

**Expert Advisory Panel  
Western SARE Tools and Technologies Grant  
Meeting Minutes 1/22/14**

**Attendees (Highlighted):**

<b>Expert Advisory Panel</b>	
Michael Cahn	UCCE
Ben Faber	UCCE
Dave Holden	Holden Research and Consulting
Karen Lowell	NRCS
Franklin Gaudi	Cal Poly: BRAE dept works at ITRC
GW Bates	RCD Coastal SanLuis
Ben Burgoa	Monterey RCD
Kevin Peterson	Cachuma RCD
Brooks Engelhardt	NRCS
Amy Storm (teleconferenced)	Larry Walker and Assoc.
Forrest Melton	NASA/ CSUMB
Dale Zurawski (teleconferenced)	VC Farm Bureau
Aubrey White	Ag Sustainability Institute UC Davis
Julie Fallon	Cachuma RCD
Pam Krone-Davis	MBNMS

**Meeting Minutes**

**1) Introductions**

Everyone introduced themselves and current projects they are working on.

**2) Discussion of Grant Background, history and outcomes:**

**A. Grant Purpose & Products (grant language)**

Growers on California's Central Coast have expressed the need for technical assistance in implementing irrigation and nutrient efficiency as a top priority for supporting sustainable agriculture and addressing mounting water quantity and water quality concerns in our region. This project directly addresses the critical need for agricultural and resource conservation professionals across California's Central Coast to coordinate and build technical capacity to ensure delivery of the most up-to-date, comprehensive and consistent information in a timely and relevant manner.

**B. Products (grant language)**

1. Online Clearinghouse of Central Coast INM tools and resources including

- irrigation and nutrient management assessment sheets, nutrient budget formulas, data collection and analysis tools, methods and procedures, equipment lists, and program management resources such as skills and services brochures, reports, and outreach materials (hosted on [www.awqa.org](http://www.awqa.org))
2. Peer-reviewed document of the suite of standard operating procedures for addressing grower INM needs, hosted online and distributed in hardcopy to INM Professionals
  3. Two Field Trainings on INM tools and standard operating procedures. Crosstraining participants will include representatives from: RCDs of: San Mateo, Santa Cruz, Loma Prieta, Monterey, Upper Salinas – Las Tablas, Cachuma, Coastal San Luis, Ventura; Central Coast Agricultural Water Quality Coalition, NRCS, and private consultants.
  4. Coordinated Regional INM Professional Network

**C. What we want to Improve through Working on the Grant:**

1. Irrigation reports and how they are developed
2. Advice provided to growers
3. How consultants are integrated, as service providers
4. Spreadsheets/ Aps/ Online tools
5. Mobile Labs and services
6. Better ways to get growers to use the services and tools provided
7. Future grants or access to resources (CSUMB students?) for programming tools into formats for web use

**3. Issues to Address:**

**A. Access and Adoption of Tools**

1. Training and use of irrigation tools
2. Improving SOPs and standardizing them
3. Gaining funding to improve tool accessibility and online usability
4. Addressing barriers to growers and irrigators adopting tools.
  - The current view is that excess water and fertilizer application is cheap insurance. If the crop doesn't get enough of either, irrigator worries that could cause loss of crop/ loss of job for the irrigator. Sometimes irrigators are reluctant to implement irrigation management to new standards, even when the grower agrees to new management practices. We need to address this organization issue to make progress. We need to involve all the key stakeholders in the organization to develop commitment and understanding.
5. Selling the value of the tool so they will be used
6. Communicate incentives for use of tools. (Currently over watering and fertilizing is viewed a "cheap insurance." Look at Ag Order and how a tool could help with a check-off. Compute \$ savings from water and fertilizer – based on actual \$ cost to the individual farmer. Sustainability claims for conservation efforts that can become part of a grower's or distributor's marketing strategy.

**B. Peer Review of Tools:**

We want to have good quality tools that are peer reviewed and combine the knowledge of all of this EAP and also outside peer review through the UC Extension process. The peer review improves both the reliability and credibility of the products to growers and provides resource conservation service providers with information about worthwhile approaches. We will do a two stage peer review process: 1) Peer Review among this Expert Advisory Panel (faster) and 2) Peer Review through the UC Peer Review Program (takes awhile).

**C. Standards for Backend Calculations:**

We want to have a consistent interface so growers can build training around the tools.

**D. Audience:**

Our primary audience is conservation professionals, including both service providers (RCD, NRCS, UCCE, consultants) and growers.

**E. Sharing of Tools**

1. All SOPs and tools produced by UCCE must be public information.
2. Online posting of tools will be determined by the group. Some RCDs may bring in tools that they do not want to have posted or that they want to post in a way that the background formulas are not enabled.
3. After the project, as partners continue to develop and upgrade tools, we should continue to share these with one another. (Create an ongoing Professional Network of sharing)

**F. On-line Tools**

1. The AWQA website will host an Online Clearinghouse of Central Coast INM tools and resources as specified in Product 1 of the Grant. Pam will be posting these tools based on what this group and Julie collects and feels is appropriate to post.
2. M Cahn would like to see a more sophisticated web presence developed for these tools so that there could be online input and calculations as well as information. This increased sophistication would be outside the scope of this grant. Options discussed were another grant building from this SARE grant and the use of CSUMB students doing a thesis, professional master's degree or capstone. The site would require ongoing support and maintenance to stay relevant. Potential web hosts could be a university or Amazon or the SIMs site.

**Tools and Technologies for Irrigation Management**

Irrigation management has two primary management aspects: Distribution of water (Distribution Uniformity) and Scheduling of Irrigation. The UCCE has developed SOPs for Distribution Uniformity Assessment. There are several tools for irrigation scheduling, with the primary categories for these being scheduling based on Soil Moisture and Scheduling Based on Evapotranspiration.

### Distribution Uniformity:

This group will review and upgrade the SOPs for DU using track changes in MS Word to provide feedback and suggestions to Michael Cahn. Michael will then send through the UC peer review process.

Cost of a D.U.: Takes 15-30 hours of meeting and field work in addition to about 4 hours to discuss and follow-up with the grower.

### Irrigation Scheduling Tools and Research Volunteers

- 1) Soil Moisture Based Tools: **Ben**
  - a) Soil Water Tension
    - i) Tensiometers
    - ii) Granular Matrix Sensors
  - b) Soil Water Content
    - i) Neutron Probes
    - ii) Time Domain Transmission (dielectric permittivity)
    - iii) Capacitance Sensors (dielectric permittivity)
  
- 2) Evapo-Transpiration Based Tools:
  - a) CIMIS & Spatial CIMIS: **Pam**
  - b) Crop Coefficients: **Michael Cahn and Forrest Melton**
  - c) Cal Poly ITRC Tools: **Kevin**
  - d) CropManage: **Michael**
  - e) TOPS Satellite Irrigation Management Support (SIMS): **Forrest**
  - f) Vineyard Soil Irrigation Model: **Forrest**
  - g) Avocado Commission Tool: **Julie and GW**
  - h) Texas Tool (suggested by M Cahn- Is this the Texas ET Network at <http://texaset.tamu.edu/growers.php?>): **GW**
  
- 3) Grower Relatedness
  - a) The NRCS guide to assessing the needs of growers - **Karen**
  - b) Educational Materials for Growers - **Karen**

### **Framework Questions:**

- Name and description of the tool/ Technology?
- How to access the tool/technology and related information.
- Under what conditions is the tool/technology useful: crop type, soil, topology?
- What is the organization capability required to use the tool/technology?
- What is the cost of the tool/technology?
- What are the advantages and disadvantages of using this tool/technology?
- What infrastructure is needed to support the tool/technology?
- What stakeholders should be involved in the implementation and what commitment is needed from each?

- Economic Information: How much water savings/ cost savings to the operation are anticipated?
- Research/Science: Relevant publications

Following the meeting, Pam developed a spreadsheet for compiling and sharing the information that we gather. She started to fill in some detail as an example, please feel free to change any of the input.

**TOPS- SIMS:**

Forrest Melton shared the SIMS webpage and how to reference specific field locations to see the Kc curve that it developed from NDVI calculations. They are finding a strong relationship between NDVI that can be calculated from satellite imagery and the Kc values. The corrections needed are for periods of water stress. Forrest is interested in having input from RCD s regarding the tool, the display and what would be needed as additional help for irrigators/growers to use it. Forrest will be presenting the tool at the AWQA meeting on June 11<sup>th</sup>. This will be a good opportunity for an interchange and for feedback. We can plan in the phone conference meeting prior to this (on 5/14) for how to prepare to get the most out of the in-person meeting.