

# Evaluation of Peach and Nectarine Production in High Tunnel and Field Plots

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### Introduction

Peaches and nectarines are not common in Iowa's commercial fruit production due to low winter temperatures and spring frost events. Peach fruit buds can be damaged by late spring frost events, when temperatures drop below 28°F. The goal of this project is to test the economic viability of utilizing high tunnels to extend the growing season and enable these fruits to be grown reliably and successfully.

### Materials and Methods

Four peach (*Prunus persica*) and nectarine (*Prunus persica* var. *nucipersica*) cultivars were established in May 2016. Two replicate plots were established at the ISU Horticulture Research Station—one in a 96 ft x 42 ft gothic-style high tunnel and one in traditional field conditions. Within each plot, two peach (Redhaven, Contender) and two nectarine (Red Gold, Fantasia) cultivars grafted onto Bailey's rootstock were established. Plots were exact replications arranged in a randomized complete block design with two trees/replication (total of six blocks).

Irrigation was installed in each plot and watering was based on soil moisture needs using environmental monitoring stations

installed in each plot. Each station monitors soil moisture, soil electrical conductivity (EC), soil temperature, solar radiation, leaf wetness, air temperature, and relative humidity at canopy height.

Data collected included chlorophyll content estimated using a handheld 502 SPAD chlorophyll meter and plant growth (height and caliper, data not shown).

### Results and Discussion

SPAD readings were significantly different across cultivars (Table 1). Fantasia had greener leaves compared with Contender, Redhaven, and Red Gold throughout the season. Early-season measurements indicated Red Gold grown in the high tunnel had 10.6 percent higher SPAD readings.

After a successful third season, differences were observed between high-tunnel and field-grown peaches. Plant health and establishment data will continue to be collected. Fruit is not expected from these trees for 4-5 seasons, but yield data will be collected once the trees start producing fruit.

### Acknowledgements

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**Table 1. Estimate of chlorophyll content in high-tunnel grown and field-grown peaches.**

<b>Cultivar</b>	<b>SPAD1<sup>x</sup></b>		<b>SPAD2<sup>y</sup></b>		<b>SPAD3<sup>z</sup></b>	
	<b>High tunnel</b>	<b>Field</b>	<b>High tunnel</b>	<b>Field</b>	<b>High tunnel</b>	<b>Field</b>
Fantasia	42.2a <sup>w</sup>	40.4a	41.4a	40.9a	41.4a	45.4a
Red Gold	44.8b	40.3b	45.6b	43.2b	46.6b	48.1b
Contender	43.4b	44.0b	44.0b	41.2b	43.9b	46.0b
Red Haven	40.2b	40.4b	42.5b	39.3b	42.3b	44.7b

<sup>x</sup>SPAD1: chlorophyll content was estimated using a 502 SPAD chlorophyll meter July 3, 2018.

<sup>y</sup>SPAD2: chlorophyll content was estimated using a 502 SPAD chlorophyll meter August 1, 2018.

<sup>z</sup>SPAD3: chlorophyll content was estimated using a 502 SPAD chlorophyll meter October 16, 2018.

<sup>w</sup>Means (within a column) with the same letters are not statistically different according to Tukey's standardized range test ( $\alpha = 0.05$ ).