Vine Growth and Nonstructural Carbohydrate Reserve of Young, Non-fruiting Kiwifruit ‘Goldrush’ as Affected by Mid-season Defoliation

In Korea, typhoons from July onwards usually influence the production of kiwifruit. This study was conducted to investigate the effect of early defoliation on vine growth of current season and nutrient reserves during winter after leaves abscission. A new cultivar ‘Goldrush (Actinidia chinensis)’ was used for this experiment, following de-blossoming in spring. And the vines were artificially defoliated from July 15 to October 14 with one month intervals and the degrees of defoliation were 0, 25, 50, 75, and 100%. Out of all the defoliation treatments conducted from July 15 to October 14, defoliation on August 16 and September 15 significantly reduced vine dry weight. In particular, 75% and 100% defoliation on August 16 resulted in a 79.2 g and 83.1 g of dry weight reduction, respectively, from the control vines (145.6 g). Vine dry weight was also reduced by a 54.5 g and 59.8 g for the 75% and 100% defoliation treatments on September 15, respectively, compared to the control vines. Defoliation on August 16 decreased both the aboveground and underground dry weight of vines, whereas underground dry weight was not affected by defoliation on September 15. Most nonstructural carbohydrates (NSC) of the young vines accumulated in the roots as starch. Defoliation on August 16 and September 15 reduced the accumulation of NSC reserves, which was correlated with a decline in vine dry weight. For vines with more than 75% defoliation on August 16 and September 15, about less than half amount of starch accumulated in the roots compared to those of the control vines.

Keywords: Defoliation, Kiwifruit, Nonstructural carbohydrate, Reserve, Vine growth

Corresponding author: E-mail, yblee@gnu.ac.kr; Tel, +82-55-772-1969