

Farmer-Driven Perception for Sustainable Potato Production in Nigeria: An Insight from the Mambilla Plateau

Ifeoluwa Simeon Odesina^{1*}, Obaiya Grace Utobolo², Covenant Ije Egbaji¹, Sylvia Makvereng Satdom¹, Andrea Zemmi Dama³, Diana Unwana Affiah¹

¹ Universidade Estadual do Norte Fluminense Darcy Ribeiro, Av. Alberto Lamego, 2000 - Parque Califórnia, Campos dos Goytacazes, Rio de Janeiro, Brazil.

² Cytogenetics and Plant Breeding Unit, Department of Plant Science and Biotechnology, University of Jos, PMB 2084, Jos, Plateau State, Nigeria

³ Department of Crop Production and Horticulture, Modibbo Adama University, Yola, Adamawa State, Nigeria

INTRODUCTION & AIM

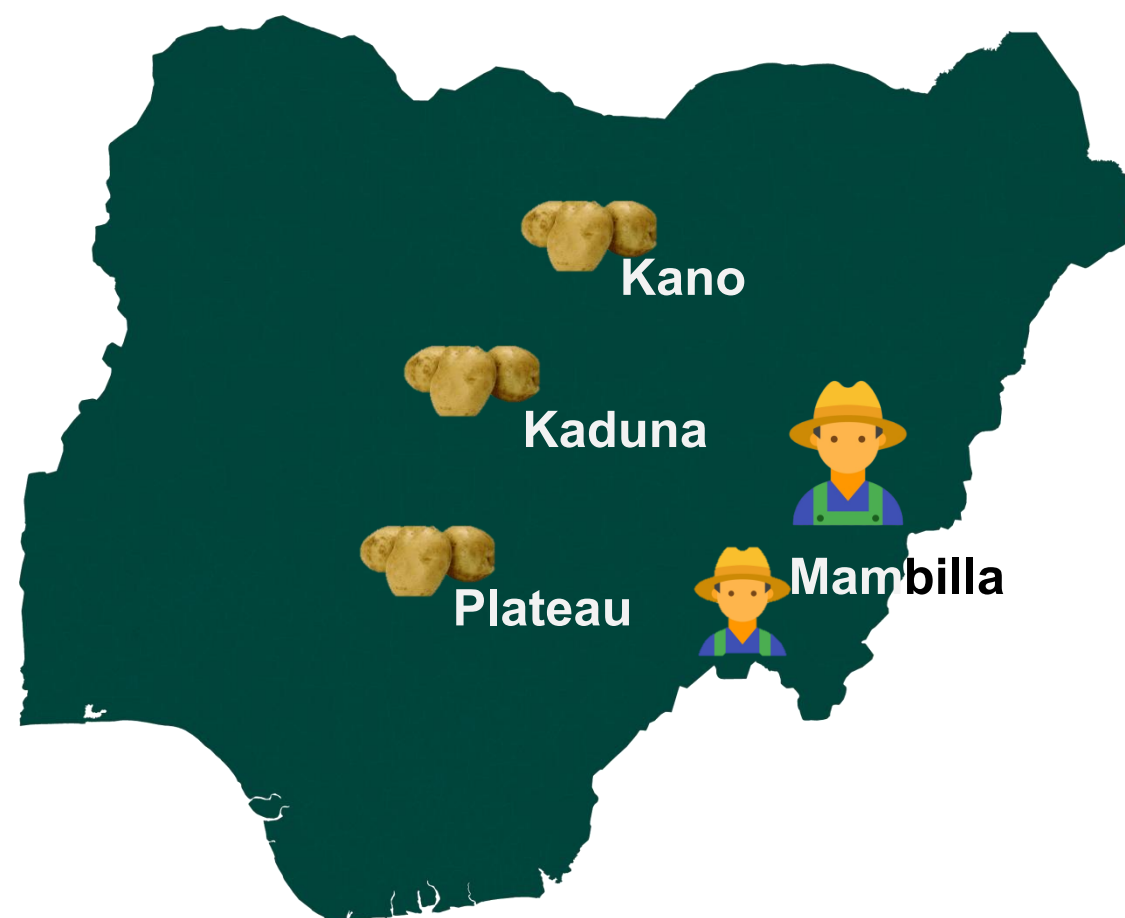
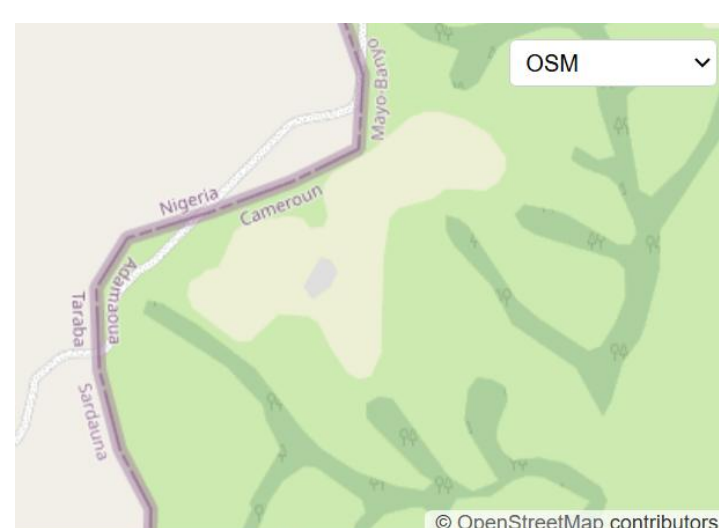


Fig. 1: Map of Nigeria showing Potato Production hub

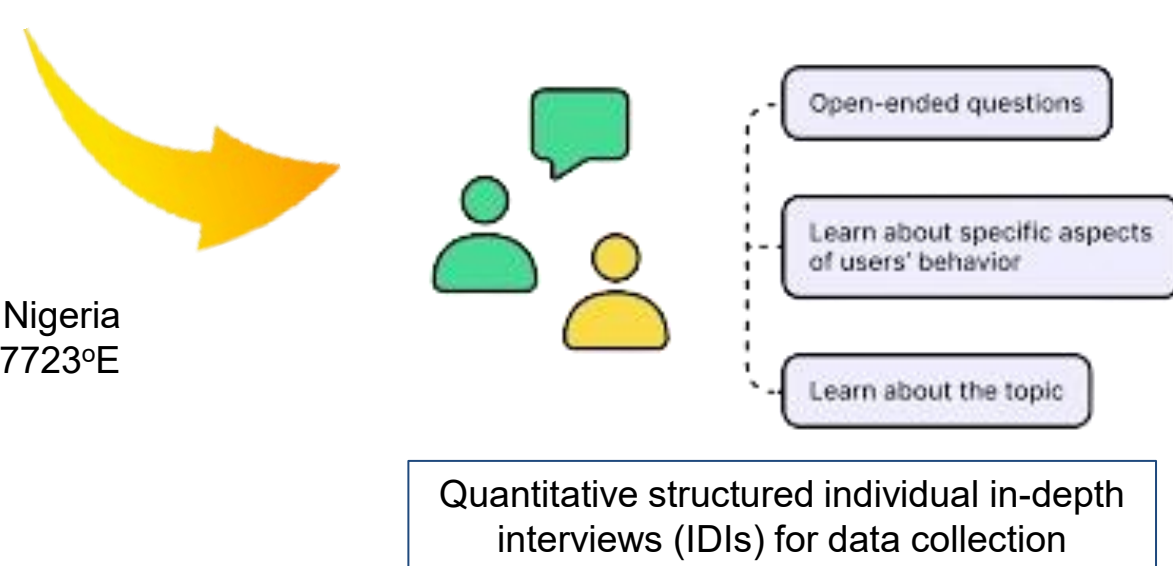
Reports by FAOSTAT (2023) revealed that Nigeria is the largest potato producer in West African region with its highest cultivation in Plateau State, where about half the production, nationally is realised (Muthoni and Shimelis 2023). As a result of its potential as the fourth most important crop in Nigeria, Schulte-Geldermann (2013) stated that it has the potential to become a major crop in Nigeria to combat food security, promote consumer's nutrition and enhance income generation.

Muthoni and Shimelis (2023) mentioned Kaduna, Plateau and some part of Kano as neighboring states in Nigeria where potato is cultivated. Meanwhile, the Mambilla Plateau in Taraba state has potato growers with evidence of prospects based on the number of years engaged in potato farming, yet no intervention had reached them as promising as it may be in potato production. Hence, the present study aims to examine relatable prospects for sustainable potato production at the Mambilla Plateau, Taraba State, Nigeria.

METHOD



Sardauna Local Government Area, Taraba State, Nigeria (latitude 6.8212°N and 7.3523°N and longitude 10.7723°E and 11.5345°E; 1600m above sea level (ASL))



Descriptive, t-test, SLM (Microsoft Excel, 2016; RCoreTeam (2022) v 4.2.1, (p ≤ 0.05))



A total of 50 in-depth structured questionnaires were administered to both the men and women farmers to collate quantitative information

RESULTS & DISCUSSION

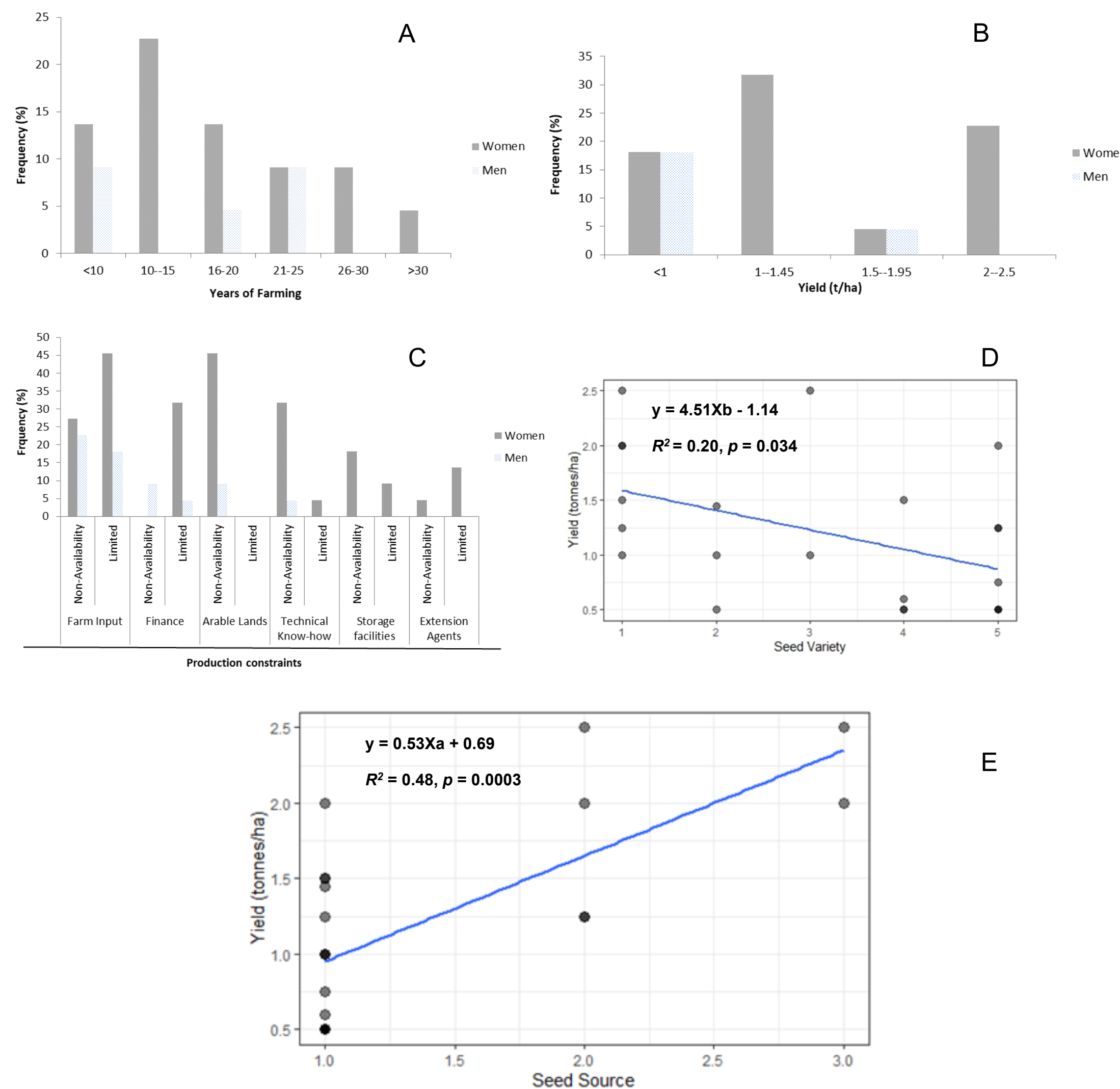


Fig. 2 A) Gender Disaggregated Response on the Years of Farming Potato at the Mambilla Plateau, Taraba State, Nigeria. B) Gender Disaggregated Response on the Average Yield per hectare for Potato at the Mambilla Plateau, Taraba State, Nigeria. C) Production Constraint faced by Potato Growers at the Mambilla Plateau, Taraba State, Nigeria. D) Potato Yield as a Function of Seed Variety. E) Potato Yield as a Function of Seed source

Superior, Red varieties, Madam, Yellow Sese and Pencil eye are the names of potato seeds that mentioned by the interviewed farmers as the most common potato varieties grown in the Mambilla Plateau.

Potato growers in Nigeria cross borders to buy seeds from undefined and undisclosed agents in other countries. This corroborates the findings of Mudege *et al.* (2020), who reported that regardless the huge investments in developing countries, a large number of the smallholder farmers still obtain their potato seeds from informal sources, particularly the open markets.

The linear regression model in Figure 2E show that seed source ($\beta = 0.69$) could positively and significantly ($p \leq 0.05$) predict potato yield at the Mambilla Plateau, whereas, seed variety ($\beta = -1.14$) had a negative regression fit, although significant ($p \leq 0.05$). However, the models reveal that seed source had highest multiple R^2 value (0.48) amongst other explanatory variables. Similar findings on the use of regression model as a yield prediction tools in crops such as maize, wheat and cotton was reported by Shastry *et al.* (2017) in their study carried out in India. It was further suggested that the model with the highest R^2 is promising to forecast yield production (Shastry *et al.*, 2017). However, seed source appears to fit into the model in this study.

CONCLUSION

The study highlights the prominence of Yellow Sese among the four potato varieties identified by farmers, underscoring its preference in the Mambilla Plateau. The dependence on Cameroonian open markets for seed sourcing further reflects local trends in varietal selection, with Nigerian varieties receiving comparatively less attention. Importantly, the linear regression analysis confirms that seed source is a significant predictor of potato yield in the study area emphasizing the critical role of seed origin in enhancing agricultural productivity.

SELECTED REFERENCES

Food and Agriculture Organisation. (2023). FAOSTAT Statistical data base. Rome. <https://www.fao.org/faostat/en/#data/QCL>.

Muthoni, J. & Shimelis, H. (2023). An overview of potato production in Africa. Potato Production Worldwide, 435-456

Mudege, N. N., Escobar, S. S., & Polar, V. (2020). Campos, H., & Ortiz, O. (Eds.). The Potato Crop, 475-506. doi:10.1007/978-3-030-28683-5