APPSA 2nd SCIENTIFIC CONFERENCE

2 - 4 April 2025 | Manthabiseng Convention Centre
Maseru, Kingdom of Lesotho

Growing sweet potato in Lesotho: *response to soil fertility*

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Background

- Sweet potato production in Lesotho is increasing
- Number of cultivars also increasing
  - Bophelo, Khumo
  - Monate, Blesbok, Mvuvhelo, Impilo, purple-purple, etc
- Benefits:
  - high in fiber, contains antioxidants for good digestive system & healthy brain,
  - very rich in beta–carotine ... source of vitamin A, hence supports good vision & immune system; and is very palatable,

Background

- Adapted to well-drained soil, …… fine loamy; tolerant to acidic pH,
- Yield potential depends on good management with recorded figures about
  - 40-50 t/ha vs ≈ 12.20 t/ha worldwide average (FAO, 2016; Stathers *et al*., 2018)
- Market value determined by crop quality, especially
  - tuber size, shape and smoothness,
- The latter also determines vulnerability of crop to pests…… damage …… decrease yield

Motivation

- Considering almost every crop is produced with fertilizers in Lesotho, it was interesting to observe that sweet potato is grown without fertilizers
- There are contradicting arguments that nutrient potassium (K) is very influential on sweet potato yield, especially for healthy skin of tubers, hence crop quality (Hahn, 1977; Dkhil *et al*., 2011; Pushpalatha *et al*., 2017)
- Therefore, as a cash crop, and also a new emerging crop, a lot of research work is important, especially to ensure quality tubers

Objective

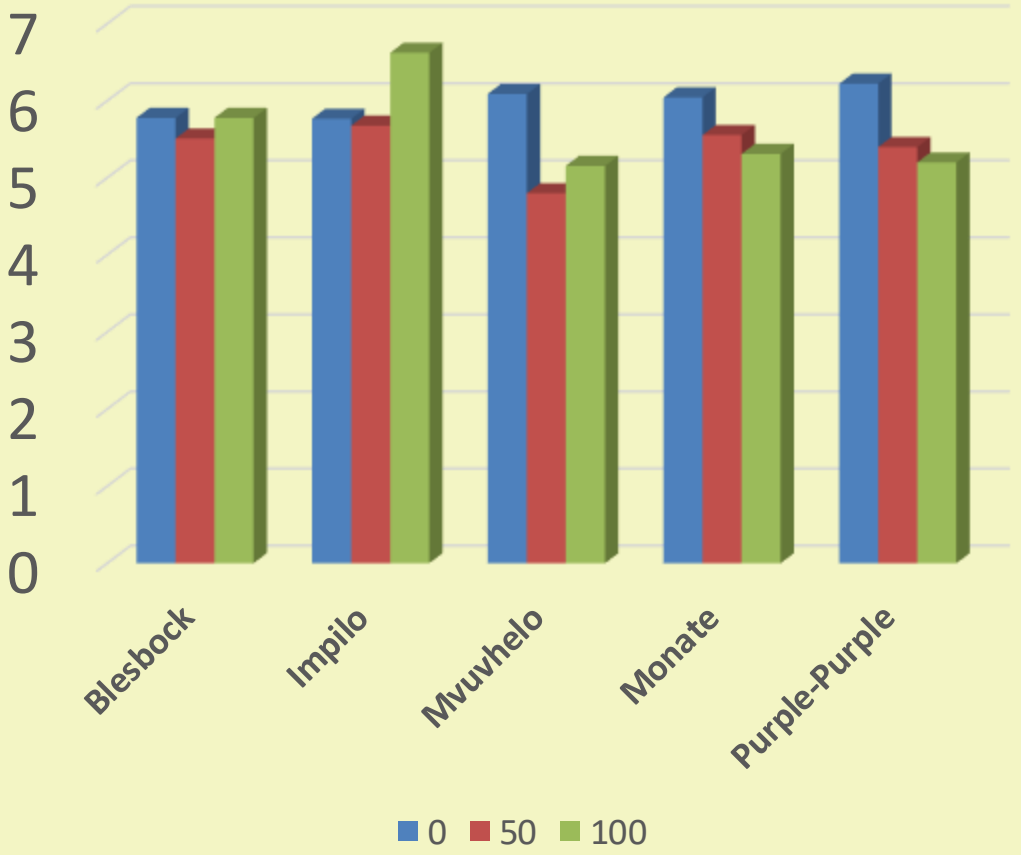
- Main objective of the study was to determine performance of five (5) sweet potato cultivars in Lesotho,
  - with more focus on response to different levels of nutrient potassium (K)

Materials & methods

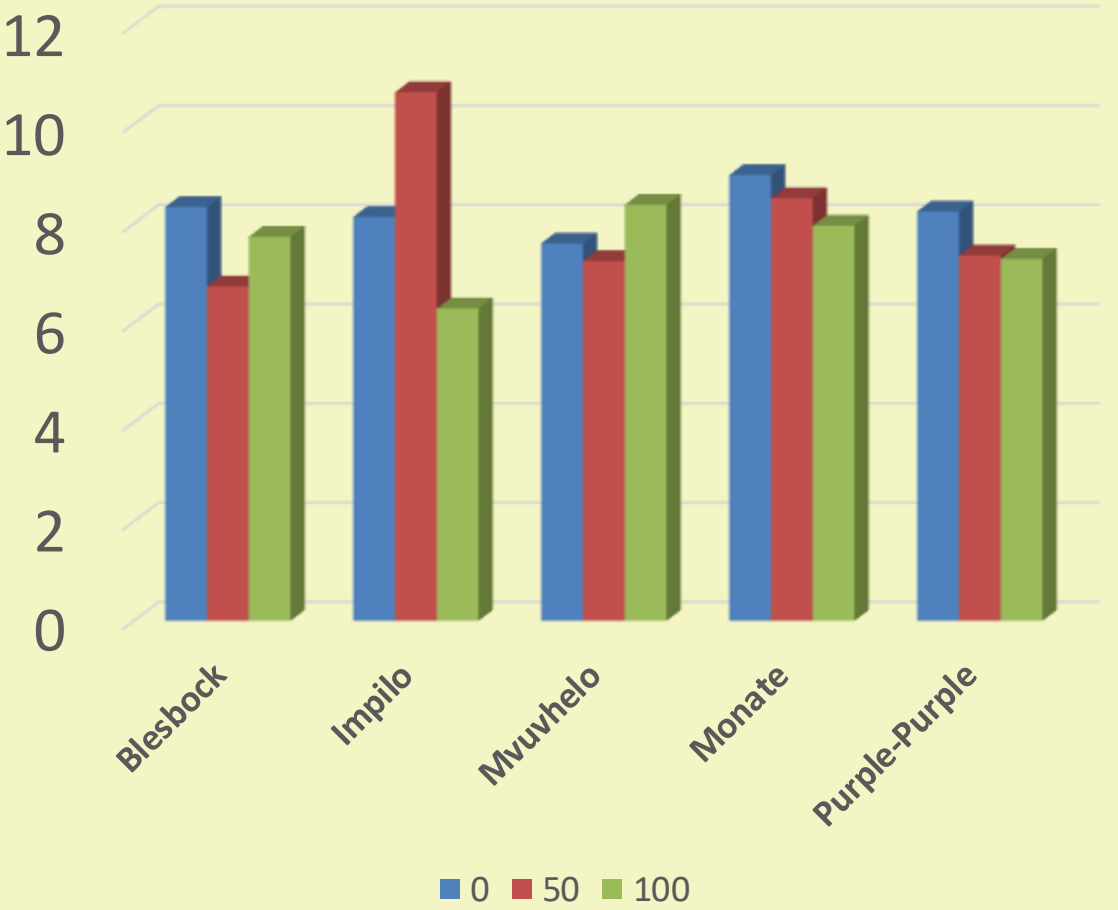
- Study was conducted
- Five study sites
- Across the northern, central and southern foothills of Lesotho
- With the five cultivars, *viz*.
  - blesbok, monate, impilo, mvuvhelo, and purple-purple
- On three (3) potassium (K) fertilizer application rates,
  - Zero, partial (50%) & full (100%) recommended rate; within 2-3 weeks
- Replicated three times, using a randomized complete block design

	Ave plants establishment (%) at different fertilizer level (%RFR)				Ave. survival @ harvest (%) at different fertilizer level (%RFR)		
	0	**50**	**100**		**0**	**50**	**100**
Blesbok	66 *(50-86)*	73 *(50-100)*	70 *(57-76)*		58 *(50-69)*	49 *(33-67)*	58 *(45-76)*
Impilo	74 *(62-80)*	72 *(57-90)*	79 *(60-90)*		65 *(36-88)*	58 *(52-64)*	60 *(40-76)*
Mvuvhelo	86 *(67-100)*	78 *(64-95)*	87 (60-100)		52 *(24-90)*	51 *(31-88)*	46 *(31-57)*
Monate	79 *(57-98)*	74 *(50-83)*	83 *(69-93)*		59 *(44-67)*	65 *(40-76)*	59 *(40-67)*
Purple-Purple	58 *(31-90)*	51 *(26 74)*	43 *(31-55)*		52 *(36-60)*	50 *(38-60)*	60 *(29-74)*

Ave # of branches @ 42-67 DAP



Ave # of branches @ 70-96 DAP



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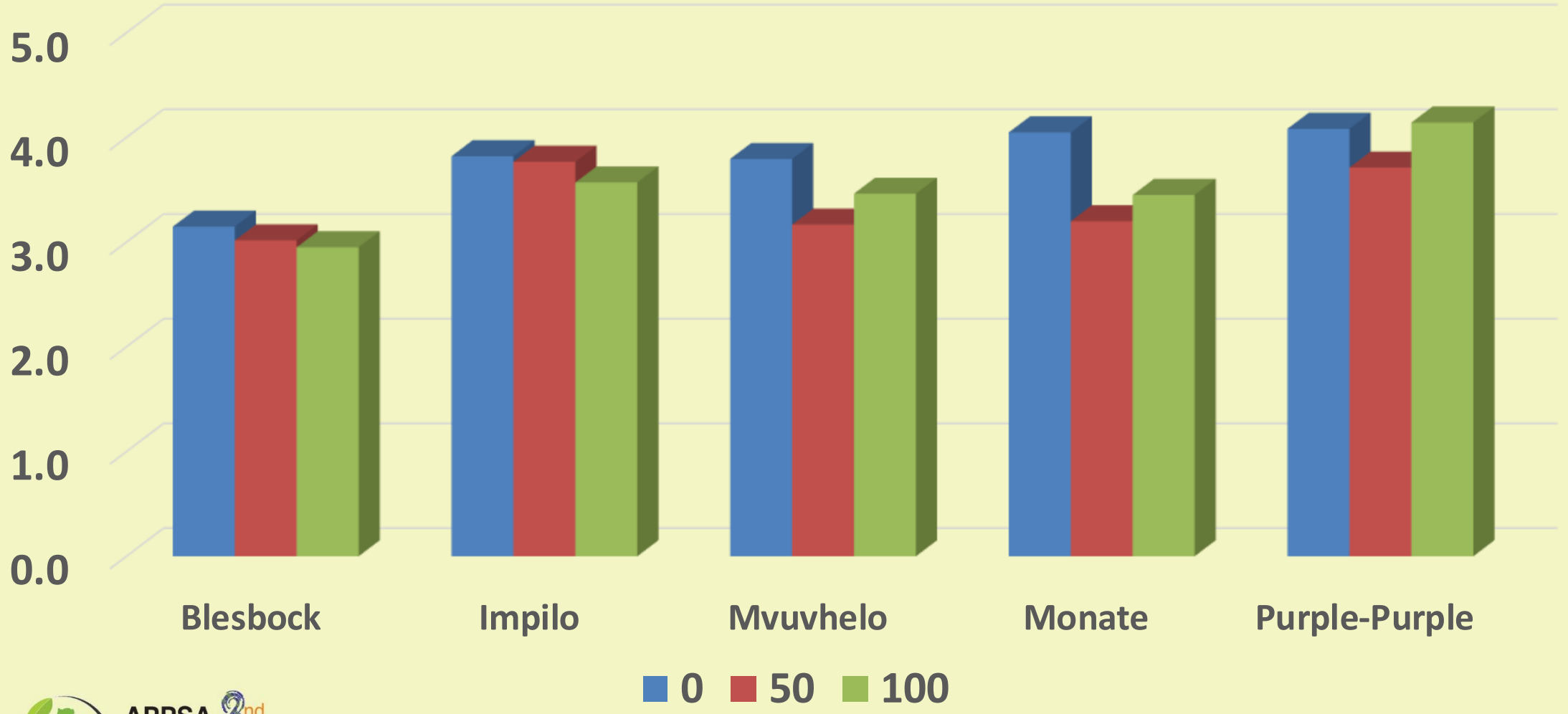
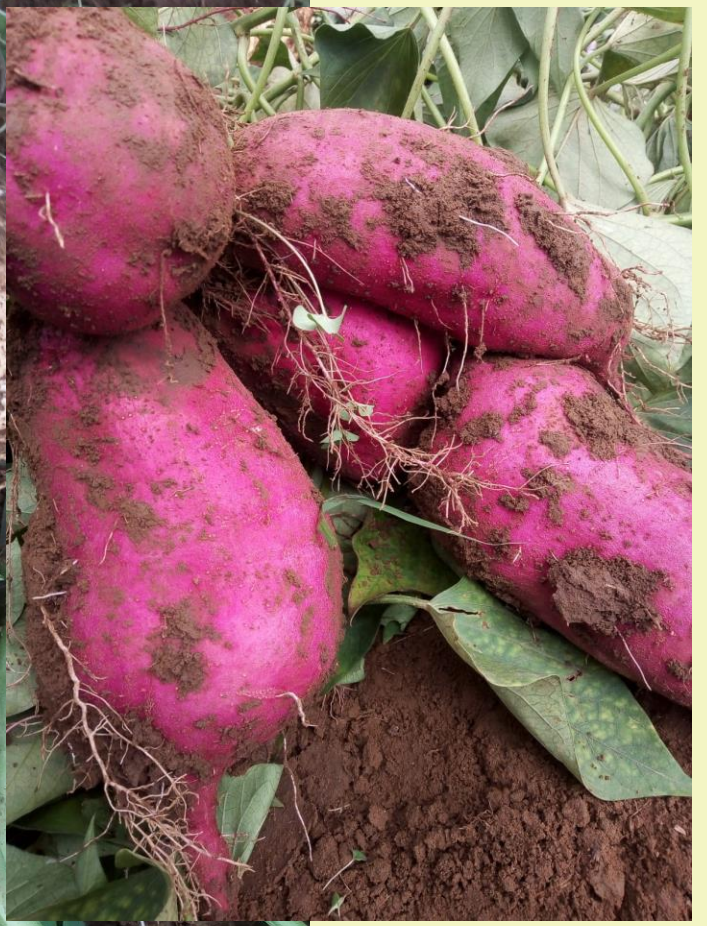
No. of tubers per plant



Discussions and Conclusion

- Considering overall performance in the country, no. of tubers per plant lower than the usually observed number of ≥10
- However, the quality was good except for one site Molengoane
- No apparent response to K application in terms of yield quantity
- Also as argued by Dkhil *et al*. (2011) and Pushpalatha *et al*. (2017) there was no obvious difference on appearance
- BUT not disputing significance of K , rather concur with owners of fields & other scientists who have been working on sweet potato in Lesotho, that currently fertilization is not important



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Acknowledgement

- CCARDESA & WORLD BANK through APPSA – LESOTHO
- All Department ……DFS, AEOs, Station officers; DAOs
- Farmers
- My Team – all my students and technicians -
  Department of Soil Science & Resource Conservation,
- National University of Lesotho