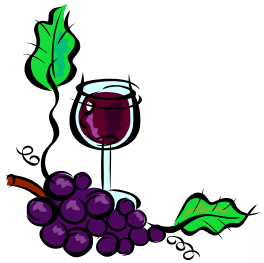
USDA-ARS Grape & Wine Workshop

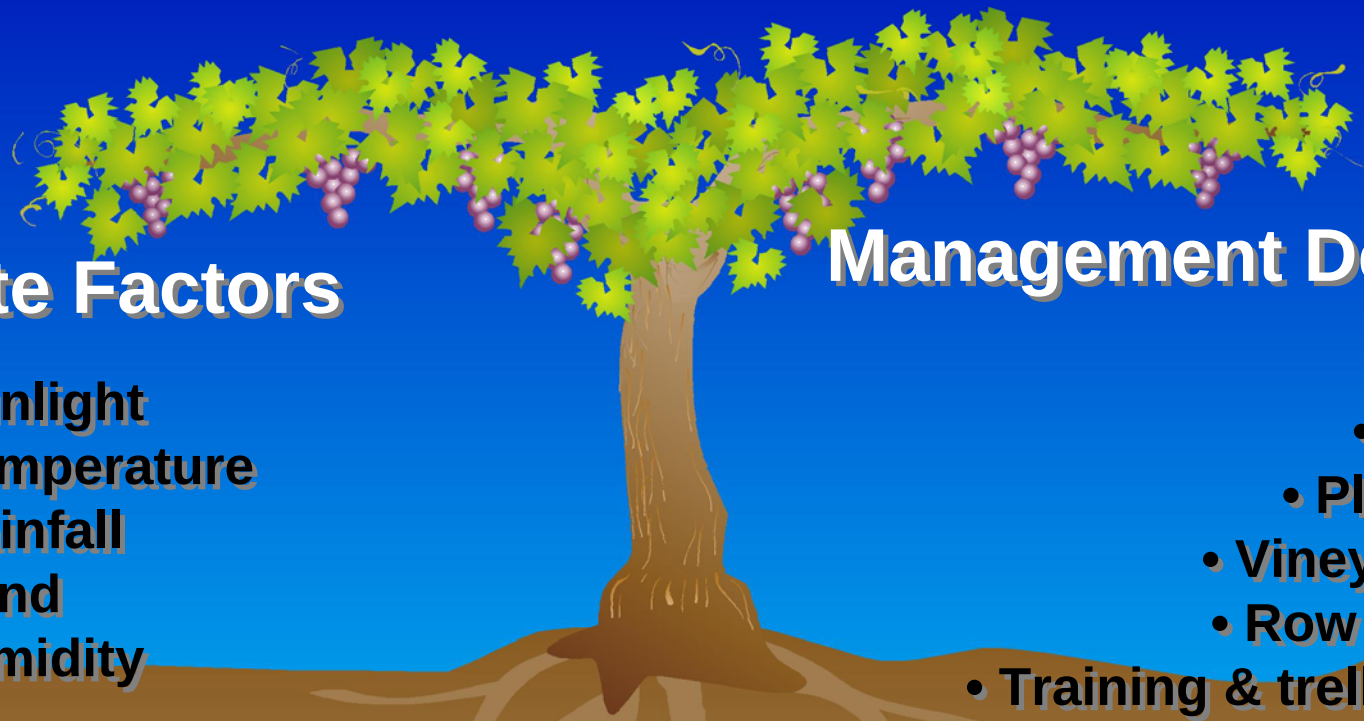
Physiology, Cultural Practices and Sustainability



Acknowledgements

- Group Participants
- Co-Chair - Julie Tarara
- Scribe – Kendra Baumgartner
- Facilitator – David Rust

Grape Production Systems



Site Factors

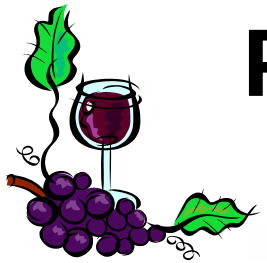
- Sunlight
- Temperature
- Rainfall
- Wind
- Humidity

- Topography

- Soil texture and depth
- Soil chemistry
- Soil pests and biology

Management Decisions

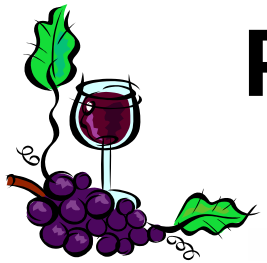
- Cultivar
- Rootstock
- Plant density
- Vineyard design
- Row orientation
- Training & trellis systems
- Canopy management
- Crop load management
- Water management
- Pests and diseases
- Floor management
- Pre-plant soil preparation
- Fertility management



Physiology, Cultural Practices and Sustainability

Research Priorities

- Understand and manage fruit ripening and the development of compounds responsible for the flavor, aroma, color and mouth feel of grapes and grape products
- Understand and manage the influence of environment and stress factors on vine performance
- Understand and manage the elements of sustainability from the vineyard to the end product



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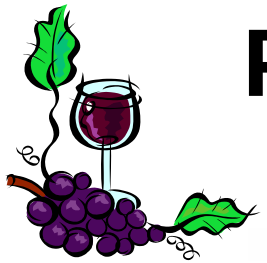
Understand and manage fruit ripening

- Identify the compounds responsible for the flavor, aroma, color and mouth feel of grapes and determine their relationships to final product quality
- Further understand how environment and cultural practices influence fruit ripening and compositional development
- Examine the relationship between sugar and flavor accumulation
- Understand the mechanisms for water, nutrient and assimilate transport into grape berries



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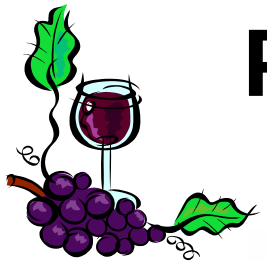
Understand and manage environmental stress on vine performance

- Define critical environmental factors that limit vine performance and economic sustainability
  - Climate, soil, water
- Understand how management decisions can help mitigate these limitations
  - Site selection
  - Scion x rootstock interactions (climate, soil, S/R signals)
  - Soil management (microbes, nutrients, salinity, pH)
  - Water management (amounts, quality)
  - Fertility management (nutrient uptake and partitioning)
  - Floor management (nutrients, vine competition)



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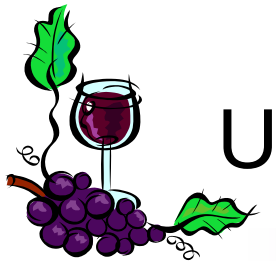
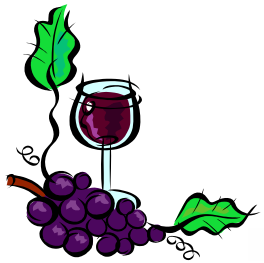


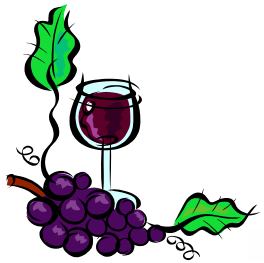
Understand and manage sustainability

- Develop best management practices for minimizing the impact of grape growing and processing on the environment
  - Vineyard development and establishment
  - Soil and water
  - Pests and diseases
  - Labor and energy
  - Waste streams
  - Community interface
  - Economic considerations



Organizational issues

- Current ARS programs in grape physiology, cultural practices and sustainability
  - Personnel
  - Focus
- Future grape program requirements
  - Expand physiology components
  - Incorporate economic criteria as appropriate
  - Wine making, processing, analytical and sensory facilities



Organizational issues

- Acknowledge and reward outreach by

  Category I Scientists

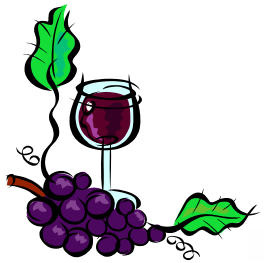
  – Commodity-focused responsibilities

  – Grape industry funding

- Regular reporting of research outcomes to the grape industry

  – Existing industry meetings and forums

  – New forums



Organizational issues

- Coordinate grape industry research efforts to improve efficiency and reduce overlap
  - Develop regional and national coordination efforts with land-grant and non-land grant universities, industry stakeholders and others involved with grape industry research
    - Coordinate positions and programs
    - Facilities and research infrastructure
    - Funding efforts