

## Exploring socioeconomic status of communal farmers in Emalahleni Local Municipality in the Eastern Cape, South Africa

S. Tokozwayo<sup>#</sup>, U. Gulwa<sup>1</sup>, A. Sogoni<sup>1</sup>, L. Royimani<sup>1</sup>, S. Matshawule<sup>2</sup>, S. Mthi<sup>3</sup>, M. Yawa<sup>1</sup>, W. Mashece<sup>4</sup> & M. Slayi<sup>5</sup>

<sup>1</sup>Department of Rural Development & Agrarian Reform, Döhne Agriculture Development Institute, Stutterheim, 4930, Eastern Cape, South Africa

<sup>2</sup>Department of Rural Development and Agrarian Reform, Aliwal North, Eastern Cape, South Africa

<sup>3</sup>Department of Rural Development and Agrarian Reform, Queenstown, Eastern Cape, South Africa

<sup>4</sup>Department of Animal Science, School of Agricultural Sciences, Faculty

Of Natural and Agricultural Sciences, Mmabatho 2735, North-West University, South Africa

<sup>5</sup>Risk and Vulnerability Science Centre, Faculty of Science and Agriculture, University of Fort Hare, Alice 5700, South Africa

---

### Abstract

Socioeconomic research is crucial for assessing a community's current state and guiding its development initiatives. The study aimed at assessing the socioeconomic status of Zwartwater communal farmers in Dordrecht, Emalahleni Local Municipality, Eastern Cape Province. A total of eight-five (85) communal farmers (i.e. livestock owners) were purposively selected and interviewed using semi-structured questionnaires. The results showed that most of respondents were males (54%) compared to females (46%). Additionally, the results revealed that majority of most farmers 53% had reached the primary school (53%) and 46% relied on both government's social support (46%) and livestock sales (42.35%). Livestock comprised sheep (72%), cattle (16%) and goats (11%). Zwartwater farmers kept livestock to generating income through wool fibre sales (44%) and sales of live animals (23%). Zwartwater livestock farmers were practising farming mainly producing wool fibre sales ( $\mu=4.75$ ) and meat consumption ( $\mu = 3.34$ ). Stock theft (55%) and livestock diseases (25%) were the most reported constraints faced by farmers. In conclusion, livestock farming in the Eastern Cape is predominantly male dominated, with females playing a lesser role. Low level of education among farmers may hinder the adoption of new technologies aimed at improving livestock productivity and combating constraints faced by farmers. Addressing these constraints requires robust government policies and creating an enabling environment for agricultural development.

---

**Keywords:** Communal, Livestock, questionnaires, Socioeconomic, stock-theft

<sup>#</sup>Corresponding author: furaluke@gmail.com

### Introduction

Globally, agriculture plays a critical role in driving the economic growth and improving the livelihood of people. In South Africa, the agricultural sector is vital for ensuring food security and sustaining a growing population (IDC, 2016). The Eastern Cape Province has the highest livestock numbers in the country and approximately 80% of its agricultural land is suitable for livestock farming. Over 65% of livestock is owned by communal farmers, but their genetic make-up and productivity are questionable (Mapekula, 2009). Communal farmers in Chris Hani District predominantly raise livestock, which is their primary source of income and sustenance for the local population (ECSECC, 2022). However, a disparity remains in participation levels of male and female farmers in livestock farming in communal areas.

Previous studies showed that men are mostly involved in livestock farming, while women are often limited to domestic duties and small-scale crop production (Mthi *et al.*, 2021; Admasu *et al.*, 2010). Women's potential contribution to farming and economic growth is hindered by gender imbalances that limit their access to opportunities such as beef exports. Furthermore, communal farmers face numerous constraints, including load shedding, unmaintained roads, high fuel prices, access to markets, stock theft, land degradation, bush encroachment, brown locust invasion and other climate-related factors such as droughts, floods, and erratic rainfall.

Climate change poses significant constraints to agricultural farming systems, with increasing temperatures, changing rainfall patterns, and more frequent extreme weather events. Despite these challenges, Eastern Cape communal farmers have shown resilience. Sustainable Development Goal (SDG 13) commits all the world's government to combat and curb the impact of climate change, keeping global warming below 2°C. The intergovernmental Panel on Climate (IPCC) highlighted the critical role of agricultural extension in improving the adaptive capacity of farmers to climate change (Sachs, 2015).

According to the provincial economic outlook of the Eastern Cape, the province's contribution to Gross Domestic Product (GDP) is 7.7%. This contribution comprises different commodity groups such as livestock (75%), horticulture (20%) and crops (5%). Nearly 66% of this contribution comes from Metropolitan Municipalities and 34% from local municipalities (DRDAR, 2016; ECSECC, 2022). The gradual transformation of smallholder producers to commercial level has been cited a factor hindering the province's economic growth. Consequently, the Eastern Cape has been described as a "sleeping giant" due to untapped agricultural potential (AET, 2019). Mthi *et al.* (2021) revealed that lack of access to financial support, poor infrastructure, lack of capacity building, and low adoption of new technology are constraints that requires government interventions. Regardless of these constraints, farming plays a pivotal role in the livelihoods of farmers. Previous studies showed that communal farmers keep livestock primarily to alleviate poverty through cash sales and meat consumption (Tokozwayo, 2016; Hanotte *et al.*, 2002; Ayalew *et al.*, 2003; Musemwa *et al.*, 2007).

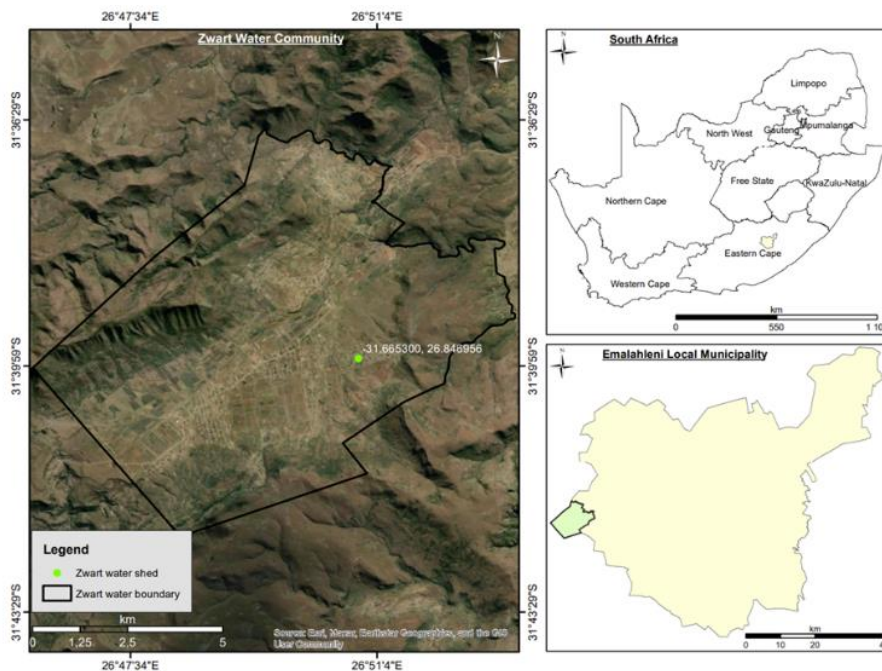
The increase in population and human settlements in grazing areas, arable lands, and wetlands will require an increase in food supply to meet the demands. The lack of job opportunities remains a significant issue, making farming a crucial means of food security (Musemwa *et al.*, 2008). The Integrated Sustainable Rural Development Strategy (ISRDS, 2004) identified farming as an alternative economic growth driver for curbing poverty in rural communities (Coetzee *et al.*, 2004). The study aimed to explore socio-economic status of Zwartwater communal farmers in Dordrecht within the Emalahleni Local Municipality. The findings from this study will provide insights into the socio-economic dynamics, importance of farming in our communities and challenges faced by communal farmers. Furthermore, the study has potential identifying research niche and contribute to the broader development of the Emalahleni Local Municipality.

## Materials and Methods

### Site description

The study was conducted at Zwartwater village, located at: 31°39'55.08"S, 26°50'49.04"E, with an elevation of 1484 meters above sea level. Zwartwater is in Dordrecht within the Emalahleni Local Municipality of the Chris Hani district in the Eastern Cape (Figure 1). Emalahleni is centrally located in the Chris Hani district, which covers an area of 3484km<sup>2</sup>. Zwartwater village receives an annual precipitation ranging between 430mm to 790mm, providing a varied but water source for agricultural activities. The average annual temperatures in the village range from 9.3°C to 49.3°C, indicating a significant variation that can impact both crop and livestock farming (Mucina & Rutherford, 2006). These climatic conditions are essential for understanding the agricultural potentials and constraints.

Due to high levels of poverty and unemployment, the majority of residents in Dordrecht depend on social benefits and remittances from family members who work outside the area (ECSECC, 2017). Approximately 90% of farmers in Dordrecht are classified as subsistence farmers, primarily producing for consumption (ECSECC, 2017). Zwartwater farmers keep goats, sheep, horse, donkeys and cattle for animal traction, income generation and consumption. Wool production is the primary source of income for many households (ECSECC, 2017). All natural resources are shared among community members, providing everyone with an equal access to resources such as grazing area. Consequently, Zwartwater had no resource management plan in place for monitoring and conservation of natural resources. The community practices a continuous grazing management system with uncontrolled stocking rates. The vegetation of the area is classified as Tsomo grassland veld type dominated by white grasses and dwarf *Euryops floribundus* (Mucina & Rutherford, 2006). The landscape is characterized by flat and gently undulating lowland plains intersected by mountains (Mucina & Rutherford, 2006).



**Figure 1** Study area (Source: Google maps Pro 2020 AfriGIS)

Due to high levels of poverty and unemployment, the majority of residents in Dordrecht depend on social benefits and remittances from family members who work outside the area (ECSECC, 2017). Approximately 90% of farmers in Dordrecht are classified as subsistence farmers, primarily producing for consumption (ECSECC, 2017). Zwartwater farmers keep goats, sheep, horse, donkeys and cattle for animal traction, income generation and consumption. Wool production is the primary source of income for many households (ECSECC, 2017). All natural resources are shared among community members, providing everyone with an equal access to resources such as grazing area. Consequently, Zwartwater had no resource management plan in place for monitoring and conservation of natural resources. The community practices a continuous grazing management system with uncontrolled stocking rates. The vegetation of the area is classified as Tsomo grassland veld type dominated by white grasses and dwarf *Euryops floribundus* (Mucuna & Rutherford, 2006). The landscape is characterized by flat and gently undulating lowland plains intersected by mountains (Mucina & Rutherford, 2006).

### **Sampling approach**

Prior to data collection, the meeting between government officials (Extension officers and Production Scientists) and farmers held to clarify the purpose of the questionnaire survey and set up the date for household interviews. Zwartwater communal areas was selected because it was the leading shearing shed in terms of sales of wool fibre across the Chris Hani District. According to ECSECC (2017), Zwartwater had approximately 145 households. A total of 85 households were purposively selected and each household was represented by one livestock owner. Both female and male-headed households who own livestock were allowed to participate in an interview. The participation of farmers was voluntary and willingness to participate and a consent form was administered in each household to ask for their permission before interviews.

### **Data collection**

Qualitative data was collected from eighty-five (85) communal farmers using purposive technique. The farmers were interviewed using a semi-structured questionnaire (Jordaan *et al.*, 2019). The questionnaire was tested by conducting a small-scale trial (5-10% of the sample) to check clarity, structure, and respondent understanding and the test was successful. The questionnaire was structured as follows; socioeconomic variables, purpose of keeping livestock and constraints faced by farmers. A semi-structured was administered through face-to-face using their vernacular language (i.e. Xhosa) by the Extension Officers.

IsiXhosa was the best language understood by the respondents and later translated into English for the purpose of writing. The collected data was cleaned (i.e. identifying and correcting errors, inconsistencies, and missing values to ensure accuracy and reliability) and entered in a Microsoft Excel for analysis.

### **Data analysis**

The descriptive statistics such as frequencies and percentages were obtained using PROC FREQ of SAS (2003). Means between constraints faced by farmers were separated using Least Significant Difference (LSD) method ( $P < 0.05$ ).

## **Results and discussion**

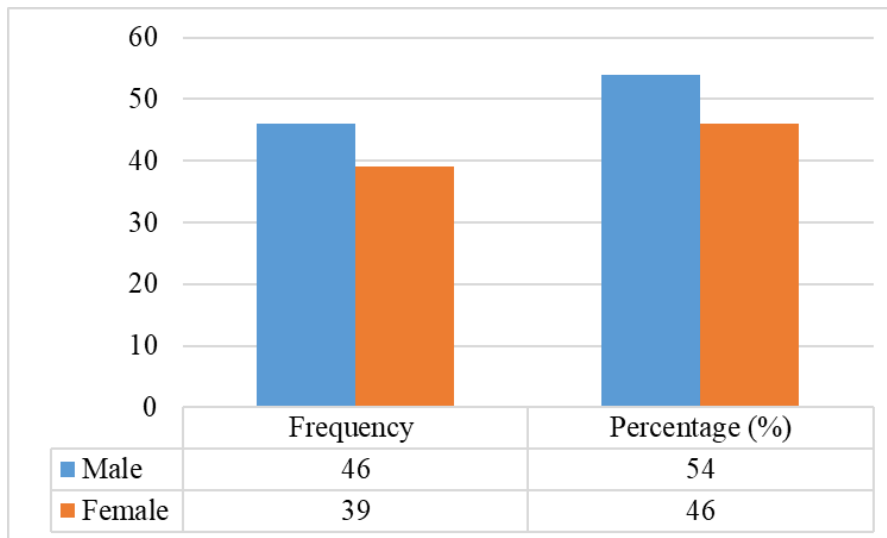
### **Demographics**

#### **Gender**

Socio-economic research is a crucial aspect to consider prior any development as it provides a comprehensive overview of household economic behaviour (Randela, 2005; Jordaan *et al.*, 2019). Figure 2 illustrates that majority of respondents were male (54%), while females constituted (46%). This finding was aligned with the norms and traditional expectations in the study area. In most communal areas, females are still responsible for domestic duties such as child-rearing, cleaning, and cooking. From cultural point of view, males are liable for looking after livestock and other agricultural activities. The different responsibilities between males and females reflects long-standing cultural practices. Farming is often perceived as demanding and unattractive to females (Mthi *et al.* 2021). In Ethiopia, Admasu *et al.* (2010) observed that domestic duties are primarily assigned to females, and males are expected to focus on agricultural activities. This contrasts with the finding of Tokozwayo *et al.* (2018), who reported higher participation of females (62%) in livestock farming compared to 38% of males in Raymond Mhlaba Local Municipality.

Trevor & Musole (2018) projected an increase in female participation in the agricultural economy due to high unemployment, suggesting a shift in traditional roles driven by economic necessity. However, gender imbalance in agricultural participation remains a global concern (Adedeji *et al.*, 2013). Food and Agriculture Organisation (FAO, 2015) reported several barriers that disadvantage female participation in agricultural activities, including lack of financial support, poor infrastructure such as access roads and unreliable electricity, market access, lack of skills, and unsuitable working conditions. Nevertheless, it is important to consider the broader socio-economic implications of gender imbalance in farming. For instance, empowering women in agriculture can lead to economic gains and improve food security. Extension and advisory services can play a crucial role in promoting gender equality by fostering social capital and community development. Previous studies highlighted that women should be given an equal access to resources and opportunities as men for addressing inequality between men and woman. Moreover, women are more likely to adopt improved agricultural practices and new technologies (FAO, 2015).

Additionally, addressing the structural barriers that hinder female participation in agriculture requires policy intervention from the government. Government policies and support are fundamental for encouraging women in farming by ensuring equitable distribution of resources, fostering supportive networks and create enabling environment for agricultural development. Government can also provide financial incentives such as subsidies for agricultural inputs, grants for capacity building to female farmers. Partnership between extension services and research institutions can also play a critical role in generating the scientific knowledge and innovations for the benefit of farmers. Strong linkages between research and extension can provide the latest research findings are translated into recommendations for farmers. In addition, government should have a clear understanding of cultural dimensions influencing gender roles in agricultural sector. Cultural norms and traditions often dictate the division of labour within households and communities, impacting women's ability to engage in farming activities. Therefore, community-based approaches that involve both men and women in dialogue and decision-making processes are essential for creating sustainable and inclusive agricultural development.



**Figure 2** The gender of respondents

### ***Age and marital status***

Out of 85 communal farmers surveyed, 90.6% (frequency: 77) were over the age of 50 years, followed by 5.9% (frequency: 5) aged between 41 to 50 years as shown in Table 1. This implies that farming in this community is predominantly undertaken by the elderly. Young participants, aged between 31-40 years counted for only 3.5% (frequency: 3), highlighting a significantly lower involvement in farming activities compared to other age groups. Given the majority of participants were above 50 years of age, these findings were anticipated and aligned with results reported by Mthi *et al.* (2023) in the same province. Their significant representation may reflect a traditional reliance on farming as a livelihood among older individuals while younger generations might be pursuing alternative careers, migrating to urban areas, or showing less interest in agriculture. The lack of youth participation is not merely a demographic issue, but it has a far-reaching consequences on sustainability and innovation. Youth often bring fresh perspectives, innovative ideas, and new technologies that can enhance agricultural productivity and sustainability. Several factors contribute to lack of youth involvement such as lack of financial support and lack of skills (Chipfupa & Tagwi, 2021). One of the major challenges faced by youth in agriculture, particularly, is the unavailability of land. Youth often lack the capital needed to start and sustain agriculture projects. Access to affordable credit and financial services tailored to the needs of young and aspiring farmers could significantly boost their participation.

Additionally, initiatives such as agricultural grants, subsidies and youth-focused investment programs can provide much-needed financial support. The majority of young people may lack the practical skills and knowledge required in farming; thus, extension services and research institutions are essential for capacity building. Government financial support for agricultural education such as short courses and field trainings can equip the youth with the necessary expertise. Mentorship programs participatory appraisal approach which involves elders and youth can also encourage the exchange of knowledge among farmers. The constraints associated with the sharing of communal land also hinder the youth participation in agricultural activities (Tokozwayo *et al.*, 2022). This situation is exacerbated by communal land-sharing practices, which can limit individual access to sufficient farming land. Policies aimed at land reform and providing equitable access to land for young farmers could held address this barrier.

Table 1 further reveals that 72.9% (frequency: 62) of farmers were married and 12.9% (frequency: 11) widowed. This implies importance of family support structures and farmers continue to engage in agricultural activities even after losing a spouse. Additionally, 10.7% (frequency: 9) of farmers were single, and 3.5% (frequency: 3) divorced. However, marriage is a commendable status in agricultural environments due to demanding nature of farming. It serves as crucial support system, enabling partner to share responsibilities and provide mutual assistance. Moreover, in married households, farm experience and skills can easily be more readily transferred from parents to their children, fostering continuity and sustainability in agricultural practices (Mthi *et al.*, 2023).

### **Household size**

Table 1 shows that household sizes in the studied area vary, with majority (43.5%) consists of small households with 1-4 members. The migration of people from rural areas to urban centers could be one of the factors contributing to smaller family sizes. The migration of people from rural to urban areas in search for better opportunities likely impacts the number of individuals per households. Zhao (1999) noted that rural to urban migration is driven by the availability opportunities in cities. This demographic shift can hinder the ability of rural communities to maintain and improve agricultural productivity. To prevent migration, government should allocate budget for the improvement of rural infrastructure, skills development programs, and the creation of additional economic opportunities.

However, a small household size may offer advantages in terms of family substance and allocation, such as land. It can reduce conflicts over resource use and simplify the inheritance process for farmland, making it easier to manage among few household members. Previous studies showed that urban areas becoming congested, as result, there is a growing demand of food supplies (Tokozwayo, 2016). Rural areas have the potential to supply food to urban areas through the promotion of organic farming, eco-tourism, and other sustainable practices.

A significant portion of (38.8%) has medium-sized households with 5-9 members, indicating a notable presence of extended family living arrangements. Larger households, with 9-12 members, account for 12.9%, while a small fraction (4.8%) of households include more than 13 members. Larger households size often mean more than hands to assist with farming activities, such as dosing, dipping livestock. This can enhance productivity, especially in labour intensive farming environments. This finding contrasts with Mthi *et al.* (2023), reported household sizes ranging 1-11 members in Elundini Local Municipality, Eastern Cape Province. The role of technology and digital tools can also transform agricultural sector by providing farmers with weather information, market prices and best practices. Encouraging digital literacy and improvement of rural infrastructure can used as catalyst to empower rural communities. Mthi *et al.* (2022) asserted that decline of household size could lead to the shortage of manpower which is essential for performing agricultural activities.

### **Source of income**

Table 1 shows that a significant portion of respondents 54.1% (frequency: 46) rely on government social support as their primary source of income. The high reliance on government social emphasizes the vulnerability of rural economies and the need for sustainable income sources. Livestock sales are the second most common source of income, with 40.0% (frequency: 34) depending on this. With 40.0% of income derived from livestock sales, the significance of livestock farming in rural economies is evident. However, over-reliance on a single income source can be risky, particularly in the face of diseases, market fluctuations, and climate change. A small proportion of respondents rely on other sources 4.7% (frequency: 4) such as re-cycling, selling the dagga, while only 1.2% (frequency: 1) sells vegetables. This implies that government support plays a critical role in sustaining livelihoods, while livestock sales remain a key economic activity in rural communities. The low percentage of income from vegetables points to an opportunity for diversification in agricultural practices. In the Sheshegu communal under Raymond Local Municipality, 65% relied on livestock farming as their primary source of income (Tokozwayo *et al.* 2018). This dependency highlights the importance of diversifying income streams for rural households to reduce their reliance on external assistance.

### **Farming experience**

Table 1 indicates that nearly 29% of farmers were between 31 and above years of farming experience, followed by 1-10 years (28%), 21-30 years (24%), and 11- 20 years (19%). The variation in farming experience among respondents reflects the diverse knowledge base within the community. Farmers with extensive experience (over 30 years) can be valuable resources for mentoring and training youth, promoting the transfer of knowledge and best practices. Conversely, the significant proportion of farmers with less experience (1-10 years) indicates the need for continued support and education to ensure their long-term success. This finding contrasts with Yawa *et al.* (2024), who reported that 58% farmers had more than 11 years of experience and 26 % had 6-10 years of farming experience. The discrepancies with findings regarding farming experience suggest regional variations in agricultural practices and demographics.

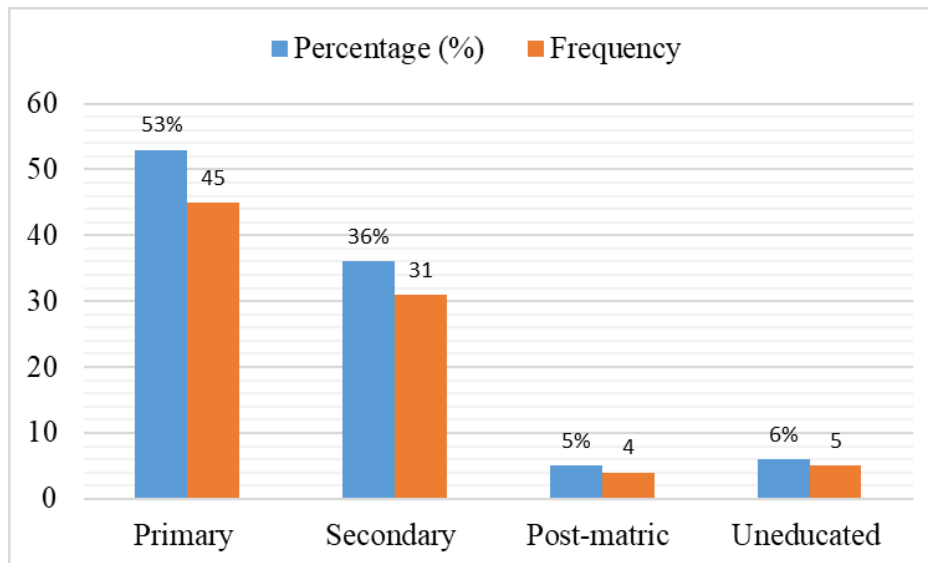
The farming experience data implies that there is a continuous need for education and training in agricultural techniques, especially for those with few years of experience. Extension services, farmer field schools, and access to modern farming technologies can significantly improve productivity and sustainability.

**Table 1** Demographic profile of Zwartwater Communal Area in Emalahleni Local municipality (n = 85)

Characteristics	Sub-characteristics	Frequency	Proportion (%)
Age	31-40	3	3.5
	41-50	5	5.9
	>50	77	90.6
	<b>Sub-total of age</b>	<b>85</b>	<b>100</b>
Marital status	Single	9	10.7
	Married	62	72.9
	Divorced	3	3.5
	Widowed	11	12.9
	<b>Sub-total of marital status</b>	<b>85</b>	<b>100</b>
Household size	<b>1-4</b>	37	43.5
	<b>5-9</b>	33	38.8
	<b>9-12</b>	11	12.9
	<b>&gt;13</b>	4	4.8
	<b>Sub-total of household size</b>	<b>85</b>	<b>100</b>
Source of income	Livestock Sales	34	40.0
	Vegetable sales	1	1.2
	Grant	46	54.1
	Other	4	4.7
	<b>Sub-total of source of income</b>	<b>85</b>	<b>100</b>
Farming Experience	1 - 10	24	28.2
	11 – 20	16	18.8
	21 – 30	20	23.5
	>31	25	29.5
	<b>Sub-total of source of income</b>	<b>85</b>	<b>100</b>

### Level of education

The findings indicate that most farmers in the Zwartwater communal areas have a basic level of education, with 53% (frequency = 45) having completed primary school. A small proportion 36% (frequency: 31) have reached secondary school, while only a minority 5% (frequency: 4) attained education beyond high school (Figure 3). Nearly 6% (frequency: 5) of Zwartwater farmers were uneducated, as illustrated in Figure 1. This suggests that the educational attainment among farmers was relatively low, which could influence their ability to access and utilise advanced new agricultural technology as such as drones. In contrast, Mthi *et al.* (2021) reported that 55% of farmers had reached secondary school, followed by 35% post-matric and 14% with primary school education. The low percentage of farmers who have attained secondary school post-matric education is a significant concern for our rural communities. While it is encouraging that most farmers possess basic literacy skills and can read and write, the limited number with higher education may hinder their ability to access knowledge, embrace innovative farming techniques such as use of Global Positioning System (GPS) collars. This gap in educational attainment could impact their productivity, decision-making capabilities, and ability to adapt to modern farming. Low levels of education among farmers can be addressed through targeted educational programs and skill development initiatives. Moreover, extension and advisory services, research services and other stakeholders can be used as vehicle to address low level of education among our farmers. Community-based learning initiatives can aid bridge the knowledge gap and empower farmers with new techniques and innovations. Therefore, improving educational attainment among farmers can lead to enhanced productivity and sustainability in farming practices. Education is a crucial tool for adoption of new technologies and innovations (Moyo *et al.*, 2008). It plays a key role in broadening the minds of farmers, enabling them to make informed decisions.



**Figure 3** Educational status

### ***Livestock population and the reasons for keeping animals***

Livestock plays an important role in alleviating poverty in communal areas of the Eastern Cape (Tokozwayo *et al.*, 2018). All respondents interviewed owned livestock which comprise of sheep (72%), cattle (16%) and goats (11%) (Table 2). The finding of Mapiye *et al.* (2009), reported high number of cattle ( $\mu = 8.7$ ), followed by goats ( $\mu = 5.4$ ) and sheep ( $\mu = 4.7$ ) in the Eastern Cape. However, high number of sheep in Zwartwater was anticipated due to market availability for wool fibre and the sustainability of grazing lands. The availability of wool fibre markets may prompt goat and cattle farmers to change their livestock species. This view contradicts, Tokozwayo (2018), who stated that the shift in livestock preference occur primarily when vegetation changes. Zwartwater farmers believe that keeping more cattle in a heavily grazed grassland, will put more pressure on limited grazing resources. Consequently, cattle and goats rely mainly on natural veld for foraging during dry season. Maize stovers or residuals and planted pastures are reserved for lambs during winter and spring season.

As illustrated in Table 2, most respondents kept livestock to generate income through wool fibre sales (44%), sales of live animals (23%), and meat consumption (17%). Statistically, wool fibre sales ( $\mu = 4.75$ ) and sale of live animals ( $\mu = 3.75$ ) showed no significant difference ( $P > 0.05$ ), but meat consumption ( $\mu = 3.34$ ) and sales for wool fibre were significant ( $P < 0.05$ ) Zwartwater farmers view farming as an investment, confirmed by the sales of wool fibre and live animals mostly old sheep. High sales of wool fibre and live sheep were driven by market access (i.e. BKB and CMW).

Generally, farming impacts the society through job creation and sustain the livelihoods of farmers. Generated income is used for procuring livestock medication, feed during dry season and supporting household needs. Goni *et al.* (2018) and Musemwa *et al.* (2010) reported similar findings in the same province. Furthermore, few farmers who kept livestock for milk [ $\mu = 1.82$ , percent = 9%, and frequency = 8] and animal traction [ $\mu = 1.31$ , percent = 7% and frequency = 6] purposes (Table 2). Majority of respondents preferred to farm with sheep over other species, resulting in low numbers of farmers still milking livestock. The dominant breeds during the data collection were Dohne merino and merino. Wool producers of Zwartwater village claim that wool production is flourishing compared to other commodities. Tokozwayo *et al.* 2022 reported that communal farmers recognize farming as a profitable business, but they still lack on natural resource management (Lesoli, 2008). Interest in animal traction has declined as increasingly rely on government support programs for mechanisation. Tokozwayo *et al.* (2018) and Allsop *et al.* (2007) reported that animal traction has become less attractive due to reliance on the government support.



**Table 2** Species and purpose of keeping livestock (n = 85)

Species	Number	Percentage (%)
Sheep	3720 small stock units	72
Cattle	840 large stock units	16
Goats	600 small stock units	11
Purpose	Mean ( $\mu$ )	Percentage (%)
Meat	(3.34) <sup>b</sup>	17
Milk	(1.82) <sup>c</sup>	9
Sales (wool)	(4.75) <sup>a</sup>	44
Animal traction	(1.31) <sup>c</sup>	7
Sales (live animals)	(3.75) <sup>ab</sup>	23

<sup>†</sup>Different superscripts in the column denote significant difference amongst challenges (P<0.05)

### Constraints faced by farmers

The results in Table 3 highlight stock-theft as the most significant constraint faced by communal farmers, with 55% of respondents (frequency: 47) ranking it as the primary challenge. This underscores the severity of theft as prevalent challenge that poses a serious threat to farming and livelihoods of communal farmers. In terms of ranking stock-theft was followed by livestock diseases at 25% (frequency: 21) and shortage of feed during winter 13% (frequency: 11). In contradiction, Mapiye *et al.* (2009) ranked feed shortage as the most critical constraint followed by diseases and parasites. Addressing stock theft demands a coordinated and collaborative approach encompasses communities, traditional leaders, private stakeholders, and government authorities (Clack, 2024).

Traditional leaders, South African Police Services (SAPS) and community leaders should play a critical role in forming community structures, reporting suspicious activities, and promoting awareness. Private stakeholders and government can contribute resources, expertise, and new technologies such as livestock tracking devices and other surveillance equipment. Moreover, government should create policies, strengthening law enforcement, and providing support to the affected areas. A collaborative effort between private stakeholders and government can create a robust system to deter theft, improve the recovery of stolen livestock and reduce the overall impact of stock theft on livelihoods and local economies (Bajwa *et al.*, 2022).

The ranking indicates that after stock-theft, livestock diseases were the second most pressing constraint, with 25% of respondents (frequency: 21). This finding requires government to put effort on the control of livestock diseases. Prevalence of livestock diseases was anticipated because Zwartwater farmers lacked vaccination program which is essential for diseases management. The third-ranked challenge is the shortage of feed during winter, reported by 13% of respondents (frequency: 11). Scarcity feed of during winter may also influenced by the availability of rainfall. Overall, these findings point to the multifaceted constraints faced by Zwartwater farmers, with both security and resource-related issues affecting the productivity of livestock. Additionally, sharing of grazing lands might lead to the deterioration of natural veld, due to overgrazing and continuous occurrence of uncontrolled veldfires. Mismanagement of veld management practices, combined with unreliable precipitation can result in forage shortages especial during winter season (Tokozwayo, 2016).

Other notable constraints include a lack of handling facilities 3% (frequency: 3) and insufficient of watering points 4% (frequency: 3) although these constraints were less pressing to farmers. Proper handling facilities are crucial as they prevent stress and injuries in animals and require minimal labour. Shortage of water exacerbated by changing of weather patterns and remained as a limiting factor in any livestock production system (Goqwana *et al.* 2008). Good condition of handling facilities held reduce animal stress and injuries, making the farming process more efficient. Water scarcity in Zwartwater due to draught can pose a significant challenge to livestock production, affecting both quality and quantity of available forage.

**Table 3** Constraints Faced by Farmers [1= most ranked and 5 = least ranked] (n=85)

Constraints	Frequency	Percentage (%)	Rank
Stock theft	47	55	1
Livestock diseases	21	25	2
Shortage of feed during winter	11	13	3
Lack of handling facilities	3	3	5
Insufficient of water points	3	4	4

## Conclusion and Recommendations

Male farmers continue to dominate the communal farming space. Low level of education among farmers presents a significant barrier in adopting new farming technologies and innovations, which are essential improving productivity and fostering economic growth. Education is at the centre of agricultural development, as it equips farmers with the knowledge and skills needed to implement modern farming practices. The study found that wool fibre is the most profitable commodity for Zwartwater farmers due to its established market demand and attractive economics returns. However, stock-theft remains the most pressing constraint forced by Zwartwater communal farmers in the Eastern Cape. The stock theft issue is a very complex and Police Services alone cannot resolve it. Therefore, a collaborative effort among communities, local authorities, and other stakeholders is essential for combating stock theft. Considering the challenges faced by Zwartwater farmers, which could adversely impact their socio-economic well-being, government policies and support are essential in addressing these gaps. Providing financial assistance to local farmers ensure they have the resources and opportunities necessary to thrive and contribute to the economic development of the district.

## Acknowledgements

Authors are indebted to the communal farmers for allowing us to do this research. We are also grateful to the Department of Rural Development and Agrarian Reform and Dohne Agriculture Development Institute for the opportunity to conduct this research.

## Conflict of Interest

The authors declare no potential interest.

## References

- Adedeji, O.S., Akande, T.O., Akinwumi, A.O., Okunlola, D.O. & Shittu, M.D., 2013. Ethoveterinary practices among sheep reared in Ona-Ara local government of Oyo state, Nigeria. *J. Vet. Sci.* 11, 38-44.
- Admasu, T., Abule, T. & Tessema, Z., 2010. Livestock rangeland management practices and communal perceptions towards rangeland degradation in south zone of southern Ethiopia. *J. Res. Rural. Dev.* Accessed [30-05-2013].
- Agricultural Economics Today (AET), 2019. Sleeping giant: the Eastern Cape and its agriculture. Available at: <https://wandilesihlobo.com/2019/09/27/a-sleeping-giant-the-eastern-cape-and-its-agriculture/> Accessed [16.05.2024].
- Allsop, N., Laurent, C., Debeaudoin, L.M.C. & Samuels, M.I., 2007. Environmental perceptions and practices of livestock keepers on the Namaqualand Commons Challenge conventional management. *J. Arid Environ.* 70; 740-754.
- Ayalew, W., King, J.M., Bruns, E. & Rischkowsky, B., 2003. Economic evaluation of smallholder subsistence livestock production: lessons from an Ethiopian goat development program. *Ecol. Econ.* 45, 473-485.
- Chipfupa, U. & Tagwi, A., 2021. Youth's participation in agriculture: A fallacy or achievable possibility? Evidence from rural South Africa, *S. Afric. J. Econ. Managem. Sci.* 24, a4004. <https://doi.org/10.4102/sajems.v24i1.4004>.
- Clack, W., 2024. Livestock theft in South Africa: October 2023 to December 2023. Technical report. <http://dx.doi.org/10.13140/RG.2.2.29087.33446>.
- Coetzee, L., Montshwe, B.D. & Jooste, A., 2005. The marketing of livestock on communal lands in the Eastern Cape Province: Constraints, challenges and implications for the Extension services. *S. Afr. J. Agric. Ext.* 34, 81-103.
- Department of Rural Development and Agrarian Reform (DRDAR), 2016. Agricultural economic transformation strategy. Department of rural development and agrarian reform, Eastern Cape Province, South Africa.
- Eastern Cape Socio-Economic Consultive Council (ECSECC), 2022. Economic review of the Eastern Cape Province. Page 1-5.
- Eastern Cape Socio-Economic Consultive Council (ECSECC), 2017. The socio-economic review and outlook. Emalahleni Local Municipality. Chris Hani District. Eastern Cape Province South Africa., Pp 2-3.

- FAO, 2015. Basic texts of the Food and Agriculture Organisation of the United Nations, Rome, Italy. [www.fao.org/3/a-mp046e.pdf](http://www.fao.org/3/a-mp046e.pdf).
- Goni, S., Skenjana, A. & Nyangiwe, N., 2018. The of livestock production in communal farming areas of the Eastern Cape: A case study of Majali community, Peelton., *Appl. Anim. Husb. Rural Dev.* 111, 34-40.
- Goqwana, W.M., Machingura, C., Mdululwa, Z., Mkhari, R., Mmolaeng, O. & Selomane, A.O., 2008. A facilitated process towards finding options for improved livestock production. *J. Range Forage Sci.* 25, 63-69.
- Hanotte, O., Bradley, D.G., Ochieng, J.W., Verjee, Y., Hill, E.W. & Rege, F.E.O., 2002. African pastoralism: genetic imprints of origins and migrations. *Sci.* 296, 336-339.
- Industrial Development Corporation of South Africa (IDC), 2016. Economic trends: Key trends in the South African Economy. Accessed [10.06.2023].
- Integrated Sustainable Rural Development Strategy (ISRDS), 2004. Information from website: <http://www.dplg.gov.za/html/progs/ISRDP.htm>. Accessed [14.02.2024].
- Jordaan, A., Bahta, Y.T. & Phatudi-Mphahlele, B., 2019. Ecological vulnerability indicators to drought: Case of communal farmers in Eastern Cape, South Africa. *J. Dis. Risk Stud.* 11, 50-91.
- Lesoli, M.S., 2008. Vegetation and soil status, and human perceptions on the condition of communal rangelands of the Eastern Cape, South Africa. M.Sc. thesis, Faculty of Science and Agriculture, University of Fort Hare, South Africa.
- Mapekula, M., 2009. Milk production and calf performance in Nguni and crossbreed cattle raised on communal rangelands of the Eastern Cape Province. M.Sc. thesis, Faculty of Science and Agriculture, University of Fort Hare, South Africa.
- Mapiye, C., Chimonyo, M., Dzama, K., Raats, J.G., & Mapekula, M., 2009. Opportunities for improving Nguni in the smallholder farming systems in South Africa. *Livest Sci.* 124,196-204.
- Moyo, B., Dube, S., Lesoli, M. & Masika, P.J., 2008. Communal area grazing strategies: institutions and traditional practices. *J. Range Forage Sci.* 25, 47-56.
- Mthi, S., Thubela, T., Mgujulwa, N., Rumisa-Gwaze, F., Jokani, N., Ntsabo, T., Mfono, A. & Tokozwayo, S., 2023. Perceived training needs among livestock farmers in the north- eastern region of the Eastern Cape Province: A case of Ugie commonage. *Appl Anim Husb Rural. Dev.* 16:1-6.
- Mthi, S., Yawa, M., Tokozwayo, S., Ikusika, O.O., Nyangiwe, N., Thubela, T., Tyasi, T.L., Washaya, S., Gxasheka, M., Mpisana, Z. & Nkohla, M.B., 2021. An Assessment of Youth Involvement in Agricultural Activities in Eastern Cape Province, South Africa. *Agric. Sci.* 12, 1034-1047.
- Mucina, L. & Rutherford, M.C., 2006. The Vegetation of South Africa, Lesotho and Swaziland. South African National Biodiversity Institute. Pretoria, Pp, 348-437.
- Musemva, L., Mushunje, A., Chimonyo, M. & Mapiye, C., 2010. Low cattle market off-take rates in communal production systems of South Africa: Causes and mitigation strategies. *J. Sustain. Dev.* 12, 209-226.
- Musemwa, L., Chagwiza, C., Sikuka, W., Fraser, G., Chimonyo, M. & Mzileni, N., 2007. Analysis of cattle marketing channels used by small scale farmers in the Eastern Cape Province, South Africa. *Livest. Res. Rural Developm.* 19, article ID: 131.
- Musemwa, L., Mushunje, A., Chimonyo, M., Fraser, G., Mapiye, C. & Muchenje, V., 2008. Nguni cattle marketing constraints and opportunities in the communal areas of South Africa: Review. *Afric. J. Agric. Res.* 3, 239-245.
- Randela, R., 2005. Integration of emerging cotton farmers into the commercial agricultural economy. PhD thesis, University of the Free State, Bloemfontein, South Africa.
- Sachs, D.J., 2015. Achieving the sustainable Development Goals. School of international and public affairs, Columbia University, USA. *J. Intern. Business Ethics.* 8, 53-62.
- SAS, 2003. Statistical analysis system of system. Institute Inc. users guide, version 9.1 cary, NC.
- Tokozwayo, S., 2016. Evaluation of farmers' perceptions and the impact of tree encroachment on herbaceous vegetation and soil nutrients in Sheshegu communal rangeland of the Eastern Cape, South Africa. MSc. Thesis, University of Fort Hare, Alice, South Africa.
- Tokozwayo, S., Mopipi, K., Timpong-Jones, E.C., Gulwa, U., Thubela, T. & Nyangiwe, N., 2018. Pastoralist's perceptions on the impact of *Vachellia* karoo encroachment in communal rangelands of the Eastern Cape, South Africa. *J. Agric. Ext. Rural Developm.* 10, 222-233.

- Tokozwayo, S., Thubela, Gulwa, U., Mthi, S., Gxasheka, M., Masiza, W., Jokani, N., Mgujulwa, N., Sogoni, A. & Mtanzeli-Cekiso, N., 2022. The impact of covid -19 and coping strategies used by small-scale farmers: A case study of Buffolo City Metropolitan, Amathole and O.R Tambo – District Municipalities of the Eastern Cape. *Appl. Anim. Husb. Developm.* 15, 32-40.
- Trevor, S. & Musole, K.J., 2018. Rural youth participation in agricultural in Zambia. *J. Agric. Ext.* 22, 52-63.
- Yawa, M., Mthenjwa, B., Jaja, I.F., Mthi, S., Nyangiwe, N., Tokozwayo, S., Rumosa-Gwaze, F., Stempa, T. & Qokweni, L., 2024. Assessment of knowledge, attitudes, and practices related to the prevalence of sheep scab among communal farmers in Eastern Cape Province, South Afr. *Vet. World* 17, 558-563.
- Zhao, Y., 1999. Leaving the countryside: rural-to-urban migration decisions in China. *Americ. Econom. Rev.* 89, 281-286.