

STUDY FINDINGS

The study answered the following research question:

- What are the perceptions of small-scale farmers and land care workers about land degradation in Ladybrand and how it influences their livelihoods?

The following sub-questions informed the research question:

What contributes to land degradation in Ladybrand?

- In what way is land degradation influencing small-scale farmers and land care workers' livelihoods in Ladybrand?
- What strategies are in place to mitigate land degradation in Ladybrand?
- What strategies should be in place to mitigate land degradation for sustainable livelihood outcomes for small-scale farmers and land care workers in Ladybrand?

The findings of the study were yielded from four focus group interviews, with 27 participants in total. The focus groups consisted of semi-structured interviews with 14 land care participants (divided into two focus groups), 8 general small-scale farmers and 5 commonage farmers. The qualitative data were analysed by means of Creswell's (2014) thematic analysis process where the researcher coded the data and extracted themes from the participants.

DEMOGRAPHICAL PROFILE OF PARTICIPANTS

The purposive sample of 27 participants consisted of 13 small-scale farmers. Of these, 8 were general small-scale farmers and 5 were commonage small-scale farmers, and 14 land care workers.

Table 5.1 presents the demographic information of the small-scale farmers in the two participant categories of commonage and general small-scale farmers regarding gender, age group and years involved in small-scale farming. The general small-scale farmers were from the Driefontein Trust Farm, Bakenkop Farm, Tshalea Duma Farm, Heldemoed Farm and Assist Mission Farm. Codes were allocated to identify the participant categories and participants respectively.

Table 5.1: Demographic profile of small-scale farmers

Participants	Farm	Marital status	Gender	Age group	Years in farming
CSF-P1	Commonage	Married	Female	58+	2
CSF-P2	Commonage	Married	Female	48–52	9
CSF-P3	Commonage	Married	Female	58+	20
CSF-P4	Commonage	Married	Male	58+	12
CSF-P5	Commonage	Single	Female	58+	29
GSF-P1	Farm A	Married	Male	58+	10
GSF-P2	Farm A	Married	Male	58+	10
GSF-P3	Farm B	Married	Male	53–57	8
GSF-P4	Farm B	Married	Male	43–47	8
GSF-P5	Farm C	Married	Male	58+	12
GSF-P6	Farm C	Widowed	Male	58+	12
GSF-P7	Farm D	Married	Female	38–42	10
GSF-P8	Farm E	Single	Female	43–47	12

As Table 5.1 indicates, there was a fair gender distribution among small-scale farmer participants in the study, with 6 female and 7 male participants. However, the commonage small-scale farmers were dominated by female participants. This could be explained by the growing feminisation of agriculture, which has seen growth of women in small-scale farming as 70 percent of farming activities in Africa are undertaken by female farmers (Byamugisha, 2013:14). The ages of the small-scale farmer participants ranged from 43 years to 58+ years with most of the participants (8) being 58 and older. Most of the small-scale farmers have lived on the farm, practising small-scale agriculture for an average period of 10 years and longer. This could be influenced by limitations in young people's access to land, land concentration and land sales and allocations outside the kin group by older generations (White, 2012:15).

Moreover, young people are increasingly seeking work in the cities, leaving agriculture to older generations (White, 2012:9). Most of the participants from the two sampling categories of small-scale farmers indicated that they were married.

The biographical information of land care workers pertaining to their gender, age group and years working in land care is indicated below in Table 5.2.

Table 5.2. Demographical information of land care workers

Participants	Gender	Marital status	Age group	Years working in land care
LCW-P1	Male	Married	33–37	10
LCW-P2	Female	Married	28–32	12
LCW-P3	Female	Single	28–32	1
LCW-P4	Female	Single	28–32	2
LCW-P5	Female	Single	33–37	9
LCW-P6	Female	Married	23–27	2
LCW-P7	Female	Married	33–37	3
LCW-P8	Female	Single	33–37	1
LCW-P9	Female	Single	28–32	3
LCW-P10	Female	Married	33–37	1
LCW-P11	Female	Single	28–32	1
LCW-P12	Male	Single	23–27	6 months
LCW-P13	Male	Single	33–37	9
LCW-P14	Male	Single	33–37	6 months

As displayed in Table 5.2, ten of the land care participants were females and four were males. This reflects how progressive certain gender roles have become, as women are now occupying more manual jobs in higher percentages than their male counterparts. As Dillip, Mboma, Greer and Lorenz (2018:2) state, more women in urban and rural areas are becoming involved in economic activities and going out to work to earn money. The involvement of women in land care is also supported by the notion that, in many developing countries, women have the primary responsibility for the growing, collecting, processing and storage of food (PricewaterhouseCoopers,

2008:14). They are also responsible for the use and management of other natural resources, such as water and land for family use (PricewaterhouseCoopers, 2008:14).

The ages of the participants ranged between 23 years to 37 years, with an average of 30 years. The involvement of younger generations in natural resource management has been classified to go a long way in reducing the current environmental impact and driving towards sustainable development (Mboringong & Angga, [sa]:2). Thus, land care is empowering the youth through creation of employment opportunities and access to resources. This will, in turn, help to alleviate poverty among the youth themselves as well as create the needed platform for them to apply their strengths and talents to the economic development process. Hereby, inclusive development and sustainable growth into the future will be ensured (Kidido & Lengoiboni, 2019:19). Majority of the participants highlighted that they were not married. The group had nine single participants and only five were married. The average of participants' years of working experiences in land care was about 4 years. Two participants had 12 years of working experience, one had 10 years, and two had 9 years, while ten participants had less than 5 years of working experience in land care. Although the two participants who had only 6 months of working experience did not meet the sampling criteria, they were included in the study as they indicated their availability to share their experiences during the recruitment process.

THEMES AND SUB-THEMES

Six themes and sub-themes emerged from the data on the perceptions of small-scale farmers and land care workers on land degradation and how it influences their social, economic and environmental livelihoods. Data from the small-scale farmers and land care workers presented similar themes and sub-themes. In the case where data were relevant to only one of the two participant categories, it will be indicated as such. The findings of the study will be supported by direct quotations from the participants, and literature will be integrated in the discussion of the findings where relevant.

Table 5.3 presents the themes and sub-themes that emerged from the data of this study.

Table 5.3: Themes and sub-themes of study

Themes	Sub-themes
Theme 1: Causes of land degradation	1.1 High volumes of invasive plants 1.2 Land pollution 1.3 Influence of land tenure systems 1.4 Overgrazing 1.5 Veld fires
Theme 2: Factors inhibiting sustainable land management	2.1 Inadequate funding and time for land care 2.2 Lack of appropriate farming equipment 2.3 Lack of markets
Theme 3: Challenges faced by small-scale farmers and land care workers affecting their ability to manage the land	3.1 Inadequate snake awareness programmes and protective equipment 3.2 Illegal livestock grazing from outsiders 3.3 Access to capital 3.4 Poor infrastructure and logistics development 3.5 Water shortages
Theme 4: Current livelihood strategies	4.1 Selling livestock to abattoirs and villagers 4.2 Part-time work and informal trading
Theme 5: Supporting systems in meeting socio-economic and informational needs	5.1 Assistance from the government 5.2 Commercial farmers 5.3 Stokvels
Theme 6: Strategies to mitigate land degradation and secure sustainable livelihoods	

Theme 1: Causes of land degradation

The findings of the study reveal various causes of land degradation. These include high volumes of invasive plants in Ladybrand, land pollution, impacts of land tenure security, overgrazing and veld fires. These causes are discussed as sub-themes next.

Sub-theme 1.1: High volumes of invasive plants

The findings indicate high volumes of invasive plants, namely slangbos, inkberry and poplar tree, which contribute to the degradation of the land. The participants explained that invasive plants are growing rapidly in their farm area regardless of their efforts to control them. Consequently, the arable land is being reduced in size as invasive plants continue to invade and degrade a considerable portion of their arable land. The participants indicated that invasive plants absorb a lot of water from the ground, which reduces the quality of the soil and the quality of livestock forage due to insufficient water supply. The findings also show that some of the invasive plants may poison livestock and therefore reduce livestock production. This indicates how harmful certain invasive plants are to their livestock. Poor soil quality and livestock production threatens the livelihood of communities whose livelihood support is dependent on crop and livestock farming.

The impact of invasive plants on land is evident in the following views of participants:

GSF-P2: We have a lot of them [invasive plants] at the farm. 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.

LCW-P1: Heavy rains contribute to land degradation and lowering of soil quality and invasive plants play a vital role.

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.

GSF-P4: It's another problem in our farm; we have got another harmful plant called ink berry. It kills our cattle.

GSF-P5: *It killed the cattle immediately. It's like they have eaten dung.*

LCW-P3: *Poplar tree drinks water ... lots of water*

The findings reveal that farmers are losing a substantial section of their arable land due to the increased growth of alien invasive plants in their area. Landman (2017:1) notes that invasive alien plants negatively impact small-scale farmers by shrinking the arable rangelands and reducing the productivity of major grain foods such as maize. People living in developing countries are mostly affected by invasive alien species because the majority of the people are small-scale farmers and are almost completely reliant on arable farming land and natural resources for their survival, with invasive species causing additional threats to their nutrition and food security (Pratt, Constantine & Murphy, 2017:31).

It is indicated in the findings that invasive plants draw up more water from the ground; as a result, it affects soil quality and livestock production. This finding corroborates the view of Chamier, Schachtschneider, Le Maitre, Ashton and Van Wilgen (2012:345) that alien invasive species upsurge above-ground biomass and water loss through evapotranspiration. As a result, it reduces both surface water run-off and groundwater recharge, leaving the land dry and susceptible to degradation. Some of these invasive alien plants, such as the poplar tree as highlighted by the participants, modify the quantity, quality and timing of water flows by using more water than the plants they displace (Preston, Le Maitre, Blignaut, Louw & Palmer, 2018:719). This also affects the productivity of livestock by reducing the livestock forage. One of the prominent invasive plants in Ladybrand is slangbos. Slangbos (*Seriphium plumosum*) is a shrub indigenous to South Africa, which has inhabited substantial parts of the semi-arid grasslands of the country (Du Toit, Cronje & Trollope, 2013). Slangbos is highly unpalatable to livestock.

Invasive alien plants also threaten livestock production and grazing pastures as some can be poisonous to livestock. Thus, it may either be poisonous or unpalatable to livestock or it may be edible but provide less or poor-quality forage compared to other forage species (Bufebo & Elias, 2018:28). The ink berry is an invasive plant which participants identified as being notoriously poisonous to their livestock. It is a declared weed in South Africa. The plant must be controlled or removed where possible. It is

highly toxic to livestock, causing liver damage to cattle, sheep, goats and bison, which can result in death (United States. Department of Agriculture, 2013:2).

Lesoli, Gyasheka, Solomon, and Moyo (2013:272) argue that invasive species lessen the functional capacity of rangeland ecosystems in terms of support for livestock and wildlife. According to Clusella-Trullas and Garcia (2017:2), alien plants are known to directly or indirectly influence food resources for livestock communities. For instance, alterations in the composition of invasive plants will influence the livestock by directly bringing down the amount or quality of forage available. Therefore, the presence of invasive plants in rangelands leads to large-scale economic fatalities for small-scale livestock farmers by lessening the level of animal productivity (Bufebo & Elias, 2018:28). These plants impact the productivity of the livestock industry by reducing the yields and quality of livestock feed, interfering with grazing, poisoning animals, increasing the costs related to the production of livestock and diminishing land value through land degradation (Landman, 2017:2).

The land care worker participants revealed that the presence of alien invasive plants creates employment for them through land management, which makes a significant contribution to their livelihoods. Therefore, the management of invasive plants is a primary source of employment for several community members in Ladybrand. However, the participants explained that the main challenge they 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 finding impacts negatively on land care workers' livelihoods and the land as expressed in the following words:

LCW-P1: *It 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.*

LCW-P1: *Yes, as land care workers, our methods and efforts ... we can remove the slangbos so that the grass can grow well.*

LCW-P3: *Less duration of time because they say we are going to work for only three months. As you see, maybe a site ... needs more time.*

The findings show a direct link between the land care workers' livelihood, management of land and managing the volume of invasive alien plants in Ladybrand. The management of invasive alien plants in South Africa is modulated under national legislation that yields for the management and protection of national biodiversity, the conservation of important species and ecosystems and the sustainable utilisation of local ecological resources (Van Wilgen, 2018:13). The management of alien invasive species usually involves a combination of mechanical control, fire and biocontrol (Van Wilgen, Richardson & Higgins, 2001:3). 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. This allows grass to grow and protect the land surface from degrading and provides livestock forage. This method of control is highly feasible in areas with low infestation; it creates employment and reduces poverty, and no contamination of water exists with herbicide (Hoare, 2016:24). However, this control method is mostly time-consuming, labour-intensive and therefore expensive, and could cause severe soil disturbance and erosion (Hoare, 2016:24). The expensiveness of this method has been a challenge for land care workers as they sometimes experience inadequate funding to fully execute their duties throughout the year, which in turn has an adverse influence on their livelihoods.

Policy on and management of invasive plants should differentiate the types of invasive plants and methods of control according to their cost and benefits as well as according to the numerous stakeholders who experience these effects (Shackleton, Shackleton & Kull, 2019:146).

Sub-theme 1.2: Land pollution

The findings indicate that one of the leading causes of land degradation in Ladybrand is land pollution. The participants pointed out that land pollution comes from waste dumping, including plastics and sewage water. The findings present that the municipality is not forthcoming with efforts to mitigate land pollution. Land pollution is also causing participants' land to shrink in size and their livestock is affected by consuming some of the dumped waste material, such as plastics and wires. The

following quotes show participants' views on land pollution and land degradation, as well as the impact it has on animals:

LCW-P1: *On the farm where we are farming, we have a problem of pollution ... Pollution, plastics, sewage water because the farm we rented is under a municipality control, but we have got it under a nine-year lease contract. 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. I think also we have land pollution. There is so much that we search here in Ladybrand, so that's the other factor of soil degradation.*

LCW-P3: *Also, too much dumping inside the location. Others are full and the municipality will tell they will take it. They are full at the end of the day; they go all over the land.*

CSF-P1: *Plastics, sewage they have no control over it ...*

GSF-P1: *They gave us 366 hectares; due to pollution, it's no longer 366, it shrank terribly; hence, it affects our cattle. 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. They did not manage to ... they are not prepared to see to it that they do not rig.*

GSF-P1: *Okay, I wanted to say that sometimes when they graze you find in the stomach a piece of wire or plastic, remember how ... just because of pollution people just throw away. People throw away mattresses, they get degraded, and the wire comes out and they eat ... some parts of the mattress come out and they eat.*

The findings present evidence on how land pollution is caused by poor management of waste products, dumping sites and sewage. According to the UNEP (2017:17), land pollution is largely an outcome of inappropriate solid waste management, littering, poor agricultural practices and mining. Mining pollutes the land by removing the topsoil, which forms the fertile layer of soil, or by leaving behind waste products and the chemicals used for the process (hazardous metals, such as mercury and arsenic).

Mining also misuses the land through deforestation, land conversion and desertification. Land is also polluted by seepages from poorly managed landfills and unrestricted dumping of liquid and solid waste from households, industrial plants, as well as organic compounds and pharmaceuticals (Sevasan, 2017:2; UNEP, 2017:17). Contaminants of land pollution easily degrade land, soils and ground water and are difficult to eradicate (UNEP, 2017:18).

As the findings indicate, land pollution has an adverse effect on humans, animals and other living organisms as well as the natural environment (Sevasan, 2017:3). The participants commented on how they have lost a considerable size of their land due to uncontrolled dumping of waste on their farmland and effects on their livestock. Ashraf, Maal and Yusoff (2014:13) affirm that the contamination of land may lead to reduced soil fertility and reduced vegetation cover. This causes soil erosion and leads to land degradation, reduced crop yields due to loss of soil and nutrients, and dangerous chemicals entering underground water and polluting drinking water sources. Therefore, land pollution affects the quality of the land, posing a threat to community livelihoods and crop and livestock production.

A report by the Department of Statistics South Africa (2018) corroborates the findings on land pollution in Ladybrand, indicating that 90 percent of an estimated 59 million tonnes of general waste produced in South Africa in 2011 ended up in landfills, while only 10 percent was recycled. Thus, there is an increased growth in solid waste, while there is a scarcity of appropriate land to dispose the waste. South Africa is therefore running out of space for waste disposal. Furthermore, considering the advantages and need for waste recycling, studies highlight that as little as 5.2 percent of households recycled waste in 2015 (Department of Statistics South Africa, 2018). In the same year, the Free State province had the third least percentage of households who sorted waste for recycling in the country, at 5.1 percent (Department of Statistics South Africa, 2018). Recycling offers benefits of conserving energy, saving natural resources, reducing land pollution and mitigating land degradation (Department of Statistics South Africa, 2018).

Sub-theme 1.3: Influence of land tenure systems

The findings indicate that the absence of land security influences small-scale farmers' efforts to implement SLM practices and to make improvements on their farmlands. This finding was well captured by a participant who is renting land in a commonage:

CSF-P1: *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.*

CSF-P1: *The suggestion towards that one is right now. I think the time frame we have 10 years ... uh ... of renting period and that 10 years is not enough. If it could be increased, then we would be able to do improvements and then you know things like that. So that's a suggestion on how ... what we think.*

Robinson et al. (2017:6) point out that tenure security has an impact on landholders' management decisions, which affect outcomes relating to conservation interests and their livelihoods. According to Moreda (2018:75), it has long been argued that lack of tenure security affects land degradation, as the likelihood that land users will invest in land conservation depends on their security of tenure. Therefore, the provision of the relevant legal and institutional measures which augment tenure security, such as government extending the tenure period of commonage small-scale farms, may alleviate the land degradation effects to a certain extent by encouraging land resource conservation and adaptation (Unruh, Akhobadze, Ibrahim, Karapinar, Kusum & Montoiro, 2019:20).

The Department Rural Development and Land Reform (South Africa, 2010) passed the Draft Land Tenure Security Bill. The Bill aims to provide protection to people who live and work on farms, to provide support systems to them for sustainable livelihoods and to provide frameworks aimed at security of tenure.

Sub-theme 1.4: Overgrazing

One of the prominent drivers of land degradation identified by participants is overgrazing. Having too many cattle on the farm destroys the soil. Furthermore, the

grazing of livestock is not well managed, and the farmers need the appropriate training and support to enact sustainable forms of grazing to reduce overgrazing.

CSF-P4: *There is too much cattle on our farm because it makes something like ... overgrazing*

LCW-P1: *First and foremost, it's overgrazing ... putting more cattle inside one camp is usually destroying that soil at the end of the day.*

CSF-P1: *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.*

In alignment with the findings, Itzkin et al. (2021:17) state that overgrazing diminishes ground cover and increases soil erosion and gully formation, which drives land degradation. Land degradation reduces the livestock carrying capacity of the area due to the decrease in ground cover or livestock forage. This results in increased livestock deaths, thereby decreasing stock numbers and ultimately posing socio-economic constraints to small-scale farmers whose livelihoods are dependent on livestock production (Itzkin et al., 2021:17). Livestock and other natural resources are commonly identified to be significant components of rural livelihood strategies and provide an essential livelihood support for many rural poor, which keeps them from poverty (Vetter, 2013:2). In relation to overgrazing, the most fundamental feature that contributes to the decline of rangelands is the ineffective distribution of livestock on the grazing pastures (Czeglédi & Radácsi, 2005:29). The participants indicated that they need assistance to implement rotational grazing in their farms as a strategy to minimise overgrazing and land degradation. Ineffective distribution of livestock subsequently leads to over-usage of some parts of the land. Thus, areas that are overused often have most of the forage plants overgrazed. Czeglédi and Radácsi (2005:29) note that implementing an efficient rotational grazing by livestock is a sustainable method for improving watershed conditions and reducing erosion on farmlands.

To support the contention on rotational grazing, Sato et al. (2019:2) assert that controlled grazing may assist restoration of degraded ecosystems by allowing the land to recuperate its cover without interference from the grazing livestock. Numerous management practices have been utilised successfully to develop grazing distribution. For example, water development, placement of salt and supplement, fertiliser application, fencing, burning and plantings of special forages can be used to enhance grazing by livestock in underutilised areas (Czeplédi & Radácsi, 2005:30). However, in Africa, an effort to improve livestock farming and the management of grazing land practices among communal and emerging farmers has failed (Allsop, Laurent, Debeaudon & Samuels, 2007). Agricultural support in South Africa is mainly intended for large-scale and commercial farming, offering little support to communal and/or small-scale farmers of crop or livestock (Vetter, 2013:2). 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 (Vetter, 2013:2). Rangelands or commons have been particularly neglected (Vetter, 2013:2).

Hall and Cousins (2013:12) indicate that fencing arable parts of land may be more cost-effective and more fitting than investing in fencing camps for livestock and can enable grazing land to be rested during the dry season. The fencing programme that forms part of the Comprehensive Rural Development Programme (CRDP) is thus a useful tool that could be put to good effect, enabling positive crop-livestock interactions and mitigating the effects of overgrazing on rangelands that contribute to land degradation (Hall & Cousins, 2013:12).

Sub-theme 1.4: Veld fires

The participants highlighted that veld fires are contributing to the high scale of land degradation in Ladybrand. Findings reveal that veld fires are destroying the quality of the soil due to smoke that enters the solar beam, which leads to high temperatures. Increased temperatures may cause vegetation cover to dry out at higher rates, thus increasing the amount of vegetation that can potentially be ignited and, ultimately, more fires. Most of the veld fires start in towns located close to the farms, particularly during the winter season when community members light fires to keep themselves warm. The participants articulated the risks of veld fires as follows:

LCW-P1: *I can say veld fires, when fire burns, smoke goes out and goes down to the solar beam and it also destroys that soil, at the end of the day there is no protection. Maybe if you plant something it dies, maybe it may rain, and just that the weather is not right.*

GSF-P4: *We are going to have a problem of just like in this season of winter, we have a problem of veld fires.*

LCW-P4: *Veld fires also play a role there.*

Veld fires are a critical challenge because they occur frequently, causing loss of biodiversity, land degradation, food insecurity, loss of life, destruction of property and emission greenhouse gases that contribute global warming and climate change (Choga & Nyamadzawo, 2017:28). Participants highlighted that veld fires are damaging the quality of the soil. Kruger, Forsyth, Kruger, Slater, Maitre, and Matshate (2006:126) corroborates that veld fires reduce land cover, expose the land to agents of accelerated soil erosion and alterations in the hydrological cycle, increase surface run-off and modify various ecological processes. The removal of vegetation cover substantially leads to the reduction of the surface's capacity to infiltrate surface run-off after a precipitation event. Land degradation may be accelerated by veld fire activity when the area has already succumbed severe overgrazing (Strydom & Savage, 2016:2). Despite the endorsed acts that were aimed at preventing and mitigating veld fires, such as the National Veld and Forest Fire Act (101 of 1998), the Environmental Management Act (107 of 2007) and the Traditional Leaders Act (20 of 1998), veld fires remain a recurring challenge (Nyamadzawo, Gwenzi, Kanda, Kundhlande & Masona, 2013:66).

Theme 2: Factors inhibiting sustainable land management

The findings indicate a plethora of factors that are inhibiting the optimisation of SLM practices in Ladybrand. The factors include inadequate funding and time for land care, lack of appropriate equipment and lack of markets. These factors are discussed as sub-themes next.

Sub-theme 2.1: Inadequate funding and time for land care workers

Insufficient funds and time are highlighted in the findings as some of the leading factors that limit SLM in Ladybrand. The findings indicate that there is not sufficient funding to employ land care workers for their land management duties. They work for only short periods of three months in the course of a year due to inadequate funding. They end up sitting at home with no employment, which influences both their livelihoods and the land for farming because no one will be tending to it. The cultivatable land for farmers is invaded by alien species, reducing the space for arable land to farm on as well as reducing livestock feeds. The influence of funding and time on SLM is captured by participants' responses:

LCW-P3: *Duration of funds ... Less duration of time because they say we're going to work for only three months. As you see, maybe this site needs more time.*

LCW-P5: *Now we're sitting here at home because of money.*

LCW-P1: *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-P5: *The farmers will suffer if there is no one to remove the slangbos, because there will be no space for planting.*

The participants' feedback during the study substantiates findings reported by Paulus (2015:12) that financial constraints are one of the main factors that are hindering land users' adoption of land management practices. As highlighted by the participants, lack of financial investment in SLM leads to further land degradation and, eventually, to more poverty. Farmers are the mostly affected by the consequences of this downward spiral, which results in low crop yields, lack of food security, little surplus to sell on the open market and unemployment. These factors combined underpin land users' poverty and decrease their social stability (Breu et al., 2011:437). The ineffectiveness and absence of SLM practices might result in the land being invaded by alien plants, which reduce the size of arable land and the quantity of available livestock feed. Nebere, Tolossa and Bantider (2021:2) highlight that SLM enhances livestock fodder, soil protection, increased fertility and biodiversity, as well as increased income and improved household nutrition. Nebere et al. (2021:3) corroborate that farmers or land

users with access to credit or funding and savings associations have a considerable chance to adopt SLM practices.

Sub-theme 2.2 Lack of appropriate farming equipment

The findings present that absence of relevant equipment impedes the implementation of land management practices in Ladybrand. The participants indicated that they are unable to improve their farming activities due to lack of equipment such as tractors. The lack of relevant equipment has resulted in farmers' delaying their agricultural practices as they sometimes need to hire the equipment needed to sustainably prepare and manage the land. The findings also reveal that some farmers use fertiliser to maintain or restore the fertility of the soil. However, it is not readily accessible to them as it is expensive. To emphasise the issue of equipment on SLM, participants commented:

CSF-P1: So, we ... we are feeling the issue of ... equipment we have been promised but nothing came so that what we are mentioning that we need that to improve our ... our farming activities, if we can have those ... it will be very helpful.

GSF-P1: Here, the problem of farming, we have enough land to grow crops but, most unfortunately, we don't have equipment ... we have short of equipment we cannot farm, no tractors and all those things.

CSF-P1: If ... you have your own equipment, you are able to do what needs to happen timeously. Now, the equipment you are renting the bigger farmers will do their land first. And then when they are done with their land, it's only then when they come to you. So, most of the time we are late in farming. So, our problem ... will always be late because they come, they do their space then they come to ours later. So, if it's ours, we have control.

GSF-P1: If there is help it should be managed, we can say ... yeah ... we have donated tractors for all farmers in Ladybrand ... somebody has to manage all that. If we can't then ... it's subsidised ... they can central all the equipment then we go there to collect it.

LCW-P1: ... other farmers, they fertilise the soil if they recognise at a later stage, maybe because of the drought, then they recognise that the soil is weak and they put fertilisers just to make the soil fertile.

GSF-P4: *But it's not only that fertiliser. Also seeds and chemicals, they are also expensive.*

The nature of equipment that farmers have at their disposal influences their decision to adopt and implement SLM practices. It is indicated in the findings that lack of equipment restricts farmers from improving their farming activities. Liniger et al. (2011:12) substantiate participants' views that land users may require specific inputs to apply SLM, such as appropriate equipment, seeds and fertilisers. Sims and Kienzle (2016:4) state that relevant agricultural equipment is an essential input not only for crop production, but it also has a critical role to play along the entire value chain. By introducing the appropriate equipment, value can be added to the whole process of agriculture. From planting to marketing and managing the land, higher value outputs can be attained. Rural employment can be created and sustained, post-harvest losses can be reduced, quality can be enhanced and small-scale farmers can be incorporated into the market economy competitively.

The findings reflect that participants experience low productivity and poor land management practices due to lack of access to equipment in spite of having enough land to grow their crop. Rapsomanikis (2015:1) corroborates the finding. The author state that for small-scale farmers to scale up their production level, apply SLM practices, meet the growing interest and increase profitability, they need to find ways to increase labour input or improve labour efficiency through mechanisation and other means. As reported in the findings, some farmers are considering other ways to access equipment. Among the possibilities is the sharing of equipment with other farmers by having a central location to access communal equipment, such as tractors (Rapsomanikis, 2015:25).

Theme 2.3: Lack of markets

The findings highlight that farmers are unable to implement SLM practices due to lack of access to markets. Access to markets allows farmers to have access to sustainable income that can be utilised to fund SLM measures. The absence of markets restricts farmers from selling their produce. Greater preference is given to the commercial farmers, which leaves small-scale farmers stranded with no market for their yields. Participants expressed the challenges with access to markets as follows:

GSF-P4: ... and lots of ideas just like farming with ... main problem is the market, our place ... there is no market for our small farming.

GSF-P1: Yah, you know he says we can try to plant everything, you know, but where are we going to send our products? That's the problem, the commercials, they know where to send them.

GSF-P1: Market, yah ... if we also indulge in vegetables, we plant cabbages, potatoes, carrots, where are we going to sell them because when we try to send it to the market they give preference to professionals, white farmers, who is going to take ours?

The participants indicated that the poor access to markets poses a challenge for them to sell their produce, which has adverse consequences on their livelihoods. The Department of Agriculture, Forestry and Fisheries (South Africa, 2012:2) supports this finding, stating that the lack of reliable markets causes small-scale farmers to receive low prices for their products when selling it at their farm gate or local markets. The UN (2012:11) corroborates participants' views in a report on sustainable land use for the 21st century, stating that access to markets and information enables land users to make informed decisions. Myeni et al. (2019:2) concur that the presence of markets advances the farmers' access to information and technical details regarding SLM. A working paper series by National Agricultural Marketing Council (NAMC) (2016:2) states that access to markets encourages the efforts of farmers and may encourage them to increase production, thus contributing to household income and food security. It is broadly understood that small-scale farmers have restricted access to profitable markets due to several limitations. These include poor infrastructure, lack of technical support, lack of information (relating to markets, production, finance and environmental issues), low involvement in agricultural cooperatives and no record-keeping practices, among other limitations (NAMC, 2016:2).

It is highlighted in the findings that small-scale farmers are receiving limited preference from the available lucrative markets compared to the commercial farmers. Thus, the markets prefer to buy from commercial farmers instead of small-scale farmers. This finding aligns with the views of NAMC (2016:2) that small-scale farmers are prohibited from the most profitable channels, such as direct sales to supermarkets and exports, primarily due to poor management skills, small quantities produced, low quality of the produce, poor or no storage facilities, little value addition to their products, transport

constraints and ineffective dissemination of information. The poor access to markets for farmers influences not only their household food security but also the sustainability of their arable land due to lack of adequate funds to implement SLM measures.

Theme 3: Challenges faced by small-scale farmers and land care workers affecting their ability to manage the land

Small-scale farmers and land care workers face different challenges that restrict their ability to manage the land and mitigate or prevent land degradation in Ladybrand. Some of the factors, as indicated by the findings, include inadequate snake awareness programmes, illegal livestock grazing from outsiders on their land, poor infrastructure and logistics development, and water shortages. The following sub-themes capture the essence of these factors in detail.

Sub-theme 3.1: Inadequate snake awareness programmes and protective equipment

The participants are of the view that snakes form part of the ecosystem; therefore, there should be educational workshops to raise more awareness and knowledge about snakes and snake bites as an occupational hazard for land users. The findings also indicate that land care workers lack the protective equipment to deal with the snakes they face during land management. They need safety boots and snake gaiters for protection. Some of the snakes hide in the invasive alien plants, which makes it challenging for them to remove the alien plants safely without interfering with the snakes. However, some participants have indicated that working for land care has changed how they approach snakes as they now avoid killing the snakes because they understand their role as part of the ecosystem. The following comments capture the perceptions of the participants on snakes:

LCW-P1: *The negative side is that we are invading the snake's place.*

LCW-P5: *Safety boots and the guarders for snakes.*

LCW-P1: *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: *They can feel that something is coming, but because they are the same with that slangbos, they hide themselves in that slangbos. So our 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-P2: *I would like to add something ... Before I became a land care worker ... the snakes, it was something scary. So, when we find it in the field, we will kill it. So, in land care we practise that the snake mustn't be killed.*

The findings indicate that the need for protective equipment and awareness raising on how to sustainably interact with snakes is an important part of the ecosystem and optimising land care workers' efforts to manage the land. The land care participants noted that they sometimes invade snake habitats while they are preparing the land and removing invasive alien plants. This, therefore, restricts them from sustainably managing the land as they fear disturbing the snakes might endanger their lives. Participants indicated that educational workshops to raise awareness on how to interact with the snakes might complement the knowledge and understanding they already have about snakes. Karthick and Varalakshimi (2017:15976) corroborate this finding, noting that understanding awareness and perception in risk population on the preventive measure, first aid and treatment for snake bites becomes pivotal in designing snake bite prevention and control programmes to protect risk populations such as in the case of land care workers. Chisale (2007:2) asserts that, by understanding something about snakes' behaviours, simple precautions can be adopted to reduce the chance of encounters, contact and therefore bites.

The participants commented that they lack the protective equipment to handle snakes during their tasks of land management. Lack of protective equipment compromises their endeavour to effectively and efficiently manage the land. In support of this finding, Rogers (2003:453) notes that protective equipment is designed to prevent occupational exposure to hazards such as snakebites. The land care workers should have access to protective equipment at no cost, including correct sizes and type of equipment (boots, snake gaiters and hooks) that take allergic conditions that are caused by the equipment into consideration (Rogers, 2003:453). Personal protective equipment can be an effective control strategy only if appropriate and reliable equipment is provided and if employees consistently use it.

Sub-theme 3.2: Illegal livestock grazing from outsiders

Illegal livestock grazing from outsiders is presented in the findings as one of the prominent factors posing a challenge for the farmers and land care workers to manage their land sustainably and reduce land degradation. The participants 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. These findings are supported by the following views of participants:

GSF-P1: Another problem is we are close to the locations ... very much unfortunate ... 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.

CSF-P1: One of the challenges we have here is we are neighbouring to Lesotho. So, the Lesotho people come bring their 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.

The illegal grazing that small-scale farmers experience on their land infringes their capacity to eradicate land degradation and causes more problems for them (see sub-theme 1:4). The findings are confirmed by Maduva (2014:32), who points out that illegal entry of livestock onto the communal land challenges the carrying capacity of the farm, which drives land degradation. Maduva (2014:32) further highlights that illegal livestock grazing also destroys the communal farmers' crops and grazing pastures, thereby endangering their livelihoods as residents. Livestock and crop production are the primary livelihood strategies that the participants have for their survival. Thus, illegal livestock grazing influences the outcomes that are provided by these livelihood strategies. As highlighted by the findings in sub-theme 1.4, participants experience overgrazing due to insufficient grazing land to distribute their livestock accordingly on a rotational grazing basis. Illegal livestock grazing further exacerbates the existing issue of insufficient grazing land, which influences the growth of their livestock. Odendaal (2011:5) argues that reduced grazing land due to illegal grazing has resulted in weaker livestock that develop at a slower rate and in small-scale farmers' incurring additional costs of buying fodder to supplement livestock's diet.

Sub-theme 3:3: Poor infrastructure and logistics development

Most participants indicated that poor infrastructure and logistics impede their effort to exercise SLM. They reported that it is a challenge for them to find vehicles to transport their livestock to the local abattoirs. The condition of the roads further aggravates the challenge to access sustainable transportation. There is also inadequate vehicle supply for firefighters' service delivery, which leaves the land users vulnerable in the case of veld fire eruption. The findings point out that the poor drainage infrastructure creates dry gullies that drive land degradation if it is not rehabilitated. The participants' views are expressed as follows:

GSF-P4: Sometimes we do have our own transport but the problem is they don't have carriers and we will have to hire somewhere.

GSF-P2: 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.

GSF-P4: Firefighter, yes, it's important ... there is one and there is one vehicle and most of the times it's not working.

GSF-P2: So, as farmers, we gather and help each other to put out the fire.

GSF-P1: The drainage system is weak.

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.

The participants' comments on the lack of reliable transport and condition of road infrastructure concur with Ngcobo (2012:46), who states that transport presents additional problems for the marketing of agricultural produce. Transporting produce to the market is challenging if there is no reliable transport available. Produce must be delivered as soon as possible after being harvested or when it is ready for sale to get the best prices. The absence of mechanical transport limits the majority of farmers to selling to their local communities and in the local town, and thus receiving lower selling prices in most instances. Poor infrastructure and logistics for small-scale farmers explain why they are restricted from accessing lucrative markets, as highlighted in sub-

theme 2.3. Umoren, Ikurekong, Emmanuel and Udida (2009:53) argue that road infrastructure is essential to enable easy transportation of agricultural produce from rural areas to the markets. The Global Mechanism of the UNCCD and Oxford Policy Management (2009:13) states that improved infrastructure may expedite access to wider national and international markets or to technical information and inputs, which may accelerate the adoption and implementation of SLM practices. Investment in infrastructure will have a positive implication on land use, particularly through transport, proper drainage facilities and roads; it will incentivise SLM (The Global Mechanism of the UNCCD and Oxford Policy Management, 2009:18).

Infrastructure development through an efficient road and transportation system may also lead to more reliable service delivery from firefighters, which may aid the community in abating veld fires that are grappling the land, as revealed by the findings in sub-theme 1:5. The findings also pointed out that poor drainage infrastructure is affecting participants' initiatives to land management, leading to more land degradation. Yarima, Sidi and Ismaila (2019:250) confirm the finding, arguing that poor drainage systems result in the distorting of the environment and to excessive soil erosion, which drives land degradation.

Sub-theme 3:4: Water shortages

Participants indicated that they have water shortages in the area and that they have notified the relevant stakeholders for assistance, but nothing has been done to address the issue. The water they have access to is polluted, which causes a problem for their livestock to consume. The participants requested the installation of a windmill to resolve the water shortages that they are facing. Below are some of the comments from participants on the shortages of water:

CSF-P4: *It was like something strong; they waste everything ... sometimes, it's too dry, they promise to put water for our animals; just promises. They give to some few people, and some got nothing and the sad thing is poor people they can't get nothing but rich people they get, I don't [know] how Ntate is help like that because ... we are poor.*

GSF-P6: *We also have a problem of water.*

GSF-P1: *And this water which is polluted causes many problems to our cattle and there comes ... people can't see diseases from polluted water.*

GSF-P1: *Because they separated water, we don't have drinking water. If we have sort of like a windmill that produces water, it will help us a lot.*

GSF-P4: *Also to renew or maintain the ground water.*

Sadiki and Ncube (2020:325) note that water allocation in South Africa remains unequal, benefiting only those who have the ability and means to use water to produce the greatest economic returns such as commercial farmers, leaving small-scale farmers with little or no access to water for crop or livestock production. Participants expressed that they are not receiving any attention to resolve the challenge of water shortages. Sadiki and Ncube (2020:325) further confirm this finding, stating that water management is still a challenge throughout the country despite the existence of the all-inclusive policy and strategy instruments. There seems to be a deficiency of momentum in the application of water allocation reforms. As highlighted in the findings, water shortages are affecting livestock production through water pollution. Popoola, Monde and Yusuf (2019:53) note that scarcity of water resources and limited grazing lands are identified as pressing challenges faced by the livestock farmers. As a result of the drying up of available streams and rivers, livestock frequently drink from polluted water, a potential source of water-borne diseases.

Theme 4: Current livelihood strategies

Small-scale farmers and land care workers adopt various strategies to support their livelihoods, which are influenced by land degradation. The findings reveal that participants resort to selling livestock to abattoirs and auctions and taking on part-time work in the community and informal trading as livelihood strategies to support their families. These livelihood strategies are discussed as sub-themes next.

Sub-theme 4:1: Selling livestock to abattoirs and villagers

Livestock farming is one of the leading financial avenues for small-scale farmers in Ladybrand. The findings indicate that selling livestock to abattoirs helps farmers to support their livelihood outcomes. Participants pointed out that the majority of the small-scale farmers are pensioners and that they sell their livestock to supplement the grant money that they receive from the government. The livestock is sold to other

villagers as well as to the abattoirs. Participants need to rent a vehicle to transport their animals to the market. The participants' views are captured below as follows:

CSF-P4: *We selling our animals.*

CSF-P1: *We sell some of the stock we have but there is also the issue, most of the people are pensioners or let me say some ... some people are pensioners so they [receive] the social grant and very few people are working. They have somebody in the house who is working but those are very few. So, we are having most people who are pensioners and they depend on the grant; government grant and then they sell the stock, the livestock to supplement.*

CSF-P1: *There are too many sources. We sell in the village but also there are ... there is this sparta where we can sell the livestock.*

CSF-P1: *We have to rent the vehicle to take them there.*

The findings that small-scale farmers in Ladybrand are selling their livestock as a livelihood strategy resonate with the views of Twine (2013:1), who postulates that communal areas pursue livestock farming as one of the various livelihood strategies aimed at establishing positive livelihood outcomes for communal households. Freeman, Kaitibie, Moyo and Perry (2008:14) corroborate that farmers mainly keep livestock as a safety net, where they sell it during times of difficulties. Livestock plays a significant role in managing risk. Thus, many farming households often sell livestock to meet emergency cash needs, such as purchasing food or meeting health expenses when shocks occur. As in the case of this study, Freeman et al. (2008:14) assert that income from livestock sales is an important component of household livelihood strategies.

To sell their livestock to the available abattoirs, farmers indicated they need to hire a vehicle to transport their livestock to the market. The absence of own transport is a challenge for small-scale farmers as they must incur extra costs to move their livestock, as discussed in sub-theme 3:3. Furthermore, poor access to markets intensifies the process for them to sell the livestock (see sub-theme 2:3). Musemwa et al. (2008:243) concur by stating that the absence of marketing and transport facilities imposes a crucial limitation on the marketing of livestock. Nearly all small-scale

farmers are situated in areas remote from prominent markets, which partly explains the poor livestock supplies to formal market outlets by small-scale farmers.

Sub-theme 4:2: Part-time work and informal trading

The findings from the study reveal that nearly all land care workers are involved in some form of informal employment and trading to optimise their livelihood outcomes, including plumbing, electrician, baking, building, painting, hairdressing and working in farms. The participants expressed their part-time work and informal trading activities as follows:

LCW-P7: *Plumber, electrician I do a lot of things.*

LCW-P2: *I also bake and sell.*

LCW-P1: *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-P6: *I work as a hairdresser ... make weaves, sell to some other people here.*

LCW-P9: *I work in the farms, grow cabbage, vegetables.*

According to the findings, the participants have diversified their livelihood strategies to pursue informal trading and part-time work as strategies to stabilise their wellbeing. The findings resonate with the views of Perret, Anseeuw and Mathebula, (2005:9) that most rural households and individuals secure their livelihoods through several sources such as local craftwork, own labour (plumber, hairdresser), informal trading and transfers (grants and remittances). Rural non-farm income consists of all non-agricultural activities which generate income to rural households through either waged work or self-employment (Davis, 2004:3). This form of livelihood diversification is practised by land care workers by constructing a diverse portfolio of livelihood strategies to improve their standard of living and manage risk through part-time work and informal trade. Bauman and Sinha (2001:1) confirm the findings by stating that in order for livelihoods to be sustainable, in the context of rural people, a household should at any given moment pursue a diversity of livelihood strategies. This is achievable when people's assets or capitals are convertible and substitutable into financial capital (baking and selling the products) (Bauman & Sinha, 2001:1). In the

case of this study, participants convert the human capital that they have acquired through land care work to pursue informal trading as strategies to supplement their income and stabilise their wellbeing.

Theme 5: Support systems in meeting socio-economic and information needs

Participants indicated the various support systems that they have at their disposal to meet their economic and information needs in order to optimise their farming and land management practices. The support systems include the government, commercial farmers and stokvels. The systems all have varying roles but similar outcomes in some way. The ensuing sub-themes elaborate further on these systems.

Sub-theme 5:1: Assistance from the government

Several participants are of the view that they are not receiving adequate support from the government and its stakeholders to maximise their growth as small-scale farmers; nor are they managing their land in a sustainable manner. The participants voiced their concerns that the government as a transforming structure simply makes promises which they do not fulfil. Their livestock and agricultural produce are continuously affected as the government fails to meet its commitment to ensure that farmers have adequate water supply for both livestock and crop production. Furthermore, poor waste management by the municipality causes land pollution, which degrades the fertility of the land to produce quality yields. Although the government and municipality have been approached for assistance, findings indicate that nothing has been done to resolve the challenges that the small-scale farmers face. The following comments capture participants' perceptions on lack of assistance from the government:

CSF-P4: Thank you, Ntate. I think it's ... 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, I don't [know] how Ntate is help like that because us we are poor ... I don't know how government ... will deal with that Ntate; poor people get nothing but rich they get.

CSF-P1: 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 the line ... to line the land and then we also have to work the land ourselves.

GSF-P1: Pollution, plastics, sewage water because the farm we rented is under a municipality control, but we have got it under a 9-year lease contract, and we have this problem of land pollution which is beyond our control. We have mentioned it to municipality but, unfortunately, we cannot ... they cannot answer to our problem.

GSF-P1: The issue was sometimes government promises us something and they disappear.

The participants' concern with the reluctance of the local government to address their challenges is consistent with the views of Aliber and Hall (2012:548), who posit that government attempts to support small-scale farmers have generally been costly and ineffective. They further argue that, although the budgetary distributions to the sector have increased remarkably over the last 15 years, the allocation and use of these resources are such that few farmers benefit and the overall impact is small. Baloyi (2010:32) states that the provision of services to the small-scale farming sector has generally been static in South Africa due to the incompetence of some service providers in dealing with small-scale farmers. The poor service delivery by the municipality in resolving land pollution and its effect on the size and quality of land and the production of livestock all influence the sustainability of small-scale farmers' livelihood outcomes (also see sub-theme 1.2).

In the context of the SLA, transformation of structures and institutions is important for sustainable development (United Kingdom. DFID, 1999). Therefore, the support of government is important for small-scale farmers to develop assets. Nyawo and Mubangizi (2021) assert that appropriate institutional support could help rectify the imbalance experienced by the small-scale farming sector. These imbalances relate to land pollution, effective institutional service delivery, market access and land expansion that caters for economically viable land for cultivation.

Participants indicated that they requested government assistance to line their land to allow the soil to release nutrients for agricultural production. The following participant describes the role and expectation of government on land preparation:

CSF-P1: *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 one lining, making sure it's well lined so that the nutrients will be able to be [absorbed into the soil].*

Satgé (2020:15) confirms this finding, noting that government should make provisions to contract a service provider to undertake the land preparation (land lining) for small-scale farmers. This will serve as an effort to maximise land capacity and increase production for the small-scale farming sector. According to Mncina and Agholor (2021), access to agricultural support services and systems is essential for farmers to increase agricultural growth.

Instead of solely depending on the government, participants indicated that small-scale farmers must also make provisions for themselves. The following comment captures this view:

CSF-P1: *... then the management of it, the farmers need to also do their part by rotational cropping, making sure that they do good crop rotation ... So those are some of the things that can be done and we are talking about things that can be done. Because we are saying the land ... there are farms around Ladybrand that are just idle.*

The need for small-scale farmers to also contribute to the management of their land is supported by Choruma and Odume (2019:3). Farmers are the central decision-makers in agricultural land management and, therefore, have an important role in the sustainable growth of their agricultural production. According to Sebola (2018:2), if provided with the needed support, small-scale farmers would be likely to succeed and potentially contribute to the success of agriculture and the economy in South Africa.

Sub-theme 5:2: Commercial farmers

It was made clear through the findings that small-scale farmers need the support from the commercial farmers to develop their farming practices and ensure growth. The participants revealed that they would like the professional commercial farmers to mentor them in their agricultural practice. Participants were of the view that

commercial farmers have the necessary means, information and advice to assist them to deliver quality harvests. The following comments reflect participants' sentiments on receiving guidance from commercial farmers:

GSF-P2: *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-P1: *We are eight here ... if somebody from some minister's office says look in Ladybrand, we have so many farmers, small farmers as we are, small farmers then one professional farmer in Ladybrand, we have people here ... 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?*

GSF-P1: *... professional farmers can produce quality. We can't produce quality because we don't have means to produce quality.*

The findings illustrate that small-scale farmers need support from commercial farmers through information, mentorship and other relevant means to optimise the quality of their agricultural production. The findings are corroborated by the Department of Agriculture, Forestry and Fisheries (South Africa, 2012:2), which accentuates that lack of production knowledge for small-scale farmers leads to lower quality in production. Mbagwu, Benson and Onuoha (2018:3) support the finding on the significance of information for farmers by arguing that information is becoming a fundamental input in agriculture to respond to opportunities that could improve agricultural productivity. The findings hinted on 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 (2021:23) purport that it is important to have insight in the productivity gap between commercial farmers and small-scale farmers because it can be used as a basis for determining the intensity of support needed to close this gap.

Sub-theme 5:3: Stokvels

The findings reveal that participants also secure support from the various community societies in which they are involved. It includes stokvels that women participate in as well as community funeral plans. One participant commented as follows:

CSF-P2: *As a woman, sometimes we think about small societies so that we can buy ... this month we can give ... the other month we give. Small society ... They help us a lot.*

CSF-P2: *Yes ... And funeral plans also.*

Bophela and Khumalo (2019:27) 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. The finding also supports the argument by Matuku and Kaseke (2014:508) that women participate in stokvels because the majority of them are poor and unemployed, and it meets their basic needs.

Theme 6: Strategies to mitigate land degradation and secure sustainable livelihoods

The findings report various measures to mitigate land degradation as an endeavour to secure sustainable livelihoods of small-scale farmers and land care workers. Besides lack of funding (see theme 2) and water shortages (see theme 3), participants revealed that they can do their part to mitigate land degradation by practising crop rotation. Having their own farming equipment and facilitating educational workshops to improve how they interact with snakes as part of the ecosystem are also strategies that can be implemented to mitigate the scale of land degradation and attain sustainable livelihoods. The following comments capture the diverse strategies proposed by participants:

CSF-P1: *... The management of it, the farmers need to also do their part by rotational cropping, making sure that they do good crop rotation. So those are some of the things that can be done and we are talking about things that can be done. Because we are saying the land ... there are farms around Ladybrand that are just idle...*

CSF-P1: *If you have your own equipment, you are able to do what needs to happen timeously. The equipment you are renting ... the bigger farmers will do their land first. And then when they are done with their land, it's only then when they come to you. So, most of the time we are late in farming. So, our problem ... will always be late because they come, they do their space then they come to ours later. So, if it's ours, we have control.*

LCW-P1: *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.*

Strategies to mitigate land degradation are embedded in the causes of the land degradation, as highlighted by the findings. Kenea (2008:24) points out that the development of sustainable livelihoods in farm communities is substantially influenced by how the land is managed and used. As the findings show, small-scale farmers aim to mitigate land degradation through crop rotation. Njaimwe (2010:18) affirms that linkages have been made between crop rotation and improving the quality of degraded soils. Shah et al. (2021:3) indicate that crop rotation is crucial not only for the development of crop production, but also for improving the quality of the soil by upgrading soil fertility, nutrient efficiency and preventing land degradation. Thus, the mitigation of land degradation through crop rotation minimises farmers' vulnerability context and helps secure positive livelihood outcomes due to an increase in crop productivity.

The findings indicate that access to necessary equipment will optimise the capacity of farmers to work on their farms and mitigate land degradation in time. The Food and Agriculture Organisation (2008:12) corroborates the finding, stating that if farmers are provided with access to the relevant farming equipment, several opportunities for land management can be exploited. These include conservation of sustainable agricultural practices such as crop rotation, reversing land degradation and increasing soil fertility. According to Rakodi (1999:326), investment in physical capital, such as production-related machinery, enables farmers to use appropriate inputs and mitigate land degradation timeously.

The introduction of educational programmes on snake awareness (also see sub-theme 3:1) as a strategy to mitigate land degradation is supported by Erickson et al. (2020). These authors posit that there is a dire need for substantial community engagement and informative workshops to raise awareness of land users' interaction with snakes. This need is particularly relevant for vulnerable populations such as land care workers and small-scale farmers. The education workshops on snake awareness will contribute to human capital development. The DFID (United Kingdom, 1999) states that the accumulation of communities' human capital can be achieved

only if people themselves are willing and able to invest in their human capital by requesting and attending workshops on snake awareness programmes. Information that improves communities' efforts towards the mitigation of land degradation could play an important role in improving small-scale farmers and land care workers' livelihood strategies.

SUMMARY

This chapter provided an overview of the empirical findings of the study. Six themes were discussed in the presentation of the research findings. These include causes of land degradation; factors inhibiting SLM; challenges faced by small-scale farmers and land care workers that affect their ability to manage the land; current livelihood strategies; supporting systems in meeting socio-economic and informational needs; and strategies to mitigate land degradation for sustainable livelihoods. The key findings, conclusions and recommendations from the study will be discussed in Chapter 6.

