

Support Services to Smallholder Farmers During the 2015-2018 Drought in the Overberg and West Coast Districts, South Africa

Carelsen, C.P.R.¹, Ncube, B.² and Fanadzo, M.³

Corresponding Author: B. Ncube. Correspondence Email: ncubeb@cput.ac.za

ABSTRACT

The recent 2015 to 2018 drought that hit South Africa negatively affected agricultural communities, the worst being smallholder farmers who generally lack livelihood resources. The study assessed the characteristics of smallholder farmers in two districts in the Western Cape. It explored the roles and effectiveness of public and private sector extension institutions in supporting smallholder farmers during drought periods. The livelihoods approach characterised 100 smallholder farmers from the Overberg and West Coast districts. Atlas.ti software was used to analyse qualitative data. Key variables that determined farmer differentiation included the level of education and livelihood trajectories. Access to markets and credit enabled improved livelihoods. The findings also revealed that the government continues to be reactive to drought disasters and only focuses on the immediate needs of relief for farmers, which in most circumstances was too late and insufficient. Implementing the Norms and Standards for Agricultural Extension Services and the Extension Recovery Plan enhanced the effectiveness of extension services. The private sector should be encouraged to comply equally with the legal framework for extension services. It is recommended that the South African government should empower and promote rigorous public-private partnerships that aim to improve service delivery.

Keywords: Extension Services, Livelihoods, Western Cape

¹ Senior Agricultural Adviser, Western Cape Department of Agriculture, Private Bag X1 Elsenburg, 7607. Tel. 028 425 4832 Email: Recardo.Carelsen@westerncape.gov.za

² Research Chair: Cape Peninsula University of Technology, Centre for Water and Sanitation Research, Bellville 7535, Cape Town. Tel. 021 953 8706; email: ncubeb@cput.ac.za Orcid 0000-0003-1936-2768

³ Head of Program: Cape Peninsula University of Technology, Department of Agriculture, Private Bag X8, Wellington 7654. Tel. 0218645211 Email: fanadzom@cput.ac.za Orcid 0000-0001-7777-7078

1. INTRODUCTION

Africa, including South Africa, has a vast natural resource base responsible for economic growth in rural areas. However, natural disasters such as droughts, floods and veld fires are some of the greatest threats to the rural economy (Nhamo et al., 2018a; Nhamo et al., 2018b; Rembold et al., 2019). The most recent drought (2015-2018) that hit the Southern African region is a case in point (Vogel & Oliver, 2019). The devastating effects of the drought were well documented across the provinces of South Africa (AgriSA, 2016; Rakagwale & Oguttu, 2020; Ziervogel, 2019). In the Western Cape province, Pienaar & Boonzaaier (2018) reported a loss of close to ZAR 6 billion in the 2017/18 production. The declaration of agricultural drought disaster areas started in early 2017 in the West Coast and Central Karoo districts, escalating to provincial drought in October 2017. The crippling effect of the drought continued in other provinces compelling the national government to declare a National Disaster in February 2018 (WCDa, 2018). The livelihoods of the rural communities were affected the worst, especially smallholder farmers. The lack or absence of effective early warning systems and drought management policies exacerbated the effects of the drought, and the support to smallholder farmers came too late in many instances (AgriSA, 2016).

Multiple organisations and institutions are mandated to give support services to smallholder farmers. However, during disaster periods, there is limited coordination, rendering such services ineffective. The effective management of drought remains a challenge to farmers and the government at large (Ncube & Lagardien, 2015; Maluka, 2017). Although extension and advisory services are the first respondents to disasters like droughts when supporting smallholder farmers, not much attention has been given to the effective coordination of the roles of the different service providers in the extension arena to prepare and cushion the smallholder farmers during drought. Furthermore, limited drought studies have been conducted at a local level. Therefore, there is a need for studies like the current study to assess the impact, roles and effectiveness of extension services on the livelihoods of smallholder farmers, especially during drought periods. This study was part of a larger Water Research Commission-funded research project entitled "*Smallholder farmer drought coping and adaptation strategies in Limpopo and Western Cape provinces*" (Ncube, 2020). The specific objectives of the research were to:

- Assess smallholder farmer characteristics and livelihood strategies in rural parts of the Limpopo and Western Cape provinces.
- Explore the coping and adaptation strategies for agricultural water use adopted by smallholder farmers during drought periods.

- Explore how smallholder farmers cope with adaptation strategies to drought in crop farming and livestock systems in the Limpopo and Western Cape provinces.

The focus of this study was the Western Cape, culminating in a Master's thesis (Carelsen, 2020). The main objectives of the study were, therefore, to i) characterise and identify smallholder farmers in selected districts in the Western Cape, ii) explore the roles of public and private sector institutions in supporting smallholder farmers in the Western Cape during drought periods, and iii) evaluate the effectiveness of public and private extension services in supporting smallholder farmers in the study area using comparisons with Norms and Standards for Agricultural Extension Service and the National Framework for Extension Recovery Plan (ERP) (DAFF, 2011).

2. STUDY AREA

2.1. Study Districts

Figure 1 shows the Overberg and West Coast districts' locations in the Western Cape Province. The districts were selected because the West Coast district was one of the country's first districts to be declared a disaster area. The Overberg was chosen with the assistance of the Western Cape Department of Agriculture as a comparison site, which was considered less impacted by drought at the start of the main project.

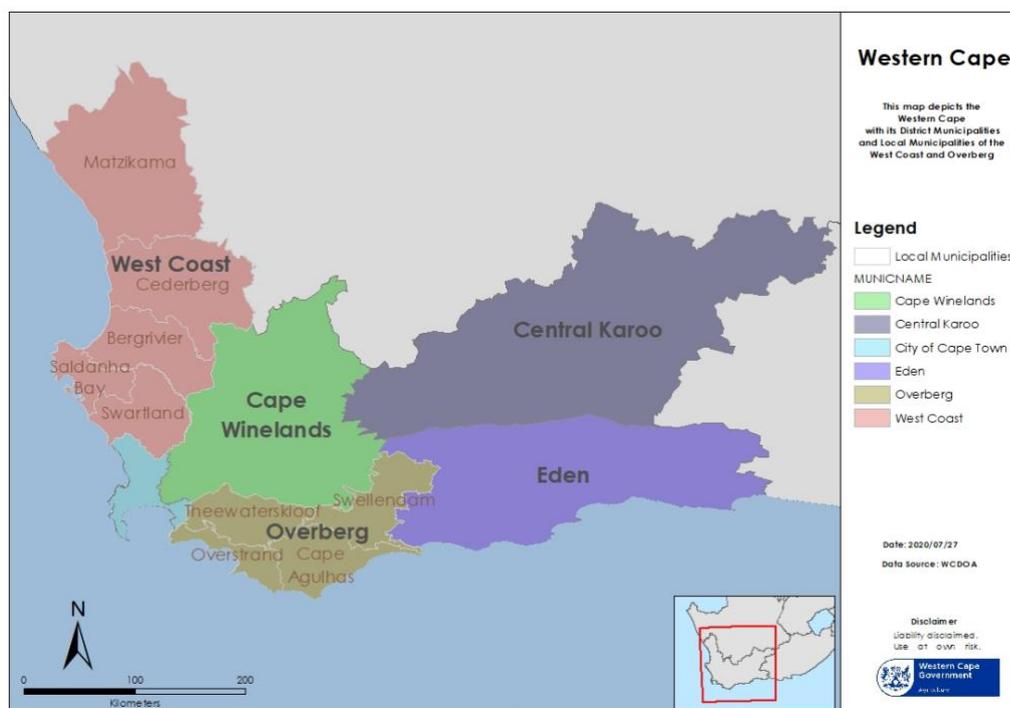


FIGURE 1: Location of the Overberg and West Coast Districts in the Western Cape Province

2.2. Agriculture in the Study Areas

Agriculture is the principal economic activity for the Overberg region, and its primary contribution amounted to 11.1% in 2018 (ODM, 2018). Other industries, such as manufacturing, transport and tourism, have strong links with the agricultural sector in the district. The sector is responsible for the agri-processing of canola (for oil), barley (for breweries) and fruits (for juice), amongst others (ODM, 2018; Zwane, 2019).

The West Coast district contributes significantly to the Western Cape agricultural gross income, with horticulture contributing 43%, field crops about 25%, and livestock about 16% (WCDoA, 2018). The Olifants River, situated in the Matzikama Municipal area, provides agricultural water through an extensive canal system. The Cederberg area is well known for the country's citrus production and exporting rooibos tea (Department of Rural Development and Land Reform [DRDLR], 2017).

3. METHODOLOGY

This study used qualitative and quantitative research methodologies involving surveys, one-to-one interviews, and focus group discussions. The Sustainable Livelihoods Framework (Department for International Development [DFID], 2000) was used to guide the development of research questions for smallholder farmers. Data were collected in the Overberg and West Coast districts from December 2017 to April 2018. Smallholder farmers practising dryland farming were interviewed. Face-to-face structured interviews using questionnaires were conducted with 100 farmers, 50 from each district, and each interview lasted between 40 to 50 minutes. Focus group discussions followed the farmer interviews to probe further, fill in gaps and seek clarification of some missing data. Additionally, 24 extension officers from the two study areas were interviewed. Data such as age group, gender, education levels and other variables were initially captured using Microsoft Excel. Atlas.ti Version 8 software was used to analyse qualitative data from the open-ended questions and focus group discussions.

Ethical approval to conduct the research was obtained from the Research Ethics Committee of the Cape Peninsula University of Technology before the study commenced. In addition, the Western Cape Department of Agriculture granted authorisation to conduct surveys amongst farmers in the Overberg and West Coast districts. There are no competing interests to declare.

4. RESULTS AND DISCUSSION

4.1. Smallholder Farmer Characteristics

4.1.1. Socio-Economic Characteristics

Table 1 shows the results of the characteristics of the smallholder farmers in the Overberg and West Coast districts.

TABLE 1: Socio-Economic Characteristics of the Smallholder Farmers

Characteristics	Sub-characteristics	Overberg (%) (n = 50)	West Coast (%) (n = 50)
Age group (years)	18-24	2	2
	25-31	6	2
	32-38	6	6
	39-45	10	20
	46-52	26	12
	53-59	14	12
	60-66	28	30
	67-73	6	14
	74+	2	2
Gender	Male	90	78
	Female	10	22
Education level	Never been to school	2	4
	Grades R to 8	30	42
	Grades 9 to 12	48	22
	Matriculated	12	14
	National certificate	4	8
	Tertiary Qualification	4	10
Family size	1-3	44	28
	4-6	54	62
	7 and above	2	10
Access to credit	Yes	32	16
	No	68	84

Credit sources	Cooperatives	5	16
	Commercial Banks	2	14
	Land Bank	0	2
	Other	2	3
Access to markets	Yes	92	50
	No	8	50
Farming groups	Yes	92	20
	No	8	80

The youth (under 35 years) comprised less than 15% in the Overberg and West Coast districts. The youth may perceive the farming sector as backward and chose not to explore agriculture as a career (Jepthas & Swanepoel, 2019). However, focus group discussions revealed that the youth were more prosperous farmers in both districts than older respondents because they were more educated and adapted better to climate change than the older group. Kumalo (2014) argues that older farmers believe in traditional farming methods and resist change. There is, therefore, a need to find ways of promoting farming to the youth. During focus group discussions, it was suggested that one way of doing this would be to introduce agriculture in schools' curricula.

The results in Table 1 showed that both districts had more male farmers—Overberg (90%) and West Coast (78%), compared to their female counterparts, Overberg (10%) and West Coast district (22%). A recent study conducted in the Western Cape by Bastian et al. (2019) also found that male farmers were more prevalent in the sector. The large household sizes (4-6) suggest that farmers have enough family labour to manage daily farming activities. This is similar to the findings of Kumalo (2014), who reported that the average family size in the Free State province is six people.

Access to credit is usually an enabler for smallholder farmers' success (Machethe, 2004; Chauke et al., 2013). Furthermore, it enhances their ability to prepare and cope with drought. Government and non-government organisations have implemented numerous interventions to increase credit facilities for smallholder farmers in rural areas, but with limited success (Rabbi et al., 2019). The current study also confirmed this, with credit access available to 32% of smallholder farmers in the Overberg and 16% in the West Coast district. Credit services for smallholder farmers were weak, increasing the negative effects of droughts. More importantly, the support granted by the Land Bank, a state organ established

as the primary credit provider to smallholder farmers, only supported 2% out of the total respondents, showing an urgent issue that requires immediate attention.

A major difference between the two districts was access to markets. Ninety-two percent of the Overberg district respondents had access to markets compared to 50% of the West Coast district. Limited agricultural production supply caused the shutdown of factories that used vegetables to produce baby feeds, leaving farmers without a market to sell their produce and causing more families to lose their jobs. The findings contradict Wiggins and Keats (2013) and Fan et al. (2013), who found that most smallholder farmers were not market-orientated due to various limitations, including inaccessibility, small production volumes, meager farm gate prices and lack of information. The smallholder farmers from the Overberg district seemed to be more organised than those from the West Coast district. Their social and organisational skills attested to this, with 92% of the Overberg respondents belonging to a group, while only 20% of the West Coast district farmers belonged to a group. This social capital intervention becomes critical during drought periods because farmers who are organised into formal structures like farmers' associations and unions receive much-needed support from NGOs and government institutions compared to those not in formal groups.

4.1.2. Land Ownership

Figure 2 shows the land ownership status of smallholder farmers in the West Coast and Overberg districts.

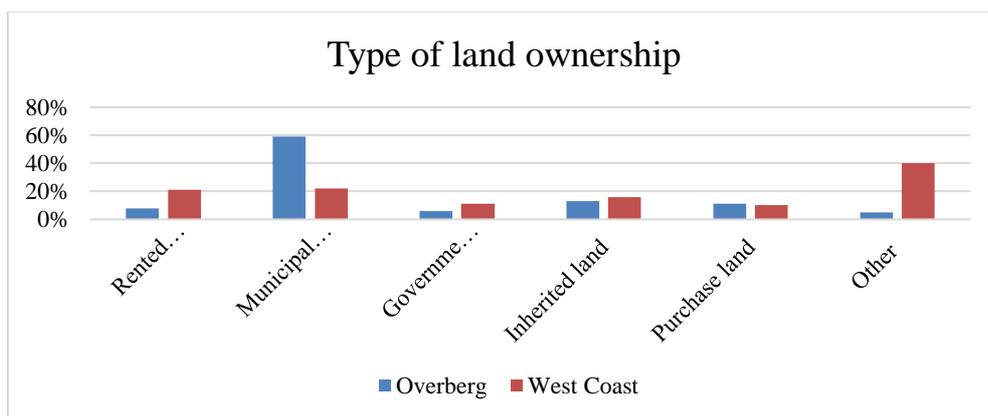


FIGURE 2: Land Ownership of Smallholder Farmers in the West Coast and Overberg District

Lack of access to land added to the complications of the smallholder farmers who struggled to access credit because the land is used as collateral required to qualify for credit from financial institutions, especially commercial banks (Chisasa & Makina, 2012; Chauke et al., 2013). The South African

Government seems to have limited ability to redistribute 30% of the country's agricultural land to black farmers by 2030 as planned (Cousins, 2010; 2013; Manona et al., 2010). Less than 12% of the respondents from both districts had access to government-leased land. Municipalities managed to successfully rent land to 41% of the respondents, even though lease agreements varied from 1 to 9 years to 11 months. This led to complications for the farmers regarding access to various support services, including grant funding. Nevertheless, some farmers gained access to support services like grants and water rights that gave a degree of relief during droughts, especially to farmers with lease agreements of 9 years and 11 months.

4.1.3. Water Sources

Figure 3 shows the water sources accessed by the respondents in the study area.

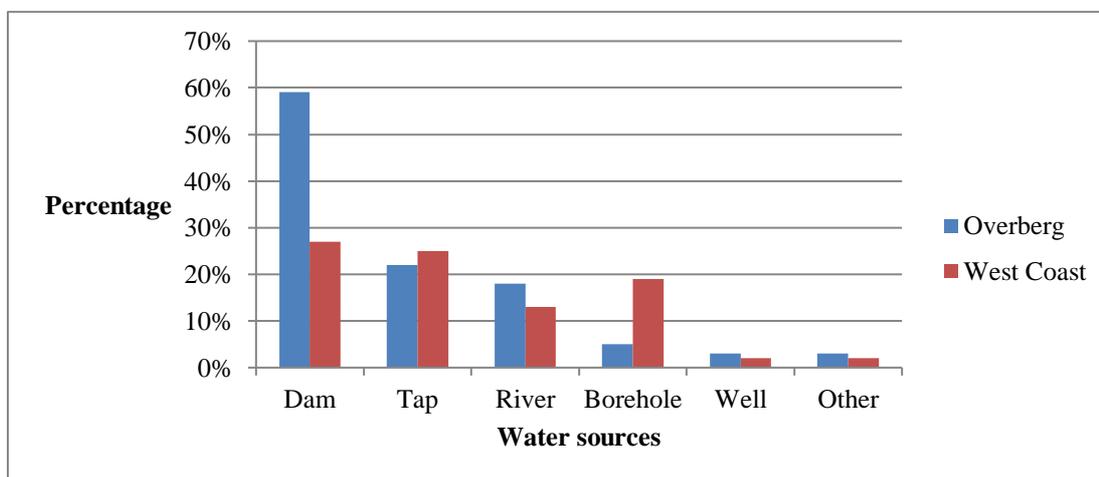


FIGURE 3: Water Sources Identified by Smallholder Farmers in the West Overberg and West Coast Districts

The smallholder farmers in the study areas had access to multiple water sources—dams (59% in the Overberg district and 27% in the West Coast district), municipal taps (25% in the West Coast district and 22% in the Overberg district), rivers (18% in the West Coast district and 13% in the Overberg district) and boreholes (19% in the West Coast district and 5% in the Overberg district). The water sources, except for boreholes, were closely monitored by water user authorities, and farmers had to pay. The cost of water increased the vulnerability of smallholder farmers to drought. During drought periods, the supply of water became limited because of low rainfall, rivers running dry, and the authorities cutting the water supply to the agricultural sector. This was one of the major challenges for smallholder farmers because they could not continue with agricultural production without water. A recent study by Mnyaka (2018) in the Western Cape found that smallholder farmers abandoned

farming activities because of a limited water supply. Ultimately, farmers stopped agricultural production and left the sector to find alternative forms of income to continue supporting their families. This was especially evident in the West Coast district, where successful young farmers had to cease their agricultural endeavours. One of the oldest farmers, who had practised farming for years in the same district, had to leave and relocate because he could no longer cope with the droughts.

4.2. Roles of Extension Services

Figure 4 shows Atlas.ti results of the general roles of public extension services in the West Coast district. The results for Overberg were similar.

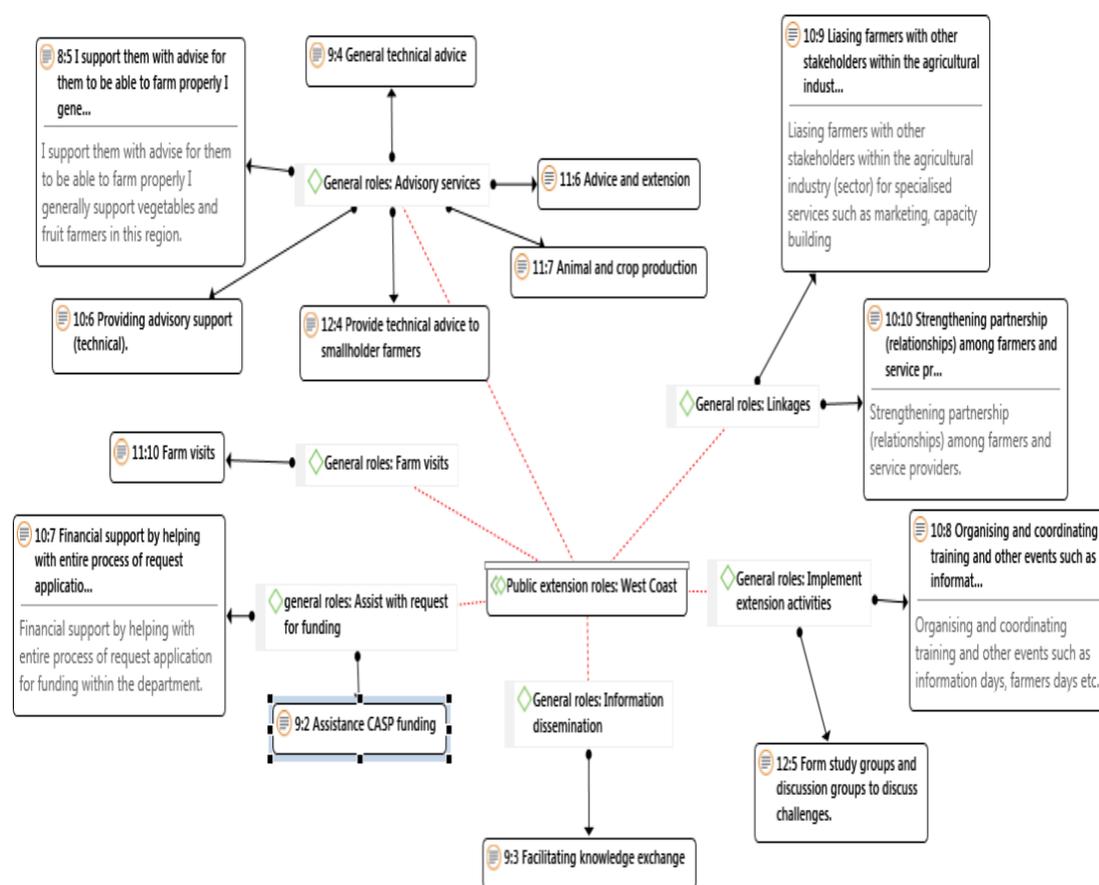


FIGURE 4: Roles of Public Extension Services in the West Coast District

Extension clients were visited by public extension officers every week (47%) and monthly (40%), compared to the private sector (7%) per semester (once every six months). The findings of Nkosi (2017) show that smallholder farmers had more access to public extension services than private extension services. The effectiveness of extension services improved when farmers received more frequent visits from extension staff (Elias et al., 2015). Afful et al. (2013) and Maka et al. (2019) report

that the more the extension agents visited farmers, the more their farm management practices improved. Similarly, Omoro (2015) reported positive correlations between the frequency of extension visits and the production performance of farmers. Focus group discussions revealed that farmers with limited access to extension services were less fortunate than those that extension officers regularly serviced. Private extension services were profit-driven. Schwartz (1994) highlighted that private extension services sold agricultural input to farmers while advising them on best practices. Therefore, farmers supported by public extension services were more successful, especially during drought, as revealed during focus group discussions. Although private extension services only serviced a limited number of farmers, their quality of services was more highly rated than public service (Elahi et al., 2018).

Extension activities occurred every quarter, which included demonstration sessions (67%), workshops (64%) and training sessions (53%). Most farmers' days (53%) happened yearly, and information sessions (40%) once every six months. These findings are similar to those of Rajalahti and Swanson (2015), who found that extension officers used training sessions, demonstration trials and workshops, amongst others, to deliver extension services to farmers. Nakano et al. (2018) report that training smallholder farmers in new technologies greatly improved yields. Similar findings are reported by Maoba (2016), that training and demonstration sessions were highly effective extension tools while farmers' days were only moderately effective.

The private sector followed the commodity approach that focused on more specialised services that were commercially oriented compared to the public sector, e.g. grain. In studies conducted in India (Mukherjee & Maity, 2015) and Switzerland (Wuepper et al., 2021), private extension services focused on cost recovery.

4.3. Role of Extension Services During Drought Periods

During drought periods, the roles of extension service officers change. Extension officers focused more on drought-related advisory services, including mitigation and coping strategies. One of the coping strategies identified in the results was livestock adjustments. Extension agents assisted farmers with investigating land degradation and calculating carrying capacity to make stock adjustments. These findings are similar to Ngaka (2012), who revealed that farmers explored livestock reduction as a coping strategy during drought to protect the natural resource base. Another phenomenon during drought is the outbreak of pests and diseases (Nhamo et al., 2018a). Veterinary services aligned their

services to disease control and early disease detection during drought. The deterioration of the condition of livestock as a result of nutrient deficiency in natural grazing due to poor veld conditions has financial implications for farmers. Ngaka (2012) also reported that farmers from the Eastern Cape and the Northern Cape provinces bought feed and vitamin supplements for their animals to compensate for the low nutrient content in natural grazing.

Economic services empower smallholder farmers by improving their agribusiness skills and facilitating market access. Extension services enable support to smallholder farmers with drought relief; farmers receive vouchers for animal feed. Ngaka (2012) reports that the government supported the smallholder farmers in the Eastern Cape and Northern Cape provinces with animal feed from the drought relief fund during the 2007/2008 drought. Even though the support was intended to bring much-needed relief for the drought-affected farmers, this method of drought relief from the South African government is highly criticised. Baudoin et al. (2017) argue that the government continues to be reactive to drought disasters and only focuses on the immediate needs of relief for farmers, which in most circumstances, arrived too late (Agri SA, 2016; Ncube & Lagardien, 2015), and was not sufficient (Ngaka, 2012). The lack of proactive measures to prevent droughts, which can prepare and cushion farmers, is the leading cause of farmers' dependency on the government. Baudoin et al. (2017) state that the government must teach farmers "to fish" and "not fish for them" or simply "give them fish".

Other drought-related services provided to the smallholder farmers in the study areas included infrastructural support in the form of drilling boreholes (Baudoin et al., 2017). In this study, extension service providers cooperated and joined forces through various interventions that included the facilitation of drought-related workshops. This was most evident in the West Coast district, where public and private extension services joined forces to support smallholder farmers collectively through capacity-building interventions. Public extension services availed their resources to organise workshops and other farmer group events, such as farmers' days. In contrast, the private sector organised expert speakers in the drought field to motivate the farmers to cope and survive the drought.

4.4. Comparison of Extension Services with the National Framework

The ERP programme aims to revitalise extension and advisory services in South Africa. The programme is made up of five pillars: 1) ensuring visibility and accountability of extension, 2) promoting professionalism and improving image, 3) recruitment of extension personnel, 4) reskilling

and reorientation of extension, and 5) provision of information communication technology (ICT) and other resources. Drawing on the National Framework for ERP (DAFF, 2011), the effectiveness of extension services in the study area was assessed. The minimum criteria for agricultural extension and advisory services, also known as the Norms and Standards for Agricultural Extension Services (DAFF, 2005), were compared with the survey findings. Table 2 presents the results of a survey of 24 government and private extension officers.

TABLE 2: Profile of Extension Officers in West Coast and Overberg Districts

	Frequency (n=24)	
	Male (17)	Female (7)
Education level		
B degree (NQF 7)*	8	3
Honours (NQF 8)	0	0
Masters (NQF 9)	7	2
Doctorate (NQF 10)	0	1
Other – Diploma	2	1
Study bursaries		
Yes	8	2
No	9	5
SACNASP membership		
Yes	7	3
No	10	4
SASAE		
Yes	0	2
No	17	5

Digital Pen and Dataphone		
Yes	10	5
No	7	2
Cell phone		
Yes	13	5
No	4	2
Landline		
Yes	16	6
No	1	1
Laptop		
Yes	17	5
No	0	2
Email access		
Yes	17	6
No	0	1
Sector employed		
Public sector	13	6
Private sector	3	0
Non-governmental (NGO)	1	1

**National Qualifications Framework (NQF)*

TABLE 3: Extension Officer Visits to Clients in West Coast and Overberg Districts

Sector	Weekly	Monthly	Quarterly	Semesterly	Yearly
Public	13	6	0	0	0
Private	0	0	0	2	0
NGO	0	0	1	1	1

Pillar One of the ERP seeks to strengthen the relationship between the extension officers and the farmers. Extension management programmes were implemented by the WCDoA that facilitate agricultural advisory services to the farmers. The agricultural information and management system was implemented, including a digital pen, digital paper and a data phone that connects with the digital

pen. It was ascertained that 50% of extension staff officers did not have data phones or digital pens, especially in the private sector.

Pillar Two comes with new legislation that aims to professionalise extension services. The appointments of new extension staff require that such members must be registered with a professional body, for example, the South African Society of Agricultural Extension (SASAE) and the South African Council for Natural Scientific Professions (SACNASP) (Bennett & Ramsden, 2007; Davis & Terblanchè, 2016). SASAE is a voluntary association that promotes science and agricultural extension to its members. SACNASP recognises agricultural extension as science and allows extension staff to register as practitioners (Mmbengwa et al., 2009). More male (7) than female (3) extension officers belonged to SACNASP, and two females also belonged to SASAE. Extension staff members in the public sector were issued uniforms to improve the image of extension services.

Although the literature highlights that extension is overloaded with clients (Lukhalo, 2017), Pillar Three (recruitment of extension personnel) promotes balancing the extension-to-farmer ratio as recommended by the ERP by appointing new extension personnel. The ERP suggests an extension-to-farmer ratio of 1:400 for crop producers, 1:500 for livestock producers and 1:500 for mixed farming (DAFF, 2011). The results show that the sector appointed young staff members with less than one to five years of work experience, two from the private sector, one from the NGOs and five from the public sector. It has been argued that the missing link of extension services is the lack of appropriate training and technical skills of extension officers (Cousins, 2010; Fanadzo, 2012; Fanadzo & Dube, 2018).

Hence, implementing Pillar Four enhances the human capital development of extension staff members. The allocation of study bursaries to extension staff to improve their qualifications and international exchange programmes organised to share experiences globally attest to this. Therefore, investments in human capital are essential for enhancing effective extension services (Landini & Davis, 2019). More male extension staff in this study had four-year degree qualifications than their female counterparts. The female extension staff, however, were more educated than their male counterparts, with one female holding a Doctoral degree. The extension staff from the study areas were, therefore, characterised as well-educated and had post-graduate qualifications, with Master's degrees (9), Bachelor's degrees (11) and Diplomas (3). Extension staff, especially from the public sector, are continuously improving their qualifications. This phenomenon is due to the ERP initiative. Given these educational levels and bursary arrangements to continuously improve the qualifications of extension

staff, it would be reasonable to describe them as educated and delivering an effective extension service to clients.

The implementation of Pillar Five gained momentum, and close to 100% of extension staff members can be classified as reasonably equipped with ICT tools and related resources to improve the effectiveness of the service. The results indicate that some officials did not have access to official cell phones (6), some had (18), some officials did not have access to laptops (2), and others did (22). The same results apply to landline telephones. Only one official had no access to email facilities and the Internet, while 23 officials had access to email facilities.

Overall, the results indicate growth and improvement in the study area. The public extension services seem to be well on their way to achieving the Norms and Standards and the ERP requirements compared to the private sector. The private sector and NGOs, therefore, need further investment if they are to comply with the legal framework for agricultural extension workers.

5. CONCLUSIONS AND RECOMMENDATIONS

Although the smallholder farming sector in the study area seems to be dominated by the older generation, the younger generation seems to be more robust and active in the challenges faced by the sector. The study found that education empowered the youth farmers and improved their ability to adapt and cope better during drought than the older smallholder farmers.

Smallholder farmers with access to credit were more strongly equipped to handle disasters like droughts than farmers without credit facilities. However, access to credit for smallholder farmers remains weak, especially in the West Coast district. Land ownership is one of the keys to enabling farmers to access credit. The inability of the South African Government, including the municipalities, to implement successful land and tenure security programmes contribute to the challenges of the smallholder farmers in the study area.

Water availability is compromised during drought, resulting in water shortages, especially in agricultural water. The smallholder farmers in the West Coast district were the hardest hit by the drought, and some left the sector altogether, compared to the Overberg district. The West Coast district lost some of its major markets during the drought.

Extension officers' visits to smallholder farmers improved the effectiveness of extension services. Public extension officers visited the smallholder farmers more frequently than private extension

officers. Public extension services fulfilled the roles of linking extension clients to multiple segments and actors within the extension service domain. Extension activities such as demonstrations, farmers' days and information sessions were the main activities.

The passing of new laws and implementing the Norms and Standards for Agricultural Extension Service and ERP enhance the effectiveness of extension services, especially in the public domain. The private sector should be encouraged to comply equally with the legal framework for extension services for South Africa. It is recommended that the South African government should empower and promote rigorous public-private partnerships that aim to improve extension service delivery. It is also recommended that further studies be undertaken to investigate the impact of extension services post the up-skilling and improvements received by the extension service providers.

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