

High tunnel, open-field production systems compared for lettuce, tomato

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In the mild coastal climate of western Washington, agricultural growers are learning more about the advantages of growing popular fresh-market vegetables in high tunnel production systems. High tunnels can offer many benefits for delicate vegetable crops, including protection from environmental stresses such as hail, frost, excessive rainfall, and high wind. Despite these obvious benefits, the use of high tunnels for growing both lettuce and tomato is currently limited in the region—estimated to be only 50 acres for tomato and less than 20 acres for lettuce. According to Washington State University researchers Suzette Galinato and Carol Miles, the adoption rate for using high tunnels is low in the region due to a lack of in-depth knowledge about specific high tunnel production practices for tomato and lettuce, the high tunnel structures best suited to each crop, potential returns, and the capital investment needed to initiate and maintain high tunnel production.

Results of the scenarios showed that, for lettuce, the labor cost per square foot of growing area was found to be six times greater in a high tunnel than in the open field. For tomato, labor costs were ten times greater in a high tunnel than in the open field. Total labor cost comprised more than 50% of the total production costs of lettuce and tomato in both the high tunnel and open-field systems. Given the base crop yield and average price, economic analysis showed that growing lettuce in the open field is 43% more profitable than in the high tunnel, while in contrast, high tunnel-grown tomato was three times more profitable than open-field tomato production.

Galinato and Miles' new study published in *HortTechnology* contains specific information about effective regional production practices for tomato and lettuce, variable and fixed costs of production, and potential returns based on defined assumptions about high tunnel or open-field production of each crop. The researchers convened focus groups of three to four growers in western Washington between April and November 2011. The groups were then tasked with developing crop enterprise budgets. Each focus group addressed one crop (lettuce or tomato) and one production system (open field or high tunnel). "We selected the focus group participants based on their experience in growing lettuce or tomato in open field or high tunnel, and their management practices," Galinato said. To develop each crop enterprise budget scenario, the groups designed a hypothetical farm situation; the types of inputs were itemized based on the production system.

"The expected marketable yields of tomato and lettuce are higher when grown in a high tunnel as compared with the open field," the authors said. "However, the higher crop yield achieved in a high tunnel was not sufficient to offset the increased costs of production for lettuce."

The researchers noted that expected crop yield should not be the primary driving force in choosing a high tunnel production system over the open-field system. "Instead," they suggested, "crop yield in addition to market price of the crop as well as production costs must all be taken into account when examining the profitability for any crop and production system."

More information: horttech.ashspublications.org/...nt/23/4/453.abstract

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