

Technical and Economic Evaluation of Selected Technologies in Mango Production: A Case in IGaCoS, Philippines

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Abstract

The Philippine mango industry contributed Php 35.520 billion in gross value added in 2020 and remained as the top three most exported crop from the country. However, the mango industry is currently facing enormous challenges specially in the aspect of production and postharvest. In this study, we evaluated the technical and economic aspects of three technologies introduced in the Island Garden City of Samal, namely: preharvest bagging using Taiwan paper bag (TPB), harvesting at proper maturity, and use of hot water treatment (HWT). A field trial was conducted using 53 randomly selected 'Carabao' mango trees in a one-hectare portion of the Gabonada Farm located in Brgy. Aumbay, IGaCoS, Davao del Norte. The freshly harvested mango fruits were transported and stored in ambient room conditions at the Postharvest Biology Laboratory in UP Mindanao, Davao City. For 12 d, the fruits are evaluated every 4 d for physico-chemical quality (percentage weight loss), total soluble solids (TSS), peel color, visual quality, shelf life, and the degree and onset of anthracnose and stem-end rot. The data were subjected to two way and three-way analyses of variance (ANOVA) for harvest and postharvest assessment, respectively. The use of TPB significantly improved the quality of mangoes by almost doubling (98%) the proportion of Class A (fresh export grade) and increasing Class B (Hong Kong and Local Manila markets) by 38%. We also proposed harvesting at 110-115 days after flower induction (DAFI), which led to 91-100% mature fruits compared to only 34% when harvested at 105 DAFI. Fruits have also higher total soluble solids (16.72 and 19.48% Brix, respectively) compared to only 15.34% Brix during the 8th day of evaluation period. We also recommend HWT for 10 minutes at 52-55 °C, which reduced the degree of anthracnose and stem-end rot thereby improving its marketability. The results of using these technologies were proven to improve the overall quality of mangoes in the Island Garden City of Samal. Furthermore, the results of this study may also be applicable in many mango-producing areas in Mindanao since their practices are generally similar.