Ploidy Level of Pollinizers Affecting Fruit Quality and Seed Formation in Kiwifruits

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Kiwifruits are dioecious plants, and thus artificial pollination is essential and crucial for commercial growing. Recently, pollen is imported from various foreign countries and staminate cultivars for pollen production are becoming more diverse with different polyploids. However, there have been few studies on ploidy level of pollinizers affecting fruit quality and seed formation. Therefore, the study aimed to investigate the effect of staminate cultivars with different polyploids on fruit quality and seed formation of pistillate cultivars. Four staminate cultivars with different polyploids, including ‘CK3’ (diploid), T line (tetraploid), ‘Bowha’ (hexaploid), and ‘Chieftain’ (hexaploid), were used for pollen sources to two pistillate cultivars with tetraploid including ‘Halla Gold’ and ‘Sweet Gold’ which are major cultivars grown in Jeju, Korea. There was no difference in a pattern of pollen tube growth in the pistils with different pollinizers, showing a pattern of penetration into the ovule within three days after the artificial pollination. Fruit set was greater than 90% in both pistillate cultivars for all pollinizers without significant difference. Fruit weight of ‘Halla Gold’ and ‘Sweet Gold’ was the highest in pollinization with T line and ‘Bowha’, respectively. There was no significant difference in soluble solids and acidity with different pollinizers in both ‘Halla Gold’ and ‘Sweet Gold’. Fruit firmness of ‘Halla Gold’ and ‘Sweet Gold’ was the highest with ‘Chieftain’ and ‘Bowha’, respectively. Flesh coloration of ‘Halla Gold’ and ‘Sweet Gold’ indicated with b and hue value was the highest with both ‘Bowha’ and ‘Chieftain’. The number of seeds in the fruits of ‘Halla Gold’ and ‘Sweet Gold’ were not significantly different, but seed weight showed significant difference among four different pollinizers with the highest in T line and the lowest in ‘CK3’ for both pistillate cultivars. The results indicated that ploidy level of pollinizers might affect fruit quality such as fruit weight, fruit firmness, flesh coloration independent of seed formation in kiwifruits.

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