

REVIEWER'S REPORT

Manuscript No.: IJAR-59323

Title: Contraintes et potentialités de valorisation technologique et alimentaire de la banane plantain en Guinée forestière

Recommendation:

Accept after minor revision.....

Rating	Excel.	Good	Fair	Poor
Originality		✓		
Techn. Quality			✓	
Clarity			✓	
Significance	✓			

Reviewer Name: Dr. Abdul Haseeb Mir

Detailed Reviewer's Report

This study provides a comprehensive socio-economic and technical diagnostic of the plantain (*Musa paradisiaca*) value chain in Forest Guinea, specifically within 10 sub-prefectures of the N'Zérékoré prefecture. Based on field surveys of 300 key stakeholders (50 producers, 100 processors, and 150 consumers), the article highlights a significant mismatch: while plantain is a vital crop with immense potential for diversification, its value chain in Guinea remains heavily informal, artisanal, and underdeveloped at the industrial level.

Key Findings

1. Socio-Demographic & Gender Division of Labor

- **Gender Disparity Across Value Chain Stages:** Production is predominantly male-dominated (70% men) due to labor requirements and land inheritance practices. Conversely, processing and local commercialization are almost exclusively managed by women (96%). Consumption is evenly split across genders (53.33% female, 46.66% male).
- **Youth Involvement:** The sector is driven by a relatively young, active demographic: 48% of producers, 46% of processors, and 34% of consumers are between 18 and 40 years old.
- **Ethnicity & Education:** The Guerzé/Kpélé ethnic group dominates the market (representing 38% of producers, 43% of processors, and 44.66% of consumers). Educational levels among actors are generally low, with 56% of producers and 52% of processors having received no formal schooling.

2. Production Dynamics and Supply Constraints

- **Primary Motivations:** The vast majority of production is aimed at local sales (58%), followed by household self-consumption (22%). Only 6% of production is targeted for export, due to a severe lack of technical support structures, commercial networks, and export contracts.
- **Agronomic & Transport Hurdles:** Plantain is cultivated in traditional polyculture systems (often intercropped with cassava, maize, cocoa, or rice) with low input usage. The lack of suitable packaging and improper transit (e.g., transport in open trucks or passenger vehicles) leads to high post-harvest losses, bruising, accelerated ripening, and microbial decay.

3. Processing Practices & Marketing Outlets

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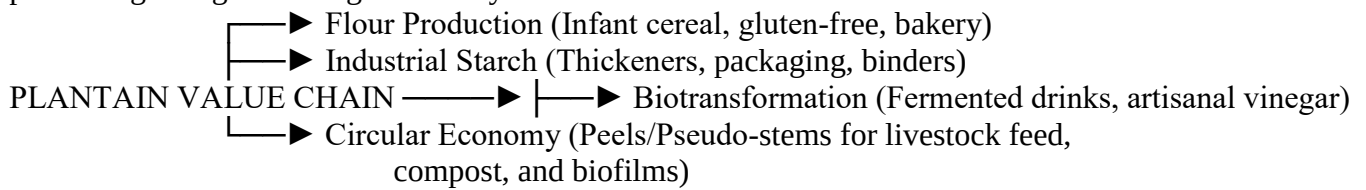
- **Artisanal Product Range:** Current local processing is limited to basic culinary preparations:
 - **Roasted plantain (*Banane braisée*):** 39% of production, 51% consumption
 - **Fried plantain (*Aloko*):** 32% of production, 62% consumption
 - **Plantain chips:** 25% of production, 36% consumption
- **Sales Locations:** A majority of processed foods are sold informally on roadsides (47%) or local open-air markets (28%), while street vendors account for 18%. Specialized shops, structured stands, or semi-industrial units are virtually non-existent (3–4%).

4. Knowledge Gap & Industrialization Potential

- **Awareness Deficit:** A substantial proportion of respondents (76.66% to 85.33%) are unaware of industrial plantain derivatives (such as bio-energy, industrial starches, or bioplastics).
- **Openness to Valorization:** Despite low initial awareness, once informed, 34.66% to 72.33% of respondents expressed strong confidence in the feasibility of industrializing plantain processing in their region.

Critical Pathways for Industrial & Food Valorization

The paper identifies key technical avenues to transition the plantain sector from subsistence/artisanal processing to high-value agro-industry:



1. **Flour & Bakery Alternatives:** Washing, blanching, drying, and milling green plantains into flour extends shelf life from days to months, offering a strategic alternative to imported wheat flour and a base for gluten-free foods.
2. **Starch Extraction:** Plantain starch possesses functional properties (swelling power, gelling) highly suited for food processing (instant soups, binding agents).
3. **Fermentation & Biotransformation:** Overripe fruits, which are otherwise wasted, can be transformed into vinegars, bio-ethanol, or fermented beverages.
4. **By-Product Utilization (Circular Economy):** Plantain peels—accounting for roughly 38% of total fruit weight—and pseudo-stem fibers can be processed into animal feed, organic fertilizers, or biodegradable packaging films.

Strengths, Weaknesses, and Recommendations

Strengths of the Study

- Provides essential field-level empirical data from an under-documented region (Forest Guinea).
- Employs triangulation and a multi-stakeholder sample (\$N=300\$) covering producers, processors, and consumers.

Strategic Recommendations

- **Policy & Infrastructure:** Establish structured collection centers and small-scale semi-industrial processing plants near production hubs in N'Zérékoré.
- **Capacity Building:** Train women's processing cooperatives in improved hygiene, standardized frying/drying techniques, and modern packaging.
- **Research & Development:** Invest in low-cost drying technologies and local starch/flour extraction setups to minimize post-harvest losses and substitute imported goods.