

Using EM and VERIS Technology to Assess Land Suitability for Orchard and Vineyard Development in Non-saline Environments

(Funded 2001-2002 by The Prosser Trust)

Principal Investigators:

Allan Fulton
UC Cooperative Extension, Tehama County
(530) 527-3101
aefulton@ucdavis.edu

Bruce Lampinen
Department of Pomology
UC Davis
(530) 752-2588
bdlampinen@ucdavis.edu

Terry Prichard
Department of Land, Air, and Water Resources
UC Davis
(209) 468-2086
tprichard@ucdavis.edu

Larry Schwankl
Department of Land, Air, and Water Resources
UC Davis
(530) 752-4634
lschwankl@ucdavis.edu

Executive Summary:

Orchard or vineyard development is a critical decision-making stage, since choices regarding pre-plant tillage, irrigation system design, orchard/vineyard design (tree or vine spacing), and selection of rootstock and cultivars that perform differently under certain soil conditions all must be made. Failure to properly consider soil conditions in advance of development are often difficult or infeasible to correct once the orchard or vineyard has been established due to physical and/or economical limitations.

To assist in making these decisions, preliminary soil assessment information of the proposed site is valuable. Commercial services are adapting electromagnetic induction (EM) and direct measurement of electrical conductivity (VERIS) technologies to provide rapid, reasonable cost assessments of soil conditions under non-saline conditions. The investigators on this project will work closely with commercial EM and VERIS assessment providers by using extensive soil sampling and laboratory analysis of physical and chemical soil properties to verify the results of these rapid assessment methods. Furthermore, the impact of spatial soil variability on orchard performance will be studied by using detailed historical crop yield and tree growth measurements from one of the project sites. Finally, the project will investigate how the soil assessment information can be incorporated into orchard and vineyard development decisions.