

**W-2128 Regional Coordination Committee
Annual Meeting - Microirrigation for Sustainable Water Use**

**November 14-16, 2013
HYATT House Denver Airport
18741 East 71st Avenue
Denver, Colorado, USA, 80249**

Minutes

(November 14)

The meeting was called to order at 8:30, and the draft agenda, was approved. A major component of the agenda was that state reports would be superseded by the need to discuss the new project proposal. Those present (A. Lakso, K. Morgan, C. Stanley, C. Corcos, M. Shukla, B. DeLeon, C. Shock, M. Bartolo, T. Trout, H. Neibling, S. Loring, J. Maloney, E. Roman-Paoli, M. Dowgert, A. Gips, F. Lamm, A. Garcia, D. Nandwani, K. Shackel, A. Fares, T. Robinson, and D. Porter) introduced themselves, followed by Comments from Dr. Loring (Administrative Advisor), highlighting the reporting process required for W2128, the process required for the new proposal (tentatively W3128), and new developments in AFRI/NIFA. Stakeholder representatives from 4 major irrigation companies addressed the group to discuss future directions in irrigation technology, and to stimulate discussion regarding the role of W2128/W3128 in these directions (a break was taken at some point during the following presentations).

Michael Dowgert and Ami Gips (Netafim) emphasized that at Netafim we want to know how to make drip irrigation simple, more reliable, and less complex so that there is greater drip irrigation adoption. Currently all systems are custom made. Could the installation be made simple so the overall system is easier and quicker to install? With lower cost more people would install drip irrigation. Drip irrigation is a much more than an irrigation system, it can be a management system for nutrients, weed control, etc. To make drip more attractive, how do we save water, manage nutrients, etc. and maximize yield? We have questions of how to enhance grower education. How do we develop better farmers? An example of the failure of drip irrigation was the adoption of drip among a certain group of apple growers who imposed too much water stress on the crop. We all know of failures that set back the adoption of drip irrigation. Just because drip is accepted for a certain commodity, it doesn't mean that the growers are getting the most out of the system. We want to extend education to growers, but manufacturers are among the least trusted sources of information. Growers do trust local product representatives. A past effort was to reduce drip irrigation system pressure. Overseas low pressure gravity fed systems have become very important, especially for 1 to 10 acre small farm systems in India, Turkey, etc. Low pressure systems have not taken off in the US.

Claude Corcos (Toro) stated that university research on drip has been essential to the development of the drip irrigation industry. The assumption that water is equally available to plants between field capacity and the permanent wilting point is probably not valid. The ideal

crop water availability to plants is probably crop and climate specific. We need better understanding and tools to use drip irrigation to meet crop needs and maximize crop outcomes. How do we get the most out of the drip irrigation system through irrigation scheduling? NDVI, CWSI, LWP, TTT, SWT, etc. With IR temperature imaging, you do not have to have sensors all over the field. What are the future algorithms? Water quality is a huge issue where irrigation has played an important role in water quality problems and can play an important role in water quality amelioration. Water supply and water use efficiency will become more important in the future, and hence a more robust model is needed to predict system success. In the area of materials sustainability, durability and recycling, overcoming insect and rodent damage would be very helpful. The failure of drip with alfalfa due to rodent damage is a well-known example. Energy reduction: Currently we use a lot of pressure in order to back flush the filtration system. Could the energy be recovered? Pressure regulating valves lose energy. Where could the energy be stored? Intellectual property: How do we best release intellectual property? An example of shared information is site specific fertilization with central pivot irrigation. An example of not sharing information: the large sweet potato growers in Israel do not share information and have hurt their yield, which collectively hurts their competitive position. (Ken Shackel mentioned that there is considerable pressure from the university administrations to extract intellectual property from university researchers.)

Bobby de Leon (Jain) stated that our focus is on the growers and our mutual success. We are trying to work with end users and what they are trying to accomplish. Internationally Jain has branched into seed, planting materials, and even micro finance to help assure the success of growers. Water resources are very limited in the US. Irrigated areas are increasing and decreasing in various parts of the country. Drip and micro irrigation has increased from 4 to 8% of the irrigated acres. For high value crops, drip is a much larger and more important part of the irrigated acreage. We are working on human resources within our company and of end users. Training and education is very important. Jain is investing in R&D and patent acquisitions. Jain is working on new production development, and trying to leverage global resources.

Jenny Maloney (John Deere) has been working on many aspects of drip irrigation including new crops. We have been trying to understand things from the customer's perspective. Perspective customers want to hear definitive answers, not "it depends." Drip irrigation information directly useful for growers needs to be consolidated and made more readily available. Education is really important for the future. Growers want to have concise results. It is really hard to extract useful concise results from research papers. John Deere financing is a major activity as a company perspective, but we have difficulty financing drip systems. The use of tablets and I-phones is the main ways that our growers receive their information. Key and useful information needs to be readily available via these formats. Growers want to see success next door. Brazilian growers do not want to know about the success of drip irrigation of tomatoes in California. They want to see success locally. Global trends: More people are entering the middle class and will want to consume more vegetables, fruit, and protein rich food. These consumption needs will depend heavily on irrigated agriculture and drip irrigation. Water risk information is available with on-line ratings of water availability,

quality, and regulation. Trends in US irrigation. Water available and regulation. Uncertainty in future prices. Changing diets? EPA edicts on fuel ethanol blends. Inconsistent rainfall. Water quality regulations, mandatory new rules in CA. China and India are investing heavily in irrigation. Key drivers for the adoption of drip irrigation, global perspective: 1. cost and availability of water. 2. value of the crop. 3. return on investment, and how long does it take to pay off the investment. Growers are more apt to adopt if they can pay off within 5 years. 4. Examples of local drip irrigation success. 5. The presence of local dealers who have full service to avoid failures (education of the dealer networks 6. Government cost share, eg. EQIP funding. The near term future will be influenced by commodity prices, farm bill, water availability, water quality regulations, growth in row crops. Stability of production is also an important driver of the development of drip irrigation, for example sugar production needs to have greater stability for the sugar industry of Brazil.

Following these presentations there was a general discussion about what industry wants from the academic community.

Jenny: Growers want to have concise results. It is really hard to extract useful concise results from research papers.

Ami: Growers want applicable data at the field level. Some research papers are not really applicable; it is from a different world.

Michael: We need to get water to move upward in the soil, but how?

Steve: Problem of the hidden availability of published research.

Freddie: The IA knows little about the working groups and NIMSS. Fewer extension agents.

Jenny is a very good googler. She wants a really easy to use site for crop information. Jenny tries to compile the information.

Ali: The commodity groups compile their information.

Craig: It is a given at branch facilities, being relevant to the industry is a given.

Clint: The comments by Jenny and Steve on the problems of the availability of university research information is spot on. Much of the university information is on line, but its availability is very poor due to the way that information is archived, interlinked, and how urls are maintained. The university breaks linkages through their management of information.

Freddie: We have high tec and low tec micro irrigation and they are separated. Never the twain shall meet.

Ami: Growers all are operating at different skill levels. They need different tools.

Following the above discussion, Tom Trout described current research at the ARS Water Management Research Unit, Fort Collins. This was followed by lunch and Travel to Greeley Colorado for a tour of USDA - Limited Irrigation Research Farm, near Greeley, CO, and Onion producer, Fagerberg Produce Co., Eaton, Colorado. The meeting was adjourned at 5:30.

November 15

The meeting was called to order at 8:00. Dr. Loring announced that 1/15/14 was the deadline for the new project proposal, and brief reports of current research were presented by A. Lakso, K. Morgan, C. Stanley and K. Shackel. The rest of the day was devoted to a discussion of the new project proposal, and the group decided on the following title and 3 objectives:

Objective 1: Develop robust and appropriately-scaled methods of irrigation scheduling using one or more soil-, plant- or weather-based approaches.

Objective 2: Develop microirrigation designs and management practices that can be appropriately scaled to site-specific characteristics and end-user capabilities

Objective 3: Develop technology transfer products for a diversity of stakeholders to promote adoption of microirrigation

The meeting was adjourned at 5:00

November 16

The meeting was called to order at 8:00, and it was decided that all participants would send F. Lamm their proposed contributions to the new objectives by December 2. The business meeting followed:

Minutes from 2012 were reviewed and approved.

Kelley Morgan (UFL) was elected as incoming secretary for 2014.

The date and tentative location for the 2014 meeting was set for 10/22/14 – 10/24/14 in Nashville, TN.

The meeting was adjourned at 11:30.