

Title Harvest maturity specification for mango fruit (*Mangifera indica* L. ‘Chok Anan’) in regard to long supply chains

Author Stefanie Kienzle, Pittaya Sruamsiri, Reinhold Carle, Suparat Sirisakulwat, Wolfram Spreer and Sybille Neidhart

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Abstract

Harvest maturity was specified for the selection of ‘Chok Anan’ mango fruit for long supply chains, which require maturity stages that ensure minimum risk of ripening during reefer transport, but which have acceptable potential for subsequent ripening. The impact of harvest maturity on performance after different periods of storage (14 °C, 50–60% RH, ethylene absorption) was explored. Twelve fruit lots picked within 24 days after 83–107 days after full bloom (DAFB) were distinguished according to physiological maturity at harvest, using principle component and cluster analysis. Titratable acids (TA), mesocarp yellowness (CIE), and dry matter (DM) contributed most to specification of harvest maturity among nine independent variables, but did not correlate with peel color despite perceivable peel color changes during maturation. Using partial least squares regression, maturity at harvest was related to post-storage quality stages that were likewise defined for different storage times. Storage was accompanied by slow ripening, but respective rates varied depending on maturity at harvest. Storage time and harvest maturity overall determined post-storage quality at 67%, equally controlling TA and total soluble solids of the stored fruit. Firmness and all-*trans*- β -carotene were more governed by the storage time, and post-storage mesocarp color chiefly by harvest maturity. Fruit harvested after 83 DAFB developed most slowly at 14 °C, but adequate ripening after optimized storage remained to be proven. Overall best performance in marine transport systems with optimized storage conditions was expected for fruit lots, the slow development of which at 14 °C until eating ripeness within 18 ± 1 days indicated appropriate ripening potential. When picked at defined levels of TA, CIE and DM as recorded after 89 DAFB, these fruit were clearly distinguished from less suitable maturity stages.