Application of Blush® on Zestar!® Apple to Improve Red Skin Color

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Zestar! apple has become a favorite of direct-market and small wholesale apple growers in the east and midwest. It is harvested in late August to early September with very good early fall apple quality. (*Fruit Notes*, Volume 65, pp. 17-19. http://umassfruitnotes.com) Unfortunately, Zestar! does not develop particularly good red skin color, especially when August is warm. Red blush color of less than 50% is not unusual. Growers would like to see better red color on Zestar! in many years, particularly when the apples are packed and sold wholesale by the grower or broker to another retailer.

Blush can be applied pre-harvest "for red color enhancement in bi-color apple varieties" according the manufacturer, Fine Americas. The active ingredient of Blush, prohydrojasmon, promotes red color by increasing anthocyanin, the natural red pigment in apples. Blush has been successful in improving red skin color of Honeycrisp. Zestar!, being a bi-color apple, is a good candidate for trying to improve red color with Blush; however, no experimental trial applications of Blush have been made on this variety to date.

Materials & Methods

Blush was applied to a row of Zestar! apple trees at the UMass Cold Spring Orchard Research & Education Center in Belchertown, MA. The trees are approximately 150-gallons-per-acre dilute tree row volume. The row was divided into four replications, and two treatments: Blush vs. contrl. Each treatment group was 10 trees, therefore a total of 40 trees for each treatment. Two applications of Blush were made: July 30, 2014 and August 12, 2014. These timings represent about 30 and 14 days before anticipated harvest, respectively. Blush rate was 52 fluid ounces per acre, applied in a water volume of 75 gallons per acre

Figure 1. Blush-treated Zestar! apple tree on August 21, 2014 at UMass Cold Spring Orchard.

Figure 2. Control Zestar! apple tree on August 21, 2014 at UMass Cold Spring Orchard.

Figure 3. Zestar! apples treated with Blush evaluated for percent red skin over-color and red skin brilliance.

(2X). Both applications were made in the morning during fair weather and moderately rapid drying conditions.

Just before harvest on August 21, 2014 samples of 50 apples for each treatment x replicate group (200 apples total per treatment) were harvested from randomly selected trees in the middle of each treatment group. The 'best' apples were generally selected as would be representative of a first 'pick.' These apples were individually evaluated for percent red over-color and red 'brilliance' (1 = below average, 2 = average, 3 = above average) by an unbiased research technician.

Results

Blush-treated and control fruit did not differ in red color (51% for control and 47% for Blush) or red skin brilliance (2.2 rating for both: 1=below average, 2=average, 3=above average). Also see pictures of the trees and evaluated fruit (Figures 1-4).

Conclusions

Blush in this experiment did not improve red over-color or color brilliance of Zestar! apples. In addition, visual (subjective) evaluation of apples on the tree did not note any observable difference in color or color quality (brilliance) of the fruit. A better, more complete evaluation would have been to run a full pack-out of the harvested fruit. Personal communication with company representative suggests that only a 5-10% improvement of red color is observed, which can be difficult to ascertain visually, however, it will make a difference when all the fruit is run across a grading line and packed-out.

August of 2014 was a cool month and good color was generally observed on *all* apple varieties approach-

Figure 4. Zestar! control apples evaluated for percent red skin over-color and red skin brilliance.

ing harvest. Perhaps, application of Blush to Zestar! during a warmer pre-harvest maturity season would give different results. Timing and rates could also be adjusted. Application to larger (200 gallons per acre or larger) Zestar! apple trees with more 'green' fruit might also benefit from Blush application. Perhaps Blush just does not give enough measurable improvement to color of Zestar! apples to justify the expense? But, growers in the east and mid-west would for certain like to have a tool to significantly improve color of Zestar! apples, particularly those growers who bring Zestar! to a broker for packing and distribution to regional supermarkets.

Thanks to Kevin Forney, Fine Americas for supplying Blush for this experiment.

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