

Optimizing strawberry yield in vertical farming

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As consumer interest in local foods rises, producers of fruits and vegetables are seeking answers to challenges such as limited growing seasons and pests. Across the country, growers are looking to vertical, hydroponic, high tunnel production systems to extend short growing seasons, minimize pest incidence, and maximize crop yield and profitability. A study in the August 2016 issue of *HortTechnology* contains new recommendations for best management practices for vertical farming for strawberry production in the Midwestern U.S.

Sam Wortman, lead author of the study, explained that vertical, [hydroponic systems](#) require the use of a soilless growing media, each media with unique physical and chemical properties. "Moreover, media can be mixed in various ratios to achieve multiple benefits," he explained. Wortman and researchers Michael Douglass and Jeffrey Kindhart conducted experiments in 2 years at two locations (Simpson, IL and Urbana, IL). First, the researchers assessed yields of 11 different strawberry cultivars. The second experiment identified an optimum soilless media for strawberries, and the third was designed to assess yields of four different cultivars fertilized with three different nutrient sources. All experiments were done in vertical, hydroponic towers within a high tunnel.

The results suggested that strawberry yield was maximized when planted in perlite mixed with coco coir or vermiculite and fertilized with synthetic fertilizer. Strawberry yield among cultivars varied by year and location, but Florida Radiance, Monterey, Evie 2, Portola, and Seascape

were among the highest-yielding cultivars in at least one site-year.

"Yield variability emphasizes the need for location-specific cultivar testing over multiple years, but results also suggest that cultivar recommendations from conventional hydroponic systems can likely be used to inform organic hydroponic production," the authors wrote.

"Based on nutrient source alone, certified organic hydroponic production seems feasible; observed yield loss (15%) was similar to what has been reported for well-managed organic systems (13%) compared with conventional systems."

They noted that that the strawberries in the current study were not managed strictly according to USDA NOP guidelines, and that yield loss in the organic nutrient treatments may have been more severe in the absence of synthetic pesticide use.

The authors recommended further research to understand nutrient dynamics and crop physiological response among levels within vertical, hydroponic towers.

More information: ASHS *HortTechnology*:
horttech.ashspublications.org/...nt/26/4/466.abstract

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