

Indigenous Vegetable Preservation Methods for Economic Growth in Umzingwane Communal Farming Areas of Zimbabwe

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Sub-Theme; Preservation of Agro-products

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ABSTRACT	ARTICLE DETAILS
The research study on the challenges in indigenous vegetable crop preservation and adoption strategies for communal farming in Umzingwane district employed a mixed-methods where both the qualitative and quantitative approaches were used following a sequential explanatory research design. The research study sought to address the challenges brought about by crop losses emanating from crop product spoilages with the objective of improving nutritional food nutritional security especially after harvesting processes. Purposive sampling was adopted because of the need to access specific targeted farmers who could provide the most relevant information on crop preservation methods used. Questionnaires and observations were used coupled with focus group discussions to unravel the study aims and objectives. The research revealed that indigenous crop product preservation methods currently used by most communal farmers in Umzingwane have been a cause of concern since they resulted in major crop losses thus exacerbating food insecurity problems within the communal farming areas and the southern region at large. Lack of knowledge and skills by farmers on ideal crop preservation technics, lack of relevant infrastructural developments, rapid changes in weather conditions and limited market information were identified as major factors responsible for poor crop produce preservation. Resurgence of endemic pests and diseases further exacerbates the problem of crop product losses within the geographic areas under study. As a way of curtailing the problem identified, the researchers recommend robust training and knowledge sharing among communal farmers as being key in improving adoption of improved crop product preservatory measures. Use of farmer field schools, unlocking cheap government funding and tailor-making policies to support specific targeted communal farmers remains critical in improving the success of ruralpreneurship. KEYWORDS: Preservation, Perishability, Ruralpreneurship	Published On: 01 September 2026 Available on: https://ijrsr.org/

INTRODUCTION

Food spoilage is a cause a concern to most farming communities' world over. Most farmers suffer huge post-harvest losses (physical and financial) due to poor storability and poor marketing potential in their vegetable products (Tadesse, 2020). The high perishability nature of most horticultural crops is a great cause of concern hence the need for preservatory measures for adoption (Kaur and Watson, 2024). A lot of freshly preserved vegetables are a key source of essential vitamins and minerals, such as vitamin A, vitamin C and potassium all needed for human health. Farmers in most communal areas usually rely on some traditional methods to preserve crop products which ensures food availability even during off-season periods (Madekoameng and Molotja, 2023). Some common measures come with both environmental and health concerns yet also some bring about high energy consumption and related costs (Lisboa *et al.*, 2024). The need for adoption of improved crop produce preservation methods remains key in the face of the fast-changing climatic conditions if food sustenance in semiarid regions of Zimbabwe was to be achieved.

BACKGROUND OF THE STUDY

Communal farmers in Umzingwane district who grow some vegetables crops usually suffer high spoilage losses mainly due to the high perishability nature of their crops. This is coupled with poor skills in proper preservation strategies on such products. A number of related studies have shown that most vegetables have a short life span and higher moisture percentages which therefore calls for adequate planning before production to enable proper marketing and processing so as to reduce unnecessary losses. Food products related spoilages have resulted in food insecurities and malnutritional challenges and continue to be a cause of concern to most communal farmers (Khan *et al.*, 2024). The thrust by the government on rural industrialization and rural entrepreneurship creates an opportunity for local farming clusters to collectively strategize on how to locally industrialise and turn locally available resources into tangible products and services. The incomes from ruralpreneurship can then fed into the national economies and thereby reducing poverty. Corato De (2020) argued that traditional preservation methods can play a key role in the safe keeping of perishable crop products especially in most resource poor communities. The author further posits that if traditional preservation methods were to be well integrated with climate smart technologies, then less damage occurs to the environmental and such remain less costly. The challenge of high commodity losses in crop products has remained a common panacea to most communal farmers not only to Umzingwane district, but a challenge to many communal societies facing technological and infrastructural constraints. It is in light of the crop losses experienced by the Umzingwane district communal farmers that the researchers found it prudent to delve into an in-depth study in order to identify measures currently adopted in crop produce preservation and also to proffer possible solutions towards sustainable preservation of perishable commodities.

STATEMENT OF THE PROBLEM

High crop product spoilages experienced in the fields during crop harvesting, at post harvesting stage and also at processing stage has been a great cause of concern which has seen potentially food secure communities becoming food insecure in most communal farming sectors of Zimbabwe including Umzingwane district and other surrounding communal areas. Global changes have negatively shifted the local conditions which has gravely impacted negatively on food storage and security for future use by humanity. Increases in endemic pests incidences, variability in climatic conditions and lack of capital to invest in climate smart crop preservation techniques has seen most crop farmers losing tonnes of their produce to decay, (Nguru and Mwongera, 2023). Accordingly, a research study which aims at retooling local communal farmers on crop preservatory methods to enhance effective ruralpreneurship becomes mandatory in the face of these fast-changing climatic conditions.

AIMS OF THE STUDY

To reduce crop losses due to product spoilages in the field, after harvesting and processing so as to improve nutritional food security as well as uplift the living standards of the communities.

Main research question

What challenge does poor crop preservation bring on food security and economic development in semi-arid regions of Zimbabwe?

SUB RESEARCH QUESTIONS

1. Which are the crop produce preservation methods currently used by the communal farmers in Umzingwane farming areas?
2. What factors retard timely adoption of various crop preservation methods in Umzingwane District?
3. Which are the most effective strategies on crop produce preservation that can be adopted for enhancing quality produce preservation?

OBJECTIVES OF THE STUDY

The study seeks: To identify various crop produce preservation methods currently used by the resource poor communal farmers in Umzingwane communal farming areas and related agro ecological regions of Zimbabwe.

To establish factors that retard timely adoption of various horticultural crop preservation methods by communal farmers.

To prescribe the most effective strategies on crop produce preservation for possible adoption by small holder communal farmers in semi-arid region of Zimbabwe.

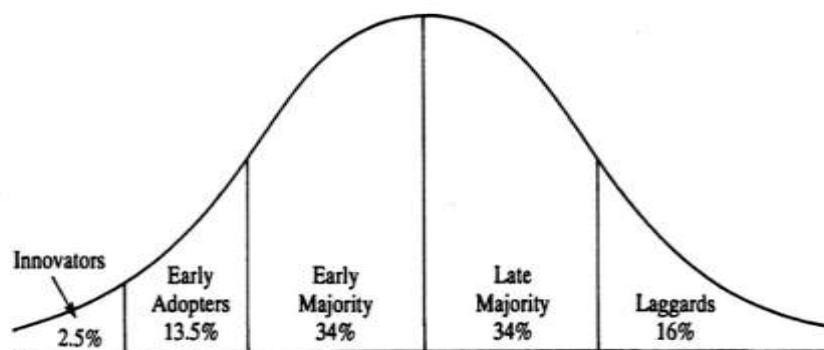
To generate some in-depth knowledge on innovative crop preservative strategies for use in future studies.

THEORETICAL FRAMEWORK

The study was premised on the Diffusion of Innovations Theory 1st developed by Everet Rodgers 1962 and later advanced in 2003, (Cua *et al.*, 2010). The framework emphasises that adoption processes of new knowledge and technology follows a curve. As first applied in agricultural innovations in 1962 it explains that the adoption of new technologies such as new preservation methods is influenced by five key elements which include innovation, communication channels, time aspect, change agents and social system.

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The study further classified adopters as innovators, early adopters, early majority, late majority as well as laggards depending on their earliness to adoption. The figure below shows the model followed. In this study the emphasis being to encourage farmers in semi-arid regions to improve the adoption rates on new technologies.



Source: Adopter categorizations on the basis of innovativeness – Rogers, E. M. (2003). *Diffusion of innovations* (5th ed.). New York: Free Press

METHODOLOGY

The study on indigenous crop preservation methods and adoption levels employed mixed-methodological approach where both the qualitative and quantitative research were used following a sequential explanatory design. The integration of both strands was necessary to ensure the combined interpretation of the practical ground situation. The mixed methods research design was considered ideal given the multifaceted nature of the study, (Mulili *et al.*, 2025). An in-depth literature was reviewed on the scope of the problem, its effects and possible solutions for adoption. The study employed a semi-structured questionnaire administered to purposively sampled communal ward which has a number of vegetable production units so as to obtain their insights on the phenomena. Focus group discussions and direct interviews with local communal farmers and local technical business advisors were conducted which gave researchers even more time to generate ideal information around the existing problem under study. A total of thirty-eight respondents were engaged following purposive sampling where sampling used a stratified sampling in line with Stratton, (2026). Quantitative designs involved further use of statistical analysis where collected data from questionnaires was analysed using both Excel and SPSS tools. The researchers maintained a high degree of confidentiality and also discouraged respondents from using their official names for ethical reasons and anonymity of respondents. Anonymity and confidentiality remained key aspects in protecting the privacy of respondents. This practice was in line with (Pascale *et al.*, 2022).

FINDINGS AND OBSERVATIONS

The sample consisted of 61% females and 39% males whose ages ranged between 24 and 74 years of age. On education, 52% respondents had no formal education, 27% had acquired up to Ordinary level of education with only 21% having acquired tertiary qualifications. The research study established that some communal farmers used sun drying methods (40%), salting (20%), refrigeration (19%), drying of boiled vegetables and blanching (12 %). A small fraction of farmers indicated that they practice fermentation (1%) as part of their crop preservatory methods. Findings are summarised on figure 2.

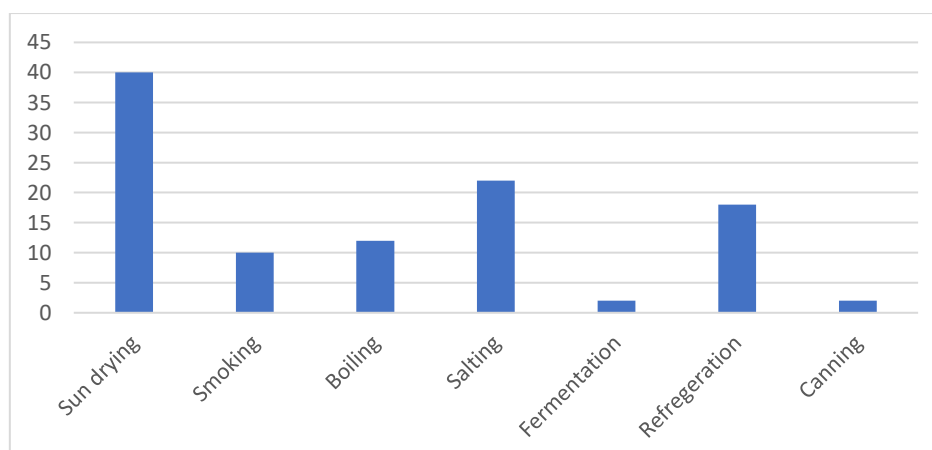


Fig 2 Indigenous crop preservation methods

The study further unearthed that most communal farmers in semi-arid areas were constrained by a number of factors in the adoption of improved horticultural crop preservation methods. Respondents bemoaned lack of adequate skills and knowledge (90%), inadequate suitable infrastructural developments (48%), prevalence of pests and diseases (42%) as well as lack of suitable resources (32%) being the major factors derailing the adoption of some traditional and improved crop preservation methods. Some respondents had this to say, and I quote 'We lack adequate training and knowledge on improved crop preservation methods', one other woman said, 'There is limited access to improved infrastructure in our communal areas and we can hardly afford hydro-cooling systems which leaves us vulnerable to produce spoilages because many a times the market for most of our crop produce is scarce here'.

On trying to find lasting solutions to crop losses, the study established that a number of measures to combating the challenges faced by communal farmers in the preservation of indigenous crop and vegetable products can be implemented. There is urgent need for continuous training of farmers on climate smart crop preservation methods, encourage the adoption of solar dryers through farmer field schools and farmer collaboration, encourage the establishment of relevant infrastructural development, tailor making policies and decisions involving lead farmer groups and also provide start-up capital for infrastructural and procurement of climate smart crop preservation equipment.

One respondent had this to say, 'We encourage policy makers to consider setting up a fund specifically to support the procurement of solar driers targeting horticultural vegetable producers in semi- arid areas given that these enterprises are the major source of livelihood for many families'. Most verbal responses show that qualitative findings explained the quantitative findings fairly well which explained the need for the mixed methods approach. The case of low percentages in use of refrigerators tallied very well with the responses on lack of capital to procure modern improved preservation technologies.

DISCUSSION

The study on indigenous crop preservation methods established that some communal farmers within Umzingwane district practiced sun drying, salting, smoking, refrigeration, boiling or blanching and fermentation on indigenous vegetables crop preservation strategies but at varying proportions. However, the adoption rate on improved technologies remains a cause of concern and thus need be improved if the farming community is to be food and economically secure. Research findings on preservation methods used by the local communal farmers were in line with findings by Kanyamba *et al.*, (2020) who in their study posit that solar drying was among the key methods in preservation of most indigenous crop products. Various scholars that include Itau *et al.*, (2024) further urged that sun-drying of traditional vegetables was key in food security among developing communities and as such need be adopted. Maziya *et al.*, (2017) went further to argue that blanching was also a successful strategy in fruit and vegetable processing if well-articulated. A smaller percentage of farmers understood the concept of blanching and seek capacitation on how it is effectively conducted.

The study however unravelled quite a number of challenges impacting negatively on adoption of improved indigenous crop preservation methods. The highly cited drawbacks on poor adoption included poor knowledge and skills, lack of infrastructural developments, poor resources, rapid changes in weather conditions, limited market information, resurgence of endemic pests and diseases among the key notable ones. Research findings were in line with previous studies by (Sarr *et al.*, 2024) who identified lack of quality training, poor awareness programs, and lack of knowledge on improved technologies on elderly farmers having contributed immensely in low adoption of improved indigenous vegetable preservation practices. In line with these arguments, (Khan *et al.*, 2025) posit that deficit in infrastructure and climatic vulnerabilities heavily impacted on quality crop food preservation and food securities in most communal farming areas.

Respondents cite the importance of tailor-made training programs and policies as key part of the long term solutions in improving crop preservation strategies. In related studies, Rundel *et al.*, (2025) affirmed the need for robust training activities in order to improve adoption levels in crop product processing. Yusof (2025) further emphasised the need for target tailoring policies as mitigatory measures in driving negative adoption on best crop preservation practices.

Summarily, the research study becomes critical since it targets the small holder communal farmers who are the majority and highly vulnerable group in the face of climatic changes. However, the study faces limitations since it was conducted at one geographic location thus making results not easily transferable but remains pivotal as it unravels the much-needed information on improving crop preservatory strategies which can enhance food security. The study becomes relevant as it directly tackles challenges faced by local Umzingwane district communal farmers in their day-to-day crop preservation efforts as well as other farmers in similar semi-arid regions of Zimbabwe who tend to experience related crop preservation challenges on their harvested crop produce.

RECOMMENDATIONS

The study recommends that the technical business advisors and other development partners should consider conducting continuous robust training programmes on improved crop preservation measures so that farmers skills are sharpened. It is further recommended that soft lending programmes can be made available to communal farmers by local banks so as to enable procurement of improved

crop preservation equipment and such related technologies. The government should consider improving infrastructure such as road networks so as to enhance market linkages over and above local farmers efforts. Farmers ought to join farmer groups such as farmer field schools so as to enhance information dissemination and knowledge sharing on improved crop preservation techniques. Such concerted efforts are deemed necessary in improving farmers performance in ruralpreneurship.

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