

## **NGWB GRANT FINAL REPORT – FY 2014-2015**

**Contract Number: 18-13-248**

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**Issue of Interest:** The overall goal of the University of Nebraska Viticulture Program (UNVP) is to provide science-based research information that will assist the development of the Nebraska grape and wine industry in a sustainable and profitable manner, thus enhancing the economic viability of Nebraska communities. Improving performance of grapes grown in Nebraska vineyards leading to excellent quality wine production is part of this goal. Evaluation and selection of grape cultivars and their efficient management in Nebraska vineyards, along with educational programs that add to the overall capability of grape growers and winemakers are also included in this overall goal.

**Approach to Problem:** Research vineyards managed by the UNVP and those of grower-cooperators are employed for scientifically designed and implemented research projects. These experiments are ongoing and have yielded results that are communicated to the Nebraska grape and wine industry by a variety of educational methods, including workshops, field days, the Annual Nebraska Winery and Grape Growers Forum and Trade Show and by electronic means such as the Nebraska VineLines newsletter and the UNVP website <<http://viticulture.unl.edu/>>.

**Goals/Achievement of Goals:** Cultivar and genotype evaluation of over 100 different genotypes has led to recommendations helpful to growers starting new vineyards or adding to existing vineyards. Additionally, canopy and overall vineyard management research has led to further recommendations helpful to growers,. New focus areas on vineyard establishment and interactions with water use efficiency and ground covers have been implemented in cooperation with a commercial grape grower (Eric Nelson, Oak Creek Vineyards).

**Northern Grapes** and **NE-1020** projects. NE-1020 results have been hampered by herbicide drift incidents, but differing tolerance to herbicides have been evaluated as a result of these damaging events. MN 1258 and MN 1220 appear to be productive and somewhat tolerant of herbicide drift, as are Seyval Blanc, Vidal Blanc and Chambourcin. It is hypothesized that the French-American hybrids may have “escaped”, rather than exhibited tolerance, since they break bud later than most of the other genotypes. Further research is indicated to determine this observation’s accuracy.

Research on ground covers and mulches is ongoing, and although results are only preliminary, they have begun to already be helpful to the Nebraska industry. More results are expected to be achieved over the next 3 to 5 years.

**Field Days, other educational programs:**

- July 10, 2014, Field Day at Nissen Vineyards, Hartington, NE. Northern grapes project and grafting-over were focus areas for this field day. Ed Swanson provided insights and demonstrations for the grafting part of the program. (over 20 in attendance).
- July 17, 2014, Field Day at Miletta Vista Winery, St Paul, NE. The newly renovated winery was the focus of this field day. Mick McDowell discussed the new features that were included following the devastating fire that destroyed the winery building a year earlier. (Over 35 in attendance).
- July 23, 2014, Field Day at Mac's Creek Winery, Lexington Nebraska. Disease management, replanting of cold damaged vines and discussion of cold hardiness were the topics for this field day. (attendance 15).
- November 8, 2014, Lincoln, NE. Fall Workshop. Topics included Disease Epidemiology and Management, along with Netting in Brazil's vineyards at this workshop. UNL Plant Pathology Professor Gerard Adams and UNVP personnel, along with Amaure Bogó's student were presenters.
- March 5-7, 2015, 18<sup>th</sup> Annual Nebraska Winery and Grape Growers Forum and Trade Show, Omaha, NE (over 160 in attendance). Evaluations by attendees of the topics presented, e.g., winemaking practices, viticulture fundamentals, cultivar selection, vineyard floor management, wine filtration, reduced input grape production and the marketing sessions were all rated good to excellent. Respondents indicated an increased knowledge after these sessions, that is, they noted higher ratings of their knowledge "after" than "before". This represented the first time that the Forum has been held in Omaha and attendees were effusive in their praise of this move. It also was applauded by the Trade Show vendors.
- Throughout the year, several issues of the Nebraska VineLines (NVL) were transmitted to the NVL mailing list. The NVL is now sent by email, which allows more spontaneous communication on timely topics when they emerge, for example announcement of Northern Grapes Project webinars. This approach has led to quicker feedback from recipients, including several who expressed their appreciation that the NVL had "gone electronic".
- The UNVP web site has been thoroughly re-structured, modernized and updated. It now can be accessed at <http://viticulture.unl.edu/>

**Results, Conclusions, Lessons Learned:** Extremely useful results have been achieved that will be of benefit to the Nebraska grape and wine industry. A few key observations follow:

- Research Technologist Stephen Gamet has continued to provide exemplary service in maintaining the UNVP research vineyards, conducting research trials, providing hands-on training for students and new growers, acquiring data and assisting in evaluation of results. He also provides technical support for

presentations and teaching and outreach activities. His support enables the UNVP leader to publish research papers, make presentations and disseminate research results emanating from the University of Nebraska Viticulture Program. His exceptional service was recognized at the 18<sup>th</sup> Annual Nebraska Winery and Grape Growers Forum and Trade Show Grand Awards Banquet by presenting him with the NWGGA's "Friend of the Nebraska Wine Industry" award.

- Canopy management. From the aforementioned UNVP research it is clear that a high cordon trellis system, especially the Geneva Double Curtain (GDC), is the preferable system for Frontenac and probably other grape cultivars with vigorous and/or pendulous growth habit. (Bavougian, Christina, Paul E. Read, Vicki L. Schlegel and Kathryn J. Hanford. 2013. Canopy light effects in multiple training systems on yield, soluble solids, acidity, phenol and flavonoid concentration of 'Frontenac' grapes. HortTechnology 23:1-7.)
- Cold hardiness evaluation and cultivar growing degree days (GDD) studies. Both of these topics were discussed at the 18<sup>th</sup> Forum and although it will be necessary to acquire and analyze more data, preliminary results are being used in discussions with growers. Further information will be presented at the Annual Meeting of the American Society of Enology and Viticulture in June, 2015.
- NE-1020 Project. Because of extreme herbicide drift damage to the cultivars and genotypes being evaluated at the UNVP planting on a commercial vineyard (Dove Landing Vineyard), only limited data were obtained from the compromised grapes in that planting. Harvested fruit samples were analyzed by the enology lab at Iowa State University and will form the basis of a partial evaluation of the genotypes in this research project. However, a positive aspect of what was a rather devastating blow to this project was accomplished by rating the relative susceptibility of the grapes in this trial. Data were summarized and presented at the 18<sup>th</sup> Forum. Further evaluation of the vines' ability to recover will be a focus of research in the 2015 growing season.
- Cultivar Evaluation continues with a renewed emphasis on Norton, Bianca, Marquette and newer cultivars and selections including Petite Pearl, Frontenac Blanc and MN numbered selections.. Several cultivars being tested In the UNVP research vineyards and the NE-1020 trials have been identified for consideration of planting on a trial basis, including Delaware, Geneva Red (GR-7), Norton/Cynthiana, Noiret, Corot Noir, Bianca, Riesling, Esprit, Aromella, Arandell, MN 1200, MN1220, Trollhaugen and Vignoles, while several *Vitis vinifera* cultivars and Valvin Muscat have not been acceptable. To obtain specific details and recommendations for these and other genotypes tested by the UNVP, contact Paul Read ([pread@unl.edu](mailto:pread@unl.edu), 402-472-5136).
- Ground covers and mulches. Our studies have shown that prairie hay, black landscape fabric, crushed glass and distillers dried gains offer promise as mulches when applied under the vine row. Creeping red fescue and native grassy vegetation are proving to be suitable options for between-row ("alleyway") installations.

**Progress Achieved According to Outcome Measures:** The Nebraska grape and wine industry and the industry in the Midwest is benefitting from the UNVP research and

educational programs. The Nebraska industry has grown from only one winery and perhaps 10 to 15 acres of commercial grapes in 1994 to its present 33 wineries, an estimated 400+ acres of commercial grape vineyards and over 125 growers in Nebraska. Many of the grape growers and winery start-ups have done so based at least in part upon science-based recommendations from the University of Nebraska Viticulture Program. The collaboration with the NWGGA has been synergistic, in that the collaboration has led to improved communication with growers and winemakers, while gaining feedback that continues to stimulate research and educational programming based upon expressed needs of the industry. Recommendations of cultivar and site selection; trellis system selection and construction; disease and other pest management and vineyard floor management, including mulches and ground covers are a few examples of information contributing to a sustainable, vibrant and growing grape and wine industry in Nebraska.

### **Financial Report**

The budget submitted in the request for funding and included on the contract has been followed, with minimal changes. Support for the Viticulture Technologist's half salary and benefits enabled delivery of educational programs and exceptional maintenance of the UNVP research vineyards. Expenditures for supplies, fuel and vehicle rental were as noted in the contract. Trellis renovations have continued while making use of donated materials which were utilized to supplement the NGWB budget.

The usual 10% overhead charge mandated by the University of Nebraska and per agreement with the Nebraska Department of Agriculture was included in the contract.

Note: Additional funding and support has been provided by the Northern Grapes Project (a multi-state SCRI grant-funded project) and the University of Nebraska's Agricultural Research Division.

Specific details of expenditures can be provided if desired, along with a list of presentations and publications emanating from this Nebraska Grape and Wine Board supported project.