



The potential benefits of the formal yam seed system from traditional production and delivery pathways in Nigeria

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Introduction

Yam (*Dioscorea* spp.) is a major staple food in West Africa and a source of income for millions (Nweke, 2016). Despite its significance, the traditional yam sector faces many challenges, including unreliable seed quality and supply, declining productivity, and high production costs. Recently, new technologies for seed production have been developed (Maroya et al., 2022) and the formal yam seed system has commenced in Nigeria. Although an interface between the formal and informal systems is necessary for a sustainable seed system, the pathways of the formal system are yet to be well established. This study investigated yam seed production systems and delivery pathways for farmer-preferred yam landraces in the informal yam seed system in Nigeria to identify available opportunities on which the emerging formal seed system can thrive.

Materials and methods

Literature focusing on yam seed systems in Nigeria and other major yam-producing regions was sourced and reviewed. A survey was then conducted in two Local Government Areas (LGAs) in each of Edo (Esan South-East and Esan North-East LGAs) and Oyo States (Ibadan North and Iseyin LGAs). The LGAs are prominent in yam production and related activities with a good representation of the traditional yam seed value chains. Respondents were selected based on their involvement in the yam value chain, and included key players in the production, marketing, and use of seed yams. Two hundred structured questionnaires were administered (100/state and 50/LGA) using Key Informant Interviews (KII). The Open Data Kit (ODK) was used for data collection and processing. Thematic analysis was done for the qualitative data to identify key themes and patterns, while the quantitative data were subjected to descriptive statistical analysis.

Results and discussion

Major opportunities in the informal yam seed system that the formal seed system can benefit from were identified and include the following.

- 1. Farmers’ acknowledgement of the influence of quality seed on yields:** All farmers interviewed recognised the inherent value of quality seeds. In the formal seed system, maintaining quality through a certification process is a primary objective and can sustainably inject quality seed into the sector.
- 2. The diversity of landraces:** Despite the diversity of landraces, farmers focus on the production of a few based on special tuber characteristics and consumer preferences, which differ by location. In Edo State, the preferred landraces are Oga (Alumaco), Oboko, Obioturugu, Epke, and water yam due to yields and cooking quality, while in Oyo State the preference is for yields and early maturity, and includes Laseri (Lasinri), Darimoko, and Isukisu. In the formal seed system, improved varieties with specific qualities can be introduced to different market segments.
- 3. Seed yam commercialisation:** Most farmers patronize seed yam markets, especially to purchase seeds when starting yam production (Table 1). After the initial purchase, more farmers in Oyo State recycle their seeds than those in Edo State. In Edo State, there is already purposeful seed production and more commercialisation, with more farmers/traders attesting to a higher profitability of seed compared to the ware yams business (Fig.1). Consequently, more of the formal seed system type of seed, minitubers of 10 – 50 g can be delivered into informal markets for commercialisation using the available transportation system than the bulky traditional seeds of 200 – 500 g (Table 1, Fig. 2).
- 4. Knowledge of seed yam production methods:** Edo State farmers are already using the minisett technique to produce seed yams for the market. The capacity of producers can be enhanced by training on the novel efficient methods of production being promoted in the formal seed system.

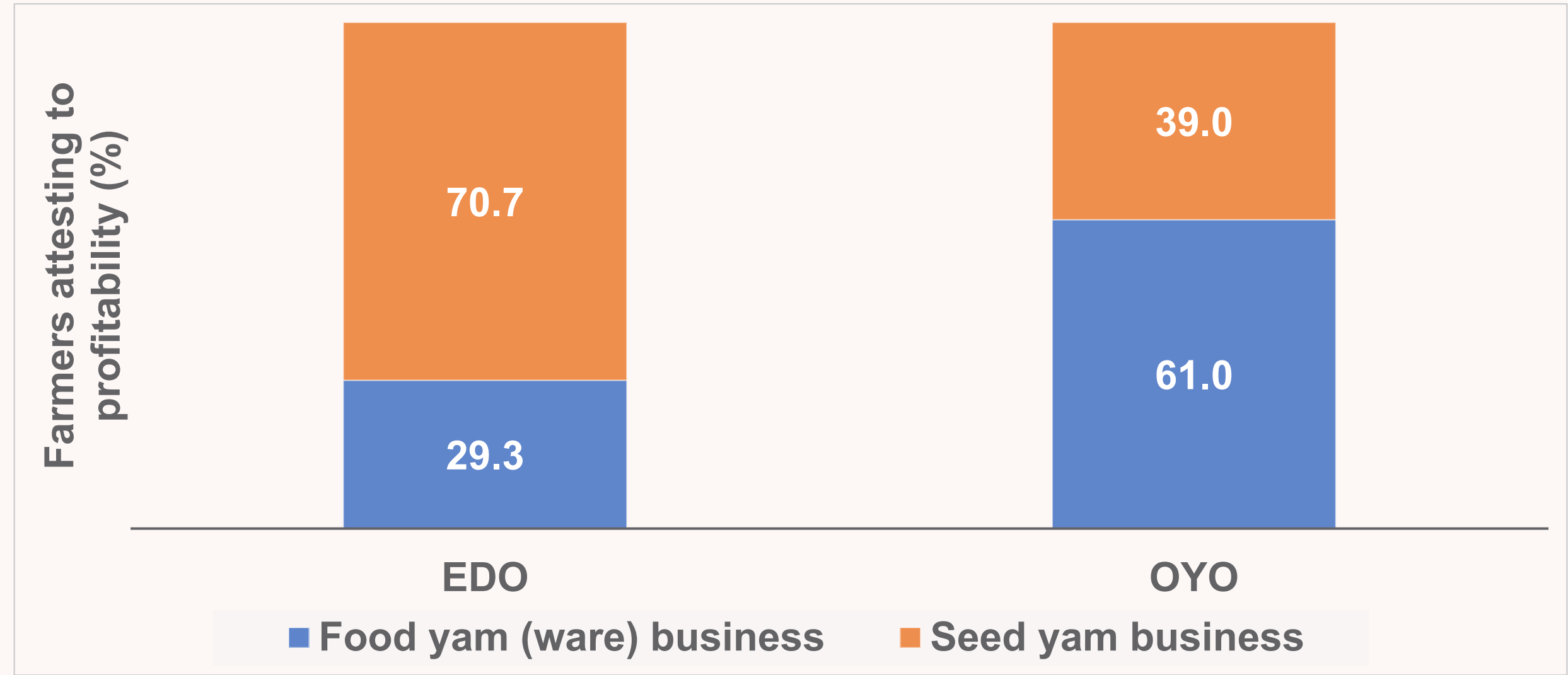


Figure 1: Farmers’ perspective on the profitability of food versus seed yam business in Edo and Oyo State, Nigeria

Table 1: Farmers’ response to survey parameters highlighting the potential benefits of the formal yam seed system and delivery pathways in two Nigerian States, 2024.

Description of parameter	Measured parameters	Edo (%)	Oyo (%)
Seed source of first yam farm	Bought from the market	70.6	67.5
	Inheritance (father)	20.2%	19.2
	Purchased from the farm/home of another farmer	3.4	7.5
	Offered as a gift from another farmer	5.9	5.8
	Produce the seed yams yourself	35.9	58.3
Source of current seed lots	Purchase the seed yams from the market	47.2	30.0
	Purchase the seed yams from the farm/home of another farmer	12.0	6.7
	Receive the seed yams as a gift	4.9	5.0
Seed production method	Sorted from ware yam harvest	43.3	64.1
	Double harvest from ware yam crop	9.6	30.4
	Purposeful seed production	47.1	5.4
Seed commercialisation by farmer	Yes	68.7	34.0
	No	31.3	66.0
Proportion of seed sales at different outlets	At home	17.9	6.3
	Local market (within 5 km)	64.2	8.3
	Distant market (> 5 km away)	14.2	70.8
	On the farm	3.8	14.6
Transportation of seed yams	Wheelbarrow	10.0	26.2
	Motorcycle	41.5	38.5
	Tricycle	16.2	10.7
	Vehicles	9.1	2.5
	Head pan	6.6	15.6
	Bicycles	16.6%	6.6

5. Resilience of the informal seed systems: Despite the challenges faced in traditional informal yam seed cultivation and delivery systems, they have to some extent sustained the needs of yam production over decades, indicating the resilience of the systems. The formal system can benefit from using the existing production and delivery structures in the value chain to introduce new technologies for improved efficiencies.

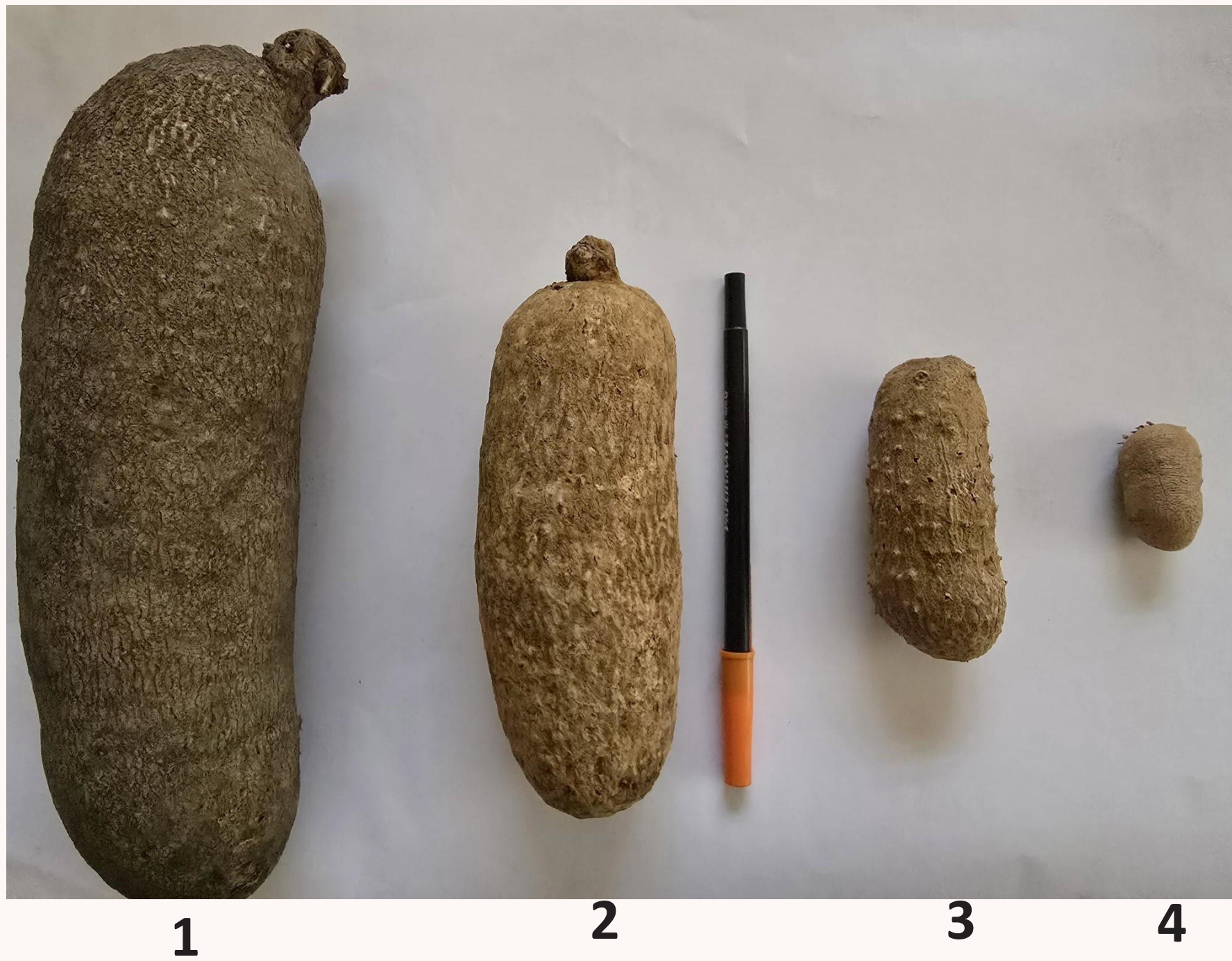


Figure 2: Seed yam in the traditional seed system, 200 – 500 g (1, 2) and formal system, 10 – 50 g (3,4)

Conclusion and recommendations

The informal seed sector has supported the production of yam, a valuable traditional crop in Nigeria and West Africa for centuries. Several challenges, particularly seed quality and supply, have hindered the increase in the productivity of the crop. However, factors in the informal yam seed sector, such as the recognition of the importance of quality seed, involvement in the commercialisation, although the seed is mainly produced on small scale using methods with low multiplication rates, and the resilience of the systems are opportunities that the formal system can use to its benefit. The introduction of innovative methods where challenges are identified will boost the development of a sustainable formal yam seed system.

References

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