Trends and Constraints in the Utilization of African nightshade (*Solanum nigrum* complex) in Tanzania

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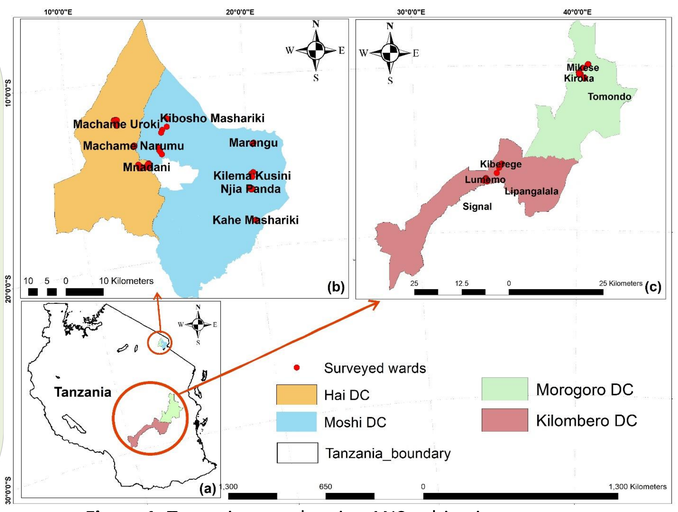
Background

- African nightshade (ANS) is a good source of income, essential minerals, vitamins and bioactive compounds[12]
- ANS is neglected and underutilized in many parts of sub-Saharan Africa (SSA) despite its various potentials
- ANS is among the most widely distributed and consumed indigenous vegetables in Tanzania[2]
- ANS utilization faces challenges due to a shift towards exotic vegetables[1]
- This study seeks to document trends and constraints of utilizing ANS and advice on optimum preservation techniques for year-round availability

Materials and Methods

- Cross-sectional study
- Random sampling used to get participants
- Semi-structured questionnaires and Focus group (FGDs)
- A total of 627 participants were interview
- Four FGDs consisting 6-10 individuals Informed consent was sought from all participant
- **Figure 1:** Tanzania map showing ANS cultivating areas



Results

Production of ANS

- Male dominated ANS production by 70%
- About 73.9% of farmers had primary education, with age range between 42-53 years
- Inorganic pesticides (77.5%) and organic fertilizers (70.6) were used
- Handheld hoe was commonly used 98.3%
- Irrigation was highly practiced (79.4%) using river water (49.9%)
- Monocropping 66.3% was the common system for ANS production
- ANS was more produced in the summer 63.6%, with majority growing ANS due to high yield
- ANS contributing to 5-10% of majority households incomes (53%)

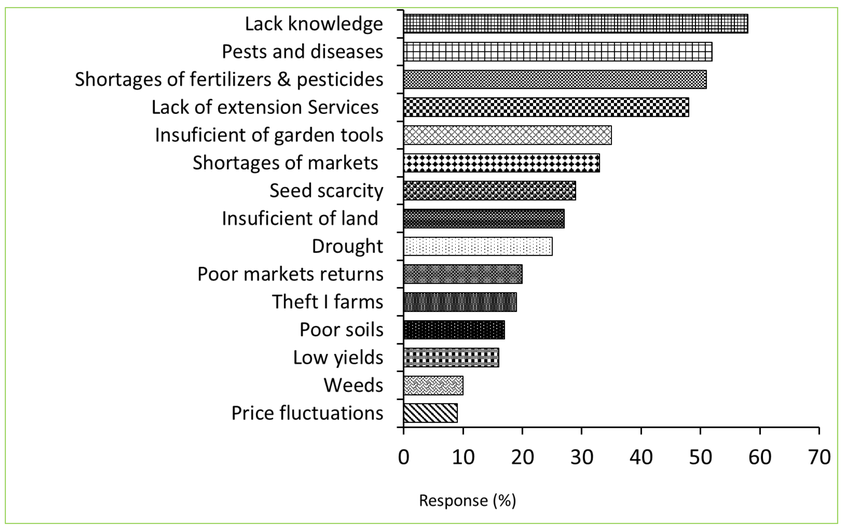


Figure 4. Challenges hindering cultivation and increases postharvest losses of ANS (n=442)

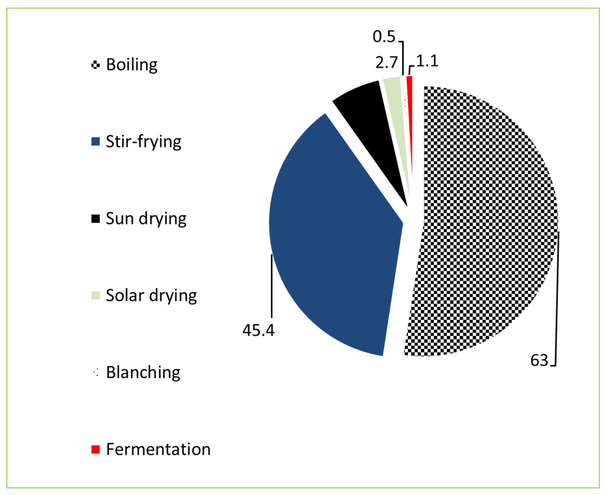


Figure 5. Processing and preservation methods for of ANS (n=469)

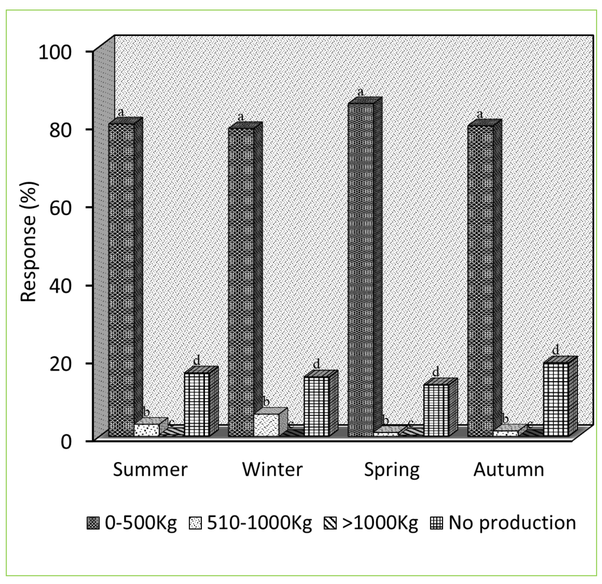


Figure 2: ANS production yield (kg) in different seasons (n=430)

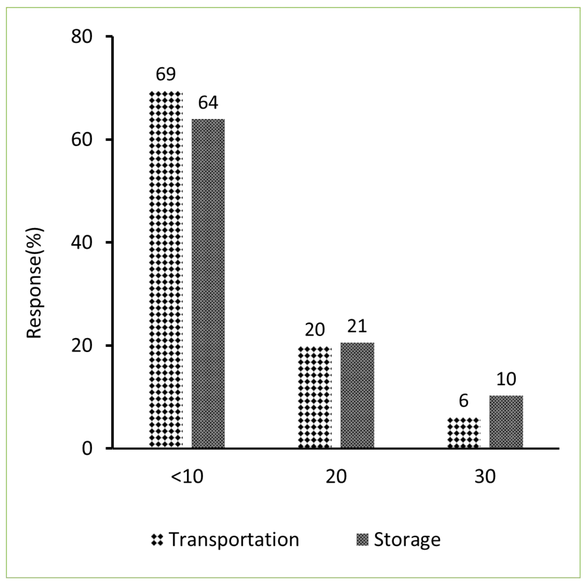


Figure 3. The quantities of ANS lost during transportation and storage (n=344)

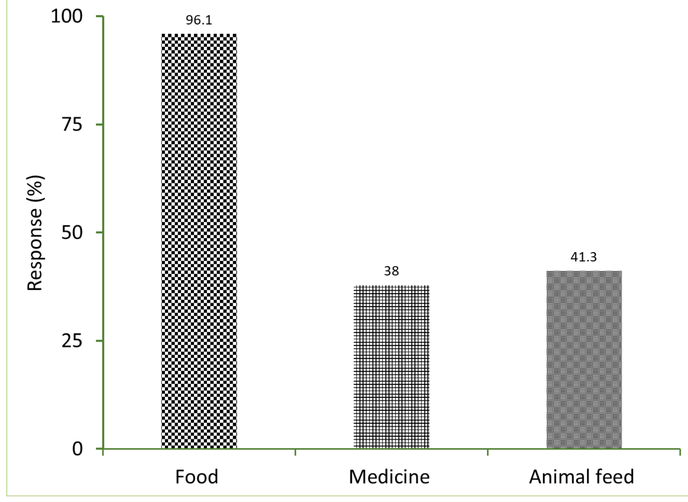


Figure 6. Utilization ways of ANS (n=560)

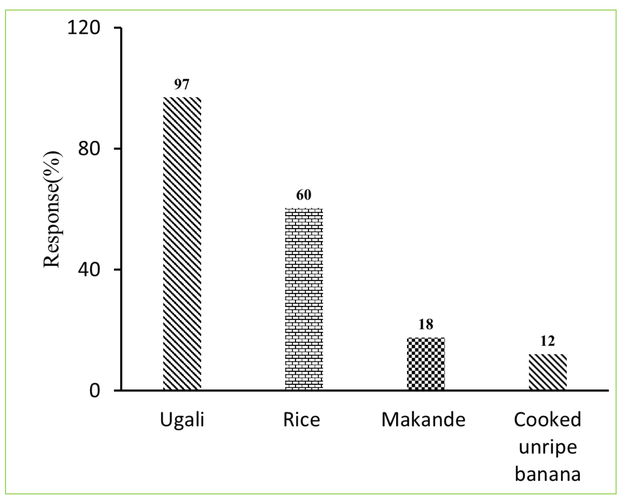


Figure 7. Foods commonly used to accompany ANS (n=560)

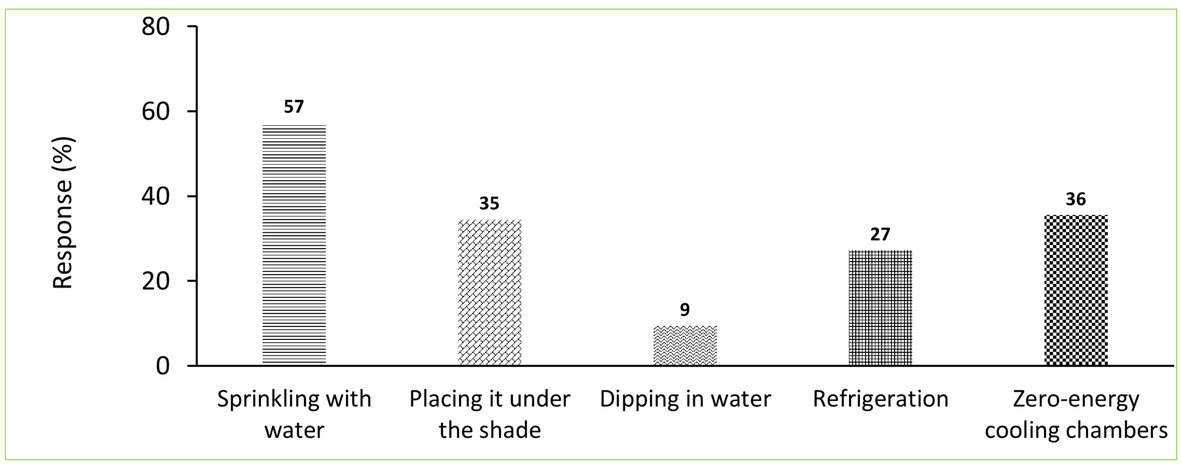


Figure 8. Various methods utilized to cool fresh ANS for preservation (n=442)

Discussion

- Easy availability of organic manure contributes to high utilization because majority of farmers animals
- Monocropping is highly preferred because ANS is grown in summer where no cultivation of main crops such as maize and rice, which are grown in spring using the same lands
- Low production about 500Kg of ANS due to production in small lands
- Lack of knowledge contributed to poor postharvest handling technology and low value addition of ANS such as drying and fermentation
- Majority (72.1%) of farmers cultivate ANS as the source of food for their home use, other rejects are used as animal feeds
- ANS accompanied various staple foods but mostly *ugali* (stiff porridge)

Conclusion

- ANS is highly consumed in Kilimanjaro and Morogoro
- Insect pests and diseases hampered production of ANS
- Frying and boiling were the main preparation methods
- Poor postharvest handling and minimal value addition hinder utilization of ANS
- Quality pesticides , training on proper production techniques, and training on value addition such as fermentation and drying can improve ANS accessibility and utilization

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2. F. Sangija, Martin, H., & A. Matemu African nightshades (*Solanum nigrum* complex): The potential contribution to human nutrition and livelihoods in sub-Saharan Africa. *Compr Rev Food Sci Food Saf*. 2021; 1–35.