Effect of pre-harvest bagging materials on fruit quality of mandarin (*Citrus reticulata* Blanco) variety *ehime*

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Mandarin (*Citrus reticulata* Blanco) has a high consumer demand in Sri Lanka. A considerable amount of mandarins are imported to Sri Lanka annually due to insufficient production and poor quality of local production. Therefore, the field experiment was conducted at the Regional Agriculture Research and Development Center, Bandarawela, Sri Lanka 2021 to select the appropriate pre-harvest bagging material that enhances internal and external fruit quality aspects of mandarin variety *Ehime.* The experiment was done in Randomized Complete Block Design with five replicates. 400 gauge thickness of five types of bagging materials i.e. T1- Dual Colour Bag, T2- Black Polythene Bag, T3- White Polythene Bag, T4- Transparent Polythene Bag, and T5- Brown Paper Bag were used as treatments. T6- Uncovered was used as the control. Two and half months old uniformly grown mandarin fruits were selected for bagging. Physico-chemical characteristics of mandarin fruits were measured at the time of covering, 52 and 93 days after covering. The fresh weight of fruits, fruit length and breadth, peel thickness and weight, hardness, flesh percentage, total soluble solids (Brix°), pH, juice content, titratable acidity, colour of the peel, flesh and juice were measured as physico-chemical characteristics. Significant variations were observed among the treatments in relation to the physico-chemical quality attributes of the fruits. After 93 days of covering, fruits covered with Dual Colour Bag had significantly highest fresh weight, peel thickness (142.95g, 0.35cm) among the treatments. Fruit covered with Dual Colour Bag had significantly highest fruit weigh and Brix values (142.95g, 7.33° respectively) among the treatments. In contrast, black polythene bags increased the fruit length and breadth (5.89cm, 5.09cm respectively.). The fruits covered with a dual colour bag and brown paper bag showed the best performance for taste in organoleptic evaluation. However, the fruits in the dual colour bag developed external colour of the peel and also equal size fruits were observed. Fruit covered with Dual Colour Bag had significantly highest overall peel appearance among the bagging materials in the consumer acceptability test. The fruits covered with Dual Colour Bag were recorded the highest mean for overall acceptability in consumer preference test. Therefore, it can be concluded that highest fruit quality was observed in dual colour bag.

Keywords: mandarin, physico-chemical characteristics, organoleptic evaluation