

Technology Adoption and Outreach
Efficient Vineyards USDA/NIFA SCRI Project
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Executive Summary

One of the objectives of the Outreach and Adoption team for the USDA/NIFA SCRI project, Efficient Vineyard's, was to determine the current knowledge base of grape growers regarding the use of spatial data for variable rate vineyard management, as well as identify the preferred learning styles of growers. A survey was created and disseminated to the members of the project team for review. A total of 181 surveys were completed by growers, members of the grape industry, as well as members of the Efficient Vineyards advisory committee. Fifty-eight growers completed a hard copy version of the survey at a California meeting conducted by Kaan Kurtural, 40 growers participated during "Coffee Pot" Meetings held in the Lake Erie grape belt of New York and Pennsylvania, 16 members of the advisory committee participated and 67 responses were collected via an on-line version of the survey using Survey Monkey. Participation in the survey was concentrated in California, New York and Pennsylvania but the on-line survey allowed for participation by growers from 15 additional states.

Survey results indicate that the members of the advisory committee are good representatives of the growers participating in the survey as comparing responses of the two groups showed they were very similar. An identified shortcoming of the survey results is that the table grape industry is underrepresented. We are currently working with project team members representing this industry group to increase participation.

Baseline information shows that there is a need for better promotion of the USDA/NIFA SCRI Efficient Vineyards project to improve the realization that the project exists as well as what the projects' goals are and how they might be used in their vineyard operations. This is not an unexpected response as we are in the first year of the project.

When asked if vineyard blocks, or portions of vineyards of the same variety are currently being managed differently, survey participants overwhelmingly replied that they did manage blocks and vineyards differently. However, when asked how they determined the variability in a vineyard to allow them to apply management practices differently, **personal observation** was the number one answer for all groups taking the survey. Survey results showed **sensors** as being only 25% as likely to be used in making variable rate management decisions as personal observations. These responses are good indicators that this project can have an impact at the vineyard level.

The survey showed that manual labor remains an important component of implementing variable rate practices. The majority of responses showed that variable rate practices are currently implemented primarily through the use of **manual labor** while **manual adjustment of mechanized practices** was the second most reported practice. This projects' goal of using GPS or other automatic adjustment of mechanized practices is being used in a very small number of vineyards represented by this survey.

When asked about the preferred method of obtaining vineyard management information, it was not unexpected that there was no clear information transfer method selected by respondents. Newsletters and field meetings were the most often selected methods but internet resources and email were also well represented. It was interesting to see that when asked how they would like to receive sensors maps, responses by members of the California grape industry were almost totally by **computer or smartphone**, whereas New York and Pennsylvania responses showed there is still the desire by a significant number of growers for **paper copies**.

Variability in vine vigor was the information identified as the number one piece of information growers would like to see via sensor mapping followed by **yield maps, water status of vines and variability of soils**.

Current users of sensor maps reported that they find them **mostly, to sometimes, reliable** but also report that **maps or data are difficult to interpret and costs are high**. Participants also indicated that both **lowering costs** and **increases in quality** were thought to be benefits of addressing variability in the vineyard. These answers identify a real opportunity for this project. Developing a system to efficiently collect, create and distribute spatial data maps that can then be used to apply mechanized variable rate management will address the concern of maps being difficult to interpret and should provide the data needed to show any improvements in fruit quality and profitability.

A follow up survey will be conducted in the final year of the project to determine impacts on a grower level.

Take Home Messages

- 1) The Efficient Vineyard Advisory Committee is representative of the grape industries involved in the project.
- 2) Personal observation is currently the most commonly used method for determining the need for implementing variable rate management. This shows a significant opportunity for showing an impact through the implementation of collecting spatial data using sensors.
- 3) Manual labor is currently the most common form of implementing variable practices in vineyards. This signifies another opportunity for significant impact through the implementation of spatial mapping linked to variable rate equipment.
- 4) Lowering costs and improving quality are seen by survey participants as the reasons for implementing variable rate practices.

- 5) While California growers embrace the use of computers and smart phones to access spatial data mapping, an educational effort is needed in New York and Pennsylvania to move growers from paper copies to allow them to take full advantage of the maps in the implementation of variable rate management.

Complete survey results can be found on the Efficient Vineyard website at;
<https://www.efficientvineyard.com/outreach/#1480695074232-c14bfab-feab>