Since 2011, we have been conducting research into specialty crop production in the greenhouse and two high tunnels at the Laramie Research and Extension Center (LREC).

Interest in local production of agricultural commodities is increasing in Wyoming. Much of the discussion centers on edible crops, including fresh herbs.

One purpose of this project is to determine water use characteristics in the greenhouse and in two high tunnels using garlic chives as the test plant. Another is to make these irrigation findings available to Wyoming growers.

**Objectives**

This project has the main goal of determining comparative differences in soil moisture levels among the two high tunnels and the greenhouse. The aim is to encourage responsible irrigation practices on specialty crops that can be grown in Wyoming for sale at local venues such as farmers’ markets.

**Materials and Methods**

Garlic chives are being grown in the greenhouse and two high tunnels at LREC’s greenhouse complex. The current project began in January 2015 and will continue through fall 2015. Garlic chives (*Allium tuberosum*) is being grown as the test plant because it is easy to grow and is not susceptible to many insects or diseases.

Seeds were sown in January 2015. The first seedlings were transplanted into the greenhouse in February 2015. Plants are in 6-inch containers in a commercial, soilless growing medium.

In the greenhouse, there are two treatments: hand-watered control and drip irrigation. Within each treatment, one Spectrum® Technologies Inc. WatchDog 1000 Series Micro Station data logger and four WaterScout SM 1000 Soil Moisture Sensors are monitoring growing medium water content. All plants were harvested May 6, 2015.

The project was repeated starting in May 2015 with a new set of plants in the greenhouse plus two sets of plants in each of the two high tunnels. All plants in the high tunnels are being watered by hand on an as-needed basis. Data loggers and moisture sensors were also placed in each location in the high tunnels.

Data being collected on a per-plant basis in each treatment include days to germination, days to transplant, and fresh weight of chives harvested once in fall 2015. Data loggers record

![Figure 1. Greenhouse production of chives using drip irrigation.](image)
moisture contents at one-hour intervals; these data will be used to detail watering requirements in the greenhouse and high tunnels. The experimental design is completely randomized with 24 single-plant replications (Figure 1). All data will be analyzed using analysis of variance and mean separations.

Results and Discussion
Partial results will be available for the August 27 LREC Field Day. Figure 2 shows moisture curves of containers in the greenhouse during February 2015.

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Figure 2. Growing medium moisture curves in February 2015 using hand-watered control (top) and drip irrigation (bottom).