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Seasonal income and coefficient-of-variation-based farm-level variability assessment of highland tomato farming in Gowa, Indonesia

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abstrak

Tomato is a high-demand horticultural commodity that supports smallholder livelihoods in highland agri-food systems in Indonesia. This study aimed to estimate seasonal net income, describe farm-level production, and assess the variability of tomato net income within one production season in Balassuka Village, Tombolopao Subdistrict, Gowa Regency. Data were collected from 42 randomly selected farmers using structured surveys, interviews, and field observations. The study used a descriptive quantitative design combining farm income analysis, coefficient of variation (CV) analysis, and a scenario-based sensitivity check to assess the robustness of short-term variability estimates across farmers in one production season. The results showed an average gross revenue of USD 4,831.39 (Rp 75,846,905), an average total production cost of USD 399.97 (Rp 6,278,961), and an average seasonal net income of USD 4,431.43 (Rp 69,567,944) per farmer. Farmers produced an average of 5,824 kg of tomatoes, with an average selling price of USD 0.85/kg (Rp 13,374/kg). Using an interpretive threshold in which CV values of 0.50 or lower indicate manageable variability, the CV values were 0.24 for production and 0.06 for net income, indicating low observed inter-farmer variability during the study season. The economic feasibility of tomato farming was also indicated by an R/C ratio of 12.08, an ROI of 1,107.95%, a BEP production level of 469.49 kg, and a BEP price of USD 0.07/kg (Rp 1,078.12/kg). The main risks reported by farmers included climate variability, pest and disease incidence, low-quality or costly seed supply, price fluctuation, and limited access to credit. In conclusion, tomato production in Balassuka was profitable during the observed season and showed low short-term farm-level variability; however, targeted interventions are needed to strengthen resilience under future production and market uncertainty.