

**Project Title:** **Optimizing efficiencies and economics of solid-set subsurface drip and overhead mechanized irrigation systems with flat-planted wheat and sorghum cropping systems**

**Project Team:**

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### **Project Status:**

The experimental field that is going to be used for this study will be readied during the first week of November for wheat planting prior to the 30<sup>th</sup> of November. Depending on whether sufficient rain comes to germinate weeds before our seeding date, we may apply about 1" of irrigation via the overhead irrigation system to germinate weeds and then once the winter weeds have emerged, we will apply Paraquat to kill them. The wheat variety, 'WB Patron,' will be seeded at a rate of 125 lbs per acre following application of 100 lbs of granular 11-52-0 fertilizer. Both the overhead and the drip plots will be established initially with overhead irrigation to guarantee uniform plant stands. The wheat variety will be taken through grain harvest next June. We estimate applying roughly 180 lbs per acre of nitrogen via either overhead or drip irrigation.

The following monitoring and data collection will be done during the course of the 2012 – 2013 wheat season:

- a. Emergence date
- b. Plant populations
- c. % canopy cover development using a digital band ratioing (R and IR) camera (weekly)
- d. Dry biomass accumulation (weekly)
- e. Weed pressure (biomass and % cover per area) monthly
- f. Irrigation and fertilizer application records
- g. Soil water storage and extraction patterns using neutron probe (weekly)
- h. Crop growth and developmental stage monitoring using Feeke's and Zadok's staging frameworks
- i. Grain yield and quality

We also hope to include in this two-year study an effort to evaluate the potential benefits of using 'stacked rotations' as a means for reducing weed populations. The notion of these rotations involves using grass crops such as wheat and sorghum in a back-to-back manner and during the production period of these crops using a variety of broadleaf herbicides to strategically target these weeds. Then, following what we intend will be a wheat-sorghum-wheat and possibly sorghum cycle, we will come back with a cycle of broadleaf crops in similar fashion, but using various grass herbicides that will be timed strategically as a means of disrupting weed life cycles to the greatest extent possible.

We hope to conduct public open house field days for wheat producers next spring as part of the annual agronomy field day that is provided by UCCE Advisors, Steve Wright and Dan Munk, and again during our annual summer Twilight Precision Irrigation and Conservation Agriculture Field Tour and Barbeque.