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From an underutilised legume → to a multifunctional climate-resilient food-system asset

CONFERENCE THEME:

Towards Multi-functional Agro-ecosystems Promoting Climate Resilient Futures



Harnessing Underutilised Legumes for Climate-Resilient, Nutrition-Sensitive Agroecosystems: The Case of African Yambean



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FROM AN UNDERUTILISED LEGUME → TO A MULTIFUNCTIONAL CLIMATE-RESILIENT FOOD-SYSTEM ASSET

Why African yambean matters

African yambean is not merely an underutilised food legume; it is a potential multifunctional crop linking soil health, dietary quality, climate resilience, livelihoods and circularity.

THE PROBLEM: Why African yambean?

- UNDERUTILISED**
Limited research investment and farmer awareness.
- RESILIENT**
Adaptable to marginal soils and climatic stress.
- NUTRITIOUS**
Protein-rich seed with substantial starch and dietary fibre.
- DUAL PURPOSE**
Produces both seed and tuber.
- MULTIFUNCTIONAL**
Potential contributions to food, soil, livelihoods and circularity.

THE PARADOX

A crop with multiple potential benefits remains underexploited.

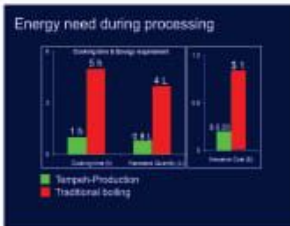
PROCESSING INNOVATION PATHWAY

- 1 Raw african yambean Seed
- 2 Dehulling / soaking Preparation
- 3 Fermentation Transformation
- 4 Reduced antinutritional constraints Quality
- 5 Improved nutritional quality Nutrition
- 6 Lower processing energy Efficiency
- 7 Greater food-use potential Outcome

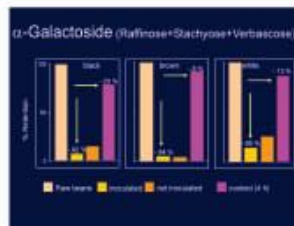
MULTIFUNCTIONAL SYSTEM



EVIDENCE FROM PROCESSING



Energy need during processing



α-Galactoside changes.

Fermentation substantially reduces processing energy
Fermentation reduces nutritional constraints

Evidence > Potential food-use and climate/environmental benefits

EVIDENCE IMPLICATION

- **AYB is protein-rich**
Potential contribution to dietary quality
- **Fermentation reduces nutritional constraints**
Greater food-use potential
- **Fermentation substantially reduces processing energy**
Potential climate/environmental benefit
- **Crop can contribute to soil fertility**
Potential agroecological benefit
- **Intercropping supports multifunctionality**
Potential biodiversity benefit
- **Small-scale processing is feasible**
Potential livelihood opportunity
- **Residues can enter livestock systems**
Circular bioeconomy opportunity

FOOD-USE POTENTIAL



African yambean in food systems
The document highlights improved nutritional quality and greater food-use potential following processing and fermentation.

Links to:

Dietary diversity
Protein contribution
Local food innovation
Small-scale processing

CALL TO ACTION

From underutilised to mainstream: what needs to happen?

- 1 **Research**
Integrated Agronomy-nutrition-processing
- 2 **Varieties**
Participatory varietal development
- 3 **Processing**
Community-driven low-energy processing innovations
- 4 **Markets**
Seed systems and value-chain development
- 5 **Policy**
Incentives for underutilised crops



African yambean can help transform an underutilised crop into a multifunctional climate-resilient food-system asset.

From seed > soil > food > livelihoods > circularity