
Eco-GC-Bin: A Community-Based Composting Solution for Food Waste Management in Merlimau Permai

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Abstract

Food waste is an increasingly serious environmental issue in Malaysia, contributing approximately 30–35% of municipal solid waste disposed of in landfills. Anaerobic decomposition of food waste produces methane, a greenhouse gas that exacerbates global warming and climate change. Although 3R (Reduce, Reuse, Recycle) campaigns have been implemented, their effectiveness remains limited due to infrastructure constraints, unsuitable equipment, and low practicality at the household level. Composting is therefore considered a more effective alternative, as it can be carried out at household and community levels using simple, low-cost methods. This study aimed to design and develop the Eco GC Bin, a community-based food waste composting bin, and assess residents' awareness and acceptance of food waste management in Merlimau Permai. A quantitative research approach was employed using a structured questionnaire based on a five-point Likert scale, involving 97 respondents selected using the Krejcie and Morgan sampling method. The data were analysed using descriptive statistics particularly mean score analysis to determine awareness and acceptance levels. The data were analysed using SPSS version 26. Results showed low initial awareness (mean scores 1.06–2.53) but very high acceptance of the Eco GC Bin (overall mean = 4.39), including effectiveness (4.40), fertilizer production (4.48) design suitability (4.38) and product has potential to market with mean value very high (4.48). The Eco GC Bin demonstrates potential to reduce greenhouse gas emissions, enhance community awareness, and provide added value through compost production, aligning with SDGs 1,3 and 11.

Keyword : *Food waste management, community composting, compost bin*
