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Harnessing the Indigenous Fruit (*Ziziphus Mauritiana*) for Poverty Alleviation to Promote Inclusivity in Muzarabani Primary Schools

Charity Chiromo
Faculty of Education
Midlands State University
Zimbabwe
Email: chiromoc@staff.msu.ac.zw

Abstract: *This study explored the indigenous Ziziphus mauritiana (Masau) fruit and its potential for poverty alleviation to most parents of learners in Muzarabani schools in Zimbabwe. When these fruits are in season, they are in abundance in Muzarabani. However, there have not been much study on its potential to alleviate poverty among the parents of most learners in Muzarabani Primary schools who are failing to get enough schooling resources for their children. The study adopted the qualitative research approach and the phenomenological research design. The population consisted of all Primary schools, School heads, School Development Committee (SDC) members and learners in Muzarabani. Random sampling technique was used to select 3 Primary schools and the 3 school heads, 15 SDC members (5 from each school) and 90 learners (30 from each school). Semi-structured interviews, observation and focus groups ere were used to obtain data from the respondents. The study revealed that, the fruit can be eaten raw, sold and some preserved for future use. The fruit-can be preserved into Masau chips for making a traditional cake, fruit powder, fruit leather and beverages. This created an opportunity for the local people to make money. The study recommends the following (i) The government through one of its universities need to establish a plant in Muzarabani to process the indigenous Ziziphus mauritiana (Masau) fruit at a larger scale (thus education 5.0 in Zimbabwe) thereby employing local people of Muzarabani. (ii) Members of the community should be educated about the dangers of drinking Kachasu.*

Keywords: *The Indigenous fruit, Ziziphus Mauritiana, Poverty alleviation, Education 5.0*

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1. Introduction

This paper sought to explore the indigenous Ziziphus Mauritian (Masau) fruit tree as a potential poverty alleviation to the people of Muzarabani District in Zimbabwe since most of their children are finding it difficult to get resources needed at school. Poverty is one of the major social issues facing the people of Muzarabani. The depth of this problem is about meeting and recognising children's dignity and basic needs at school. Education can be one of the important tools that can be used to free citizens and provide them with the opportunity to become masters of their own destinies. This study serves as a starting point to identify intervention strategies for constructively and effectively resolving the financial problems of most learners in Muzarabani Primary schools.

Children should be afforded the opportunity to learn as they are our tomorrows' future.

The Ziziphus Mauritian (masau) fruit trees are part of the local, regional and global indigenous fruit trees (Grivetti & Ogle 2000). They are mainly found in the tropical regions of Asia and Africa. Historically, the Masau tree originated in central Asia and spread to North Africa, where it became distinctly Zimbabwean (Kerkar, 2017). The use of *Z. mauritiana* in India can be traced back to as early as 1,000 BC (Morton, 1987). The Ziziphus Mauritian fruit tree is known as Jujube in India, Apple in China, Unnab in Arabic and Masau in Zimbabwe and is regarded indigenous (Palgrave, 1990). These trees are mainly found along roadsides where the discarded fruit pips have geminated. However, the trees that grow in river banks have relatively larger fruits with a small stone, as compared to those that grow in drier areas (Kerkar, 2017). According to Nyanga, Nout, Gadaga, Boekhout & Zwietering, (2008) these trees are generally evergreen spiny shrubs but sometimes attain the size of a small tree that has a rapidly developing taproot, a necessary adaptation to drought conditions. Some are cultivated around gardens as protective barriers or hedges (Faroogi, 2016) since the trees have got some thorns. The leaves of the trees are nutritious livestock feed for cattle, sheep and goats.

Figure 1. The *masau* (*Ziziphus mauritiana*) tree, Muzarabani rural community

In Muzarabani these indigenous fruit trees are found throughout the district and yet some families are finding it difficult to put food on the table, others failing to send their children to school and some learners going to school without enough resources. This paper investigated ways of generating some income at a larger scale through this wild fruit. According to UNICEF (2015), the wellbeing of children is of paramount importance worldwide as evidenced by many conventions and memoranda of understanding that have been crafted to improve quality of life for children. In this case there are contradictions between the Rights of Children enshrined in international conventions and statutes especially on the right to education and the life led by most learners in Muzarabani at school. The dearth of research-based evidence in this area in the context of most learners' financial situation at school in Muzarabani District motivated me to undertake this study. This study, therefore, explored the indigenous Ziziphus Mauritiana (Masau) fruit and its potential for poverty alleviation to the people of Muzarabani District in Zimbabwe

Theoretical Framework

This study was guided by the Africanacity theory. Africanacity is the distinctly African ability to always find a way to solve challenges (Cross, 2021). In other words, Africans find ways to bring possibilities to life. According to Cross, (2021) Africans are remarkable people that always find solutions and a way to get things done, that is meeting every challenge with tenacity, ingenuity, positivity and creativity. In business, Africans are committed to doing whatever it takes to make sure customers around the African continent have the best service and products.

The study attempted to answer the following research questions:

1. How do Muzarabani people utilize the wild fruit Masau?
2. Are there any financial challenges faced by Primary learners in Murarabani at school?
3. What are the strategies that can be put in place for the people of Muzarabani to make maximum profit using the Masau fruit?

2. Literature Review

Among the indigenous fruit trees in Zimbabwe the Masau fruit plays a very important role in the livelihoods of the rural people of Muzarabani (Raman, 2006). According to Nyanga, Nout, Gadaga, Boekhout & Zwietering (2008) in Sub Sahara Africa the Masau trees are an essential source of food and income to local communities. When the fruits are in season, they are in abundance and can be eaten raw. They can also be preserved for future use.

The fruit is first green, turning yellow to brown as it ripens. *Ziziphus mauritiana* fruits ripen from mid-June and are available until the end of September, this means that the indigenous fruits ripen and are often available during the dry season when food availability is low (Akinnifesi et al., 2006; Campell, 1987). According to Nyanga (2008) the fruits are good sources of nutrients such as carbohydrates, protein, and essential micronutrients such as calcium, potassium, phosphorus, copper, iron, zinc and vitamin C.

Generally, this indigenous tree is said to have so many functions in the livelihoods of people. In the bible for example it is written that, the thorns of this tree were the ones which were used to make the crown for the Holy Christ (Khoshbakhi, 2005). On the other hand, the study done by Khoshbabhi, (2005) revealed that the fruits of this tree can be used as income generating project. These indigenous fruits are an important source of income for poor people since entry barriers for collection and use are relatively low (Tembo et al., 2008). The survey carried out by Nyanga (2008) showed that the *masau* fruit is usually gathered by women and children, and eaten raw or processed into products such as porridge, traditional cakes, *mahewu* (non-alcoholic fermented beverage), and jam, which are sold at local markets at a small scale.

Most of the rural population in arid regions meet their daily requirements of biomass or biomass-based products, such as food, fuel (firewood), fodder, fertilizer (organic manure) and building materials (poles) (Kaaria, 1998: Morton, 1987) from this tree. Extracts from the fruits, seeds, leaves, roots and bark of the *masau* tree are used as traditional medicines to treat the effects of insomnia, skin diseases, inflammatory conditions and fever (Nyanga, 2008: Morton, 1987).

Figure 2: The Indigenous Ziziphus Mauritiana Fruit (masau)

A literature review on the role played by Ziziphus mauritiana (Masau) fruit in improving the income of people in rural areas reveals several key themes and findings.Ziziphus mauritiana fruits are rich in vitamins, minerals, and antioxidants, making them valuable for nutritional supplementation, particularly in areas with limited access to diverse diets (Pareek et al., 2018).Traditional uses of Ziziphus mauritiana include its medicinal properties, contributing to its demand and potential economic value (Kehinde et al., 2020).Studies indicate that the cultivation and sale of Ziziphus mauritiana fruits can significantly contribute to household income in rural areas (Jain et al., 2019).The fruit's marketability and potential for value-added products like jams, juices, and dried fruits enhance its economic viability (Yadav and Yadav, 2016).Ziziphus mauritiana plays a cultural role in many rural communities, being integrated into local diets and traditional practices (Bhoite et al., 2021).Its cultivation and trade often involve community-based initiatives and cooperative efforts, strengthening social cohesion and collective economic benefits (Pareek et al., 2018).

Challenges such as seasonal variability in fruit production, susceptibility to pests and diseases, and lack of infrastructure for processing and marketing can limit the income potential from Ziziphus mauritiana (Jain et al., 2019).Access to markets, fair pricing mechanisms, and sustainable cultivation practices are crucial for maximizing economic benefits (Kehinde et al., 2020).Policy support, including subsidies for cultivation inputs, investment in rural infrastructure, and capacity-building initiatives, can enhance the income generation potential of Ziziphus mauritiana (Yadav and Yadav, 2016).Integration of Ziziphus mauritiana into national agricultural development strategies and promotion of sustainable farming practices are recommended for long-term economic gains (Bhoite et al., 2021).

A distillate called *kachasu* is made from *masau* fruits that have been fermented for 4-7 days. *Kachasu* is a common name given to traditionally fermented and distilled alcoholic spirits which are potent. Although *kachasu* can be produced from wild fruits, it is usually made from maize meal, bulrush or finger millet (Gadaga et al., 1999). In Zimbabwe, *kachasu* consumption is illegal because it is alleged to be toxic hence it can cause ill health and is also associated with cases of sudden death (Brett et al., 1992; Gadaga et al., 1999). In Malawi, dried *Z. mauritiana* fruits are fermented and then distilled to make a potent alcoholic beverage (Kaaria, 1998) and a wine called *mlunguzi* is produced from a combination of *Uapaca kirkiana* and *Z. mauritiana* (Maghembe et al., 1992)

There is a need for further research on market dynamics, consumer preferences, and the socio-economic impact of Ziziphus mauritiana cultivation across different regions and contexts (Pareek et al., 2018)Comparative studies with other fruit species and exploration of new product innovations could expand the economic opportunities associated with Ziziphus mauritiana (Jain et al., 2019).In conclusion, Ziziphus mauritiana fruit holds promise as a valuable resource for improving income in rural areas through its nutritional, medicinal, and economic potential. However, realizing these benefits requires addressing challenges through supportive policies, infrastructure development, and community engagement strategies.

3. Methodology

3.1 Research Design

The study was based on the social constructivist-interpretivist paradigm. It emphasizes that reality is socially constructed through interactions and interpretations rather than being objective and absolute. This paradigm focuses on how individuals and groups make sense of their experiences, beliefs, and behaviors within their social contexts. The main aim of this study was to explore the indigenous Ziziphus mauritiana (Masau) fruit and its potential for poverty alleviation to parents of most learners in Muzarabani District. The study adopted a qualitative case study design to explore the indigenous Ziziphus mauritiana (Masau) fruit and its potential for poverty alleviation to most parents of learners in Muzarabani schools in Zimbabwe. A sample of 3 primary schools in Muzarabani District was randomly selected to take part in this study out of all the primary schools in Muzarabani District. The three school heads of the selected schools automatically became part of the sample. Ninety (90) learners *(30 learners from each school)* without proper uniforms were randomly selected in order to establish the standard of living of their families. Random sampling was used to ensure the validity and reliability of data since it takes advantage of the most up-to-date information on the sample participants. It is a constrained technique since the validity of the selected criterion is in no doubt. It is impossible to use or generalize inferential parametric statistics to the entire population. Fifteen (15) School Development Committee (SDC) members *(5 from each school)* were purposively selected to ensure the selection of participants with in-depth information. Semi-structured interviews were used to obtain data from the school heads. The observation method was used to collect data from learners. Focus group discussions were held in each school with the SDC members. Three different sessions of Focus Group Discussions were held. The researcher heeded McMillan and Schumacher's (2010) assertion that qualitative research entails an inductive analysis of data by the researcher, in order to establish patterns and themes, producing a final written research report that captures the participants' voices.

4. Results and Discussion

The study established that, the masau fruits are of social, economic and nutritional significance to the Muzarabani people. This was supported by Nyanga, Nout, Gadaga, Boekhout & Zwietering (2008) who mentioned that in Sub Sahara Africa the Masau trees are an essential source of food and income to local communities.

Most respondents indicated that the people of Muzarabani consume fresh *masau* fruits every day during the season. This was supported by Raman (2006) who said that Among the indigenous fruit trees in Zimbabwe the Masau fruit plays a very important role in the livelihoods of the rural people of Muzarabani. The study found out that the people of Muzarabani gather the fruit every day early in the morning when they are in season and most of the children in Muzarabani carry this fruit to school as lunch.

Most of the respondents revealed that they believe the fruit is a complete meal on its own, which means it plays an important role in the diet. This is in line with Nyanga (2008) who pointed out that the fruits are good sources of nutrients such as carbohydrates, protein, and essential micronutrients such as calcium, potassium, phosphorus, copper, iron, zinc and vitamin C.

Most learner participants revealed that they carry to school and consume the fresh fruit when in season. When out of season they carry the fruit in dried form or even the products of the fruit such as traditional cake, ordinary drink or maheu as their lunch. This was supported by Nyanga (2008) who said that masau fruit is usually gathered by women and children and eaten raw or processed into products such as porridge, traditional cakes, *mahewu* (non-alcoholic fermented beverage), and jam, which are sold at local markets at a small scale. However, they indicated that they also needed variety of some other foods as their lunch. The study revealed that because of poverty most parents could not afford some other foods as lunch of their children at school.

The research also established that most people of Muzarabani gather and sell some of this fruit at rural and urban markets. According to the Africanacity theory Africans find ways to bring possibilities to life (Cross, 2021). This was also observed by Khoshbabhi, (2005) who pointed out that, the fruits of this tree can be used as income generating project. However, upon a closer look the researcher observed that the selling of this fruit by most parents of learners in Muzarabani was done mostly locally and a few could afford to go and sell at urban markets. This means that the selling was done at a smaller scale.

The study established that, most parents in Muzarabani sell the wild fruit in order to send their children to school. This was supported by Tembo et al (2008) who mentioned that these indigenous fruits are an important source of income for poor people since entry barriers for collection and use are relatively low. However, all the 3 school Heads and some SDC member participants indicated that the majority of parents in Muzarabani were finding it hard to pay full school fees for their children. Some were not paying the fees on time and others were failing completely to the extent that their children end up dropping out of school. Yet they were surrounded by this precious fruit. On a sad note, the researcher observed that some parents could not afford to buy complete uniform for their children nor buy enough stationary needed at school by their children.

In addition, according to Africanacity theory in business, Africans are committed to doing whatever it takes to make sure customers around them have the best products just like the people of Muzarabani. These people made high quality jam, traditional cakes and beverages such as maheu, wine and alcohol out of this fruit for business. The study established that even though the people of Muzarabani came up with the best end products of the Masau fruit at a larger scale there were very few customers to buy the products in and around Muzarabani since everyone else was doing likewise. This was supported by Kehinde et al., (2020) who said that access to markets, fair pricing mechanisms, and sustainable cultivation practices are crucial for maximizing economic benefits.

The other way to generate income using the Masau fruit that came out of the study was to brew beer. The ordinary beer called Mlunguzi and traditional distilled one called Kachasu, Even-though other researchers such as (Faroogi, 2016; Nyanga, 2008: Raman, 2006) had come up with such findings still most parents in Muzarabani are finding it difficult to pay school fees and to get resources needed at school by their children.
The SDC member participants revealed that most parents in Muzarabani, both men and women drink Kachasu and this seems to have detrimental effects on their health. According to Gadaga et al., (1999), In Zimbabwe, *kachasu* consumption is illegal because it is alleged to be toxic hence it can cause ill health and is also associated with cases of sudden death The researcher also observed that most Muzarabani men are now addicted to the beer to the extent that they woke up in the morning and start looking for the beer instead of working and being responsible. Women and children are the ones who mostly does the picking of the precious fruit.

5. Conclusion and Recommendations

5.1 Conclusion

The majority of parents in Muzarabani were finding it hard to pay full school fees for their children. Some were not paying the fees on time and others were failing completely to the extent that their children end up dropping out of school. Yet they were surrounded by Ziziphus Mauritian (Masau) fruit tree. The study concluded that the indigenous Ziziphus Mauritian (Masau) fruit tree the masau fruits are of social, economic and nutritional significance to the Muzarabani people. the indigenous Ziziphus Mauritian (Masau) fruit tree had potential to increase income among the people of Muzarabani District in Zimbabwean increase in income amongst the people of Muzarabani meant that most parents would afford to send their children to school. According to Nyanga, Nout, Gadaga, Boekhout & Zwietering (2008) the Masau trees are an essential source of food and income to local communities.

Also, the that the fruits are good sources of nutrients such as carbohydrates, protein, and essential micronutrients such as calcium, potassium, phosphorus, copper, iron, zinc and vitamin C which was another advantage to the people of Muzarabani. However, there was need for variety since most of the students mainly consumed the fruit at school. Despite the negatives surrounding the fruit hereby the local people used the fruit to make Kachasu which as dangerous to the health of the people, the law enforcement had a duty to eradicate this problem.

5.2 Recommendations

The study recommends that:

1. The Government through one of its universities need to establish a plant in Muzarabani to process the indigenous Ziziphus mauritiana (Masau) fruit (thus education 5.0 in Zimbabwe)
2. The University to invest in research to improve cultivation techniques, increase yield, and enhance fruit quality which is disease resistant.
3. The University to offer training and workshops to the local people on best practices for cultivation, irrigation methods and pest management and to ensure environmental sustainability. (thus, community engagement)
4. The company to employ the local people of Muzarabani (thus job creation)
5. The local people to work in the new fields as well as harvesting the wild fruit and selling to the company: thereby generating some income for themselves and be able to look after their children especially their education.

6. The company to sell the by-products both nationally and internationally so that the company gets forex and handsomely pay their workers.
7. Provide microfinance options or low-interest loans for farmers to invest in Ziziphus mauritiana cultivation equipment.
8. Improve rural infrastructure such as roads and transportation networks to facilitate the distribution of Ziziphus mauritiana fruit to markets.
9. Members of the community should be educated about the dangers of Kachasu on political gatherings, traditional gathering, church congregations, school meetings, posters and the police should be vigilant.

By implementing these recommendations, governments can help rural communities harness the economic and nutritional benefits of Ziziphus mauritiana fruit, thereby improving livelihoods and fostering sustainable development in these areas.

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