

Mobile Irrigation Lab

A new service for vineyards in
Napa and Sonoma Counties



MIL provides low-tech, rapid evaluation of water use efficiency

- Evaluations designed to answer 2 questions:
 - Is water being distributed *uniformly* through the irrigation system?
 - What are sources of variation in water application?
 - Pressure differences, emitter variation, unequal drainage, unequal spacing, undulating topography.
- Report provides information on improving distribution uniformity and irrigation precision
- Improving water use efficiency can also improve water conservation



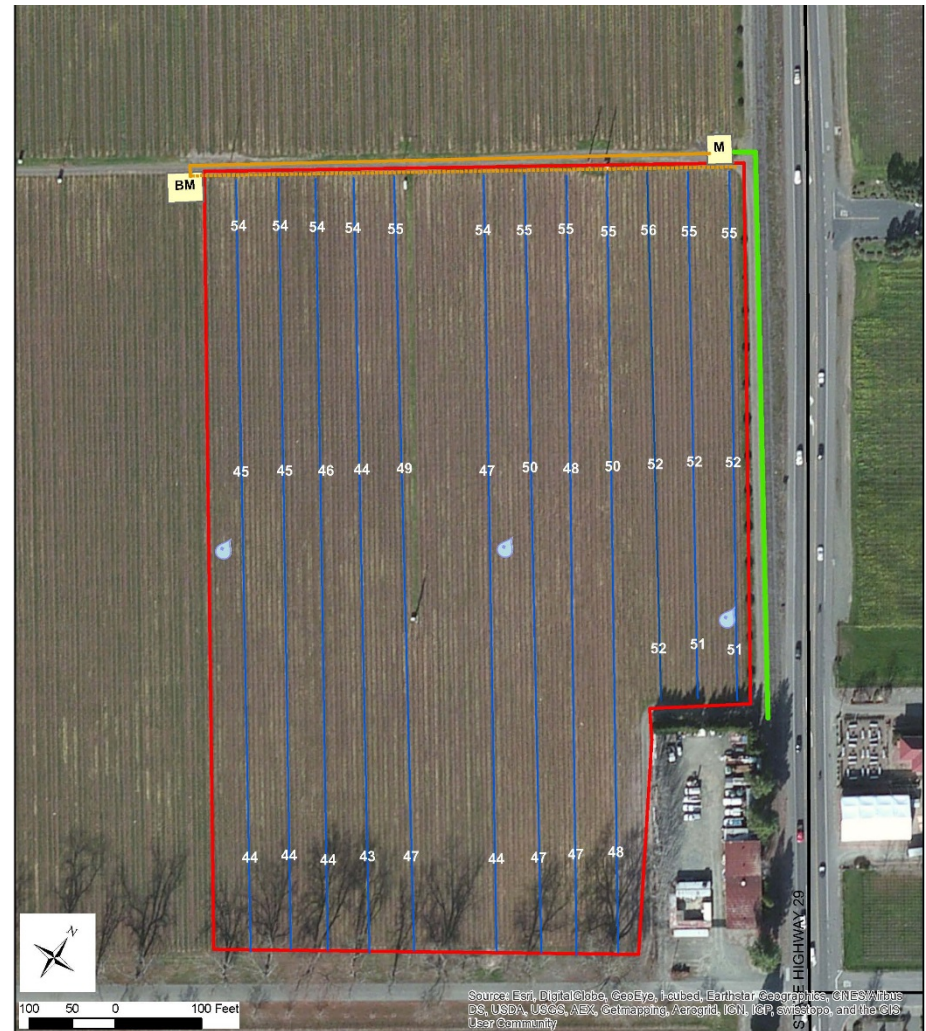
RCDs will facilitate 120 evaluations over next 3 years

- Napa and Sonoma RCDs funding from CA Dept of Water Resources and Prop 84
- Free service to growers (for now)
- RCDs train vineyard staff to conduct evaluations to increase impact, meet evaluation goals
- RCDs conduct irrigation workshops in conjunction with offering service
- Program advertised through partner groups, events, newsletters, presentations











MIL benefits growers

- Problem solve areas of weak/excess vigor
- Understand true volume of water applied to each vineyard block per irrigation cycle
- Increase evenness of vineyard production (ripening)
- Improve water management and potential for conservation
- Meet Sustainability and Farm Plan Goals (e.g. CSWG)



Map created by Napa County RCD March 9th, 2015

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, IGP, swisstopo, and the GIS User Community

	Block A1 Boundary	54	Pressure (PSI)
	County Municipal Water Line		Drip Emitter Flow Test
	Irrigation Main Line		Vineyard Master Manifold
	Irrigation Sub-Main and Risers		Block Manifold
	Drip Line		



A typical 8-hour evaluation

Interview

- Discuss overall concerns, water source, pumps, filtration, pipe layout



Measurements

- Pressures
- Flow volumes



Observations

- Pressures at the water source
- Source of emitter plugging
- Unequal drainage



Lessons learned so far

- Useful service for all types of vineyards and management
- Wide range of performance
- Growers benefit from having new eyes focused on irrigation
- There is always one component of the evaluation that highlights potential improvement/concerns
- Gateway to discuss irrigation scheduling, alternatives, and improvements
- Growers want to make improvements and conserve water
- Most water conservation comes from altering irrigation scheduling
- RCD benefits from new contacts
- Exposure to all types of Vineyard Management



What we see

- Wide Range of different Irrigation systems

Ponds/ Reservoirs

Well

City/ Municipal water

Pump to holding tanks

Gravity

Booster Pumps

Direct Well Pumping

Combination

Filtration Systems

Emitters per Vine

Single / Double Poly

Valley bottom / Hillside



What We See

- Generally old systems (> 15 yrs old) have “OK” – “Poor” DU.
- Younger Systems have a “Good” to “Excellent” DU.
- Plugged/Clogged Emitters
 - Age
 - Sediments
 - Brand – Toro vs Netafim
- Pressure Variation
 - Often the most common issue
 - Below/Above Pressure Compensating PSI range (7 -45psi).
- Non-Pressure Compensating System
- Filtration Issues
- Inadequate pump or Irrigation Infrastructure
- Limited Acreage can be Irrigated per Irrigation Cycle



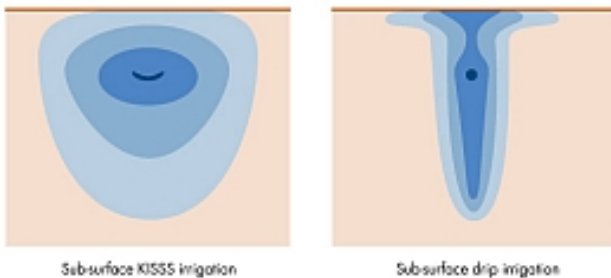
State Water Efficiency and Enhancement Program

SWEEP EVALUATION – Kendal Jackson KISSS Irrigation Install

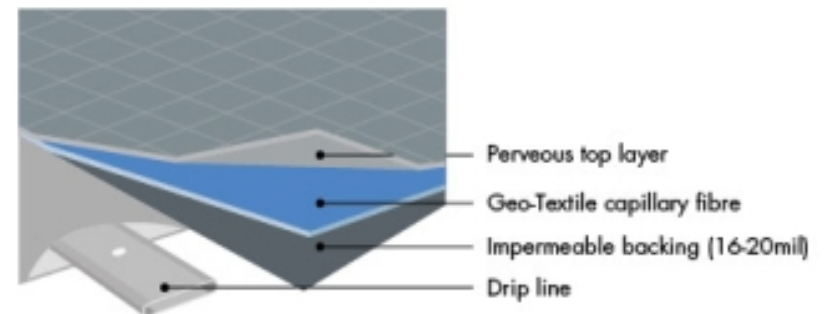


- Subsurface Textile Irrigation
- Geotextile Fabric
- Disperse Water evenly, single band application
- Application rates match capillary absorption of soil
- Water Savings up to 60%
- Eliminates Evaporation and run-off
- Reduces weed propagation
- Deters root intrusion without chemicals

KISSS Sub-surface Irrigation Wetting Pattern



Ebb and Flow Mat Construction



Tools for Efficient Water Use in the Vineyard

Demonstration of tools and technologies for vineyard managers

June 9, 8:15 - 11:00 am

Raymond Vineyard, 849 Zinfandel Lane, St Helena, CA



Experts will show and share tips, tools, and techniques for improving efficiency of water use in the vineyard

- The State's Sustainable Groundwater Mgmt Act: What it means for us, *Patrick Lowe, Napa County*
- CODE's BMPs for water management and other tools, *CSWA*
- Mobile Irrigation Lab Evaluates Uniformity, *Napa County RCD*
- Surface renewal and vine-stress monitoring for irrigation scheduling, *Tule Technologies*
- Soil moisture monitoring of irrigation scheduling, *Advanced Viticulture*
- Sap flow monitoring within an holistic solution to optimize vineyard and resource management, *Fruition Sciences*

Space is limited

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Funding provided by CA DWR, North Bay Watershed Association, and County of Napa

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