

of plastic mulch modified soil temperature at four inch depth. Average daily soil temperature was higher in the black plastic mulch as compared to white. Reflected light intensity was 44% higher from the white plastic mulch as compared to black. There were no significant differences in marketable number of cucumbers between black or white plastic mulches, however, within each mulch treatment, trellis treatment significantly increased yield over non-trellised treatment. The marketable numbers were almost one and a half times more when trellis system was used. Marketable weight followed the same pattern. There was no difference in marketable yield between trellised treatments of black or white plastic mulch. Non-marketable fruit weight was highest in trellised treatment, irrespective of plastic color. Fruit quality attribute with respect to average fruit length was highest in the black plastic mulch + trellis treatment. Results from this study indicate that trellising cucumbers in high tunnel production systems affects fruit length and yield higher number of marketable fruits as compared to non-trellised systems. Trellising allows for better air movement and heat dissipation and reduces the occurrence of fungal and bacterial diseases. Although white plastic mulch reflected almost double the amount of light when compared to black, it did not translate to enhanced yield or productivity. White plastic mulch kept the soil cooler than black and could be used in high tunnel production when crop plantings occur during peak summer.

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8:45–9:00 AM

The Composition, More so than Yield, of Organic Field-grown Tomato Fruit Is Affected by Grafting and Rootstock

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Grafting and rootstock (RS) effects on the yield and composition of tomato (*Solanum lycopersicon* L.) fruit taken from open field, certified-organic plots were documented in 2008–10. Four- to five-week-old scion ('Celebrity') seedlings were grafted, using the cleft method, to seedlings of three experimental rootstocks (313, 314, 319) developed at OARDC and two commercial rootstocks ('Beaufort', 'Maxifort'). Ungrafted and self-grafted

control plants were also prepared. Grafted plants produced three to four new leaves during the healing phase and were scored and sorted according to quality and vigor. Thereafter, uniform subsets of high quality plants were set into single-row, raised-bed, drip-irrigated, 1 mL plastic mulch-covered, 7.2 m² field plots containing 10 plants of a single genotype. All RS-S combinations were replicated twice and four times in 2008 and 2010, respectively, and arranged in a randomized complete-block design (RCB); in 2009, an augmented RCBD with 1–3 replications per genotype was used. After being set, plants were pruned to the third node, trellised using a Florida stake and weave system, irrigated per the "hand-feel" method and protected from weed, pest, and disease pressure using approved and accepted materials and methods. Total and marketable yield (fruit number, weight) were calculated after removing and sorting all fruit at stage 5–6 ripeness from eight to ten plants per plot every one or two weeks approximately ten times annually until fruit production and ripening stalled. Soluble solids, pH, and titratable acidity were measured on a subset of ten marketable fruit per plot collected at harvests 4–6. Grafting influenced neither the timing of fruit production (onset, duration) nor the total or marketable yield as recorded over the entire season, regardless of whether yearly data were pooled or kept separate for analysis. In contrast, specific components of fruit composition were affected by grafting and RS. For example, total soluble solids differed by RS in 2008 and 2009 but not in 2010. In 2008 and 2009, fruit from ungrafted 'Celebrity' and SGH07-319-rooted plants had significantly higher soluble solids values than fruit taken from those grafted to 'Maxifort'. Fruit pH also differed by RS in all study years. For example, 319-rooted plants tended to produce fruit with a higher pH than other treatment plants. In 2009, titratable acidity tended to be highest in fruit taken from self-grafted plants and lower in fruit taken from ungrafted or plants grafted onto commercial or experimental RS. Four working hypotheses for the effects observed here are offered.

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9:00–9:15 AM

Commercial Extract from the Brown Seaweed *Ascophyllum nodosum* (Stimplex®) Improves Earliness and Yield of Hydroponically Grown Sweet Bell Peppers

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