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Land Degradation's Influence on Livelihoods of Small-Scale Farmers and Land Care Workers in Ladybrand, South Africa

Alexander Mabunga Msipa¹  | Antoinette Lombard¹  | Ilse Aucamp¹ | Jussi Baade² 

¹Department of Social Work and Criminology, University of Pretoria, Pretoria, South Africa | ²Department of Geography, Friedrich Schiller University Jena, Jena, Germany

Correspondence: Antoinette Lombard (antoinette.lombard@up.ac.za)

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ABSTRACT

Land degradation influences the natural resource-based livelihoods of agricultural communities whose livelihoods are dependent on the productivity of the land. South Africa has been and still is considerably affected by land degradation which adversely influences livelihoods and well-being. The article reports on the findings of a study aimed at determining how land degradation in the Ladybrand area, Free State Province, South Africa, influences the livelihoods of small-scale farmers and land care workers, and what land management strategies can mitigate land degradation for sustainable livelihood outcomes. The explorative study adopted a qualitative research approach and an instrumental case study research design. A purposive sampling method was used to select 13 small-scale farmers (general and commonage) and 14 land care workers for the study. Data were collected through focus group interviews and were analysed using thematic analysis. The findings indicated the causes of land degradation in Ladybrand that jeopardise land management practices for sustainable livelihoods, namely, the high volume of invasive plants, land pollution, overgrazing, unsecure land tenure systems and poor access to markets. Strategies recommended to mitigate land degradation and improve land management practices for sustainable livelihoods include rotational grazing, tenure security for small-scale farmers, increasing access to markets and institutional support to small-scale farmers and land care workers. This study documents the insights of small-scale farmers and land care workers on land degradation and their commitment to practise sustainable land management.

1 | Introduction

Land degradation has a substantial influence on environmental sustainability and livelihood security (Manikandan and Kurian 2016) of those who depend on land for their well-being (Hamdy and Aly 2014; Rabumbulu and Badenhorst 2017). Land degradation is often identified as the consequence of existing social and economic conditions experienced by land users and workers (Hammad and Tumeizi 2010). The social and economic

aspects include population growth, poverty, overgrazing, deforestation and access to agriculture extension, infrastructure, opportunities and constraints created by market access as well as policies and general government effectiveness (Jouanjean, Tucker, and Te Velde 2014). The discrepancy between land use and land quality (Fitzpatrick 2002) is fundamental in the discussion on livelihoods and well-being of the community as land itself holds a social and economic value that supports the livelihoods of small-scale farmers and land care workers.

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The unjust historical background of South Africa such as land tenure and resource allocations shaped the land degradation context and debate in the country (Mani, Osborne, and Cleaver 2021). Consequently, the socio-economic hardships from land degradation are worst for those that derive their well-being from practising small-scale farming or working on commercial farms (Hamdy and Aly 2014), who are mostly Africans. There is a direct association between high levels of poverty and severe land degradation in South Africa (Hoffman and Todd 2000). The land degradation debate in South Africa is contextualised between extensive agricultural farming and collective livestock production in rangelands (Palmer and Bennett 2013).

The landscape of South Africa consists of nearly 91% of drylands which exposes the country to desertification and land degradation that contribute to critical environmental challenges, including food security, poverty, urbanisation, reduced resilience to climate change and biodiversity loss (Department of Environmental Affairs 2018). Furthermore, 80% of the land in South Africa is used for agriculture and subsistence livelihoods. Of this, 11% (12.76 million ha) has arable potential, of which 82% is under commercial agriculture, while the majority (69%) is used for grazing.

In South Africa, communal land degradation is characterised by woody plant encroachment that negatively impacts ‘*biodiversity, livelihoods and the overall supply and value of ecosystem services, reducing the ability of rangelands to regulate water*’ (Mani, Osborne, and Cleaver 2021, p. 997). One of the prominent invasive plants in the Ladybrand area is slangebos (*Seriphium plumosum*). It is a shrub indigenous to South Africa, which has inhabited substantial parts of the semiarid grasslands of the country (du Toit, Cronje, and Trollope 2013) and puts pressure on the available grassland for grazing (Urban et al. 2021).

Small-scale farmers are agricultural farmers consisting mostly of family members using mainly their own labour and obtaining a variable share of their livelihood from their produce. The family relies on its agricultural activities for at least part of the food consumed, be it through self-provision, non-monetary exchanges or market exchanges (Khalil, Conforti, and Gennari 2017). Land care workers are part of Land care South Africa, which is a community-based programme supported by both the public and private stakeholders through a series of partnerships (Land care South Africa 1999). Land care workers in Ladybrand focus on the conservation of the natural resources (land) through sustainable utilisation and the creation of a conservation ethic through education and awareness (Land care South Africa 1999). The sustainable livelihoods approach (SLA) was the appropriate theoretical framework for the study as it is a holistic approach that recognises that livelihood strategies and outcomes are influenced by various dynamic factors (Twigg 2001). It enhances communities’ livelihood opportunities and outcomes, which reduces poverty, risks and insecurities (Serrat 2008).

The objectives of the study were to determine (1) how land degradation influences the livelihoods of small-scale farmers and land care workers in Ladybrand, and (2) what land

management strategies are, or should be in place to mitigate land degradation for sustainable livelihood outcomes. Results may bring new insights into the socio-economic impacts and dimensions of land degradation in developing land management strategies that contribute to sustainability of land and livelihood outcomes for small-scale farmers and land care workers in Ladybrand. This insight is significant for the larger project on monitoring land degradation and land surface dynamics in the Ladybrand region, being the aim of the South African Land Degradation Monitor (SALDI) project involving natural and social scientist in Germany and South Africa. The aim of SALDI was to develop an innovative and adaptive monitoring system for land surface dynamics and degradation assessment in South Africa while also looking at the socio-economic impacts and dimensions of land degradation (Baade et al. 2024).

2 | Background and Methods

2.1 | Study Area

The study was conducted in the surroundings of Ladybrand, a small agricultural town located in the Mantsopa Local Municipality, being part of the Thabo Mofutsanyana District in the Eastern Free State province of South Africa, located about 15km from Maseru, the Capital City of the Kingdom of Lesotho. The Ladybrand area is regarded as one of the most fertile areas in the Free State province; however, it has been affected by financial limitations and increased production cost along with natural disasters (Thabo Mofutsanyana District Municipality 2014) contributing to land degradation. Land holds an inherent value in the Free State province, where the landscape is dominated by agriculture and from where 70% of South Africa’s grain production comes (Department of Agriculture and Rural Development 2018).

While the government and mostly white commercial farmers in Ladybrand area have been making an effort to build capacity of small-scale farmers, the challenges remain vast. Furthermore, there are limited funds to purchase land and required equipment for small-scale farmers, ‘that can be optimised for sustainable land management and mitigate the degradation of land as natural capital’ (Thabo Mofutsanyana District Municipality 2014). Small-scale farmers have difficulties to access available information and support from the Department of Agriculture, which hampers their development and ultimately the quality of the land as well as their sustainable livelihoods (Thabo Mofutsanyana District Municipality 2014). Sustainable land use and prevention of land and soil degradation are, therefore, central to the well-being and socio-economic development of the small-scale farmers and land care workers of Ladybrand.

2.2 | Research Methods

The study used a qualitative research approach and an instrumental case study design to explore in-depth perspectives from research participants (Babbie and Mouton 2011). Nonprobability purposive sampling (Strydom 2011) was used to select the

sample consisting of 27 people in total, of which 13 were small-scale farmers eight general small-scale farmers (GSF) and five commonage small-scale farmers (CSF), and 14 land care workers (LCW). The small-scale farmer participants included six female and seven male participants. The age range of small-scale farmer participants was 43–58+ years with eight of the participants being 58 and older. Most of the small-scale farmers have lived on the farm for an average period of 10 years and longer. Of the land care workers, 10 were females and 4 were males. Their age ranged between 23 and 37 years.

Data were collected through three semistructured focus group interviews, two with small-scale farmers and one with land care workers. The semistructured interviews were guided by a combination of closed- and open-ended questions, which allowed for further prompting questions (Neuman 2011). The interview questions explored the causes of land degradation in Ladybrand, the challenges experienced by small-scale farmers and land care workers as well as their perception on land degradation and how it was influencing their livelihoods. Thematic data analysis was used to analyse the data (Creswell 2014; Creswell and Poth 2018). The study received ethical clearance from the University of Pretoria (reference: HUMO026/0221). Participants voluntarily took part in the study and provided written informed consent. Confidentiality was maintained, and particular care was taken to avoid harm by addressing livelihood vulnerabilities.

3 | Results

Data from the interviews of the small-scale farmers and the land care workers presented similar themes and subthemes. The four themes that emerged include the participants' perceptions on (1) current livelihood strategies; (2) causes of land degradation; (3) challenges to manage the land and (4) support systems to mitigate land degradation and sustain livelihoods. In presenting and discussing of the findings, direct voices of participants (P) are indicated with pseudo codes according to the participating categories: General small-scale farmer participant (GSF-P[number]), commonage small-scale farmer participant (CSF-P[number]) and land care worker (LCW-P[number]).

3.1 | Current Livelihood Strategies

Small-scale farmers adopt various strategies to support their livelihoods, including selling livestock to abattoirs and auctions and taking on part-time work in the community and in informal trading.

3.1.1 | Livestock Farming

In the event of unplanned shocks, small-scale farmers often sell livestock to meet emergency cash needs, such as purchasing food or meeting health expenses. However, the absence of own transport is a challenge as they must incur extra costs to move their livestock. Alternatively, they have to rely on selling in the village as CSF-P1 mentions: *'There are too many sources. We sell in the village but also there are ... there is this Sparta [local abattoirs] where we can sell the livestock...'*

3.1.2 | Part-Time Work and Informal Trading

Nearly all land care workers are involved in some form of informal employment and trading to optimise their livelihood outcomes, including piece work, plumbing, electrician, baking, building, painting, hairdressing and working on farms. *'Specifically, I will speak about me. I will maybe sometimes catch some piece jobs, sometimes I go building, painting ... sometimes it's plumbing, it's only the piece jobs'* (LCW-P1). *'I work as a hairdresser ... make weaves, sell to some other people here'* (LCW-P6). *'I work in the farms, grow cabbage, vegetables'* (LCW-P9).

3.2 | Causes of Land Degradation

Participants indicated that invasive plants, land pollution, overgrazing and impacts of land tenure cause land degradation in the Ladybrand area.

3.2.1 | High Volume of Invasive Plants

The findings indicate that invasive plants draw up more water from the ground; as a result, it affects soil quality and livestock production. One of the prominent invasive plants in Ladybrand is slangbos (*Seriphium plumosum*) which is a shrub indigenous to South Africa that has inhabited substantial parts of the semiarid grasslands of the country (du Toit, Cronje, and Trollope 2013; Urban et al. 2021). Invasive plants affect the productivity of livestock by reducing the livestock forage as articulated by LCW-P1: *'That's why sometimes if you put cows in that kind of land, they shrink because that grass does not absorb enough water because of this slangbos. When there is slangbos, the grass does not grow; it cannot be green.'*

Some invasive plants like the ink berry (*Cestrum laevigatum*) is considered to be toxic and harmful to livestock which *'kills our cattle'* (GSF-P4). High volumes of scrubs like slangbos and inkberry absorb more water from the ground and leave it dry, which are the main causes of land degradation in Ladybrand. It is hard to control its growth as stated by GSF-P2: *'In as much as we would want to kill them, they just grow and grow. So, as a result, there is less land and a lot of invasive plants.'*

The management of invasive plants is a primary source of government-funded employment and income for land care workers. However, the main challenge that land care workers experience in the management of invasive plants is inadequate time and funding to work on the land on a permanent or long-term basis. This negatively impacts their livelihoods and the land as LCW-P1 states: *'It [removal of invasive plants] influences our way of living because... say the farmers stop this thing of taking out the slangbos, we are not getting any salary at the end of the month...'*

3.2.2 | Land Pollution

The participants pointed out that land pollution in Ladybrand comes from waste dumping, including plastics and sewage water. They highlighted that they have lost a considerable size of their land due to uncontrolled dumping of waste on their

farmlands and the effects on their livestock: *'They gave us 366 hectares; due to pollution, it's no longer 366, it shrank terribly. Our cattle eat plastics. Whenever we sell or slaughter it, in the belly they find plastics, that's the problem. And the water is polluted coming from the sewage and from the location and from the town here'* (GSF-P1). Despite reporting the matter, nothing is done. *'We have this problem of land pollution, which is beyond our control. We have mentioned it to municipality but, unfortunately ... they cannot answer to our problem. ... so that's the other factor of soil degradation'* (LCW-P1). The existing pollution encourages more dumping. *'Just because of pollution people just throw away. People throw away mattresses, they get degraded,...some parts of the mattress come out and they [animals] eat'* (GSF-P1).

3.2.3 | Influence of Land Tenure Systems

Small-scale farmers do not own the land on which they farm. The absence of land security influences small-scale farmers' efforts to implement sustainable land management (SLM) practices and to make improvements on their farmlands as they do not own their land:

'The land that you are renting, you don't know how much to put in because there is a time issue. If it's not your own, after some time then it will be taken away from you....I think the time frame we have 10years ... of renting period and that 10years is not enough. If it could be increased, then we would be able to do improvements' (CSF-P1).

3.2.4 | Overgrazing

Overgrazing diminishes ground cover and increases soil loss and gully formation, which drives land degradation (Itzkin et al. 2021) and subsequently reduces the livestock carrying capacity of the area. *'... putting more cattle inside one camp is usually destroying that soil at the end of the day'* (LCW-P1). *'There is too much cattle on our farm because it makes something like ... overgrazing'* (CSF-P4).

Participants indicated that they do not have enough land and training to successfully implement rotational grazing on their farms as a strategy to minimise overgrazing and land degradation: *'You see, if you have enough land and you have training and support, then you are able to rotate your livestock. You put it ... at one time you put them here then you leave the other area not being grazed. Then after some time you leave this one, you move them there. But then if you just have a piece of land, a small one, you have them there all the time ... there is nowhere else'* (CSF-P1).

3.3 | Challenges to Manage the Land

Small-scale farmers and land care workers face different challenges that restrict their ability to implement sustainable land management practices and mitigate or prevent land degradation.

Challenges include inadequate funding and time for land care workers, inadequate snake awareness programmes and protective equipment, illegal livestock grazing from outsiders, poor infrastructure and logistics development.

3.3.1 | Inadequate Funding and Time for Land Care Workers

Findings indicate insufficient funding to employ land care workers for their land management duties: *'Less duration of time because they say we're going to work for only three months [while] ...this [slangbos] site needs more time'* (LCW-P3). They end up sitting at home unemployed, while the land being invaded by invasive plants and the reduced arable land and livestock feed affect their livelihoods. *'We won't work, we will be seated at home, no job, no food, no income, no salary, no nothing. Especially on the farms, if it can stop meaning all the cows, the ships and all the stuff... where will they get grass because the whole place will be full of slangbos and the cow will shrink'* (LCW-P1).

Farmers are also affected by the consequences of this downward spiral, which results in low crop yields, lack of food security and little surplus to sell on the open market.

3.3.2 | Inadequate Snake Awareness Programmes and Protective Equipment

Land care workers sometimes invade snake habitats while they are preparing the land and removing invasive plants. This risk restricts them from sustainably managing the land as they fear disturbing the snakes might endanger their lives:

'They [snakes] can feel that something is coming, but because they are the same [intertwined] with that slangbos, they hide themselves in that slangbos. So our equipment [hoes, cutting and chopping equipment] ... I am sure it's 2 metres long, so when we take out that thing [slangbos], sometimes when you finish taking it out you see something is lying there, it comes straight inside that thing' (LCW-P1).

In addition to protective equipment, land care workers need information: *'I think, educational sort of workshops because we don't know a lot about snakes and they are part of our ecosystem. So, there must be some state awareness, so that we can learn more on how to interact with the snakes'* (LCW-P1).

3.3.3 | Illegal Livestock Grazing From Outsiders

Illegal livestock grazing from outsiders is a prominent challenge for small-scale farmers to manage their land sustainably and reduce land degradation. They indicated that people from neighbouring areas illegally bring livestock to graze on their farms and the law enforcement agents do nothing to address this issue: *'We have a problem, illegal grazing...people from the location are doing illegal grazing ... and even if we report to the police, they do nothing about it'* (GSF-P1).

The problem is across borders with the neighbouring country as CSF-P1 states:

‘One of the challenges we have here...is the Lesotho people come bring their [live] stock here. At night, they cut our fences so there is no good control between us and them; so it’s causing us a lot of problems, the Lesotho cattle, it’s one of the problems we have.’

3.3.4 | Poor Infrastructure and Logistics Development

Poor infrastructure and logistics pose a challenge for SLM practices. As noted by The Global Mechanism of the UNCCD and Oxford Policy Management (2009), poor infrastructure has an adverse influence on access to wider national and international markets or technical information and inputs which may affect the adoption and implementation of SLM practices, while investment in infrastructure encourages SLM. Small-scale farmers struggle to find vehicles to transport their livestock and produce to the local markets and the condition of the roads further aggravates this challenge. As GSF-P2 states, *‘The roads are bad. There are potholes everywhere, even at our place there are potholes. I can’t even tell you how many tyres I had to buy. I think over R12, 000 for tyres.’* The condition of the roads further exacerbates the livelihood challenges of small-scale farmers.

The implications of poor drainage infrastructure was remarked by LCW-P1: *‘The increasing of the running water, when you have a lot of heavy rains, it ends up making the dongas. That’s when you find sometimes lot of water so it damages the soil.’*

3.4 | Support Systems in Mitigating Land Degradation and Sustain Livelihoods

Land care workers and small-scale farmers need the support of government, commercial farmers and community to meet their socio-economic needs and sustain their livelihoods.

3.4.1 | Assistance From the Government

The government plays an important enabling role to reduce poverty and inequality in South Africa. Land restoration and owning land are burning issues to correct past injustices. Small-scale farmers need land and support from the government and its stakeholders to maximise growth. CSF-P1 expressed the land issues in their area: *‘Government has a lot of land around Ladybrand; we are talking specifically about our area here. Around Ladybrand, there are government farms that are not being utilised; if government can increase the land for the commonage people that would help.’* *‘Secondly, the same land to produce well, you need to manage it well in terms of land lining [land preparation], making sure it’s well lined so that the nutrients will be able to be [absorbed] into the soil.’*

The role of government was not expressed in terms of entitlement, but partnerships. Small-scale farmers are willing to work hard and draw from their own strengths and resources, but they do

not have the means to do it without government’s assistance to line (prepare) their land to allow the soil to release nutrients for agricultural production. CSF-P1 further explained: *‘Because if you work hard the land is still sour ... you are not going to get anything. But if you work smarter that means you line the land and then it will release the nutrients and then you have more production. That means the help that we can get from the government is ... to line the land and then we also have to work the land ourselves’* [CSF-P1].

Most participants expressed their disappointment in government not living up to the partnership that they need to farm successfully. They approach government and get promises that never realises, experiencing being left behind. *‘The issue was sometimes government promises us something and they disappear’* (GSF-P1). *‘We try to fix everything but we got nobody to help us, to train us and nobody ever gives us nothing and we ask for the government ... They say they will give something but nobody ever comes back ... They promise to put water for our animals ... just promises. They give some few people and some got nothing and the sad thing is poor people can’t get nothing but rich people they get’* (GSF-P4).

GSF-P1 spoke about government deferring its role to commercial farmers to assist small-scale farmers: *‘... if somebody from some minister’s office says look in Ladybrand, we have so many farmers, small farmers as we are, ...then one professional farmer in Ladybrand, we have people here ... [asking] Please be a mentor to these five people; give us report about them, what they have done, are there any problems? Then we are going to give you a small subsidy; the minister says so ... How about that one?’*

3.4.2 | Support From Commercial Farmers

Participants were of the view that commercial farmers have the necessary means, information and experience to advise and mentor them to deliver quality harvests and to develop their farming practices. *‘I really rely on commercial farmers for information. Whether I need anything, I go to a commercial farmer. Whether you need information or advice ...’* [GSF-P2] *‘... professional farmers can produce quality. We can’t produce quality because we don’t have means to produce quality’* [GSF-P1].

3.4.3 | Community Support

Mostly women participants also secure support from the community societies to which they belong, namely, stokvels and community funeral plans. Stokvels *‘are an informal self-help union of people with a common goal of pooling the funds together on a weekly or monthly basis to address a common need due to poverty, unemployment, and income security’* (Bophela and Khumalo 2019, p. 27). CSF-O2 commented as follows: *‘As a woman, sometimes we think about small societies so that we can buy ... this month we can give ... the other month we give. Yes ... And funeral plans also. Small society ... They help us a lot.’*

4 | Discussion

Findings indicate that livestock and crop production are the primary livelihood strategies of the small-scale participants while

they have to engage in other income activities for meet their needs. In the absence of sufficient land, support and resources to optimise land productivity, small-scale farmers developed resilience to diversify their livelihood strategies. They diversify their livelihood strategies by including informal trading and part-time work. Baumann and Sinha (2001) state that in order for livelihoods of rural people to be sustainable, a household should at any given moment pursue a diversity of livelihood strategies. Small-scale farmers mainly keep livestock as a safety net to sell during difficult times which is an important component of household livelihood strategies (Freeman et al. 2008). Community societies such as stokvels play a pertinent role in supporting one another and securing a livelihood, particularly for women. Bophela and Khumalo (2019) concur that participating in stokvels bears social and economic benefits directed at generating income, sustaining food security, facilitating social networks and reducing the exhaustion of a finite portfolio of assets.

Land degradation influences crop and livestock production, which, in turn, affects the livelihood outcomes of small-scale farmers. The contamination of land leads to reduced soil fertility, the availability and quality of water, the air and forests and as a result, precipitates and prolongs poverty (Ashraf, Maah, and Yusoff 2014). Land pollution poses a threat to small-scale farmers' livelihoods as livestock that eat harmful material such as plastics and wires, and soil that loses its fertility lead to reduced crop yields and substandard livestock production. In addition, invasive plants interfere with grazing forage for livestock and diminish land value. Invasive plants have an adverse impact on small-scale farmers as they shrink the arable lands and reduce the productivity of major grain foods such as maize (Landman 2017). Furthermore, invasive species increase above-ground biomass and water loss through evapotranspiration reducing both surface water run-off and groundwater recharge, leaving the land dry and susceptible to degradation (Chamier et al. 2012). However, while the livelihoods of small-scale farmers are affected by the presence of invasive plants, it creates employment and a livelihood for land care workers in land management. They have an important role in stabilising agricultural productivity and contribute to sustainable livelihoods and well-being of the farming community.

Overgrazing hampers the production of livestock, which adversely influences the sustainability of small-scale farmers' livelihoods. It diminishes ground cover and increases soil loss and gully formation, which drives land degradation (Itzkin et al. 2021). According to Little, Hockey, and Jansen (2015), South African grasslands are gradually being degraded through the increasing impact of overgrazing. It is estimated that 60% of the grassland ecosystem has been permanently transformed, while as little as 15% remains as natural grassland. Of the grassland biome, 25% is degraded to some degree and only about 2% is formally conserved (Little, Hockey, and Jansen 2015). Illegal livestock grazing further exacerbates the existing insufficient grazing land, which influences the growth of small-scale farmers' livestock and their primary livelihoods (Muduva 2014). Conversely, controlled grazing assists with restoration of degraded ecosystems by allowing

the land to recuperate its cover without interference from the grazing livestock (Sato et al. 2019).

The management of invasive plants in South Africa is regulated by national legislation that yields the management and protection of national biodiversity, the conservation of important species and ecosystems and the sustainable utilisation of local ecological resources (Van Wilgen 2018). The management of alien invasive species usually involves a combination of mechanical control, fire and biocontrol (van Wilgen, Richardson, and Higgins 2001). The land care workers apply both mechanical and fire control elements to remove invasive plants in Ladybrand. This includes the physical felling or uprooting of plants and their removal from the site in which case it is important for them to have an understanding about snakes' behaviours so that they can adopt simple precautions to reduce the chance of being bitten (Chisale 2007). Furthermore, awareness of first aid and treatment for snake bites are important in land management programmes (Karthick and Varalakshimi 2017).

Removing invasive plants allows grass to grow which protects the land surface from degrading and provides livestock forage. According to Hoare (2016), this method of control is highly feasible in areas with low infestation; it creates employment and reduces poverty, while water is not contaminated with herbicide. However, the manual control method is mostly time-consuming, labour-intensive and therefore expensive, and could cause severe soil disturbance and erosion (Hoare 2016). The high cost of this method has been a challenge for land care workers as they are only employed part-time for a few months which directly influences their livelihoods and puts them at risk to fall in and out of poverty. Financial constraints in employing land care workers are not only affecting their livelihoods, but is one of the main factors hindering land users' adoption of land management practices (Paulus 2015).

In the framework of the sustainable livelihood approach (Department for International Development, 1999), the consequences of land degradation in Ladybrand make small-scale farmers and land care workers vulnerable to social and economic shocks which affect their livelihood outcomes. Instead of focusing on their vulnerabilities, the sustainable livelihood framework seeks to build on the strengths of small-scale farmers to accumulate assets or capitals. These include human capital (knowledge, skills and good health), financial capital (financial resources), social capital (network of relationships), physical capital (infrastructure and production equipment) and natural capital (natural resource stocks including land) (Department for International Development, 1999).

Poor small-scale farmers are unable to compete for resources, including preferred and productive land and are, therefore, limited to marginalised land that cannot sustain their farming practices (Birungu 2007). They often contribute inadvertently to land degradation because they are unable to keep land fallow for given periods of time, make investments in land improvements or use cost-effective farming mechanisms (Birungu 2007). Furthermore, they struggle to get access to profitable markets (van Tilburg and van Schalkwyk 2012).

Access to the various types of capitals is determined by transforming structures and processes, thus, the institutions, policies and legislation that shape livelihoods (Department for International Development 1999). To this end, having access to agricultural support services and systems is essential for farmers to increase agricultural production (Mncina and Agholor 2021). The government has a pertinent role to play in providing an enabling environment through allocation of resources and services, including agricultural support, infrastructure and access to markets.

Livestock and agricultural yields are affected by inconsistent water supply, which the municipality in Ladybrand has failed to address. Poor drainage systems distort the environment and cause excessive soil erosion which drives land degradation (Yarima, Sidi, and Ismaila 2019). The observation of Aliber and Hall (2012) remains relevant; despite increased budgets, government's attempts to support small-scale farmers have been costly and ineffective, and allocated resources only benefit a few farmers.

Agricultural support in South Africa is mainly intended for large-scale and commercial farming, offering little support to communal and/or small-scale farmers (Vetter 2013). Furthermore, extension officers who are expected to provide training on grazing management are poorly trained and under-resourced, and the service they provide is largely in the form of top-down, singular provision of often unfitting information; rangelands or commons have been particularly neglected (Vetter 2013). De Satgé (2020) maintains that support from the government to contract a service provider to undertake the land preparation for small-scale farmers will maximise their land capacity for increased production and ultimately improving their livelihoods. Nyawo and Mubangizi (2021) assert that appropriate institutional support of small-scale farmers to develop assets could help rectify the imbalance experienced by the small-scale farming sector.

The findings hinted at the imbalance of the quality of yields produced by the commercial farmers and those produced by small-scale farmers due to differences in access to the relevant resources. Zantsi, Cloete, and Möhring (2021) argue that it is important to have insight into the productivity gap between commercial farmers and small-scale farmers because it can be used as a basis for determining the intensity of the support needed to close this gap. The Department of Agriculture, Forestry and Fisheries (2012) accentuates how the lack of production knowledge influences production quality. Mbagwu, Benson, and Onuoha (2018) affirm that information is becoming a fundamental input in agriculture to respond to opportunities that could improve agricultural productivity. Findings alluded to small-farmers' reaching out to commercial farmers to mentor them in sustainable land management for increased crop production. However, findings pointed out that land management is interlinked with small-scale farmers not owning the land. As Robinson et al. (2017) aver, tenure security has an impact on landholders' management decisions. Hence, the likelihood that land users will invest in land conservation depends on their security of tenure (Moreda 2018). Resulting from the racial discriminatory policies of apartheid, the majority of the South African black population still do not have access to land rights

and tenure. This reality has a profound effect on the livelihoods of small-scale farmers.

The livelihood strategies of small-scale farmers and land care workers are regulated by the assets that they have at their disposal. Livelihood strategies consist of combinations of activities, which Scoones (1998, p:10) refers to as '*livelihood portfolios*.' These include agricultural intensification or extensification, livelihood diversification and migration. Thus, small-scale farmers can gain more of their livelihood from agriculture through intensification (more output per unit area through capital investment or increases in labour inputs), or from extensification (more land under cultivation). They could also move away from solely crop and livestock production (Brons 2005) and diversify to a range of off-farm income-earning activities or move away and seek livelihoods elsewhere (Scoones 1998). However, opportunities for diversity vary among households (Mutenje et al. 2010), depending on the quality of resources (land, labour, capital) and access to markets.

Nkonya, Mirzabaev, and von Braun (2016) state that despite the crucial role that land plays in human well-being and development, investments in sustainable land use are minimum, particularly in developing countries. The study in Ladybrand affirms the observations of Nkonya, Mirzabaev, and von Braun (2016) that productive efforts and incentives for sustainable land management and for prevention of land and soil degradation are presently inadequate and would need to be substantially increased to eradicate poverty and enhance food security in the world. The full effect of SLM initiatives requires a bottom-up approach as local input facilitates accurate understanding and insight (Fraser et al. 2006). Therefore, this study intended to comprehend the perceptions of local land users and workers of land degradation and how their livelihoods are affected by land degradation. Land degradation poses a threat to the social and economic development of small-scale farmers and land care workers and the well-being of their community. Land management can protect land as a natural resource, but also contribute to economic capital through increased agricultural productivity that reduces food insecurity and poverty. SLM promotes social capital and supports human capital to optimise livelihood strategies for sustainable livelihood outcomes (Department for International Development 1999). The Department of Environmental Affairs decision in conjunction with several other departments to adopt 'a more integrative resource management approach to satisfy livelihoods' needs whilst securing ecological restoration' is a significant step in land management for sustainable livelihood outcomes (Mani, Osborne, and Cleaver 2021, p. 986).

5 | Concluding Recommendations

Land degradation poses a serious threat to small-scale farmers' livelihoods and influences a considerable portion of arable land and livestock grazing in the study area Ladybrand in the Free State Province, South Africa. Invasive plants displace palatable grasses, increase evapotranspiration and decrease groundwater recharge leaving the land dry and prone to degradation with implications for food and livestock production and livelihoods.

Small-scale farmers are reluctant to invest in land management practices due to lack of tenure security, which contributes to the cycle of land degradation and socio-economic challenges. Illegal livestock grazing from neighbouring areas is one of the prominent factors posing a challenge for the farmers and land care workers to manage land sustainably and reduce land degradation. Inadequate snake awareness programmes and lack of protective equipment hinder land care workers further to appropriately manage the land.

Successful small-scale farming is intertwined with effective land management strategies and both are important for sustainable livelihood outcomes and combatting poverty. Therefore, land management strategies to mitigate land degradation in Ladybrand should prioritise both land and people (small-scale farmers and land care workers) for sustainable land management and livelihood outcomes.

Implementing legal and institutional measures that enable tenure security will promote ownership and management of land. Rotational grazing accelerates the restoration or mitigation of degraded land by allowing the vegetation cover and land to recover with minimum tampering with grazing livestock. However, the shortage of land in Ladybrand affects small-scale farmers' efforts to practise rotational grazing in a manner that promotes the mitigation of land degradation as well as supporting the security of their livelihood outcomes.

This study documents the insights of small-scale farmers and land care workers about land degradation and their commitment to practise sustainable land management to secure a sustainable livelihood. Adequate supply of necessary farming equipment will enable small-scale farmers to explore several opportunities of land management. Educational workshops on snake awareness and provision of protective clothing will ensure that land care workers are knowledgeable and understand how to handle the challenges that they encounter during land management. With the support from government and commercial farmers, both small-scale farmers and land care workers can practise SLM that contributes to sustainable livelihood outcomes and contribute to conserving the ecosystem.

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Data Availability Statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to privacy or ethical restrictions.

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