APPLICATIONS OF STimpleX™, A COMMERCIAL BIOSTIMULANT, IMPROVES RED COLOR ON ‘JONAGOLD’ APPLES

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Peel color in apples is an important quality attribute, and is important in determining market acceptance. Well colored, bright red apples are generally preferred by consumers. Red color development is dependent on environmental conditions, and chlorophyll degradation. Anthocyanins, carotenoids, and flavonoids all are pigments involved in coloration. Temperature, light, crop load, water stress, and plant growth regulators can all have an impact on color development.

The use of seaweed in agricultural production has been used since historical times, however its use expanded after a practical extraction method was developed in 1949, which allowed for easier transportation of active compounds in seaweeds to areas further from the coast. The brown seaweed, Ascophyllum nodosum, is considered the most researched seaweed for use in agriculture. StimpleX™ (Ascophyllum nodosum extract, Acadian Seaplants), is made through a non-pressurized alkaline extraction process, and contains no additives. It has been documented that different species of seaweed and different extraction processes create products with a different chemical makeup that will likely have different activity when applied to plants.

Prohydrojasmon (Blush, Fine Americas, Inc) (PDJ) has recently been registered for increasing red color in apples. PDJ is a synthetically produced jasmonate, which functions as a functional analogue of jasmonic acid in plants. Jasmonates are involved in fruit de-greening by enhancing chlorophyll degradation, as well as enhancing anthocyanin and carotene accumulation.

Both Blush and Stimplex have been used for improving fruit color in apples.

Field trials in Wayne County, NY began in 2012 to evaluate the effect of StimpleX™ (Ascophyllum nodosum extract, Acadian Seaplants) on red color development in ‘Jonnagold’ apples. A full season Stimplex program was compared to a grower standard program, which included an additional biostimulant. The percent red fruit color was significantly higher in fruit from Stimplex treated trees than in the grower standard (Figure 1). In 2013 the same trees received the same treatments, but plots were split, and half the plots received a preharvest treatment of Blush. Without the application of Blush, Stimplex treated trees had a numerically higher percent red color compared to the grower standard (Figure 2). Percent red color was higher in 2013 than 2012. Percent red color with Blush was numerically the same at Stimplex, but significantly greater than the grower standard control (Figure 2). The percent red color in the Stimplex plus Blush treatment was significantly greater than the other treatments.

These results indicate the benefits of a Stimplex program, under commercial
production practices, for improving peel color in Jonagold apples with or without the application of Blush. The mechanism of red color improvement by Stimplex in apples has not been determined, however other trials have shown increases in phenolic compounds, and flavonoids resulting in increased antioxidant activity, as well as increased jasmonic acid under disease pressure.