Tropentag, September 16-18, 2026, hybrid conference

"Towards multi-functional agro-ecosystems
promoting climate resilient futures"

Willingness to pay for solar-dried horticultural products in urban Kenya: Evidence from Nairobi city county

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Abstract

Agriculture contributes about 33 % of Kenya's GDP and employs 70 % of the rural population, yet horticultural value chains continue to face substantial postharvest constraints. Cabbage (Brassica oleracea var. capitata) is a staple vegetable and major income source for smallholder farmers, while mango (*Mangifera indica*) is highly seasonal, with low-season scarcity driving premium retail prices. Cherry tomato (*Solanum lycopersicum* var. cerasiforme), a traditionally neglected but nutritious species, is increasingly becoming a profitable crop for smallholder farmers supplying urban markets. During glut seasons, poor handling, inadequate storage, and long farm-to-market distances contribute to estimated losses of 20–40 % for cabbage and 40–50 % for mango while utilisation of cherry tomato remains low. Solar drying offers a viable pathway to add value, extend shelf life, and support climate-smart horticultural value chains. However, evidence on consumer willingness to pay for solar-dried horticultural products in urban African markets remains limited.

To assess consumer-side market potential, this study estimates willingness to pay (WTP) for solar-dried cabbage, mango and cherry tomato. Data were collected from 442 fresh food shoppers sampled across urban markets in six suburbs of Nairobi City County representing different socioeconomic groups. A double-bounded contingent valuation questionnaire was used and responses were analysed using a Quadratic Interaction Tobit Model accounting for censoring and interaction effects.

Results show differentiated WTP patterns across products. Age has an inverted U-shaped association with WTP with the highest predicted WTP among respondents aged 42–44 years. Income is positively associated with WTP, although its marginal effect declines at higher income levels. A composite perception index integrating nutrition, affordability and shelf life positively predicts WTP across products. Awareness of solar-dried foods is negatively associated with WTP independently possibly reflecting quality concerns. However, its interaction with higher income or education is positive, indicating that awareness is more likely to increase WTP among educated or higher-income consumers. All associations are statistically significant at $p < 0.05$. Price-elasticity estimates indicate that a 10 % price increase reduces purchase probability by approximately 11–12 %, suggesting highly elastic demand. Linking urban demand with rural value addition could reduce seasonal gluts, improve farm-level market opportunities, and support climate-smart horticultural value chains.

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Keywords: Climate-smart value chains, Kenya, price elasticity, solar-dried horticultural products, urban consumers, value addition, willingness to pay