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Effect of Aminoethoxyvinylglycine (AVG) Treatment on Preharvest Drop, Fruit Color and Quality of 'Tsugaru' Apples

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This study was carried out to investigate effects of aminoethoxyvinylglycine (AVG) on harvest date extension and storability promotion in 'Tsugaru' apples. AVG ($75 \text{ mg} \cdot \text{L}^{-1}$) was applied 1 time 4, 3, 2 and 1 weeks prior to the predicted harvest date, and twice 2 and 1 weeks prior to and after 1 week the predicted harvest date. The predicted harvest date of 'Tsugaru' apples is approximately August 20 every year. AVG sprayed fruits had greatly decreased preharvest drop compared to control fruits. When AVG sprayed fruits were delayed about 1 month (until Sept. 20) after normal harvest date, preharvest drop was between 14 to 30%, and fruit weight increased about 35.8%. Preharvest drop was greatly decreased with 2 times application (14~16%) compared to 1 time (22~30%). During this period, flesh firmness and acidity decreased, and the fruit red color (Hunter value a) developed. Respiration decreased a little, ethylene production greatly decreased, and flesh firmness and acidity were higher in AVG-sprayed fruits than in control fruits. AVG-sprayed fruits were stored at low temperature ($0 \pm 1^\circ\text{C}$) for 60 days, they maintained higher fruit quality than control fruits. Cell wall hydrolases activities decreased in AVG-sprayed fruits compared to control fruits during cold storage. Especially, α - and β -galactosidase activity greatly decreased in AVG-sprayed fruits. Therefore, results indicated that treat of AVG will be an effective method to prevent preharvest drop and to improve fruit quality in 'Tsugaru' apples.

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Applicability of SSR (Simple sequence repeat) Marker to Identify Commercial Variety in Watermelon (*Citrullus lanatus* L.)

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SSR (simple sequence repeat) markers have been utilized for variety identification, parentage assessment, genetic diversity analysis, construction of molecular maps, and property rights for plant varieties. This is main disadvantage its high cost of initial development compared to other marker systems. Recently, the characterization and transferability of SSR markers has been reported in Cucurbitaceae. The cross-species application of SSR markers, developed in melon and cucumber, was examined for watermelon (*Citrullus lanatus*) in order to investigate genetic characterization. Eighty-two SSR loci out of 200 SSRs from melons and 96 SSRs from a cucumber were detected in watermelon varieties. Of the 82 primers, 15 revealed polymorphism in 24 watermelon varieties. In addition, 12 polymorphic primer sets were selected from 52 SSRs derived from watermelon. A total of 72 polymorphic amplified fragments were obtained by using 27 SSR markers. The average polymorphism information content (PIC) was 0.34, ranging from 0.15 to 0.661. A total of 72 SSR loci were used to calculate Jaccard's distance coefficients for a cluster analysis using UPGMA. A clustering group of varieties, based on the SSR analysis, was divided into 4 groups corresponding to the type of variety. Now we are analysing the relationship between morphological characteristics and markers genotypes of 52 commercial watermelon varieties.