The Effects of Hydroponic and Drip Irrigation on Brassica oleracea var. Sabellica 'Premier’ and Lactuca sativa 'Spretnak' Growth

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The goal of this experiment was to determine whether a nutrient film technique (NFT) hydroponic system or a drip irrigation system would provide the most growth in Brassica oleracea var. sabellica 'Premier’ and Lactuca sativa 'Spretnak,' and to determine which system was more water efficient. It was hypothesized that the NFT system would provide better growth because the plants would have more immediate access to water and nutrients. The NFT hydroponic system involved seedlings being placed in net pots that were suspended in a gutter with nutrient-rich water that was wicked into the plants' roots. The drip system involved drip tubes that provided nutrient-rich water to the plants that were held in a peat potting medium. After the plants matured, they were harvested and the leaf area was determined. The results found that there was no significant difference between each irrigation system for dry weight and leaf area. However, lettuce leaf area index was greater for drip irrigation, and kale stem dry weight was greater for the NFT system. The drip irrigation system used 0.38 liters less water per plant than the NFT system. Since the irrigation systems provide comparable growth, it would be more beneficial for farms in arid climates to use a drip system, and for farms in areas that lack arable land to use an NFT hydroponic system.

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