Reclaiming Africa's Dietary Heritage: Unpacking the Climate Resilience and Nutritional Benefits of *Svoboda* in Zimbabwe

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Abstract

The decline of traditional food systems in Sub-Saharan Africa, including Zimbabwe, has exacerbated farmers' vulnerability to climate change. Despite the abundance of research on known small grains like rapoko (finger millet), sorghum, and millet, the efficacy of svoboda (barnyard millet), a near-extinct small grain crop, has been overlooked. Traditionally cultivated in Manicaland and Masvingo Province for its adaptability and high nutritional benefits (International Plant Genetic Resources Institute, 2019), svoboda (grain size: 1.5-2.5mm) remains a treasured heritage crop among a few elderly farmers. This qualitative study, conducted in Bikita and Marange Districts, picking 8 participants (3 farming households and 1 expert from each district) were snowballed to explore svoboda's climate resilience, nutritional profile, and potential to enhance food security, rural development, and environmental sustainability through in-depth interviews and field observations with adult communal farmers. The districts were chosen because they are among those adversely and constantly affected by climatic changes apart from their historical significance in svoboda growing. The findings advocate for targeted campaigns to revitalize svoboda cultivation, leveraging dry-land agriculture to promote climate resilience and nutritional well-being. As farming communities shift towards modern foods, the nation's food security, sovereignty, and cultural heritage are compromised. Revitalizing svoboda offers a unique opportunity to reclaim Africa's dietary heritage and promote sustainable development.

Keywords: aridity, climate change, dietary heritage, gastronomy, permaculture, *svoboda*

Introduction

The sharp decline of traditional food systems in Sub-Saharan Africa, exemplified by Zimbabwe, has rendered farmers increasingly vulnerable to the vagaries of climate change. This paradigmatic shift has compromised the nation’s food security, sovereignty and cultural heritage, underscoring the need for a nuanced reevaluation of indigenous crop varieties. This qualitative study seeks to raise awareness on the need to revitalise the near-extinct, forgotten or lost crop variety known locally as *svoboda*, and widely known as barnyard millet (*Echinochloa esculenta*), a small grain millet often ground into flour and consumed as rice. It can be dehulled, parboiled, and eaten the way people do to rice. It is endowed with remarkable nutritional, climate resilience, and socioeconomic benefits.

Background

In Zimbabwe, the Bikita and Marange Districts are paradigmatic examples of regions beset by erratic rainfall patterns and climatic changes, which have deleterious effects on agricultural productivity. The districts' predominantly sandy and poor soils, which are prevalent in most parts of the region, are ill-suited for modern grains, which are increasingly vulnerable to climate-related stresses. The two districts' agro-ecological conditions, characterised by sandy soils and a semi-arid climate, are well-suited for the rain-fed growing *svoboda*. *Svoboda* boasts a grain size of 1.5-2.5mm, which is smaller than that of *rapoko,* which ranges from 2.5-3.5mm. This traditional crop is highly adaptable to the local conditions, making it an ideal choice for smallholder farmers in the area. Historically, both Marange and Bikita Districts have been one of the strongholds of *svoboda* production in Zimbabwe, with local farmers cultivating the crop for centuries.

Svoboda is typically grown in areas with low rainfall, where other crops may struggle to thrive (Akplo et al, 2023). As Alkire and Foster (2011) note, the crop is planted in well-prepared fields, often in rotation with others, and requires minimal external inputs. Farmers tend to the crop regularly, ensuring that it receives adequate moisture and sunlight. The plant itself has narrow, pointed leaves with a bluish-green color and a slender, straight stem that grows to a height of 1-2 meters. Harvesting is typically done by hand using traditional methods, where mature panicles are cut, dried, and then threshed to extract the grains, which are then winnowed to remove chaff and debris. The grains are stored in traditional granaries or bags, where they can be kept for extended periods without spoilage. When preparing *svoboda* for consumption, the grains are typically dehulled, parboiled, and then ground into flour, which can be used to make a variety of traditional dishes, including porridge, bread, and beer. The straw from the crop is also used for animal feed and thatching.

In addition to its uses as a food crop, *svoboda* has also been used in traditional medicine for its numerous health benefits. The crop is rich in nutrients, including fibre, protein, and minerals, making it an excellent food source for people with dietary restrictions. The traditional knowledge and practices associated with *svoboda* cultivation have been passed down through generations, with farmers playing a crucial role in preserving the crop's genetic diversity and cultural significance. Despite its numerous benefits, *svoboda* cultivation has declined precipitously with the advent of colonialism and the introduction of so-called modern crops, like maize, relegating this erstwhile staple crop to the periphery of agricultural practice. Today, *svoboda* persists in the hands of a dwindling coterie of conservative farmers who have preserved the traditional knowledge and practices associated with its cultivation, providing a vital link to the past. This study sought to build on this traditional knowledge, exploring the

potential of *svoboda* to promote climate resilience, nutritional well-being, and sustainable development in Bikita and Marange Districts.

Statement of the Problem

The vulnerability of most sub-Saharan African farming populations to the vagaries of climate change-related stresses is attributable to a heavy reliance on modern cross-bread hybrid cereals persistently grown on climate-induced dryland farming zones. In Zimbabwe, the net effect for this is food hunger, limited livelihood options and poverty and hence as a remedy, this study gives advocacy to *svoboda* with climate-change-related positives for seed revival, sustainable food security in rural communities.

Research Objectives

The objectives of the study were to:

1. Investigate and document the nutrient properties of *svoboda.*
2. Explore the traditional preservation methods and cultural significance of *svoboda* in rural communities.
3. Examine the potential of *svoboda* in promoting sustainable agriculture, enhancing food security and improving livelihoods in rural communities.

Research Questions

The study was guided by the following questions:

1. What are the nutritional characteristics and benefits of *svoboda*?
2. How have rural communities in Zimbabwe preserved and maintained *svoboda* over time?
3. What are the potential contributions of *svoboda* to sustainable agriculture, food security and rural livelihoods?

Literature Review

The decline of traditional food systems in Sub-Saharan Africa, including Zimbabwe, has exacerbated the vulnerability of farmers to climate change (Muchuru and Nhamo (2019). Despite concerted efforts to promote modern crop varieties, small traditional grains such as *rapoko*, sorghum, pearl millet and sundry have been largely overlooked, yet they offer a promising solution to climate change resilience (Tesfaye et al., 2020). Such grains are currently, though minimally grown in parts of Manicaland and Masvingo Provinces for their adaptability and high nutritional benefits (International Plant Genetic Resources Institute, 2019). Despite these merits, a burgeoning body of research suggests that small grains are more resilient to climate

change, require less water, and are rich in nutrients (Ferguson and Lovell, 2014).

This study attempts to promote *svoboda* farming in Zimbabwe's climate change- prone areas such as Bikita and Marange, and so forth to increase food security and livelihood options. Svoboda is a near-extinct type of millet that is climate change, weevil, pest and disease resilient. A critical examination of *svoboda's* etymology, derived from the Shona language, reveals that it means "freedom" or "liberation," which aptly describes its potential to liberate farmers from the constraints of modern crop varieties (ZIMVAC, 2023) and a dependency on government and donor agencies for food security. The crop's small size (grain size: 1.5-2.5mm) and hardiness make it an ideal crop for dry-land agriculture, which is critical for promoting climate resilience and nutritional well-being in Zimbabwe (Chitiyo & Duram, 2017). Furthermore, *svoboda's* nutritional profile, which includes high levels of fibre, protein and minerals, makes it an excellent crop for promoting nutritional well-being (Pingali et al., 2021).

Empirical studies have demonstrated the efficacy of permaculture-based farming methods, which promote the use of small grains like *svoboda,* in improving crop yields and enhancing food security (Akhtar, 2016; Vitari & David, 2017). Conservation farming, which involves the use of small grains has been successfully implemented in areas like Mukore Village in Bikita, Zimbabwe (Chitongo, 2013). These approaches offer a sustainable alternative to modern crop varieties which are often susceptible to climate change factors (Janzon, 2018). By promoting agro-ecological practices, small grains like *svoboda* can play a critical role in enhancing food security, rural development and environmental sustainability.

In Zimbabwe, small grains have been found to be more nutritious than modern cross-bred cereals, which cannot withstand drought and changing weather conditions (ZIMVAV, 2023). Research has shown that small grains like *svoboda* are rich in antioxidants, phytochemicals and other nutrients that are essential for human health (Ferguson & Lovell, 2014). Furthermore, small grains like svoboda require less water and pesticides, making them a more sustainable option for farmers (Althouse, 2016). By promoting the use of small grains like *svoboda,* Zimbabwe can reduce its reliance on imported crops and promote food sovereignty.

Revitalising *svoboda* offers a unique opportunity to reclaim Africa's dietary heritage and promote sustainable development (Althouse, 2016). By leveraging dry-land agriculture and promoting climate resilience and nutritional well-being, *svoboda* can play a critical role in enhancing food security, rural development and environmental sustainability in Zimbabwe (Ferguson & Lovell, 2014). As scholars like Janzon (2018) argue, it is time to scale up small grain varieties like *svoboda* and downplay modern crop varieties that are vulnerable to climate change. By doing so, Zimbabwe can

promote a more sustainable and resilient food system that benefits both farmers and consumers.

Methods

This qualitative study employed snowball sampling to select 8 information-rich participants, consisting of 3 farming households and 1 expert from each of the Bikita and Marange Districts in Manicaland and Masvingo Provinces, Zimbabwe. The districts were conveniently chosen due to their historical significance in *svoboda* cultivation and vulnerability to climate change. The study utilized a case study design, with a focus on smallholder farmers who grow Svoboda millet in Bikita and Marange Districts of Zimbabwe. Data were collected in the pre, during and post 2024 farming season through in-depth interviews and field observations, focusing on adult communal farmers who traditionally cultivated Svoboda. The data collection process aimed to gather information on the socio-economic characteristics of the farmers, their production practices, and the challenges they face in growing *svoboda.* The data analysis was conducted using a thematic approach, where the data were analyzed to identify key themes and patterns. The analysis revealed that *svoboda* millet has several advantages over other traditional crops, including its ability to thrive in poor soils and its resistance to pests and diseases. To ensure anonymity and confidentiality, villages and respondents were coded. The study adhered to ethical standards, obtaining clearance and informed consent. Trustworthiness was ensured through triangulation of data collection methods and analysis, as well as member checking.

The study's findings were further validated through a comparative analysis of *svoboda* and other traditional seed varieties. The analysis revealed that *svoboda* has several advantages that make it an ideal crop for farmers in drought-prone areas, including its drought resilience, nutritional value, and resistance to pests and diseases. *Svoboda's* deep roots allow it to access water deep in the soil, making it more resistant to drought. Additionally, *svoboda* is also less susceptible to pests and diseases, making it a low-maintenance crop that requires fewer external inputs. By promoting the production and consumption of *svoboda,* it is possible to preserve cultural heritage and promote community cohesion (Marongwe, 2013). The study's findings suggest that reviving *svoboda* may have numerous benefits for food security, sustainable agriculture, and cultural preservation through using it, for example in cultural observances and rituals such as beer brewing in rain-making ceremonies. It is essential to provide support to farmers who still grow this crop and promote its production and consumption to ensure its survival for future generations.

Permaculture Theory as a Paradigm for Sustainable Ecology

The Permaculture theory, conceived by Australian scientists Bill Mollison and David Holmgren, emerged as a response to the detrimental effects of industrialisation on the Australian environment. Mollison & Holmgren (1978) introduced the concept of permaculture, emphasizing sustainable ecology and industrial production. Initially designed to mimic natural ecosystems, permaculture aimed to promote sustainable benefits while minimizing harm to nature. Over time, the scope of permaculture expanded to encompass social systems, sustainable agro-biodiversity, and practical solutions to agricultural challenges. The theory is guided by three ethical principles: earth care, people care, and fair share (Holmgren, 2002). Earth care involves preserving diverse life forms, while people care emphasizes the interconnectedness between humanity and nature. Fair share ensures equitable resource distribution, reducing poverty and promoting harmonious coexistence. Permaculture has been defined as the creation of ecological human settlements, particularly through the development of sustainable agricultural systems that mimic natural ecosystems (Althouse, 2016). Mollison founded the first Permaculture Institute in Northern Australia in 1979, offering design courses based on his publication*, Permaculture a Designer's Manual* (Macnamara, 2001). The concept has since spread globally, with permaculture associations established worldwide. The permaculture framework advocates for a transition from traditional farming methods, which often result in soil degradation, to conservation agriculture that promotes sustainable development (Janzon, 2018). This approach encourages minimal soil disturbance, boosts soil-microbial symbiosis, and facilitates crop rotation and mixed cropping for optimal yields (Chitongo, 2013).

Results and discussion

Revitalizing traditional food systems

The sharp decline of traditional food systems in Sub-Saharan Africa, exemplified by Zimbabwe, has rendered farmers increasingly vulnerable to the vagaries of climate change (Macnamara, 2001). This study's findings suggest that revitalizing traditional crops like *svoboda* can promote climate resilience, nutritional well-being, and sustainable development. As Ferguson & Lovell (2014) noted, small grains like *svoboda* are more resilient to climate change and require less water. Communal farmers in Bikita and Marange Districts who grow *svoboda* reported higher yields and better adaptation to local conditions compared to those growing modern cross-bred grains like maize.

Svoboda has inherent resilience to climate change, making it ideal for regions experiencing unpredictable weather patterns. According to ZimTrade. (2024),

Zimbabwe's worst drought in 40 years during the 2023/2024 growing season drastically impacted crop yields, particularly for maize, which is the country's principal grain. These crops also provide critical nutrients essential for growth and development, offering protection against infections and diseases. Traditional foods have superior nutritional composition, but they are largely absent from the Zimbabwean diet (Chitiyo & Duram, 2017). Revitalizing traditional crops can contribute to sustainable development by promoting local food systems, improving food security, and enhancing community resilience. In Zimbabwe, more than 70% of the population relies on rain-fed agriculture, making them vulnerable to climate-related shocks. Very few farmers who are growing drought-resistant small grain crop varieties were noted to be relying on near-extinct small grain varieties like *svoboda* as some farmers testified.

Farmer 1 from Bikita District noted,

> *Svoboda inhaka yedu uye kubva kare yaitipa goho kunyange munguva yekusanaya kwevhura.*
>
> (Svoboda is our heritage crop, and it has always given us good yields even in times of drought).

Farmer 2 from Marange District echoed this sentiment, stating:

> *Taingorima svoboda kubva kare uye yaitibetsera kuraramisa mhuri dzedu.*
>
> (We've been growing svoboda for generations and it's always provided for our families).

The colonial legacy in Zimbabwe continues to stop farmers to return and adapt to traditional cereal crops often stereotyped as backward. Adopting traditional cereal grains as staples depends on the behaviour of consumers and markets; it is more about demand than supply. Zimbabwean consumers mainly prefer maize as a staple, but there is a growing demand for traditional products, mainly for health reasons.

Favourable price control measures through the Zimbabwe Grain Marketing Board (GMB) have also helped to incentivise farmers to grow these crops. Interventions to promote the consumption of traditional foods must take into account generational factors, family contribution, and food safety at every stage of the socio-ecological model. Agricultural extension services should be tailored to provide training and resources for farmers on best practices for growing traditional crops. Efforts should be made to develop markets for traditional crops, improving their economic viability and

appeal to a wider audience. By doing so, Zimbabwe can build a more resilient and sustainable food system, better equipped to withstand the challenges of climate change.

Reasons behind the near-extinction of *svoboda* seed variety and the need for its revival

Local farmers attribute the decline in *svoboda* growing to several factors, primarily the lack of support and recognition from government institutions and the agricultural sector at large. Many farmers have shifted to growing crops varieties that are more demanded at the market and with better price support. This shift has led to a decline in the cultivation of traditional crops like Svoboda, which, despite its numerous benefits, is often overlooked in favor of more modern and lucrative options.

The neglect of traditional crops like *svoboda* is not just an oversight but also a result of changing consumer preferences and lack of awareness about the nutritional and environmental benefits of these crops. Chitiyo & Duram (2017) note that alternative agriculture, which includes traditional crops like Svoboda, is often marginalised by consumer food perceptions and international agencies. This marginalisation has limited the growth and development of local markets for traditional crops, making it harder for farmers to sustain their production. To promote the revival of Svoboda, Chitiyo & Duram recommend that local farmers should be supported in growing traditional small grains through initiatives that raise awareness about the benefits of these crops and develop local markets. In addition to awareness and market development, Janzon (2018) suggests that promoting the growing of traditional small grains like Svoboda requires a focus on sustainable agricultural practices that enhance soil health and biodiversity. By adopting practices that work in harmony with the environment, farmers can improve the productivity of their land while reducing their reliance on external inputs. This approach not only benefits the environment but also makes farming more sustainable and resilient in the face of climate change. Janzon's recommendations highlight the importance of integrating traditional knowledge with modern sustainable practices to promote the growth of crops like *svoboda.*

Marongwe (2013) emphasises the need for policy support and institutional frameworks that recognize the value of traditional crops like *svoboda.* By developing policies that support the production, processing, and marketing of traditional crops, like the 2023/2024 National Traditional Grains Policy of Zimbabwe, governments can create an enabling environment for farmers to grow these crops sustainably (ZimTrade, 2024). This could include providing training and resources to farmers, supporting the development of local markets, and promoting the nutritional benefits of traditional crops. With the right support and policies in place, traditional crops like svoboda can

play a critical role in enhancing food security, promoting sustainable agriculture, and preserving cultural heritage. This is due to a number of reasons such as drought resistance, weevil resistance, long shelf span, low maintenance costs and ability to grow well on different soil types.

Fig. 1: Svoboda (*Echinochloa esculenta*)

It can be seen in Figure 1 that *svoboda* grain size can closely match 1.5 to 2.5mm with a hardiness that makes it an ideal crop for dry-land agriculture. According to Chitiyo and Duram (2017), it is highly medicinal and nutritional having high fibre, protein and

mineral content.

One farmer in Bikita District boasted of having harvested 4 sacks of *svoboda,* which he grew on a very small piece of land and he expressed confidence that he could produce a significant yield if he were to grow it on a larger scale. The table below shows data that were obtained from the observations and interviews held in both Bikita and Marange Districts.

Quantity of *svoboda* grown by Bikita and Marange District Communal Farmers in the 2024 Period

Table 1

	Bikita District				**Marange District**		
	Village A Farmer 1	**Village B Farmer 2**	**Village C Farmer 3**		**Village A Farmer 4**	**Village B Farmer 5**	**Village C Farmer 6**
Svoboda Quantity in bags	4	3	1		1	0.5	3
Main purpose	Beer brewing, food	Beer Brewing, food	Medicinal purposes		Preserving heritage, medicinal purposes	Preserving heritage, food	Food for medicinal purposes

In spite of the fact that most farmers in Bikita District favoured growing modern cereals such as maize, they had very little harvest compared to the few farmers who grew favoured growing *svoboda*. None of the *svoboda* crop grown failed according to the information obtained in both districts. Had the Svoboda crop been recommended, the farmers could have been growing it on large pieces of land to obtain big yields. Farmers 3, 4 and 5 suggested that they grew *svoboda* mainly to prevent the crop from extinction and for its drought and weevil resilience. However, all the farmers grew *svoboda* as a preserve and food while Farmers 3, 4 and 6 grew it particularly for medicinal purposes such as its potential to treat type 2 diabetes, gluten-related disorders and iron deficiency anaemia Chitiyo & Duram, 2017). The *svoboda* crop did not fail them because it proved to be drought, weevil, pest and disease resistant as compared to other modern cross-bred cereals like maize.

This resilience of the *svoboda* crop is a testament to the potential benefits of traditional farming practices, which have often been overlooked in favour of modern agricultural methods. The fact that these crops have been preserved for generations speaks to

their inherent value and the knowledge that has been passed down through the years. By embracing these traditional practices, farmers in Bikita District and beyond may be able to build a more sustainable and resilient agricultural system, one that is better equipped to withstand the challenges of climate change and other environmental stressors.

Furthermore, the medicinal properties of the *svoboda* crop highlight the importance of preserving biodiversity and the knowledge associated with traditional crops. As the world grapples with the challenges of climate change, food insecurity, and public health, the potential benefits of traditional crops like *svoboda* cannot be overstated. By supporting and promoting these crops, policymakers and agricultural experts can help to ensure that communities like those in Bikita District have access to nutritious food, sustainable livelihoods, and the knowledge and resources they need to thrive.

Svododa's Climate Resilience and Adaptation

Climate resilience and adaptation are critical concerns for agricultural communities worldwide, particularly in regions vulnerable to climate-related stresses. Traditional small grains like Svoboda millet have demonstrated remarkable resilience to these stresses, attributable to their adaptability to poor soils, drought, and high temperatures (Janzon, 2018). As Akhtar et al. (2016) noted, permaculture-based farming methods, which promote the use of small grains, in this case, svoboda millet, can improve crop yields and enhance food security.

Farmer 1 from Marange District explained:

> *Svoboda yaingorimiwa munharaunda muno kwemakore, uye inonyatsoda nzvimbo seino. Haipfukutiwe uye inorarama muivhu chero risina chikafu*.
>
> (Svoboda millet has been traditionally grown in this area for centuries and it's well-suited to our local conditions. It's resistant to weevils and it can thrive in poor soils).

This expertise was corroborated by direct observations which revealed that Svoboda millet fields in both districts showed better crop yields and showed fewer signs of stress compared to modern ones.

The benefits of growing *svoboda* millet are further underscored by the data collected from the two districts. In Bikita District, the average yield of *svoboda* was approximately 3 to 4 sacks per acre with each sack weighing about 50 kilograms, a

remarkable achievement considering the crop's rarity and the challenging environmental conditions. In Marange District, two farmers stored *svoboda*, with Farmer 4 having a single sack while Farmer 5 and Farmer 6 have a half bucket and three buckets respectively. These findings suggest that promoting the production and consumption of *svoboda* can have significant benefits for local communities. Additionally, the crop's adaptability to poor soils and drought makes it an ideal choice for farmers in areas with challenging environmental conditions.

Moreover, the preservation of traditional crops like *svoboda* millet is crucial for maintaining biodiversity and ensuring food security in the face of climate change compared to other drought prone crops. As the global climate continues to change, crops like *svoboda* will become increasingly important for communities that rely on agriculture for their livelihoods. By supporting and promoting these crops, policymakers and agricultural experts can help to ensure that these communities have access to nutritious food and sustainable livelihoods.

Furthermore, the potential for *svoboda* to contribute to sustainable agriculture and food security in Zimbabwe is significant. With the right support and promotion, this crop could become a major player in the country's agricultural sector, providing a reliable source of food and income for thousands of smallholder farmers. As such, policymakers and agricultural stakeholders must take a proactive approach to supporting the production and consumption of *svoboda,* and to promoting its benefits to local communities.

Nutritional and Medicinal Benefits of Svoboda

Traditional small grains like *svoboda* are increasingly recognised for their medicinal properties and high nutritional value. Farmer 3 from Bikita District reported,

> *Tinoshandisa svoboda kubika sadza, chikafu chemuno muZimbabwe. Inoshandisiwa zve pachivanhu chedu sekubika doro uye inozivikanwa nekurapa zvirwere.*
>
> (We use svoboda to make sadza, which is a staple food in our community. It's also used in traditional beer brewing, and it's known to have health benefits).

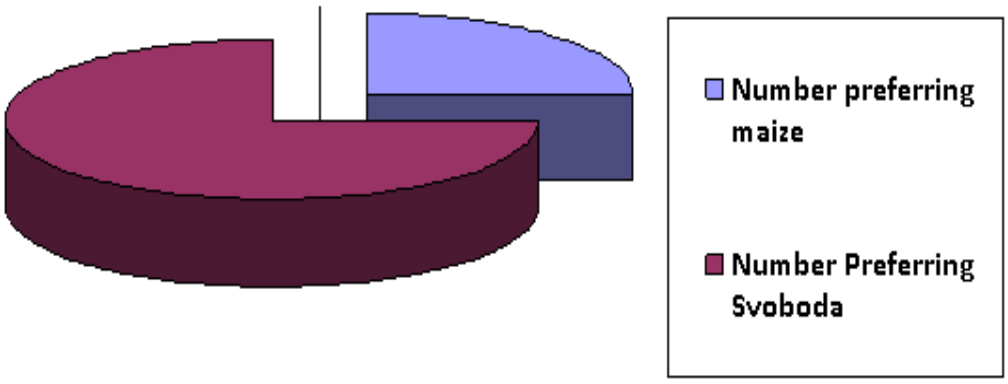
For instance, *svoboda* is rich in fibre, protein, and minerals, making it an excellent crop for promoting nutritional well-being. Additionally, the crop has been found to have antioxidant properties, which can help to prevent chronic diseases. These findings suggest that promoting the production and consumption of *svoboda* can have

significant health benefits for local communities. Furthermore, the crop's nutritional benefits can help to address malnutrition and related health problems in rural areas.

Notably, most farmers in Bikita District who grew *svoboda* reported that they used it to make traditional foods such as *sadza* and traditional beer. Similarly, in Marange District, farmers who grew *svoboda* reported that they used it to make traditional foods, consume it as a medical recommendation, and to promote nutritional well-being. The versatility of *svoboda* in traditional food preparation and its perceived health benefits highlight its potential to contribute to the nutritional security of rural communities. The potential health benefits of *svoboda* are particularly significant in the context of rural Zimbabwe, where access to healthcare and nutritious food can be limited. By promoting the production and consumption of this crop, policymakers and healthcare professionals can help to address some of the pressing health challenges faced by rural communities. Moreover, the antioxidant and nutritional properties of *svoboda* make it an attractive crop for communities looking to adopt healthier dietary options.

In addition to its health benefits, the cultural significance of *svoboda* in traditional food preparation and ceremonies should not be overlooked. The crop's role in traditional beer brewing and *sadza* preparation highlights its importance in social and cultural practices. By supporting the production and consumption of Svoboda millet, policymakers can also help to preserve cultural heritage and promote community cohesion.

Fig 2: Comparative Assessment of Crop Preference in Face of Climate Change



Farmers preferring svoboda= 6 (75%); Farmers Preferring Maize= 2 (25%)

Socio-economic Benefits and Cultural Significance

Revitalizing *svoboda* can promote socio-economic benefits and cultural significance in local communities such as communal practices like beer brewing and sale, barter trade and sundry. As Chitiyo and Duram (2017) noted, alternative agriculture

characteristics, such as those found in millets production, can enhance rural development and environmental sustainability. Farmer 6 from Marange District noted,

> *''Svoboda is a part of our cultural heritage, and it's a symbol of our community's resilience and adaptability.''*

The crop is also an important source of income for local farmers, who can sell it at premium prices due to its high nutritional value. For example, in Bikita District, Farmers 1 and 2 who grew *svoboda* reported higher incomes compared to those growing modern cereals. Notably, Farmers 4 and 6 in Marange District who grew *svoboda* reported that they sold it to augment family income.

The economic benefits of growing *svoboda* are likely to be particularly significant for smallholder farmers, who often struggle to access markets and secure a reliable income. By promoting the production and sale of this crop, policymakers can help to create new economic opportunities for rural communities and support sustainable livelihoods. This, in turn, can contribute to poverty reduction and improved food security, as farmers are better able to afford the food and other necessities they need.

Table 2: A Comparative Analysis of *Svoboda* and Maize

	Advantages	**Disadvantages**
	-drought resistant/withstands climate-related shocks -weevil resistant Disease and pest resistant -easy to store -an icon for heritage preservation -nutritional benefits -medicinal value -favors virtually all soil types -used to pay fines and beer brewing -potential to enhance food security, rural development and environmental sustainability	- currently limited market access -currently limited on *svoboda* in general -limited availability of processing machinery -not a preference by modern consumers as food

Maize and other cereals	-high market demand (widely traded commodity -higher yields per hectare if rains are stable -is a staple food in many cultures -shorter growth cycle	-require adequate rains -often succumb to drought Prone to pests and diseases e.g., fall armyworm and BMB, eldana -purchasing pests and chemicals costly -high labour cost -storage costs -falling market prices -require fertile soils -labor intensive e.t.c.

It can be noted that, despite some advantages maize has over *svoboda*, climate change factors stand as the major drawback and, therefore, the need to recommend Svoboda for its adaptability to climatic vicissitudes and the need to preserve the country's heritage. Maize and other cereals are often vulnerable to climate change as well as pests and diseases among other disadvantages mentioned in the above table. During the interviews and field observations held, it was evident that most communal farmers prefer very much to grow Svoboda but they lacked support from local authorities and the government.

A Comparative Analysis of *Svoboda* and other small grain seed varieties

A comparative analysis of *svoboda* and other traditional seed varieties reveals that Svoboda has several advantages that make it an ideal crop for farmers in drought-prone areas. According to one farmer from Bikita District,

> *Svoboda millet is more resilient to drought than other traditional crops like rapoko, sorghum, and finger millet. It can survive with minimal rainfall and still produce a good yield.*

The farmer noted that Svoboda millet's deep roots allow it to access water deep in the soil, making it more resistant to drought. The farmer also highlighted the merits of *svoboda* in terms of its nutritional value observing that Svoboda millet is rich in fibre, protein and minerals, making it an excellent crop for promoting nutritional well-being. In comparison, other small grain crops like *rapoko* and sorghum may not have the same level of nutritional value. In addition to its drought resilience and nutritional value, *svoboda* is also less susceptible to pests and diseases. The farmer noted that *svoboda* is resistant to weevils and other pests, which makes it a low-maintenance crop that requires fewer external inputs. This makes *svoboda* an attractive option for farmers who want to reduce their reliance on chemical pesticides and maintain a more sustainable farming system. The farmer also highlighted the importance of preserving

svoboda as it is part of African cultural heritage and it is essential that farmers preserve them for future generations. By promoting the production and consumption of *svoboda,* it is possible to preserve cultural heritage and promote community cohesion.

Therefore, the above observation reveals that *svoboda* has several advantages that make it an ideal crop for farmers in drought-prone areas. Its drought resilience, nutritional value, and high resistance to pests and diseases make it a low-maintenance crop that can provide a reliable source of food and income for farmers.

Harnessing the Power of Small Grains for a Food-secure Future

The data analysis reveals that reviving *svoboda* can play a critical role in securing a food-secure future. According to Farmer 1,

> *Svoboda yavashoma chaizvo zvokuti yavakuda kukurudzira varimi vanayo vasara kuti vairime. Izvi zvikasaitiwa, ndiwo mapararire embeu ye svoboda.*
>
> (Svoboda is a lost seed that needs to be revived through incentivizing the fewest farmers with remnant svoboda seed reserves. If not done, svoboda may become totally extinct).

This sentiment is echoed by many other farmers who participated in the study. The analysis highlights the importance of providing support to farmers who still grow *svoboda*, as they are the custodians of this valuable genetic resource. By incentivizing these farmers, it is possible to increase production and promote the crop's resilience to climate change.

The study also reveals that *svoboda* has several advantages over other traditional crops, including its ability to thrive in poor soils and its resistance to pests and diseases. Farmer 1 also noted that *svoboda* is a hardy crop that can survive with minimal rainfall, making it an ideal crop for our region. The analysis suggests that promoting the production and consumption of *svoboda* can help to improve food security, particularly in areas where other crops may struggle to grow.

The data analysis also highlights the potential of *svoboda* to contribute to sustainable agriculture and food security. By promoting the use of this crop, it is possible to reduce reliance on external inputs, such as fertilisers and pesticides, and promote more sustainable farming practices. This can have numerous benefits for the environment, including improved soil health through aeration, improving soil crump structure, and biodiversity. Furthermore, the study reveals that *svoboda* has significant cultural

importance, particularly in traditional food preparation and ceremonies. The analysis suggests that promoting the production and consumption of *svoboda* can help to preserve cultural heritage and promote community cohesion.

Conclusion and Recommendations

The revitalization of *svoboda,* a small grain crop on the brink of extinction, necessitates a multi-faceted approach that engages local authorities, cultural centres, and relevant ministries and departments in Zimbabwe's agricultural sector. To revive *svoboda*, a strategic intervention is required, involving the procurement of existing stocks at premium prices to incentivise farmers to replenish supply reserves. Subsequently, the certified *svoboda* seed should be promoted as a recommended crop, with yields commanding high prices at grain collection depots, such as the Grain Marketing Board of Zimbabwe. This approach will not only ensure the preservation of *svoboda* for future generations but also contribute to a more sustainable and healthier food system. Furthermore, cultural centres and local authorities should collaborate to promote the cultural significance of *svoboda,* while responsible ministries such as the Ministry of Lands, Agriculture, Water, Climate and Rural Resettlement should provide technical support and resources to facilitate the crop's sustainability. By adopting a coordinated and inclusive approach, Zimbabwe can successfully sustain *svoboda,* enhancing food security, promoting cultural heritage and contributing to a more resilient agricultural sector.

Recommendations

Based on the conclusion, the following three recommendations can be made:

1. The Ministry of Agriculture and other relevant departments, should procure existing stocks of *svoboda* at premium prices to *incentivize* farmers to replenish supply reserves and encourage more farmers to grow the crop.

2. The government should promote certified *svoboda* seed as a recommended crop, ensuring that farmers have access to high-quality seeds and technical support. This can be achieved through collaboration with agricultural extension services, research institutions, and other stakeholders.

3. Cultural centres and local authorities should collaborate to promote the cultural significance of svoboda, raising awareness about its importance in traditional practices and its potential to contribute to a more sustainable and resilient food system. This can include cultural events, educational programs, and community outreach initiatives.

4. For its drought and weevil resilience, it is also recommended to communal farmers that *svoboda* be tried in other drought prone areas of Zimbabwe such as Mberengwa, Gokwe, Chiredzi and Zaka

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