Molecular Markers Derived from RAPD and ISSR Analysis for Identification of Watermelon\(^1\)

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**Summary**


RAPD and ISSR markers were obtained for eight watermelon \(\textit{Citrullus lanatus}\) (Thunb) Mansf. cultivars (lines) including two hybrids [Tainung No. 6 and Tainung No. 7 bred at Agricultural Research Institute (ARI)] for fingerprinting and assessment of their genetic relationship. Nine reproducible RAPD primers generated 127 fragments, among which 93 were polymorphic bands (polymorphism 73.2%). Eighteen ISSR primers yielded 198 ISSR fragments, of which 120 were polymorphic bands (polymorphism 60.6%). Fingerprinting analysis showed that 24 genotype specific RAPD markers and 37 specific ISSR markers were sufficient to differentiate these cultivars (lines). The genetic relationship and genetic similarity between cultivars (lines) were estimated using Dice coefficient of similarity of all of the ISSR or RAPD markers. Based on UPGMA (un-weighted pair-group mean arithmetic), the pedigree information and the dendrogram of these two markers were similar. Analysis of the similarity coefficient of ISSR markers revealed that three commercial cultivars with a genetic similarity of 0.58 belonged to a cluster different from the cluster of two hybrids with genetic similarity 0.44. These two groups had genetic similarity coefficient value of 0.34. It is suggested that both RAPD and ISSR could be utilized as a reliable tool for the fingerprinting and assessment of the genetic relationship of watermelon cultivars.

**Key words:** Watermelon, Fingerprinting, RAPD (random amplified polymorphic DNA), ISSR (inter simple sequence repeat).

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