Development of postharvest handling model for mangosteen fruit (*Garcinia mangostana* L.) along the export supply chain

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Abstract

The research aimed to obtain the best scenario of postharvest handling that could increase added value along the export supply chain. As a part of ongoing research, this paper aimed to identify the postharvest handling and losses that occur along the existing export supply chain in the study site, to develop a model and scenario of postharvest handling system that could potentially increase added value. The existing export supply chain consists of four actors i.e., farmers, small middlemen, medium middlemen and exporter. The present situation shows that mangosteen suffers high mechanical damage (about 9.92-24.8%) caused by current postharvest handling technique. Improvement in postharvest handling could reduce losses up to 9.02-14.88%. The developed model consisted of four sub-models based on critical handling steps i.e., harvesting, 1st packaging (conducted by middlemen), storage and 2nd packaging (conducted by exporter). In the harvesting sub-model, export volume was defined as a function of utilized harvesting tools, i.e., farmer stick (stick with hook), stick with serrated knife, stick with cut knife. While in the packaging sub-model, the export volume was expressed as a function of the type and layout of packaging such as hard plastic crate without partition, BE flute, BC flute cartoon with net foam, C flute cartoon with inner packaging. Finally, in the storage sub-model, the export volume was defined as a function of various temperature i.e., 28, 20, 13°C. In order to obtain the best scenario, eleven scenarios were developed which characterize handling technique alternatives comprising of high, moderate and low level of losses.