
   e. *Comments:* Stafne will provide leadership on training for eXtension and formating/organization of eXtension products. *State Extension leaders* will work with local industry groups to plan and tailor events in their state and region, including field meetings, workshops, conferences and publications. *All Team members will be responsible for providing outreach to industry through appropriate forums.*

6. **Project Evaluation**
   a. *Leaders:* Lasley
   b. *Members:* Gomez, Gartner, Gustafson, Holecek, McCole
   c. *Activities:* All objectives; (See evaluation plan p 14)
   d. *Institutions:* All institutions.
   e. *Comments:* The Social Science team will develop start and close of project survey instruments and standard meeting evaluations. Leaders of each sub-objective will be responsible for project evaluation metrics and reporting (See Evaluation Plan below)

7. **Liaison to Project Advisory Council**
   a. *Leaders:* Luby
   b. *Members:* Martinson, Luby, Dharmadhikari
   c. *Comments:* Set agenda and venues for the annual Project Advisory Council meeting; communicate with Project Advisory Council members.

Administrative Timeline

Monthly: The PD and Executive Committee will hold teleconferences to discuss project activities.

Monthly: In the week prior to teleconferences, each Team Leader will provide short written updates and announcements to the PD that will be summarized, sent via e-mail list serve to participants, and posted on the project website by the Project Assistant.

Semi-annually: Each Team Leader will prepare and submit a full progress report. The progress reports will be evaluated and summarized by the Executive Committee for distribution via email listserve and posting on the project website.

Semi-annually: The PD and Executive Committee will participate in meetings or teleconferences with the Advisory Council members to update them and solicit feedback.

Annually: Northern Grapes project meetings will be held annually for all participants (during the winter season in conjunction with a viticulture or enology workshop for stakeholders in the Northeast or Midwest). The first meeting, held prior to the Minnesota Grape Growers Assn. conference in the February following project start in October will be an organizational meeting. Annual project meetings will include the following activities: face-to-face meetings with Advisory Council members, progress reports from Team Leaders, project workshops, and presentations of plans and results by participating team members. Funding to assist Advisory Council member travel is included in PD Martinson's budget.

Project Timeline

Activity		Project Year				
		1	2	3	4	5
Objective 1: Document cold climate varietal performance in variable climates and understand the resulting sensory characteristics of the fruit and wines.						
1a	i. Vine performance and weather data (Vineyard Studies Group)	x	x	x	x	
	ii. Fruit chemistry (Dharmadhikari, Mansfield)	x	x	x		
	iii. Winemaking (Dharmadhikari, Mansfield)		x	x	x	
	iv. Sensory profiling (Koziel and Cai)		x	x	x	
	v. Data compilation, analysis (Martinson and other team members)		x	x	x	x
1b	i. Frontenac transcriptome metabolome (Fruit Composition Group)	x				
	ii. Marquette transcriptome metabolome (Fruit Composition Group)		x			
	iii. La Crescent transcriptome metabolome (Fruit Comp. Group)			x		
	iv. Front. gris transcriptome metabolome (Fruit Composition Group)				x	
	Volatile metabolites (Koziel and Cai)	x	x	x	x	
	v. Data compilation and analysis (Ge, He, Ye)		x	x	x	x
1c	Phenotype advanced selections and cultivars (Luby, Hegeman, Hemstad, Cook, Vickers)	x	x	x		
Objective 2: Develop and extend research-based vineyard management practices that allow sustained production of high quality fruit from cold climate cultivars.						
2a	i.Training system trials (Domoto, Read, Martinson, Nail)	x	x	x		
	ii. Canopy management (Domoto, Nonnecke, Harbut)	x	x	x		
	ii. Cropping level (Domoto and Nonnecke)	x	x	x	x	
	iii. Cropping level (Martinson)		x	x	x	
	iv. Extns. demo plots (Iungerman, Harbut, White, Nail, others)			x	x	
2b	i. Soil sampling in research sites (Rosen, Domoto, Nonnecke, Burrows, Hatterman-Valenti, Martinson)	x	x	x		
	ii. Nutritional profiling (same as previous)	x	x	x		
	iii. Correlation with yield, vine and fruit (same as previous)	x	x	x	x	
2c	Disease and insect evaluation on eight cultivars (VT) (Berkett)	x	x	x		
	Disease and insect evaluation (WI): eight cultivars, new vineyard (Mc Manus)	x	x	x	x	x
	Sulfur and copper sensitivity trials	x	x	x		
	Cultivar-specific ratings/programs for disease management and plant resistance			x	x	x

	Activity	1	2	3	4	5
Objective 3: Develop and optimize winemaking practices to sustainably produce and market distinctive, high quality wines from cold climate cultivars.						
3a	Optimize deacidification methods: physiobiological and chemical (Cook, Mansfield)		x	x		
	Treatment optimization (Cook, Mansfield)				x	
3b	Minimize herbaceous or 'hybrid' aroma (Mansfield)		x	x	x	
3c	Enhance wine sensory profiles: i. Yeast strain trials (Mansfield, Cook, Dharmadikari and Koziel)		x	x	x	
	ii. Skin contact (Dharmadhikari, Koziel)			x	x	
	iii. Enological tannin additions (Dharmadhikari, Mansfield, Cook)	x	x			
Objective 4: Identify strategies to support sustainable development of businesses based on cold climate cultivars, from the individual winery to regional agri-tourism.						
4a	Cold climate wine customers: Pilot survey(Holecek)	x				
	Cold climate wine customers: Multistate survey(Holecek)		x			
	Cold climate wine customers: Household survey(Holecek)			x		
	Tasting room behavior and attributes: Pilot study (Gomez)	x				
	Tasting room behavior and attributes: Multistate customer study (Gomez)		x	x		
	Tasting room behavior and attributes: Extension Workshops (Gomez)				x	x
	Branding outreach: Initial Regional group workshops in the Midwest and Northeast (Gartner)		x			
	Branding outreach: Followup workshops for individual winery branding in Midwest and Northeast (Gartner)			x	x	
4b	Best practices for wine trail development (Gustafson)	x	x			
	Best practices in wine tourism partnerships (Mccole)	x	x	x		
4c	Economic impact of cold climate wine industry on rural communities (Gartner)	x	x			x
	Impact of state policies and regulations on wine and grape (Gartner)	x	x			
4d	Quality assurance and limiting wine flaws (Dharmadhikari and Gartner)	x	x	x	x	
Proj. Eval.	Start and end of project demographic survey of industry (Lasley and Gartner)	x				x
	Project Advisory Council meeting at winter conference	x	x	x	x	x

Project Advisory Council: PAC members will be asked to provide input on project progress and research, plan specific extension/outreach activities, and industry associations will be asked to encourage membership participation in project survey and consumer/marketing activities (Obj. 4).

Extension timeline: Extension and outreach activities will be integrated with research activities to the maximum extent possible, and all team members will be responsible for contributing to outreach, as appropriate to their expertise and role. Designated team members from each state will be responsible for planning and scheduling local extension events, in cooperation with industry groups in their state. Detailed outreach plans will be formulated at the annual PAC meeting.

Extension timeline

		Project Year				
	Activity	1	2	3	4	5
Northern Grapes Symposia : Project symposia jointly organized with project team and industry winter meetings in the Midwest and Northeast (estimated attendees in parentheses):						
	Minnesota Grape Growers Association (600); $50K match	x	x	x	x	x
	Iowa Grape Growers Association (300); $15K match			x	x	
	Viticulture 2013, NY Wine and Grape Foundation (600) $12K match		x			
	Michigan Wine Industry Council $5500 match			x		
	Nebr. Grape Growers and Winemakers Forum (300)$15K match			x	x	
	Additional New England/Northeast conferences (Location TBD)			x	x	x
Northern Grapes Enterprise Workshops – interactive, hands-on participatory workshops						
Vineyard workshops	Field meetings at vineyard sites and demonstration plots (Obj. 1, a, b, c; 2a,b,c): ND, SD, NE, MN, WI, IA, IL, MI, NY (2 loc), VT, MA, CT)	x	x	x	x	x
Winemaker workshops	Two day-long shortcourses: Presented by Cook and Dharmadhikari (Upper Midwest), and Mansfield and Gerling (Northeast) (Obj. 3)					
	1. Basic Wine Production from Cold Climate Cultivars	x	x	x	x	
	2. Specialty Wine Production: production of dessert, fortified, and sparkling wines from cold climate wine grapes			x	x	x
Marketing/ Management	Branding Workshops Obj. 4a (Gartner)		x	x	x	
	Customer information systems/customer loyalty (4a) (Gomez)				x	x
	Winery marketing workshops (Holecek, Gustafson, McCole)			x	x	x
Northern Grape Webinars – Electronic seminars delivered to computer desktops (110 capacity)Monthly November through April (six annually) throughout project; archived at eXtension.						
	Basic topics in Vit, Enol, and Retail management;	x	x			
	Yeats 3-5: Project-focused one-hour seminars. Individual or group presentations on research results for industry audience			x	x	x
Northern Grapes Newsletter – Project updates and brief articles about project personnel, preliminary results, outreach events						
	4-6 issues per year; news format; contributions from Co-PIs	x	x	x	x	x
Northern Grapes Owner's Manual Publications - Cultivar-specific growing and winemaking practices produced and posted to eXtension GCoP, with more in-depth coverage of individual topics as appropriate.						
	Working Edition drafted	x	x			
	Working Edition internally reviewed by PDs and PAC			x		
	Working Edition posted, comments solicited and used for updates				x	
	Sustainable Edition posted					x

Key Personnel and Scope of Work

Project Director and Co-director

Dr. Tim Martinson (Cornell University) will provide overall management of the project. He will attend appropriate workshops and meetings, contribute to and oversee data analysis and manuscript submission, and have prime responsibility for dissemination of data and resources arising from the project. He will interact with the participants as outlined in the Management Plan. He will lead the data collection, analysis, and summary publications for vineyard studies in Obj. 1a, and participate in data collection and specific studies as outlined in Obj. 2a and 2b. He will also coordinate, with Eric Stafne (eXtension) planning and production of outreach materials (Extension Timeline).

Dr. Jim Luby (University of Minnesota) will serve as project co-director, and will advise and assist PD Martinson on project management, with special emphasis as Liason to the Project Advisory Council (as team leader) and stakeholder groups. In the event that Martinson is unable to continue as PD, Luby will serve as acting PD, until Executive Committee appoints successor. He will direct research activities in Obj. 1c, and participate in Objs. 1a and 1b.

Team Leaders

Dr. Paul Domoto (Iowa State University) will lead the Viticulture Studies group, and have co-responsibility with **Dr. Gail Nonnecke** for research vineyard trials in Iowa (Obj. 1a,2a, 2b), and organize project evaluation activities around Obj. 1a, and Obj. 2).

Dr. Anne Fennell (South Dakota State University) will lead the Fruit Composition and Genetics group (Obj. 1b and 1c), and be responsible for vineyard trials in South Dakota (Obj. 1a), and organize project evaluation activities around Objs. 1b and 1c.

Dr. Anna Katharine Mansfield (Cornell University) will lead the Enology group, oversee fruit chemistry and winemaking (Obj. 1a); lead winemaking process trials (Obj. 3, all sub-objectives as listed); and organize project evaluation activities for Obj. 3 sub-objectives as listed in evaluation logic model (p. 14-27).

Dr. William Gartner (University of Minnesota) will lead the Consumers/Marketing group (Obj. 4), and formulate project evaluation activities for Obj. 4. He will work with Evaluation lead Lasley to design Year 1 and Year 5 industry demographic surveys in Project Evaluation Plan. He is responsible for projects in Objs. 4a, 4c, and 4d.

Dr. Eric Stafne (Oklahoma State) will lead extension efforts related to the eXtension Grape Community of Practice (GCoP), including training and posting of project materials on the eXtension site, and working with project members that are GCoP members to develop and edit project resource items for eXtension. He will co-lead, with Martinson, the extension team.

Dr. Paul Lasley (Iowa State University) will lead and coordinate project evaluation. He will work the evaluation team (see p. 14) to provide overall project evaluation through start and close of project surveys of stakeholders and with subject-area team leaders to provide evaluations of each sub-objective.

Team Members (includes collaborators and Co-PIs alphabetically by institution and name)

Dr. William Nail (Connecticut Agr. Exp. Station) will lead vineyard research trials in Connecticut (Obj. 1a and 2a), and serve on the Viticultural Practices team, and as state representative on Extension team.

Dr. Miguel Gomez (Cornell University) will lead tasting room marketing studies (Obj. 4a), serve on the Consumer/Marketing team, and assist on the project evaluation team.

Mr. Kevin Iungerman (Regional Extension Associate, Cornell Cooperative Extension) will serve on the Viticultural Practices team and will manage vineyard trials in the Lake Champlain region (northeastern New York), including Obj. 1a and grower demonstration plots in Obj. 2a, and be a member of the Extension team.

Mr. Chris Gerling (Cornell University, cooperator) manages the vinification and brewing laboratory at Cornell, and will direct winemaking in support of Objs. 1a, 2a (supporting Martinson and Iungerman), winemaking trials (Obj. 3); serve on Enology team; serve as the New York state extension leader on the extension team; and participate in and plan extension workshops/publications.

Bill Shoemaker (University of Illinois) will conduct vineyard studies in Illinois (Obj. 1a), serve on the Vineyard Studies team; and serve as the Illinois state extension leader on the Extension team.

Dr. Lingshuang Cai (Iowa State University) will work collaboratively with Dr. Jacek Koziel as part of the Fruit Composition and Genetics group on Objs. 1a (sensory profiling) and 1b (volatile metabolites).

Dr. Murli Dharmadhikari (Iowa State University) will have co-responsibility with Anna Katherine Mansfield for overseeing fruit chemistry and winemaking (Obj. 1a); lead winemaking process trials (Obj. 3, all sub-objectives as listed); lead Obj. 4d; serve on extension team as state extension leader for Iowa; on the Consumer/Marketing team; and serve as a Liaison to Project Advisory Council team.

Dr. Jacek Koziel (Iowa State University) will lead project work on Objs. 1a (sensory profiling) and 1b (volatile metabolites) and serve as a member of the Fruit Composition and Genetics group.

Dr. Gail Nonnecke (Iowa State University) will co-lead research vineyard trials in Iowa (Objs. 1a, 2a, 2b) with Paul Domoto, advise and direct graduate students, and participate in project evaluation activities around Objs. 1a and 2.

Mr. Michael White (Iowa State University) will work with vineyard extension demonstration projects (Objs. 1a, 2a, 2b) in collaboration with co-PI's Dharmadhikari, Domoto, and Nonnecke and serve on the Extension and Evaluation teams.

Ms. Sonia Schloemann (University of Massachusetts) will conduct vineyard studies (Obj. 1a, 2b) in Masschusetts, serve on Vineyard Studies team; and serve as Massachusett's state extension leader on the Extension team.

Dr. Don Holecek (Michigan State University) will conduct consumer marketing studies (Obj. 4a), serve on the Consumer/Marketing team, and develop associated extension workshops and publications.

Dr. Dan McCole (Michigan State) will conduct wine tourism partnerships studies (Obj. 4b) in coordination with Co-PI Gustafson, and serve on Consumer/Marketing team, and develop associated extension workshops and publications.

Dr. Paolo Sabbatini (Michigan State) will conduct vineyard studies (Objs. 1a and 2a), serve on Vineyard Studies team, and serve as the Michigan state extension leader on extension team.

Dr. Carl Rosen (University of Minnesota) will lead Obj. 2b, serve on the Vineyard Studies team, and develop associated extension workshops and publications.

Mr. Kent Gustafson (University of Minnesota) will conduct wine tourism partnerships studies (Obj. 4b) in coordination with Co-PI McCole and serve on Consumer/Marketing team, and develop associated extension workshops and publications.

Dr. Adrian Hegeman (University of Minnesota) will work in collaboration with Co-PI Fennell on the genomics and metabolomics projects (Objs. 1b and c) and serve on the Fruit Composition/Genetics team.

Dr. Zata Vickers (University of Minnesota) will provide expertise in sensory evaluation in support of Objs. 1b and 1c, and serve on the Fruit Composition/Genetics team.

Ms. Katie Cook (University of Minnesota) supervises Minnesota research winemaking and extension and will collaborate with the Enology group and Mansfield and Dharmadhikari (Obj. 3) on winemaking trials, and with the Fruit Composition/Genetics group on Obj. 1b. She is the state extension leader for Minnesota.

Mr. Peter Hemstad will perform breeding activities and vineyard evaluations in support of Co-PI Luby for Obj. 1c.

Dr. Paul Read (Univ. Nebraska Lincoln) will conduct vineyard studies in Nebraska (Obj. 1a, 2a), serve on Vineyard Studies team. and serve as the Nebraska state extension leader on the Extension team.

Dr. Harlene Hatterman-Valenti (North Dakota State University) will conduct vineyard studies (Objs. 1a and 2b), serve on the Vineyard Studies team, and serve as North Dakota's state extension leader on the Extension team.

Dr. Rhoda Burrows (South Dakota State University) will conduct vineyard studies (Objs.1a, 2b) in South Dakota, serve on the Vineyard Studies team; and serve as South Dakota's state extension leader on the Extension team.

Dr. Xijin Ge (South Dakota State University) will provide data integration and statistical analysis associated with Obj 1b and serve on the Fruit Composition/Genetics team.

Dr. Dong He (South Dakota State University) will provide data integration and statistical analysis associated with Obj 1b and serve on the Fruit Composition/Genetics team.

Dr. Jun Ye (South Dakota State University) will provide statistical analysis associated with Obj 1b and serve on the Fruit Composition/Genetics team.

Dr. Lorraine Berkett (University of Vermont) will conduct vineyard studies in Vermont (Obj. 1a, 2c), serve on the Vineyard Studies team, and serve as the Vermont state extension leader on the Extension team.

Dr. Rebecca Harbut (University of Wisconsin) will conduct vineyard studies and grower demonstrations in Wisconsin (Obj. 2a), serve on the Vineyard Studies team, and serve as Wisconsin's state extension leader on the Extension team.

Dr. Patricia McManus (University of Wisconsin) will lead the pest and disease management sub-objective and collect project evaluation information for it (Obj. 2a), serve on the Vineyard Studies team, and develop associated extension workshops and publications.

Collaborators and Nature of Collaboration: Project will collaborate with industry producers in several states listed below, among others:

State	Obj.	Collaborator
IA	1a	Dr. Paul Tabor, Tabor Home Vineyards and Winery, Baldwin, IA, iowawine@netins.net **Nature of Collaboration:** Mature vineyard for field trials (Co-PIs:Domoto and Nonnecke)
IA	2a-ii	William James, Owner; Hickory Creek Vineyard, Adel, IA, **Nature of Collaboration:** Mature vineyard for field trials(Co-PI:Domoto and Nonnecke)
IA	2a-ii	Stanley Olson, Owner, Penoach Winery and Nursery, Adel, IA, solson@penoach.com **Nature of Collaboration:** Mature vineyard for field trials (Co-PI:Domoto and Nonnecke)
IA	2a-iii	Tom Moore, Viticulture Technician, Kirkwood Community College, Cedar Rapids, IA, tmoore@kirkwood.edu **Nature of Collaboration:** Mature vineyard for field trials, (Co-PI: Domoto and Nonnecke)
IA	2b	Charles Caldwell, Owner, Black Squirrel Vineyard and Winery, Council Bluffs, IA, caldhome@aol.com, (Co-PI:Domoto and Nonnecke)
IA	2b	Dave Cushman, General manager, Park Farm Winery, Bankston, IA, dwcushman@parkfarmwinery.com **Nature of Collaboration:** Mature vineyard for field trials(Co-PI:Domoto and Nonnecke)
IA	2b	John and Diane Larson, Owners, Snus Hill Winery, Madrid, IA, info@snushillwine.com **Nature of Collaboration:** Mature vineyard for field trials (Co-PI:Domoto and Nonnecke)
IA	2b	Steve Richardson, Vineyard manager, Tassel Ridge Winery, Leighton, IA, Steve.r@tasselridge.com, **Nature of Collaboration:** Mature vineyard for field trials (Co-PI:Domoto and Nonnecke)
IA	3a,c	Bob Werson, Tassel Ridge Winery, Leighton, IA, info@tasselridge.com, **Nature of Collaboration:** Fruit for winemaking trials (Co-PI: Koziel, Dharmadhikari)
NY	2a	Phil Randazzo, Coyote Moon Vineyards, Clayton, NY, phil@coyotemoonvineyards.com **Nature of Collaboration:** Mature vineyard for field trials. (Co-PI: Martinson)
MN	2b	Agvise Laboratories, Northwood, ND, **Nature of Collaboration:** Soil and tissue analysis (discounted rate)
NE	2a	Checkline Vineyards, Creighton, NE, **Nature of Collaboration:** Mature vineyard for field trials (Co-PI: Read)
CT	2a	Gouveia Vineyards, Wallingford, CT, **Nature of Collaboration:** Mature vineyard for field trials (Co-PI: Nail)
MI	4a-c	Linda Jones, Michigan Grape and Wine Industry Council. **Nature of Collaboration:** Assistance in coordinating industry input on consumer surveys in tasting rooms and gathering economic impact data of Obj. 4. (Co-PI: Various)
SD	2b	Matthew J Jackson, Enologist Belle Joli Winery, Belle Fourche, SD, **Nature of Collaboration:** Mature vineyard for field trials. (Co-PI: Burrows)
SD	2b	Randall and Nita Sarvis, Pierre, SD, **Nature of Collaboration:** Mature vineyard for field trials. (Co-PI: Burrows)
SD	2b	Greg and Muriel Stark, Lewis and Clark Vineyards, Yankton, SD, **Nature of Collaboration:** Mature vineyard for field trials. (Co-PI: Burrows)

Linkage to Existing Programs and Projects

The Northern Grapes project is built on a network of viticulture and enology collaborators in U.S. viticulture and enology programs. The advances from the project will reach the northern grape and wine industry through these programs. These participants have previously worked with each other in collaborative extension and research capacities.

In particular, nine Co-PIs are members of the USDA MRF project NE1020 Multi-state Evaluation of Winegrape Cultivars and Clones which has as an objective to test the performance of new or previously neglected wine grape cultivars in the different wine grape growing regions within the U.S., including the cold climate cultivars featured in the Northern Grapes project. The NE1020 project in conjunction with the Northern Grapes project will improve the competitiveness of U.S. grape growers and wineries by providing performance and quality information that is much needed for planting decisions.

Northern Grapes also ties in to the USDA-SCRI project "Improved grape and wine quality in a challenging environment: An eastern US model for sustainability and economic vitality" headed by Dr. Tony Wolf at Virginia Tech. This project includes investigators in the eastern seaboard wine region from New York to North Carolina. Co-PI Anna Katharine Mansfield is a Co-PI in the Wolf project and a member of the Executive Committee. Co-PIs Bill Nail (Connecticut Agricultural Experiment Station) and Sonia Schloemann (University of Massachusetts) are participants, and Tim Martinson (PD) is on the Wolf Project Advisory Council.

Northern Grapes links to the eXtension grape Community of Practice www.extension.org/grapes through co-PD Stafne who leads the GCoP (Six Co-PIs are already members). This venue will be an important component for development of and access to Northern Grapes extension information.

Intellectual Property Management

The outputs of this research consist of data sets and information relating to specific objectives. This may include information on specific germplasm, databases, or software.

Breeding germplasm data will remain the property of individual breeding programs. Plant material will be shared by the owner with project members and institutions only under specific Material Transfer Agreements. The majority of the data will be made public through the publications of project members and the project web site. The project may develop protocols and information that support the breeding process, but does not aim to develop and introduce new cultivars. New cultivars and germplasm releases using protocols developed will occur beyond the term of the project. Such cultivars will remain the intellectual property of breeding programs according to the established guidelines of participating institutions.

Data and software will remain the property of the group(s) and institution(s) that generated them. However, data will be shared freely within the project where needed. Results from such shared data

analyses will be published only with agreement of all involved. Software will be made available within the group without cost but with appropriate material transfer or licensing agreements.

Evaluation Plan, Metrics and Logic Model

Dr. Paul Lasley, rural sociologist and director of the Iowa Farm and Rural Life Poll, will lead project evaluation efforts by all members of the team.

A key indicator of the project and industry status will be a project survey at the start and end of the project, developed in collaboration with Co-PI William Gartner (Obj. 4c) to collect acreage, sales, profitability, employment, and other industry demographic information at the start of the project in participating Midwestern and Northeastern states. Partnering industry associations (Appendix D) will be heavily involved in the development and implementation of these surveys. Follow-up surveys, including an end of project survey, will track how these indicators have changed over the course of the project and include additional metrics to assess producer adoption of information provided by the project.

Co-PIs will work with the PAC and pre-established metrics in the logic model for each objective (Tables 1 and 2, below) to assess progress towards overall goals and deliverables. The PAC and team will meet annually to review goals, assess progress, and make decisions and provide input into extension activities and projects, as well as research progress. Membership and functions are described in Appendix C. We currently have ten industry members committed to serving on the PAC.

Table 1 (p. 16) describes the overall project goals, outcomes and measurable indicators that will be used to evaluate the overall project. At the start of the project, Dr. Lasley and social science team members William Gartner and Miguel Gomez, along with other project team members, will develop a survey instrument to assess the current industry status with respect to the project goals and indicators. At the close of the project, a similar survey will track "the state of the industry" and document changes with respect to these goals and indicators.

Project team members have developed evaluation metrics and outcomes for each sub-objective (**Table 2, p. 17-27)** and will work with the evaluation team to integrate assessment and feedback mechanisms as part of the ongoing research. The research teams in each sub-objective will be responsible for developing assessment tools appropriate to the research objective.

The three social scientists will provide technical assistance, counsel, and methodological skills to each team, but the responsibility for evaluation lies with the research and extension team involved in each sub-objective.

Tools for evaluation will include:

- Annual review and summary of data generated by the project at the PAC meeting
- Feedback forms assessing knowledge gained at workshops and courses
- Documentation of publications generated by the project
- Formal and informal assessment by the Project Advisory Council
- Social media venues for soliciting communication and comments from stakeholder groups

- Annual formal reports will be used to provide feedback for project management and continuous improvement and to document cumulative progress and outcomes

An annual organization survey for stakeholder groups will be used to monitor their awareness and support of technologies and strategies that are part of the Northern Grapes project and the integration of socio-economic research into production, processing, and marketing.

Continuity Plan

Northern Grapes will catalyze a sustainable multi-regional effort in applying viticultural, enological and socio-economic knowledge to cold climate grape and wine production and marketing and perhaps create a model for other nascent industries. Stakeholders in various states will gain exposure to the expertise of Co-PIs from outside their own state that they can work with in future collaborations and Co-PIs will gain a broader understanding of transregional challenges facing the Northern Grapes industry.

The tools, information and plant materials in this project will become an integral part of each of the state research and extension programs. Therefore, to the extent that each of the state programs is self-sustaining and the broader industry adopts these technologies and strategies, the output from this program will also be self-sustaining. Most state programs have expertise in a limited number of areas (e.g., some states lack enology expertise or economists with interest or expertise in specialty crops or tourism and policy issues). The multi-disciplinary and multi-state collaborations built through Northern Grapes should provide a synergistic base resulting in each program being more productive and therefore competitive to attract core funding from their home institution and the associated industries, i.e., growers, wineries, state tourism and development agencies and other federal programs.

For our industry partner organizations, many of which are small and new to interacting with researchers, this project will develop institutional capacity and collaborative connections with other producers, community organizations, and tourism promotion agencies across state lines that will outlast this project.

Project Management Budget:

Project management and evaluation is budgeted in both the Cornell budget (Martinson) and Iowa State subcontract (Dharmadhikari budget). Direct expenses budgeted, not including overhead, total **$314,990** (not including indirect costs) including the following items:

A. Project administration:

1. Salary and fringe - Project administrator 50% FTE (Martinson; Cornell) $119,.456 plus $64,780 fringe (budgeted at $45,000 FTE, with 3% increases;) $184.236 Total
2. Travel for PD and project administrator: $11,000 ($3,000 Year 1 for attending PD conference; $2K annually Years 2-5.
3. $1K budgeted annually for project supplies, and $250 Years 1-4 for computer costs.

BUDGET CATEGORY		YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL
A. SALARIES AND WAGES							
50% FTE	Research Support Specialist	$22,500	$23,175	$23,870	$24,586	$25,324	$119,456
B. FRINGE BENEFITS		$10,485	$12,978	$13,367	$13,768	$14,181	$64,780
C. TOTAL SALARIES, WAGES, AND FRINGE BENEFITS		$32,985	$36,153	$37,238	$38,355	$39,505	$184,236
D. NONEXPENDABLE EQUIPMENT							$0
E. MATERIALS AND SUPPLIES		$1,000	$1,000	$1,000	$1,000	$1,000	$5,000
F. TRAVEL		$3,000	$2,000	$2,000	$2,000	$2,000	$11,000
	Domestic	$3,000	$2,000	$2,000	$2,000	$2,000	
H. COMPUTER COSTS		$250	$250	$250	$250		$1,000
J. TOTAL DIRECT COSTS		$37,235	$39,403	$40,488	$41,605	$42,505	**$201,236**

B. **Project Advisory Council Meetings:** $15,000 budgeted for travel and lodging (PAC members) and meeting expenses (Catering one day, two meals for team and PAC) **$63,754** direct costs (Cornell Martinson budget)

BUDGET CATEGORY	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	TOTAL
Travel	$15,000	$15,450	$15,914	$16,391	$16,883	$79,637
Computer	250	250	250	250		$1,000
Total direct cost	$15,250	$15,700	$16,164	$16,641	$16,883	**$63,754**

C. **Project Evaluation:** (Iowa State Subcontract, Dharmadhikari budget) includes $25,000 in Year 1 and $25,000 in Year 5 for Dr. Paul Lasley to implement start and end of project survey. **$50,000** budgeted.

Note: directly budgeted expenses do not include indirect costs included in budget.

Table 1: Overall Northern Grapes Project Logic Model and Evaluation Metrics

Objective/Rationale	Activity	Expected Outcomes	Measurements/ Evaluation
New varieties have made possible grape and wine production in cold climates. Varietal performance, specific viticultural and winemaking practices, and marketing/consumer information are needed to support industry growth and development. Research and outreach will enhance and support growth and development of wineries and vineyards in cold climate regions of the Midwest and Northeast.	Multi-disciplinary studies will address: • Varietal performance and resulting fruit and wine flavor attributes in different climates • Applying appropriate viticultural practices to achieve consistent fruit characteristics for winemaking • Applying winemaking practices to unique fruit composition of CC varieties to produce distinctive, high quality wines that consumers like and purchase • Understanding consumer preferences, and individual/regional marketing strategies that will increase sales and growth of wines made from cold climate cultivars and sustained profitability of wineries and vineyards	*Short term:* • In five years, production and sales of wines made from cold climate cultivars will double • Improved quality resulting from better growing and winemaking practices will improve customer retention and drive repeat sales *Medium to Long Term:* • Continued breeding and cultivar evaluation will result in accelerated release of improved cultivars • Cold climate cultivars will establish unique regional marketing identities in their area • Wineries will understand and apply business and tasting room management practices that drive sales • Wineries and vineyards will transition from 'startup' status to 'sustained profitability'	• Start of project inventory of acreage, production, planting activity, vineyard age, wine sales in target states in the Midwest and Northeast • 5 year follow-up study tracking the same industry demographics • Track entrants and exits from winery/vineyard businesses • Document employment growth and economic impact by end of the project • Under each sub-objective, work with objective PI's to annually track progress through metrics for each sub-objective • Monitor progress through annual meeting of project teams with PAC

Table 2: Outcomes and Evaluation Metrics by Sub-objective

1: Document cold climate varietal performance in variable climates and understand the resulting sensory characteristics of the fruit and wines.			
Objective	Activity	Expected Outcomes	Measurements/ Evaluation
1a. Evaluate cold climate variety performance under a wide range of climates throughout the Upper Midwest and Northeast to match cultivar with site.	Climate dictates success or failure in achieving ripe, sound quality fruit. • Data on vine performance and standard juice chemical composition collected from 12 sites over four years. (Years1-4) • Research wines (Years 2-4) and sensory characteristics of juice and wine from selected varieties will be evaluated. • GC/MS olfactometry of selected cultivars and sites will be used to identify aroma and flavor-active compounds. (Years 1-4)	Establishing range of phenology, heat unit requirements, and length of season for new cultivars will help match site and cultivar and identify varietal flavor components. *Short term:* • Vine performance metrics (yield and fruit composition) in variable Northeast and Midwest environments over four years. • Sensory profile of juice and wines from selected cultivars over four years • Identification of novel flavor and aroma-active components *Medium and long term:* • Growers and wineries will make informed planting decisions based on climate and varietal performance	• Annual compilation of data from field sites on yield and fruit composition • Publication detailing relative adaptability of different cold climate cultivars and ratings for risk of poor ripening characteristics and winter injury • Minimum ranges of heat units and frost free days by cultivar to consistently ripen fruit to produce high quality wines • How fruit composition affects flavors and resulting wines

Objective	Activity	Expected Outcomes	Measurements/ Evaluation
1b. Characterize changes in fruit composition during the ripening phase and how they influence grape characteristics at harvest	• Analyze fruit composition and wine sensory characteristics during ripening including standard (fruit chemistry) and novel (GC-olfactometry, gene transcript, and metabol-omic) approaches to assess fruit maturity and inform harvest decisions. • Sample headspace of grapes in the field and correlate with juice composition at key points during the ripening phase • Integrate novel and standard measurements with sensory characteristics in experimental wines and juice from major cold-climate cultivars	*Short term*: • Benchmarks and description of primary and secondary metabolites and their rate of development during ripening phase for Frontenac (Year 1), Marquette (Year 2), La Crescent (Year 3) and Frontenac gris (Year 4). • Knowledge of timing and genetic basis of berry development in these cultivars • Novel headspace analysis of volatiles from grapes in the field during ripening phase *Medium term:* • biomarkers for evaluating breeding selections and impact of viticultural practices *Long-term:* • novel maturity indices and field-portable devices to non-destructively sample grapes and inform harvest decisions	• Publications detailing appearance of primary and secondary metabolites and genetic transcripts associated with their development in Frontenac, Marquette (Reds), La Crescent and Frontenac gris (whites) • Novel transcript and metabolite markers and protocols to inform future cultivar development (see Obj. 1c) and vineyard management studies

Objective	Activity	Expected Outcomes	Measurements/ Evaluation
1c. Intensify pre-release evaluations of elite selections from the University of Minnesota and private breeding programs	• Phenotype fruit chemistry (acids, phenolics, antho-cyanins) of cold climate germplasm (standard cultivars and 20-30 elite selections) (Years 1-3) to compare selections, ancestors, and standard cultivars as a basis for testing and making introduction decisions.	*Short term:* • Identify genotype and phenotype contribution to fruit chemistry attributes *Medium term:* • Develop markers and protocols to enhance selection and evaluation by breeders *Long Term:* • Accelerate introduction of improved cold climate cultivars	• Database of metabolite profiles used by breeders to inform advancement and introduction of breeding selections by comparison with standard *V. riparia*-based and early-ripening *V. vinifera* cultivars.
Objective 2: Develop and optimize viticultural practices that allow sustained production of high quality fruit from cold-climate cultivars			
Objective	**Activity**	**Expected Outcomes**	**Measurements/ Evaluation**
2a. Develop and optimize viticultural practices (training, canopy, crop management) to consistently produce crops with manageable acids and optimal fruit characteristics	• Multistate replicated training system and crop load experiments will evaluate feasibility and economics of training systems, canopy management, and cropping level adjustments to reduce acids and enhance varietal character. • Demonstration blocks will provide on-farm data-based trials as a platform for educating growers on the link between practices and wine characteristics	*Short term:* • Data-based recommend-ations of costs and benefits of training systems. • Guidelines on cropping and canopy management practices to improve fruit composition at harvest • Hands-on experience and demonstration of viticultural practice and link with fruit characteristics *Medium and Long Term:* • More consistent wine quality • improved profitability	• Data and findings on training systems and crop level adjustment conveyed through Owner's Manual and peer-reviewed publications • Track grower knowledge and adoption of improved training/trellising systems • Evaluate grower knowledge and adoption of canopy and crop load management in different seasons to improve fruit chemistry

Objective	Activity	Expected Outcomes	Measurements/ Evaluation
2b. Determine optimal mineral nutrition diagnostic criteria and soil nutrient management practices for cold climate cultivars	• Establish nutrient diagnostic criteria for cold climate cultivars through surveys in vineyards in MN, ND, SD, IA, and NY. (Year 1-3) • Collect soil samples to characterize soil physical and chemical properties • Collect leaf blade and petiole samples at bloom, pre-veraison,, and veraison and analyze for essential nutrients • Based on this survey, correlate soil properties/tissue nutrient concentrations and vine growth characteristics and grape juice quality for wine	*Short term:* • Better understanding of how tissue nutrient levels vary with variety, type of tissue sampled, stage of growth and soil traits. • Greater awareness and use of tissue sampling to determine the need for nutrient inputs *Medium and long term:* • Modification of fertilizer and nutrient application to optimize grape yield and quality for wine making • Nutrient diagnostic criteria using petioles and leaf tissue for cold climate grape cultivars • Mean values and ranges of nutrient concentrations at different growth stages for the major cold climate cultivars grown the Upper Midwest and Northeast.	• Owner's manual publication and peer-reviewed journal publications on best management practices for soil and tissue sampling, nutrient assessment and nutrient levels • Presentations at workshops and field days will be evaluated through surveys • Online follow-up evaluation to growers to assess impact of project on fertilization practices

Objective	Activity	Expected Outcomes	Measurements/ Evaluation
2c. Develop sustainable pest management recommendations that take into account copper and sulfur sensitivity and disease resistance of cold climate varieties	• Replicated field trials will be established to determine relative resistance of cold-climate grape cultivars to pests (Years 1-4), including Powdery mildew, downy mildew, phomopsis;, *botrytis* fruit rot, anthracnose, and common insect pests (Years 1-3) • Cold climate cultivars' tolerance to copper and sulfur-based fungicides will be assessed in replicated field trials (Year s1-2)	*Short term:* • Data on disease and insect incidence in two environments (WI and VT) will be generated over multiple growing seasons • Copper and sulfur sensitivity and phytotox-icity in *V. riparia*-based cultivars will be determined *Medium term:* • Disease and sulfur/copper sensitivity will be incorporated into pest management recommend-ations, and cultivar-specific management programs will be developed *Long term:* • Growers will incorporate host resistance into their pest management programs resulting in higher-quality grapes produced with lower pesticide inputs	• Annual updates (Year 3) in disease susceptibility and sulfur/copper sensitivity ratings by cultivar incorp-orated into Owner's Manual publication, regional pest management guidelines, and peer-reviewed journal publications • Growers' use of host resistance to manage pests will be assessed at the project outset and in a 5-year follow-up as described above for the "project inventory" • Producers in selected states surveyed at start and end of project on disease management inputs (fungicide e) and efficacy

Objective 3: Develop and optimize wine making practices to sustainably produce and market distinctive, hiqh quality wines from cold climate cultivars.			
Objective	**Activity**	**Expected Outcomes**	**Measurements/ Evaluation**
3a. Optimize deacidification methods for cold climate cultivars (Cook, Mansfield) 3b: Minimize herbaceous or 'hybrid' aroma (Mansfield) 3c. Enhance wine sensory profiles (Dharmadhikari, Koziel, Cook, Mansfield)	• Test and develop improved practices for chemical and physiobiological deacidi-fication of wines (Years 2-4) • Identify compounds associated with vegetal or herbaceous aromas characteristic of red wines produced from *V. riparia* – derived cultivars • Evaluate yeast strains and their impact on wine sensory characteristics to develop recommendations for matching yeast and cultivar • Evaluate skin contact for white cultivars to enhance aromatics • Present wines to industry through informal industry evaluation sessions for regional winemaker audiences	*Short term:* • Trials will identify cost-effective methods for deacidification using standard and novel (physiobiological) methods • Appropriate yeast strains for specific cold climate cultivars will be identified and recommendations formulated • Skin contact trials will identify appropriate winemaking practices for enhancing varietal aromas in white wines • Concentrations of key phenolics and optimal use of enological tannins for mouthfeel enhancement in red wines will be identified • Industry outreach with experimental wines provide experiential impact of winemaking practices *Long Term:* • Improved wine quality and marketability	• Winemaking practice will incorporate improved deacidification procedures, reducing costs and resulting in better balanced wines • Cultivar-specific flavors and wine characteristics will be enhanced through yeast selection and appropriate use of skin contact and enological tannins • Use, modification, and adoption of specific techniques by winemakers will be determined through questionnaires and surveys at program symposia and workshops.

Objective 4: Identify strategies to support stainable development of businesses based on cold climate cultivars, from the individual winery to regional agri-tourism.			
Objective	**Activity**	**Expected Outcomes**	**Measurements/ Evaluation**
4a. Facilitate development of successful marketing strategies for cold climate wines in based on target consumer demographics, on-site marketing, and branding (Gartner, Gomez, Holecek)	Coordinated, survey-based studies will address the following questions: • *Who are the consumers of cold-climate wines?* (Years1-3, Holecek) Tasting room and household surveys designed to assess consumer demographics and preferences • *What tasting room marketing strategies produce customer satisfaction and loyalty?* (Years 1-3, Gomez) using the same basic demographics, this will focus on attributes associated with tasting room visits and purchasing behavior • *Branding outreach to cold climate regions and wineries.* (Years 3-5) Regional branding workshops will be held with winery association representatives to define and create long-term marketing image appealing to target markets.	*Short term:* • Demographic and consumer-preference information about customers of cold climate winery tasting rooms • Understanding of tasting room factors that link to tasting room purchase decisions • Strategies and practices for individual and regional branding of cold climate wines *Medium to Long term:* • Link product attributes and consumer preferences to wine sales • Build capacity of wineries and associations to collect and analyze customer sales data to make decisions about product development and attributes • Partner with wineries to build effective sales and branding strategies	• Owner's Manual publications on consumer attributes, tasting rooms and consumer information surveys results will be produced in Years 4-5 of the project • Survey adoption of strategies and practices for individual and regional branding of cold climate wines

Objective	Activity	Expected Outcomes	Measurements/ Evaluation
4b. Identify strategies and techniques for wineries and winery associations to work successfully with each other in wine trails and with other community and regional organizations for rural economic development and effective marketing (McCole and Gustafson)	Studies will address: • *What are the best practices for wine trail development?* (Gustafson, Years 1-2) • *What are the best practices to enhance wine tourism partnerships?* (Years 1-3, McCole) Case studies, explorative interviews and surveys in mature and emerging wine regions will assess strengths and limitations of tourism partnerships	*Short term:* • Identify which wine trail practices demonstrate increased sales for cooperating wineries • Identify which aspects of regional partnerships with state and local tourism and business partners promote or impede winery sales and development *Medium to long term:* • Individual wineries and winery associations experience increased traffic and sales through joint partnerships	• Publications of best strategies and practices for developing wine trails and partnerships: • Wine trails: Years 3 and 4 • Partnerships: Years 4 and 5 • Survey adoption of strategies and practices
4c. Quantify the current economic impact of the cold climate grape and wine industry on rural communities and assess the impacts of state policy and law that impede or advance its development (Gartner)	• Evaluate current economic impact of the cold climate wine industry through targeted surveys estimating direct and indirect impact on rural economies. Compile information on how state policies and regulations affect viability of the cold climate grape and wine industry	*Short term:* • Accurate, uniform estimates of the economic impact of cold climate cultivars, vineyards, and wineries across the Upper Midwest and Northeast *Medium to long term:* • Information to support investment decisions by industry and policy options by state and local policymakers	• Publication of industry-wide evaluation survey in Years 1 and 5 in coordination with Paul Lasley (Iowa State)

Objective	Activity	Expected Outcomes	Measurements/ Evaluation
4d. Develop a pilot quality assurance program for cold climate wines	• Create the Cold Climate Vintners Quality Alliance (CCVQA) through a series of meetings with stakeholders in pilot states of Iowa and Minnesota. Develop bylaws, operation guideline and regulations. Formulate administrative details and procedure for implementing the program • Establish quality standards for chemical and sensory evaluation of wines (CCVQA label) • Organize outreach plan to assist growers and winemakers to strive for product quality • Develop marketing and promotion plan for consumers • Implement and evaluate the plan	*Short term:* • CCVQA organization, a coalition of wine producers is formed and administered and quality standards relating to chemical and sensory evaluation established *Medium term:* • Member wineries will submit wines for evaluation. Wines will be chemically analyzed and evaluated by an expert panel against the establish standards. Successful wines will receive approval for quality designation. *Long term:* • CCVQA quality seal on label for quality assurance • Consumers will learn about the industry effort in producing quality wines and will be motivated to purchase regional wines • Success in pilot states leads to expansion to other states	• Establishment of CCVQA organization in pilot states in Years 1 and 2. Bylaws, standards, and adminis-trative procedures formulated. • Trial implementation in pilot states in Years 3 and 4. Finished wines evaluated, and first CCVQA-labeled wines marketed. • Participation and expansion into other states evaluated in Years 4-5 and beyond. • Publication of best management practices and strategies for VQA based on pilot state experience.