Irrigating Chives in a Greenhouse and Two High Tunnels—Completion Report

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Introduction
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) greenhouse complex. Interest in local production of horticultural commodities is increasing in Wyoming. Much of the discussion centers on edible crops, including fresh herbs.

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

Objectives
The main objective was to determine 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 (*Allium tuberosum*) were grown in the greenhouse and two high tunnels at LREC’s greenhouse complex. Seeds for the spring greenhouse study were sown December 11, 2014, and transplanted to 6-inch pots on January 26, 2015. Half the pots were watered by hand, and half were watered by a drip system (Figure 1). Chives were harvested and weighed May 6, 2015.

The summer 2015 greenhouse and high-tunnels’ study began March 8 when seeds were sown; seedlings were transplanted in the greenhouse and two high tunnels May 22. Plants in the high tunnels and on benches in the greenhouse were hand watered; the other greenhouse plants were drip irrigated. All plants were harvested and weighed September 10. Four soil-moisture monitoring sensors were placed in each of the six test plots.

Results and Discussion
Even with similar soil-moisture contents, greenhouse-grown chive plants watered with drip irrigation were lower in fresh weight than those watered by hand (Table 1). All pots were treated with a slow-release fertilizer placed on the growing medium surface. The slow-released nutrients may not have been released as easily in the drip system as in the hand-watered pots.

In the high tunnels, fresh weights were highest in the east, north, and south locations and were higher than

![Figure 1. Drip-irrigated chives in the greenhouse, summer 2015.](image)

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<th>Table 1. Average fresh weights of chive plants grown in a greenhouse in spring and summer under either drip irrigation or hand watering.</th>
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those found in the greenhouse. Soil-moisture levels were similar among the high-tunnel locations and were higher than in the greenhouse. This was probably due to differences in soil water-holding capacities. Results over four years have shown highest yields in general on the east side of the north–south-oriented tunnel. Morning sun seems to be very important for high-tunnel production, and higher soil moisture may also be a factor.

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