International Journal of Advanced Technology and Social Sciences (IJATSS)
Vol.3, No.2, 2025: 171-176

Management of Food Consumption Waste Households in Manokwari Regency

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A R T I C L E I N F O

Keywords: Consumption, Food Trends, Food Security, Waste Management, Local Food

Received : 5 December
Revised : 23 January
Accepted: 23 February

A B S T R A C T

This research aims to examine household food consumption trends, types of food consumption waste, and food consumption waste management for rice, sweet potatoes, and bananas in Manokwari Regency. Local food, as an important part of food security and environmental sustainability, faces challenges amid the shift in consumption patterns towards imported food. This study uses a quantitative descriptive method with in-depth interview techniques and observations in three districts in Manokwari Regency, involving 100 respondents. The research results show that the main food consumption in Manokwari Regency is rice, with a consumption of around 300 kg per month, followed by bananas and sweet potatoes. Household food waste is dominated by leftover rice in the rice commodity, banana peels in the banana commodity, and most respondents do not produce sweet potato waste. Food waste management is still low, with most waste being discarded without any treatment, despite the potential for utilizing organic waste as animal feed or compost. The results of the SWOT analysis identify opportunities to improve community-based waste management and maintain local food consumption patterns. This research suggests the need for better education and waste management strategies to support ecosystem sustainability and reduce negative environmental impacts

DOI: https://doi.org/10.59890/ijatss.v3i2.257
E-ISSN: 3026-2410
https://journal.multitechpublisher.com/index.php/ijatts

INTRODUCTION

Local food has great potential in creating a sustainable food system, especially amid the increasing threats of climate change and pressure on natural resources. According to the Food and Agriculture Organization (FAO), sustainable food systems must be able to support the nutritional needs of society without compromising the ability of future generations to meet their own needs (FAO, 2021). In Indonesia, local foods such as sweet potatoes, grains, and bananas offer concrete solutions to achieve food security while maintaining environmental balance. This becomes increasingly relevant as the consumption patterns of society tend to shift towards imported foods, which have a greater environmental impact due to the carbon footprint generated during transportation.

Local food plays an important role in supporting food security and environmental sustainability. However, amidst the changing global consumption patterns, the role of local foods such as sweet potatoes, grains, and bananas is often marginalized by the high dependence on imported foods. This condition poses a number of challenges, particularly related to environmental impact, resource management, and the sustainability of the local food system. Food waste at the household level that is not utilized is often considered ordinary trash that is simply thrown away. However, food waste has the potential to be recycled into useful products, such as compost or animal feed, which can support ecosystem sustainability.

Ineffective waste management can have serious negative impacts on the environment and public health. Waste that is not properly managed has the potential to pollute the air, water, and soil, thereby damaging ecosystems and threatening the lives of living beings. For example, organic waste left to decompose in open spaces can produce methane gas, one of the greenhouse gases that contribute to accelerating climate change. In addition, liquid waste from households and industries that is disposed of carelessly can contaminate water sources, reduce water quality, and pose health risks to humans due to contamination. On the other hand, the accumulation of waste in poorly managed landfills can produce a pungent odor and attract pests, which can potentially become disease carriers (Hahladakis, 2022). Thus, poor waste management is not only a local issue but also a global concern that requires serious attention to create a cleaner and healthier environment. Thus, this research aims to address three main issues, namely: (1) studying household food consumption trends of rice, sweet potatoes, and bananas in Manokwari Regency, (2) analyzing household food consumption waste in Manokwari Regency, and (3) analyzing the management of household food consumption waste in Manokwari Regency.

LITERATURE REVIEW

Local Food

Local food is defined as food that is produced, processed, and distributed within a specific geographical area (FAO). Similarly, in the context of Indonesia, the concept of local food is closely related to traditional food systems and local cultural heritage (Coelho et al., 2017). This definition emphasizes the proximity between food production and consumption, which can foster a more direct and healthy relationship between producers and consumers (Christensen & Phillips, 2016). Additionally, local food is often associated with the concept of "local knowledge" or "traditional ecological knowledge," which encompasses the accumulation of wisdom and practices related to food production and consumption that have been passed down within specific communities (Christensen & Phillips, 2016).

Local food systems often feature a variety of food items, such as tubers (e.g., sweet potatoes to the preservation of local biodiversity and traditional agricultural practices (Martinez, 2016), cassava), grains (e.g., traditional rice varieties), and bananas (Coelho et al., 2017). These local food plants usually adapt well to the local climate and soil conditions, and have been cultivated by local communities for several generations (Coelho et al., 2017). The production and consumption of local food can also contribute to the importance of local food for the resilience and sustainability of communities.

Local Food and Waste Management

Local food plays an important role in environmental sustainability, especially because food consumption patterns affect the type and volume of waste produced. According to Rahayu et al. (2020), the consumption of local food based on natural ingredients tends to produce organic waste that is easier to decompose compared to processed or imported food that often uses plastic packaging. This organic waste, such as food scraps and fruit peels, can be reused through the composting process, which in turn supports environmentally friendly waste management (Sukmana, 2019).

However, the shift in consumption patterns from local food to modern food also increases the amount of inorganic waste, such as plastic and other packaging, which is difficult to decompose in the environment (Pratama, 2018). In their research, Handayani and Sari (2021) showed that the lower the consumption of local food, the higher the proportion of inorganic waste in household garbage. This shows the importance of maintaining local food consumption patterns to reduce negative environmental impacts. In addition, community-based waste management can be an effective solution for managing food consumption waste. In this context, Kurniawan et al. (2019) explain that a community-based approach can enhance public awareness about the importance of waste management, particularly in utilizing organic waste as compost fertilizer or alternative energy. Community involvement also helps create a waste management system that is sustainable and locally relevant.

METHODOLOGY

The research location is in the West Manokwari District, East Manokwari District, and South Manokwari District of Manokwari Regency, with 3 sample villages taken from each district. The research was designed using a quantitative descriptive method with in-depth interview and observation techniques. The subjects of the research used are families with a sample size of 100 respondents. The survey method uses a questionnaire as a data collection tool. The survey was conducted on families of respondents who consume rice, bananas, and cassava, where the sampling method was carried out using simple random sampling.

The data collection technique was carried out through recording and documentation. The research variables include consumption trends, food consumption waste, and food consumption waste management. The measurement of variables uses a ratio scale by measuring the food consumption waste produced. The data processing method used is descriptive statistics. Descriptive statistics use simple tabulation to explain the indicators that make up each variable of food consumption trends, food waste, and food management. Meanwhile, the management of food consumption waste is analyzed using SWOT analysis.

RESULTS AND DISCUSSION

Consumption Trends Consumption Trends and Production Trends of Rice, Bananas, and Sweet Potatoes

Based on the last five years' trend, rice production in Manokwari has been relatively stable with slight fluctuations. The peak occurred in 2022 with 15,545.55 tons, then decreased to 14,000.4 tons in 2023 and 13,000.54 tons in 2024. On the other hand, banana production saw a significant surge in 2021 to 1,189.5 tons from 98 tons the previous year, possibly due to high market demand or certain policies. However, banana production drastically decreased to 227.4 tons in 2023 and 176.1 tons in 2024, indicating the need for better management to maintain consistency. Meanwhile, sweet potatoes play an important role in local food diversification, but data limitations make this analysis only provide an initial overview. The available data does not yet reflect the actual conditions, but it is still useful for assessing the potential and challenges of sweet potato production in Manokwari.

Food Consumption

Rice consumption in Manokwari reaches almost 300 kg per month, making it the main commodity compared to bananas (100 kg) and sweet potatoes (50 kg). This consumption pattern is influenced by the availability and the community's preference for rice as a staple food. Food diversification needs to be carried out to reduce dependence on rice and improve food security.

Types of Waste

Food waste is categorized based on its type to facilitate analysis. Rice waste is dominated by leftover rice (98%), indicating potential reduction through better portion management or utilization as animal feed. Banana waste mostly consists of peels (56%), which can be processed into compost or animal feed. Meanwhile, 57% of respondents do not produce sweet potato waste, while the rest discard the skin (27%) or damaged parts (8%). Sweet potato waste also has

the potential to be further utilized in organic processing.

Waste Volume

The calculation of waste volume shows that rice is the main source of household food consumption waste, with a total of 552 kg (67.32%), mainly from leftover rice. Bananas contribute 268 kg (32.68%), dominated by banana peels, while sweet potatoes only account for 0.10 kg (0.01%) due to their high utilization rate. Waste management education, especially for rice and bananas, is necessary so that waste can be utilized as animal feed or compost, while the practice of maximizing sweet potato utilization needs to be maintained.

Waste Management

The analysis results show that the type of household food consumption waste for rice, bananas, and sweet potatoes has different patterns. In rice, most of the waste produced consists of leftover rice, which accounts for 98% of the total waste, while only 2% of respondents do not produce any rice waste at all. Banana waste is dominated by banana peels at 56%, followed by a combination of peels and other parts at 22%, and 14% of respondents do not produce banana waste. In sweet potatoes, the majority of respondents, 57%, do not produce waste, while waste in the form of peels or ends of the tubers reaches 27%, and other waste such as damaged parts or combinations each account for 8%. The waste management methods also show variation for each commodity. Rice waste is most commonly utilized as livestock feed by 55% of respondents, while 31% simply dispose of the waste. A small portion utilizes rice waste for composting at 8%, and the rest use other methods. For bananas, most of the waste is simply discarded at 54%, while 18% is utilized as animal feed, and 11% for compost. For sweet potatoes, the majority of respondents who produced waste chose to utilize it as animal feed (29%), while 6% used it for compost.

The average frequency of waste disposal also varies (appendix). Rice waste has the highest average disposal frequency, which is 25.88 times per month, meaning that almost every day there is rice waste produced by households, followed by bananas at 12.72 times per month, and sweet potatoes at 3.84 times per month.

CONCLUSION AND RECOMMENDATIONS

The trend of household food consumption in Manokwari Regency shows a dominance of rice consumption compared to sweet potatoes and bananas. Rice has become the staple food with the highest consumption level in terms of both frequency and volume. Sweet potatoes are utilized efficiently with minimal waste, while bananas are consumed with moderate frequency but in significant volume as supplementary food.

The largest waste comes from rice consumption, specifically leftover rice (98% of rice waste), which indicates excessive serving or improper portion control. Banana waste is dominated by banana peels (56%), most of which are discarded without further processing. Sweet potato waste is very small, with 57% of households not producing waste from this commodity. The highest frequency of waste disposal occurs with rice (25.88 times per month), followed by bananas (12.72 times), and sweet potatoes (3.84 times).

The most commonly used waste management method is the utilization of rice and sweet potato waste as livestock feed, with 55% of respondents utilizing rice waste. Banana waste is mostly discarded by the majority of respondents (54%), indicating low management for this commodity. Community-based management is still minimal, so most waste is managed individually without an organized system. The potential for utilizing organic waste such as leftover rice and banana peels to create value-added products has not yet been maximized.

FURTHER STUDY

This research still has limitations, so further research is needed related to the topic of Management of Food Consumption Waste Households in Manokwari Regency in order to perfect this research and increase insight for readers.

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