

1. What is the top 3-5 grape related accomplishments of ARS during the past 3 years? What priorities of industry have been met?

Julie Tarara- Separation of solar radiation and temperature on berry composition.

Paul Schreiner- Whole vine nutrient uptake and allocation.

2. What major gaps still exist between ARS' research focus and the needs of industry?

Funding needs to be coordinated.

Collaborative cross-functional teams.

Defining quality. Relationship between crop load and sugar. Best quality associated with medium crop load and medium brix and really is a function of balanced vines.

Fertigation- nutrition effects on quality.

Analytical chemistry. Lack infrastructure for analysis of chemical compounds. Fermentation processing. Scale up applicability of small lot fermentations. 2 liter, 20 liters, 200 liters. Service laboratory- not research lab. May not be a major obstacle if administratively set up.

Quality evaluation requires making wine. Without making wine cannot measure quality. Need to make wines where grapes are grown. Need standardized winemaking procedures. 300 gallon fermentations (2 ton) used at Ste Michelle Wine and estate.

EJ Gallo- 10 gallon fermenters. Provides optimum fruit volume per fermentation lot.

Wine.

Sample size for making wine.

Place to make the wine.

Integrative experiments: expertise required. Plant physiology, (current focus on molecular biology not useful), Expertise: whole plant level- biotic and abiotic stress. Use molecular information to better understand the physiological processes. Physiologist work with

molecular biologist. Who is training physiologist- college programs declining?

Team of scientists- Pacific Northwest is good.

If money was not limitation, prioritize research topic area

Water management

Optimizing the rate and timing for top 4 key varieties.

Water quality. Vine balance,

Pruning level, buds per vine??

Plant nutrition and quality? Know about N & K. Know little about P.

Managing Ripening (Lohr) - water, shoot positioning, leaf growth restricted early, then increase water after veraison.

Chemometrics of the Lohr sweet spot (25.5-28.5)- if vines are physiologically active, flavor concentrates. Yield losses start happening at around 27.0 brix. Development of rapid, objective, analytical methods for screening ripening. Real-time screening of methoxypyrazine analysis (disappearance of negatives).

Synchronization of ripening between brix accumulation and flavor development.

Nutrition/fertilization

Cultivar suitability

Biochemists

305 meeting: what does ARS provide scientists to enable them to work in an interdisciplinary environment?

3. What are the future research projects could address these gaps?

Collaborative, cross-functional teams. Correlating chemical compounds with quality. Implement utilization of quality standards.

How to execute collaborative, cross-functional teams.

4. Which teams of scientists (ARS, university, and industry), that currently exist?

5. How can the progress and impact of ARS research on grapes be increased?

6. Outreach?

Wine making infrastructure needed.

Integrative- interdisciplinary team. Project management- symphony without a conductor.

Not pulling together collaborative projects.

Role of NGWI- coordinating research activities. NWCSFR- Does not bring overarching collaborative efforts. How to coordinate efforts.

Earmarker is industry.

Similar to GWRIC in Australia or CRC for viticulture. Reward system for scientists needs to change to support interdisciplinary teams.

Right now- reward is based on Papers per year, \$ per year in external grants. Solution- Get away from one year funding cycle for external grants.

Why locate ARS scientists in remote locations without critical mass?