

Grain quality, pricing, and millers' preferences for improved agricultural development in Tanzania

Arelene Julia Malabayabas¹, Jhoanne Ynion¹, Melanie Connor¹ and Joseph Kangile²
International Rice Research Institute¹, Tanzania Agricultural Research Institute²

Introduction

- **Rice milling is key to agricultural development**, linking producers to consumers and adding value
- There is a significant disconnect between the quality that farmers produce and the specific requirements of millers and consumers (FAO, 2015)
 - resulting to price volatility and lower profitability for all stakeholders in the rice value chain (Nkwabi et al, 2021)
- Goal: To unlock the potential of Tanzania's rice sector by gaining a deeper understanding of the relationship between grain quality, pricing, and millers' preferences, thereby fostering efficient linkages between farmers, millers, breeders, and consumers
 - To assess the current status of the rice milling sector to understand its operational landscape
 - To determine the specific grain quality traits (e.g., size, purity, moisture) demanded by millers. This information is also crucial for guiding breeding programs and seed systems to develop and disseminate market-preferred varieties.
 - To determine the primary rice varieties currently sourced and milled in the Morogoro province to align production with market demand.

Methods

- A cross-sectional survey of rice processors was conducted across the districts of Morogoro province in Tanzania
- A total of 214 rice millers were interviewed to collect information on rice milling operations, capacity, millers' preferences, and sourcing practices (Figure 1).
- The millers were randomly selected from a list secured per district.
- Results of the survey were analyzed using descriptive analysis.

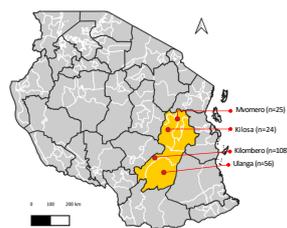


Figure 1. Sample size by district in Morogoro province, Tanzania

Data Results and Findings

Mills: (Figure 2)

- Two-step mills are the predominant type: Kilosa (79%), Kilombero (58%), Ulanga (46%), and Mvomero (48%).
- One-step mills are notably less common in Kilosa (8%) and Mvomero (4%). However, they make up a more significant portion in Kilombero (30%) and Ulanga (36%).
- Multistage mills show a varied distribution: with smaller fraction in Kilombero (13%), Kilosa (13%), and Ulanga (18%), but are strikingly co-dominant with two-step mills in Mvomero (48%).

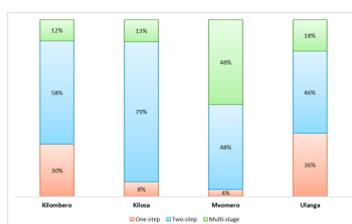


Figure 2. Milling process by district, Morogoro, Tanzania

Rice sourcing:

- **Grain quality and price** are the top priorities for millers across all districts (Figure 3)
- **Origin** is considered a key factor in the Mvomero and Kilombero districts
- **Timely Delivery** is crucial in the Kilosa and Mvomero districts
- **Moisture Content** is the most important quality parameter for millers familiar with the rice varieties they process across all districts

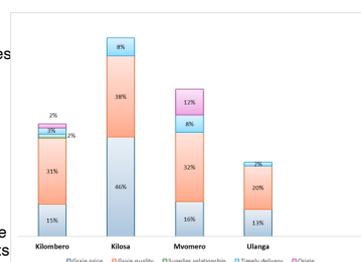


Figure 3. Key rice sourcing criteria by district in Morogoro region, Tanzania

Rice sourcing - Continued

- **TXD 306 (Saro 5)** and **Mbawambili** were the most common varieties sourced/milled across the districts of Morogoro region (Figure 4).
- TXD 306 is semi-aromatic, high-yielding, and adaptable to lowlands, while **Mbawambili** is aromatic and appreciated for its quality and adaptability.
- Among the milled rice varieties that millers were unable to identify, long-grain fragrant aromatic types were the most predominant across all four districts.

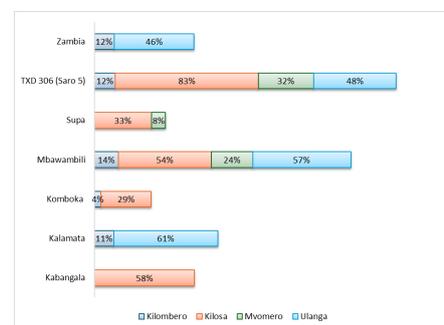


Fig 4. Rice varieties sourced/milled by region, Kenya, 2024.

Conclusion

- Two-step milling remains dominant, reflecting a transitional phase in the rice sector.
- Presence of multistage mills highlights potential for further modernization.
- Millers prioritize grain quality and price when sourcing.
- Moisture content is a universally critical quality parameter.
- Demand reflects dual market preferences: modern yield (TXD 306) and traditional quality (Mbawambili).
- There is a strong market preference for aromatic varieties, such as TXD 306 and Mbawambili
- Bridging the profitability gap in Tanzania's rice value chain depends on aligning farm-level production practices with these clear, quality-based demands from millers and the end market.

Key Insights

- **Technology Upgrade Needed:** Mapping current milling technology enables targeted interventions to shift from basic to efficient multistage systems, improving rice quality and boosting incomes.
- **Moisture Content Importance:** Low moisture content is the top, non-negotiable quality demand from millers, offering the clearest path for farmers to increase their income
- **Market Linkages Matter:** Millers' sourcing preferences signal farmers on which varieties to grow and standards to meet, particularly moisture content, driving better alignment and profitability.
- **Multi-trait Demand Breeding Approach:** The demand for both modern, high-yield (TXD 306) and traditional high-quality (Mwambili) aromatic varieties require multi-trait breeding approach
- **Localized Priorities:** Sourcing needs like origin and delivery vary by district, demanding tailored supply chain solutions rather than a single regional strategy.

References

- Wilson, Richard & Lewis, Ian. (2021). The Rice Value Chain In Tanzania A report from the Southern Highlands Food Systems Programme. 10.13140/RG.2.2.19592.65289.
- Nkwabi, James & Sharma, Ravinder & Dev, Kapil & Sharma, Subhash. (2021). Challenges for Small Scale Rice Farmers-A Case Study from Tanzania. DOI:10.13140/RG.2.2.19592.65289