

Title Characterization of six varieties of *Cucumis melo* L. based on morphological and physiological characters, including shelf-life of fruit

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Abstract

Seventy-two accessions covering six varieties of *Cucumis melo* were characterized by using 35 morphological characters with emphasis on shelf-life, and the relationships between shelf-life and related characters was investigated. Principal component analysis (PCA) revealed that development period of plant and fruit, size of seed and fruit, shelf-life, stem hair, flesh juiciness, netting, abscission of peduncle, rapid yellowing of epidermis at maturity, Brix value, and color of flesh and epidermis etc. were the principal characters to discriminate melon accessions examined in the present study. According to the scatter diagram, vars. *acidulus* and *makuwa*, both of which belong to the Oriental melon, are closely related because of their short growth duration, small seed, thin pericarp and poor shelf-life, while American cantaloupe (var. *reticulatus*) and European cantaloupe (var. *cantalupensis*) are rather closely related due to their climacteric fruit with orange flesh, slipped peduncle and rapid yellowing of epidermis at maturity, which is closely related with their shelf-life. PCA also indicated that var. *saccharinus* was closer to var. *inodorus* than to the other varieties, due to their requirement of long period for development, large size of seed and fruit, and half- or non-slipped peduncle. Shelf-life of melon fruit was significantly correlated with the following characters: quality of flesh, size of seed and fruit, abscission of peduncle, development periods of plant and fruit, rapid yellowing of epidermis at maturity, Brix value and color of flesh and epidermis. Accessions with good shelf-life were mostly found in vars. *saccharinus* and *inodorus*.