

HIGH TUNNEL GRAFTING AND VARIETY TRIALS

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Introduction:

Many studies have shown that grafting susceptible tomato varieties onto disease resistant rootstocks can improve plant growth and yield. This is especially true where crop rotation choices are limited in high tunnels. There is increasing interest in utilizing grafting in high tunnel production because of concerns with soil-borne diseases and the difficulty of practicing good crop rotation. One grower study in Pennsylvania also showed a yield response when a disease resistant variety was grafted and planted into fumigated and non-fumigated soil in a high tunnel. In order to investigate whether grafting can enhance yield without the presence of soil-borne disease in a high tunnel, a study was conducted in the research high tunnels at the Rutgers Agricultural Research & Extension Center, Bridgeton, NJ in 2011 and 2012.

Materials and Methods:

Four varieties of tomatoes ('BHN589', 'Primo Red', 'Red Deuce', and 'Scarlet Red') were grafted onto 'Multifort' rootstock in 2011 and 'Maxifort' rootstock in 2012 and compared with ungrafted plants. The grafted and ungrafted plants were transplanted 1 cu ft bags (2 plants/ bag) of clean soilless mix to eliminate the possibility of soil-borne disease on April 18, 2011 and April 19, 2012. The bags were setup on landscape fabric on the floor of research high tunnels, watered with drip tape through the bags and the plants were trellised using 4' stakes. Tomatoes were harvested vine ripe, graded for marketability and into three size categories (>3.5", 2.75-3.5" and 2.35"-2.75) and weighed.

Results and Discussion:

The yields of all four varieties were higher for the grafted plants than the ungrafted plants (Figures 1., 2., 3., & 4.). In 2011, the yields and fruit quality from the plots were somewhat low due to a problem with a lack of surfactant in the bag media mix. In 2012 a surfactant was added through drip irrigation with fertilizer to prevent this problem. It is unclear why the ungrafted 'BHN 589' performed so poorly in 2012.

Conclusions:

Grafting appears to be a potential tool for increasing tomato yields in high tunnels even when soil-borne diseases are not known to be present.

Acknowledgement:

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Figure 1. Marketable yield from high tunnels RAREC, Bridgeton, NJ 2011

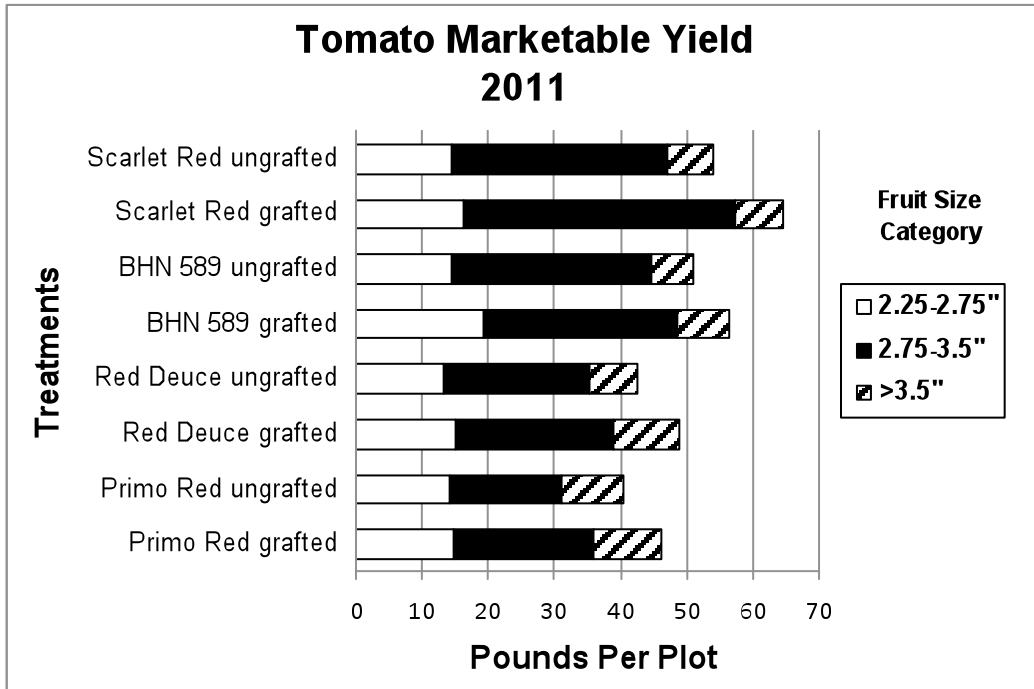


Figure 2. Marketable yield from all varieties combined RAREC, Bridgeton, NJ 2011

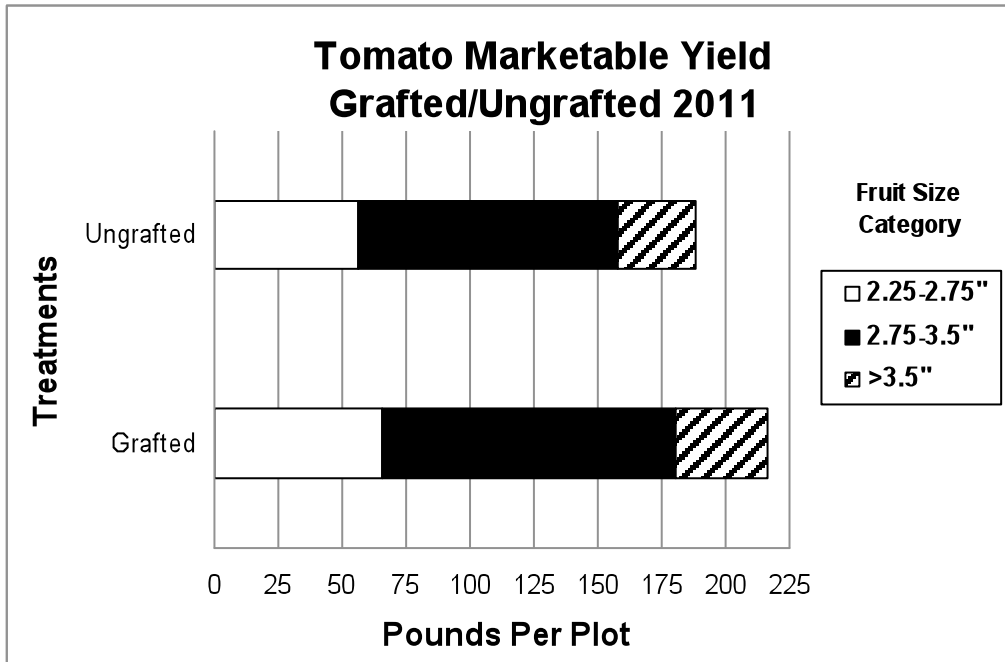


Figure 3. Marketable yield from high tunnels RAREC, Bridgeton, NJ 2012

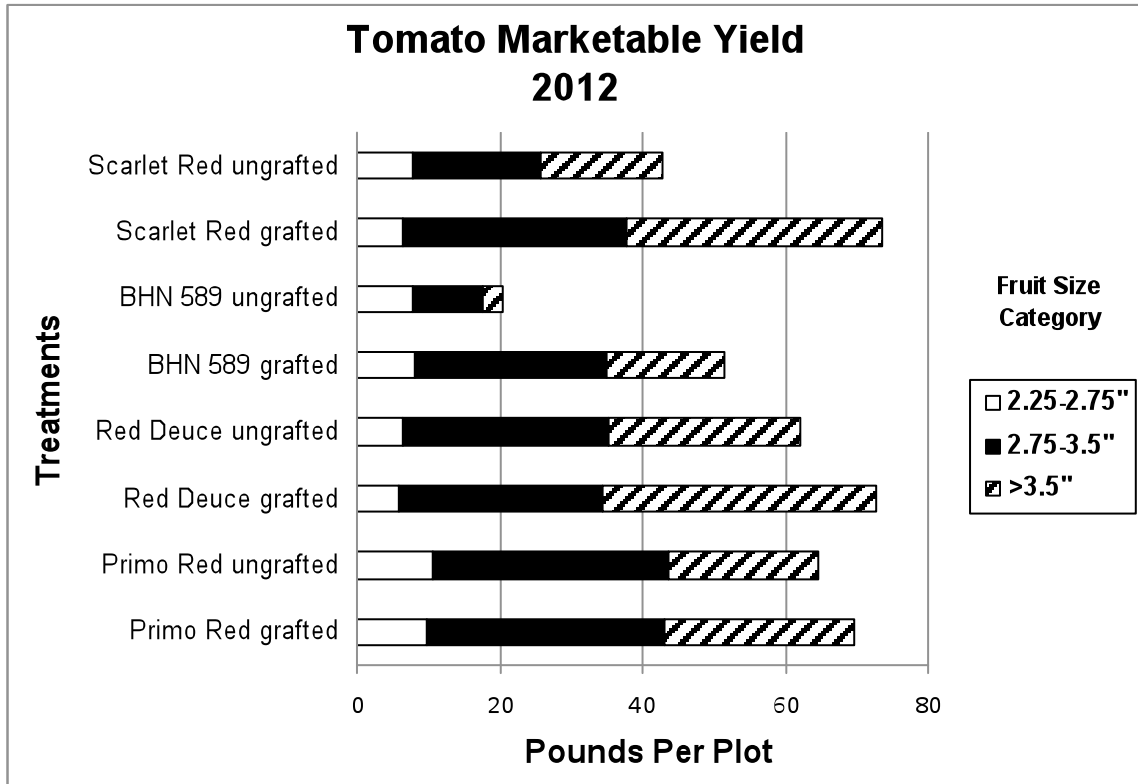


Figure 4. Marketable yield from all varieties combined RAREC, Bridgeton, NJ 2012

