

How Sensitive Are South African Postgraduate Research to Pandemic Lockdowns? A Case of Agricultural Economics and Extension Dissertations

Zantsi, S.¹, Sotsha, K.² and Nkunjana, T.³

Corresponding Author: S. Zantsi. Correspondence Email: siphezantsi@yahoo.com

ABSTRACT

The key to avoiding the next pandemic catastrophe is to be prepared. This research represents an attempt to understand the potential effects of lockdowns on completing Masters and PhD dissertations that focus on smallholder farmer's primary data, taking the example of COVID-19. A sample of four South African universities (Fort Hare, Limpopo, KwaZulu Natal, and Western Cape), which mainly research smallholder farmers using primary data, addresses the study objective. Dissertations completed in 2014-2019 (pre-pandemic) were retrieved from the respective universities' repositories. An abstract appraisal was done to identify dissertations that focused on smallholders and used smallholder primary data. Hence, a smallholder dissertation index (SDI) was computed to measure the susceptibility of each university to lockdown interruptions. The results indicated that the master's and PhD research in the selected universities rely heavily on smallholder primary data (shown by >0.50 SDI), with varying proportions between the universities. Dissertations that used smallholder primary data obtained the data using face-to-face field interviews. This implies that in these institutions, the lockdowns could have negatively affected the writing of master's and PhD dissertations. Consequently, the study concluded that adopting online survey methods might help minimise the impact of lockdowns.

Keywords: Research and Development, Smallholder Farming, Agricultural Economics

¹ Agricultural Economist, Economic Analysis Unit, Agricultural Research Council-Central Office, 1134 Park St, Hatfield, Pretoria, 0028, South Africa *corresponding author E-mail siphezantsi@yahoo.com 0000-0001-9787-3913

² Senior economist, Smallholder Market Access division, National Agricultural Marketing Council, 536 Francis Baard Street, Meintjiesplein Building, Block A, 4th Floor, Arcadia, 0007Pretoria; ksotsha@namc.co.za

³ Senior Economist, Markets and Economic Research Centre, National Agricultural Marketing Council, 536 Francis Baard Street, Meintjiesplein Building, Block A, 4th Floor, Arcadia, 0007, Pretoria; thabile@namc.co.za

1. INTRODUCTION

There is a general agreement among scholars that research and development (R&D) plays a crucial part in a country's economic growth and development, which in turn leads to a reduction in poverty (Alston, Beddow & Pardey, 2009; Chaminuka, Beintema, Flaherty & Liebenberg, 2019; Liebenberg, Pardey & Kahn, 2011; Pardey et al., 2016). This is particularly true for the agricultural R&D of developing regions, such as sub-Saharan Africa, where agriculture still contributes a relatively larger share of the GDP than developed regions' GDPs (Pardey et al., 2016). In the sub-Saharan region, South Africa has the second-largest expenditure on R&D (Chaminuka et al., 2019).

The impressive R&D returns on investment in agricultural productivity in South Africa have been well-documented by Liebenberg (2013). However, the aforementioned study also notes that before 1994, R&D expenditure and benefits were not evenly distributed across the dual South African agriculture due to colonial policies, which sought to suppress black agriculture and maintain it to a subsistence level (Lipton, 1977). Poor-resource and low-productive smallholder farming still lags in virtually all respects compared to well-advanced and internationally competitive commercial farming (Karaan & Vink, 2014; Sihlobo, 2023).

In addressing this gap between the two "agricultures" in the words of Merle Lipton (1977), the first democratically elected government set out to shift support and expenditure from commercial farming to the development of smallholder farming (Vink, 2001). Several funding bodies, such as the National Research Foundation, have made funding grants available to research institutions and universities (HSRC, 2020). The latter has an advantage because it contributes in at least two ways to the R&D: building human capacity through postgraduate degrees and generating new knowledge to advance agriculture and extension.

While agriculture, particularly agricultural economics and extension, are offered in many institutions of higher learning in South Africa (Vink, 2012), primarily specialised universities and those situated in the rural parts of the country because of proximity to smallholders, focusing on smallholder research. According to Statistics South Africa's 2016 Agricultural Household Survey (AHS), more than two-thirds of smallholder farming households are in three provinces: Limpopo, Eastern Cape, and KwaZulu Natal (StatsSA, 2016). The StatsSA's AHS is one of the few national data sets on smallholder agriculture in the country, which contains general information on smallholder agriculture. Therefore, researchers need a more

detailed data set for other specific research questions. Such detailed data sets are often obtained through field surveys by either face-to-face interviews or focus group discussions with smallholder households, among other methods. For these reasons, smallholder agricultural research is primarily data-dependent, and field surveys are the biggest data source.

The outbreak of the COVID-19 pandemic has posed a threat to this ongoing research work on smallholder agriculture because of travel restrictions and prohibitions of large gatherings, including classroom learning (Republic of South Africa, 2020). Some of these factors directly or indirectly affected obtaining primary data on smallholders, thus hindering research and postgraduate completion of master and doctoral dissertations (Stephens et al., 2020). In today's 4th Industrial Revolution and the digital world, where possible, researchers are already using online surveys through platforms such as SurveyMonkey, QuestionPro, Google Forms, Survey Sparrow and others to gather data from farmers (Eastwood et al., 2020). However, this might not be possible for smallholders for at least three reasons. First, smallholders are usually poor and have low literacy levels (StatsSA, 2019). As technology adoption is not prevalent, online platforms as an alternative to data collection are challenging (Bontsa et al., 2023). Secondly, some smallholders are in remote areas with problematic infrastructure and signal connections are typically poor or inaccessible (Rey-Moreno et al., 2016). Thirdly, while 99% of South African households have mobile phone access, only half of these smallholders are estimated to have smartphones (StatsSA, 2019). For these reasons, field surveys are likely to be the main option for obtaining primary data. Consequently, although the impact the COVID-19 pandemic has had on conducting research is yet to be understood and quantified, research specific to smallholders is likely to be severely affected.

Therefore, this article intends to make a small contribution to this emerging problem by first quantifying PhDs and master's dissertations produced within agricultural economics and extension departments in selected South African universities. This is achieved by retrieving dissertations from selected university repositories. Since publishing master's and PhD dissertations online is a more recent activity, this study only focuses on the last six years from which we compute an index under normal circumstances. This forms the basis of our argument for understanding the potential effect COVID-19 has had on dissertations, focusing their research on smallholders. Given the known lockdown restrictions, we argued that we will be in a better position to predict the potential effect once the output under normal

circumstances is known. The data and the literature on the impact and effect of the lockdowns have been widely published. In the case of smallholder data, Statistics South Africa and the Human Sciences Research Council have already published some surveys, which assist us in achieving the objective of this study. Although many factors are at play in completing dissertations, this study only focuses on access to data.

The remainder of this paper is structured as follows: the immediate section contextualises the study's research problem by providing a brief overview of the impact of COVID-19 and unpacking investment R&D in agriculture. Section 3 describes the study methods and data. Results are presented in Section 4, while Section 5 discusses the results, offers concluding remarks, and highlights some areas for future work.

2. A BRIEF OVERVIEW OF THE EFFECT OF COVID-19 AND AGRICULTURAL R&D

The purpose and objective of this section are to contextualise the central argument and contribution of this study to the broader literature. Hence, it reviews the state of the COVID-19 pandemic in South Africa and its impact on people's lives and livelihoods, including those of researchers and smallholder farmers. Later, the section unpacks the R&D investment and expenditure on agriculture in South Africa. These two subjects are important in understanding the impact of the COVID-19 pandemic on acquiring primary data for smallholder research because investment in research sought to improve the participants' quality of life, i.e., smallholder farmers in this case. At the same time, COVID-19 poses a threat to research contributions.

2.1. The COVID-19 Pandemic and its General Effect

South Africa recorded its first case of COVID-19 on 5 March 2020 from a couple on holiday in Italy. The virus then spread, making the country the pandemic's epicentre in Africa and the Southern African Development Community region. A national state of disaster was declared on 16 March 2020, with partial travel bans, closing of schools, and prohibiting gatherings of more than 100 people, among other measures (Republic of South Africa, 2020). In Africa, South Africa leads not only in the number of confirmed infections but also in the number of recorded deaths, possibly due to more advanced technology and better regional record-keeping. Various analyses suggested that COVID-19 mostly affected the more vulnerable population groups, the elderly and people with comorbidities (Figure 1).

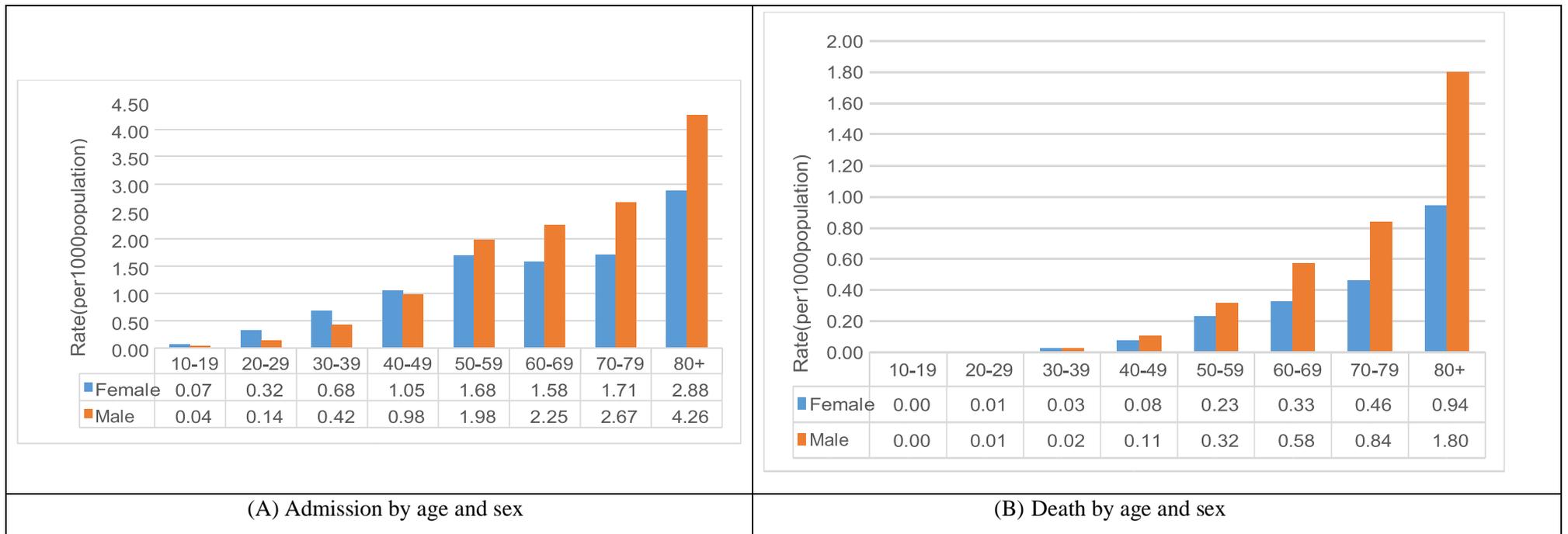


FIGURE 1: COVID-19 Hospital Admissions and Deaths by Age and Sex

Source: StatsSA (2020)

Gauteng, KwaZulu Natal, Western Cape, and Eastern Cape in March 2021 were the hardest hit provinces (Table 1). On the economic impact, it is said that the COVID-19 pandemic affected the most vulnerable population groups, blacks, low-income earners, and people living in rural and informal settlements, among others (Bassier et al., 2021; Turok & Visagie, 2020). Such characteristics are similar to those defining smallholder farmers in South Africa, implying that smallholders were likely to be more affected by the pandemic. To address the impact of COVID-19 on smallholder agriculture, the Department of Agriculture, Rural Development, and Land Reform issued support totalling 1.2 billion rands to qualifying smallholders (Department of Agriculture, Rural Development and Land Reform, 2020).

TABLE 1: COVID-19 Observed Deaths by Province (as of 24 March 2021)

Province	Reported Deaths Percent	
Gauteng	412 106	26,8
KwaZulu-Natal	333 207	21,6
Western Cape	281 531	18,3
Eastern Cape	195 006	12,7
Free State	82 404	5,4
North West	63 085	4,1
Mpumalanga	74 037	4,8
Limpopo	62 948	4,1
Northern Cape	35 684	2,3
Total	17 577	100,0

Source: SAcoronavirus (2021)

2.2. R&D Agricultural Investment

The government is by far the most important funder of agricultural research in South Africa. According to Liebenberg et al. (2011), agricultural investment analysis from 1910–2007 showed that the government has been responsible for much of the investment. Recently, the report on agricultural R&D expenditure in the 2010/11 financial year from the Human Sciences Research Council shows that 98% of the expenditure came from the government and the remainder from the private sector (Table 2). More than three-quarters of the expenditure on agricultural R&D was spent in four provinces. KwaZulu Natal had the highest expenditure share (28%), followed by the Western Cape (17.8%), Gauteng (15.2%), and the Eastern Cape

(15.1%). Limpopo had the least expenditure (2.5%). The government spent more than 79 million rands on basic higher education research – a category in which agricultural economics and extension research fall (Table 2).

TABLE 2: Agricultural Research Expenditure in South Africa 2010/11

Type of Research	Expenditure (R 000)	Percentage of total R&D expenditure
Basic research	344 085	28.3
Government	206 920	17.0
Science councils	57 608	4.7
Higher-education institutions	79 557	6.5
Applied research	700 034	57.5
Government	241 986	19.9
Science councils	330 066	27.1
Higher-education institutions	127 982	10.5
Experimental development	172 414	14.2
Government	73 128	6.0
Science councils	53 386	4.4
Higher-education institutions	45 900	3.8
Total	1 216 533	100.0

Source: HSRC (2020)

Those who benefit from the research funds are postgraduate students directly or through their supervisors' block grants from funding bodies such as the National Research Foundation. More Masters' students enrol and graduate with agricultural-related degrees than doctoral studies (Table 3). While all farmers benefit from agricultural research, smallholders benefit more by far from agricultural research. Three-quarters of farmers who benefit from agricultural research are smallholders (HSRC, 2020).

TABLE 3: Number of Masters and Doctoral Students Enrolled and Graduated in 2010/11

Masters and doctoral student enrollment and completion in agriculture	Number
University enrolment: postdoctoral	29
University enrolment: doctorate	478
University graduates: doctorate	58
University enrolment: master's	944
University graduates: master's	185

Source: HSRC (2020)

3. METHODOLOGY

3.1. Conceptualisation

Cousins and Chikazunga (2013) defined smallholder farmers as households that produce for home consumption and sell their surplus for cash income. Small-scale farmers rely primarily on family labour and differing levels of mechanisation, capital intensity, and credit (Hlatshwayo et al., 202; Zantsi et al., 2021). According to Leedy and Ormrod (2018), research is collecting, analysing, and interpreting data to understand a phenomenon. Masters and doctoral theses also follow the research process. Research is usually categorised by the approach taken to collect and interpret data. For example, inquiries that deal with qualitative data are referred to as qualitative research studies, while those that use quantitative data are referred to as quantitative research studies. However, because there are often limitations between these two approaches, some studies apply a mixture of the two (Queirós, Faria & Almeid, 2017). In our sample, we include all smallholder dissertations based on primary data analysis from field surveys.

3.2. Selection of Sample Size

This study collected data from four South African universities that offer agricultural economics and extension within their faculties. We selected universities based in rural parts of South Africa, where most smallholders live and farm (Pienaar & von Vintel, 2014; StatsSA, 2016). These universities included the University of Fort Hare (Eastern Cape), the University of Limpopo (Limpopo), and the University of KwaZulu Natal (KwaZulu Natal). The

exception to this rule was the University of the Western Cape (UWC). While UWC is not located within the three provinces that house a majority of smallholders, it has largely focused on smallholder farming research within the Eastern Cape, Limpopo, and KwaZulu Natal.

3.3. Collection and Analysis of Data

From this sample of universities, we collected master's and doctoral dissertations completed in the last six years (2014 – 2019). The reason for going a year back in our range is that some of the selected universities have not yet updated their repositories to include studies completed in 2020. In the first step, all dissertations completed in a given year were collected per university, focusing on agricultural economics dissertations. However, because agricultural economics is mixed with other disciplines in some universities, it is not always named “Department of Agricultural Economics” (Vink, 2012). Nonetheless, in the results, we provide the name of each university's department/college/institute. In the second step, from the list in step one, we differentiate dissertations that have used primary data from the list of all dissertations found in the research repository. The selected dissertations were retrieved from each university's repository of dissertations and the national ETD portal of South African theses and dissertations, where they appear under the heading “recent submissions”. The initial abstract appraisal was done, and then, if the dissertation was found to meet the inclusion criteria, the data was recorded. An index was developed from the total of studies collected to quantify the outputs of the period under review. The smallholder dissertation index (SDI) was calculated as follows:

$$\text{SDI} = \frac{\text{Number of doctoral or masters dissertation per university in a given year}}{\text{Number of doctoral or masters dissertations per university in a given year that used primary survey data}}$$

4. RESULTS

This section presents the repository search results for PhD theses and Master's dissertations in the four universities considered in this study. The section starts with doctoral theses in all four universities and later looks at master's dissertations.

4.1. Doctoral Dissertation

The results of the number of completed PhD theses are presented in Table 4. Detailed information about the selected theses in each institution is presented in the Appendix. The University of KwaZulu Natal (UKZN) has 12 theses, the highest number of completed theses

in the period under review, followed by the University of the Western Cape with half the number (6) of theses produced at UKZN. At the University of Limpopo, no doctoral theses were identified for the period under review. Whereas at the University of Fort Hare (UFH), only one PhD thesis was found. Regarding the SDI index, the UFH and UKZN had the highest, 0.96 and 0.92, respectively, implying that these two universities heavily depend on primary data (Table 4). The UWC PLAAS had half of their completed theses using primary smallholder data (SDI=0.50) (Table 5).

TABLE 4: The Extent of Dependence on Smallholder Primary Data

Institution	SDI for masters	SDI for PhD
The University of Forth Hare	0,94 (17)	1 (1)
University of Limpopo	0,83 (30)	- (0)
University of KwaZulu Natal	0,58 (24)	0,92 (12)
University of the Western Cape	0,44 (18)	0,50 (6)

4.2. Masters Dissertations

The results of completed masters' dissertations from the institutions under study are presented in Table 4. While the UFH and UL had only one and no PhD theses, UL led the way both in the number of completed masters dissertations (30), and UFH had the highest SDI (0.94) followed by UL. These institutions are followed by UKZN (0.58) and UWC (0.44), universities in provinces that have the highest expenditure on R&D (HSRC, 2020). The issue of closeness to smallholder farmers being mostly situated in former homelands (Pienaar & von Vintel, 2014) and proximity to rural areas is visible in this case because UKZN is close to the KwaZulu former homeland and the UL is close to the former homeland of Lebowa and UFH closer to former Ciskei and Transkei; while UWC is far from any former homeland.

5. DISCUSSION AND CONCLUDING REMARKS

The COVID-19 pandemic has caused numerous disruptions in many spheres of life, including the area and research procedures. This study attempted to understand the effect of the pandemic on doctoral theses and masters' dissertations conducted by students. Four South

African universities offering agricultural economics degrees were used as a reference point to understand this effect.

The results indicate that, generally, PhD and Masters' research in the selected universities mostly focuses on smallholder farming in South Africa. This is due to the developmental gap between smallholder farming and commercial farming or dualism in South African agriculture caused by historical structural imbalances. Furthermore, we found that PhD and master dissertations conducted on smallholders in the selected universities rely heavily on primary data, as shown by a high SDI.

When zooming in on each university, the results indicate that not all universities have the same reliance and dependence on smallholder primary data. This means that, although there is a general focus on smallholder research, some of this research is not necessarily dependent on primary data. Hence, the index differs – apart from the number of dissertations recorded.

According to the SDI, the UFH relies more heavily on smallholder primary data than the other universities. The SDI of 1 and 0,94 for PhD theses and Masters' dissertations, respectively. In terms of Masters, the UL is ranked second (SDI = 0,83), followed by the UKZN (SDI = 0,58) and the UWC (SDI = 0,44). This implies that 94% of the Masters' dissertations completed in the UFH between 2014 and 2019 relied on smallholder primary data, compared to 83%, 58%, and 44% of the Masters' dissertations completed in the UL, UKZN, and UWC respectively. In terms of the PhD theses, the UFH (SDI = 1) again relies on smallholder primary data compared to the UKZN (SDI = 0,92) and the UWC (SDI = 0,50). This implies that 100% of the PhD theses completed at the UFH between 2014 and 2019 relied on smallholder primary data, compared to 92% and 50% of the PhD theses completed in the UKZN and UWC, respectively. No PhD theses were found in the UL during the period under review.

Furthermore, the dissertations completed using the smallholder primary data were found (through abstract appraisal) to have used the traditional method of face-to-face interviews, and none indicated using online interviews. This implies that intense lockdown regulations and other COVID-19 restrictions on travelling and gatherings could have seriously affected the completion of theses and dissertations. However, we acknowledge that other factors contribute to the completion of the theses and dissertation other than access to data. For example, student determination, good health, and a healthy relationship between students and supervisors (Hofstee, 2006).

Therefore, it is recommended that new methods of gathering smallholder data should be found soon to reduce the potential disruptions and delays caused by the COVID-19 pandemic.

The options include:

- Adding variables in the few national data sets such as the StatsSA's Agricultural Household Surveys. This will reduce the requirements of collecting smallholder data through face-to-face field interviews. However, this requires strong collaboration between the universities and StatSA in consultation with the community of agricultural economists to determine the inclusion of certain variables and which variables are necessary.
- Considering various online data collection methods such as Google Docs, SurveyMonkey, and others. However, there are several limitations in this regard, which include the literacy level of smallholder farmers (which may affect the understanding of questions and formulation of answers) and access to means such as smartphones, good signals, and data. In this case, the study recommends a strong collaboration between the universities and extension officers who have access to farmers on a day-to-day basis. The feasibility of this recommendation could be studied in future research.

The long-term impact of COVID-19 will still be felt in the coming years. It is only then that the true impact could be assessed and quantified. Perhaps this study could be used as a benchmark study as it only assessed the short-term impact of this pandemic.

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APPENDIX

TABLE 5: PhD Dissertations Completed at the University of KwaZulu Natal from 2014-2019

No.	Titles of all completed Ph.D. dissertations in the University of KwaZulu Natal (College of Agriculture, Engineering and Science)	Completion year	PhD dissertations focusing on smallholders using primary data (SDI=0.92)
1.	The nexus of crop and income diversification, commercialization and household welfare: empirical evidence from Ethiopia.	2019	Yes
2-	The integration of freely available medium resolution optical sensors with Synthetic Aperture Radar (SAR) imagery capabilities for American bramble (<i>Rubus cuneifolius</i>) invasion detection and mapping.	2018	No
3.	Revealed preference analysis of consumers' switching behaviour towards rice brands in Nigeria.	2018	Yes
4.	Economic analysis of determinants of grain storage practices and implications on storage losses and household food security in Makoni and Shamva Districts in Zimbabwe.	2017	Yes
5.	Entrepreneurial development pathways for smallholder irrigation farming in KwaZulu-Natal: typologies, aspirations, and preferences.	2017	Yes
6.	Adoption and economic assessment of Integrated Striga Management (ISM) technologies for smallholder maize farmers in Northern Nigeria.	2017	Yes
7.	The impact of social grants on rural households' incentives to farm, market participation, and farm entrepreneurship: evidence from KwaZulu-Natal, South Africa.	2017	Yes
8.	The significance of women empowerment on rural livelihood outcomes among irrigation and dry-land farming households in Msinga, South Africa.	2015	Yes

9.	Climate change perception, crop diversification and land-use change among small-scale farmers in the Midlands region of KwaZulu-Natal, South Africa: behavioural and microeconomic analyses.	2015	Yes
10.	Evaluating farmers' and consumers' acceptance of new cooking banana hybrids in Uganda: microeconomic analysis and policy implications.	2014	Yes
11.	Market participation, channel choice, and impacts on household welfare: the case of smallholder farmers in Tanzania.	2014	Yes
12.	The economics of smallholder irrigation water management: institutions, water-use values and farmer participation in KwaZulu-Natal, South Africa.	2014	Yes

TABLE 6: PhD Dissertations Completed at the University of the Western Cape from 2014-2019

No.	Titles of all completed PhD dissertations in the University of the Western Cape (Institute for Poverty Land and Agrarian Studies)	Completion year	PhD dissertations focusing on smallholders using primary data (SDI=0.50)
1.	Agricultural investments in the communal areas of the Eastern Cape: The impacts of joint ventures on livelihoods and land rights	2018	Yes
2.	Urban land tenure, tenancy & water, and sanitation services delivery in South Africa	2017	No
3.	Agrarian change and the fate of farmworkers: trajectories of strategic partnership and farm labour in Levubu Valley, South Africa	2015	Yes
4.	Accumulation and differentiation: the dynamics of change in the large-scale commercial farming sector of South Africa	2015	No
5.	Governing the intertidal subsistence fisheries in Mozambique: vulnerability, marginalization, and policy mismatches case study of the district of Palma (The Province of Cabo Delgado)	2014	No

6.	Cattle, ,commercialization and land reform: dynamics of social reproduction and accumulation in Besters, KwaZulu-Natal	2014	Yes
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TABLE 7: Masters and PhD Completed Dissertations at the University of Fort Hare from 2014-2017

No.	Titles of all completed MSc & PhD dissertations in the University of Fort Hare (Department of Agricultural Economics and Extension)	Completion year	MSc. dissertations focusing on smallholders using primary data (SDI=0.94)	PhD dissertations focusing on smallholders using primary data (SDI=1)
1.	Small-scale farmers' participation in planning and implementation of farmer support programs in Amahlathi Local Municipality, Eastern Cape Province, South Africa	2017	Yes	
2.	Analysis of the impact of Smallholder Irrigation Schemes on the choice of rural livelihood strategy and household food security in Eastern Cape	2017		Yes
3.	A situational survey of the Siyazondla homestead food production program and food security, poverty alleviation in selected communities of Nkonkobe local municipality of the Eastern Cape	2016	Yes	
4.	Determinants of participation in beekeeping and its contribution to rural household income: the case of O. R. Tambo Municipality, Eastern Cape Province, South Africa	2016	Yes	
5.	Production of Indigenous Leafy Vegetables (ILVs) and their contribution to household food security: evidence from Coffee Bay, Eastern Cape Province of	2016	Yes	

	South Africa			
6.	Factors that influence smallholder farmers' maize varietal choice: the case of Mhlontlo Local Municipality Eastern Cape	2016	Yes	
7.	Socio-economic factors influencing the adoption of in-field rainwater harvesting technology for enhancing household food security by smallholder farmers in the Nkonkobe Municipality, Eastern Cape Province	2015	Yes	
8.	An investigation of skills and knowledge of women participating in water and food security projects in the Eastern Cape Province: a case of Mbekweni village, Sirhosheni, and Lutengele villages	2015	Yes	
9.	An evaluation of the effects of land tenure security in on-farm investment and on-farm productivity: a case of the smallholder farmers in the Amathole District of the Eastern Cape Province of South Africa	2014	Yes	
10.	Towards the modeling of indigenous poultry production in the Eastern Cape Province, South Africa: characterization and extension evaluation for poverty reduction	2014	Yes	
11.	Analysis of technical efficiency of small-scale maize producers: a case study in Tsolo magisterial district in O.R Tambo district in the Eastern Cape of South Africa	2014	Yes	
12.	The impact of land and agrarian reforms on poverty alleviation: lessons from the Jay Dee Rovon workers trust and Mon Desire in Joubertina, Eastern Cape-South Africa	2014	Yes	
13.	Assessment of the performance of smallholder irrigated sugarcane farming in	2014	Yes	

	Maphumulo Municipality of KwaZulu-Natal Province			
14.	Analysis of entrepreneurial behaviour of smallholder irrigation farmers: empirical evidence from Qamata Irrigation scheme	2014	Yes	
15.	Farmers' awareness of climate change and variability and its effects on agricultural productivity: (the case of King Sabata Dalindyebo Municipality in Eastern Cape)	2014	Yes	
16.	A review of agricultural economics training at South African universities	2014	No	
17.	Impact of Agricultural development projects on poverty alleviation In Amajuba district municipality (KZN)	2014	Yes	
18.	Identifying appropriate paths for establishing a sustainable irrigated crop-based farming business on smallholder irrigation schemes: a case of Ncora Irrigation Scheme	2014	Yes	

TABLE 8: Masters' Dissertation Completed at the University of KwaZulu Natal from 2014-2019

No.	Titles of all completed Masters Dissertation in the University of KwaZulu Natal	Completion year	Masters dissertations using primary data (SDI=0.58)
1.	Causality analysis and physio-economic impacts of climate change on maize production in South Africa.	2019	No
2	An ex-ante impact assessment of the farm-level impacts of genetically modified (GM) sugarcane to contain insect-resistant (IR) and herbicide-tolerant (HT) genes in the Eston sugarcane supply region of KwaZulu-Natal, South Africa.	2019	No
3.	Improved rice varieties adoption and technical efficiency of smallholder rice farmers in Ogun State, Nigeria.	2019	Yes
4.	Investments in ecological infrastructure: an assessment of the expected costs and benefits of rehabilitation of the	2018	No

	Mthinzima Wetland in KwaZulu-Natal.		
5.	Economic and agronomic evaluation of using excreta-derived plant nutrients sources (latrine dehydrated and pasteurized pellets, struvite, and nitrified urine concentrate) as agricultural fertilizers.	2018	No
6.	Effects of interactions between governance, intergenerational and gender dimensions on smallholder irrigation scheme in KwaZulu-Natal, South Africa.	2018	Yes
7.	Social grant dependence, irrigation water use, and on-farm entrepreneurial spirit: a behavioural explanation for smallholders in KwaZulu-Natal.	2018	Yes
8.	Exploring the role of digital technology in enhancing an environmentally responsive architecture: toward a fog water harvesting and visitors center on Signal Hill	2018	No
9.	Factors influencing the economic performance of a panel of commercial milk producers from East Griqualand, KwaZulu-Natal and Alexandria, Eastern Cape, South Africa: 2007-2014.	2018	No
10.	The impact of outsourced extension services on the performance of smallholder farmers in Msinga, KwaZulu-Natal, South Africa.	2018	Yes
11.	An evaluation of the availability of traction power for tillage and its effects on food security of smallholder farmers' households in KwaZulu-Natal, South Africa.	2017	Yes
12.	Land and water use rights in smallholder farming: impacts on productive use of irrigation water and entrepreneurial spirit in KwaZulu-Natal.	2017	Yes
13.	A demand analysis of farm labour employment in the south coast and midlands commercial sugarcane farming by labour categories: implications of the sectoral determination.	2016	No
14.	Small-scale irrigation water use productivity and its role in diversifying rural livelihood options: case studies from Ndumo B and Makhathini irrigation schemes, KwaZulu-Natal, South Africa.	2016	Yes
15.	The impact of capital endowment on smallholder farmers' entrepreneurial drive in taking advantage of small-scale irrigation schemes: case studies from Makhathini and Ndumo B irrigation schemes in KwaZulu-Natal, South Africa.	2016	Yes
16.	Analysis of factors determining livelihood diversification among smallholder farmers in KwaZulu-Natal.	2016	Yes

17.	Comparative analysis of the impact of food prices on household food security: evidence from the North-West and KwaZulu-Natal Provinces, South Africa.	2015	Yes
18.	Measuring the operational competitiveness of commercial operations in public protected areas under Ezemvelo KZN Wildlife: implications for ecotourism in the KwaZulu-Natal Province.	2015	No
19.	Measuring rural household vulnerability to food insecurity: the case of uMzimkhulu Local Municipality, KwaZulu-Natal, South Africa.	2015	Yes
20.	An analysis of the economic competitiveness of green maize production in smallholder irrigation schemes: a case of Makhathini flats irrigation scheme in KwaZulu-Natal, South Africa.	2014	Yes
21.	Smallholder farmers' willingness and ability to pay for improved irrigation: a case of Msinga Local Municipality, KwaZulu-Natal Province	2014	Yes
22.	Evaluating farmers' and consumers' acceptance of new cooking banana hybrids in Uganda: microeconomic analysis and policy implications.	2014	Yes
23.	Spatial prioritization of conservation areas on the fringes of KwaZulu-Natal protected areas: application of the framework of the characteristics using tourism competitiveness.	2014	No
24.	Urban biodiversity management in the face of climate change: livelihood impacts and adaptation strategies in Inanda community of eThekweni Metropolitan Area, KwaZulu-Natal, South Africa.	2014	No

Source: Authors' compilation

TABLE 9: Masters Dissertations Completed at the University of the Western Cape from 2014-2019

No.	Titles of all completed master dissertations in the University of the Western Cape (PLAAS)	Completion year	Masters dissertation focusing on smallholders using primary

			data (SDI=0.44)
1.	Obesity in Children: Environmental and Parental Influences. The Case Study of Khayelitsha in South Africa	2020	No
2.	Analysis of government compliance in the provision of water and sanitation to rural communities: a case study of Lepelle Nkumpi local municipality, Limpopo province	2020	Yes
3.	Movement of Zimbabwean immigrants into, within, and out of the farm labour market in Limpopo province of South Africa	2019	No
4.	Role of water as a resource in hygiene and sanitation	2019	No
5.	Trade of fish imported from Sub-Saharan Africa in the Cape Town Business district	2017	No
6.	Assessment of the type, extent, and modalities of intra-regional fish trade: A case of South Africa and other Southern African Development Community (SADC) countries	2017	No
7.	Rural livelihoods and agricultural production in smallholder irrigation schemes: The case of the Hoxane Irrigation scheme	2017	Yes
8.	Institutional dynamics in a small-scale organic farming organization: the case of the Ezemvelo Farmers' Organisation	2017	Yes
9.	Assessment of the type, extent, and modalities of intra-regional fish trade: A case of South Africa and other Southern African Development Community (SADC) countries	2016	No
10.	The trajectory from government-managed to farmer-managed smallholder irrigation and its effects on productivity, operation and maintenance: An analysis of Mamina Smallholder Irrigation Scheme in Zimbabwe	2016	Yes
11.	(Re)constructed communities under land restitution: a case study of the Popela land claim	2015	Yes
12.	Rural livelihoods and women's access to land: a case study of the Katuli Area, Mangochi District, Malawi	2015	Yes
13.	Large-scale land acquisitions in Kenya: the Yala Swamp case study of Kenya's land governance system and actual practices	2014	No
14.	Understanding the human dimensions of ecosystems approach fisheries management: The case of fish workers in the hake sector in Saldanha Bay	2014	No

15.	Grazing rights in communal areas of a post-independent Namibia: a case study of a grazing dispute in the western Kavango region	2014	Yes
16.	The comprehensive rural development programme as a vehicle for enhancing stakeholder participation in rural governance: a case study of Dysselsdorp in the Western Cape Province, South Africa	2014	No
17.	Livelihoods and production in smallholder irrigation schemes: the case of New Forest Irrigation Scheme in Mpumalanga Province	2014	Yes
18.	Assessing the role played by informal traders within the snoek value chain in selected townships in Cape Town, South Africa	2014	No

TABLE 10: Master Dissertations Completed from the University of Limpopo from 2014-2019

No.	Titles of all completed masters dissertations in the University of Limpopo (School of Agricultural and Environmental Sciences)	Completion year	Masters dissertation focusing on smallholders using primary data (SDI=0.83)
1.	Estimating supply response of milk production to price and nonprice factors in South Africa	2019	No
2.	Determinants of food security among small-scale maize farmers in Polokwane Local Municipality, Capricorn District, Limpopo Province, South Africa	2019	Yes
3.	Consumers' preference and willingness to pay for graded beef in Polokwane Municipality of Limpopo Province, South Africa	2019	No
4.	Analyzing potato price volatility in South Africa	2019	No
5.	Farmers' perceptions of extension agents' professional qualities affecting service delivery in Thulamela Municipality, Limpopo Province	2019	Yes

6.	Price transmission and casualty analysis of chpasteurizedsteurised liquid milk in South Africa from 2000 to 2016	2019	No
7.	Livelihood diversification and poverty among rural households in Capricorn District, Limpopo Province, South Africa	2019	Yes
8.	Determinants of market participation and profitability for smallholder Nguni livestock farmers: implications for food security and livelihoods in the Limpopo Province	2019	Yes
9.	Value chain mapping and marketing efficiency of cowpea farmers in Capricorn and Waterberg Districts of Limpopo Province, South Africa	2019	Yes
10.	Estimation of sorghum supply elasticity in South Africa	2019	No
11.	Farmers' use of agricultural extension communication channels for receiving farm management information in Polokwane Local Municipality, Limpopo Province	2019	Yes
12.	Cross margin analysis and perception of smallholder cattle farmers using arc's cattle infrastructural facility scheme in Fetakgomo Municipality, Sekhukhune District of Limpopo Province	2019	Yes
13.	Gender analysis of access to formal credit by small-scale farmers in the Greater Letaba Municipality	2019	Yes
14.	Perceptions of agricultural extension practitioner towards information and communication technology tools in Polokwane Local Agricultural Office, Limpopo Province	2019	Yes
15.	Farmers' perceptions of community-based seed production schemes in Polokwane and Lepelle-Nkumpi Local Municipalities, Limpopo	2019	Yes
16.	Determinants of economic efficiency among smallholders cowpea farmers in South Africa: a case study of Capricorn and Waterberg Districts in Limpopo Province	2018	Yes
17.	Determinants of competitiveness among smallholder avocado farmers in Vhembe District of Limpopo Province, South Africa	2018	Yes
18.	Market access productivity of smallholder maize farmers in Lepelle Nkumpi Municipality, Limpopo Province, South Africa	2018	Yes

19.	Effect of land restitution program on households' food security in Limpopo Province of South Africa: a case study of Waterberg District	2018	Yes
20	Economic analysis and perception of integrated wildlife/livestock farming as an alternative land-use option in rural areas of Mopani District in Limpopo Province, South Africa	2017	Yes
21.	Market participation of smallholder sunflower farmers in Sekhukhune District of Limpopo Province, South Africa	2016	Yes
22.	Value chain analysis and resource-use efficiency of smallholders broiler farmers in Capricorn District, Limpopo Province	2016	Yes
23.	Economic impacts of large-scale land investments along the emerging Chisumbanje Sugarcane Bio-ethanol Value Chain in Zimbabwe	2015	Yes
24.	Members' perceptions of financial services co-operatives:a case study of Motswedi, Lothlakane, Disaneng, Kraaipan, and Lehurutshe	2015	Yes
25.	Socio-economic analysis and profitability of small-scale broiler production enterprises in Vhembe District, Limpopo Province	2015	Yes
26.	Effect of Masibuyele Emasimini Agricultural program on food security at new forest irrigation scheme in Bushbuckridge Municipality of Ehlanzeni District in Mpumalanga Province	2015	Yes
27.	Evaluation of extension support within comprehensive agricultural support program in the Tshwane Metropolitan Municipality	2015	Yes
28.	Determinants of household participation in agricultural production in Shatale Region of the Bushbuckridge local Municipality, Mpumalanga Province	2015	Yes
29.	Determinants of cattle ownership and herd size in Vhembe District of Limpopo Province, South Africa	2015	Yes
30.	Analyzing the technical and allocative efficiency of small-scale maize farmers in Tzaneen Municipality of Mopani District: a Cobb-Douglas and logistic regression approach	2015	Yes

