Vegetables and Herbs Under High and Low Tunnels

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Introduction
Fresh, locally grown produce may not be as readily available in Wyoming as in other states for reasons including short growing season, adverse climatic conditions, and high altitude. Growing vegetables and herbs in unheated high tunnels, either alone or in combination with low-tunnel row covers, may help producers overcome some of these obstacles. The goal of this project is to successfully grow fresh tomatoes, chili peppers, green beans, and basil in two high tunnels—one situated in a north–south (NS) direction and one east–west (EW), with and without low-tunnel row covers.

Objectives
Our main objective is to determine any differences in yields when vegetables and an herb were grown under high tunnels alone or with low-tunnel row covers within the high tunnels. Another objective was to determine any differences in yields depending on location within each of the two high tunnels.

Materials and Methods
Three species of vegetables and one herb were grown in each of the two high tunnels at the Laramie Research and Extension Center greenhouse complex. ‘Ace 55’ tomato, ‘Anaheim Chili’ pepper, and ‘Thai Asian’ basil seeds were sown in the greenhouse April 6, 2015, and were transplanted to the high tunnels May 29, 2015. Seeds of ‘Earliserve’ green beans were directly sown into the high tunnels May 29, 2015.

Three tomatoes, four peppers, 10 bean seeds, and five basils were planted in northeast, southeast, northwest, and southwest locations within each high tunnel. All plants in the NE and NW sections of the NS tunnel and the NE and SE sections of the EW high tunnel were covered with white fabric low-tunnel row covers suspended over metal hoops (Figure 1). The plants in the other sections were left uncovered.

Yield data collected were tomato, pepper, and green bean fruit weights per plant (fruit were harvested as needed all summer). Yield data on basil was the fresh weight of each plant, harvested August 24, 2015.

Results and Discussion
The location with the highest average basil fresh weights was under the low-tunnel row cover in the NE area of the NS high tunnel (4.3 oz). Highest average per-plant yield of green beans was in the SE section of the NS high tunnel, not covered with a low-tunnel row cover (1.8 oz). For chili peppers, highest average per plant yield was in the NE section of the NS high tunnel, which was covered with low-tunnel row cover fabric (0.43 oz). Tomato yields were highest in the row-covered NE section of the NS high tunnel (41.7 oz) (Figure 2).

Results indicated yields were generally higher in the NS tunnel than the EW tunnel. Low-tunnel row covers did seem to help increase yields in the NS tunnel more than the other tunnel. Exposure to morning sun on the east side of the NS tunnel may have been the reason.

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Figure 1. Low-tunnel, row-covered plants in the NS high tunnel (uncovered for photo).

Figure 2. 'Ace 55' tomatoes harvested from plants grown under a white fabric low-tunnel row cover.