

# Production Efficiency

	Objective	Research Outcome	Industry Benefit
3.1	Optimize vineyard production systems for cost, quality and the environment	Enhance the efficiency of production systems including labor, water, fertilizer and pesticides, while maintaining and/or improving yield and/or fruit quality	Increased environmental and economic sustainability
3.2	Develop and adopt advanced technologies for precision viticulture	<p>Implementation of precision viticulture technologies that reduce vineyard variability and improve production efficiency</p> <ul style="list-style-type: none"> <li>• Determine producer needs for data, including crop estimation, crop load, and canopy size to achieve vine balance with the aid of precision agriculture</li> <li>• Develop a decision support system, develop unified/integrated methodologies, (data management, data collection and data processing)</li> </ul>	Improved vineyard performance and fruit quality
3.3	Identify and maintain the highest quality, disease free grape germplasm	Identify and maintain the highest performing, disease free plant materials for each growing region and market use	Improved vineyard performance and fruit quality

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3.4	Develop tools to enhance traditional breeding approaches	Identify the genetic basis for desirable fruit quality attributes and resistance to abiotic and biotic stresses. <ul style="list-style-type: none"><li>• Characterize clones for the vine and fruit in terms of roots, vigor, canopy, plant architecture, flavor, fruit competition and product quality. Characterization should also include viticulture assessments and yield components.</li></ul>	Increased economic viability and environmental sustainability
3.5	Optimize the interaction of the genotype with the environment	Establish robust environmental (climate, soils) metrics for the evaluation of vineyard sites and cultivar adaptation Prepare for climate change – cultivar evaluation and production systems for warmer/cooler regions. Understand the environment	Improved vineyard performance and fruit quality