

# Blush Research Report -2013

## Evaluation of the product Blush in a commercial orchard setting

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### **Justification**

Fruit quality is a very important part of the economic value of the apple. There are many inputs that have an impact on apple quality, many that can't be controlled by the grower. Varieties are selected for maximum fruit quality and finish for the climate in which they are planted. The amount of canopy, irrigation, crop load can also be influenced by the grower. The amount of sun, rain and temperature cannot. Therefore it is important to have chemical tools that can enhance fruit without causing any other quality issues. This is especially important in the export market where fruit must travel long distances and risk being rejected if the quality has gone down during shipping.

The amount of color on fruit and the finish when the crop is harvested is essential to having a good pack out. The more fruit color there is the more profit from the crop. If the crop is low in color the grower stands a chance of losing money on a product that has had many expenditures already. On average a grower spends at least \$500.00 or more dollars per acre for just the disease and insect control alone. That does not include the picking costs, nutrition and any other inputs. A product that is priced accordingly, and that would be able to increase color on an apple, with no negative effects would be a huge asset to producers. Even a small increase in pack out would equate to a profit increase.

### **Project Objectives:**

1. To determine if the product Blush will increase fruit color in commercial apple orchards on two different varieties.
2. Also to evaluate if there is any difference in the fruit quality from using this product.

### **Significant findings:**

1. In almost all of the treatments upon comparing the Blush treated fruit and control. The treated fruit always had at least 3-17% more color.
2. The Blush treated fruit did not appear more colored, in some trials, on the tree but only upon observing the fruit from 360 degrees of rotation it was noticed that the fruit had more color on the calyx ends than the control.

- The fruit quality evaluations did not yield any differences between the Blush treated and control samples.

## Methods

**Study Sites and Treatments.** There were four commercial grower sites selected Klein’s Produce, JK Farms, Solstice Farms and Succop Orchards. The protocol was two treatments; Blush 52 oz. rate at 35-28 days before harvest, and the untreated control or grower standard. Growers were instructed to use 100 gallons of water or at least as much as they could apply with their current sprayer since some used low volume sprayers. The apple varieties selected were Honey Crisp, and Gala. The cooperators were ask to apply the trial treatments to two separate areas as far apart as possible. Growers were purchasing the product themselves this year so they were able to put the product where they wanted. Because of this some of the trials did not have large plots sizes when sampled. They were also instructed that we would like the pack out data from these blocks. Pete Nyblad and Klein’s Produce said they would be able to provide pack outs but when it came time to do it everyone didn’t have the time with the huge amount of fruit and lack of labor.

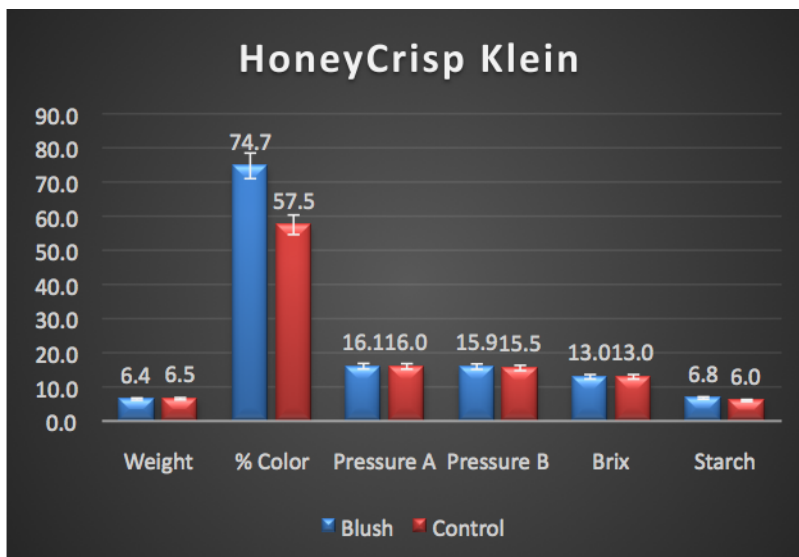


Figure 1

Fruit evaluation was completed by first observing the fruit on the trees when possible and taking photos. Fruit samples were gathered by picking 100 fruit randomly from each trial. These fruit were then sorted light to dark, control and treated were set side by side on a light surface and photographed. Fruit was then evaluated visually for percent color, by rotating the apple 360 degrees and evaluating the amount of red color on the apple. Only one person evaluated all of the fruit for color to reduce

variability in ratings. Pressure tests of two sides of the apple were taken and averaged, Brix or soluble solids was measured by refractometer, weight taken and finally maturity was determined by dipping the fruit in starch solution to rate maturity. This was evaluated by starch charts from Michigan State University. Data was averaged and graphed for each cooperator and fruit sample. The first sample evaluated was from Klein’s Produce variety Honey Crisp (Figure 1). This was a small plot trial of 5 rows with the middle one being the control. The grower sprayed Blush in the middle of rows 1, 2 and rows 4, 5. Samples of the treated fruit were taken from rows 1 and 5 on the inside of the rows for evaluation. There were 50 fruit taken from each row in the treated plot. The control row was row 3 which was sampled on both sides. The treated fruit appeared to be a darker red color visually. Analysis of the fruit

yielded no difference in the weight, pressure, soluble solids (Brix) or starch. The Blush treated fruit was 17.2 percent higher in color than the control.

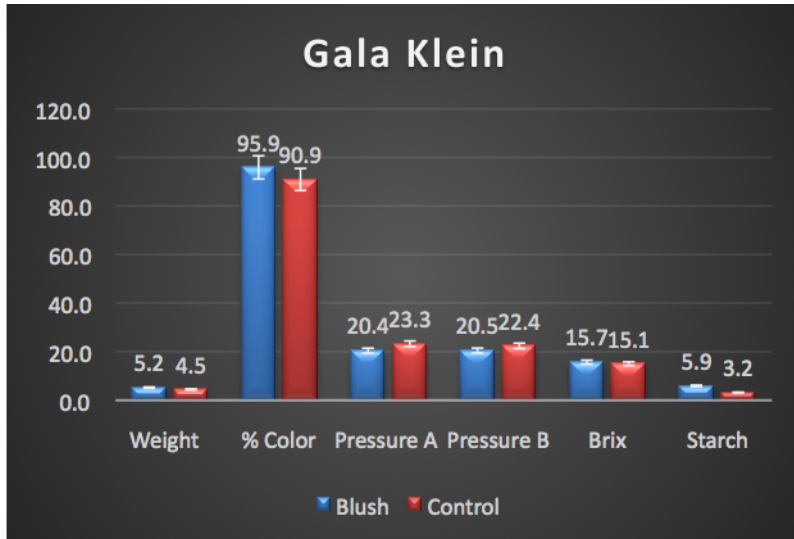


Figure 2

The second fruit samples taken were from JK Farms Galas. There were 6 rows untreated on the east side of a Honey Crisp block. The other side of the Honey Crisp block had 6 rows of Blush treated Gala. The fruit was all high in color upon observation but did yield a difference of 5% when evaluated. There still was no difference noted in the weight, pressure, and soluble solids (Brix). There was a difference in the starch readings between the two treatments but still not significant. This could be explained

by variation in maturity of the trees throughout the field.

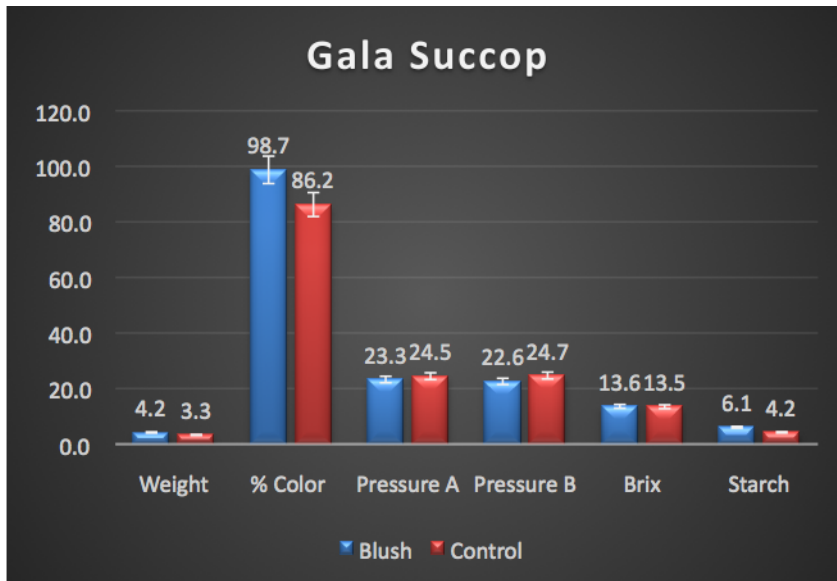


Figure 3

The third fruit samples taken were from a block of Galas at Succop Orchards. During the pictures it started to rain so the apples look wet. There were four rows of untreated trees on the north side of four Macintosh rows. On the south side of the Macintosh rows were 6 rows of Gala treated with Blush. During the pictures and when picking the treated samples appeared to have a more red color compared to the untreated. The fruit was all

very high in color but the treated rows were a deeper red color all over the apple. There was a 12.5 % higher color in the Blush treated fruit compared to the control upon evaluation (Figure 3). There was no significant difference in weight, pressure, soluble solids (Brix) or starch. Although again in this trial the control block had a lower starch reading but not significant. This could be explained from the field variation in trees sampled and the smaller sample sizes.

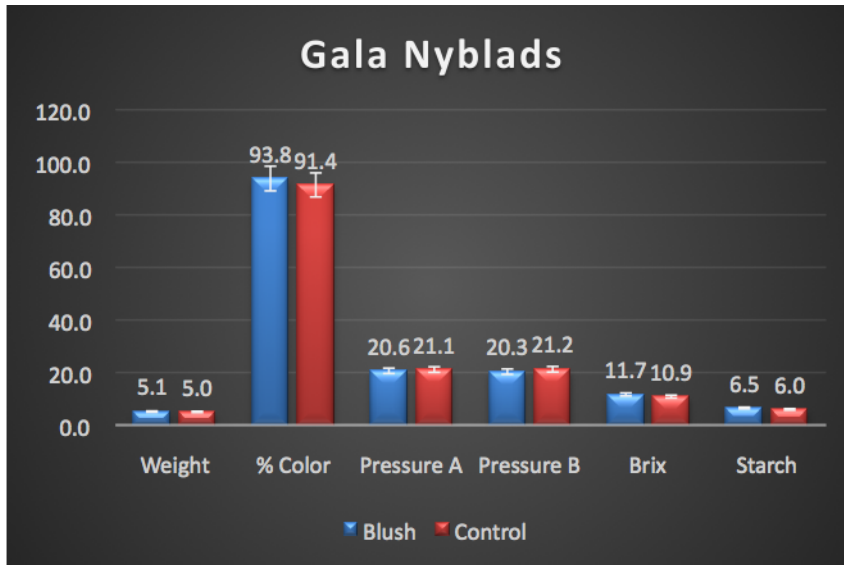


Figure 4

This was a very small plot trial consisting of four rows. Two rows on one side of a drive and the other two directly across from them. The grower Solstice Fruit Farm sprayed Blush on one of the inside rows on the south side of the drive. The other row was the control. We sampled on the outside edge of the control row away from the Blush treated side. On the north side of the drive

the grower sprayed Blush on the inside of the west row and

then Retain down the middle of the two rows. This yielded treatments of a control (untreated), Blush, Blush/Retain and Retain only. The only concern was that there could have been some drift from the Blush or the Retain due to the trial rows being next to each other. Samples were taken and analyzed with some interesting results. Looking at just the Blush treated and the control, there was a 2.4% increase in color in the treated block (figure 4). Again, no differences in any of the other fruit quality tests evaluated.

## Results

There were two varieties tested. Klein's Produce (Grower 1) had the most significant difference in color with Honey Crisp at 17% more color on the Blush treatment. The rest of the grower cooperators, J K Klein (Grower 2), Succop Orchards (Grower 3) and Pete Nyblad (Grower 4) had approximately the same results with the variety Gala. The Gala plots all had 3-12 percent increase in color on the Blush treated fruit.

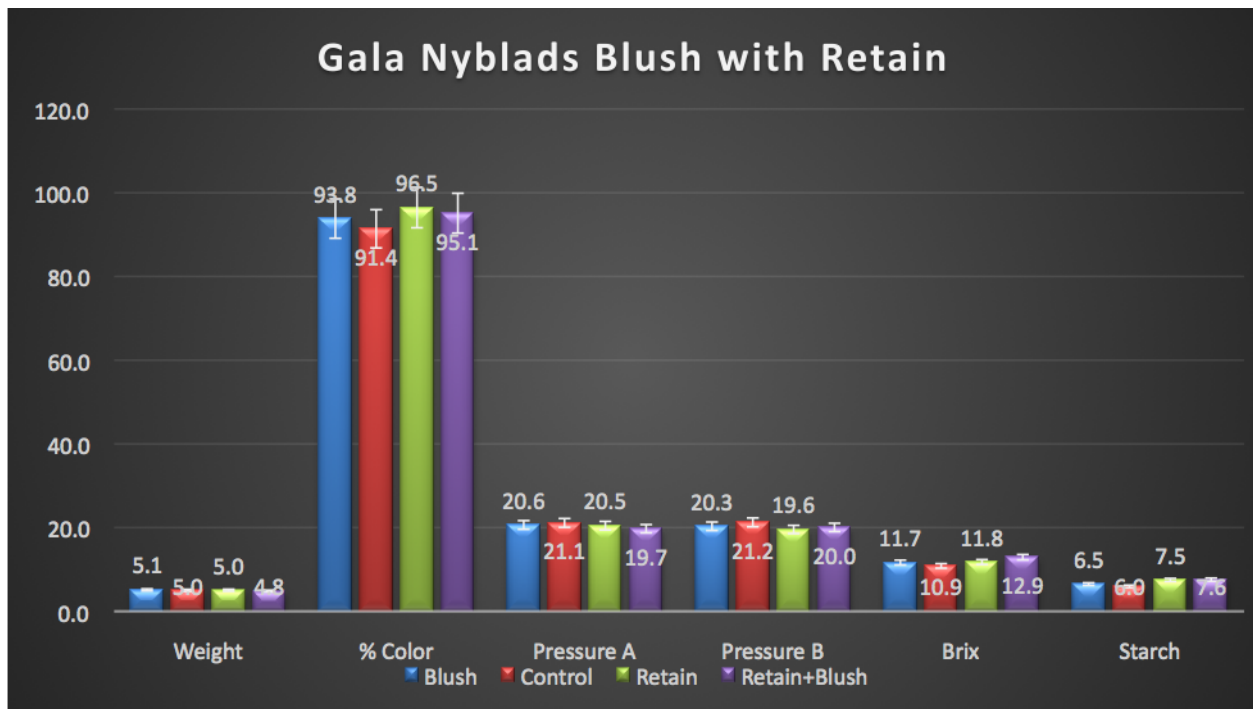


Figure 5

Looking at all the treatments together, the Retain treated two rows seemed to have more color (Figure 5). Again this could be explained by the variation in trees and fields. The Retain treated samples had higher starch readings making them more mature. This is fairly normal for this product but the pressure will remain the same, which it shows in the results. The Solstice Farm Gala trial was picked on September 23, much later than the other two samples which could explain some differences. There was no difference in pressure from any of the treatments which is not surprising with the Blush product. The surprise is that the Retain product is no better than any of the other treatments especially in pressure of fruit.

## Conclusions

The product Blush effects fruit in a positive manner by increasing fruit coloring by at least 3-17 percent compared to an untreated sample. It was consistent across all of the trials as opposed to 2011 where there was a lot variability in data. This could be explained by there only being two varieties in the 2013 trial and five in the 2011. Blush appears to effect some varieties more than others, such as Gala and Honey Crisp. This could be explained by horticultural differences in the trees makeup. It does not affect any other fruit quality such as weight, pressure, soluble solids (Brix) or maturity, which is extremely important. There were no conclusions drawn with respect to the Blush plus Retain or either product on their own. This would require more trials on just these two products.

The product Blush appears to be a viable coloring tool for fruit. The variability of some grower's results to others is hard to explain but could be explained by sprayer or spray practices. Some varieties

will respond to the product more than others and should be directed towards those areas for better results.