

Costs of the Commonly used Packaging Methods in Tomato Supply Chain in Sri Lanka

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Packaging demands special attention in the fresh produce supply chain in Sri Lanka, particularly for delicate food crops like tomatoes. Traditionally, in Sri Lanka, smallholder farmers and collectors use polypropylene mesh sacks or gunny (hessian) bags and wooden boxes to transport fruits and vegetables. Despite the rigidity and durability of wooden boxes, those used in the fruit and vegetable trade often lack standard size and quality; they vary in weight, lack ventilation vents, and have abrasive edges. Consequently, these methods usually lead to damage and accelerated decay due to overfilling and poor ventilation. Despite regulations mandating the use of plastic crates or rigid containers for transporting, handling, and storing tomatoes, stakeholders are hesitant to adopt these practices due to cost and logistical concerns. This study assesses the costs associated with three common packaging methods within the tomato supply chain in Sri Lanka: polypropylene mesh sacks, wooden boxes, and plastic crates. Mesh sacks appear financially attractive for small-scale farmers and collectors, costing LKR 21.55 per kilogram of tomatoes delivered, compared to LKR 32.63 for wooden boxes and LKR 42.79-44.57 for plastic crates. However, while mesh sacks offer lower immediate costs and thus appear attractive they result in higher food losses, leading to greater financial costs totaling LKR 210 per kilogram compared to LKR 175 for wooden boxes and LKR 91 for plastic crates. Including environmental costs, the total costs are LKR 248.24 per kilogram for mesh sacks, LKR 223.79 for wooden boxes, and LKR 148.73 for plastic crates. Plastic crates, although the most expensive upfront at LKR 42.79-44.57 per kilogram, provide better protection and ventilation, which results in lower food losses. There the financial cost per kilogram consigned is LKR 91, with total costs amounting to LKR 148.73 per kilogram. Thus, Plastic crates reveal their viability as a better packaging option in terms of both financial and environmental benefits. It is imperative that stakeholders weigh factors such as upfront investment, ongoing depreciation, salvage value, and environmental impact to determine the most favorable approach for tomato transportation. The finding suggests that while wooden boxes can minimize losses, they must adhere to proper standards for optimal results. Stakeholders should consider both direct costs and the potential for minimizing losses and maximizing efficiency when selecting packaging options for tomato transportation.

Keywords: Environmental Cost, Financial Cost, Packaging, Plastic Crates, Tomato

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