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EXPERIENCES OF YOUTH IN AGRARIAN TRANSFORMATION IN RURAL SOUTH AFRICA: A CASE OF GREENPLANET PRIMARY COOPERATIVE IN ORANGE FARM

A Thesis submitted to the Faculty of Humanities, University of the Witwatersrand, Johannesburg, in fulfilment of the requirements for the degree of Doctor of Philosophy in Development Studies

By

Wilma Claris Chibonore

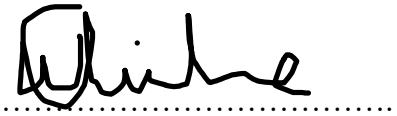
June 2022

DECLARATION

I declare that this thesis is my own, unaided work. It is being submitted for the degree of Doctor of Philosophy in Development Studies at the Faculty of Humanities, University of the Witwatersrand, Johannesburg, South Africa. To the best of my knowledge, this thesis has not been submitted before for any other degree or examination at any other University. The Ethics Clearance number for this thesis is H18/09/03. Parts of this thesis have been published as the following journal articles:

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Wilma Claris Chibonore

Date: 29/06/22

Supervisor: Professor Samuel Kariuki

ABSTRACT

This thesis advanced a qualitative approach to analyse the practices, structures and rationalities that inform youth engagement in agriculture drawing on evidence from Orange Farm in Gauteng Province of South Africa. The study takes off on the premise that there is low generational renewal in agriculture as the older and ageing generation makes the majority of active farmers yet farming holds great potential for creating youth employment whilst youth engagement in agriculture secures food of the future. The study finds that youth (dis)engagement and (dis)interest in farming is directly related to the availability and easy access to everyday support structures particularly those provided by the state and observes that many young people are in fact interested in farming but are currently operating in a structurally disabling environment amidst poor state support which does not allow for growth or access to key resources. The study finds that youth interest in farming exists although these interests are largely skewed towards technologically advanced farming systems and against backward manual farming systems therefore contradicting existing discourse as well as challenging the general narrative and consensus that youths are not interested in farming or that youth interest in farming is waning.

The thesis reveals that young farmers understanding, interpretation and engagement with agricultural technology is based on their levels of exposure, location and access to resources. Poverty, structural limitations and marginalization experienced by the youth contribute significantly to their reception and perception of agriculture as a whole. The thesis argues for an agrarian developmental state approach towards the strengthening of agricultural opportunities and the relevant institutional structures and resources such as land, stipends, extension services, training, technology and market allocation to support youth farming in rural South Africa where the economies are generally stagnant and youth unemployment very high. This study observes that young people as active citizens and through utilising individual agency have the capacity to drive their own innovations within the agricultural sector when awarded the platform, opportunity and support to do so. The study reveals that the young farmers are 'millennials' who use their youth agency to engage in social networking facilitated by use of social media as a powerful tool for unity and resistance against unfavourable farming environments. Lastly, two contradictory perspectives on the impact of COVID-19 emerge in this study, one of COVID-19 having presented opportunities for growth and success for the young farmers and another of the pandemic having

further marginalized and disrupted the already struggling young farmers with both narratives being shaped directly and indirectly by the pre-existing structural challenges.

Methodologically, empirical data was mostly gathered through face to face semi-structured interviews, focus groups and conversations with the young farmers with the remainder of interviews having been conducted virtually via Skype, WhatsApp chats and WhatsApp calls upon the emergence of COVID-19 which converged with this study. Participant observation occurred through attending farmers meetings, agriculture tours, engaging in some farming activities on some sites as well as being part of the young farmers WhatsApp group. The thesis also relied on published journals, statistical reports, media reports, policy documents as well as videos from the public hearings regarding the amendment of the South African Constitution to allow for expropriation of land without compensation in order to bolster the empirical findings.

Key words: *youth participation, agriculture, young farmers, food security, community development, poverty reduction, youth empowerment, land reform, government intervention, sustainable development, income generation, COVID-19.*

DEDICATION

To Toya and Calu, you believed…thank you for making this happen.

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I would like to thank everyone who contributed in one way or another towards the realization of this thesis. To the world's most supportive siblings Lee, Mai Ti, Mucha, Calu, thank you so much for the love.

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I am also grateful to my supervisor Prof Kariuki for teaching me to work independently and grow intellectually. Thank you to my fellow PhD colleagues Dabie, Mkoma Wellie, Mkoma Mike, Mkoma Admire for the valuable feedback and advice. Dr Chikadzi, (aka Mkoma Vee), thank you for always being there.

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NK and Zodzo, the best part of the final days, thank you for keeping me sober and driven towards the end.

Lastly, to God Almighty, in whom ALL things are possible, head bowed, Your power has spoken for itself.

The above acknowledgements notwithstanding, any errors in this thesis remain my sole responsibility.

ABBREVIATIONS

ACRONYM	EXPLANATION
AgriBEE	Agricultural Broad-based Black Economic Empowerment
AET	Agricultural Education and Training
Apps	Mobile Farming Applications
COVID-19	Coronavirus disease- an infectious disease caused by the SARS-CoV-2 virus
DAFF	Department of Agriculture, Forestry and Fisheries
DALRRD	The Department of Agriculture, Land Reform and Rural Development
DRDLR	The Department of Rural Development and Land Reform
EWC	Expropriation of Land Without Compensation
FAO	The Food and Agriculture Organization of the United Nations
IDC	Industrial Development Corporation (IDC),
IoT	Internet of Things
LRAD	Land Reform for Agricultural Development
M- Agri Services	Mobile Agricultural Services
NDP	National Development Plan
NYDA	National Youth Development Agency
TVET	Technical Vocational Education and Training
UN	United Nations
UNESCO	United Nations, Educational, Scientific and Cultural Organization
UPA	Urban and Peri-Urban Agriculture
YARD	Youth in Agriculture for Rural Development
3IR	Third Industrial Revolution
4IR	Fourth Industrial Revolution

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CHAPTER ONE: INTRODUCTION

1.1 Introduction

Existing research on youth and the agriculture problem has been critiqued as being very weak, not theoretically and historically informed (Sumberg et al., 2012). This stems from a scarcity of empirical analysis on the role and opportunities for youth employment in Agriculture. There has however been a bias in academic literature in South Africa towards analysis of the role played by land in enhancing rural livelihoods, land use amongst adults, the land reform process, land tenure and land use patterns by the beneficiaries of the land reform program (Ntsebeza & Hall, 2007). This literature largely excludes a focus on youths as actors within agricultural spaces for development purposes. For White (2020), in order to understand how young people are excluded from farming, it is important to understand the distribution and ownership of agrarian resources as this impacts on the intergenerational transfer and generational renewal of the sector by young rural people as they realize or halt their aspirations as farmers. An agricultural transformation and industrial revolution will modernize the sector, add value to the produce, increase yields and consequently lift rural smallholder farmers out of poverty whilst attracting young farmers and reducing youth unemployment, thus is a potentially successful economic development path (Emmanuel et al., 2020).

There is limited research that explores rural young people's economic, political and social challenges and opportunities towards rural transformation (Arslan et al., 2020). Focus on initiatives to improve economic opportunities for rural youth would contribute to the development of the rural economy and stem rural-to-urban migration of youths, many who go on to live in vulnerable conditions in urban slums (Khutswane, 2013). A youth lens in agriculture and development towards providing appropriate state support and policies that are specifically tailor-made to suit the interests and aspirations of rural young farmers will enable them to grow and contribute meaningfully towards local community food security and rural development given their heterogenous characteristics.

The majority of young people in Africa live in rural areas and in poverty (Hakizimana, 2016). Further, in Africa, rural youths are more economically excluded than their urban counterparts with

only 1 in 5 having access to finance[1] whilst their participation towards rural development is also low (Trivelli & Morel, 2020. These youths continue to experience ongoing challenges in agriculture with difficulties to access modernized and enhanced farming technologies, difficulties to access insurance for their farm produce, as well as poor technical assistance and support (World Bank, 2021). Sub-Saharan youth have also faced continuous challenges in accessing markets for their produce as well as challenges accessing training and extension services for enhancing their farming skills and expertise (Bezu & Holden, 2014; World Bank, 2021).

The Third Industrial Revolution (3IR) in farming has failed to address these obstacles despite the fact that young people have great potential and qualities of physical strength, innovation, are less risk averse, have high skills aptitude, have flexibility and quick technological adaptability which when nurtured and utilized effectively will ensure transformation of the agriculture sector and development of rural areas (Kwenye & Sichone, 2018). This raises the debate on Africa's readiness for the Fourth Industrial Revolution (4IR) in agriculture where a clear division exists between those that see its possible benefits given Africa's young population versus those that anticipate a negative outcome where the rich will only get richer while the poor continue to be further marginalised (Ayentimi & Burgess, 2019). These scholars also question the potential success of 4IR as African agriculture is largely characterized by rain-fed primary agricultural production, weak and mismanaged institutional structures and low technological innovation which have existed in the 3IR. However, given that demographically sub-Saharan Africa is the youngest region globally as more than 60% of its population is under 25 years, the 4IR creates an opportunity to advance social and economic development and competitiveness of the continent (Ayentimi & Burgess, 2019).

In South Africa, it is believed that the vast gaps between the rich and poor, the dual nature of the agri-sector and the major differences between the urban and rural areas makes rural lifestyle and farming even more unattractive to young people (White, 2012). Recent studies have shown that urban-based youths see agricultural activities as unattractive, backward, old fashioned and appropriate for the elderly and the poor (Akrong & Kotu, 2022; Daum et al., 2022; Douglas et al., 2017; Ephrem et al., 2021; Moreda, 2020; Sumberg et al., 2017). There now exists a global

[1] Hatayama, M. (2018). Youth employment programmes: What works in rural settings? World Bank

challenge of low generational renewal/replacement in the farming sector as young people are either disinterested due to change in times or are disengaged due to challenges they face in farming (Pérez et al., 2020; Qualman et al., 2018). Similarly, official statistics in South Africa have shown that the number of young people involved in agriculture are significantly lower than their older counterparts (Metelerkamp et al., 2019). Research conducted in 2006 showed that the average age of a livestock farmer in the Northern Cape's 'coloured rural areas' was 55 years old[2] whilst most cattle farmers in the Eastern Cape were over 50 years.[3] As of the year 2019 it was recorded that the average age of a farmer in South Africa was 62 years.[4] This is not much different to first world countries like Denmark and the USA where the average age of a farmer is 52 and 55 years respectively[5] (Sihlobo, 2015; International Business Publication, 2008). In Canada the young farmers especially those who are under 35 years are exiting the trade at a rate that is twice that of the general farming population (Qualman et al., 2018). In Cameroon the average age of farmers who operate on cocoa and coffee farms is 55-65 years.[6]

These statistics show a dire need for the industry to attract and retain the youth as well as facilitate easy initial entrants for young people. However, questions can be raised as to whether the aspirations of the youth are in alignment with the opportunities that are available to them within the farming sector either as employees, entrepreneurs or small-scale farmers? It has thus been raised by some scholars as a concern that if it is true that young people in South Africa have lost interest in pursuing agriculture as noted earlier, then not only is the future of rural agriculture (in the face of on-going rural poverty) at stake but that the current high youth unemployment levels will not get any better (Sumberg et al., 2012).

[2] Samuels, M.I. (2006). Patterns of resource use by livestock during and after drought in a communal rangeland in Namaqualand.. MSc thesis, University of the Western Cape, South Africa. Accessed from http://etd.uwc.ac.za/bitstream/handle/11394/2044/Samuels_MSC_2006.pdf?sequence=1&isAllowed=y

[3] Nqeno N, Chimonyo M & Mapiye C. (2011). *Farmers' perceptions of the causes of low reproductive performance in cows kept under low-input communal production systems in South Africa*.. Tropical Animal Health Production 43: 315–321.

[4] Sihlobo, W (2019). SA youth doesn't like farming because its not sexy. True or false? https://www.dailymaverick.co.za/opinionista/2019-10-07-sa-youth-doesnt-like-farming-because-its-not-sexy-true-or-false/. (Accessed on 19 January 2020).

[5] International Business Publication (2008). Denmark Company Laws and Regulations Handbook. International Business Publication: USA.

[6] Guillaume-Gentil, A. (2014). TOOLS FOR YOUNG FARMERS: Effective policies are essential. *Spore*, (171), 4-5. Retrieved from http://www.jstor.org/stable/24344594

Scholars have highlighted that most land reform and food security policies and programs post-apartheid have not been adequately implemented (Sauti & Lo Thiam, 2018) and have not worked in favour of most youth as majority of them cluster youth with other marginalized groups such as women and those with disabilities (Arko-Achemfuor, 2016). Young people are an important stakeholder to engage in the development arena for sustaining the future of agriculture yet they are "virtually left out in policy and program considerations" (Etim & Udoh, 2018, p. 1). Better inclusion of young people as beneficiaries of land reform is key in order for youths to effectively benefit from the land reform initiatives (Zantsi & Greyling, 2021). Majority of land reform beneficiaries in South Africa are the older generation while the youth play little to no role as they have not been specific targets of these policies but have been clustered with the larger group of vulnerable populations (Khutswane, 2013). This has given rise to continued rural-urban migration by rural youths as they see no benefits in joining the farming sector in their rural environments when they cannot benefit from the land reform processes.

Young people in South Africa struggle to access finances and other resources necessary for successful farming (Dube & Nicholson, 2018). Despite the agriculture sector in South Africa being a potential source of job creation for the youths, the sector's systems and infrastructure are ill-prepared to accommodate young farmers or youths who have an interest in farming (Metelerkamp, 2021). Nonetheless, youth aspirations for farming as well as clear career paths into agriculture have not been adequately discussed in favour of more literature arguing for young people's disinterest in farming (Qualman et al., 2018). However, the thin existing literature suggests that young farmers find a sense of belonging and fulfilment from assisting their communities through agriculture (Metelerkamp et al., 2019) with such contradictory narratives requiring deeper interrogation.

Marginalised communities such as rural areas in South Africa historically have been deprived of infrastructure and amenities as they were often situated in remote areas where there were little to no economic prospects (Aliber, 2003). However, there is an inadequacy of evidence that shows what strategies and interventions have worked towards facilitating youth involvement in agribusiness as an economic prospect (Trivelli & Morel, 2020; Yami et al., 2019). State involvement in youth mobilization within the agricultural sector in South Africa requires further

interrogation (Resnick & Thurlow, 2015). However, some academics have suggested that the growth in numbers of rural youths requires that government should place greater emphasis and prioritize the creation of opportunities for land-based livelihoods for young people as rural youths are affected the most by unemployment (Hebinck & Lent, 2007).

In the South African context, some key challenges within the Agricultural Education and Training (AET) include an inadequacy of trained educators for both theoretical and practical agriculture, poor quality of training programs, lack of affordability by poor youths, steep admission requirements for those with little education, lengthy physical distance from training centers, literacy challenges by learners, numeracy challenges by learners, difficulty of language of instruction for learners and limited resources for poor communities that also offer AET services (DoA, 2007; DAFF, 2008). The management of AET is currently fragmented and in need of better coordination and integration of all involved stakeholders, as colleges are currently managed at provincial level and are not formally recognized as being part of the national higher education system (Swanepoel, 2017). All these challenges have an impact on the experiences, meanings and perceptions that young aspiring farmers have towards agriculture.

Lastly, towards the conclusion of this research and thesis write up, the COVID-19 global pandemic emerged and raised interest in questions and implications for the youth and agriculture problem. Discussion on the impact of COVID-19 has been added as an extended subsidiary area of scrutiny but is not one of the primary areas of analysis of this thesis. The unforeseen COVID-19 global pandemic and current emerging write-ups by researchers on this pandemic presents a strong case of a conceptual and academic analysis as it has a bearing on youth and farming. COVID-19 unearthed the vulnerabilities that exist in the global food system which is heavily interconnected, and because it is a new phenomenon not much is known nor documented about its impact on agriculture (Moseley & Battersby, 2020; Siche, 2020). Thin research exists on its impact on small-and-medium black vegetable farmers in South Africa yet it has become apparent that during pandemics farmers or food producers are essential service providers world over (Wegerif, 2022). Debates continue on what should constitute the most appropriate food system that can adequately address the vulnerabilities brought about by COVID-19 in South Africa, although farmers being key actors in the food system require a particular attention especially the experiences of small scale

black farmers given the history of racial inequalities (Paganini et al., 2020; Wegerif, 2022). COVID-19 deepened these vulnerabilities of inadequate support, significantly restricting production capacity and further reinforced these already existing inequalities.

Variables such as age, income status, place of residence, land size as well as access to structural support determine the levels of anxiety experienced by farmers during the pandemic, with the highest vulnerabilities being experienced by the younger farmers (Cevher et al., 2021). This is because they are often poor, especially in rural areas with low access to resources and key support compared to the more established and experienced older farmers with access to resource support. "The prevalence of depression and anxiety disorder in young farmers between the ages of 18 and 37 is higher than the general population" yet their mental health should be considered in efforts to create a sustainable farming workforce post the pandemic (Cevher et al., 2021, p. 13). Despite the complex politics of young farmers' vulnerabilities which have been worsened by COVID-19, youths remain the future food producers with greater capacity to utilize modern technology for globally competitive efficient quality farming (Mantra et al., 2021; Woomer et al., 2021). This is in comparison to their older counterparts who are increasingly struggling to adapt to the newer technologies thus calling for rethinking youth farming practices.

Wegerif (2022) calls for a holistic approach to the food system which is informed by an understanding of the experiences of black small-and-medium farmers. An account of the impact of COVID-19 on young rural farmers is necessary because they are seen as key stakeholders in agriculture and have "direct contact with food resources in supply chains" within their rural settings (Yazdanpanah et al., 2020). Because COVID-19 has had disproportionate effects on people, the youth (especially rural youth more than their urban counterparts) have been hit the hardest (Chakravorty et al., 2021; Odey et al., 2020). They have experienced higher levels of food insecurity compared to adults caused by the total confinements or total national lockdowns (Fall et al., 2021). This is a major concern as youth are "a very vital asset in development" (Is et al., 2021, p. 73).

Against this background, this thesis aimed to understand the different dynamics that young black farmers encounter and engage in within the already established agriculture sector in South Africa.

1.2 Key Research Questions

Core Research Question: *What have been the experiences of rural youth engaged in farming amidst agrarian transformation in South Africa?*

The following sub-questions were addressed:

- How are youth aspirations for farming (de)constructed in the various farming cooperatives and what forms do these aspirations take at the wake of the agrarian transformation in South Africa?
- What has been the role of the state in relation to youth agriculture to ensure success of agrarian transformation and rural development? What have been the responses by the youths towards these state interventions?
- To what extent has emerging modern technologies such as progressions of the third and fourth agricultural industrial revolutions impacted the commonly held narrative that youth interest in farming is waning?
- What has been the role of youth farming in the South African land reform context?
- What have been the wider implications of COVID-19 to youth farming, agrarian transformation and rural development?

1.3 Key Arguments

Based on the empirical findings, this thesis argues that youth farming aspirations are independent of their deficits and marginalisation but are closely shaped by their being active citizens and participants of development, hence discourse on youth farming ought to investigate in depth the nature and manifestations of these aspirations. Farming is seen as a form of resistance and resilience against the chains of poverty and as a means to creating youth employment in a jobless environment hence aspirations to improve expertise in the trade and create their own locally competitive food stores. Farming challenges have actually created an opportunity for the youth to form a united front to assist one another in order to overcome existing obstacles as well as to fight an oppressive corporate farming system which has excluded young new entrance to farming. These

challenges are seen and treated as opportunities for growth thus help to shape and reshape youth farming aspirations as the environment shifts continually.

Further, the study of state interventions towards empowerment of young rural farmers provides a shift from studying these interventions from the views of the state implementers but through a youth lens in agriculture and development thus placing focus on the youth as recipients of the services. The thesis argues that governance of youth agriculture presents itself as a complex task given the interplay between the state as a parent and key source of structural support versus young farmers as the expectant children with a sense of entitlement. The high expectations set out by the young farmers towards the state play a significant role in how state interventions and strategies towards enhancing youth agriculture are perceived and received. The study revealed contradictory narratives with some citing poor state support as the key contributor to general disinterest and early disengagement thereby creating a continued 'youth haemorrhaging' from the agriculture sector. However, the majority cited continued interest and endurance as well as expectations for growth in farming despite the many structural impediments.

Another key argument of this thesis is that the conceptual definitions of the 4IR in agriculture along with the practical implementation as interpreted by the young farmers lacked harmony and were far removed from what 4IR in agriculture actually entails both as a concept and in practice. These conceptual misalignments or rather misconceptions displayed by the youths were a result of poverty and resource scarcity which highlight marginalisation as a central and starting point to rural youth backwardness. The structural challenges encountered by young farmers play a key role in shaping the discourse on youth farming, youth marginalization and rural development. The study argues that youth interests in farming exist although these are largely skewed towards advanced farming systems. A key finding of this thesis is that young people are interested in farming which contradicts existing discourse as well as challenges the general narrative and consensus that youths are not interested in farming or that youth interest in farming is waning.

The study also argues that existing land tensions as a key area of contention for the farmers are also deepened by the vague state instruments which promote access to farming land for the youth as the land policies and programmes in place to support young farmers do not explicitly cater for

easy access to farming land for youths in all regions of South Africa. Though the definition of youth and their challenges is well articulated by state instruments, the implementation of youth programs to address these challenges are faced by multifaceted obstacles which require localised solutions involving the youths themselves since young people are a distinct category of actors with heterogenous characteristics thus giving them a voice in how they can be assisted. The existing programs and resources though present are perceived to not appropriately reach the target audience with improved access being skewed towards urban youths thus further marginalizing rural youth who are already side-lined and excluded from socioeconomic participation.

Lastly, the thesis argues that the emergence of COVID-19 brings into question and opens up conversation on the readiness of state apparatus to support young farmers to take advantage of any unintended positive outcomes presented by socioeconomic challenges given that the youth themselves proved ready. The pandemic presented an opportunity for the development of policies that strengthen youth resilience to economic shocks as well as for strengthening existing structures to ensure regional and global competitiveness of young marginalised farmers. There emerged two contradictory perspectives in this study, one of COVID-19 having presented opportunities for growth and success for the young farmers, and another of the pandemic having further marginalized and disrupted the already struggling young farmers. The emergence of COVID-19 made it impossible for the young farmers to access markets outside of their community due to restricted mobility imposed by government to curb the spread of the virus and the state-enforced social distancing measures at the beginning of the pandemic. Meanwhile, COVID-19 as an unintended consequence also created an opportunity for growth which the young farmers could have tapped into in depth provided that there existed adequate local farming structural support.

1.4 Preamble And Method

This study focused on the exploration, understanding and analysis of youth engagement in farming at community level, towards rural development and sustainable livelihoods. An in-depth analysis of the dynamics within the current agricultural sector and youth participation was examined. The study assessed themes of youth farming aspirations, state interventions, modern farming technologies, land reform and COVID-19 within the context of youth agricultural cooperatives located in Orange Farm. Youth agency that was exercised during the farming processes was also

documented and examined. This study was influenced by the dearth in academic literature that addresses young people's experiences in farming and mainstreaming activities towards rural development in South Africa. By exploring all aspects of rural agriculture and the engagement of youth, this approach responds to Ben White (2012) who notes in his scholarly writing that most research on youth has predominantly focused on young men and youths in cities and has excluded/paid less attention to the youths in rural areas.

The study had intended to study one youth agriculture cooperative through purposive selection. This cooperative was completely youth owned, but by the time I was granted ethics clearance to conduct my data collection (approximately three months later) most youths from this cooperative had left. Consequently, I had to conduct interviews and focus group discussions to acquire data from six other youth farming cooperatives with similar characteristics within the same community who were also involved in agriculture. Thus, multiple case studies were then analysed for richer data. For this reason, the original title of the thesis has been maintained despite the study having gone on to explore other youth farming cooperatives albeit the focal analysis of the thesis is on young farmers from different cooperatives. These case studies were made up of young people (classified as youths according to the South African youth policy-less than 35 years although I chose to focus only on those 20 years and older as they would have had fair experience in farming post school and would also have been above the age of majority for legal purposes) who farmed vegetables and herbs and supplied these to their local community or outside the community.

The bulk of data was obtained through semi-structured interviews and focus groups complimented with some participant observation. Participant observation took the form of involvement in harvesting during harvesting days at the gardens and fields where the youth I interviewed worked. In some instances, I took part in soil preparations and watering the produce as some participants refused to be interviewed by me without my participation in their day-to-day activities. My semi-structured interviews were mostly carried out through physical conversations with key informants and the young farmers. Further, I utilised the videos on the public hearings regarding the amendment of the constitution to get some youth perspectives on the land issues in South Africa. As COVID-19 converged with my research process I utilized Skype, WhatsApp chats and WhatsApp calls to engage some of my participants as a means to observing social distancing

regulations. The primary and secondary data which I gathered was analysed through thematic content analysis as this enabled me to capture the 'complexities of meaning' through the capture of implicit and explicit ideas emerging from the data (Guest et al., 2011).

1.5 Organisation Of Thesis

- **Chapter one:** The first chapter is an introduction of the research. It emphasises the research gap and sets the contextual background and explores theoretical issues related to youth farming in South Africa. The chapter begins to interrogate the discourses and practices on youth farming, state intervention and rural development as key themes of this thesis. The chapter problematizes farming using a youth lens to development and covers the aims, objectives, rationale and key research questions adopted in the study.
- **Chapter two:** This chapter discusses academic literature surrounding youth and farming. This literature review unpacks scholarly material and debates on youth along the lines of development, youth aspirations in agriculture and the fourth industrial revolution in agriculture. The chapter also presents a broader perspective on ongoing debates around agrarian transformation, agricultural revolutions and the South African youth agrarian landscape. Lastly, an analysis of the impact of the corona virus pandemic (COVID-19) on youth farming and the agricultural sector in its broad sense is done.
- **Chapter three:** The third chapter discusses the methodology used in this research as well as offers a reflection of my field research experiences as both an observer and participant.
- **Chapter four:** Chapter four is a presentation and interpretation of youth farming aspirations amidst the existing state support within the agricultural sector. The chapter explores interventions in place for strengthening youth engagement in the agricultural sector such as skills training, extension service provision, access to markets and land. The meanings and narratives that young farmers attribute to these state interventions is explored. Easier access as well as dependability of state resources is seen as more desirable and of greater importance. Resilient youth interests and aspirations exist despite the structural impediments, hence a youth lens in agriculture and development could potentially lead to successful 'accumulation from below' of wealth for rural youths if the necessary help is provided. The chapter thus questions the relevance and effectiveness of

government interventions and argues that focus should not necessarily be on state interventions in general but about their appropriateness.

- **Chapter five:** This chapter explores young farmers understanding and experiences with the Fourth Industrial Revolution (4IR) in agriculture. Concepts of marginalization and exclusion from technological advancements are explored along the lines of digital inclusivity. Narratives are shared on how young farmers engage with the 4IR and technology in farming as the thesis views them as millennials. The understanding of the 4IR technologies was by default understood to be more in line with the 3IR. The question is raised as to whether Africa having been left behind in the past can catch up to the new 4IR in agriculture and whether youths will successfully be included in this revolution given the existing marginalisation, technological misalignments and exclusion of young farmers at policy and practical levels? Lastly, youth farming interests are skewed towards advanced farming technologies and this thesis argues that the structural challenges encountered by young farmers play a key role in shaping the discourse on youth farming, youth marginalization and rural development.
- **Chapter six:** This is an auxiliary analysis chapter which does not form the core area of scrutiny of this thesis but has been included as COVID-19 emerged towards the conclusion of this research and thesis write up and raised interest in questions and implications of the pandemic for the youth and agriculture problem. The chapter discusses the impact of the unforeseen COVID-19 on the young farmers as their narratives present a strong case of a conceptual and academic analysis on the bearing that pandemics have on youth and farming. The chapter presents two major contradictory encounters of challenges versus opportunities presented by COVID-19 for the young farmers. This brings into question state contribution towards assisting marginalized young farmers towards adjusting and thriving in the 'new normal' brought about by COVID-19 by tapping into their interests as well as understanding their environment and farming needs better. The tension between the opportunities versus the challenges presented by COVID-19 makes the delivery of interventions for rural young farmers more complex as their environmental dynamics are already characterized by complexity. Lastly, the chapter argues for a multifaceted approach to addressing rural youth challenges and their perceived marginalisation towards mitigating

the negative impact of future pandemics as well as boosting their engagement in farming for the protection of local food systems.

- **Chapter seven:** The final chapter is a conclusion of this thesis which summarizes the whole discussion of my study, its contribution to theory and practice and identifies openings for further research. The thesis concludes by arguing for an African perspective towards the study of young farmers and their contribution to development as youth representation towards agricultural transformation is a key pathway out of poverty in South Africa.

CHAPTER TWO: LITERATURE REVIEW

2.1 Introduction

This chapter places the position of this study by reviewing scholarly literature and policy-based material on debates around the primary pillars of this thesis which are rural youth engagements in agriculture and development, the fourth industrial revolution in agriculture, land and agrarian reforms, as well as the impact of COVID-19 on youth agriculture. The chapter begins with a discussion of youth (dis)engagement and (dis)interest in agriculture which lays the foundation for the examination of the different meanings and approaches used towards empowering youth for poverty alleviation within agriculture and development discourse. It acknowledges the importance of "a youth-inclusive agricultural and rural development agenda" which approaches youths "not as instruments of development, but as subjects, actors and citizens; both locally and nationally; and investing in infrastructures that make rural places more attractive for young men and women to live and work in" White (2019, p. 4). An investigation of the fourth industrial revolution (4IR) is done which solidifies the broader argument of my work that an in-depth inquiry into the impact of the 4IR technologies on youth interest into farming as a career will help to understand how best young people as future farmers can be attracted and retained in the industry given the global decrease in youths involved in farming yet the global population continues to grow thus requiring securing food of the future (Ballaro & Moriarty, 2019).

The chapter also investigates the history of the South African agrarian reforms and land dispossessions and points to the significance of this towards understanding the current youth farming dynamics, arguing that the transition from apartheid left stark polarization between the experiences of black young farmers and white commercial farmers, with the continuation of this status quo further marginalizing black youths in farming (Metelerkamp et al., 2019). Lastly, a review of literature on the impact of COVID-19 on the young farmers is done because COVID-19 has disproportionately affected rural youth more than their urban counterparts (Chakravorty et al., 2021; Odey et al., 2020) and unmasked the existing structural racially skewed inequalities within food systems (Ammons et al., 2021). This thesis acknowledges that farming is more than a technical activity but is a socio-cultural practice, a way of life, a means of living which acquires "a meaning far deeper than almost any other occupational identity" (Vanclay, 2004, p. 213).

2.2 Youth Lens In Agriculture And Development: An African Perspective

This section explores academic discussions around youth (dis)engagement in agrarian practices which are of interest and value in assisting to advance the argument this thesis makes on the importance of youth agriculture towards economic development. Youth as a concept is difficult to define due to the fluidity of this group of people whose form changes in different spaces and times (Girard, 2017; Sumberg et al., 2014; White, 2019). Thus, 'youth' carries a different definition in different spaces and time (Durham, 2000). Social roles, responsibilities and expectations and other developmental milestones such as educational attainment are used in different spaces to define what constitutes youth thus age limits are not always a determinant of youth (Klouwenberg & Butter, 2011). Youths though diverse and complex are often treated as a group that is generally disconnected from their social context yet some scholars have argued against such an approach highlighting that youths are creative active agents who have great potential for transforming society and who are capable of creating disruptive innovations (Girard, 2017). This scholar also states that in most African countries and for the African Union 'youth' are categorized within the 15-35 years age bracket. To comprehend the lives of young individuals, it is necessary to examine how the concept of youth is formed or created as well as how the youth experience it (White, 2012). However, comprehending this also necessitates us to locate young individuals within broader social frameworks.This thesis explores how youth is constructed in the South African context and explores the experiences of these young people in the context of larger socio-economic structures within which they live and farm.

Youth studies as an area of research has thus far been focused on making comparisons across generations (the youth today versus the youth of the past) and making comparisons between different social and ethnic groups of young people (McLeod, 2009). One can see that youth scholarship has incorporated young people along the lines of culture and transitional studies and less on economic development matters that affect them. Some youth studies have focused on youth as a collective group whilst others have focused on youths as individuals (Blackman, 2005). A lot of academic material about youth in South Africa has focused more on psychosocial aspects of young people such as issues to do with the youth and HIV (see Francis & Rimensberger, 2008, for more detail); the youth and violence (see Sathiparsad, 2005, for more detail); the youth as historical

political agents of change (see Cooper, 1994, for more detail); youth and education (see Beutel & Anderson, 2007, for more detail); teenage pregnancy (see Mkhwanazi, 2010, for more detail) amongst others.

White (2019) has called for a conceptual combination of rural/agrarian development and youth studies as he argues that this is the best way to understand the experiences of young rural farmers. This thesis has studied youth engagement in farming as well as investigated the agrarian development terrain in combination. Some authors argue that there is a need for academic cooperation and strategic alliances for purposes of comparative documenting of the diverse contexts and experiences of young people globally as this process has already begun but still requires urgent strengthening and support (Cooper et al., 2019). This thesis contributes by documenting the experiences of young rural farmers which can be used for comparative purposes by other scholars. However, the author does not specifically form strategic alliances for this purpose. Academics have called for a more sophisticated comprehension of the youth's attraction towards agriculture in order to get a deeper appreciation of their motivations and (dis)inclinations towards this field, as this is instrumental and key towards crafting appropriate development strategies for alleviating poverty (LaRue et al., 2021).

Further, these scholars state that young people too have ambitions and aspirations to succeed in whatever livelihood strategy they choose for income generation yet there is limited research which has explored these concepts of motivation in relation to young farmers. To address this gap, the thesis explores youth interest and aspirations towards agriculture with a specific focus on young people who are already engaged in farming and excludes those who are not engaged in farming. A youth studies perspective that looks into the tripartite relationship between the future of food, farming and youths should encompass various fields as this helps in creating a better understanding of young people and their contradictory shift away from agriculture (White, 2012). This comes at a time when rural unemployment and underemployment are rampant, as well as reminds us of the necessity and entitlement of young individuals to be thoroughly investigated - not as targets but as active contributors, whenever feasible, in research. This thesis approaches youths as active agents towards their own development and investigates what young farmers envision for the future of farming.

Theoretical development in youth studies has marginalised the study of rural young people yet these young people as active agents in society move about from rural to urban areas through 'mobility imperatives' that allow them to access resources for the construction of their desired identities (Farrugia, 2016). There is a call for mainstreaming Southern African scholarship on youth as well as challenging and contesting what is currently recognized as knowledge on the experiences of Southern youth which is deemed worth sharing as this knowledge often shapes policies for youth development (Cooper et al., 2019). However, majority of studies on South African youth have been approached using Western European and North American theories (Cooper et al., 2019). This is despite the fact that these theories only contain partial components and not all aspects that speak to issues concerning youth in the Global South as they are mostly tailor-made for youth in developed nations yet youths globally do not have homogenous characteristics. These scholars therefore argue for the questioning of the universal relevance and applicability of such theories to youth studies in the South. Scholars writing on youth participation in the South propose the importance of understanding the relationship between youth and agricultural development as their active engagement and influence in the sector views them as competent citizens and not passive recipients in the food systems (Geza et al,. 2021).

For the purpose of this study, an African perspective to agriculture can prove useful to guide analysis, interpretation, and presentation of findings as it provides some ground to develop a critical and contextual understanding of Southern African youth agriculture and development discourse. An African perspective to agriculture acknowledges the important role played by agriculture as a key pathway towards economic development as a significant number of people earn their livelihood from agriculture (Abate et al., 2000; Jama & Pizarro, 2008; Wiggins, 2014). To take an African perspective to examine rural youth engagement in farming I ask: what have been the experiences of rural youth engaged in farming amidst agrarian transformation in South Africa? An African perspective can provide meaning to the complex nature of rural youth farming in a Southern African context. Such an approach allows for zooming into the dynamics that surround young Africans' farming practices and the economic importance of their engagement in agriculture. Given the stated youth disinterest in farming, such a perspective is critical for this study for the indepth analysis of youth aspirations within the context of African rural livelihoods. Further, an African perspective on agriculture allows the study to explore the role that agriculture

plays towards poverty reduction and questions agriculture's success at improving livelihoods in some settings and times and not others. It also offers investigative support towards analysing agriculture's potential contribution to the future development of Africa (Brzeska et al., 2012). Thus, a South African perspective on the potentiality of youth integration into agrarian development can be explored with a lens towards Africa's development.

An African perspective on agriculture analyses the social, political and institutional processes that affect agricultural outcomes on the continent as these have a major impact and influence on agricultural productivity (Binswanger-Mkhize & McCalla, 2010; Scoones et al., 2005; Wiggins, 2014). This allows for investigating all systems that support or thwart success in the agricultural sector for the young farmers. This is especially important to explore in the context of rapid agrarian transitions/reforms. This perspective acknowledges and argues that "Africa is different – in its geography, agro-ecology, history, politics and culture – and is immensely diverse. Yet generalised, ill-informed visions of development have dominated intervention strategies, backed up by narratives about "progress", "success" and "modern" farming" (Scoones et al., 2005, p. 2) which are rather generic and not appropriate to the African context. Thus, for this study, an African perspective allows for questioning rural youth farming practices in the context of the apartheid history, post-apartheid politics and youth culture of South Africa which inevitably shapes youth career paths. It encourages an understanding of the broad historical narrative which impacts farming in the different African countries in order to fully unlock farming's potential (Brzeska et al., 2012). This allows for a discussion and analysis on the role played by apartheid in shaping the present-day agriculture sector as well as the experiences of the young farmers studied in post-apartheid South Africa.

Proponents of African agriculture argue towards agriculture-led poverty reduction and development (Brzeska et al., 2012). An African lens acknowledges the active rather than passive role played by agriculture torwards boosting income, reducing hunger and improving living conditions thus creating sustainable livelihoods (Abate et al., 2000). Such a lens is a useful analytic tool for exploring how young farmers in Orange Farm utilise agriculture to boost income, alleviate poverty and enhance their conditions of living. Thus this thesis values the socio-economic impact

of agriculture and seeks to enhance understanding on young African farmers' practices as well as the factors that shape these engagements.

An African perspective understands and acknowledges the traditional nature of most African agricultural practices which involve use of small pieces of land, is labour intensive and utilises very little external inputs (Scoones, 2005). This is useful for analysing the largely backward forms of farming which utilise small pieces of land and minimal resources in the case studies explored by this thesis. Further, an African perspective appreciates the existence of African-owned state initiatives to boost agriculture and stimulate socio-economic growth this way (Brzeska et al., 2012). Thus, the thesis explores and questions the nature of South African state initiatives towards boosting youth agriculture as well as the accessibility and impact that these programmes have.

This approach also encourages debates that move beyond failures of past agricultural prescriptions on the continent towards "identifying and building on current successes and encouraging new and innovative thinking about future pathways and opportunities" (Scoones et al., 2005, p. 1; Devèze, 2011; Binswanger-Mkhize & McCalla, 2010). Such an approach is a key tool of analysis which this study uses to compare some successful global case studies to those of the youths in Orange Farm thus encouraging new innovative thinking towards the future of rural youth farming in South Africa. Further, this assists in the discussion and interpretation of findings on the impact of COVID-19 on the young farmers since it brought about a 'new normal' in agriculture. Key to this thesis is that an African perspective on agriculture questions "how to avoid the recycling and repackaging of old – and often failed – ideas? How to generate new thinking, rooted in African contexts and ground realities, which makes a difference?" (Scoones et al., 2005, p. 1; Sikora et al., 2017). This assists in exploring new ways of thinking about rural youth farming and development which are context-specific and relevant and can contribute to the discourse on young farmers.

Scholarly discussions using this perspective are clustered into three main categories which explore technical fixes (resources and technologies), market and institutional fixes (markets and institutions) and policy fixes (policies and policy processes) (Jama & Pizarro, 2008; Scoones et al., 2005). This guides the analytical angle this study takes by exploring the role of technology such as the 4IR and resource access; market access and institutional support as well as the role of

state policies and programmes towards supporting and empowering young rural farmers in South Africa. An African perspective towards agriculture argues that most often "the argument for technical inputs is derived from generic "expert" assumptions, rather than a detailed analysis of farm-level constraints, in particular livelihood settings" (Scoones et al., 2005, p. 2). Consequently, this thesis also questions and conducts a detailed analysis of farm-level constraints experienced by the young farmers within their livelihood settings. Lastly, an African perspective acknowledges that African farmers are faced with heterogenous conditions which impact their agricultural practices and outputs hence there is no one-size-fits all, generalized or a fixed prescription for how they should engage in farming (Brzeska et al., 2012). This is useful for this study as the thesis acknowledges that the experiences of the young farmers are unique to themselves and uses this analysis to contribute a unique angle to the discourse on youth farming and development. This approach is also used to analyse the impact of COVID-19 which was unique to the farmers and presented new ways of operating which affected the present and future of agriculture and rural youths' livelihoods.

To better understand rural livelihoods and the potential for development interventions scholars have called for an adequate intensive and extensive combined approach to understanding the external factors such as food prices and the labour market dynamics as well as internal factors such as ever-changing aspirations and traditions (Hajdu et al., 2020). A developing doctrine endorses the idea that the economy of rural areas – centered on farming but covering a broad range of other activities – will emerge as the perfect intersection of job prospects for countless young individuals in the long term. (Yoboah et al., 2020). However, scholars have highlighted that little is known regarding how rural youth in Africa engage in and get the most out of this process of rural transformation as well as the impact of social difference and gender in this process. In response, this thesis has specifically explored how rural youths engage in farming for rural development. There is a gap in evidence that highlights what has worked versus what has not worked in the various policy and program interventions that governments and development partners have initiated towards youth engagement in agribusiness across Africa (Yami et al., 2019). Further, it is not clear how effective government strategies towards attracting young people to farming have globally been (Pelzom & Katel, 2017). This thesis provides secondary data which unpacks these various policies and programs albeit from a South African perspective.

It has emerged however, that young people in SADC countries have no interest in continuing to engage in rural farming and have no aspirations towards remaining in rural lifestyles (Girard, 2017). Literature suggests that this disinterest is a result of the existing mismatch between rural youths' desires and their experiences with rural agriculture as they struggle to access modern farming technology which is believed to be a key motivator as young people view the manual labour associated with rural farming as backward, demeaning and dirty (Girard, 2017; Metelerkamp et al., 2019; Pelzom & Katel, 2017). It is argued that "ICT can effectively be integrated into agricultural development strategies as a means to attracting young people towards farming as ICT offers exciting, modern and advanced approaches to agribusiness making it easier for farmers to access loans, markets, market information amongst others virtually (Is et al., 2021). Studies have also shown that young people tend to lose interest in agriculture due to several challenges such as lack of quality farming land, farming infrastructure, funding and other farming resources and services (Eistrup et al., 2019; Ripoll et al., 2017; Sumberg et al., 2017).

The issue of youth access to farming land is a contentious one which has been debated broadly in academia. Some have argued that despite farming being a major source of employment opportunities for youths their low participation in agriculture is due to poor access to farming land via customary tenure regimes (Wuni et al., 2017). White (2012) has argued that the developing domain of youth research can aid in comprehending the youth's disinclination from agriculture, highlighting factors such as the diminishing skill set of rural youngsters and the declining significance of farming and rural lifestyles.Similarly, other scholars have called for a youth studies perspective that explores how youths might be best inspired and supported by understanding their attitudes and experiences in order for them to actively participate in agriculture for realizing a just food system (Metelerkamp et al., 2019).

In Ghana, the youths struggle to access farming land because the land is expensive for them to purchase as residential developers are also competing for the same land for infrastructural development purposes (Wuni et al., 2017). Meanwhile, traditional leaders are not willing to give young people productive farming land and these challenges are similar for youths in other African countries. In Ethiopia, it has been established that rural youths often get small pieces of agricultural land from their families making it impractical to conduct meaningful and sustainable farming livelihoods (Bezu & Holden, 2014). Rapid urbanization has also been blamed for the increasing

inaccessibility of agricultural land for young people as infrastructural development tends to be given higher priority status compared to youth farming ambitions (Bennell, 2007). It has also been highlighted that for rural youths in Africa, their traditional authorities tend to only release land to them when they are between 40-50 years (White, 2012). Such a long waiting period to get access to a decent sized productive farming land (communal resources) discourages some youths from remaining in the agricultural sector thus seeking alternative off-farm jobs as these rural youths do not have the money to purchase land. It is argued that "the collection, compilation, analysis and presentation of gender- and youth-disaggregated land reform statistics can play an important role in raising consciousness, promoting change, providing an unbiased basis for policies and measures, and monitoring and evaluating their impact" (Report of the presidential advisory panel on land reform and agriculture, 2019, p. 54). Though not focused on gendered agricultural practices, this thesis analyses and discusses general youth land reform experiences and statistics.

It has emerged that rural youths see farming as a poor rewarder hence they do not aspire to furthering their careers in agriculture nor appreciate agriculture as a livelihood strategy (Mathivha, 2012; Spore, 2000; Tafere & Woldehanna, 2012; Yami et al., 2019). Some scholars argue that agriculture in Africa requires transformation in order to be valuable and offer decent remunerative employment to youths (Yoboah et al., 2020). Research has however shown that there is a relationship between high agricultural productivity and youth interest in taking agriculture as a career option because rural youths who come from families or areas where there is high agricultural growth were seen to be more receptive to agriculture as a career option as they have experienced or witnessed its potential (Girard, 2017; Pelzom & Katel, 2017). Yami et al (2019) describe this as an issue of role modelling for young farmers in agriculture to inspire them. Thus, young people are argued to have future aspirations that are generally shaped by their traditional environment of living such that rural youths tend to envision possible futures with limited economic opportunities (Girard, 2017).

Some scholars have gone on to describe this 'youth and agriculture problem' as one that is either perceived as 'youth in peril' or 'agriculture in peril' (Sumberg et al., 2012) and a topical issue for discussion in development discourse (te Lintelo, 2012). There exists limited literature or academic material on youth and agriculture; youth in rural areas and youth agriculture training in South

Africa (Mathivha, 2012; Swarts & Aliber, 2013). Existing research on youth and the agriculture problem has been critiqued as being very weak, not theoretically and historically informed as well as lacking sufficient empirical evidence on farming schemes and training programmes (Sumberg et al., 2012). The positionality of youths in agricultural livelihoods is problematized as literature in the agrarian context has identified rural youth as a vulnerable group whose rights to land and water are not always guaranteed and are at the mercy of the older generation yet access to these key agrarian resources is seen as a source of retaining youths in farming (Djurfeldt et al., 2019). This key question of youth interest and its manifestations in farming has not been adequately discussed within the food system discourse (Metelerkamp et al., 2019).

White (2019) calls for incorporating the perspectives and concerns of young individuals into policy discussions, associations, and societal/political campaigns at local and national levels. This scholar also calls for creating more effective support structures and opportunities for growth within small-scale agriculture for rural youths thereby making rural areas more attractive for youths to live and work. Similarly, other scholars have argued for youth-inclusive sustainable agriculture which purposefully prioritizes resource access to youths in order to boost their agricultural produce and enhance their rural farming experiences as youths are seen as an untapped human resource in rural areas (Zulu et al, 2021). The focus should shift towards the creation of a more enabling and empowering environment that allows young people to actively engage in society without experiencing any obstacles (Geza et al., 2021).

For purposes of this study, youth empowerment is defined as "an altitudinal, structural and cultural process whereby young people gain the ability, authority and agency to make decisions and implement change in their own lives and the lives of other people" (Yusuf, 2017, p. 165). The progress of the farming industry in societies that are mainly based on agriculture, where the majority of rural households depend significantly on farming for their sustenance, is the key pathway out of poverty (LaRue et al., 2021). This, according to these scholars is because agricultural development generates positive spill-overs to the rural non-farm economy and jump-starts development as there is no region globally that has established an advanced economy without initially reinforcing its agricultural industry. The youth represent a significant prospect for agriculture transformation.

Scholars have also argued that youth participation structures for development require genuine approaches to participation so as to ensure greater success as most international development programs have been critiqued for leaning towards portraying an artificial sense of equity and democracy (Kwon, 2019; Scales, 2017; Willetts et al., 2014). There is a need to approach development through critically examining how youth agency is politically institutionalized. Currently, the literature on "youth attitudes, expectations and experiences of employment within South African agriculture" is thin and there is a call by scholars "for an improved understanding of the viability of an agricultural development agenda premised on the principles of "accumulation from below" (Metelerkamp et al., 2019, p. 3).

This thesis pays particular attention to young rural South Africans' attitudes, expectations and experiences towards farming. This discourse on youth attitudes towards agriculture is key to this thesis as the interests and engagements of the young farmers under study add value in advancing the argument this thesis makes on youth and agriculture. However, most of the existing discourse has been largely extracted from quantitative studies with very few qualitative studies having been conducted (Is et al., 2021). Instead, this thesis advances a qualitative approach. It is argued that more qualitative research is needed to also explain the role that media plays in influencing a youth perspective of the agricultural sector because a radio and television are known examples of good communication tools for rural young farmers (Nugraha & Nugroho, 2021; Is et al., 2021). This thesis explores the young farmers' engagement with social media in particular towards their farming journey.

There is also a dearth in research that analyses the education system and learning processes in agricultural sciences in South Africa and sub-Saharan Africa at large, yet identifying the challenges and opportunities in the education and training will allow for the creation of more capable agricultural professionals and improved systems (Kidane & Worth, 2012). This thesis explores the diverse agricultural skills training methods, knowledge sharing platforms and institutes both within reach and out of reach for the young farmers. Issues of education and skills training in agriculture have not been adequately evaluated and so there is a gap in knowledge on how effective these training programmes are especially in low-and middle-income countries

(Maïga et al., 2020). It is argued that the agri-industry urgently requires young Africans to be thoroughly and sufficiently trained in order for them to become equally competitive in the global agricultural village where farming technology has significantly advanced and where there is a general interconnectivity of farmers globally (Reinhardt, 2018).

Lastly, the South African agrarian discourse has been critiqued for its dearth in information on the coordination that occurs between urban farmers and their supporting organizations as the available scholarly material does not adequately interrogate the factors that facilitate this networking (Kanosvamhira, 2019). This discourse on urban farmers is also key to this thesis as Orange Farm (the area under study) has a mix of urban and rural dynamics thus introducing the phenomenon of peri-urban farming. Peri-urban agriculture's complexity is best understood as a segment of a more comprehensive spectrum of interactions between rural and urban areas (D'Alessandro et al., 2018). In the discussion around agriculture and food security, it is critical to explore peri-urban farming as scholars have argued that rural and urban features tend to co-exist within cities (Allen, 2003). Follman et al (2021) argue that conceptually it is impossible to spatially demarcate between urban and peri-urban agriculture versus rural agriculture in terms of the distance of each from city centres. The peri-urban interface contains complex rural-urban interactions and engagements where both lifestyles overlap (Lynch, 2005; Richards & Taylor, 2008; Thornton, 2008). Thus, the people living in peri-urban areas, their perceptions and practices often move in both directions within the urban-rural nexus. Scholarship which compares urban versus peri-urban dualisms has been critiqued for glossing over critical dynamics and engagements and relations that make up the interdependency and mutual constitution of urban and peri-urban spaces (De Bon et al., 2010).

However, contemporary urban scholarship has been critiqued for its focus on apartheid and post-apartheid periods in urban South Africa without thoroughly exploring the colonial legacies that have shaped this urban development and its governance strategies (Miraftab, 2012). This thesis analyses the impact of apartheid's legacy on the young farmers experiences. Looking at the historical trajectory of South Africa's agrarian question helps to answer the question posed by Walker and Cousins (2015) regarding to what extent can the past be held responsible for current obstacles within the agrarian terrain? Walker (2015) further argues that the country's dynamic, messy and complex history of land dispossession is still lingering on, is far from being adequately

dealt with and is long overdue for remediation yet existing agrarian reform policies simplify this history and display reluctance to accept this complexity thus limiting the depth of diagnosis as well as depth of solution to the problem.

The population growth in urban cities has presented opportunities for Urban and Peri-Urban Agriculture (UPA) to thrive as there is now a greater demand for sustainable food markets (Follmann et al., 2021). Urban agriculture is seen as a good strategy for improving food access, alleviating poverty and ensuring food security in urban areas that are food insecure and where the existing food systems are highly exclusionary (Beni & Adu, 2017; Siebert, 2019). According to D'Alessandro et al (2018) peri-urban farming has been described in some academic literature as n an essential origin of food for households largely due to the decline in household income of poorer urban dwellers and increased urbanization. Thus it is seen as playing a key economic role towards ensuring food security and as a feasible means of supporting oneself in response to intricate circumstances of peri-urban dwelling with its diverse uses of land and diverse characteristics of dwellers. However, Modernization proponents have been largely criticized by some scholars concerning urban agriculture since they believe that farming is backward and associated with lack of development (Rogerson, 1993). These same critics of Modernization thinking argue that this 'ruralisation of cities' within developing nations is not a consequence of increased rural-urban migration but rather a response by the urban poor to secure their livelihoods given the fluctuations of urban economies.

Existing literature on urban farming suggests that there exists three main interconnected themes which are "food security, employment and institutions" (Jacobs & Xaba, 2008, p. 190). Regarding food security, literature has shown that urban agriculture is a source of sustainable livelihoods especially for poor women (Mkwambisi et al., 2011). Supporters of urban farming are more concerned with the nutritional value which is provided to the individuals and communities involved in the farming. However, some scholars have argued that availability of food does not automatically translate to ease of access to the food by those who need it most (Ellis & Sumberg, 1998). Regarding employment, urban farming is at times the only major source of income for the urban poor (Zezza & Tasciotti, 2010). Regarding institutions, agriculture and land tenure policies and frameworks are at the centre of urban farming literature with a focus being placed on neo-

liberal policies as being favourable since they promote markets and view them as ideal institutions (Bourque, 2000).

Urban agricultural practices that have occurred in South Africa especially at the onset of independence have primarily involved informal cultivation done by marginalized groups who are often the most vulnerable, especially elderly women (Rogerson, 2003). However, apartheid policies for managing urban areas failed to address issues of the urban poor (May & Rogerson, 1995). Calls have been made to encourage urban agriculture in South Africa in an attempt to address poverty of the marginalized (Rogerson, 2003). However, UPA is still largely an understudied area in the Global South but now requires further investigation given the rapidly growing urban areas which require food security and sustainable livelihoods (Drescher et al., 2021). Further, what attracts youths to urban farming in South Africa is largely understudied (Chibanda, 2021; Mmbenga et al., 2021). Scholarly debates surrounding the land and agriculture status in South Africa post-apartheid have previously overlooked the role of UPA (Nieuwoudt & Groenewald, 2003). Some authors have highlighted that planning policies crafted by urban authorities in South Africa (in cities such as Durban) do not encourage urban farming in peri-urban areas (D'Alessandro et al., 2018). This is because they overlook the potential value it possesses towards alleviating poverty and ensuring food security, hence it is commonly disregarded as a peripheral or impermanent undertaking, which is unsuitable for the urban setting. This is similar to Lusaka in Zambia where urban municipality officials have been critiqued for viewing urban agriculture as a rural activity that is not appropriate in cities (Simatele & Binns, 2008). For Slater (2001) such condemnation and disapproval of peri-urban farming by urban authorities is engrained in a much deeper awareness by the authorities of their failure to ensure effective urban development .

Given the high levels of youth unemployment in Africa, scholars argue that rural-urban food supply chains are growing and can be used to cater for own-farming, as well as farm-wage labour for rural youths who are not located in the deep hinterland, to create better opportunities for themselves and sustainable livelihoods (Dolislager et al., 2021). Some academics argue that because land in peri-urban areas is often cheaper than in inner city, this makes it a viable space to conduct small-holder farming and other forms of urban agriculture for sustenance (Nieuwoudt &

Groenewald, 2003) which can be used as a traction to spur and incite youth interests in farming. The emergence of COVID-19 has also presented an opportunity for encouraging and supporting youth engagement in urban agriculture as the need to build resilient local food systems has been magnified by the pandemic, to which young people can participate for the strengthening of local food systems (Chibanda, 2021). Peri-urban areas often have good potential for agricultural productivity with their use of municipal land to conduct intensive forms of small-scale production for both local and distant markets (Cousins, 2007). However, despite the potential for peri-urban farming as a food security and sustenance strategy in Southern Africa, it is largely an underdeveloped and neglected sector (Lewis, 2011; Geza et al., 2021). Consequently, the most vulnerable people such as the urban poor and youths are marginalized from effective urban farming due to low access to the necessary key resources and inputs for successful farming. This results in low productivity of peri-urban agriculture and a greater reliance on government social grants and food aid as a survival strategy. Hence, those practicing peri-urban agriculture often lack commitment and easily abandon the trade once new opportunities for sourcing food arise.

Keenan (2007) argues that vast literature supports that urban agriculture is critical for ensuring food security of the urban poor as it complements rural agriculture whilst involvement of youths as a marginalized group in urban farming is an innovative approach to addressing the socio-economic decay. This is because it equips them with key skills for success in future food production, enables them to actively participate and contribute meaningfully to their community development. Despite agriculture presenting potential for youth involvement for sustainable livelihoods, youth in South Africa continue to be excluded from socio-economic opportunities and participation, thereby deepening their experiences of poverty and putting them amongst the poorest of the poor (Chibanda, 2021). Geza et al (2021) argue that agriculture is more than on-farm physical labour and that since opportunities for urban and rural farming also exist in food value chains and other support services which young people can engage in effectively, these economic opportunities need to be strengthened especially in rural South Africa where the economies are generally stagnant.

2.3 Agricultural Revolutions And Technological Landscape

This section discusses the evolution of technological innovation in the current agricultural revolution and its impact on the farming environment globally and in South Africa. A broader contextual analysis of previous farming revolutions shall begin as insight into this history sets the tone and assists in understanding the pattern, trends and dynamics of the current farming revolution. Industrial revolutions are characterized by great innovation and ingenuity that completely supersede existing and previous ways of doing things (Sihlongonyane et al., 2020). Scholars commonly combine and integrate the improvements in farming technologies and techniques with changes in land tenure in their definition of 'agricultural revolution' (see Wickins, 1989, for more detail). Similarly, this section discusses the agricultural revolution which is about enhancements in output and modifications in farming technique as well as the agrarian revolution which is about land ownership and rural societies as these two are interlinked in this thesis. This section of the thesis departs from an argument made by Webb (2000) that there is a need to revisit the idea of a revolution in agriculture arguing that this change should ideally be for the betterment of society. This scholar further argues that a South African agricultural revolution should go beyond just boosting agricultural production and take into account the well-being of those who depend on agriculture for their living, as well as the society that depends on it.

Academics have been making strides towards exploring the changes that are occurring in agricultural food systems caused by disruptive technologies looking at current and future trends in food production, storage and packaging, resulting in the use of terms such as digital agriculture, big data, digital food and the agility of global food systems to describe these changes (Chapman et al., 2020). However, for Dunga (2019) the agricultural technological revolutions have since the beginning improved the lives of first-movers who had the resources to adapt quickly whilst the poorly resourced individuals mainly at the peripheries of poverty have failed to adapt. This is because these technologies have meant that the poor have to either trade-off their basic needs of food, clothes and accommodation in order to acquire the technologies due to the high cost of the technologies for the average person. Hence, they have gotten left far behind and gotten poorer as technology advances swiftly thereby widening the gap between the rich and poor. Similarly, Mamphiswana and Bekele (2020) highlight that in the first, second and third industrial revolutions, Africa and poor people have remained 'technology colonies' mostly supplying the low cost labour

required to extract raw materials and have been less involved in the manufacture or processing into final products. This implies that only a small portion of the population engages in economic activities, leaving a significant number of potential workers such as the youth outside the workforce. This is despite the fact that this youth bulge could be capitalised on to propel development as has been the case in China.

The First Industrial Revolution was characterized by the use of water and steam to generate power for mechanization of production processes in factories (Xu et al., 2018). In Agriculture this first revolution which occurred from 1780 was concerned with ensuring self-sufficiency within farming (Ane & Yasmin, 2019) and transitioning from man power to animal power (Rasmussen & Stone, 1982). The first revolution marked an initial shift from subsistence farming to farming for the market although the cultivation methods used and the way the farms were physically organized or designed did not change (Thompson, 1968). In developed countries, the success of the first industrial revolution which advanced rural communities and transformed traditional farming was only experienced after other key elements were met without which this revolution could not benefit the masses nor transform the lives of the average man (Dunga, 2019). For example, prior to its success in Central and Eastern Europe, this first revolution was initially critiqued for being an ideology that was externally sourced, imported, and enforced without consultation of local farmers, with its state proponents aiming to modernise agriculture through "socialist collectivisation" (Silviu, 2006). However, the ideological concept failed right from the outset due to inadequate state incentives, flawed farming policies, and the strong attachment of peasants to their land, resulting in their reluctance to adopt the concept. Only when the state introduced unfavorable farming conditions did many peasants abandon agriculture and take up industrial jobs.

The Second Revolution occurred from 1810 (Ane & Yasmin, 2019) and was characterized by the use of electricity to provide power to allow for mass production processes (Balkaran, 2017). In Agriculture this second revolution saw a transition from use of animal power to mechanical power for enhancing food processing and storage technologies, increasing quantity and quality of produce through improving seeds, fertilizers, irrigation systems amongst others (Rasmussen & Stone, 1982). The second agricultural revolution fundamentally transformed the farming industry by dismantling its self-contained system and bringing it more in line with the operational practices of

factory owners. The agricultural industry evolved from an extractive model that continuously replenished what it extracted into a manufacturing model during this revolution. This marked the commercialization of agriculture, where farmers had to take on a more managerial role to ensure productivity and self-sufficiency of their farms (Thompson, 1968).

In the second revolution, the extreme state measures that had previously been imposed in the first agricultural revolution in Central and Eastern Europe eventually led to successful crafting and implementation of land property rights in a bid to protect landowners and boost the agriculture sector (Silviu, 2006). Africa on the other hand has failed to effectively and widely implement the changes required for successful implementation of this revolution as well as to implement the technologies brought about by all agricultural revolutions for the equal benefit of the masses such as smallholders (Beattie, 2008). This is because the introduction of new technology, especially in the short-term, will not bring about a significant transformation on its own until other structures such as access to markets and improved transportation systems are implemented to ensure that the new technologies are not under-utilised (Beattie, 2008).

The third industrial revolution in agriculture (3IR) occurred from the late 1960s and introduced the use of electronics and information and communication technology (ICT) to create automation in production processes (Ane & Yasmin, 2019). In Agriculture, this third revolution was concerned with enhancing production through improving crop varieties, expanding efficient farming infrastructures, incorporating ICT into farming technologies, improving access to markets, improving farming policies and the administration of modern farm management (Pingali, 2012). According to Thompson (1968) the labour of men was replaced by machinery. This revolution was believed to have widely reduced poverty and deterred hunger for millions in developing countries (Pingali, 2012) although more recent scholars argue otherwise as shall be discussed later in this section. According to Thompson (1968) even though the three agricultural revolutions are conceptually distinct, they were unlike political revolutions as they cannot be neatly classified into chronological periods. They have tended to overlap although they were more distinct in Britain than most countries. Thus many farmers were still using some of the features of these revolutions and not all of them at once with the exception of a few technologically advanced farmers who were far ahead.

Thus, though beneficial towards economic expansion, the 3IR has been a double-edged sword that has marginalised the already marginalised populations further and severely exploited their labour whilst the wealthy increased their wealth due to access to the necessary capital for adaptation of technology (Moll, 2021). For example, rural people experience barriers to accessing digital technologies due to the low and poor ICT infrastructure in rural areas, the high cost of the technologies, low income which often leads to lesser education and skills for using the technologies as well as awareness of new technologies (Ismoilov, 2021; Koutsouris, 2010; Upadhyaya et al., 2019). It has also been suggested that broadband network providers are not interested in offering their services to rural areas due to the fact that these people are widely dispersed and also would have lower uptake due to the costs associated with ICT hence the digital gap continues (Akca et al., 2007).

The 3IR has been criticised for smallholder farmers being unable to equally compete with bigger farms due to poor access to the farming technology hence increasing the gap between advanced farmers and smallholder farmers (Jellason et al., 2021). Consequently, the latter have become more marginalized whilst the former have technologically and financially advanced significantly due to easier access to the technologies. These authors argue that in sub-Saharan Africa the 3IR in agriculture has failed to achieve its goals of improving yields for smallholder farmers because the farmers were not consulted prior to introduction of the new technologies yet they were the ones expected to use the technologies. Thus, the imposition of these Western-type technologies was not suitable for farming systems in sub-Saharan Africa along with the high input costs. Therefore, the core argument is that "past phases of the industrial revolution have not yet reached many of the world's citizens who still do not have access to electricity, clean water, sanitation and many types of capital equipment taken for granted in advanced economies" (Guliwe, 2019, p. 15). African nations lack the capacity to make the transition to a Fourth Industrial Revolution (4IR) economy, and even the most technologically advanced countries on the continent, like South Africa, are behind developed countries.

Though the 3IR was introduced and marketed as a pro-poor method to advancing smallholder rural agriculture through improved farming technologies in a bottom-up approach to economic

development (Breisinger et al., 2011), in Sub-Saharan Africa this revolution has actually not yet taken off successfully. This is because the prerequisites that are necessary for its effective implementation are missing, hence the continent has failed to successfully immerse itself in this agricultural revolution (Oladele et al., 2010). This revolution has required heavy public investment, and pro-rural development policies that enable smallholder farmers to access modern farming technologies and resources, easy access to agricultural extension services for support, access to markets and financial services (Diao et al., 2008). However, this has failed in Sub-Saharan Africa compared to the successes experienced in Asian countries due to institutional challenges such as high levels of corruption, poor infrastructure and lack of will by the state to facilitate easier adoption as these are necessary prerequisites for successful implementation of such technologies (Mhlanga, 2021; Oladele et al., 2010; Zambon et al., 2019). Technological agricultural support should be in the form of economic policies that benefit rural areas as most rural families have experienced stagnancy in agricultural productivity resulting in increased rural-urban migration to escape rural famine (Amin, 1990).

Also, the technologies utilised in this revolution are argued to be developed without the consideration of local agro-ecosystems thus making them inappropriate for use by the local farmers (Oladele et al., 2010). Further, the smallholder farmers possess low skills or expertise for operating the technologies due to little exposure (Breisinger et al., 2011). This often results in poor management and ineffective implementation forcing the farmers to revert back to the traditional small-scale and basic technologies that they are familiar with. Despite the existence of advanced farming technologies in the 3IR, yields by smallholder farmers are generally far below their potential (Ariga et al., 2019). This is because use of modern inputs is still very low and exacerbated by underdeveloped markets and poor access to extension services to assist in the adaptation and use of these technologies. Some scholars argue that policymakers and development partners have neglected African agriculture hence the poor results despite existence of advanced farming technologies in the industry as these do not reach all farmers equally (Diao et al., 2008).

Grassroots level challenges experienced by farmers in Sub-Saharan Africa to implement the technologies brought about by the agricultural revolutions are largely resource-based as the technologies are often very expensive for smallholder farmers to acquire (Ariga et al., 2019). Poor

access to advanced farming inputs by poor smallholder farmers has resulted in them being unable to compete with the global economy whilst wealthy farmers and large corporations advance forward during these agricultural revolutions (Beattie, 2008). Thus, poverty has actually not been reduced but exacerbated by these technologies particularly in the sub-Saharan region where the greatest concentration of poverty exists compared to anywhere else in the world (World Bank, 2018). This increase in capital-output ratios means that the poor rural farmer cannot afford to adapt such technologies due to the high costs of adaptation (Soeker et al., 2021; Webb, 2000). However, for Wickins (1989) an increase in the area cultivated as well as the capital injected such as what occurred in South Africa's agricultural revolution is not necessarily an accurate depiction of agricultural progress. This is becuase capital can be underutilised and land misused. Instead, using improved yields per hectare as a measure is more appropriate.

Changes occurring in the South African agricultural space ought to be analysed alongside the wider global agricultural revolutions landscape where a decreasing number of farmers are feeding an ever-increasing population (Jones, 2000). Some scholars have highlighted that the major agricultural revolutions have historically been unknown to most South Africans (Jones, 2000). Webb (2000) argues that in South Africa the transition from the first to the third agricultural revolution happened specifically on farms owned by white individuals who are considered as the commercial segment of the agricultural economy. This has led to to an increase in land price, land value and capital formation over time, resulting in these farmers becoming extremely prosperous and possessing significant political influence. Similarly, research conducted by Soeker et al (2021) has shown that the implementation of advanced farming technologies in South Africa has been largely enabled due to most commercial farmers being white and well-resourced. Meanwhile, black farmers mostly engage at subsistence level and utilise less advanced farming technologies due to poor access to resources thus rendering the farming sector racially unequal when it comes to access to and readiness to implement emerging agricultural technologies.

Jones (2000) argues that without massive government support it is impossible to successfully adapt new technologies from emerging agricultural revolutions. This is because successful South African farmers have historically required and received intensive capital injection from the state in order to adapt to newer farming technologies in the first, second and third revolutions. Jones (2000, p.

184) further argues that "what is important is not government intervention per se, but the kind of government intervention that takes place and how effective it is." The results from government interventions by developed countries have been more successful than those of most developing countries with the exception of South Africa whose government intervention was successful though unfairly, disproportionately and unjustly distributed. Black agricultural practitioners have not shared nor benefited proportionately in this revolutionary progress due to the political racial bias which has subordinated the rural areas and reserves, albeit, the black farmers are blamed for poor farming practices such as cattle over-grazing causing soil erosion (Wickins, 1989).

The 3IR has actually further marginalized rural farmers and limited the competitiveness of smallholder farmers whilst well-resourced farms with the financial muscle and access to advanced technologies have progressed their farming greatly creating wide polarity between the haves and have-nots of farming (Malo, n.d ; Pingali, 2012). Webb (2000) argues that in South Africa, despite these advancements, the general population's overall well-being has not been significantly improved through reduced food costs. A study on the impact of technological advancements on poor households in South Africa showed that due to the meagre incomes of these families, technology in its basic forms such as televisions and cell phones are purchased at the expense of other key basic needs (Dunga, 2019). This trade-off has led to deeper poverty for these households resulting in them being further marginalized. These experiences are by far different to those of well-resourced white commercial farms in the country whose owners can afford newer and more advanced technologies as discussed earlier.

Due to poor access to farming resources and advanced technologies, participation by young rural people in farming has been largely circumstantial and less aspirational as most youths enter farming out of lack of career options, leading to them often relocating to urban areas for a 'better life' once the opportunity arises as they are fleeing poverty which farming offers no prospects of escaping (Geza et al., 2021). For White (2020), to understand how young people are excluded from farming, it is important to understand the distribution and ownership of agrarian resources as this impacts on the intergenerational transfer and generational renewal of the sector by young rural people as they realize or halt their aspirations towards farming. In response, this thesis explores young farmers access to and ownership of agrarian resources.

Poor and limited infrastructure along with low access to inputs and resources in the 3IR has hindered youth success in farming resulting in meagre revenues (Kwenye & Sichone, 2018). Sub-Saharan youth have also faced continuous challenges in accessing markets for their produce as well as challenges accessing training and extension services for enhancing their farming skills and expertise (Bezu & Holden, 2014; World Bank, 2021). According to White (2015) in most countries access to farming land is beyond the reach of many young people thus discouraging them from continuing on the agricultural path as access to key resources necessary for their breakthrough are limited. Young people are a diverse group with diverse backgrounds and aspirations therefore sustainable youth engagement requires a multifaceted and cohesive approach although efforts to achieve this continue to be disjointed, unsystematic and in bits and pieces (Giuliani et al., 2017).

The neglect of youth and poor resource allocation towards their farming practices has resulted in young rural farmers producing low economic returns despite their active engagement within the trade yet a country's economic development relies on a viable agricultural sector which fosters effective youth participation and engagement (Kwenye & Sichone, 2018). Further, young people have been largely neglected by government programmes that cater for smallholder farmers support thus further alienating young rural farmers from any forms of work on the land as these many barriers to entry continue to leave no provision for the next generation nor any options for potential success in young people's farming futures (White, 2020). Further, policy food systems and value-chain activities have remained skewed against young people thus crippling youth participation in agriculture (Mujčinović et al., 2021).

For Geza et al (2021) youth perception about agriculture's capacity to improve their livelihoods has been largely pessimistic and their involvement in agriculture has been minimal because the existing agricultural programs have not sufficiently addressed the structural issues that impede youth participation and incapacitate them from thriving. The 3IR in farming has failed to address these obstacles despite the fact young people have great potential and qualities of physical strength, innovation, are less risk averse, have high skills aptitude, have flexibility and quick technological adaptability (Kwenye & Sichone, 2018). When nurtured and utilized effectively these will ensure transformation of the agriculture sector and development of rural areas.

These challenges experienced by young rural farmers are evidence of a continuous existence of grassroots obstacles which require intervention and sustainable solutions in order for new farming technologies and revolutions to benefit all farmers at all levels. More than half of the population in sub-Saharan Africa is dependent on subsistence farming as their only source of sustenance yet thus far the 3IR has not materialised due to low government investment towards agricultural infrastructure, research and technology (Cheru et al., 2013). According to Amin (1990, p. 4) Africa has not yet initiated its agricultural revolution, which is a prerequisite for any subsequent stage of development and "achieving the agricultural revolution is the priority target for decades to come". Since the 1970s Africa has experienced a sharp decline in agricultural productivity due to increased costs of inputs in the midst of climatic changes and soil destruction from poor farming techniques (Gakou, 1987). Thus the agricultural revolution in rural areas requires technical and social industrial support (Amin, 1990) to radically transform and strengthen the capacity of agriculture. It is against this background of poor agricultural development, poor access to critical resources and infrastructure in Africa by rural and youth farmers in the 3IR that this thesis argues for a youth-inclusive agrarian transformation at the wake of the 4IR in agriculture.

The 4IR was initiated from 2011 (Ane & Yasmin, 2019). According to Araújo et al (2021) the major 4IR application domains in agriculture are Monitoring (crop monitoring, soil monitoring, weather monitoring, animal monitoring etc), Control (controlling irrigation systems, fertilization systems, smart greenhouses, harvesting systems, weed, pest and disease control), Prediction (predicting weather conditions, agricultural production yields, crop and animal development, market demand etc) and Logistics (handling and storage, transport and distribution, supply chain management, provenance traceability etc). The 4IR is a solution to current and future food challenges as it allows for sustainable intensified agriculture which is a solution to the world's 'perfect storm' of an increasing population and an increasing demand for food alongside global environmental challenges (Barrett & Rose, 2020). The 4IR in agriculture boosts yields, is more efficient, and significantly reduces physical labour as machines do the work. For example, in Nigeria a start-up called Zenvus is being used to measure and analyse soil data to assist farmers to apply the right quantities of fertilizer and for optimal irrigation of farms (Ndung'u & Signe, 2020). Robots in the 4IR are being used to plant, harvest, supply water, spray specific targets, monitor the

environment, accurately predict agricultural data, detect diseases, control weeds and pests amongst others in a more efficient way than technologies in the 3IR, thus assisting farmers with decision making (Araújo et al., 2021). Robots are being used in France to prune grapevines whilst special technology algorithms are being used to make decisions on which stems should be cut whilst in Japan special machines are now being used to pick strawberries every 8 seconds based on their colour variations (Guliwe, 2019).

Most literature on the 4IR in agriculture centres on developed countries with a gap in Sub-Saharan African discourse on the subject (Ayentimi & Burgess, 2019; Jellason et al., 2021). However, in Africa, some academics have thus far documented the use of farming mobile smart applications which is more in line with the 3IR and less on the 4IR (Demenongu et al., 2018; Emeana et al, 2020; Rioba, 2018). This thesis contributes to the knowledge gap by exploring how the 4IR is understood, is manifesting and is utilised by young farmers within South Africa's agrarian context. It is argued that the existence of digital technologies in agriculture is opening up opportunities for smallholder farmers to partake in the digital farming system (Ismoilov, 2021). This scholar further argues that since an approximate 70% of people in developing nations who belong to the poorest 20% have access to a mobile phone this is a start towards integrating these poor and rural populations into agricultural digitalization. More literature and policy discussions on the implications of 4IR in Africa are required as such debates are key in shaping an understanding of the continent's future (Wim, 2017).

However, being a fairly new term, "the fourth agricultural revolution is, as yet, ambiguous and loosely defined, often used interchangeably with 'smart farming', 'precision agriculture', 'digital agriculture' and other similar terms. Academics using the phrase have struggled to define it and delineate exactly what type of innovation pathways are being articulated" (Barrett & Rose, 2020, p. 2). Some scholars have argued that the growth of ICT during the digitalization of technology in the 3IR lays crucial groundwork for the onset of the 4IR, which relies heavily on advancements in ICT capabilities (Ayentimi & Burgess, 2019). This allows for a fusion of computational power and emerging technologies and has the potential to revolutionize social structures, work processes, and job markets. Similarly, Moll (2021) argues that the transformations in the 21st century are primarily a continuation of the ongoing development of the 3IR, and there is currently no indication

that the 4IR is imminent. Further, some scholars argue that the 4IR should not be termed a revolution as its emergence would not have been possible without the 3IR and its ICT thus there exists debates and tension as to whether the 4IR constitutes technological continuity or technological disruption (De Propris & Bellandi, 2021). Other scholars even argue that the 4IR is "the second wave of the internet" as digital connections between people and things have increased (Jegede & Ncube, 2021, p. 675).

What the 4IR might mean and might deliver for South Africa has not been adequately explored in literature although the concept itself is critiqued for emerging from poor or insufficient historical analysis to learn of its potential economic disruption (Sutherland, 2020). Thus one can agree with Sutherland (2020) that indeed the 4IR is by far a 'futuristic concept' for South Africa which is way ahead of its time and one that will require an alignment of skillsets to keep up with the fast-paced global developments (Mpofu & Nicolaides, 2019). Rossouw (2020, p. 79-80) has also argued that for South Africa the 4IR is a "seemingly futuristic concept" to be treated with caution as the post-apartheid government "has by now quite a record of obfuscating deep structural problems and poor policies with conceptual buzzwords", benefitting a few black political elites whilst the majority of black people lack "the necessary networks and connections to be "empowered". Further, it is argued that the 4IR suffers from "conceptual shallowness" thereby raising questions as to the post-apartheid state's ability to engage with this revolution for the benefit of all citizens yet it has a track record of failure. Similarly, other scholars argue that the 4IR is likely to be yet another 'elitist initiative' which will only benefit the few in South Africa and will take long before it can benefit the masses (Sutherland, 2020).

Ndung'u and Signe (2020) also argue that Africa has lagged behind in previous industrial revolutions, raising questions as to whether this time it will successfully implement a digital revolution with the 4IR. Similarly, Guliwe (2019) argues that despite the fact that developing nations should adapt to the 4IR or be left far behind, Africa is largely still struggling with bread and butter basic challenges such as poor access to water, electricity, internet amongst others making it difficult for the continent to adopt the 4IR in the near future as this revolution requires heavy investments which are not a top priority for Africa at the moment. Africa's preparedness for the 4IR has been questioned with scholars arguing that Africa still needs to build its technical

capabilities; otherwise, it will remain a passive recipient rather than an active participant in the revolution (Okoye et al., 2020). Iraki (2018) argues that regarding whether Africa is prepared for the 4IR the existing anecdotal evidence suggests that the continent is still unprepared and yet to catch up with the developed nations in terms of the proliferate implementation of the earlier three revolutions as it still has limited industrialization.

Similarly Cilliers (2018) argues that r ather than making progress, Africa is slipping even further behind the rest of the world economically as the technology gap widens thus further marginalizing poor nations and poor citizens. 4IR as a concept has prerequisite skills that are necessary for its success as its introduction has brought forth a "survival of the fittest" socio-economic mode which requires proactive engagement in order to narrow the already existing technological gaps which previous revolutions have failed to address (Modiba & Ntshangase, 2021). The potential success of 4IR has been questioned as African agriculture is largely characterized by rain-fed primary agricultural production, weak and mismanaged institutional structures and low technological innovation which have existed in the 3IR (Ayentimi & Burgess, 2019). Most of sub-Saharan Africa's rural smallholder farmers are poor, have low incomes, little access to resources such as capital, markets nor crop insurance to allow them to invest in high cost modern technologies which have been the norm in the 3IR (Jellason et al., 2021).

Although little research has been done that examines South Africa's readiness for the 4IR, the existing research indicates that the country like other developing nations is far from ready (Jegede & Ncube, 2021). Others argue that the 4IR will not succeed as South Africa lacks a common national ideology or cultural agenda (like Israel and China) that drives the receptiveness and oneness to implementing such advanced technological innovations (Sirayi et al., 2021). Some scholars question the potential success that the adoption of 4IR technology in South Africa will have towards addressing poverty, unemployment and inequality due to the complex economic base with inadequate IT infrastructure and skill-set shortage for digital technologies (Olaitan et al., 2021). For example, the education system is instrumental to closing the 4IR gap yet the higher education system in South Africa is not ready for implementing the 4IR curriculum due to the poor implementation of the massive infrastructural resources required and the high cost associated with

it, yet there is a need for graduates with the relevant skillset for the 4IR (Modiba & Ntshangase, 2021).

The debate on Africa's readiness for the 4IR can be divided between those that see its possible benefits given Africa's young population versus those that anticipate a negative outcome where the rich will only get richer (Ayentimi & Burgess, 2019). Given that demographically sub-Saharan Africa is the youngest region as more than 60% of its population is under 25 years, this creates an opportunity and potential for the 4IR to be used to advance social and economic development and competitiveness of the continent (Ayentimi & Burgess, 2019). According to Emmanuel et al (2020) an agricultural transformation and industrial revolution will modernize the sector, add value to the produce, increase yields and consequently lift rural smallholder farmers out of poverty whilst attracting young farmers and reducing youth unemployment, thus is a potentially successful economic development path. Similarly, Ayentimi and Burgess (2019) argue through the optimistic lens of technological advancement, that the 4IR presents boundless possibilities for the economic transformation of Africa. This is especially true for the informal sector, which is largely comprised of small and micro enterprises and agro-processing businesses. With the integration of fundamental technologies, these enterprises can expand and become more competitive. In Africa agriculture is a more efficient means of reducing poverty compared to other industries and the 4IR offers an opportunity to boost agricultural productivity and growth as research has shown that this growth can significantly reduce poverty (Cilliers, 2018).

In South Africa these debates need to specifically be about how the country can improve existing systems to create a conducive environment for catching up to and implementing 4IR to advance the nation (Balkaran, 2017). Sutherland (2020) points out that what the 4IR might mean and might deliver for South Africa has not been adequately explored in literature although the concept itself is critiqued for emerging from poor or insufficient historical analysis to learn of its potential economic disruption. Though this thesis does not focus on what the 4IR might mean for South Africa, it does however explore what it means for young rural farmers and their ability to access 4IR resources. Scholars have highlighted that in the context of South Africa there is still low use of 4IR technologies although "unmanned aerial vehicles (UAVs) are increasingly being used for fertilisers and chemical spraying. UAVs, in combination with smartphone platforms to provide

remote sensing data, also use global positioning systems (GPS) for digital soil mapping for various environmental and agricultural development purposes" (Jellason et al., 2021, p. 3). Scholars argue that in the context of South Africa such disruptive and cutting-edge technology should equally permeate rural areas as this is not yet the case in order to create opportunities for them and make them more competitive and increase their livelihoods through smart working but should be done without compromising the rich rural cultural heritage and ecosystem (Sirayi et al., 2021).

Technology scholarship has raised concerns that emerging technologies often have unintended consequences on society yet the unequal impact that the 4IR technologies will have on different groups of society has not yet been clearly articulated in literature (Barrett & Rose, 2020). Academic debates have argued that there is always winners and losers where disruptive technologies are concerned and more often than not it is the poor who are widely the losers as they have limited resources to partake in these technologies, thus further widening the economic inequality gap (De Propris & Bellandi, 2021). Rotz et al (2019) critique that the new agricultural technologies are being introduced and used for individual gains and profit by the already established farmers who can afford them and are not being used for the uplifting of poor and vulnerable farmers in the industry who are already excluded from significant economic gains through farming. Due to the existing digital divide, rural people are far removed from access to the fast-paced agricultural technologies that now exist due to financial constraints as well as have limited network coverage in rural areas (Ismoilov, 2021). Digital inclusion in rural agriculture can only be achieved if some key elements are in place such as easier access for both individuals and communities to digital tools and services, training and capacity building (Upadhyaya et al., 2019). Further, sustaining this digital inclusivity requires provision of economically relevant content and lowered cost of access for the benefit of all, including vulnerable groups such as youth and women (Upadhyaya et al., 2019).

Rural areas, poor people and poor regions remain marginalized as the gap created by digital technologies widens through uneven access, thus calling for intervention by public policymakers to achieve inclusive economic growth yet currently not much is known regarding how these public policymakers are responding to these 4IR technologies in developing countries (Lele & Goswami, 2017). African businesses mostly less financially sound than those in developed nations risk

lagging behind regarding global competitiveness if they fail to capitalize on 4IR opportunities (Ndung'u & Signe, 2020). Adaptability is key in the future of work and questions have been raised as to the preparedness of Africa's education and training in order to address the futuristic labour requirements which will be brought on by the 4IR as these are not clearly defined in literature (Cheong, 2019). Scholars have raised questions as to the relevance and prospects of 4IR in sub-Saharan Africa and whether Africa can fully participate in the 4IR when the continent has a big informal sector, constrained public infrastructure, low technical skills, limited advanced technology dominated largely by foreign multinationals and a predominantly young population (Ayentimi & Burgess, 2019). Institutional environments that support the digital ecosystem and culture brought by the 4IR are still lacking in most African economies as Africa is still grappling with existential social problems such as poor health care, poverty, ethnic clashes amongst others thus putting the continent in survivalist mode which excludes technological global competitiveness (Okoye et al., 2020).

Bridging this gap through improved access to the internet and other technological tools will help rural farmers remain competitive and improve their farming experiences as they will acquire new skills, be able to access extension services and inputs easily compared to when they do not have access digitally (Akca et al., 2007). Some scholars have argued that the persistent digital divide is multifaceted, intricate, and constantly changing, which reflects broader socio-economic and political inequalities and should not be treated as a simplified lack of access to emerging technology (Koutsouris, 2010).

The marginalization of rural people from farming technologies is captured in literature through descriptions of the rural landscape using terms such as "the minority, the undeserved areas, the economically disadvantaged, the economically depressed" (Akca et al., 2007, p. 405). These terms are problematic as they characterize rural areas by the challenges they encounter thus subconsciously making it acceptable for these areas to be in the backward state they are often in. As the digital revolution in agriculture advances, critical questions have been raised as to the implications of these disruptive technologies for rural spaces whose farmers are already marginalized, arguing that these technologies also further entrench the marginalization of the rural poor in the farming sector (Rotz et al., 2019). This view which diverges from the optimistic view

on emerging farming technologies argues that the socio-economic racially skewed inequalities experienced by rural farmers in previous revolutions will only be further entrenched (Koutsouris, 2010). This is because the new opportunities created by digitalization only benefit the wealthier farmers who can afford to have access to them whilst the digital exclusions widen between rural smallholder farmers versus advanced farmers.

However, there is not much that is known regarding how technology that is emerging from the 4IR is affecting young farmers as well as its impact on their decision-making to pursuing farming as a career (Ballaro & Moriarty, 2019). There is a gap in the documentation of experiences by young poor farmers in rural areas regarding their engagement with agriculture in the 4IR yet 4IR is believed to completely transform rural life and rural agricultural production, distribution and consumption (Sung, 2018). As stated earlier, this thesis explores this gap by investigating young farmers' knowledge, access to and engagement with the 4IR. Rural areas, poor people and poor regions remain marginalized as the gap created by digital technologies widens through uneven access thus calling for intervention to achieve inclusive economic growth (Lele & Goswami, 2017). It is argued that exploring the impact of 4IR technologies towards igniting youth interest in a career in agriculture will bring to light potential solutions to how best young farmers can be lured and retained in farming amidst the global diminishing generational renewal in agriculture to secure food of the future (Ballaro & Moriarty, 2019). Thus far it is noted that approximately only 8% of millennials have an interest in an agricultural career as majority find it unattractive and backward (Cubbage, 2019).

It is imperative that a definition of millennials is given at this point as this shapes the argument the thesis makes for a youth-inclusive agrarian transformation. There is no agreed upon definition of millennials (also known as Generation Y) as some state that this is the generation of people born between 1980-1992 whilst others state that their year of birth ranges from the mid 1970s to the early 2000s (Bannon et al., 2011). Others have approximated this generation to have been born between 1980-2000 (Eastman et al., 2014). For some scholars, millennials fall in the 1981-1996 category (Dwivedi & Lewis, 2020). It has been argued that it is important to understand the employment needs of millennials in order to boost their morale, retain them as well as boost their efficiency within the workplace as they are proficient in incorporating technology into the

workplace (Bannon et al., 2011). Other scholars have described them as being a digitally immersed "net generation" with potential to be the greatest generation who are equipped with all the necessary tools for securing the future of the world (Hershatter & Epstein, 2010, p. 212). Other authors have described them as being the "first high-tech generation" born into a world of strong use of technology and social networking connections (Eastman et al., 2014, p. 455).

With the global average age of a farmer being above 50 years, scholars reason that these millennials (Generation Y and Z) should be incorporated into farming as part of the youth farmer regeneration as they possess potential to transform traditional or conservative agricultural practices into modern techniques that provide greater economic benefits (Is et al., 2021). Young people are by virtue of their youth the most vibrant population group which has the capacity to utilise technology for societal development (Odey et al., 2020). For Sung (2018) most young people are not interested in agriculture because it is associated with backwardness and so 4IR is being used especially in first world countries to address this generational gap that is being created by scaling commercial agriculture through a combination of mechanizing, automating and modernizing the sector (Sung, 2018).

Discussions are being called for which explore young people's technology needs as well as calls being made for research agendas that incorporate the youth themselves given the rapid growth and use of technology as youths are believed to be the future, yet the world of research has excluded them from the process (Cowan et al., 2021). This thesis explores young rural farmers' technology needs alongside their farming aspirations. Studies indicate that younger and better-educated farmers are more inclined towards embracing modern agriculture 4.0 technologies and practices (Jellason et al., 2021). This co-production of knowledge on the youth with the youth will help youths to shape the future that they want through technological redistribution as they possess valuable knowledge and experiences (Cowan et al., 2021). This comes at a time when youth marginality in contemporary Africa raises key questions about the impact of globalisation and citizenship on youth agency (Rashid, 2020).

Some scholars argue that more literature and policy discussions on the implications of 4IR in Africa are required as such debates are key in shaping an understanding of the continent's future

as the youth are the future (Wim, 2017). "The image of farmers, who are too often viewed as 'behind the times', is changing" with the emergence of many digitally connected agricultural start-ups in Africa (Châtel, 2017, p. 4). This is presenting exciting opportunities in agriculture for youths with Ghana, Tanzania, Kenya and Nigeria being notable examples where young farmers are engaging in digital agriculture for online trading and access to timely agricultural information. This digital agriculture is being conducted especially through mobile phones using farming mobile smart applications (Demenongu et al., 2018; Emeana et al., 2020; Rioba, 2018).

Agriculture in Africa is seen as 'the centre of wealth creation' and this has necessitated a need to make the sector more attractive and modern for young people in order to assist young graduates to enter the sector and become the dynamic new youthful population that will replace the older generation of farmers (Adesina & Reeve, 2017). Today's youth live in an environment where digital technologies play a significant role in their daily lives hence the phenomenon of the "young farmer problem" and the presumed disinterest in farming by young people requires a continuous "increasing use of digital communication tools among government and civic society to support generational renewal in farms by establishing online rural youth forums; promoting youth volunteerism in sustainable agriculture projects; using social media to disseminate information, recruit, and mobilize youth; and for agricultural education and extension" (Unay-Gailhard & Simões, 2021, p. 2). This may motivate, attain and retain rural young people in agriculture given that farming has potential to be used for youth-inclusive socio-economic growth and development (Plechowski, 2014).

Most rural young farmers are limited from fully utilizing the opportunities they encounter in the digital world and remain unprofitable due to low affordability of digital tools and low prerequisite skills for using digital tools and services yet the concept of the 'digital world' appeals to them (Plechowski, 2014). Young people have not been adequately addressed in literature concerning this digital divide or digital inequalities yet they are key development instruments (Badran, 2014). However, at entry level to the digital world, young farmers have begun to actively engage social media for their agribusinesses to market their products, acquire useful market information and extension services through platforms such as WhatsApp, Facebook and YouTube (Widhiningsih & Hariadi, 2019; Geza et al., 2021).

These youths are also termed ‘tech-savvy’ as their lives are characterized by heavy use of wireless devices as well as their heavy use of online social networks whilst they are driven by new technology (Bannon et al., 2011). For these ‘digital natives’, technology plays a core role in their life expectations and perceptions (Calvo-Porral & Pesqueira-Sanchez, 2019). Their cellphones are treated as a “natural extension of themselves” which they keep with them for almost 24 hours a day (Bannon et al., 2011, p. 61). It is argued that there is a necessity for understanding their needs in order to appropriately provide them with solutions that are relevant to them as their consumption patterns are different to previous groups (Hershatter & Epstein, 2010). Globally it is argued that the youth need skills training and education to best be prepared to and adapt to the future of work which the 4IR brings lest they remain economically excluded and unemployed (Armstrong et al., 2018).

However, for South Africa the legacy of poor schooling imposed by apartheid in farming communities left many children with little to no decent education and poor skills for navigating the farming space which the white farmers had (Atkinson, 2007) This has spilled over into post-apartheid South Africa negatively affecting the professionalization of farm work by black workers whose skills are often minimal especially as their children often cannot access secondary school. For example, it was estimated that only 31% of farm children attended school in the 80s (Cooper, 1988). This becomes problematic for purposes of generational agricultural skills transfer as government is accused of avoiding its duty to provide good quality education in rural areas (Atkinson, 2007).

Engaging young people in 4IR initiatives in agriculture is a key step towards inclusive economic growth as the National Youth Policy in South Africa explicitly acknowledges that “young people are a major human resource for development, often acting as key agents for social change, economic expansion and innovation. Their imagination, ideals, energy and vision are essential for the continuous development of society” (National Youth Policy 2020, 2015, p. 2). Thus, it is important to consider youth as part of the solution to food security although there is a dearth of research that specifically examines food security from a youth perspective (Feighery, et al., 2011).

The successful adaptation of the 4IR in rural South Africa is dependent on government and business support and this presents an opportunity to bridge the wide developmental gap between rural and urban areas whilst building prosperous rural areas in the country (Sirayi et al., 2021). This comes at a time when South Africa's readiness for the 4IR through resilience to unknown and future shocks, through the mitigation of risks and challenges and through capitalizing on advanced production opportunities is said to be in the 'nascent quadrant' (Levin, 2018). This means that the country has a mixed performance of strength in innovation and entrepreneurship alongside weaknesses in competent human capital with the necessary digital skills and a lack of direct innovation, stable policies and lack of strong institutional support.

In conclusion, scholars argue that despite the agricultural constraints faced in the 3IR, African countries may be able to leapfrog their advancement straight to the 4IR in agriculture through skipping an intermediate technology stage (Iraki, 2018). This is because Africa has previously successfully leapfrogged from poor, low access to fixed landlines and physical banks by smallholder farmers straight to telecoms and mobile banking. These advancements occurred instead of following the conventional adoption pathways followed by traditional technology which developed countries have followed as approximately 60% of sub-Saharan Africa's smallholder farmers are now largely utilizing mobile phone-related agriculture technologies for advisory and financial services (Jellason et al., 2021). The changes brought about by the 4IR require proactive adaptation and responses by individuals, corporations and governments with the responsibility for creating an enabling environment resting on the state (Ayentimi & Burgess, 2019). The limitations experienced by the South African government in formulating and implementing favourable 4IR policies require further research and comparisons against other emerging economies (Sutherland, 2020). This may prove useful as the demands that the commercial industry has towards government for effective implementation of the 4IR are also not clearly articulated.

2.4 South African Youth Agrarian Landscape

This section explores academic discussions around post-apartheid agrarian reforms on youth farming which are of interest and value in assisting to advance the argument this thesis makes on

the importance of youth agriculture towards rural development. This section discusses the South African agrarian terrain under which the youths in this study operate. In South Africa greater focus in agrarian discourse has been placed on class and gender and "the youth is absent in most analyses of land reform processes whilst relationships between the older and younger generations are not considered in many land and agrarian studies" (Khutswane, 2013, p. 137). However, there is a growing attention by scholars being given to the role that young people play in agriculture in South Africa (Grabowski et al., 2020). This thesis also contributes to this growing knowledge by exploring young rural farmers' access to and engagements with land and land reform processes. The thesis also provides a youth lens and African perspective towards the Expropriation of Land Without Compensation (EWC) debates.

Young people have been marginalised in development debates and planning, with rural youth being disproportionately excluded compared to their urban counterparts, yet all young people are key to addressing development challenges (Vargas-Lundius & Suttie, 2014). According to Swarts and Aliber (2013), rural youth in South Africa are key actors towards advancing rural development through participation in agriculture yet they encounter several challenges that make it difficult for them to engage in agriculture therefore creating a 'youth in agriculture' problem. For Cheteni (2016), government should prioritise young people in farming as youth participation in agriculture in South Africa is largely hindered by poor resource availability, poor faming career growth and prospects, and the general low status attributed to agriculture. This is despite the fact that young people play a key role in the development of rural areas through engagement in the farming landscape. Rural youths in South Africa are generally marginalized from socio-economic integration and opportunities and are excluded from programme planning and policy implementation (Vargas-Lundius & Suttie, 2014). This calls for a youth-sensitive and inclusive transformative approach to agricultural and rural development to ensure that rural youths can be actively engaged in economic and political systems that concern them and achieve viable and sustainable livelihoods. This marginalisation of rural youths in South Africa is the main cause of the exodus from farming by rural youths in favour of menial jobs in the cities (Thobejane & Thaba-Nkadimene, 2017). This exodus continues to foster the ever-increasing youth unemployment bulge in the country as many young people especially those with little education are jobless and this high

rate of unemployed youth in South Africa has potential to exacerbate existing social problems due to idle and desperate youths.

South Africa's youth population between the ages 14–35 is large as they make up 42% of the total population and bear the brunt of "many of the socio-economic challenges faced by the nation such as poverty, inequality, joblessness and poor health" hence there is a need for strategies that promote and enable sustainable livelihoods and development of the youth (NYDA, 2016, p. 1). The youth unemployment rate for those in the 15-24 age group in South Africa was estimated to be over 63% in the first quarter of 2021 (StatsSA, 2021) and this high number is potentially catastrophic if not addressed as the youth remain economically marginalised. The youth population is expected to grow to 39 million by 2030, and this youthfulness of the South African nation is acknowledged to be a useful asset for economic development yet high unemployment by the youth worsens (National Development Plan, 2021). This is due to the inequalities and economic exclusion they already experience along with a mismatch between their skillset and available jobs, as well as poor structural support and lack of social protection from government.

Looking at the historical trajectory of South Africa's agrarian question helps to answer the question posed by Walker and Cousins (2015, p. 6) on "how much is 'history' to blame for present challenges" within the agrarian terrain? This thesis explores this question on the impact of the country's history with a specific focus on rural young farmers. Walker (2015) further argues that the country's, dynamic, messy and complex history of land dispossession is still lingering on, is far from being adequately dealt with and is long overdue for remediation yet existing agrarian reform policies simplify this history and display reluctance to accept this complexity thus limiting the depth of diagnosis as well as depth of solution to the problem. In Natal alone during apartheid more than 300 000 farm labour tenants were evicted including the younger generation who had inherited the land from their fore-fathers who had been the initial labour tenants (Torres, 1994). This burden of history lingers on simultaneously with the state's struggles and occasional success at addressing these injustices as the colonial view of white privilege and denial of the past injustices is manifested by the state's agrarian reform policies that have failed to address these challenges from the roots (Walker, 2015).

In 1994 at the beginning of the transition from apartheid the agricultural support given to white commercial farmers was greater than other racial groups. These conditions have not changed significantly almost 3 decades later as black youths continue to be marginalized yet they require more support in order to thrive in farming as they have inherited generational dispossession of both land and other key farming resources (Metelerkamp et al., 2019). Young people are alienated from agriculture and have been deskilled from acquiring appropriate rural life skills and this emanates from history of the Global South which is commonly known for its dispossession of farmland away from local farmers and a neglect of rural infrastructure (White, 2012). Understanding this historical distortion gives a clearer picture into the struggles that young people encounter in trying to access farming land and farming opportunities as this land was historically acquired, and continues to be acquired by large corporates and individual elites in post-colonial states with support from government and local leaders. This further facilitates continuous land dispossession and socio-economic exclusion of rural youth and smallholder farmers. This requires state intervention to facilitate more inclusive rural development approaches which are youth-centred and in favour of smallholder farming.

South Africa's colonial history is characterized by land dispossessions which were race-based and which also led to the underdevelopment of rural areas and impoverishment of black people alongside a thriving predominantly white commercial farming sector (Goebel, 2005). Walker (2015) has called for a rethinking on contemporary livelihoods and aspirations to ensure appropriate future development based on this history which justified the apartheid project. Bank and Hart (2019) argue that currently the state is struggling to find young black farmers who are enthusiastic about transforming the predominantly white-owned countryside commercial agriculture sites. This is not only due to inappropriate agricultural training and inadequate farm inputs for the youths but also due to policy administration failures and the prolonged colonial, apartheid and post-apartheid land alienation which has resulted in the weakening of the connections that black people have to previously white commercial farms. For example, in the Bantustans land was allocated on a 'one-family one-plot system' where a small plot was given per family (unless the family was associated with the ruling tribal authority) resulting in a large landless rural population meaning that most citizens could not make a living from farming (Cooper, 1988).

This history of dispossession has arguably crippled the connection that young people have with land and agriculture as they have inherited generational scarcity in the farming arena. However, White (2012) argues that issues of neglect of rural infrastructure, anti-rural bias and the alienation that young people feel from agricultural work and knowledge can be addressed through a broader inclusive agricultural approach which boosts innovation, improves access to infrastructural resources, boosts education and skills training for rural youths. Dismantling these barriers and improving these farming experiences for young people will have a ripple effect that spans generations as more young people will become interested in farming (Ntsangase et al., 2016; Fanadzo & Ncube, 2018). This will address the existing generational renewal gap in the farming sector in South Africa where most farmers are of the older generation with little prospects of future participation by the younger generation.

The many failures of youth agribusinesses due to poor support have led to the sector becoming unattractive and receiving low prioritization and disinvestment leading to uncertainties for the future of agriculture in South Africa (Mmbengwa et al., 2021). Most young people in South Africa are not interested in farming as a career option because of the difficulties they encounter, the lack of infrastructure, lack of resource support, the low status and stigma of poverty and unsuccessful subsistence farming by black people which is associated with the profession (Kole, 2021; Sebola, 2018). For example, this disinterest in agriculture by young people has been captured by some scholars who highlight that an approximate 47.30% of farmers who have participated in the Zululand's farming programs were those aged 60 years and above with only 3.3% of youth having participated (Mmbengwa et al., 2021). This shows how low youth participation in farming is problematic despite the fact that agriculture is employment-intensive and can be used to address the high youth unemployment and youth bulge.

Swartz and Aliber (2013) and Akinyemi and Mushunje (2019) raise concerns that a continued disinterest in farming by youths in South Africa is likely to diminish any hope for rural development in the future, thus downgrading rural life and culture yet small-scale agriculture has potential to be the greatest source of future employment for rural youths. Agricultural sustainability in South Africa is "compromised unless the youth are prepared to pursue" it hence

the circumstances of both young farmers and potential young farmers need to be understood in order for a meaningful discussion around agricultural sustainability to ensue (Ntshangase et al., 2016). Speaking at the launch of the Kgalema Motlanthe Foundation, President Cyril Ramaphosa acknowledged that "today's young people did not live under apartheid but have to live under its legacy" (Turok, 2018, p. 17). This sentiment was supported by many other speakers who noted that the major challenge is that young people's struggles are overlooked, misunderstood and systematically neglected, thus calling for emphasis to be placed on youth as they are often side-lined and excluded in the fight against poverty and inequality (Turok, 2018). Further, young people are an important stakeholder to engage in the development arena for sustaining the future of agriculture yet they are "virtually left out in policy and program considerations" (Etim & Udoh, 2018, p. 1). This is despite the fact that youth are acknowledged for the role they can play towards poverty reduction and economic growth (Report of the high level panel on the assessment of key legislation and the acceleration of fundamental change, 2017).

Magagula and Tsvakirai (2020) argue that youth are in search of careers that are non-agricultural as there is no clear or obvious opportunities being articulated regarding agriculture at the wake of the much-hyped 4IR despite young people already having misconceptions about the agriculture sector due to poor access to information. Despite its potential for employing young people the sector is often side-lined resulting in young people also losing interest and threatening the long-term future sustainability of the sector. However, there is a growing recognition that agriculture can be utilised in an inclusive economic model for empowering youths along development lines (Vargas-Lundius & Suttie, 2014). Scholars argue that the youth bulge in Africa can be harvested by fast-tracking the transformational change in agriculture to raise productivity, reduce food prices, boost rural incomes, and create jobs simultaneously (Brooks et al., 2013).

For Kwenye and Sichone (2016) as cited by Etim & Udoh (2018), young people compared to the elderly are the most desirable catalysts for bringing about agricultural transformation and developmental progress as they have greater capability, flexibility, enthusiasm and inclination towards technological innovation which are key towards advancing the farming sector. Scholars argue that the youth bulge in South Africa can be addressed by integrating young people into the agriculture sector as the sector can be used to promote youth entrepreneurship in the form of

agribusinesses (Mmbengwa et al., 2021). This will solve or at least reduce the existing high youth unemployment problem. Scholars have also called for a rethinking of how to effectively engage youths to intrigue their interest in agriculture, as they possess a higher drive for development, which can be harnessed to address the food insecurities and poverty in developing countries through an improvement in the agricultural education system (Haruna et al., 2019).

According to Maluleke (2019) agriculture has the potential to create close to 1 million new jobs by 2030 in South Africa. Brooks et al (2013) highlight that young Africans are well placed and have potential to use ICT to participate in and boost agricultural productivity as ICT can be used to address questions such as when, how and what to plant. However, despite the agriculture sector in South Africa being a potential source of job creation for the youths, the sector's systems and infrastructure are ill-prepared to accommodate young farmers or youths who have an interest in farming (Metelerkamp, 2021).

Black youths studying Agriculture in South Africa face challenges in trying to acquire training in the sector unless they have access to their own farming land (Maluleke, 2019). This poses a challenge for the future of South African agriculture and food security. For Haruna et al (2020) agricultural practitioners can yield better results with improved access to skills training to enhance their knowledge and education on how to manage their productivity. Mtembu (2010) argues in the context of South African agriculture that the matter of succession planning remains a crucial concern for all growers in the industry, as the younger generation shows little interest in pursuing primary agriculture. This scholar argues that the current generation desires to travel, work in various industries, and seek employment opportunities abroad. This presents a significant threat to the small-scale grower sector, as the average age of a grower in that sector is approximately 53 years old, which is nearing retirement age. However, youth interest can only be generated where exposure exists as scholars argue that those youths who are exposed to farming at family level particularly on family farms have a higher likelihood of taking over family farming activities (Ntshangase et al., 2016). These scholars also argue that peer influence can be used by young people in South Africa who are already involved in farming to ignite interest and facilitate the entry of other youths to agriculture as a way of addressing the limited exposure which makes many youths shy away from farming.

Scholars have also argued that there is an exodus of many rural youths to urban areas in South Africa as they are not interested in a farming career partially due to the low status they attribute to agriculture, lack of information on the trade and a lack of prospects for agricultural career growth (Cheteni, 2016). For example, an empirical quantitative case study conducted by Ntshangase et al (2016) on rural youth farming in KwaZulu Natal and Zululand Region showed that rural youths (14-35 years) are not interested in the farming practice but would rather migrate to urban areas, with very few of them remaining in cane farming, particularly those whose parents are already involved in the trade as they are more willing and open to the idea of farming compared to those whose families are not already involved in cane farming. This disinterest by the youths is also coupled with the fact that majority of high schools in South Africa do not offer Agriculture as a subject whilst those that offer the subject are critiqued for being too theoretical and less practical such that students do not get adequate exposure to the field (Maluleke, 2019).

When it comes to skills development in Agriculture it has been argued that Technical Vocational Education and Training (TVET) colleges need to offer more appropriate training which meets the needs of the sector thus improving chances of employability as well as success in farming (Report of the high level panel on the assessment of key legislation and the acceleration of fundamental change, 2017). Similar challenges resonated with university students studying agriculture who also felt that more practical training was lacking which would equip them thoroughly for the sector (Maluleke, 2019). According to Masha et al (2021) most TVET institutions have lecturers who are ill equipped to teach the agriculture curriculum and continue to teach older conventional methods that are no longer appropriate for the ever-advancing technologies and skills demand thus creating a gap and skills deficit with a potentially disastrous impact on future food security. Similarly, Swanepoel (2021) argues that there is a need for balancing theoretical knowledge with practical training as most farmers receive limited training. Akinyemi and Mushunje (2019) further argue that youth education in South Africa needs to include how to effectively utilize land so that young black South Africans can be empowered to manage the land appropriately for higher yields.

These experiences contradict the importance of agricultural training stated by Haruna et al (2019) who state that education in agriculture focuses on developing practical skills, and in addition to

teaching methods, it offers a way to enhance the knowledge, abilities, and skills of its beneficiaries towards achieving food security. Poor rural youth rely on training for improving their chances of sustainable livelihoods, but the agriculture system in South Africa continues to have persistent issues regarding poor access and quality of AET, no clear path provided for youth, fewer AET institutions available compared to the demand and low competence of teachers and extension service providers (Metelerkamp et al., 2019). Young people are synonymous with socioeconomic development in South Africa hence as future land-bearers they require the necessary education, yet the agricultural learning institutions have challenges of their own (Report of the presidential advisory panel on land reform and agriculture, 2019).

Further, the youths who are qualified agricultural graduates are struggling to find employment in the sector whilst they also do not have the capital to start their own agribusiness (Maluleke, 2019). Arguments have been made that the state must enhance its endeavors to attract youth to the agricultural sector as the many challenges encountered such as poor financial access and negative market forces deter emerging farmers from growing in the sector (Khapayi & Celliers, 2016). Research has also shown that many young farmers in South Africa lack mentorship in the field to guide them and show them available opportunities (Maluleke, 2019).

Despite the sparse research on youth involvement in agriculture in South Africa (Swartz & Aliber, 2013), scholars highlight that most land reform and food security policies and programs post-apartheid have not been adequately implemented (Sauti & Lo Thiam, 2018). These policies have not worked in favour of most youth as majority of them cluster youth with other marginalized groups such as women and those with disabilities (Arko-Achemfuor, 2016). Better inclusion of young people as beneficiaries of land reform is key in order for youths to effectively benefit from the land reform initiatives (Zantsi & Greyling, 2021). Majority of land reform beneficiaries in South Africa are the older generation while the youth play little to no role (Khutswane, 2013). The youth have not been specific targets of these policies but have been placed as part of the larger group of vulnerable populations. This has given rise to continued rural-urban migration by rural youths as they see no benefits in joining the farming sector in their rural environments when they cannot benefit from the land reform processes (Khutswane, 2013). Further, there are "no active policies that are aimed at engaging South Africa's youth (adult

population under 35 years of age) into ownership of land" yet youth are acknowledged to be the future stewards of land whose security of land rights is key to ensure national food security and social stability (Presidential advisory panel on land reform and agriculture, 2019, p. 17).

The South African government has introduced various policy initiatives since 1998 [such as the Youth in Agriculture and Rural Development (YARD 2008) and Department of Land Affairs Youth Empowerment Strategy (2008)] in a bid to attract young people into mainstream farming although this has not yielded the desired results of absorbing more youths into commercial farming as they did not directly incentivize engagement and empowerment of youths in the sector.[7] Instead, the existing policies (such as Youth Employment Subsidy of 2012; Jobs Fund of 2011) are directly skewed towards benefiting employers for recruiting youths, thus leaving the task of youth absorption into agriculture to employers. Also, these initiatives were criticized for lacking solid institutionalisation, poor longevity strategies in place and adequate monitoring and evaluation for them to achieve success.[8] However, in 2018 the Department of Agriculture in South Africa launched the 'Premier's Advancement of Youth (PAY)' which is a two year agricultural internship for recent matriculants so that they gain broad training on agriculture as a way to attract youths to farming as a career choice (Constable, 2019). This program has thus far been marked a success due to the fact that 70% of its first cohort of graduates went on to further their studies in agriculture (Constable, 2019)[9].

The government through the Department of Agriculture, Forestry and Fisheries (DAFF), the Industrial Development Corporation (IDC), the Department of Trade and Industry (DTI) and the National Youth Development Agency (NYDA) assist young farmers through offering agricultural support programs, youth in agriculture awards, black economic empowerment programs, agro-processing competitiveness fund and other financial and non-financial support at the national level (Dube & Nicholson, 2018). In 2004 government initiated the Comprehensive Agricultural Support Programme (CASP) to offer funding to emerging farmers as a means for job creation, poverty

[7] Hornby, Donna and Cousins, Ben. (2016). *Rethinking Agriculture in South Africa: Constraints and Opportunities – Key Lessons for Policy Makers*. Conference report, Cape Town, 11-13 October, 2016. Retrieved from https://www.plaas.org.za

[8] Sumberg J, N Anyidoho, M Chasukwa, Blessings Chinsinga, J Leavy, G Tadele, S Whitfield and J Yaro (2014) Young people, agriculture, and employment in rural Africa *WIDER Working Paper 2014/080*

[9] Constable, J. (2019). Interns dream of agriculture. *Agriprobe*, *16*(2), 30-32.

alleviation and production expansion by the emerging farmers. Though CASP intended to offer support to emerging farmers through capacity building, developing markets, providing advisory services, financial services, training and information provision, it only managed to provide on-farm infrastructural support (Hall & Aliber, 2010 as cited in Fanadzo & Ncube, 2018). Further, only 10% was put towards training and capacity building therefore resulting in less than 1% of smallholder farmers having benefited from the program in 2009 and these accounted for less than 0.02% of the intended beneficiaries (Hall & Aliber, 2010 as cited in Fanadzo & Ncube, 2018, p. 438).

At provincial level, different provinces have different programs to cater for young farmers such as agricultural training institutions, technical support programmes and financial assistance offers (such as loans) although these are not the same in all provinces (Dube & Nicholson, 2018). Below are the National programs that currently offer support to young farmers:

Table 2.1 South African national programs that support young farmers

DEPARTMENT OR ORGANISATION	PROGRAM
Department of Agriculture, Forestry and Fisheries	1. Comprehensive Agricultural Support Programme. 2. Small Holder Support Programme. 3. Agricultural Broad-Based Black Economic Empowerment Programme. 4. Youth in Agriculture Awards.
Industrial Development Corporation (IDC)	1. Agro-processing Competitiveness Fund.
Department of Trade and Industry	1. Youth in Agriculture Awards. 2. Sector Specific Youth Catalytic Projects. 3. National Youth Service Programme.

	4. Youth Entrepreneurship Collateral Fund.
National Youth Development Agency (NYDA)	1. Agricultural Development Agency (ADA) provides young entrepreneurs an opportunity to access financial and non-financial development support. 2. Grants offered by NYDA are offered for individual applicants, co-operatives and community projects.

Source: Dube & Nicholson, 2018, p. 119.

I was unable to gather data on the extent to which these programmes have been successful as well as the challenges faced. Perhaps this is an area for further research. However, the Department of Agriculture's Director General is on record as admitting that "when we started with our land reform programme in 1994, we did not have specific programmes targeted at youth empowerment and this has resulted in few youths being beneficiaries of land and agrarian reform" (Nyamwanza, 2017, p. 5). The Minister of the Agriculture, Land Reform and Rural Development (DALRRD) has acknowledged that "the generation of the current [food] producers is becoming more mature, and soon will be exiting the system" and has questioned how the department can ensure that "our young people take over, learning from the old, but bringing in the new knowledge and innovation"? The minister also acknowledged that "it's important that we [government] listen more and hear what it is that young people are saying to us in terms of this sector, and how can we plugin to ensure that we resolve and provide solutions to enable them to actually succeed" (South African Government News Agency, 2021). Khutswane (2013, p. 138) problematises the relationship between youth and land as a resource in South Africa raising the question 'has the land reform process been unsuccessful in creating circumstances that enable young people to participate actively and meaningfully in projects, or is it that the youth do not perceive land reform as a means for development'? This further poses questions of whether or not the youths actually want to participate in farming. This thesis investigates these questions further.

However, studies on beneficiaries of land reform processes in South Africa have shown that though significant literature attributes farmer success to older age and longer years of farming experience, younger farmers are however proving to have higher risk tolerance and greater audacity in farming as well as better farm management skills compared to their older counterparts (Zantsi & Greyling, 2021). Young people especially those who are more educated have proved to have a higher likelihood of engaging with the new and emerging farming technologies which are more advanced (Jellason et al., 2021) thus posing potential for safeguarding the future sustainability of food production. Young people possess valuable knowledge and experiences which if engaged through technological advancement are beneficial for the future (Cowan et al., 2021). Emerging technology is presenting exciting opportunities in agriculture for youths as they get to engage in digital agriculture and are interested in working with new and advancing technologies in farming (Châtel, 2017; Demenongu et al., 2018; Emeana et al., 2020; Rioba, 2018).

Young people have greater potential for success in farming and a youth focus will mitigate the transmission of generational poverty (Khutswane, 2013) as the need for energy, innovation, and physical stamina makes the agricultural industry a good fit for individuals between the ages of 15-34, who are considered the 'mature young' (Brooks et al., 2013). However, a greater focus of discourse has been on the racial, gendered and class factors of land reform with an exclusion of youth lens (Nyamwanza, 2017). This scholar further highlights that youths in South Africa are now actively involved in land contestations as they feel that the state is not doing enough to ensure that they can access land and better their lives, yet the scholarly historical debates in the country have placed a minor youth focus despite the importance of understanding the generational dynamics surrounding them. Various scholars have written on the experiences of youth post-apartheid and often labelling them as 'born-frees' whose socio-economic and political engagements are shaped by historical experiences that the older generation encountered (Tivenga, 2021).

There is a need for shifts in land acquisition strategies in South Africa in order to open up new possibilities for inclusive economic growth and development which enhances linkages between rural and urban areas whilst also purposefully accommodating marginalized groups such as youths (Report of the presidential advisory panel on land reform and agriculture, 2019). Majority of

youths in Africa lack access to land yet land is a fundamental requirement for most agricultural practices, and it is the most widely accepted form of collateral for securing agricultural loans from banks (Moitui, 2019). Despite having various land reform programs in place post 1994, South Africa has made minimal advancement in granting land to the increasing number of underemployed rural youth who are interested in farming (Brooks et al., 2013).

Recent agrarian debates place special emphasis on youth and women in efforts to support emerging black farmers in the country (Cheteni, 2016). On 3 January 2020, the Minister for Agriculture, Land Reform and Rural Development (ALRRD) published a policy for beneficiary selection and land allocation for the public to comment on. This policy categorises 'youth' (those between 18-35 years) as part of the 'vulnerable groups' along with women, orphans, rural people, persons with disabilities amongst others (The Beneficiary Selection and Land Allocation Policy, 2020). Youth and women tend to be classified together when it comes to sustainable agricultural intensification and land access due to the history of gender and age bias that has existed as men have historically disproportionately controlled agricultural resources in South Africa (Grabowski et al., 2020).

This land beneficiaries policy problematizes the land redistribution programme as not having given enough opportunities to vulnerable groups who continue to be marginalized and denied access to land for productivity and settlement (The Beneficiary Selection and Land Allocation Policy, 2020). This poor access to land for vulnerable groups such as youth is attributed partially due to the lack of transparency and credibility of the land allocation and beneficiary selection processes as these have often been manipulated. Youth as part of the vulnerable interest groups often have their security of tenure undermined by more powerful actors such as chiefs hence the land regulations framework require transparency and accountability (Diagnostic Report on Land Reform in South Africa, 2016). However, scholars have critiqued that the failure of the land reform process is also partially due to the laxity of the selection process for beneficiaries of development initiatives (Gandidzanwa, 2021). The policy states that a purposeful approach will be taken to empower vulnerable groups with land as most of the recipients of land redistribution through the program will be vulnerable groups particularly women, youths and those with

disabilities residing in rural and peri-urban areas (The Beneficiary Selection and Land Allocation Policy, 2020).

However, there is no clear categorical distinction amongst the groups thus making it problematic as these groups have heterogeneous traits. Similarly, Zantsi (2019) and Hall (2015) critique the lack of clarity on the criteria of beneficiary selection for the failure of land redistribution. It is argued that to become land beneficiaries the land reform process has grouped young people with other marginalized groups yet their characteristics are not homogenous to those of other groups. Also, within the youth group itself there are other sub-groups as youth characteristics are not the same (Nyamwanza, 2017). For example, the NYDA (2020, p. 7) has categorised youth based on "youth in rural areas; out-of-school youth; in-school-youth; youth with disabilities; young women; unemployed youth; youth in conflict with the law; youth at risk; youth heading households; youth abusing dependence-inducing narcotic-based substances including alcohol " which shows their diversity and diversity of needs.

Putting matters of youth development in the agricultural sector in mainstream discussions that look at boosting youth land rights is a critical step towards addressing the land question in South Africa and also potentially minimises chances of self-serving politicians abusing this issue (Nyamwanza, 2017). This scholar further argues that land reform in the country should shift towards a new narrative of inclusive, progressive processes of radical economic and agrarian transformation that take on board youth generational concerns without disrupting national food security. The policy for beneficiary selection and land allocation proposes the creation of a cohort of new young black smallholder and commercial farmers through access to land and the necessary agro-processing value chain opportunities (The Beneficiary Selection and Land Allocation Policy, 2020). Despite the fact that the average age of a farmer in South Africa is in the late-middle age category of around 62 years (Sihlobo, 2015), a sustainable land reform requires greater participation from the youths given their scarcity in the sector (Zantsi, 2019).

State support in South Africa for youth in agrarian reforms is key yet Wissink (2019) argues that a compelling package has not been developed yet to support emerging smallholder black farmers as they struggle to access financing, contracted markets for their produce as well as technical

expertise through mentorship and training. Hence, their productivity and growth remains low whilst there are few new entrants to agriculture because of this challenging terrain. De Jager (2015) argues that the promotion of smallholder farming by government is a poverty trap if there is no transformation of the agricultural sector and no clarity around where and how the farmers fit into the value chain. Regarding state support, the Land and Agricultural Development Bank of South Africa being a government-owned development bank has funded R25 million for the 2020-2021 Agri-Youth programme being run by the NYDA (NYDA, 2021, p. 50). In the 2020 annual report the Land Bank stated that they "remain committed to address the inclusion of youth in agriculture…We provided financing to 14 youth-owned enterprises through 49 transactions valued at R102 million" (Land Bank, 2020, p. 104).

The Land Bank has also committed to empowering women and youth with financial support to ensure inclusive participation in the sector by these groups in both rural and urban areas (Land and Agricultural Development Bank of South Africa, 2021). However, Sebola (2018) problematizes the eligibility criteria for land redistribution towards emerging black beneficiaries who are particularly categorised as marginalized such as women and youth, arguing that the current funding beneficiaries are mainly individuals with limited experience, knowledge, or enthusiasm for agriculture. Similarly, for Dlamini et al (2013), this failure by young land beneficiaries is partially due to poor or insufficient farming skills for commercial engagement (Cousins, 2015). This large investment spent on such farmers is wasted in failed agricultural projects as the state has not yet succeeded in finding better alternatives for empowering emerging black farmers (Sebola, 2018). This scholar further argues that as a result the emerging black farmers have not benefitted from such activities and remain agriculturally underdeveloped whilst the state loses large sums of money financing agricultural projects with little success. As a result the position of most youths in South Africa in the land reform processes is compromised by their scepticism towards the economic viability of agriculture, their low farming skills and low capital (Nyamwanza, 2017). Some scholars have attributed the failure to thrive in agriculture by land beneficiaries to the lack of adequate state support post settlement (Kirsten et al, 2016). The state's failure to support them post giving them land is the main factor for their failure to succeed in the sector yet government is more focused on distributing land to these marginalized black beneficiaries and not

so much concerned with ensuring that agricultural benefits are derived from this land (Sebola, 2018).

Part of the reasons for land reform failures to date is also that the beneficiaries of land have themselves had little involvement or engagement in the processes as the state took on technocratic processes with a paternalistic approach (Mkodzongi & Brandt, 2018). This approach prioritised the know-how of 'experts' and undermined that of local people affected at grassroots levels as there is minimal room for alternative viewpoints presented by regular citizens to be considered in post-colonial South Africa (Mkodzongi & Brandt, 2018). Black people aspiring for access to land have had little input in the land reform policies regarding access to and use of the land compared to white farmers who as 'agricultural experts' have had significant input in the conceptualisation and implementation of these programmes. White commercial farmers have thus continues to retain control of land through their strategic partnerships with government as 'experts' to assist and mentor emerging black farmers who would have benefitted from leased state land.

As part of agrarian reform another key policy initiative which was launched by government in an attempt to integrate budding black farmers into commercial mainstream agriculture worth discussing at this stage is the Agricultural Broad-based Black Economic Empowerment (AgriBEE) policy. The aim of this initiative was to ensure a balanced participation in the agricultural economy by enhancing the ownership, procurement and skills development of black emerging farmers (Norris et al., 2011; Nel, 2019) including marginalized groups like women, youth and those with disabilities who are underrepresented in the sector (Kloppers & Fourie, 2014). However, AgriBEE has "had little impact because it is not enforceable, i.e. the charter is not legally binding and only indicative scorecards are in place" despite its rationale for incentivising the integration of black farmers into the sector being very clear (Ncube et al., 2017, p. 11). Thus black smallholder farmers have not benefitted significantly from it. Government policies have failed to facilitate greater youth participation in agriculture and this is a significant contributor in the disinterest in farming by youths (Bennell, 2007). Ngam (2021) calls for rethinking government's approach to agrarian reforms arguing that government has to be the main driver of AgriBEE through creating an equitable and more just allocation of resources as this move can catalyze change and create a more equal agrarian space and society.

Other scholars have called for development strategies that prioritize collaboration amongst all key stakeholders for sustainable development plans because AgriBEE like many other government initiatives has not had a significant impact on targeted smallholder black farmers (Norris et al., 2011). This stagnancy has been attributed to the poor or shallow understanding of the complexities of the livelihood systems and aspirations of the targeted farmers by the designated educators and service providers due to poor organisation of the target farmers, thus limiting their engagement and involvement in the policy making processes. Jacobs (2012, p. 175) argues for "an urgent need to reconstruct an independent agrarian social movement, rooted among poor farmers and farm workers, to mobilise and agitate for agrarian change based on a rejection of neoliberalism". Jacobs (2012) argues that government's two-way approach to rural development and land reform through expanding commercial farming simultaneously with increasing the number and market share of smallholder farmers is a flawed approach. This is because the bigger agribusinesses continue to grow and exert greater oppressive control over smaller farmers leading to the destruction of smallholder farmers and an increase in food prices thus posing a threat to food security. Further, smallholder farmers possess heterogeneous characteristics which make it problematic for a one-size-fits-all blanket approach of support services to be enforced as farmer complexity, diversity and variables ought to be recognised in order to generate more appropriate expected impacts from developmental efforts and planning (Ncube et al., 2017).

The barriers in institutional support structures have led to failure to accommodate emerging black farmers despite the existence of theoretically sound policies as needs of smallholder farmers are complex yet overlooked (NAFU Farmer Empowerment, 2006; Norris et al., 2011). Further, the AgriBEE policy lacks clarity on its measures for empowering smallholder farmers and farm workers (Lahiff, 2008). This leaves the agrarian reforms landscape with many loopholes that make it unconducive and unattractive for young people to pursue agricultural careers despite agriculture's potential towards rural development. This is in conjunction with youth's poor farming skills, poor education and training and lack of access to resources for enhanced agricultural performance thus incentivising youth disinterest in farming (Girard, 2017; Eistrup et al., 2019; Ripoll et al., 2017; Sumberg et al., 2017) and makes it difficult for youths to even access job opportunities under the AgriBEE policy (Nel, 2017). As a result youth participation at all levels

of agriculture in South Africa and Africa at large is dismal despite opportunities existing at all levels of the food production value chain (Haggblade et al., 2015).

2.5 The Impact Of COVID-19 On Agriculture

This section explores academic discussions around the implications of the emergence of COVID-19 on youth farming which are of interest and value in assisting to advance the argument this thesis makes on youth and agriculture. Coronavirus disease (COVID-19) is an infectious disease caused by the SARS-CoV-2 virus which can spread between people in close contact through coughing, sneezing, speaking, singing or breathing (World Health Organization, 2021). "An analysis of the impacts of COVID-19 on rural youth economic activities and food security will help bring further to light the nature and extent of these effects" (Fall et al., 2021, p. 100). Young people have largey abandoned agriculture due to poor support in terms of farming resources such as extension services, sufficient land access, financial constraints, adequate training, improved farming technology, market access, favourable youth agricultural policies and access to relevant timely information (Is et al., 2021; White, 2012; Wuni et al., 2017). COVID-19 has added to this burden on youth farmers and the concern posed is that COVID-19's impact on agricultural supply chains will be long lasting (Nkamleu, 2020). This study was keen to explore the implications of COVID-19 on youth farming and young people's engagement with farming technology and the rural economy.

To explore the impact of COVID-19 on young rural farmers is critical as they are key stakeholders in agriculture within rural settings (Yazdanpanah et al., 2020). In response, this thesis explores the impact that COVID-19 had on young rural farmers. Because COVID-19 has had disproportionate effects on people, the youth (especially rural youth more than their urban counterparts) have been hit the hardest (Chakravorty et al., 2021; Odey et al., 2020) and have experienced higher levels of food insecurity compared to their older counterparts caused by the total confinements or total national lockdowns (Fall et al., 2021). This is a major concern as arguments have been put forward that youth are "a very vital asset in development" (Is et al., 2021, p. 73). It emerged that the higher the levels of education the lower the incidences of food insecurity for rural youths whilst more

females than males were hardest hit by food insecurity, suggesting a gendered imbalance in incidences of youth rural poverty and inequality exacerbated by COVID-19 (Fall et al., 2021). Oladele and Vieyra-Mifsud (2021) argue that despite the challenges brought about by COVID-19, this presents an opportunity for boosting innovation to create more resilient policies that tackle youth employment and skills enhancement for regional and global competitiveness. Local food production bases and shortening supply chains can occur concurrently given the strong reliance on imports of food trade in Africa. Similarly, other scholars argue that COVID-19 presents an opportunity for innovating new responses and adaptations by rural people for their agri-businesses to thrive as necessity is believed to ignite invention (Phillipson et al., 2020).

However, the disruption of COVID-19 in rural sub-Saharan Africa's agricultural economy has not been adequately documented and quantified as there exists limited real-time data (Middendorf et al., 2021). Nchanji et al (2021) argues that it is crucial to provide appropriate support measures to rural farmers to minimize the effects of COVID-19 on agricultural systems as more than 70% of global food consumption comes from food produced by rural smallholder farmers which is then sold in urban areas. However, the COVID-19 total lockdowns led to restricted movements which saw farmers being limited regarding access to markets, farming inputs such as fertilizers, seeds amongst others (Peprah, 2020). COVID-19 also disrupted the provision of physical agricultural extension services prompting the adoption of e-extension services where resources allow although many African countries are still behind in this regard due to resource constraints (Lioutas & Charatsari, 2021). The poor are most vulnerable to food supply shocks caused by the pandemic thus calling for strengthening safety net welfare programs and support for smallholder farmers in order to increase local food production (Khan et al., 2020). The impacts of COVID-19 on the farming system in developing countries ought to be understood as the future of food security depends on it in order to mitigate future global food system disruptions (Cariappa et al., 2020).

COVID-19 has revealed the racial bias and disparities in the current food systems and advanced the need to promote community resilience through localized or community-based food systems (Ammons et al., 2021). Prior to COVID-19, the agricultural sector has been struggling to attract as well as retain youths due to existing restrictions in the sector such as a mismatch between young people's professional expectations and characteristics versus local demands and the opportunities

that the sector offers them (Simões & do Rio, 2020). An increasing amount of literature has looked at youth interest and participation in farming and it is key to conduct such research as it concerns the future of agriculture and encourages the formulation of a "youth farmer regeneration strategy" for agriculture's sustainability given that majority of farmers are the older generation (Is et al., 2021, p. 73). COVID-19 thus came at a time when food security has been the longest silent pandemic with hunger killing thousands yearly in Africa (Nkamleu, 2020). Meanwhile, the youth being one of the most marginalized groups are affected by food insecurity more than other population groups (Wuni et al., 2017). A call is made for empowering young farmers because during challenging periods, it is crucial to provide young people with positive opportunities for development to ensure the success of their generation (Arnold, 2020 as cited by Calvert et al., 2020).

The emergence of COVID-19 has "necessitated holistic discussions around the complex food systems" with the effects of the pandemic on farmers, food security and nutrition having varied globally based on existing pre-COVID challenges as well as measures taken by governments to curb spread of the virus (Nchanji & Lutomia, 2021, p. 1). For example, the global food chains prior to COVID-19 have been critiqued for being poor-functioning due to inefficiencies in production, marketing, post-harvest and consumption (Alexander et al., 2017). Lioutas and Charatsari (2021) argue that it is key to recognise the peculiarities and heterogeneous characteristics of the diverse forms of agriculture such as large-scale, small-scale, high-input etc as their needs and experiences are different. As such, the impact of COVID-19 or other future disasters requires designing policies and disaster-management plans that equally allow for resilience of each of these diverse forms of agriculture based on their different levels of vulnerability as these are not uniform. Understanding the effects of COVID-19 on the farming sector is key in sub-Saharan Africa as smallholder farmers have the largest share and are the backbone of food production in this region (Huss et al., 2021). Their food stocks are critical for food security and mitigating food supply shocks that emanate from any unpredictable periodic scarcities and lean seasons in the region such as those caused by COVID-19.

COVID-19 unmasked the interconnectedness and interdependencies between farming and the socio-economic environment with both relying on one another for sustainability (Lioutas &

Charatsari, 2021). Iese et al (2021) argue that the pandemic has also offered a chance to reinforce conventional food systems and reassess, reimagine, and localize strategies and methods for agricultural production. Marusak et al (2021) call for a rethinking of the structure of the food supply chains for more effective just-in-time delivery systems that permit constant product flows and small local inventories acting as safeguards against abrupt and widespread changes in demand or supply shortages,in the event of unforeseen future bottleneck failures. Similarly other scholars have called for a post-COVID strategy that strengthens the agricultural sector and a rethinking of existing policies that affect farmers in order to reduce the structural weaknesses that make it difficult for farmers to thrive and produce more (Cariappa et al., 2020).

Vast literature shows that rural youth experience more marginality compared to their urban counterparts, making them more vulnerable to economic shocks (Simões & do Rio, 2020). However, this literature is critiqued for providing a gloomy picture on youth in rural areas leaving no room for exploring how local resources including farming can improve their livelihoods and opportunities. Though COVID-19 has affected the livelihoods of rural youths this calls for young people to work as a collective, use their interdependency to unleash their creativity in order to remain resilient and self-sustain with the limited resources they have because they have the ability to overcome any struggle (Williams, 2020). Rural smallholder farming systems are the most vulnerable to economic shocks and disruptions caused by COVID-19 due to having poor support structures (Chitra et al., 2021). Further, the remoteness of their location often means that their access to farming inputs is disrupted whilst their harvested stock goes bad due to disruptions in transportation and the closure of restaurants. COVID-19 has added to an already existing agrarian crisis in rural areas by imposing trade restrictions disrupting demand and supply of agricultural products (Phillipson et al., 2020; Singh, 2020). Agriculture is perceived to be the main source of livelihood for the rural economy and the leading source of food security both now and in the future as well as a powerful tool for addressing the youth unemployment and underemployment menace (Wuni et al., 2017).

However, because of the remoteness of rural areas, there has been limited studies that have investigated the impact of COVID-19 on agriculture and smallholder farmers as real-time data is scant (Middendorf et al., 2021). Further, the social wellbeing of smallholder farmers has not been

thoroughly documented along with their vulnerabilities and resilience strategies towards the unanticipated shocks caused by COVID-19 yet this is key to understand for the sake of enhancing agricultural systems in future (Middendorf et al., 2021). This thesis investigated the vulverabilities experienced by the the young farmers as well as their coping mechanisms during the pandemic. What is known thus far is that rural communities are largely dependent on agriculture and the disruptions to food production caused by COVID-19 on the farming sector has inadvertently weakened the livelihoods of the already vulnerable rural households despite the rural population being the poorest, most marginalized and most food insecure (Karamidehkordi et al., 2021).

Nurlaela and Sujono (2021) argue that young farmers possess energy, innovative and creative ideas which can be tapped into during the pandemic to create opportunities for growth in agribusiness, especially since Generation Z has a knack for using social media which can be advantageous for supporting their farming businesses virtually during the pandemic. There exists differences in the abilities of farmers to access ICT resources and COVID-19 has made it more difficult for poorer farmers to access digital technologies (Dharmawan et al., 2021). Meanwhile, for Yeboah and Flynn (2021) the decision by smallholder farmers to adopt farming technologies is influenced by the direct economic benefit which is derived from this adoption. These scholars argue that farming technology adoption is shaped by both intrinsic and extrinsic factors and this calls for planners and policy makers of rural development to simultaneously consider both factors, instead of singularly. Such an understanding of both factors assists in better understanding decisions that smallholder farmers make regarding adopting agricultural innovation as well as the effectiveness of these methods .

According to Maïga et al (2020) agricultural development is up to 3.2 times more effective than any other sector in reducing poverty in resource-rich, low-income countries. Hence, with the development of technology, young people have greater opportunities to enhance their farming skills through access to relevant information thus better positioning them for greater success in farming through improved understanding of the agricultural systems. A study conducted by Nurlaela and Sujono (2021) in Indonesia showed that young farmers with higher education especially holders of undergraduate university degrees have greater creativity, are more modern

and business-minded than senior farmers, and have conducted the most online research on the most saleable and appropriate products to farm and include in agribusiness during COVID-19.

Studies have also shown that improving access to farming technology can entice rural youths as well as change their negative perceptions on farming whilst understanding their aspirations is crucial to understanding their socio-economic needs, preferences and decisions they make regarding the future (Mussa, 2020). This simplifies the process of identifying and addressing the structural bottlenecks that hinder their success in farming. Rural youths' perceptions and aspirations regarding their involvement in farming and the rural economy are "highly complex and often nuanced" (Yeboah & Flynn, 2021, p. 18). Understanding these is crucial for designing and implementing policies and programmes that can appropriately and adequately promote youth employment in rural Africa.

A study on rural youths in Uganda showed that COVID-19 affected their access to markets due to restricted movements thus limiting them to local markets at lower prices and reducing their customer base and consequently lowering their income from agricultural produce significantly (Banga et al., 2021). Apart from these losses, these youths also struggled to get access to good quality inputs at affordable prices leading to lower harvests as well as loss of farming land in some instances due to inability to pay rent. A desk study done on the impact of COVID-19 on youth agri-enterprises in Kenya, Uganda, Rwanda and Burundi revealed similar results and this comes at a time when young farmers were already experiencing major challenges such as poor access to markets, capital and training opportunities in the sector pre-COVID-19 (Kihiu et al., 2020). This destruction of the agricultural sector caused by COVID-19 deepens the rural youth crisis yet agriculture in Africa can end poverty and youth unemployment whilst also helping youths to lead satisfying lives (Wuni et al, 2017).

2.6 Conclusion

This Chapter has drawn from general and comparative literature as well as literature specific to South Africa within the youth and agriculture debate. Concepts that are central in the study were discussed. The literature review suggests that there is a link between youth farming practices and the history of agriculture in South Africa. This makes it important to interrogate how young farmers navigate the farming trade as they are development agents and are the future of the country. This chapter has also revealed that most literature on agriculture in the Social Sciences can be categorised based on its area of focus of which this thesis focuses on the experiences of the young farmers and their relationship with the broader economic food structures. Drawing on the concepts of empowerment and youth aspirations the thesis suggests that young farmers as agents of development engage with resources and structures available to them to ensure development and food security within their communities. There is a general consensus in academia that rural poverty ought to be reduced, although there is no agreed approach to how to do this, whether farm-based or off-farm development paradigms as rural young people in sub-Saharan Africa have proved to not be interested in agricultural careers for longer than their transition period (LaRue et al., 2021). Key aspects of issues discussed in this chapter are that a youth lens in agriculture allows for an analysis of young people as active participants in development that concerns them.

Further, agricultural revolutions have overlapped one another and despite the introduction of more advanced technologies derived from the new revolutions developing countries continue to be largely left behind due to institutional and infrastructural setbacks. Also, the South African youth agrarian landscape is largely shaped by the history of the country with apartheid's exclusive laws which marginalised black people resulting in marginalised offsprings of black apartheid victims. Thus an analysis of present-day young farmers in South Africa should not be isolated from the history of the country. Laslty, COVID-19 has undoubtably had a negative impact on most sectors of the world and the agriculture sector is no exception. All supply chains were disrupted in one way or another calling for rethinking of existing farming strategies and dynamics for the future. Despite the role of youth agriculture not having been fully explored in literature, agriculture brings hope, encourages self-discovery, builds confidence and can be utilised to safeguard humanity and wellbeing for rural youths in the midst of the challenges brought by COVID-19 onto their lives (Williams, 2020). The study utilises an African perspective towards the analysis of youth farming.

The following chapter discusses the methodological approach utilised in this study to address the research questions.

CHAPTER THREE: METHODOLOGY

3.1 Introduction

This section discusses the methodological approach used to advance the core argument of this thesis. The study aimed to understand the different dynamics that young black farmers encounter and engage in within the already established agriculture sector. This research departs from fieldwork conducted in South Africa between August 2018 and August 2019, April 2020 to September 2020, as well as desktop research which extended to January 2021.

3.2 Multiple Case Study Design

Research design has been defined as the primary/core method that is used in conducting research (Denzin & Lincoln, 1998). The study adopted a multiple case study design. This research method is an indepth study of several cases studies, groups or events in order to understand the phenomenon being investigated (Stake, 2013). This research design appreciates and acknowledges the availability of objectivity whilst also valuing the importance of the subjective creation of meaning by human beings from several cases (Gustafsson, 2017). The thesis initially had proposed to study one farming cooperative which had been completely youth-led and youth-run but by the time ethics clearance was received from the Wits Ethics Department to allow for fieldwork (after about 3 months) most of the youths involved in that cooperative had left the cooperative with only 5 youths remaining. The rest had all disengaged completely and were now job-hunting for formal employment or already employed in the formal sector at the time of my arrival to initiate the interviews. As shall be discussed in the analysis chapters, these youths had left due to poor access to state farming resources which could improve their yields as well as a lack of financial support in the form of farming stipends which could serve as a buffer for them whilst their farming ventures were still in their infancy. For this reason, the original title of the thesis has been maintained despite the study having gone on to explore the experiences of youth from six other youth farming cooperatives (bringing the number of cooperatives explored to 7) in order to acquire richer data. However, the researcher acknowledges this inherent limitation where the thesis title has not been

changed. The focal analysis of the thesis as stated earlier is however not on cooperatives but rather on the young farmers who were part of these farming cooperatives.

Multiple case study design allowed for the exploration of youth farming environments with similar settings in order for this 'youth farming' phenomenon to be revealed, explored and understood in its context through multiple diverse lenses. The encounter with youths from different farming cooperatives[10] allowed for a deeper understanding of the diverse experiences of the farmers given their heterogenous characteristics. According to Vanclay (2004, p. 213-214) "the farming community is not homogeneous. There are many ways in which diversity can be observed within the farming community: rich and poor; big and small; old and young; early in the life cycle or late in the life cycle; propensity to adopt new ideas (innovator) and propensity to retain tried and true methods and pro-chemical (or pro-GMO) and anti-chemical (or anti-GMO). Farmers can be categorised on every single variable that can be logically considered in conjunction with agriculture". This research specifically focused on young farmers as a category although it was by pure coincidence that all of them who were interviewed were still in the early stages or incubation phases of their farming enterprises with only one who was fully engaged with the formal market of produce provision.

The study context is largely a peri-urban area which resembles what Parnell (1993) describes as a typical manifestation of white South African supremacy which is the brainchild of apartheid laws that saw the social and economic segregation of black people through state manipulation of residential planning policies and regulations. Located 55km to the South of Johannesburg, Orange Farm was initially created by the Transvaal Provincial Administration (TPA) through the expropriation of land from local farmers for township development and is recognized by the Gauteng City Regional Observatory (GCRO) as a marginalized area whose early dwellers were farm workers who had been laid off (Richards & Taylor, 2012). Orange Farm has high levels of youth unemployment which has resulted in a prevalence of drugs, prostitution, delinquency, crime, HIV/AIDS and unwanted pregnancies amongst the youth (Babbie, 2010). According to the National Development Plan (2030) rural youths are more vulnerable to the abovementioned due

[10] Planet Green Cooperative, Ikakgeng Primary Cooperative, Daluxolo Primary Cooperative, Phaphamang Environmental Agriculture Cooperative, Inqanawe Cooperative, Lakeside Community Food Gardens, Senzushintsho Cooperative

to poverty. Peri-urban areas often have good potential for agricultural productivity with their use of municipal land for small-scale production for both local and distant markets (Cousins, 2007).

It is argued that because land in peri-urban areas is often cheaper than in inner city this makes it a viable space to conduct small-holder farming and other forms of urban agriculture for sustenance (Nieuwoudt & Groenewald, 2003). Vast literature supports that urban agriculture is critical for ensuring food security of the urban poor as it complements rural agriculture and that involvement of youths as a marginalized group in urban farming is an innovative approach to addressing the socio-economic decay as it equips them with key skills for success in future food production, enables them to actively participate and contribute meaningfully to their community development (Keenan, 2007). The emergence of COVID-19 has also presented an opportunity for encouraging and supporting youth engagement in urban agriculture as the need to build resilient local food systems has been magnified by the pandemic to which young people can participate for the strengthening of local food systems (Chibanda, 2021). Given the high levels of youth unemployment in Africa, scholars argue that rural-urban food supply chains are growing and can be used to cater for own-farming as well as farm-wage labour for rural youths who are not located in the deep hinterland to create better opportunities for themselves and sustainable livelihoods (Dolislager et al., 2021). This thesis acknowledges that there exists no single definition or methodology of what constitutes rural areas (Ocana-Riola & Sanchez-Cantalejo, 2005) as there has previously been debates on whether 'rural' is a "geographical concept, a location with boundaries on a map or whether it is a social representation, a community of interest, a culture and a way of life" (Plessis et al., 2001 as cited in Madu, 2010, p. 177). Thus the urban-rural nexus overlaps in this thesis.

Orange Farm receives an average of 713 millimetres of rainfall yearly (South African weather service, 2009) and is largely a maize and small-holder farming region (Richards & Taylor, 2012). The area has dry winter conditions within which only winter crops such as cabbage, potatoes and peas can be grown well beyond which irrigation systems would have to be implemented for a wider variety of crops to be grown (Onyango, 2010). There is a significant amount of homestead gardens, school yard gardens, project gardens, community gardens and supplementary homestead gardens (homestead gardens which extend or spill over into available idle or vacant plots) (Richards &

Taylor, 2012). Most elderly residents have been found to have excellent knowledge about farming and perceive farming to be a potentially viable sustainable livelihoods strategy although most young people (mid-twenties) were reported to have no knowledge of farming at all whilst also perceiving peri-urban agriculture as unattractive due to supposed poor returns of the trade (Onyango, 2010). For example, a study in Orange Farm showed that only 4% of those less than 25 years old were involved in agriculture whilst only 23% were engaged in urban farming within the 26-35 years cohort.[11] This was contrasted to the 36-50 years age group who had 42% participation rate in the same study[12] yet urban farming can serve as a source of income, employment creation as well as reduce costs of food therefore promote urban food security (Richards & Taylor, 2008).

The study purposefully chose to focus on Orange Farm due to its large number of youths involved in farming practices, its semi-rural structural dynamics, the existence of the municipal Food Resilience Unit which is largely involved with training young farmers in the area and lastly due to the area's accessibility, convenience, simplicity and permissiveness for the researcher given the stipulated timeframes and financial restrictions.

3.3 Qualitative Research Approach

This study adopted a qualitative research approach which aims to capture and understand in a holistic way, the dynamic social interaction and experiences (Silverman, 2001) of black youths involved in agriculture as well as the experts in the trade within South Africa. Most of the existing discourse on youth participation in farming-related activities has been largely extracted from quantitative studies that have looked at the statistics on the young farmers' population with very few qualitative studies having been conducted on young farmers' participation trends and interests towards farming-related activities and how countries are engaging youths to ensure farmer regeneration (Is et al., 2021). Other scholars have approached the limited publications on rural youth challenges and opportunities through theoretical analysis of existing most recent research papers, literature reviews and data sets (Adamowicz & Szepeluk, 2016; Arslan et al., 2020;

[11] Richards, R., & Taylor, S. (2012). Changing Land Use On The Periphery: Case study of urban agriculture and food gardening in Orange Farm. South African Research Chair in Development Planning and Modelling, School of Architecture and Planning, University of the Witwatersrand. August 2012.
[12] Ibid

Hatayama, 2018; Maïga et al., 2020; Yami et al., 2019). Thus, there has been a call for more qualitative approaches that use face to face interviews to analyse young farmers' multiple strategies for survival in the sector (see Pérez et al., 2020, for more detail) as other scholars have utilised surveys to capture youth perceptions on agriculture in rural South Africa (see Dube & Nicholson, 2018, for more detail). This thesis advanced a qualitative approach through use of face to face interviews to address this methodological gap and contributes to extending our understanding of the youth and agriculture question in South Africa. Qualitative studies allow for the freedom to capture natural actions and representations as well as documenting the common trends (Henning et al., 2004). This approach allowed for the documentation of meanings associated with various farming experiences and found emerging trends or patterns that were commonly occurring amongst the participants. This was made possible through the analysis of detailed descriptions of diverse farming experiences shared by participants.

Within qualitative research researchers gather "raw empirical information of a phenomenon" to find answers to their research questions through speaking to relevant participants (Henning et al., 2004, p. 6). This process is critical in research as it helps the researcher to gain an in-depth understanding of the perceptions and experiences of the participants (Babbie & Mouton, 2004; Bamberger et al., 2012). In order to gather relevant data, youth in this study were defined as anyone within the age range of 20-35years for the sake of finding appropriate recorded data for farmers in this age range.

Purposive sampling was utilized in order to select participants as it allows for the choosing of participants mainly based on their capacity to answer the research questions and to assist in building theory substantively (Henning et al., 2004). The inclusion criteria is that participants had to be black male and female youths from a previously disadvantaged background involved in some form of farming activities and who belonged to a youth-led farming cooperative. The 7 cooperatives' names were footnoted earlier in this section and what they all had in common was that all 7 of them were formally registered as agriculture cooperatives; their farmers were between 20-35 years old; they all conducted vegetable farming with the exception of 2 cooperatives that conducted both livestock and vegetable farming; they all sold their produce to local community members and local spaza shops with the excetion of 3 cooperatives that also supplied formal mega

stores. The cooperatives involved in livestock farming reared pigs and chickens and bred eggs for sale. The vegetable farming largely involved farming spinach, tomatoes, broccoli, carrots and lettuce.

The study also interviewed youths who used to conduct farming but had left the trade in search of alternative careers. The study purposefully did not work with minors under 18 years even if they were involved in agricultural activities too due to difficulties associated with getting parental clearance and consent. Also, once children under a particular age become involved in money-making agricultural activities this can easily be misconstrued for child labour[13] hence this age group was avoided because of the potential ethical complications that are associated with it. The agricultural experts chosen were either academics who teach agriculture, agro-economists, agricultural marketing agents, NGOs that work with young farmers, employees at Department of Agriculture, black adult farmers who work with youths or white commercial farmers.

For primary data collection, a total of 41 approximately 45 minute long in-depth face-to-face interviews were conducted to gather information from the young farmers, disengaged youths who used to farm but are no longer in the sector as well as the agriculture experts. Individual semi-structured interviews assist with acquiring in-depth information on the experiences and views of the interviewees (Petty et al., 2012) hence they were used to get a deeper understanding of the individual farmers' experiences in the trade. The interview schedules used were made up of questions which explored the dynamic experiences of young farmers in their trade. Key to note is that the researcher intentionally explored the youths' understanding of the terms 3IR and 4IR in their raw original form (i.e asking 'what is your understanding of the 4IR') as they were in order to see if the youths were at all privy to what these concepts entailed and how they manifested in agriculture. This was a key finding which would determine the depth and breadth of the nature of information and resources that these youths have access to in general. All young farmers interviewed were part of a farming cooperative within Orange Farm. Only 2 youths who have left the farming trade could be traced successfully for an interview. These youths form what this thesis calls 'disengaged youths' as they had disengaged or left the farming practice. Efforts to reach other

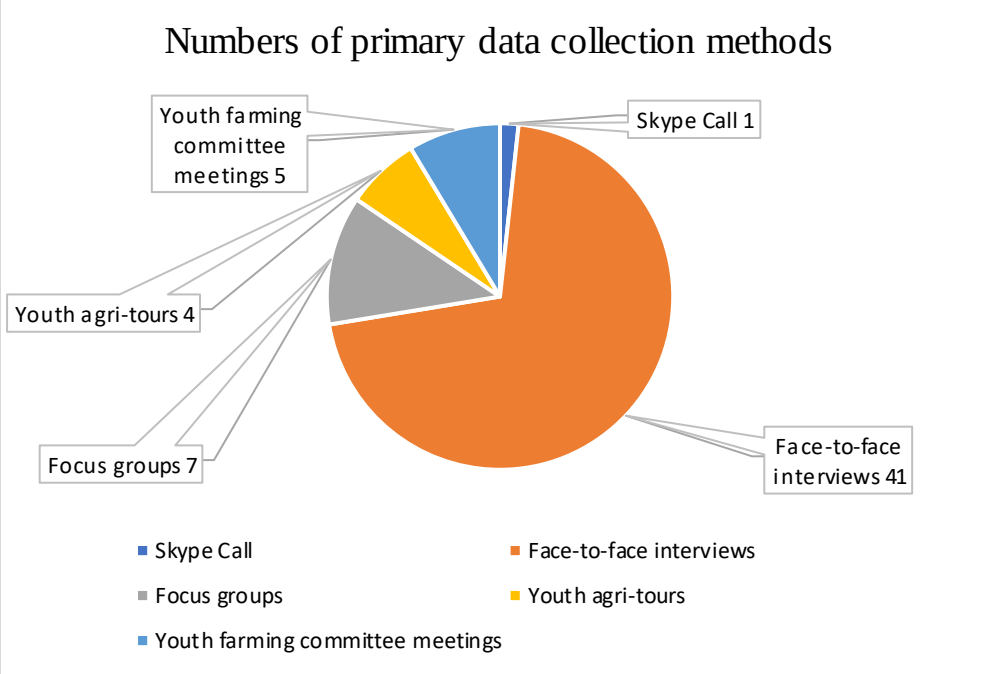
[13] Child labour laws are "intended to protect young workers from the most dangerous jobs" (as children are vulnerable persons) although "children who work on their parents' farms are exempt from these laws" (Marlenga et al., 2007, p. 276).

youths who had left farming were unsuccessful. However, the researcher is aware that this is on the lower side (e.g. analytically these 2 interviews cannot be used to claim saturation of qualitative data and validity). Perhaps this is a weakness of this study.

All agriculture experts were interviewed face-to-face except one who due to availability had to be interviewed via Skype. 7 focus groups with young farmers from 7 different cooperatives[14] were conducted using semi-structured focus group guides. There was a minimum of 7 farmers in each focus group and a maximum of 10 members based on their willingness and availability to take part. Similar to the interview schedules, the focus group guides used were made up of questions which explored the experiences of young farmers in navigating their trade. Data was further collected through attending 4 youth agriculture tours and 5 youth farming committee meetings to just sit in and observe and listen to the nature of discussions.

Figure 3.1: Data collection methods quantified

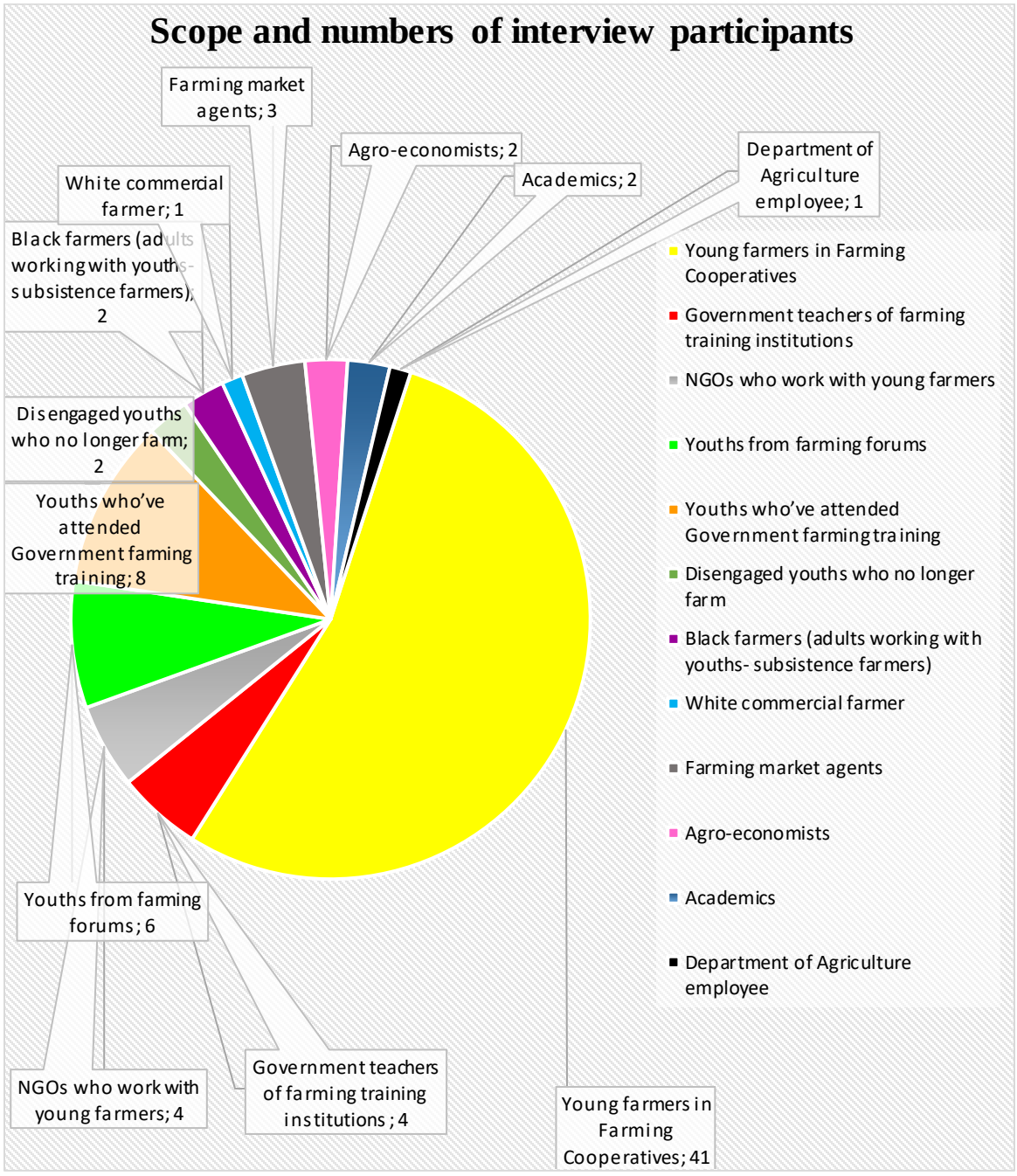
The following quantifiable primary data collection methods were used:



This sample can be summed up as follows:

[14] Planet Green Cooperative, Ikakgeng Primary Cooperative, Daluxolo Primary Cooperative, Phaphamang Environmental Agriculture Cooperative, Inqanawe Cooperative, Lakeside Community Food Gardens, Senzushintsho Cooperative

Figure 3.2: Scope of interview participants



The profile of young farmers interviewed can be summed up as follows:

Table 3.1: Profile of young farmers (Total number=41)

Demographic Factor	Sub-Category	No.
Age of farmers	20 to 25 years	6 (2 females 4 males)
	26 to 30 years	10 (3 females 7 males)
	31 to 35 years	25 (5 females 20 males)

Most interviews were recorded using an audio-recorder with permission from the participants. However, a few were not audio-recorded either because permission to record was not granted or that the interview was conducted through participatory engagement in the farming practice itself such that recording became impossible as the researcher too was working the land along with the farmers. In these instances notes were written immediately afterwards or during tea and lunch breaks to capture the key issues raised during the interviews which had been conducted in the form of conversation whilst being engaged in the farming activities with the participants. For example, in three cooperatives the researcher had to conduct participatory research in which interviews were carried out in the form of conversations with the young farmers as we worked in their tunnels and on their pieces of land. This was particularly unique to three cooperatives whose chairmen gave me permission to interview their young farmers on condition that I too worked on the land as they did not want their youths disrupted from working. All three cooperatives were chasing deadlines to deliver their produce by certain dates in the near future and so the presence of the researcher to interview the youths whilst sitting and chatting was seen as a waste of time unless the researcher too engaged in the farming activities whilst conversing with the youths.

Figure 3.3: Farming practices being conducted by some youth cooperatives

Left: the researcher on site with some female farmers whilst assisting to plant lettuce.

Right: the researcher on site assisting with harvesting broccoli.





Source: Chibonore (2019). Research data, Orange Farm.

The focal analysis of the thesis is however not on cooperatives but rather on the individualised experiences of the young farmers who were part of these farming cooperatives. However, both the concept of youth and that of cooperatives were useful as data sources for analysis in this thesis as the two complemented each other. In South Africa cooperatives are seen as a tool to alleviating poverty (Tshuma & Boyana, 2013) although questions have been asked in academic circles as to whether cooperatives are a solution for empowering youths to "shape their own futures, and if so, how and in what ways"? (Hartley & Johnson, 2014, p. 56). Significant emerging literature has shown that farmers engaged in collective action through cooperatives have a higher likelihood of embarking in market participation, adopting technology and increasing their general welfare (Sinyolo & Mudhara, 2018). Cooperatives are believed to offer critical spaces and environments of learning for youths which are social in nature (Hartley & Johnson, 2014). However, despite agriculture being seen as posing potential for rural development and poverty alleviation not much is known regarding the characteristics and impact of the characteristics of young people belonging to farming cooperatives on their agricultural projects (Maele et al., 2015).

Participatory research also occurred through the researcher joining the YARD youth WhatsApp group in order to get a first-hand understanding of the dynamics that happened virtually amongst these young farmers within their farming virtual circles. The WhatsApp group was a platform where young farmers daily shared as many farming opportunities with one another in a harmonious and unanimous effort to empower each other in the industry. The purpose of the group was to serve the interests & empower the youth aged 18 - 35 in agriculture, environment & land reform areas within the context of rural development for their region. Its administrators who were YARD representative committee members encouraged the sharing of matters & opportunities related to agriculture, environment & land reform, and required that members did not engage in other unrelated conversations on the group or forward pictures or videos or chain messages that had nothing to do with the purpose of the group. It was through this group that the researcher got to attend some Agriculture tours which were organised for these youths by YARD with help from the Department Of Agriculture. These agri-tours happened at different times and in different locations and were a form of training and conscientization for the young farmers who were mostly still in the incubation phase. These tours were mostly for raising awareness to the young farmers and to show them how the more established farming enterprises and farming markets work in and around Gauteng Province.

Part of the desktop research for this study involved watching YouTube videos of the public hearings on the Expropriation of Land Without Compensation (EWC) debate which were carried out across South Africa and aired on the South African Parliament's official YouTube channel. I had to watch the videos and do my own transcribing of the youth voices in the debates. I particularly sifted for youth voices that specifically echoed similar sentiments to those of the youths in my study in Orange Farm as well as youths sentiments that I felt would contribute in some way to my research findings. This was done because I discovered that none of the public hearings had been officially transcribed nor written verbally in great detail for public consumption and were not uploaded on the Parliament's website in written format. The downside to my transcribing is that in cases where the youths did not specify their age or their youth organizational affiliation I used my own discernment and subjective judgement to decide whom I thought was a youth or who looked like they fall within the youthful category that I am studying. I watched all the videos and specifically took the youth voices that spoke to my research.

All youths who spoke and whose views I captured were black and coloured only. Some youth contributions from the public hearings on EWC were translated on my behalf by a friend who speaks the South African local languages as I do not speak any of them but can only understand a little bit. However, some public hearings like those that happened in the Free-State, Eastern Cape and KwaZulu Natal had official interpreters appointed/contracted by parliament to translate each individual contribution that was given in a vernacular language so this made it easy for me to just listen to the English translations provided by the interpreter immediately after the contribution was made. However, I did feel that in some instances the interpreters left out some key translations in their attempt to summarise what the speakers were saying as I can partly understand some vernacular languages. In some instances the translators would simply stand up to state the position of the youth such as "I support land expropriation without compensation" without then expanding further to explain the reasons that the youth gave for their position.

Some challenges I faced were that the audio was quite poor in some of the public hearings especially the Limpopo recordings. On average 6 youths spoke per each session of the public hearings that was filmed (out of a possible average of 50 adults who were filmed per session). This has gotten me wondering whether young people are not that interested in the land issue or were perhaps at work as it was more of the middle aged men and women who spoke. Most of those youths who did speak mainly focused on their desire for land for housing. The majority of youths who spoke mainly echoed a desire to see the constitution amended for the sake of black emancipation. Very few were against a constitutional amendment with the main reason being that the leading party had failed to manage the land process thus far. I only transcribed the contributions by young people which specifically were echoing similar sentiments on land as those of the youths in Orange Farm.

I purposefully did not transcribe all youth contributions as some were either political outrage or were either speaking to other issues surrounding the constitutional amendment but were far from addressing my research question or my interested area of study. For example, the Limpopo Public Hearing 1 did not have much of substance that was echoed by the young people that I could relate to my research. I also found it interesting that most youths who spoke on their support of a constitutional amendment of Section 25 largely gave "economic emancipation" as their main reason although they did not specifically allude to agriculture. One then wonders whether the

youths have a solid understanding of agriculture as a means to economic emancipation too? I am of the opinion that these young people want the land but not necessarily for farming but for other economic ventures thereby showing how agriculture as a job creator and means to food security is in danger of extension by young black people.

Most young people who contributed to the land hearings were males with an average of one young female for each group of about 6 youths per each public hearing session. I then wonder whether the females are not interested in engaging on this issue or they are busy elsewhere or they are not engaging in agricultural activities much. The Constitutional Review Committee in KwaZulu Natal (Public Hearing Part 1) actually had no youth who spoke in this round. Also interesting is that out of all youths who spoke in Limpopo province only one was against the constitutional amendment arguing that black people just want land but do not farm on it. One youth openly said that she wanted land for housing as she was not interested in farming and did not know how to do it.

Eastern Cape public hearings Part 1 was not uploaded on the parliament official YouTube page so I did not have an opportunity to watch it and transcribe the youth voices. Instead, only Part 2 was uploaded and I did not manage to transcribe the youth voices on that recording as those youths who spoke did not echo sentiments that I felt were linked to my research in any way. Also, the Gauteng Province public hearings were conducted in the city of Tshwane hence there is no separate recording for Gauteng which was uploaded onto the parliament's official YouTube page.

In light of the EWC hearings an examination of ways that land reform plans can cater for youths as a tool for empowerment and gainful youth employment is key given the high youth unemployment in the country (Dlamini & Ogunnubi, 2018). These same scholars raise a critique that the various land reform policies in South Africa have failed to consider the role of youth as evidenced by government's failure to accommodate the youth's land interests and needs thus calling for alternative more effective and sustainable approaches to land reform beyond the EWC innuendos. Akinola (2020) interrogates the concept of EWC raising the critique that despite youthful voices intensifying the need for radicalised land reform there remains no clarity around how the EWC as a policy in itself would effectively address the needs for rural development and support required by black emerging farmers. The youth are most marginalised and vulnerable to poverty and food insecurity and are in the same vulnerability category as women and the rural

population therefore justifying a need for rethinking the approaches to land reform for the benefit of these marginalised groups to be able to utilise opportunities brought about by land and farming (Sabi, 2021). Similarly, Clark (2019) argues that providing the historical context of South Africa's land question is much easier than consensus on how it should be dealt with although there is evident urgent need for change and redistribution as the country's wealth is mainly in white hands with severe disparities existing between white farmers versus black farmers expertise and resources thus presenting challenges for black people to adequately exploit opportunities presented by land and farming.

Some challenges faced by the researcher in listening to the public hearings were that the audio was quite poor in some of the hearings especially the Limpopo recordings. Also, the Eastern Cape public hearings Part 1 was not uploaded on the parliament official YouTube channel so this was not watched.

Lastly, as already stated in previous chapters, COVID-19 though not a key focus of this research emerged towards the conclusion of this research and thesis write up and raised interest in questions and implications of the pandemic for the youth and agriculture problem. A lot of the data for analysis of the impact of COVID-19 on agriculture was largely derived from secondary data such as published journals, statistics reports, online newspapers with the exception of a few telephonic conversations (mainly via WhatsApp calls and messages) with some of the participants from the pre-COVID-19 field research process.

In conclusion, data during the entire research process was collected in four phases as follows:

Phase One:	**Phase Two:**	**Phase Three:**	**Phase Four:**
August 2018- August 2019.	March 2019- March 2020.	December 2019- January 2021	April 2020- September 2020
Primary data- Interviews with young	Primary data- Interviews with young	Secondary data- desktop research on reports from	WhatsApp conversations with young

farmers and experts in the field.	farmers and experts in the field.	international organisations such as FAO, World Bank etc.	farmers to observe social distancing rules on COVID-19
	Secondary data-information from online electronic archives e.g news articles, Parliament videos, reports etc.		

3.4 Thematic Content Analysis

Data analysis was carried out using thematic content analysis. Thematic analysis captures the "complexities of meaning within a textual data set" through the capture of implicit and explicit ideas emerging from the data (Guest et al., 2011, p. 10-11). Thematic content analysis focuses on converting "raw data to final patterns of meaning which can be systematically categorised according to what a unit of meaning signifies for the researcher" (Henning et al., 2004, p. 102).

The key themes which emerged in the study were:

- The role of emerging modern technologies such as progressions of the third and fourth agricultural industrial revolutions on the commonly held narrative that youth interest in farming is waning.
- Youth aspirations for farming at the wake of agrarian transformation in South Africa.
- The role of the state in relation to youth agriculture to ensure success of agrarian transformation and rural development as well as youth responses to these interventions.
- The implications of land reform on youth farming in South Africa.
- The wider implications of COVID-19 to youth farming, agrarian transformation and rural development?

This research followed Patton's (2002) approach to data analysis and interpretation. This approach states that the process of conducting data analysis "involves reducing the volume of raw information, sifting trivia from significance, identifying significant patterns, and constructing a framework for communicating the essence of what the data reveal" (Patton, 2002, p.432). The following phases were adopted during the primary data analysis processes:

Phase 1: Orientation to the data- I began by manually analysing raw data which had been collected and transcribed from interview recordings of the young farmers and experts. I did this initial step to identify any errors and omissions and to correct these as much as possible. This initial phase gave me an overview of the research material and content I was working with.

Phase 2: Analysing the data- Here I began to familiarize myself with my data a lot more and started summarizing the data into the main emerging categories. Though very lengthy and tedious, this process helped me to really get a clearer visual and appreciation of the trends that had really come out of my data collection processes.

Phase 3: Final composition of analysed data- This phase involved a final write up, discussion and analysis of the themes of the set data whilst establishing the patterns which had emerged. Here an in-depth discussion and analysis of my data occurred in the form of a final write up.

3.5 Ethical Considerations

According to Henning et al (2004) ethical considerations are those ways of carrying out research in a manner which does not infringe on people's rights. This involves following a set of principles which ensure safety of all concerned in the research process (Chadwick et al., 1984).

Informed consent

Informed consent involves the researcher clearly explaining to the participants about the nature of the research so that participants become fully aware of what they will be taking part in (Silverman, 2001). In my study both the young farmers and experts in the field only took part being made fully aware of the scope of interviews. They were also made aware of the full extent of their contribution

and that they would not get any financial benefits from these interviews. They were also informed of the fact that the research would not change anything for their current livelihoods. All this communication was delivered both in writing and verbally prior to any interviews or focus groups.

Violation of Privacy/Anonymity/Confidentiality

According to Kumar (2005) the identities of participants must be protected at all times and their private lives should be respected. I have thus to the best of my abilities tried to write my analysis in such a way that does not give away the names or positions of my participants in a manner that reveals their identities or exposes them. I have changed all names and used pseudonyms. I have also tried not to expose certain organisational posts within organisations that would make it obvious who the person in question is. The participants in this study were informed of this anonymity of their identities in the data compilation and report writing of the research as their identities would be protected through the use of pseudonyms. However, participants' identities were not anonymous to me the researcher and in cases of focus groups their identities were known to one another. My supervisor was also aware of who my participants were and all participants were informed of this fact prior to conducting interviews. Also, interviews were recorded using a recorder and participants had their permission sought for these recordings to happen. As a result I did have a few individuals who were not comfortable having their conversations recorded and as such I had to write notes in those interviews. The interview recordings shall be kept locked away in a safe for a period of time then discarded after six years provided that no research publications stem from the study. Participants were made aware of this as well.

Voluntary Participation and the Right to Withdraw from the Study

Voluntary participation involves allowing participants to willingly take part in the study and also giving them the freedom to withdraw from the study as and when they so wish (Babbie & Mouton, 2004). Participants were informed of the option to withdraw from the research at any time if they so wished and could do so without giving any justification to me the researcher. As a result I actually had one interview that was cut short as the female farmer had a young child who was unwell and required her attention. This interview was never followed up on by both me the researcher nor the participant. Participation was therefore not coerced but carried out on agreeable terms between the researcher and participants at all times.

Beneficence

Beneficence is concerned with ensuring that goodness and an act of kindness and concern over the participants is adhered to by the researcher at all times (Irwin, 2006). Walker (1985) notes that it is critical for researchers to ensure that the environment in which the interviews are conducted is safe and convenient for participants. A conscious effort was made by the researcher to portray a non-judgmental attitude towards diverse responses and perspectives that were shared by participants even when they differed from my own. I also accepted, appreciated and respected the diversity within each participant during the process of data collection.

Avoidance of harm or non-maleficence

This is largely concerned with ensuring that no harm occurs to participants during the researching process (Babbie & Mouton, 2004; Henning et al., 2004). Harm can take different forms such as physical, emotional or psychological but should be avoided by the researcher as far as possible. I therefore ensured that my interviews and focus groups were conducted in environments that were safe and friendly to all participants. I only conducted my interviews in venues which had been suggested and approved by the participants and at a time of their convenience. Also, the research was conducted in an open and truthful manner so as to avoid deception as this can potentially be both emotionally and physically harmful to participants in the long run. There were no hidden intentions on the part of the researcher and this was made very clear to the participants.

Approval of studies by institutional ethics committee

The research was only carried out after receiving the ethics clearance from the University of the Witwatersrand Human Research Ethics Committee (Non-Medical), and in accordance with its requirements. I had to produce this ethics clearance certificate to formal organisations where expert interviews were required. The young farmers themselves were content with a verbal understanding of the stipulations of this ethics certificate and were largely not interested in seeing it prior to interviews or focus groups.

Publication of findings and feedback given to participants

Scholars highlight that the final research report should be made available to participants if and when they so request it (Babbie & Mouton, 2004). In line with this, participants were informed that an electronic copy of the final research report containing the findings of the study would be made available to them if they so desired. Also, regarding the writing of findings, the researcher tried to avoid drawing wrong or deliberately false conclusions that serve her own interests. I also tried not to form research findings which I had already premeditated. Finally, the findings of this research may be published in the form of an academic journal with the protection of participants' identities as mentioned earlier.

3.6 Limitations Of The Study

According to Simon and Goes (2013) every research study no matter how well it has been conducted has limitations. Some of the potential limitations of this research include:

Subjectivity

Subjectivity is concerned with the researcher's personal feelings or thoughts towards the research data and how these should have no influence on the data analysis process (Henning et al., 2004). It was therefore critical that this research process exercised objectivity regardless of my personal views towards the topic under enquiry. I therefore approached the research process and analysis of data in an open-minded way so as to limit the level of personal input and data bias. Morrow (2005) finds it key that an objective approach to research should occur. However, I am aware that the researcher's own subjective pre-occupations could potentially influence the interpretation of the data. Nonetheless, member-checking was carried out in which the researcher revisited the participants with the collected data to confirm the accuracy of that data in order to avoid misinterpretation and enhance clarity by the researcher.

Generalizability

Generalizability has been defined as the extent to which research findings and conclusions can be commonly and overly applied to a broader context (Schofield, 2002). However, I am aware that the research sample size is possibly too small for a general conclusion to be drawn regarding the

experiences of the entire rural youth population within the agricultural sector in South Africa as a whole.

Trustworthiness of study

Trustworthiness in a qualitative inquiry is aimed at supporting the argument that the inquiry's findings are legitimate and worth paying attention to (Morrow, 2005). The integrity of the research conducted is key here (Shenton, 2004; Rolfe, 2006). The researcher therefore looks at credibility (the authenticity and realistic nature of the research), transferability (the extent to which the findings can be applied to a different setting by following similar procedures), dependability (the extent to which similar findings will be obtained if the study is replicated in a similar context), and confirmability of the research project and its findings (Lincoln & Guba, 1985). To enhance trustworthiness, I encouraged openness and honesty in sharing of experiences by all participants prior to conducting the interviews so as to get farmers' experiences that are authentic and genuine. However, I am aware that there is still no guarantee that participants honoured the honesty-agreement as their responses were purely subject to their discretion and comfort in answering the questions. I had no control over the truthfulness and legitimacy of data provided by participants either. However, a detailed account of the methodology has been provided which can potentially be used for comparison by future researchers wishing to conduct a similar study.

3.7 Conclusion

The chapter unpacked the methodological approach utilised in this thesis and reflected on the ethical considerations as well as limitations of the study. In a nutshell, a qualitative approach was used to capture the experiences of the research participants and a case study design was used to explore the various cooperatives and understand the phenomenon being investigated. Interview schedules and focus group guides were the main instruments utilised to collect data. Thematic content analysis was then used to capture and interpret the ideas and meaning of the data. Ethical considerations were catered for accordingly prior to, during and after data collection. The following chapter provides a discussion of the findings of this study in relation to the research question which probed the issue of youth aspirations. It explores youth interests in farming as well as interrogates their level of engagement. The chapter explores how youth aspirations for farming

are (de)constructed in the various farming cooperatives and what forms these aspirations take at the wake of the agrarian transformation in South Africa. Further, the chapter explores the role of land reform and the state in relation to youth agriculture to ensure success of agrarian transformation and rural development. Consequently, it also explores the responses by the youths towards these state interventions.

CHAPTER FOUR: YOUTH (DIS)INTEREST OR (DIS)ENGAGEMENT IN FARMING?

"It's a fallacy that young people don't want to be involved in agriculture. But there is a problem with the image of agriculture. Young people think a black person cannot be a commercial farmer, because currently there's a white face there. That image is very big among young people".[15]

4.1 Introduction

The above quote is a narrative that youth engagement in agriculture is largely dependent on the image and exposure they have of the sector. Most youths shared this sentiment that they do not have adequate information to navigate and succeed in the farming sector. It was believed that access to timely and relevant information, skills training, extension support, farming stipends, as well as access to markets and larger pieces of farming land can boost their performance in farming which will ultimately improve the image of agriculture amongst their non-farming peers, thus, igniting youth interest in farming. This chapter discusses and analyses government's engagements with young farmers as this is a key theme to this study. An analysis is conducted on the role played by the existing state structural support mechanisms towards either igniting or thwarting youth interests and aspirations in farming, and how one might think about and evaluate these state interventions towards agrarian transformation in favour of youth involvement in agriculture in rural South Africa. In particular, this chapter asks: what has been the role of the state in relation to youth agriculture to ensure success of agrarian transformation and rural development? What have been the responses by the youths towards these state interventions?

This chapter reveals that structural resource challenges which were largely a responsibility of the state hindered youth success in the agricultural sector. However, this did not deter the youth from continuing to farm as they had a passion and aspirations to grow in the trade.This finding contradicts commonly held scholarly narratives and prevailing beliefs by many authors (see Girard, 2017; Eistrup et al., 2019; Ripoll et al., 2017; Sumberg et al., 2017; Yami et al., 2019, for more detail) that young people have disinterest and do not envision themselves embarking on a

[15] *NEWS24: TITLE: Can attracting more young people to agriculture naturally solve land reform questions.* https://www.news24.com/Analysis/can-attracting-more-young-people-to-agriculture-naturally-solve-land-reform-question-20180522.

farming career or making farming a livelihood option. The chapter also reveals that the level of knowledge and exposure to the farming sector that the youths had was largely dependent on existing state structural support as the availability of this support played a significant role in how youth agriculture was generally perceived, received and experienced. I discuss that while structural support may be present in various forms, easier access to as well as dependability of these resources was perceived as being more desirable and of greater importance. A special focus on youth access to key structural resources using an African perspective has implications on the discourse on inclusive agrarian transformation which acknowledges young Africans as key stakeholders, competent citizens and active participants towards the current and future food security and economic development on the continent.

The next section explores in depth how the young farmers generally navigated the farming space in the midst of weak state support. In a nutshell, the young farmers valued their trade and were keen to learn more and improve their expertise. Though often faced with many structural challenges and resource shortages due to poverty and marginalization, they did not let their lack deter them from the trade but rather remained enthusiastic to continue to explore various ways to survive with the hope to eventually thrive.

4.2 Navigating The Farming Space: Youth Interest Versus Resource Shortage

This section advances an African perspective towards youth-inclusive agrarian reform in discussing how the young farmers navigate their terrain. I argue reason that resource scarcity impacts on youth interest and generational renewal in the Agricultural Sector in South Africa, leading to weak although present youth participation in socio-economic development initiatives through farming. As noted in Chapter two, scholars have called for a rethinking of how to effectively engage youths to intrigue their interest in agriculture as they possess a higher drive for development which can be harnessed to address the food insecurities and poverty in developing countries (Haruna et al., 2019). The narratives discussed here on youth interest in farming are derived from both disengaged youths as well as current young farmers. The current farmers shared their reasons and understandings of why their peers disengaged from farming or were not interested in farming at all. Meanwhile, the disengaged farmers shared their reasons for why they had abandoned farming. It is key to note however that only two disengaged young farmers could

be traced and interviewed. The researcher is aware that this is not enough to formulate firm conclusions yet their narratives have been captured as they were synonymous to those that were raised by the youths who were still active farmers.

It emerged in this study that the few farmers who had left the trade had disengaged due to the many frustrating and unfriendly existing dynamics in the sector that thwarted their progress in farming. Farming was seen as a tough journey hence some opted to quit along the way and decided to sit at home and gain back their 'unemployed' status. Disengagement from agriculture was attributed to unconducive external factors that were beyond their control. Lack of extension support, insufficiency of resources, poor income generation, hard labour amongst others were the core reasons for this withdrawal. It was perceived that "young people are motivated to do farming at large scale but because of some shortages it becomes an uphill struggle, especially with lack of basic farming equipment, appropriate protective clothing and more" (research participant, 18/12/18). These sentiments align with White (2012, p. 9) who argues that young people are fleeing agriculture due to "the downgrading of farming and rural life; the chronic neglect of small-scale agriculture and rural infrastructure". However, the youths studied who had abandoned farming did highlight that because they enjoyed farming they were continuing with "small-scale gardening" within their homes as that was "less labour intensive than attempting to work on a bigger piece of land without adequate resources" (research participant, 18/02/19). These harsh experiences made it difficult to continue to attempt farming at a larger scale but did not deter them from working in their home-gardens as the passion for the trade existed.

The young farmers studied opposed the commonly held view that youths are not interested in farming which was highlighted in chapter two (see Girard, 2017; Eistrup et al., 2019; Ripoll et al., 2017; Sumberg et al., 2017; Yami et al., 2019, for more detail). They argued that they possessed interest and passion for farming although pursuing agriculture as a career or livelihood strategy was simply an insurmountable task in the face of "inadequate support" (research participant, 20/08/19). They perceived themselves as being in their incubation phase thus required relevant state support as they desired to thrive in the sector too. Their narratives support the critique made by advocates for pro-poor reforms that the multiple post-apartheid changes in agrarian policies can actually improve the lives of smallholder rural farmers if implemented well yet government has

dismally failed to ensure that these benefits reach all instead of a select few (Jacobs, 2012). Many farmers shared similar sentiments that:

> *"Young people are interested in agriculture but government is letting them down as The Department of Agriculture is not supportive in many ways. For example, it's very difficult to get certain information about the agriculture trade at the Department of Agriculture. Most of these young farmers who are still starting out have no deep pockets and so government needs to assess and see where there is genuine potential and assist in setting them up with the necessary resources and the information they need as well as the skills" (research participant, 4/04/19).*

The Department of Agriculture, Land Reform and Rural Development (DALRRD) colloquially known and referred to as the 'Department of Agriculture' by the farmers is the leading government agency responsible for the farming sector in South Africa. However, its intervention approaches for youth empowerment in farming were seen to be poor and not appropriately reaching these young farmers who live in the outskirts of the city as shall be discussed in greater depth in the following section. The farmers revealed that the interest in farming existed but many challenges which the young people encountered along the way left them vulnerable. Agriculture was seen as a career option which could only be done under more favourable conditions such as greater government support, improved access to information, resources and training. Similarly, a Spanish case study on young livestock farmers revealed that young farmers are an endangered species depending on their ability or inability to access adequate farming land, their educational status, the nature of innovation in their farming activities of interest as well as the level of autonomous decision making that they possess over their activities (Gongora et al., 2019).

However, this poor access to farming support experienced by these young farmers was a stark contrast to the experiences of young people in pre-colonial South Africa who Bundy (1997) described as having had access to solid family support and also inherited farming resources thus making it easier for them to embark on farming as a livelihood strategy. The youths studied were all coming from families who engaged in menial small-scale farming with little productivity. They were attempting to actually become the first in the family to break through in agriculture. The generation before them had failed due to the crippling history of apartheid which stripped the previous generation of arable land, crucial farming resources and farming expertise over time. These challenges experienced by both the disengaged farmers and the current farmers were evidence of what Turok (2018) argued that today's youths are victim's of apartheid's legacy yet they did not get a first hand experience of it.

Using the African perspective to agriculture, this status quo calls for emphasis on agrarian reforms that exclusively focus on (rural) youth given the historical and present-day alienation from the fight against systematically induced poverty and inequality. This explains the poor generational renewal in farming in South Africa as discussed in Chapter one and two. This study supports Metelerkamp et al (2019) in the call for an appropriate theoretical understanding and description of the challenges surrounding youth farming in South Africa given the evidence by Sumberg et al (2017) and Ripoll et al (2017) which shows that young people though a key resource towards development are inadequately engaged in the formulation of sustainable agricultural approaches that concern them given their heterogenous needs and aspirations. Using a youth lens and African perspective for development one can ask how focus can best shift towards rethinking youth roles in African societal development and how best obstacles that create the disabling environment can be addressed?

Many active young farmers in this study revealed that their farming activities were still at an incubation phase and similar to the disengaged farmers they too felt that sustainability and growth at this stage was difficult due to poor structural support. They did not have other sources of income and felt that external assistance in the form of government stipends which they could receive monthly were necessary as a backbone and stop-gap measure whilst they transitioned to more self-reliant farming systems. They argued that not only would stipends incentivise them to stay in the farming sector but that they would help as a support mechanism and a form of diverse income stream until their farming careers became self-sustainable, profitable and dependable. These youths were not on any other forms of state grants to supplement their income hence they felt that as they transition to profitable small-scale farming they needed temporary financial muscle to survive, sustain their families and dependents. At the time of the research most of them were conducting agricultural activities that did not yield income on a monthly basis but rather seasonally. An African perspective to youth farming brings to light the challenges that are specific to these rural youths which call for context-relevant solutions with an understanding of the benefits of youth engagement in agriculture.

Speaking about the existing challenges one young farmer stated that "we started farming a long time ago but we still do not get any decent income coming through, so we need some form of government stipend at least R2640 per month to help us buy bread for our families as we don't get income monthly" (research participant, 16/09/18). The views shared were that stipends would encourage consistency and persistence in agricultural engagement. However, despite this lack of reliable income they would continue to farm in the hope of succeeding one day because they were aware that without tertiary education their chances of acquiring decent formal jobs and a decent income were limited. It was seen as important to keep trying until they succeed at farming as they would be able to become their own bosses despite not having been educated beyond high school. Thus agriculture was believed to bring hope to unemployed and uneducated youths.

Since scholars have argued that younger farmers are proving to have greater aptitude in farming than the older generation (Zantsi & Greyling, 2021), it is worth empowering the rural youths as they possess qualities which can be utilised to advance rural development through agriculture. This thesis argues for an African perspective to farming which sees a financial safety net as a key state investment given that these young farmers were only starting out and apart from their enthusiasm and passion for farming they had no other guarantees of resistance from poverty shocks. The youths felt that the silence by government regarding easier access to support structures equated to violence similar to that perpetrated by the apartheid government except that the current government in the new dispensation of "supposed freedom is more passive or quiet" (research participant, 22/04/2019) towards the pleas of these young farmers. As a result, they perceived that the silence jeopardized the quality of state poverty alleviation programs for young people especially in instances where the youths were trying to empower themselves.

Similar sentiments were shared that "government should improve their political will and enthusiasm towards assisting young farmers to alleviate the financial burden" and argued that there was currently an "unenthusiastic half-hearted approach by government to offer genuine, sustainable, revolutionary and robust interventions which could boost youth farming" (research participant, 15/02/20). Silence was seen as a highly oppressive power imposed on these young farmers by government. It was perceived that the state chose to be "purposefully ignorant" of the existence of these farmers and that "state priorities" were directed towards other "seemingly more important aspects of economic growth and development" (research participant, 15/05/19). Silence

as a concept has been "theorised as a form of quiet, slow, psychological violence" which "invisibly inflicts harm on those categories of people most often in need of advocates, activists, allies, and empathy" (Pillay, 2016, p. 157). Borrowing from this concept, silence ensures a continued suffering of the young farmers in the face of unequal competition. In recognition of this existing oppression, Pillay (2016, p. 157) makes a call for advocates to speak up "against postcolonial injustices, understanding root causes that are mostly historical and racial…and by proactively participating in transformational narratives and dialogues that destabilise, problematise, and confront hegemonic practices maintaining divisive status quos".

These views shared by the farmers on state neglect resonate with those of Metelerkamp et al (2019) that there continues to be a stark polarization between the agricultural support and experiences of white commercial farmers versus other racial groups as was evident at the end of apartheid. These conditions have not changed significantly therefore further marginalizing black youths who typically require greater support to thrive in farming. These young farmers did not dwell strongly on the impact of apartheid but were rather "more concerned about the current government's failures to rectify the existing farming-land shortages, inability to provide adequate agricultural training, inadequate resources and other critical infrastructure to ensure that young black farmers can succeed in the trade" (research participant, 5/11/19). These young farmers were more focused on where they were at that time, their current progress or lack thereof and where they were headed in future and the role of support that government can and should provide.

However, it was revealed that the National Youth Development Agency (NYDA) being a state agency established to address the diverse challenges experienced by South Africa's youth (NYDA, 2021) offered some form of state grants to 'deserving youths' although these grants were not specific to farming youths only but catered to diverse youth entrepreneurship initiatives. These grants were said to be hard-to-reach as the requirements to meet the criteria for these grants were too steep such as being expected to have registered and well-structured business initiatives with well-constructed business plans and budgets. However, these youths did not actually have adequate information regarding the expectations from the NYDA which would qualify them for these youth entrepreneurship grants. Upon conducting further research, I found that the NYDA actually offers a multifaceted package of services for young entrepreneurs which includes non-financial services such as business mentorship, business management training and consultancy,

market linkages among others provided that the youth do not [yet] qualify for the financial grants (NYDA, 2021). The lack of knowledge on this key information showed how due to marginalization and poverty the youths studied were far-removed from easy access to critical information. Such youth programmes like the NYDA need to go into these disadvantaged remote communities in order to be closer to the youths and enlighten and empower them accordingly.

However, one cooperative studied (Phaphamang Environmental Agriculture Cooperative) was a recipient of state grants from both the Department of Public Works and DALRRD as follows:

Box 5.1 A unique case where young farmers were receiving government stipends for farming

There was only one cooperative out of all participants interviewed who stated that they received government stipends. These stipends were however not coming from the DALRRD (which would perhaps be the most appropriate source of funding) but rather from the enterprise sector of the Department of Public Works which supports upcoming entrepreneurs. The DALRRD was instead supporting them with training, tools and seeds on occasion. They explained the conditions and prerequisites that were necessary for them to qualify for these government resources as follows:

> *For a start the government is actually helping us. We are currently paying 220 participants or employees (we have 197 women out of the 220 so we have more women), not only here but on other sites. We have assistance from the department of Public Works with their stipends. From the Department of Agriculture we get assistance with information and advisory stuff such as their talks. The Department of Agriculture also gives us seeds here and there as well as tools once in a while. So the assistance is there but from where I am standing I can tell you this, we still have a long way to go. However, for you to qualify for stipend from the department of Public Works you must be a registered non-profit organization and be in existence for at least 2 years and you need to register the organization for UIF (Unemployment Insurance Fund). This means in case this program ends the farmers should be able to go to the Department of Labour and claim unemployment funding. We have one person who actually successfully claimed when they lost their job with us. Another requirement is that you have to register for quality for injuries and disease so that the farmers can be compensated if injured on the job. You also have to register for CSD with the Department of National Treasury. Everything that you need to do with the government you must register with the Department of National Treasury so in order for you to qualify for funding the requirements are quite cumbersome but will benefit you if you manage to address all of them. (research participants, 2/12/18).*

Source: Research data (2018-9)

Evidently, these requirements were quite steep and could not be met by an average entry-level farmer who was still trying to find their feet in the trade. Inclusive agrarian transformation which

accommodates African rural youths has to actively engage them first to understand their grassroots challenges and needs in order to adequately redress the image of agriculture, reconceptualize the meaning of 'young farmer' if necessary, in order to treat youths as creative active agents who have great potential for transforming society, and who are capable of creating disruptive innovations as competent participants in the food system (Metelerkamp et al., 2019). Key to note is that more youths joined this cooperative on a regular basis as well as inquired frequently about what the cooperative does which was perceived by the young farmers from that cooperative to be a sign of sparked interest towards agriculture. This calls for more funding to be put towards youth agriculture yet Greenberg (2010) has highlighted that the South African national budget has over the years been critiqued for allocating the least amount of funding towards the agriculture sector in an argument that service sectors are performing better than agriculture.

It was also revealed that these young farmers used white commercial farmers as a form of 'mirror image' for the levels of success they would want to reach in the trade. The state of success by white farmers closely resembled the levels of success that the youths aspired to achieve within their own environment. For example, they aspired for similar benefits and privileges that they saw white farmers enjoying in the form of profits, advanced technology, vast arable land and ability to process raw produce into finished products since their businesses were well-established. White farmers experiences were therefore used as a measuring frame for what they ought to have access to and what they felt entitled to as citizens of the same country. However, their sense of entitlement was often frustrated by the various "racist encounters" (research participant, 2/10/18) which they experienced in the field whilst interacting with white commercial farmers.

They alleged that "some white farmers have the mentality that black people have no capacity to engage at commercial farming level such that the white farmers openly sabotage black farmers" (research participant, 2/10/18). The nature of sabotage included selling poor seedlings, impure eggs for breeding, tightening policies around acquiring cannabis licenses as well as refusal to buy young black farmers' products. These sentiments were shared by very few youths and this was because they were the only youths whose farming initiatives were doing well enough for them to interact with the agricultural market outside of their local community [by interacting with white commercial farmers for the purposes of acquiring seeds and other farming resources]. The other young farmers involved in the study were not yet at these more advanced stages and were still

largely buying their seeds from supermarkets thus did not have direct contact with the larger commercial white farmers at any given time.

Regarding a negative encounter with a white farmer one youth said:

> *I don't like white people, in fact not all white people are bad. But some white people are bad. They don't want us to also grow in the agriculture sector. I went to buy eggs for hatching from a white-owned company and they lied to me that they had sold to me pure eggs for me to get pure breed chickens. To my surprise the chickens I bred were not pure breeds. The white people shake the eggs so that you don't get a pure breed when you hatch them. So they sold me eggs that they shook so that they remain at the top in the market. Pure breed chickens are more expensive to buy and sell so they don't want us black people to also make money from (breeding) pure breeds. (research participant, 2/10/18)*

In a completely different incident, another farmer expressed disgruntlement over his experience at a seed market and stated the following:

> *I went to buy lettuce seedlings from a white farmer's shop recently and you know those white people are bad. They sold to me overgrown lettuce seedlings and lied that they are still seedlings. But they were much bigger than the size of normal lettuce seedlings and so most of the lettuce in that batch did not grow very well because we had to plant lettuce that was no longer in its seedling stage. Also at that same shop, I asked them to sell to me a special seed of vegetables and they refused and told me to go and buy the seeds in Germany where they bought them. But I know that if it was a white person they would have sold the (correct) seeds to him. These white people do not want competition. They do not want us to also do very well in agriculture like them. (research participant, 5/03/19)*

Similar experiences were shared by several farmers arguing that white commercial farmers did not want black competition in agriculture. The farmers perceived this sabotage to be a result of a lack of key state structures which should offer the necessary support to young farmers for acquisition of farming resources in the agricultural system. The youths felt that they could not "advance at an equal rate" (research participant, 2/10/18) to that of their white counterparts as the current environment was "disabling in many respects" and did not "allow for growth nor fair competition between young black farmers and white commercial farmers" (research participant, 2/10/18). However, using an African perspective, this thesis acknowledges that the two are not comparable variables due to their different characteristics as the experiences and needs of young black rural farmers in their incubation phase are certainly diverse and unique to their stage of development and are different from those of white established farmers. Thus both groups have heterogenous characteristics whose needs should be conceptualized and dealt with separately.

The young farmers were intentionally kept suppressed as consumers and less as producers by a disabling system which did not allow them to flourish yet they had the passion and used their mirror image to envision the levels of farm success they could potentially achieve with the necessary support structures in place. These experiences and claims of sabotage resonate with an argument made by McEwan and Bek (2006) that core relational and structural power constraints that still exist in the farming sector continue to reinforce the dual nature of the industry whose legacy stems from apartheid and its politicisation of empowerment thus urgent redress of these power constraints is necessary.

Further, some argued that white farmers through their tight networks continued to directly and indirectly stifle the development of potential black farmers. They perceived that white farmers had speed and depth in the farming sector which the young black youths did not have and also had resources and services which black farmers were still reliant on. The disgruntled young farmers expressed a desire to also learn from these white farmers hence they went to them to acquire seedlings and other farming resources. It was felt that the white farmers in question felt insecure and would do anything to ensure that black farmers did not rise to their levels for the purposes of fair competition. These contestations in the market place and supply chain resonate with arguments made by Louw et al (2007) that emerging farmers are unable to equally compete with established commercial farmers in the market place such that support for emerging farmers and small producers within the supply chain in South Africa requires fair trade, channelling financial services in order to enhance their competitiveness and limit entry barriers and increase chances of survival.

However, Royal and Boipono (2014) argue that post-apartheid the government has tried to empower black farmers by identifying white farmers who could mentor them but these mentorship programmes have failed dismally because of negative market forces that work against the black farmers despite having been mentored thus failing to grow and remaining alienated from the system. This calls for understanding the complex livelihoods systems of the farmers and their farming motivations .

This study also found out that white farmers were taking advantage of the policy provisions which have been made available for the benefit of black farmers such as BEE. One black marketing agent

at the Johannesburg City Deep Farmers Market spoke of his experience with white farmers and shared sentiments similar to those of many other black marketing-agents as follows:

> *"Now today the AgriBEE provisions which have been put in place to help promote the black farmer are not working. The implementation is poor because white people put a black person in front but in the background they are the real owners of the business but are now directly benefitting from BEE provisions which have been put to support black farmers. So we are just not winning because the white man is too greedy and will do anything to keep us farming at the bottom of the food chain. Then also, government itself is not assisting black emerging farmers especially with resource allocation lacking".* (research participant, 7/08/19)

Thus, some white commercial farmers were argued to purposefully sabotage upcoming black farmers or even fraudulently benefit from the AgriBEE system for purposes of staying ahead as the industry leaders and quash any opportunities for black farmers to thrive. The updated AgriBEE Sector Code was published on 8 December 2017 effective immediately with the intention of "promoting equitable access to and participation of 'Black' People in the entire agricultural value chain; empowering rural and local communities to have access to agricultural economic activities, land, agricultural infrastructure, ownership and skills; unlocking the full entrepreneurial skills and potential of 'Black' People in the Sector; de-racialising land and ownership; facilitating structural changes in agricultural support systems" amongst other key goals (Nel, 2019, p. 20). This Sector Code stipulates various minimum standard expectations for large farming enterprises such as having a subminimum requirement of 40% black ownership, ensure 40% skills development, 40% enterprise and supplier development of black farmers. It also stipulates various exemptions such as preferential procurement for black-owned and female black-owned start-up agricultural enterprises.

Despite these favourable stipulations in the revised AgriBEE Sector Code, the previous one was of little benefit to black farmers as the target populations had not been adequately included in the formulation and design of the policy due to their poor social organization (Norris et al., 2011). Further, the black emerging farmers had poor agricultural technical skills limiting their chances of success in agriculture (Kloppers & Fourie, 2014). Also, this initiative had no strong linkages with other critical institutions in agriculture such as the Land Bank and all departments of agriculture at provincial and national level for the solid support of farmers (Norris et al., 2011). Instead, white farmers benefit more from such partnerships as they get AgriBEE exemptions for training (skills development) or empowering black farmers (Nel, 2019). Though still too early to evaluate, it will be interesting to note the results of this newly revised AgriBEE Sector Code towards

empowerment of black small-scale farmers and youths in particular given that the youths in my study had a desire to achieve similar success to that of their mirror image white counterparts. Perhaps this is an area for future studies.

4.3 The Tripartite Union: Sales, Access To Markets And Availability Of Arable Land

Given the experiences discussed above, this section asks how youth aspirations for farming are (de)constructed in the various farming cooperatives and what forms these aspirations take at the wake of the agrarian transformation in South Africa? An Africam perspective regarding agrarian transformation in South Africa allows for a rethinking on contemporary livelihoods and aspirations to ensure appropriate future development for the benefit of rural youths.

The farmers in the study shared their methods of accessing markets for their produce which revealed a significant neglect of small-scale farmers' needs which were a prerequisite for them to thrive in the sector. They stated that they used various means of sale such as selling to the community on a door-to-door basis, selling to the community via Facebook (by posting their produce on their personal profile statuses as well as using Facebook Marketplace) and WhatsApp, as well as selling in the city. Most of them sold in the city especially during the week and then sold largely to their local community on weekends. They all used public transport to carry their produce to the city to sell their harvests as their produce was not yet large enough to require hiring private transport. Most of them stated that selling the produce in the city was the easiest way to have all their produce bought due to the large volume of potential customers and they asserted that as long as one's produce was healthy and fresh the chances of having all produce bought by end of day were high especially during rush-hour at the close of business. This resonates with an argument made by Follmann et al (2021) that an increase in the urban population has created opportunities for the agricultural trade to thrive given the need for sustainable food sources. Though exhausting, the trip to the city was often worth it although it had its own concerns of safety of one's profits against the many thieves loitering in the CBD.

The farmers highlighted that the "state should assist" them in "provision of guaranteed markets to simplify the sales," as sometimes they were not able to sell all their produce whilst it was still fresh (research participant, 5/03/19). If they had "guaranteed markets" it would simplify their

engagement in the sector as "established suppliers" thus guaranteeing them "income at all times when their harvests are ready" (research participant, 3/05/20). Using an African perspective, it is evident that these experiences were a manifestation of apartheid's skewed support towards white farmers as shown by Bundy (1997) that black people were stripped off their access to markets thus forcing them to become capitalist laborers. Hence, the present-day young farmer has no access to solid markets as the present-day government has failed to effectively provide support structures to these descendants of previously successful peasant farmers. However, the young farmers stated that they did not always travel to the city as their sales depended on harvest season as they were not yet at a stage where they were producing enough harvest for continuous sales throughout the year. They stated that they did not have large enough land for them to be able to produce enough for continuous sales throughout all seasons as they were largely organic open-air farmers whose production quantities depended heavily on the amount of arable land available. Thus sales, access to markets and availability of land were discussed as a tripartite union that required some form of balance. This thesis will now discuss the issue of access to markets raised followed by the land contestations raised as both of these had an impact on sales.

4.3.1 Market Access Contestations

Most farmers generally felt that access to set markets outside of their local community was difficult unless if one was going to sell their produce in the city. There was a desire for ongoing and sustainable access to guaranteed markets which could be relied on as a means to acquiring guaranteed income on an ongoing basis. The youths felt that government had the power to give them access to markets which they could not penetrate due to red tape and corruption experienced in state tender processes.

On how best government can assist young farmers one female farmer said:

> *Government can best assist young farmers by opening up the markets; make the markets available, there are hospitals, prisons, clinics. Government must do something about those places instead of them sourcing vegetables from Woolworths or Pick n Pay. Pick n Pay is a millionaire now, so instead, they should come to us the new farmers, because we are farming organic freshly produced food. They should buy from us and distribute to the hospitals, prisons, the clinics and they must start cooking fresh food for the older persons as well when they go to fetch their pills at the clinic. If we can be given such tenders we will rise much quicker in the farming industry. (research participant, 3/10/18)*

At a YARD taskforce meeting another disgruntled young black farmer expressed his frustration with the current supposedly racial farming industry as follows:

> *The white people still run the show. How do we black youths catch up in farming when we are so far behind. It's like asking Oscar Pistorius (metaphor for disabled persons) to run without his blades and tell him to catch up to Usain Bolt (metaphor for someone who is well abled and fully equipped). The white people are far ahead because their forefathers stole from us. We have to find our own gap in the market. White business people don't want to buy our produce. They tell us that they already have their own suppliers so we struggle to get lucrative markets because our own black people don't pay well. (research participant, 13/09/19)*

The above sentiments were shared by many farmers who expressed a desperate need for access to consistent well-paying markets. The youths expressed that the current agriculture models which they used within their cooperatives were not bringing in enough income for sustainability and sustenance. They desired to not only participate in the dominant corporate food systems but to also create sustainable markets of their own where they could experience security from the oppressive elements that existed within the corporate food system. As youth-led farming cooperatives, they felt that they too had the ability to produce agricultural outputs which could equally compete with the mainstream stores. Nonetheless, these aspirations were curtailed by the lack of appropriate structures within their communities that could allow them to produce more since their land was already limited and largely did not belong to them as highlighted in the methodology chapter three of this thesis.

What these young people desired regarding government assistance with access to markets can be likened to a desire for support systems such as the Brazilian government's state procurement programmes where produce is acquired from small farmers thereby ensuring market certainty for them. Brazil is a typical case study where government innovation has contributed to the provision of markets for farmers and support of rural entrepreneurs as part of its food security strategy (Kelly & Swensson, 2017; Swensson, 2015). This inclusive approach involves addressing economic and social development issues simultaneously through establishing procurement programmes which are structured in a manner that demands supplies from smallholder farmers as well as the distribution of food to those who are categorised as food and nutritionally insecure (Wittman & Blesh, 2015).

Box 5.2 Brazil Case of government procurement programmes in support of smallholder farmers

Brazil's Institutional Procurement Programmes (IPP) constitute the Programa de Aquisição de Alimentos / Food Procurement Programme [PAA] and Programa Nacional de Alimentação Escolar / National School Feeding Programme [PNAE]. Regarding the PAA, direct government participation in the procurement of food from family producers is the key and main activity (Aranha, 2011). PAA was established in 2003. Friendly mechanisms which make this government procurement easy are in place instead of the conventional bidding processes where farmers compete for government tenders. Its 5 modus operandi are: "Purchase with Simultaneous Donation, Direct Purchase, Incentive for Milk Production and Consumption, Support for Stock and Institutional Purchase" (Swensson, 2015, page iv). Purchase with Simultaneous Donation (CDS) [Compra com Doação Simultânea] is the PAA main method of tracking the disbursements of funds and monitoring of the CDS program recipients. This primarily involves the government being the largest customer who procures the food produce for onward donation to recipient entities ("such as day-care centres, shelter homes, food banks, subsidized restaurants and community kitchens, public and philanthropic hospitals") with its objective of sufficing the domestic demand for nutritional development and augmentation for people with food and nutrition deficiency (Kelly & Swensson, 2017, p.6).

"Direct Purchase (CD) [Compra Direta] encompasses the purchase of a set of pre-determined products when prices are low, or when there is high demand from populations in food insecurity situations" (Kelly & Swensson, 2017, page 6). CD aims to standardize the price of relevant family farming products, suffice the demands of its food access initiatives and create strategic reserves. Incentive for Milk Production and Consumption (IPCL) [Incentivo à Produção e ao Consumo de Leite] entails the procuring of cow or goat milk from subsistence farmers with the objective of combating hunger and malnutrition though the issuance and dispensation of free milk for people in situations of social vulnerability, food and nutritional deficiency; while boosting domestic and subsistence farmers production of milk, this in turn will guarantee a standardized and market compatible price. Support for Stock Formation (FE) [Apoio à Formação de Estoques] offers monetary resources targeted at formal groups of subsistence farmers enabling them to procure and reserve produce from the current harvest and sell them thenceforth, under more conducive or expedient conditions (Kelly & Swensson, 2017). Institutional Purchase [Compra Institucional] allows for the acquisition of food to meet daily

food demand from the direct and indirect public administration at federal, state and municipality level (including hospitals, prisons, military bases, university restaurants, etc.). It is administered directly by these institutions with their own resources (Kelly & Swensson, 2017).

Regarding the PNAE, it has been in existence since the 1950s although in 2009 this school feeding programme was directly linked to family farming policies by government. PNAE's objective is to meet students' nutritional needs at school "as well as to promote student growth, development, learning and academic achievement, and healthy nutritional habits" (Kelly & Swensson, 2017, page 7). This programme requires that 30% of all food (30% of the procurement budget) for school meals must be directly purchased from family rural entrepreneurs and family farmers instead of being purchased via the conventional public bidding process in order to receive the government tender (Aranha, 2011). This the states, municipalities as well as federal schools are required by these policies to purchase from the lower level farmer thereby empowering these farmers. Both programmes are doing very well such that by 2012 an approximate 190 000 smallholder farmers had benefitted from the PAA programme alone (Swensson, 2017).

Source: Aranha (2011); Swensson (2017); Kelly & Swensson (2017

Friendly procurement processes which the youths studied desired could remove the limitations and barriers of inabilities to access formal markets which they experienced as they then could become guaranteed of access to better paying markets for their produce. Conceptually, the World Food Programme has defined this as a need for creating "an enabling environment" for small-scale farmers to access markets and to participate in tendering, while arranging distribution channels for their products (WFP, 2008, p. 37 as cited by Otsuki, 2011, p. 215). Using an African perspective towards agriculture, this thesis argues that such empowerment through access to guaranteed markets will over time result in positive spill-overs of the gains from farming towards the rural non-farm economy too. Agriculture can transform rural economies and kickstart development through youth inclusion in agricultural transformation.

It was highlighted that the desired government procurement services should not follow conventional bidding, tendering or free market policies as these would disqualify the farmers from participating on an equal playing field versus established commercial farmers and those with political connections. They emphasized a desire for a disruption of the existing traditional procurement processes as the conventional processes did not fairly accommodate them. Brazil implemented development-oriented policies which it merged with some already existing social welfare policies so as to adequately cater for the diverse social contexts in the country (Wittman & Blesh, 2015). Since the youths studied failed to meet standards required for accessing certain markets, the Brazil case becomes of relevance again as it reveals that for government to effectively assist entry level young farmers with markets they also need to include access to technical assistance such as marketing, managerial and production skills. This is so that the farmers are able to effectively comply with and meet the standard quality and quantity requirements that such a government programme would put in place. However, such programs are beneficial although easier access to them for youths in remote areas is even more desirable. Again, this raises the issue of the important role played by an agrarian developmental state where the state through utilising public funds can support lower level subsistence small farmers as engines for socioeconomic growth. This can be done through boosting their ability to produce market-worthy products because leaving the agricultural market to self-regulate only benefits the minority elite farmers (Lefort, 2012).

Since sales, access to markets and availability of arable land were discussed as a tripartite union that required some form of complementarity, this thesis will now discuss the issue of land contestations raised as this had an impact on sales too.

4.3.2 Land Access Contestations

Land ownership is undoubtedly a social justice issue in South Africa given the history of land dispossession. As a key theme to this study, this section asks what have been the experiences of young farmers towards land acquisition. The youths studied resoundingly and unanimously expressed a desire for access to larger arable land and security of tenure so that they would be able to acquire bank loans as well as to fully develop the land since they would become the rightful owners. Their greatest challenge was acquiring security of tenure for the land which they worked

on as they largely used idle land or land in community schools with limited tenure. They were frustrated over this lack of land ownership and landlessness. This frustrations align with the argument made by Frantz Fanon (1963, p. 44) that "for a colonial people the most important essential value, because the most concrete, is first and foremost the land: the land which will bring them bread and, above all dignity".

As stated earlier, these young farmers felt a sense of “silent oppression” by existing structures [i.e government and corporations alike] which were “violently suppressing” their farming potential as they could not fully invest in farming land which they did not have sole ownership over (research participant, 21/5/19). There was a general consensus that they needed land to call their own as well as land which was large enough to allow them to expand their open-air farming operations. A lease was seen and described as a passport to accessing funding as well as for allowing one the independence to fully invest their energy into the land knowing that they had security of tenure.

Echoing their challenges to accessing titles to land, one farmer stated:

> *So we farmers are struggling with the lease issue. Even if we are farming on open space or since there are many open spaces we can use but the challenge is always that we can never get the lease because even the councillor does not own the land. You will find out that if we want a particular space then we go to the councillor to seek written permission to legally own the space they always tell us that it is not their space as the municipality. Instead, they tell us that the land belongs to Van Vulem or whoever that Boer you don't know who does not even live in the area. This person could be even dead but they still hold the titles to the land. You see that the councillor has to go to that white man and ask for the land so that is a major challenge because those white people will not release the land. (research participant, 25/08/18)*

Another farmer explaining her challenges regarding access to security of tenure highlighted the following:

> *Us farmers are struggling with access to a lease. If I want to go and apply for any funding they will want a lease. For example, the Department of Agriculture want 7 years and upwards for a lease. And at the school where I farm they do not want to give me the 7 years but instead give me 3 years at a time. (research participant, 10/10/19)*

Many similar sentiments were shared where farmers revealed that they were experiencing great challenges trying to access leases and argued that it hindered their progress as they could not even get sponsorship without showing “evidence of security of tenure” (research participant, 6/11/18). These narratives showed how the lack of title deeds deterred the farmers from effective farming practices as they struggled to access funding for developing their enterprises. This aligns with

sentiments by Stevens and Wu (2021) who argue that young people as new entrants to farming struggle to get access to land and security of tenure yet access to and ownership of farming land will either increase their short-term or long-term farm profitability. However, one agricultural economist who has argued against an attempt to expropriate farming land without compensation in South Africa highlighted that local banks are currently funding up to as high as 70% in loans to farmers (Farmer's Weekly, 2018). However, most of the participants studied had not been and could not be recipients of such bank loans since they held no leases or title deeds to the land which they farmed on thus showing how the existing structures were not friendly to youths of historical disadvantage who had not inherited land.

The concern that the youths had over land ownership is a complete contrast to that of youths in the nation of Benin whom studies have found to not be bothered by a lack of a title deeds as they saw farming as a temporal activity with prospects of moving to more rewarding economic activities (Amegnaglo & Soglo, 2019). This is a stark contrast to the youths studied who distinctly highlighted a desire for land ownership along with title deed possession as they saw farming as a long time and possibly a life time activity with potential rewards which is again contrary to commonly held narratives of youth disinterest in farming. Therefore, access to title deeds was of value to them as they intended to invest in the trade long term and saw farming as a potential permanent income generating activity. It was evident that though they currently had very limited resources, these young farmers were hopeful and zealous for government assistance with more land to expand their trade. However, their hopes were competing with post-apartheid state incompetence towards land redistribution as argued by Satge and Cousins (2019, p. 1) that land reform budgets dropped yearly (approximately 0.4% of the annual budget being allocated to the entire land reform process with 0.1% being allocated to land redistribution) alongside increased state incapacitation, policy confusion, corruption and land capture which saw the elites and politically connected individuals getting access to land whilst the poor were side-lined. As of 2017, a total of 11 million hectares of land had been redistributed via government programmes with 4.8 ha of land having been redistributed, 3.38ha having been restored via restitution claims and 2.77ha having been compensated financially (Sihlobo & Kapuya, 2018, p. 1). It is unclear what percentage of this land has been given to black youths for farming purposes.

In contrast, generational renewal in South Africa's peasant farmers' households in pre-colonial times was automatic, guaranteed and inevitable as the young people inherited family farming land along with the farming skills being passed down through the generations hence they were successful farmers described as being far better producers than the Europeans (Bundy, 1972). However, as reiterated in the literature review, post-aparthied, a significant portion of the black population has no land and property ownership. The youths in this study were no exception as they inherited generational poverty passed down from their forefathers who were victims of the apartheid system. An agrarian developmental state should also extend its dominance and involvement in land leasing processes as it has the power to engage and make key structural changes to benefit farmers which the private sector cannot achieve (Lefort, 2012). However, it is argued that in South Africa, "the dysfunctional nature of the state bureaucracy and government adherence to a market-oriented policy militates against the promotion of a thorough-going land and rural development programme that can address the apartheid legacies of widespread poverty and land and income inequality" (Karriem & Hoskins, 2016, p. 326).

Section 25(6) of the South African Constitution highlights that "a person or community whose tenure of land is legally insecure as a result of past racially discriminatory laws or practices is entitled, to the extent provided by an Act of Parliament, either to tenure which is legally secure, or comparable redress". The youths studied however did not know the procedures to follow to receive assistance in gaining legal titles for their land or whether or not they actually did qualify for this legal security or redress. They generally just felt that they had "inherited generational landlessness" (research participant, 15/02/19) and needed assistance to acquire legal titles for the land.

At this juncture the thesis now discusses some of the narratives which emerged from the Expropriation of Land Without Compensation (EWC) debates which were mostly heated and emotive in 2018.

Expropriation Of Land Without Compensation (EWC)

The analysis thus far has shown that land is a source of empowerment and capital for young farmers. The voices of these farmers equally found expression in the national debates around Expropriation Of Land Without Compensation (EWC). This section does not intend to analyse the

submissions that were made towards the EWC however, it is quite affirming that the majority of national voices presented by the black people of a younger generation found expression in some of the sentiments shared during the EWC. During the course of the study, the public motion on land gained prominence as a brainchild of the EFF's political manifesto adapted by the ANC in December 2017 which proposed a radical change to Section 25 of the Constitution to allow the state to become the custodian of all land, thus giving the state muscle to expropriate the land necessary for historically dispossessed landless black people (Vorster, 2019).

In the debate on EWC it was argued that government is largely to blame for the inefficient and slow pace at which land has been redistributed post 1994 as it has not taken a decisive proactive role to stop market-based land acquisitions through the 'willing-buyer willing seller' basis, but should have rather expropriated land and paid just and equitable compensation as per the Constitution (Boshoff et al., 2018). These actions by the government are blamed for further exacerbating inequality as those who were historically excluded continue to feel the brunt of lack of property rights hence landlessness continues to be a major contributor of conflict in the country (Akinola, 2020). In a critique of some submissions that were made by civil organizations to the Joint Review Committee on EWC, one scholar argues that the three main trajectories stated were that land is a commodity, a social space and a spiritual inheritance yet for the historically dispossessed land "ownership is an important identity marker that provides them with a sense of autonomy and rootedness, an opportunity for personal self-realization, access to the broader economy, bargaining power and social space" (Vorster, 2019, p. 2). Using an African perspective, it is indeed a reality that land ownership gives young rural people real socio-economic power and provides a sense of belonging hence successful youth-inclusive agrarian transformation requires genuine empowerment of the youth as well as appropriate problematization of the youth and agriculture problem in South Africa.

Majority of the younger generation who spoke at these public debates reiterated the key strands that emanated in this study as shall be shown below. Issues of land ownership, agriculture training and access to the necessary institutional structures for successful launch of small-scale farmers were highlighted. The youth voices captured here are those that were specifically appropriate and

relevant to this study and are of the youths who echoed similar sentiments to those of this study's participants from Orange Farm.

Using an African perspective, it is evident that there was a need for redress of land issues along with land policies and programs tailored especially towards young people as youths can easily be ignored in the land debacle. Some youths even stated a desire for land for conducting their agricultural practicals as they had studied or were currently studying Agriculture but lacked the sufficient land to implement what they learned. Contributing at the City of Tshwane Public Hearings into the amendment of section 25 of the Constitution, one student of Agriculture promoted EWC and argued that black Agricultural students have no land to conduct their practicals (land to implement their academic agricultural theory into practice) as follows,

> "*…I also want to motivate further that we have got students who have studied Agriculture. When they are still studying they are expected to conduct practicals, where do they conduct practicals because their parents do not own farms? It's a struggle for us to associate with the few Afrikaaners who are doing farming so that we can be able to go and do practicals and also thereafter to practice farming as graduates. We've got a number of graduates (farming graduates) even in our midst who have nowhere to go because they have no land to practice what they have studied".*[16]

Similarly, highlighting that youths who are taught agriculture in tertiary education need farming land one youth contributing at the Limpopo Public Hearings into the amendment of section 25 of the Constitution stated the following,

> *"I think the section should be amended because the land belonged to our forefathers who owned the land so it was taken from them without permission. Other reason is that, most of our black communities don't have the land to do the farming activities because most of the land is occupied by the whites. And I think it (Section 25) should be amended because at tertiary most young people are taught how to handle agriculture so they are able to do agriculture because they learn how to do agriculture. And it will make the black economy grow and have more information on how to do the agriculture on their own and it will break the barrier of poverty amongst black South Africans".*[17]

Many similar sentiments were shared as young people felt that without access to arable land they could not practice farming hence could not improve their expertise in the long run, thus, always remaining marginalized and far behind the established white commercial farmers of historical

[16] Parliament YouTube channel. Streamed live on 28 July 2018. Title: Constitutional Review Committee – City of Tshwane Public Hearing Part 1. https://www.youtube.com/watch?v=TXk3tdmg5BE&list=PLt0wwMdzvHOqsB5pcppgvpwmjrFC3WHmK&index=6. (3:34:52 minutes).
[17] Parliament YouTube channel. Published on 2 July 2018. Title: Youth Voice of Limpopo have their say on Land Expropriation. https://www.youtube.com/watch?v=EHcF_8LZEE8.

advantage. These views were synonymous with those mentioned in earlier sections that many young people have not had access to arable land as well as other resources necessary for them to thrive in farming. In the same vein many others at the Public Hearings argued that black people have the capacity to grow their own food thereby needing land arguing that "it's a myth that we cannot produce. We are good in producing food because if you look around on all white farms it's the black people who are producing the food".[18]

Visible was frustration with the politics surrounding land as these young black youths too were hungry for farming [productive] land. The above sentiments highlight a form of separation from what one feels rightfully belongs to them. They also felt that government had the obligation to step in and assist them to acquire land due to their previous disadvantages inherited intergenerationally from apartheid. Based on field observations it was evident that state ownership of land did not automatically imply black youth ownership of land. However, Karriem and Hoskins (2016, p. 326) argue that land reform "will only be achieved through a transformative developmental state with a skilled and competent bureaucracy, a strong centralised planning agency that has the power to coordinate and ensure that government departments work together and implement policies according to plan, and a state that will actively intervene and expropriate land to meet government objectives".

It was apparent in this study that the issue of access to land for young black South Africans was a highly emotive and contentious topic. There was a general sense that these young people felt robbed and felt victimised by the apartheid system such that they had inherited generational poverty and "SASSA inheritance" [government grants, as said by one participant in the EWC debates]. They felt disabled and incapacitated by a lack of land yet they were very much aware of the benefits of having land as well as the importance of working the land. Land is capital, wealth and food hence it was associated with freedom although the existing lack of land was interpreted as a lack of freedom in a country in a country which one rightfully belongs. They believed that they were landless land owners in their own land. They generally felt that white people came to South Africa with the ill intention of dispossessing them of their land and of ensuring that those systems of oppression remain intact unless challenged. They challenged the common perception that young people are not interested in farming or want anything to do with land. They argued that they too had the capacity to "work the land" and produce results since they farmed in their back yards or even on other white people's

[18] Parliament YouTube channel. Streamed live on 18 Jul 2018. Title: Constitutional Review Committee -North-West Public Hearing Part 1. https://www.youtube.com/watch?v=zMWXhkmObXY&list=PLt0wwMdzvHOqsB5pcppgvpwmjrFC3WHmK&index=13. (43:00 minutes).

farms. They perceived that landlessness actually forced them to "become consumers and not active producers" (research participant, 12/05/19) since access to vast fertile farming land was limited.

From watching the public hearings on EWC there was a sense that some young people were not in full comprehension of how exactly the EWC processes are intended to work but were generally clear that they too wanted their share of the land. This was arguably a display of the concept of 'citizenship' through a sense of social solidarity by the youth in respect to their desire for land redistribution that caters for their needs. The notion of citizenship enables "disenfranchised and discriminated groups to acquire, retrieve and defend property rights" (Everingham & Jannecke, 2006, p. 546). Good citizenship allows for the emergence of sustainable, supportive communities of property beneficiaries (Van der Walt, 2008). The concept of citizenship acknowledges that grassroots ordinary actors have the ability to either respond positively or resist state interventions (James, 2013). Through the public debates it was clear that given the platform young people have a strong force of citizenship that they can utilize to mobilise for change.

However, the current post-apartheid government has been critiqued for undermining citizenship rights to property of rural South Africans by giving traditional leaders authority to decide who gets land thus making all rural people 'subjects' of their traditional leaders and vulnerable to state decisions and rules (Ubink & Pickering, 2020). Lipton (2010) also argues that the ANC has skilfully crippled rural citizenship through its imposition of chiefs to maintain order, manage the land and also consequently ensure that the rural electoral vote remains with the ANC. As a result the necessary counter-pressures from the rural land beneficiaries against the state have been minimal as these citizens wait on government whilst being pacified by social grants as a poverty reduction measure. Using an African perspective, one could thus argue that youth influence and power can easily form a united force which if given the platform to manifest through youth-inclusive agrarian transformation will see South Africa's rural areas develop at a much faster pace with benefits to the entire rural economy thus reducing inequality. In conclusion, one can see that the tripartite union between sales, access to markets and availability of land requires some form of balance in order for the young farmers to benefit from their agricultural activities.

4.4 A Double Predicament: Agricultural Education and Extension Officers

This section advances the ongoing arguments about an African perspective towards state interventions for youth-inclusive agrarian reform by discussing the impact of agricultural education, and availability of extension officers towards enhancing youth interest and generational renewal in the Agricultural Sector in South Africa. This section investigates the nature of education, training and extension support services that were accessible to the farmers because these were key features of successful practice as the youths were seen as active agents in the food system and towards socio-economic rural development.

4.4.1 Agricultural Education and Training

The youths studied typically had taught themselves how to farm then only once in the field and experiencing challenges did they start to actively seek further formalized training and knowledge on the sector. They had initially started farming on impulse due to desperation from unemployment then once immersed in it began to realise its benefits and desired to learn more as their interests in farming were ignited. This reflected their use of agency to get involved in activities that benefit and sustain them in the midst of poverty and marginalisation as youths engage in collective protest by creating political networks to address and navigate spaces that threaten their "security, respect and livelihoods" (Jeffrey, 2012, p. 247). Young people employ strategic thinking in response to tactical challenges set before them therefore gaining control of the situation through creative engagement (Jeffrey 2012; Larson & Angus, 2011). The engagement by these young farmers utilising their self-will and agency to uncover solutions for their livelihoods contradicts the public discourse as noted by Cuzzocrea and Mandich (2016) which states that young people are not willing to chart the course of action for their lives. However, for the youths studied, poor access to structural opportunities as well as existing uncertainties constricted the extent to which they exercised their agency.

The young farmers did not know much about agriculture as they largely operated on basic self-taught information. As noted in Chapter two, issues of education and skills training in agriculture have not been adequately evaluated and so more knowledge is required on the effectiveness of

agricultural training programmes in low-and middle-income countries (Maïga et al., 2020). Identifying the challenges and opportunities in the agricultural education and training field will allow for the creation of more capable agricultural professionals and improved systems (Kidane & Worth, 2012). Majority of the youths studied relied on Google search engine and their farming social groups on WhatsApp for easy access to farming information and education. They stated that they desired more training and easier access to learning material to improve their farming trade as they were "really interested in farming" but did not have "easy access to training material" (research participant, 7/08/19).

According to Mudege et al (2017), Agricultural Education and Training (AET) is a contributor to growth of the agricultural sector in South Africa as well as increased productivity of labourers in the sector. However, for the youths studied, there was a disparity that existed between their desires for more farming training versus the training that they actually had access to. The youths felt that this lack of easy access to agricultural training thwarted their agricultural progression. This disparity between the theoretical importance of skills training and the practical inadequacies of training on the ground which were experienced showed that young people as active participants in societal development did not have adequate structural support for successful engagement in economic productivity in an African rural setting where agriculture could potentially play a key role.

Regarding why their cooperative had a few young people one female farmer stated a common sentiment shared by many other young farmers as well as key informants regarding youth disengagement from farming:

> *The young people have to be educated more, changing the mindset first before we can do anything. They need to first get rid of the mindset that farming is for old people. Young people do not see farming as a business because we grew up at home doing gardening so they do not recognize it as a business that can make me sustain myself or as something that can take me places. They are not seeing the bigger picture of which they need to be educated about Agriculture; about how important it is and how far you can go if you get enough resources. So it is about the mindset, educating them to understand how important this is because remember agriculture is the backbone of every life-giving economy. Without food we cannot sustain ourselves, food will always be a need. So for me it is a business that can never go wrong no matter what. (research participant, 3/03/19)*

Similarly, on his opinion on youth aspiration since he worked with many young farmers [220 youths that he works directly with on a daily basis], one key informant said:

> *As much as government officials and leadership have been saying they want to make farming more fashionable, it's not yet fashionable. The youths are not buying it. IT was made fashionable, very much fashionable and everyone flocked into IT. Marketing was made fashionable and everyone was going to marketing. But in agriculture they say we need to recruit young people and we need to make agriculture fashionable and make individuals interested but technology which interests young people is not there. More technology and skills training on how to use it will attract young people especially when they see their peers using this. Young people do not know about farming and so they need to be educated in order for them to see the benefits and then that way they will find it as fashionable. (research participant, 6/06/19)*

Highlighted above is that young people were either disengaging from agriculture early or not even entering the sector to begin with because they were ill-educated or ill-informed about its benefits hence they could not become interested in a career that they knew nothing about. This resonates with a view by Bajema et al (2002) that young people's aspirations are skewed towards familiar territory [what they know or what they can imagine]. Thus, the farmers felt that their fellow youths in the community had little to no agricultural aspirations as their knowledge on the trade was inadequate. They felt that their fellow youths were "not aware of the vast opportunities as well as careers that exist in the sector apart from manual labour associated with tilling the land" (research participant, 8/08/19). This supports an argument made by Reinhardt (2018) that in South Africa Agriculture as a field of study is often overlooked by youths particularly those in high school and in higher education as a career option due to limited awareness as well as misconceptions on the vast opportunities that exist in agri-business and the nutrition value chain. It was evident that most young people in the community studied were in search of formal employment which they commonly and colloquially referred to as "marketing" (meaning to market oneself to a formal employer for a job) and were not in search of an agricultural profession as agriculture's benefits were unknown as it was associated with poverty.

To concur with this finding, Anthony Goble (2018), AgriSA's young farmer of the year [in 2018] highlighted how there was a need to market the agriculture sector as young people were poorly informed about the sector hence they were not engaging in the sector. He argued that young people were hungry to learn about the sector and how they could be involved. He said, "when I went to high school, getting an Agriculture degree wasn't advertised, it wasn't appealing. The business world was the sexy place to go. I believe, if you have a thriving industry, it will attract more young people. You hear so often that the youth are lazy, they don't want to work. But there's an insatiable

appetite to get a hold of what's going on".[19] In a similar narrative, Hamlet Hlomendlini (2018), chief economist of AgriSA argued that young people are disengaged from agriculture as they unknowingly [ignorantly] associate it with the white commercial farmer thereby implying that there is no room for them in the sector. Highlighted here was that young people do not know any better regarding the exact dynamics in the sector and how they can manoeuvre around them.

However, the young farmers saw farming as a lucrative business and actually felt that their peers were lacking this revelation due to the existing stereotypes around farming being a rural career where "black people do not thrive" (research participant, 03/03/19). They felt that their peers perceived agriculture to "produce poor returns", had "no ready-market", had "few credit facilities available", was "physically draining" and was therefore "not an attractive career path" (research participant, 11/10/19). This picture contradicts reality as experienced by commercial farmers. For example, agriculture in South Africa contributes significantly to the GDP and was actually the best performing industry at the onset of Covid-19 in 2020 (DALRRD, 2020). Gross farming income earned from all agricultural products increased by 15,8% to R327 138 million in 2020, compared to R282 419 million in 2019. Net farming income increased significantly by 40,3% to R124 388 million in 2020, compared to R88 675 million in 2019 (DALRRD, 2020, p.1-2). This information on the lucrative side of farming was known by the young farmers studied but was not known by their peers whom they felt would engage in farming if they were privy to this information.

However, the level of knowledge and exposure to the sector that the youths had was largely dependent on (non)existing structural support which played a significant role in how youth agriculture was generally perceived, received and experienced. The farmers studied did not possess diplomas, degrees or any other higher level certifications in agriculture. However, all of them had attended some form of government funded training workshop at one point or another. For purposes of generational agricultural skills transfer, government is accused of "ducking its responsibility towards rural education" by neglecting rural farming training facilities (Atkinson, 2007, p. 235). This is despite the fact that sustainable livelihoods for poor rural youth rely heavily on agricultural training (Metelerkamp et al., 2019). The fight against rural poverty and increasing farmer

[19] NEWS24: TITLE: Can attracting more young people to agriculture naturally solve land reform questions. https://www.news24.com/Analysis/can-attracting-more-young-people-to-agriculture-naturally-solve-land-reform-question-20180522.

productivity requires farmer education and training (Wallace, 2007; Zossou et al., 2017). Better coordination of public agricultural training is needed in South Africa where all stakeholders can be involved and where provincially managed training facilities can be formally recognized by the national higher education system (Swanepoel, 2017). Further, public agricultural training is also riddled with various key challenges such as poor quality of training programs, lack of affordability by poor youths and steep admission requirements for those with little education (DoA, 2007; DAFF, 2008). Raidimi and Kabiti (2019) conclude that in South Africa the quality and relevance of education and training should be improved by establishing key linkages with researchers, extension service provoders and farmers which will in the long run create sustainable food security.

The youths studied had also attended agricultural tours for educational purposes which were sponsored by the DALRRD. They stated that locally there was a government centre that taught young people on community food security and that this community centre was far to reach on foot (it was about 14km away) and required one to use local transport to get to the part of the community where the centre was located. Further, they did not have enough money to always go to the centre and argued that education and training should happen at a closer local venue where they would not have to pay local transport fees to attend the training as to them "every penny counts" (research participant, 10/09/19). Provision of fully functional agricultural support structures made available locally can narrow this knowledge gap due to easier access instead of distance being a barrier to skills transfer. Agriculture tours attended would occur in places outside their communities and required that the youths first travel to the city to the DALRRD offices then from there they would be provided with transport to the venues of the agriculture tours. These tours were stated to be very useful although the issue of transport cost to the city was a challenge since they were still in their incubation phase of farming.

One young farmer had this to say about the transport logistics for attending trainings:

> *Student training should happen in local community halls so that the students don't have transportation costs because right now the youth are crying that they don't have money to travel outside their communities always. So these trainings are ineffective as long our young farmers are not assisted the whole way. Training provided should be local and not at these headquarters that are so far out of reach for the young farmers. For example, Shell (the oil company) provides training to youths in different fields but they don't train people at headquarters. They find places closer to accessibility for young people or rent spaces close to the young people so that transport is not a challenge. The training has to be accessible. (research participant, 8/03/19)*

Box 5.3 Experience At An Agriculture Tour Organised By YARD

I had the privilege of attending a few youth farming events that were organised by YARD in 2019. I discovered that government was trying to empower these young farmers by training them and opening their eyes to how the farming sector actually works. However, the youths felt that these efforts were minimal and not enough. This was because these efforts were not reaching the target audience (the young farmers) appropriately. I observed that communication of these farming events was posted on the YARD WhatsApp group meaning that if one was not on this group or did not have a smart phone then they would miss out on this information unless if they had a friend who was in this group who would share the information [note: I got to know of this group through one young farmer I interviewed]. It was evident that more advertising of such training opportunities was needed even using social media or television. Some of the youths even highlighted a desire for the agricultural trainings to be made available on national television as well to actually educate young farmers on designated timeslots and channels given that these youths were a 'tv and computer generation' that appreciates virtual learning. Using an African perspective encourages proper research into these experiences and finding out how the young farmers actually want to be helped given the technology era will actually help government to devise more appropriate interventions for the young farmers with the help of the young farmers themselves as they are active participants in their own empowerment.

Source: Research data (2018-2019)

The farmers argued that the challenges they faced trying to access education and training were a hinderance to knowledge transfer yet this information was seen as an appropriate vehicle for socio-economic empowerment as well as nurturing a sustainable farming culture within the community. Education was also seen as a way of placing the young farmers on a level playing field with established commercial farmers or to at least give them an added advantage which they lacked regarding access to relevant information. Other young farmers narrated that they had attended government sponsored agricultural training sessions where tools for engaging in practical learning were not available as follows:

> *When we got there (participant refused to give the name of the government farming training institution), we were told to wear our work suits and when we got there they did not have tools. When you take people for training ensure that there is proper equipment to use. The trainers are*

> *sometimes not people with expertise and are not able to share this knowledge with the learners because you will see that one knows how to drive a tractor up and down but they cannot show the learners how to do it. So one has to be sure that if you give responsibility to someone to teach or disseminate information, they must make sure that the person knows how to deliver this information to the learners. (research participant, 12/02/19)*

The youths felt that the quality of training being provided was not the best as tools were often insufficient thus inhibiting the learning process and the transfer of knowledge. This resonates with the argument by Reinhardt (2018) that effective knowledge transfer and information dissemination is key for youth to acquire the appropriate farming skills they require. Scholars have argued against a one-size-fits all approach to structuring Agricultural education and training as learning should be contextually and locally relevant to the needs of the learner (Spielman et al., 2008; Wallace, 2007). In line with an African perspective towards farming, the quality of agricultural training needs to be relevant to the specific needs of these rural youths and thorough so as to fully equip them. Though the youths studied wanted to be on the same playing field as established commercial farmers, a more practical immediate inclusive-agrarian transformative process could involve supporting these farmers to become successful small-scale farmers.

However, Aliber and Hall (2012) argue that government's support for smallholder farmers has been an expensive and ineffective exercise whose impact has been small and only benefitted a few, thus thwarting the possibility of creating a sustainably successful commercial smallholder group. They further critique the state for treating smallholder farmers as 'emerging farmers' as long as they do not expand to resemble commercial farmers hence efforts to empower them into commercial smallholders have been largely unsuccessful. This is because they are seen and treated as being at the nursery stage from which commercial farmers will emerge in future instead of approaching them as potential successful small-scale farmers. Thus, using an African perspective, a re-conceptualization and redefinition of what it means to be a young rural farmer which views them as potential successful commercial farmers and food producers who are currently in incubation is critical towards reframing and recreating more appropriate interventions in a manner that accurately captures and addresses their current needs.

The following section builds the discussion further by unpacking the engagements that the farmers had with state agricultural extension service providers.

4.4.2 State Agricultural Extension Services

This section discusses the experiences of the young farmers with the state extension service providers. The farmers studied spoke of individual government experts who came on site to inspect how the agricultural activities were progressing. In some instances, it was not known of the exact titles of these experts although it was apparent in the descriptions given that these agricultural experts were actually agricultural extension officers who worked for the government and were mandated to do regular visits to farming sites. It was also apparent that the roles and involvement of the extension officers within the community were unclear and sporadic. There was no formal structure in place as these agricultural extension officers came erratically at their own accord and at unplanned times such that the farmers did not even know most of the names of these extension offers. They tended to forget the dates when the officers last came on site to assess their progress and in some instances the farmers even missed the extension officers as they would arrive when the farmers were not present on site. These experiences resonate with Pye-Smith (2012) who argued that the low agricultural productivity in Africa has largely been attributed to poor performance of extension services as these advisory services are often poorly funded and poorly trained. This is despite the fact that an inclusive-agrarian transformation requires more youth-centric and rural-biased extension support services as key infrastructure for agricultural development (Bezu & Holden, 2014; Unay-Gailhard & Simões, 2021; White, 2019; Zulu et al, 2021).

In this study, there was lack of clarity regarding the relationship that should exist between the young farmers and the extension officers. The general perception was that proper structures at government level were lacking that should ensure that these extension officers actually conducted the site visits and rendered their services appropriately to the farmers. Further, the role and expectations from extension officers were not fully known. However, what was clear was that the farmers wanted to "look up to these extension officers for farming inspiration and for help with agricultural information" (research participant, 4/6/19) but could not do so due to the unreliability of the extension officers. The growth and success of the agri-sector in any nation is largely dependent on the existence of effective farmer education in the form of extension services provided that they are properly administered (Anaeto et al., 2012; Due et al., 1997). Engaging with

agricultural extension officers "helps farmers to analyze their present and expected future situations, to structure farmers' existing knowledge, to acquire specific knowledge related to certain problems, solutions and their consequences so that they can act on possible alternatives and to evaluate and improve their own opinion-forming and decision-making skills" (Vanden Ban & Hawkin, 1988, as cited in Anaeto et al., 2012, p. 180-181). Extension services have the potential to "provide farmers with necessary education, skill and technical information to enable them to take effective farm management decision for accelerated agricultural development" (Saliu et al., 2009, p. 72). Similarly, Danso-Abbeam et al (2018) add that the role of extension programmes goes beyond simply disseminating information regarding improved farming technologies and management, but that they consequently play a significant role towards increasing farm productivity and revenue as well as reducing poverty and food insecurity in rural areas thus are a key tool for rural development.

For the youths studied, meeting the extension officers on site was almost always accidental. Also, some extension officers had gained infamous reputations for promising to return to assess or further assist the farmers but never returned.[20] Below is some evidence of how the dynamics with these extension officers had been playing out:

Unhappy with the current services being provided by government extension officers one farmer had this to say:

> *Government is not helpful at all. We are struggling to even get extension officers to come onto our sites and test the land. To just get started off in agriculture is a nightmare for us. The extension officers only come after such a long time sometimes after 3 months when you no longer need them. So government is creating a ceiling for us which determines how far we can go in farming and trust me we cannot go very far. Even if we get the resources we still need the extension officers to come through to our sites on time when we need them so that they show us the way forward with certain produce but they just do not show up. We are at such a disadvantage because the white people have their own private extension officers which they can afford to hire but we can't. (research participant, 15/10/19)*

Echoing similar sentiments one farmer who was also displeased with the services she received from a government extension officer had this to say:

> *A big challenge we have with these government extension officers is that they do not know what they are doing. When we make a request for an extension officer to come through and assist us*

[20] It is also possible that these young farmers felt that the extension officers never returned because they were actually not aware of their timetable for scheduled visits in the area.

> *then the extension officer who comes through does not specialise in the area where I need help. So for example I specialise in vegetables like carrots, lettuce, pepper, tomatoes, but the extension officer who once came to assist me had specialised in animal husbandry so he was not able to help me at all yet when I made the request for an extension officer I was very specific that I wanted help with my vegetables. So you see, the extension officers are useless to us because they come so late and when they do come you realise that it's the wrong one who has come with the wrong expertise to your site so government is really letting us down. (research participant, 5/02/19)*

These young farmers were aware of the benefits of information and skills acquisition and in some cases resource allocation that was associated with extension officers hence they were disgruntled by the fact that the extension officers were disengaged from their duties. The youths felt as though they were being short-changed by the very system and support structures which were supposedly put in place for their benefit. Availability and consistency of these extension services is more desirable than general provision of unreliable services as it is one thing for the state to provide resources but is another for these interventions to be reliable. Of interest and key to note was that none of the youths studied were pleased with the services they received from the extension officers. They perceived this non-committal and unreliable behaviour by the extension officers to be a reflection of the bigger government system which they represented as this system was letting them down by not providing them with the adequate attention and assistance they required. Many similar sentiments of incompetence by the extension officers were shared with many farmers stating sentiments such as, "I have 40 pigs at my place. You know I put in a request for an extension officer to come and help me when my pigs got swine flu and guess what, the extension officer only came after 3 months when I had already made another plan" (research participant, 20/10/19).

Similarly, Maoba (2016) highlighted that South African extension and advisory service providers who work for the state have been criticized for being invisible, ineffective, and inefficient where their services are needed by rural farmers. Loki et al (2019) further argue that this inefficiency is because of their lack of decent financial incentives. The government budget for agriculture which can also be used for hiring and training more extension workers is too little and often the money's use is unaccounted for (Aliber & Hall, 2012). This raises issues of corruption as a potential cause of the poor performance by extension service providers and all other state interventions. This manifestation of inefficiency by state extension service providers is a reflection of the structural cracks at institutional levels well beyond the extension offers. Other scholars have argued for the state to reform extension service provision in South Africa, adding that this move requires determination and commitment by the state to see to its success as it is the link between farmer

success and adaptation of agricultural innovation systems (Davis & Terblanche, 2016; Jonathan & Bontle, 2018).

Using an African perspective to analyse and interpret these findings, I argue that existing weaknesses in key state structures thwart and render a youth-inclusive rural agrarian transformation a 'futuristic concept' unless major institutional changes intentionally occur for boosting youth agriculture. Danso-Abbeam et al (2018, p. 2-3) state that the concept of an extension service is seen as "a primary tool for making agriculture, its related activities as well as other economic activities more effective and efficient to meet the needs of the people. It is, therefore, regarded as a policy tool for promoting the safety and quality of agricultural products". It has been highlighted that state extension service provision in South Africa is still very much utilising a top-down approach and more often than not provides one-way inappropriate information to farmers (Fanadzo & Ncube, 2018). This brings into question the level of training received by the extension officers to enable them to transfer skills and knowledge that is relevant and appropriate?

Raidimi and Kabiti (2019) state that in the South African context investment in thorough training and education of public agricultural extension service providers is important, and a prerequisite, so that they are better equipped to disseminate appropriate knowledge which addresses the current needs of smallholder farmers for ensuring sustainable food security. The qualifications and training of public extension officers contradicts those in the private sector in that they are mostly less qualified in the natural sciences; very few are professionally registered; their work experience in farming or research is on average 4.9 years compared to an average 21.5years for private ones; few of them embark on further training; 9.2% had a B.Sc Agric degree compared to 53.1% of non-governmental extensionists thus calling for more advanced training of government extension officers as majority are underqualified (Koch & Terblanche, 2013, p. 114-115). Gandhi et al (2007) argue for the importance of utilising agriculture extension services where extension officers are thoroughly trained in order to instil and teach farmers relevant and appropriate farming techniques and practices.

This study revealed that the white commercial farmers hired their own private extension service providers who had greater expertise. One floor manager at the Johannesburg City Deep Farmers Market explained how the white commercial farmers could afford to hire private extension officers

hence their produce was always of the expected quality which was acceptable at the market. He highlighted that:

> *White people have their own inspectors and do not need the government extension officers so by the time they come to the market all their products are already certified and guaranteed to be meeting the expected standards including sizing and grading. (research participant, 11/09/19)*

In light of this revelation, it was evident the young black farmers who were at the mercy of government extension officers (who did not even show up or who showed up unprepared) could never be at an equal playing field with private experts who were paid handsomely by commercial farmers to ensure that the produce meets expected standards. It was clear that there were loopholes within the government extension services support structure. Perhaps, it could be argued that government was involuntarily a catalyst in the creation of an agricultural ceiling which determined how far a young black farmer could go. A study in the Eastern Cape and KZN provinces with land reform beneficiaries showed that 64% of them (who were predominantly younger farmers with larger land sizes) preferred that the extension services be privatised and 98% of them also highlighted their willingness to pay for the extension services instead of free services as they valued the benefits on farm returns and productivity (Loki et al., 2019). This opens up the question of whether free state services are sustainable and whether provision of these services at a small fee is not a better option towards ensuring improved service delivery? However, the issue of affordability also remains a challenge given the marginality of poor young farmers. This study however did not speak to any extension officers to hear their views, perhaps their narratives form an area for further study.

Despite all the above contestations narrated by the youths studied, there was one exceptional youth cooperative that exceeded the rest regarding outputs, navigation of the farming sector and engaging with state resources. The researcher felt it necessary to profile this cooperative as it was unique in that they used both open-air and tunnel farming and had managed to succeed in making profits, although it was still small in terms of what the youths envisioned. A brief analysis of how this cooperative successfully conducted farming and resuscitated agricultural interest amongst youth this way now ensues. This assists to advance the argument this thesis makes for an African perspective/approach towards igniting youth interest in farming through intentional and contextually relevant state support to ensure rural development and the future of food security.

Case Study: Phaphamang Environmental Agriculture Cooperative



Photo: The organic tomato farming project on the plot. *Photo taken by researcher with permission from the cooperative director (Chibonore, 2019).

This cooperative was located in De Deur, Dreamland (falls under Vaal municipality and not Johannesburg although it was right on the border of Orange Farm and De Deur). It had been operational for 4 years at the time of the researcher's visit in September 2019. It was registered both with the Department of Social Development as a cooperative as well as with the Department of Trade and Industry (DTi) in order for the members to qualify for the Unemployment Insurance Fund (UIF) if ever the cooperative ceased to exist unexpectedly. The land which this cooperative worked on was 4 hectors. The director of the cooperative had individually bought this 2 hectares land (approximately the size of 2 soccer fields) and had the title deeds for it such that they had no problems with developing infrastructure on the land as they felt secure against any potential demolishing by municipality. This cooperative had a total of 220 full-time members who were not employed elsewhere but worked at the cooperative full time as their sole source of income. Of this number 197 were women and 23 were men. The cooperative members were predominantly youths with age ranges from mostly 35 years and below with the exception of about 10 elderly ladies. The youngest member was 19 years old. The average age of members was 28 years.

This cooperative was in the farming industry for the purpose of generating profits and creating employment for local youths. This cooperative showed great potential for growth with the existence of a poultry unit, piggery unit as well as 4 tunnels with controlled temperatures for vegetable farming [the cooperatives financial books were not disclosed nor shared with the researcher for confidentiality purposes]. All the farm produce was 100% organic as the director of the cooperative believed in the importance of eating healthy, nutritious, fresh food which had minimal chemical usage. All produce was sold commercially to the local Food Lovers Market in Soweto and locally to the immediate community as well. Some of the produce was given to the workers to take home and eat with their families.

This cooperative had cultivated a working environment that provided a sustainable approach to earning a living through creating local employment. Some local NGOs [names were withheld for confidentiality purposes] would occasionally assist the cooperative with skills training and knowledge enhancement of the members. Given that the cooperative's members received training from the various local NGOs they adequately possessed the skills to self-manage as they worked in the absence of supervision on a daily basis. This also guaranteed a good quality of produce from the cooperative. Further, the cooperative also had some healthy relationships with other individual local farmers within Orange Farm who were growing organic produce as well as with the other cooperatives that the director was involved in. These relationships were useful especially when the cooperative was unable to meet the stock order requirement and needed to outsource some produce for their largest commercial buyer. These networks were also used for transferring knowledge, ideas and learning.

Lastly, given their possession of security of tenure in the form of title deeds, the cooperative did not struggle to acquire funding compared to their counterparts in the same area who did not own the land they worked on. For example, the cooperative received government assistance with stipends for the young workers pegged at between R80 and R95 a day per person. These stipends were funded by the Department of Trade and Industry (DTi) and not by the Department of Agriculture and Rural Development as would be a natural assumption. This cooperative had fulfilled all expectations and compliance requirements hence they were able to qualify for stipends. Regarding qualifying for government stipends the youth stated that "for you to qualify you must

be registered non-profit organization and be in existence for at least 2 years and you need to register the organization for UIF (the Unemployment Insurance Fund). In case this program ends they (the farmers) should be able to go to the Department of Labour and claim, one person actually did it. They have to register for quality for injuries and disease, so we had to register with those too. You also have to register for CSD with the Department of National Treasury. Everything that you need to do with the government you must register with the Department of National Treasury" (research participant, 23/10/2019).

The cooperative was working towards engaging in the processing of raw products into processed goods such as canned vegetables for sale although they had not yet started this but the idea was in the pipeline of soon-to-be-done deliverables. They were also looking to acquiring more advanced software for e-commerce purposes which would allow for a mobile platform for receiving customer orders, feedback as well as for marketing their products online as this was currently not the case.

Given this brief analysis of a fully functional youth cooperative, it is evident as stated by Williams (2013, p. 13) that the state is arguably the most critical player in putting cooperatives at the forefront in what could be an "alternative economic order" where cooperatives play a more significant socioeconomic role towards enhancing livelihoods and alleviating poverty. For purposes of this research a cooperative is seen through the lens of the International Cooperative Alliance (ICA) which defined a cooperative as "an autonomous association of persons united voluntarily to meet their common economic, social, and cultural needs and aspirations through a jointly-owned and democratically-controlled enterprise" (Aref, 2011, p. 82). Such a definition allows this thesis to appreciate the youth agency at play in the various cooperatives towards desire for an envisioned future. Scholars have questioned the extent to which cooperatives can be a solution for youth empowerment and how so? (Hartley & Johnson, 2014). Christian et al (2018) argue that in South Africa youth [and women] agricultural cooperatives help this vulnerable group to overcome many challenges associated with farming such as lack of funding and access to land.

"Co-operatives can be seen as presenting a potential opportunity for youth, to promote livelihoods and income, and to provide youth with their own 'training ground' in organisational skills, social

solidarity and cohesion, and democratic processes" (Hartley & Johnson, 2014, p. 56). A study conducted on several youth farming cooperatives in the Limpopo Province of South Africa showed that improving land allocations for youth as well as servicing and strengthening existing youth projects and initiatives helps to enhance their productivity given that key challenges are poor access to land, funding and key information about the trade (Maele et al., 2015). However, the post-apartheid state has not played a sufficient role and has rather distanced itself from promoting cooperatives but has instead involved itself more with regulating the market conditions within which cooperatives operate (Williams, 2013). In contrast, the apartheid government purposefully and progressively supported its farmers through their cooperatives and in the process thwarted and constrained black farmers agricultural activities (Ducastel & Anseeuw, 2018).

Williams (2013) has argued that government has not done enough to utilize cooperatives to empower the poor as these cooperatives are treated with a top-down approach in which they are seen as a pro-capitalist channel for the poor. Instead, state focus in South Africa has been on multiplying the number of cooperatives resulting in thousands of cooperatives having been registered on paper yet in practice many of these are either not following the principles of cooperatives or are not even operational at all. These conditions paint a gloomy picture for youth farming engagement especially as Cheteni (2016) highlights that the availability of youth agricultural cooperatives and programmes along with the necessary resources are key variables that determine youth interest and participation in farming.

However, this study did not investigate from government informants the issue of state initiatives that exist which support young farmers' access to markets. Instead, secondary data explored showed that there exists some government initiatives in South Africa that provide market access to rural local farmers such as the National School Nutrition Programme which operates through procurement of produce from local farmers (Devereux et al., 2018). The government spends an approximate R7 billion annually promoting rural smallholder farmers this way by creating market opportunities in an attempt to achieve sustainable rural development through pro-market interventions that are merged with pro-poor policies (Mensah & Karriem, 2021). Though this programme does not exclusively procure from young farmers alone, the programme promotes 'home-grown' solutions to school feeding in all nine provinces of the country (Stein et al., 2022).

As stated earlier the youths studied lived in a remote area and so they had poor access to key farming information which likely explains their lack of knowledge about this program or any similar government procurement programmes for the benefit of local farmers or those that are youth-specific within and around them.

4.5 Conclusion

Focus of the discussion in this chapter was on the desires of the youths to receive government assistance with resources for successful entrance and survival in the farming sector. The lack of government assistance with resources was perceived as passive violence and oppression which was actively imposed onto the young farmers since they were operating in a disabling environment. These experiences undermine youth agency and aspirations for participating in the economy and societal development (see Girard, 2017, for more detail). Success in the farming sector can be achieved through an agrarian developmental state which creates a space where policies and the implementation of the ground complement each other (Harrison, 2016) and is critical towards addressing youth and the agriculture problem. An African-centred, youth-inclusive, sustainable agricultural approach should purposefully prioritise resource access to youths as well as set up key structures that facilitate access to land, markets and finances in order to boost their agricultural productivity and enhance their rural farming experiences as youths are an untapped human resource in rural areas. Leaving the agricultural market to self-regulate only benefits the minority elite farmers thus further marginalizing the rural poor and youth smallholder farmers.

Training was seen as a key tool of empowerment towards success in farming yet the current structure involving the dispatching of extension officers by DALRRD was not working successfully for the farmers. This was because the extension officers either arrived too late when their help was no longer required or the extension officers who came through did not have the adequate expertise to cater to the needs of the young farmers upon request. This is despite the fact that effective extension and advisory services are essential for assisting small-scale rural farmers with the right information at the right time as well as for the effective transfer of farming technologies for growth and success in farming (Jonathan & Bontle, 2018; Maoba, 2016). Education and training in the Agricultural sector for both farmers and public extension officers are key towards equipping farmers with vital information and knowledge in the fight against rural

poverty and ensure development through optimal yields and farmer productivity (Fanadzo & Ncube, 2018; Raidimi & Kabiti, 2019; Zossou et al., 2017). The following chapter discusses young farmers' understanding and experiences with the Fourth Industrial Revolution (4IR) in agriculture.

CHAPTER FIVE: FOURTH INDUSTRIAL REVOLUTION (4IR) IN AGRICULTURE: THEORY VS PRACTICE

"Farming has become highly technical. And that's what young people love and are driven by. That's where the image of agriculture is going, and we should promote that."[21]

5.1 Introduction

The above quote is a narrative that farming technology has significantly advanced and that youth interests in agriculture are skewed towards modern technology. To secure food of the future, using an African perspective to inquire on the impact of 4IR technologies on youth interest in farming brings light to potential solutions towards youth attraction and rentention in agriculture. This chapter boulsters the preceding one by exploring young farmers' interests and engagements with advanced technology as well as the role played by the state in this regard. At this juncture the study asks how emerging modern technologies such as progressions of the 4IR in agriculture influenced the commonly held narrative that youth interest in farming is waning?

It emerged that how the farmers interpreted the 4IR in agriculture as well as how they thought they practiced it were far removed from what 4IR in agriculture actually entails conceptually. Their understanding of the 4IR technologies was by default more in line with the 3IR in agriculture with its high use of the internet and data. Poverty and marginalization contributed significantly to this misconception and misalignments as well as towards how agriculture was generally received and perceived by these youths. This is despite the fact that tech-savvy youths appreciate utilising technology in farming and bring new ideas and skills in line with advancing technology and argued by Frost and Sawa (2017). The chapter reasons that youth interest in farming exists, although these interests are largely skewed towards technologically advanced farming systems. This finding contradicts existing discourse as well as challenges the general narrative and consensus that youths are not interested in farming or that youth interest in farming is waning (as discussed in Chapter two). Rather, the study revealed that youth interest in backward farming systems in particular is

[21] NEWS24: TITLE: Can attracting more young people to agriculture naturally solve land reform questions. https://www.news24.com/Analysis/can-attracting-more-young-people-to-agriculture-naturally-solve-land-reform-question-20180522.

what is waning in favour of technologically advanced farming approaches. This (de)construction of commonly held meanings of the 4IR in farming provides a base for understanding youth participation in agriculture as well as the farming environment within which they operate. Similarly, understanding the meanings and reflections that young farmers attach to the 4IR with its enhanced and ever-progressing farming technologies is critical towards shaping the discourse on rural African young farmers' interests given that these youths are 'millennials' and have a keen interest in innovative farming. The following section explores indepth the meanings that the young farmers studied attached to the 4IR in agriculture.

5.2 Youth 4IR Farming: Discordant practice compared to theory

This section takes off from the premise raised by Sung (2018) that there is a dearth in scholarly research that documents how young rural farmers engage with and understand the 4IR given its potential to completely transform rural livelihoods. It emerged in this research that the young farmers studied appreciated an in-depth use of various forms of technology to boost agriculture as well as to make careers in agriculture more exciting and easier. Key to note is that they associated any forms of enhanced technology in agriculture with the 4IR. Given that conceptually the 4IR in agriculture is still at its infancy, the young farmers had a limited understanding of what it actually constituted. Their interpretation and perception of the 4IR technologies was by default (mis)understood to be the 3IR. There was a fair understanding of the various existing farming technologies brought about by mechanization for boosting yields and they related these with the 4IR. They particularly had a knack for using the internet and mobile applications to aid their farming experiences and interpreted these as the 4IR in agriculture. A significant number described the 4IR in agriculture as an era of great use of "the internet and mobile applications on smart phones" (research participant, 04/05/19). To the contrary, this definition is more in line with the 3IR in agriculture as stated in Chapter two that the 3IR introduced the heavy use of the internet and technological advancements in telecommunications in all sectors of the economy hence it is commonly known as the information age (Ane & Yasmin, 2019; Karvonen, 2001; Smith, 2001) whereas the 4IR has moved well beyond that as shall be explained below.

As highlighted in the literature review, conceptually the 4IR in agriculture involves use of precision and smart-farming technologies such as robotics, remote sensing, improved seed and

plant technology, software for monitoring and improving production efficiency (Shepherd et al., 2018). This digital agriculture is also characterized by the use of analytics (ability to analyse data), telecommunication (data transfer and storage) (Klerkx et al., 2019; Zambon et al., 2019) which in practice were well beyond the reach of these young rural farmers. However, these youths perceived their use of the internet and mobile apps as their engagement with the 4IR in their daily farming activities. They stated that "the internet is now being used everywhere in agriculture because we are in the 4th industrial revolution. Farmers should start to use apps, there are apps now that are directed to farming. Because everyone is using the internet they should put the farming information on the phone, make an app, put more agricultural programs on TV too" (research participant, 6/09/18). Similar sentiments were shared on the importance of using cell phones in the 4IR as other farmers stated that "we have got cell phones which we can use to help us take agriculture to greater heights and lure more young people into agriculture. Many young people think that agriculture is about feeding pigs yet we are now in the 4th industrial revolution in agriculture which allows us to use the internet in farming and no longer about manual labour only" (research participant, 10/02/19).

Using an African perspective to youth engagement and development in agriculture the question then becomes how best can rural young farmers in an African context be exposed to and integrated with advanced farming technology given their undeniable appreciation and acknowledgement that farming has moved well beyond tilling and ploughing? This creates an opportunity for getting a broad understanding of the needs and aspirations of rural young farmers in order to find solutions that can appropriately address the 'youth and agriculture problem' in South Africa. These needs and aspirations were explored in Chapter four and parts of this current chapter in relation to technology.

The lack of clarity surrounding their (mis)understanding of 3IR and 4IR concepts showed just how far removed they were from access to timely information regarding their trade. However, their sentiments align with Moll (2021) who argues that the 21st century is characterized by a continuation of 3IR technologies as the 4IR has not yet arrived. For example, speaking about the importance of acquiring 4IR technologies, one female farmer spoke of a desire for apps that could be used to replace the difficult manual labour such as cell phone apps where one just "presses a

button and water comes out of pipes onto the crops" (research participant, 8/04/19) whilst one sits in an office or the comfort of their home. Many such sentiments were echoed by different participants highlighting their desire to access improved farming technologies and also as a key to attracting more youths to agriculture as apps were believed to "limit the amount of time spent doing manual labour whilst increasing yields and profits" (research participant, 3/03/19).

Using an African perspective as a tool of analysis, the evident discordance between the conceptual understanding of what constitutes the 4IR in agriculture versus practice shows the wide extent of marginalization and how far removed the ordinary smallholder community young farmer was from the fast-paced technological advancements in agriculture. To the contrary, the commercial and larger-scale farmers had easier access to these resources hence further polarization of the two groups. As highlighted in the literature review, there have been many calls for enhancing the technological space and improving its access for young farmers in South Africa as a way to lure them into farming (Ballaro & Moriarty, 2019). Echoing sentiments that technology should be promoted in young farmers, Dr Dirk Strydom, head of the Department of Agricultural Economics at the University of the Free State (2018) argued that the notion that a farmer is someone who sits on a tractor with a plough at the back should now be abandoned. He argued that this current generation of millennials is techno-savvy and therefore has a great appreciation for the use of technology in farming. He argued that this young generation is not attracted to the old forms of manual farming and that as a result it is necessary to promote technology in farming as a way to attract and retain young farmers. He said,

> *"farming has become highly technical. And that's what young people love and are driven by. That's where the image of agriculture is going, and we should promote that. We should also stop thinking of farming as just the primary production process. The real low hanging fruit in terms of job creation is in the value chain."*[22]

Given that the youths engaged in this study would typically be classified as 'millennials'[23] they valued the importance of using the internet and gadgets to simplify their farming experiences and boost their yields. As noted in the literature review, millennials are termed "tech-savvy" due to

[22] NEWS24: TITLE: Can attracting more young people to agriculture naturally solve land reform questions. https://www.news24.com/Analysis/can-attracting-more-young-people-to-agriculture-naturally-solve-land-reform-question-20180522.

[23] There is no agreed upon definition of millennials (also known as Generation Y) as some state that this is the generation of people born between 1980-1992 whilst others state that their year of birth ranges from the mid 1970s to the early 2000s (Bannon, Ford & Meltzer, 2011). Others have approximated this generation to have been born between 1980-2000 (Eastman, Iyer, Liao-Troth, Williams & Griffin, 2014). For some scholars millennials fall in the 1981-1996 category (Dwivedi & Lewis, 2020).

their heavy social media engagments and drive for new technology (Bannon et al., 2011). Technology influences their life expectations (Calvo-Porral & Pesqueira-Sanchez, 2019). Using the African perspective to agriculture, it was evident that the modern, present-day African rural youth is both woke and aware of the internet-in-agriculture. Thus, there was a manifestation of Western contemporary traits amongst rural African youths hence this thesis acknowledges them as being millennials. To harness their potential requires long-term state support with access to improved farming technologies even if the technology is not 4IR but at least at an advanced stage of the 3IR since these youths were far behind in terms of technology access.

However, despite the South African government's ambitious move to adopt the 4IR in agriculture, the necessary structures being put in place are not yet widely accessible to youths in remote areas or outskirts of the city like the youths studied. Thus, implementation gaps exist along with exclusivity of the 4IR technologies to the commercial and more advanced farmers as discussed by Kriel (2018), Hall and Cousins (2018) and Troskie (2017). One can agree with Sutherland (2020) that indeed the 4IR is by far a "futuristic concept" for South Africa which is way ahead of its time as the post-apartheid government is yet to put in place the key structures and networks to make it accessible to the masses.

On describing how they were engaging the 4IR farming technologies in their agricultural practice, the young farmers spoke of their heavy engagement with social media through involvement in a WhatsApp group as well as their use of Facebook regularly. In particular, the youths used Facebook personal statuses and Facebook Marketplace to sell their produce although they did not mention use of other similar social networking platforms in Agriculture or other related groups on Facebook. As mentioned earlier, this form of interaction with telecommunications is more in line with the 3IR and is certainly far removed from the 4IR. However, what is key is to gain an in-depth understanding of how they utilised these online tools as this shapes further our understanding of youth engagements and aspirations in farming. Issahaku et al (2018) argue that there is a dearth in literature on the impact that mobile phone ownership and its use have on agricultural productivity. The thesis zoomed into the use of mobile devices and the internet in relation to the youths' farming trade as this helped to clarify and explicitly expose their marginality and vulnerabilities in the absence of easily accessible farming support structures. Most of the youths in the study were part of a 'young farmers WhatsApp group' which they used to daily share as

many farming opportunities with one another in a harmonious and unanimous effort to empower each other in the industry. The group had 123 members (the number fluctuated occasionally as some youths joined or exited) who were all either part-time or full-time farmers in their region. This group was perceived by the youths to be a cost-effective or rather cheap way of using technology, the internet and data to continuously empower each other in the farming trade. They were of the belief that they were "disadvantaged by the predominantly white-owned corporate food system and the legacy of apartheid" hence they saw a need to be united towards "fighting the system to succeed in farming" and overcome their barriers (research participant, 15/05/19).

These youths were mentally progressive and could easily be described as 'woke farmers' who despite their lack of advanced technology (that they desired) were still very much aware of its existence and utilized that which was within their reach to advance one another in the trade. Being 'woke' has been defined conceptually as a state of ongoing vigilance and consciousness of the existing racial and social injustices and embarking on an active struggle against these injustices that are rooted in historically embedded white privilege which dispossessed and exploited other races (Glass, 2017). This study has revealed that ownership of a smart phone as well as having data to use it allowed the young farmers to do research about their farming practices which helped them improve their productivity, allowed them to market their produce affordably, share agricultural opportunities as well as helped them to improve their knowledge on where to acquire specific agricultural services for their benefit. This 'wokeness' was displayed through engagements on their WhatsApp group to spread knowledge and opportunities around farming which these youths ordinarily did not have easy access to. This was their way to overcome the historically embedded crippling farming environment within which they operated. For example, the introductory message that the WhatsApp group administrators sent to a new-comer to inform them of the group's purpose clearly stipulated the following:

> *Welcome to the Youth in Agriculture communications group. The purpose of the group is to serve the interests & empower the youth aged 18 - 35 in agriculture, environment & land reform areas within the context of rural development. We encourage the sharing of matters & opportunities related to agriculture, environment & land reform, and kindly ask that members not have conversations on the group or forward pictures or videos or chain messages. Please take some time to fill out our membership form if you are currently operating in or interested in agriculture or waste management. Thank you. (7/7/19)*

On a different occasion one new comer to the group asked what the purpose of the group was and he was answered by one other group member who is not an administrator as follows:

To share knowledge and experience between people and groups in the agriculture value chain to advance our business and individual interests. (2/9/19)

Evident was a hunger to disrupt the existing socio-economic imbalances within the agriculture sector through the use of cell phones and the internet to advance their agribusiness ventures. A considerable number of participants in the group shared various farming experiences with the rest of the group. WhatsApp allowed them to share their aspirations as well as help each other to navigate a space where they felt existed a sanctioning of access to agricultural knowledge and practice for black youths by both government and the leading white commercial farmers (as stated in Chapter four) who dominated the industry.

Despite the stark polarisation in farming experiences between these youths versus the already established farmers, these young farmers remained encouraged and self-motivated to keep fighting until they eventually achieve what they would consider to be success in the industry. For example, marketing their produce on the WhatsApp platform one farmer stated that "hi farmers anyone who needs to buy spinach I'm here. Any quantity" (research participant, 3/3/19) whilst another marketing their own business which supplied greenhouses wrote "good day farmers, you're welcome to contact me for greenhouses/tunnels that are evolutionary & affordable and maximize any production potential. You're welcome to inbox me directly" (research participant, 6/4/19). Many such messages where farmers shared their produce or expertise within the industry with the others in the group continued to come through on a daily basis.

I argue that this was their own manifestation of a desire to achieve the concept of 'Food Justice' by creating their own alternatives to the current system. In a nutshell, food justice is a form of politics and food-based activism that allows its actors to engage and disrupt the structural inequities that have been created by corporations and the state, whilst simultaneously working towards creating counter-solutions and creating platforms for resisting this disadvantage for the affected communities who are often marginalized (Sbicca, 2019). The young farmers used their cell phone technology to create alternative farming solutions for themselves whilst also using this platform to critique and raise their concerns regarding the state's response (or lack thereof) to their challenges. They used virtual communities to fight the system.

I argue that their experiences were a reflection of how 'social media solidarity' as a concept manifests amongst young people who also belong to the 'millennial' category. The real-life experiences of millennials are intertwined with their virtual lives such that since they spend a great amount of time in virtual social media reality they heavily depend on social media networks for access to news, entertainment, connectivity with friends as well as staying up to date with any information that is relevant to them (Dwivedi & Lewis, 2020). The younger generation is commonly using digital platforms for active citizenry and participation instead of traditional forms of participation (Adi et al., 2018). 'Social media solidarity' has in Europe manifested through online activities on Facebook and Twitter being used successfully by young people to mobilise then take to the streets in protest for various causes named by different hashtags (Adi et al., 2018). WhatsApp has also become increasingly used as a tool for active mobilization and coordination for political action and solidarity as it is easily scalable and allows for critical conversations to happen across various groups who share the same interests (Pang & Woo, 2020).

Social media is being used by millennials to "create and maintain a sense of belonging" with likeminded individuals in the virtual world and for spreading messages fast to large audiences (Dwivedi & Lewis, 2020, p. 2). Millennials find inspiration on social media for comradery, solidarity and connectedness on social causes that they believe in (Janicke et al., 2018). Social media is used by millennials as a medium for acquiring power to fight social exclusion and loss of control in their physical environments (Dwivedi & Lewis, 2020). It is increasingly being used for connective action to express solidarity in the form of civic mobilisation for challenging authority and the status quo which the concerned interest groups are disgruntled with (Adi et al., 2018). However, other scholars have argued that social media allows for "cheap and insincere" informal participation and activism by "keyboard activists" yet these social networks have proved useful for organizing support and commitment in a cost effective way (Carlsen et al., 2021, p. 124).

Academic research has shown that how millennials interact with social media is largely dependent on personal interests (Dwivedi & Lewis, 2020). Other scholars have argued that this "clickable solidarity" allowed by social media has the capacity to create tangible results such as protests and revolutions in real life as actions are taken from this virtual reality to the physical space (Narayan, 2013, p. 32). A study in Denmark showed that informal citizen-to-citizen distribution of solidarity

and support was manifested strongly through volunteering via social media networks which were used for mobilisation of support during the government imposed COVID-19 lockdowns (Carlsen, et al., 2021). The social networks created by citizens via social media have actually proven to be stable and adaptive to the ever-changing needs of people during the COVID-19 pandemic thus being flexible enough to offer support quickly. A study on democratic engagement in Kenya showed that use of social networks by youths has a positive impact on their political participation as they are able to engage through sharing information and mobilisation (Kamau, 2017). Thus social media is increasingly allowing for collective community engagement, support, solidarity and resistance to oppressive social elements (Locke et al., 2018).

Using social media to promote youth participation in agriculture is key as young people are attracted to social media (Sebotsa et al., 2021). Social media has potential to inspire genuine interest in farming, enlighten as well as entice youth towards agri-entrepreneurship thus it can be used as a 'pull-factor' towards farming whose history has largely 'pushed' youths away (Muktar, 2015). Social media is used by young farmers to acquire information as well as communicate with the farming community (Sebotsa et al., 2021). Research has shown that majority of rural youths engage in social media for entertainment purposes with only a few engaging for agricultural educational purposes (Kumar et al., 2019). Social media also facilitates the buying and selling of agricultural produce as well as allows for interaction between customers and farmers (Varner, 2018; Balkrishna & Deshmukh, 2017; Kuria, 2014). In particular, in India, Facebook, YouTube and WhatsApp were the most popular for rural youths for acquiring new knowledge and training on farming matters such as seed selection and treatment, fertilizer application and treatment of pests and diseases (Kumar et al., 2019). In a study in Kenya, the use of Facebook, WhatsApp and Google search engine were the most popular for searching for information to enhance farming by young rural farmers (Sebotsa et al., 2021).

Similarly, true to millennial form, the findings of this study showed how the young farmers as millennials revolted against the existing corporate food system which they felt had no room for them through their cell phones. They perceived their use of the WhatsApp group as an alliance-forming and marketing tool given that most of them could not afford expensive marketing gadgets. The youths argued that the agricultural trade in South Africa had "an invisible force" that was

keeping them out through an "agricultural sector influx control" which had "purposefully been designed to either keep black people out completely or at least keep them at the very bottom of the food chain" (research participant, 18/09/19). These simple alliances by young farmers through the use of WhatsApp were believed to give them power and clout in their large numbers to shape their future success in farming.

Besides the virtual engagements with cell phones, the disconnection between the concept of 4IR in farming versus young farmers' understanding and practice of the concept raises questions about South Africa's preparedness to support and adopt 4IR for rural youths and small-scale farmers. This argument will be advanced further in the section to follow.

5.3 State Involvement In Implementing 4IR Structures For Youth In Agriculture

Given the vulnerabilities and marginality of rural young farmers towards accessing advanced farming technologies discussed in the preceding section, at this juncture the thesis discusses state involvement towards establishment of youth-centric technological structures that allow for youths to actively engage in advanced farming for socio-economic development. For South Africa, questions should be asked about the best approach that can allow the country to create an environment that is conducive for implementing 4IR in a manner that makes it available to both urban and rural falks?

This brings the thesis to preface a reflection of the concept of a developmental state within the South African context. Discourse on the developmental state gravitates towards the argument that the future development of a country is dependent on a state's intentional and willingness to intervene in the economy to overcome existing socioeconomic challenges and lead to people-centred and people-driven development using democratic ideals (Edigheji, 2010). A developmental state "ought to be in the centre in driving socio-economic transformation and growth and should intervene decisively in the economy to maximise the redistributive effect of socioeconomic gains" (Maserumule, 2012, p. 188). A developmental state paradigm towards structural transformation looks at the role of the state which allows for the analysis and comprehensive understanding of key sectors such as agriculture where complex state-market interlinkages exist (Ikpe, 2018). A developmental state prioritises government policies towards

economic development which promote collaboration between the formal and informal citizen and officials' networks whilst also being able to flexibly switch between being market driven versus being state driven as the need arises (Bagchi, 2000). In farming, the developmental state plays a critical role towards improvement of peasant agriculture as well as overseeing food production processes for achievement of food self-sufficiency and food sovereignty (Mbunda, 2016). In the South African context, this developmental state is best manifested through collective united efforts by all people towards a common goal in order to achieve sustainability of undoing the historical systemic marginalisation and disadvantage of black people instead of being left to the ruling political party alone (Freund, 2007; Tshishonga & De Vries, 2011).

In contrast, the South African state was regarded as an "unreliable source of help" (research participant, 12/9/19) (as discussed in Chapter four), hence the young farmers unanimously through their WhatsApp group continued to encourage each other to work hard. The general view shared was that "government is inefficient as well as uninterested" (research participant, 3/11/19) in boosting these young farmers. As a result, they found it more worthwhile to use their individual 'agency' to help themselves thrive and take ownership over their own success in the sector. For example, one farmer encouraged others on the group to continue finding solutions to the challenges they face and not just wait on government as he stated that "the only way to get things done is to be involved my leaders (every farmer is referred to as a leader as they see themselves as future society leaders). We are done thinking that the government will bring us things. Hell no. We've got to go and get them ourselves" (research participant, 9/08/19). Similar motivational sentiments were shared in the WhatsApp group as the youths felt that state help is far from coming therefore they needed to self-help in order to grow in the trade.

As stated in the literature review, there is a need to critically examine and question dynamics surrounding youth agency in order to create genuine solutions that ensure successful youth participation towards development (Kwon, 2019). The concept of agency recognizes and values youths for the active and independent citizens that they are with a great capacity for transforming society through creation of disruptive innovations (Girard, 2017). Young people are known to use their resourcefulness to protest and resist existing injustices although the manifestation of this agency is best understood in the context of the socioeconomic and political dimensions or

structures across space and time as these shape the nature and manifestation of agency employed by youths (Jeffrey, 2012). Youth agency and their envisioned futures are deeply intertwined as young people project and anticipate certain desired futures which impact on how they respond to existing circumstances in order to construct these desired futures (Cuzzocrea & Mandich, 2016). When their wellbeing and livelihood is threatened, young people create political alliances to address these threats (Jeffrey, 2012). They employ strategic tactical responses to empower themselves against the situation (Larson & Angus, 2011). Such academic arguments contradict scholarly voices that state that youths are disinterested in engaging in activities that shape their lives, albeit, poor access to relevant structural opportunities constrict their level of agency (Cuzzocrea & Mandich, 2016).

These farmers studied were largely still at the onset of the third agricultural revolution thus making the 4IR a piped dream and a far-future concept as discussed in the preceding section. This is despite the South African government's commitment to boosting access for youth to 4IR technologies. President Ramaphosa speaking at the launch of the ANC elections manifesto in 2019 stated that government would commit to the following to ensure that the country adapts to the 4IR:

- *Ensure that there is significant localisation of new technologies;*
- *Ensure that SMMEs and co-operatives are drawn into the digital economy;*
- *Support e-commerce; and*
- *Strengthen and consolidate efforts to digitise government and expedite the implementation of e-government amongst others*

(President Ramaphosa speaking at the launch of the ANC elections manifesto, 2019).

The president noted that in order to ensure inclusion of youth, reduce youth unemployment and reduce poverty at the onset of 4IR government would ensure the establishment of township digital hubs that would serve both rural areas and townships (Ramaphosa, 2019). However, this service had not yet reached the area which serves the youth in this study (in 2020 during data collection of this study). Also, in 2018, the government committed to training one million young people on data science and related skills by 2030 through collaborating with various partners.[24] The young

[24]Minister Stella Ndabeni-Abrahams: 4IR Presidential Commission Induction, 14 May, 2019. Address by the Minister of Communications, Ms Stella Ndabeni-Abrahams At the induction session of the Presidential Commission on the Fourth Industrial Revolution. https://www.gov.za/speeches/minister-stella-ndabeni-abrahams-induction-session-presidential-commission-fourth#

farmers in this study were not aware of any such programs and were often looking out for any training programs offered by government which could improve their expertise in agriculture (as discussed in depth in Chapter four. Using an African perspective to Agriculture, I argue that state interventions that create an enabling environment that reduces the gap of technological marginalization to effectively support young rural farmers and boost youth employment in agriculture is key, although, easy/simplified access to such state support structures is the most desirable intervention to achieve youth-inclusive economic growth.

The emergence of the 4IR at a fast pace warrants an indepth exploration into how the South African government is implementing policies that favour this development and how these policies compare on the global platform (Sutherland, 2020). A brief analysis of how Thailand and India have successfully implemented 4IR initiatives and resuscitated agricultural interest amongst youth now ensues as it assists to advance the argument this thesis makes towards an African-appropriate youth focus in agriculture to ensure rural development and future food security. Such country-specific analysis presents an opportunity to analyse the role of the state towards economic transformation in search of development lessons (Dadzie, 2013). "The successes of Asia's developmental states remain of significance to the African context because these economies present an empirical reality that is approachable as a basis for examining development experiences" (Ikpe, 2018, p. 765).

India

In a case study where government support is visible for farmers in the form of a digital revolution, India initiated the 'Digital India Programme' in July 2015 for advancing all sectors of the economy and ensuring wide-spread access to technology throughout the nation (Saikia et al., 2020). The state has seen it prudent to advance agriculture as more than 55% of its population depend on agriculture as a main source of livelihood with an approximate 55% of the country's workforce being rural smallholder farmers (Suresha, 2019). For agriculture this 'Digital India Programme' has meant merging the digital space with the physical through use of ICT to facilitate agricultural information and services in a timely, sustainable and profitable manner as it has been recognized that ICT can boost agricultural production and profitability (Saikia et al., 2020). The Indian government has forged public-private partnerships (NGOs included) to create the Digital India

Initiative whose to ensure increased innovation and networked solutions which can improve agricultural productivity and rural development (Lele & Goswami, 2017).

This virtual ecosystem has manifested in the form of standardized e-government farmer portals and a farmer call centre have been established for farmers to countrywide to utilise in order to acquire timely and appropriate information and trainings about the climate, the soils, farmer yields, agricultural practices, marketing infrastructure, access to import and export certificates, drought relief and management and much more (Saikia et al., 2020). Amongst the many digital projects is a mobile application called Agrimarket App has also been created for farmers to use to access market prices within 50kn of their location whilst an electronic National Agriculture Market has also been created to allow for electronic trading of agricultural commodities (Goria et al., 2017). It has been argued that through 'Digital India' rural youth are able to learn of more opportunities that exist in the farming sector, give them access to digital technologies for farming, give them more "knowledge about the agro-based policies of the government and the benefits" thus potentially reducing rural-urban migration by youths (Rani & Roy, 2017, p. 173). All this comes conveniently at a time when the e-commerce industry in India is expected to grow to between USD 125-150 billion by the end of the 2020 financial year (Sharma & Tandon, 2020, p. 21). The government has also initiated another programme to empower young people called 'Skill India' which is training youths for these skills of the future as the state has recognised that young people need to be equipped with the right skills and right opportunities for them to thrive (Rani & Roy, 2017; Sharma & Tandon, 2020).

It has been recognised that there is a need to advance rural development through timely and relevant expert technologies for rural agriculture in order to ensure sustainable food security of the future (Suresha, 2019). As a result, the initiative has successfully connected 2.5 million rural village councils with high-speed internet (Lele & Goswami, 2017). This program is so far succeeding at making it easy for poor farmers in remote areas to access timely information as well as tailor-made information based on their needs (Saikia et al., 2020). Consequently, research conducted on the perceptions of smallholder farmers on mobile phone advisory services in India have revealed that mobile phones have become a key tool for agricultural extension services especially regarding information dissemination as this is giving farmers the ability to retrieve the

agricultural information as and when desired (at their convenience as it is readily available) (Panda, et al., 2019). Also, these smallholder farmers revealed that they appreciated the ability to make better informed decisions and appreciated the context relevance of the information shared via their mobile phones. This Indian study also showed that more than half of the farmers possessed a smartphone and used WhatsApp for sharing communication. Further, the digital banking initiatives established for farmers in this 'Digital India Programme' are also helping especially poor farmers in rural areas to save and access credit electronically without them having to endure the poor banking infrastructures physically (Saikia, et al., 2020).

This India case study is a model case on how the government of a developing nation can intentionally build support structures for ensuring that the rural poor who are predominantly farmers can access improved farming technologies. Such an approach to economic development is inclusive as it does not further marginalize the already marginalised poor communities as new technologies emerge since it has already been argued by some scholars that the 4IR is an elitist initiative which will only benefit the wealthy (Sutherland, 2020). However, on paper, South Africa in its pursuit of becoming a developmental state has developed various policies such as the 1994 Reconstruction and Development Programme (RDP) which was abandoned in 1996 amongst other failed policies for transformation which have lacked coherent plans for attainment, have been subject to corruption, poor coordination across government institutions and weak resource capacity in areas where state support is needed most (Freund, 2007; Turok, 2010). The state has also focused more on maximising business profits, economic growth and opening up the economy to global competition instead of protecting local markets and national interests which are inclusive and can benefit the masses and not the elite few (Tshishonga & De Vries, 2011).

The South African state should adopt an approach which is more suitable for poor areas as it "attempts to mobilise and channel resources to new or neglected uses, achieving in the process the legitimisation of new social objectives or a major re-alignment of existing objectives" therefore allowing for equal access to resources in terms of quality and quantity that does not exclude or reject the poor (Tsheola, 2012, p. 161). Adopting a developmental state in South Africa requires the state to shift focus more towards addressing its urgent problems of wide inequality, poverty and unemployment through building the sustainable key institutions to see to the provision of

relevant infrastructure to address these needs and ensure development of the people (Tshishonga & De Vries, 2011).

A brief analysis now ensues on how Thailand as an Asian case study has successfully implemented 4IR initiatives and offered state support to farmers and consequently resuscitated agricultural interest amongst youth this way.

Thailand

In another case study where government support is visible for farmers at the wake of the 4IR, Thailand has initiated its Thailand 4.0 model whose one key pillar is targeted at boosting smart farming through the use of advanced technology by farmers (Luanglath, 2018). This initiative is part of Thailand's internal focus on nation branding to transform the economy and promote inclusive economic growth that is sustainable by involving Thai people in the age of digital technology (Desatova, 2018). Young people are seen as the engine for achieving this goal as a significant number of the population is in the aging bracket (Puriwat & Tripopsakul, 2020). The new concept on agriculture has been initiated to address poor cropping literacy, insufficient human labour and poor farm management knowledge amongst farmers in the country as cost of production was often very high whilst the agricultural products were losing value at global trade level due to traditional farming methods (Khatikarn, 2017). It is anticipated that this new concept will create an environment that allows the younger generation to enjoy farming (Khatikarn, 2017).

Given that there is still shortage of adequately skilled industry-ready people in sufficient numbers due to limited appropriate education for the Thailand 4.0 (Kwanmuang et al., 2020), the Ministry of Agriculture and Cooperatives has established over 2000 agricultural learning centers which it aims to use to help farmers to shift towards technology-led cultivation and evolve from traditional farming methods (Jones & Pimdee, 2017). Another aim was to ensure that at least 20 000 households of smallholder farmers are developed into Smart Farmers within 5 years of the initiative (Puriwat & Tripopsakul, 2020). The Thai Finance Ministry in 2016 proposed to commit itself to establishing a US283.8 million fund that supports the Food Innopolis project (Jones & Pimdee, 2017). The aim of the project is to house 3000 researchers, 10000 students of Food

Science and Technology, 9000 food factories, 150 laboratories specifically for food research, 20 pilot plants and 70 universities (Jones & Pimdee, 2017, p. 15).

This has required the government to initiate a transition from Education 3.0 which focused on churning out graduates who are ready for the internet era of work towards the Education 4.0 where young people are trained to become highly skilled and competent in digital technologies and innovation (Kwanmuang et al., 2020). This is coupled with the fact that Thailand has 22 policy instruments in place that were designed to provide young farmers with support towards accessing land, capital, markets and other forms of capacity building (Faysse et al., 2019). This government has intentionally formed partnerships with various stakeholders towards ensuring that the 4IR benefits the agricultural sector effectively and can reach all targeted farmers. This comes at a period when research has shown that despite the current disinterest in farming by Thai youths, an improvement in farming conditions will sway young people back to the agricultural sector as the youths have expressed resource shortages as their main reason for leaving the sector or for not even entering the sector to begin with (Salvago et al., 2019). Though it is still too early to evaluate the successes of this initiative and with little recorded impact of the programme thus far, it is emerging that smart farming through this initiative is leading to increased productive use of high technology which is lowering farming costs, is highly efficient, saves time and is ensuring higher profits for small-scale rural farmers amongst which young famers are also involved (Kwanmuang et al., 2020).

This case study of Thailand shows an intentional approach by government to want to ensure that the 4IR technologies reach both large-scale and small-scale rural farmers. The relevant institutions need to be put in place, the right stakeholder structures partnered with and the relevant financial support are a prerequisite for the success of such emerging technologies (Ariga et al., 2019; Mpofu & Nicolaides, 2019; Rossouw, 2020). Government's support towards peasant farmers is critical for boosting local food supply and production processes although African states have been critiqued for failure to effectively engage with developmentalism ideology due to poor allocation of resources to agriculture yet this sector is the base for economic transformation (Mbunda, 2016). To the contrary, active state involvement and capacity in Asian countries towards developing appropriate critical infrastructure and policies to support smallholder farming has contributed

significantly to boosting farming production and transforming the agriculture industry (Dadzie, 2013). Understanding government involvement in developing the agricultural sector is key to rethinking the role of the state particularly as the developmental state plays a central role towards implementation of technological change to ensure productivity in farming. This is because successful innovation requires that the new technology is diffused widely to producers for the generation of high quality produce at low costs complemented by provision of knowledge on how to utilise these scientific advances (Ferleger & Lazonick, 1993).

A brief analysis of Denmark and Israel as typical case studies that show how the futuristic concept of 4IR in agriculture has been implemented and is yielding fruit in these countries will now follow. This is to advance the argument that 4IR is still largely an aspirational concept in South Africa and one that can yield fruit through an agrarian developmental state approach which allows for applying the technologies widely and inclusively across both small-scale and large-scale farmers.

Israel

A model case study of how a developing nation has overcome its challenges and implemented the 4IR in agriculture is Israel whose use of 4IR in farming as a futuristic concept has yielded unprecedented fruit. The country has successfully become a world leader in ensuring availability of both low tech and high-tech agricultural innovation for both smallholder and commercial farmers despite the country's poor water supply (low precipitation), poor soil quality (two thirds is arid or semi-arid land and only 295 000 hectares are arable land), great distance from key export markets and history of longstanding war with Palestine (Abraham et al., 2019, p. 12). "Some of the different technologies include extensive use of desalination water, reuse of treated sewage for agriculture, computerized early-warning systems for leaks, and computerized drip irrigation and micro sprinklers" (Kassa & Andualem, 2020, p. 3). The country also uses various precision agriculture technologies with artificial intelligence to allow farmers to gather agricultural data on one platform using agricultural apps, conduct real time and accurate water and soil tests, inspect insects using aerial imaging, collect and analyse digital data for farmers systems, manage, monitor and feed cattle on dairy farms, robotic uniform milking systems and post-milking procedures amongst others (Leichman, 2019). The country has overcome all odds to the point where over 40% of the countries vegetables are grown in the desert whilst the country has also become the largest

producer and exporter of jojoba in the world through its desert farming (Abraham et al., 2019). The government has also put in place fair trade policies to improve commercial relations between farmers and wholesalers (OECD, 2020).

As of 1948 at Israel's independence the country was very poor with food insecurity challenges and dependent on international aid with a GDP per capita of $1000 which is similar to where most developing countries are today (Abraham et al., 2019). The country initially introduced a socialist and centralised approach to farming where each farmer was informed of the crops to grow as a way of making sure the system becomes self-sufficient as well as ensuring that farmers cooperatives and associations were well-managed and organized (Said et al., 2019). In the 1950s, during the country's early stages of development, Israel successfully took on an ambitious project to build a 250km water pipe from the Sea of Galilee to the Negev desert using international aid from the US and the UK despite many engineers having deemed this project practically impossible (Said et al., 2019). The country also made use of structures left behind by the British such as good roads and a railway system to transport their produce efficiently whilst they also made use of British-created agricultural boards to allow farmers and farming cooperatives to sell to these boards then these boards would then export to the UK and beyond (Abraham et al., 2019).

Israel's agricultural success is attributed to "strong leadership and government commitment to agriculture, effective government, innovation: approach to problem solving, farmer organisation, market-led approach and support from abroad" (Abraham et al., 2019, p. 17). Israeli government is heavily involved in the allocation and distribution of key resources such as land and water (OECD, 2020). Its efficient visionary leadership apportioned 30% of the national budget to agriculture and water and another 30% to education leading to effective institutional architecture and targeted agro-industrial policies (Said et al., 2019). Israel's success in agriculture is rooted on its key principles of sustainable farming, economic sustainability, social sustainability and environmental sustainability (Kassa & Andualem, 2020). The state is also intentional about rural development through efficient use of land and resources (UN, 2011). In order to help smallholder crop production farmers to grow the government set up a credit fund in 2015 with government serving as the loan guarantor with 85% guarantee so that these farmers are able to acquire loans (OECD, 2020).

Israel uses desalinated sea water from the Mediterranean Sea for 60-85% of domestic and industrial use and has become the world leader in water management with a stable water distribution system that only loses 3% compared to15% in developed countries and 35% in developing countries (Abraham et al., 2019). Their efficient water distribution system allows them to use recycled water (approximately 80% of water used is recycled) to irrigate orchards in the Negev desert whilst 50% of water used to irrigate the country's agricultural produce is marginal water beating the USA, Australia at reclaiming effluent water for irrigation (Kassa & Andualem, 2020, p. 3). This water system is spearheaded and managed by the Ministry of Agriculture and Rural Development (UN, 2011). As of 2018 the country exported approximately USD $200 million worth of dates, avocados, fruit juices, citrus fruits, processed food and seeds each (Abraham et al., 2019, p. 12). The government also continues to heavily fund research on agricultural technologies to ensure increase in agricultural production, genetic improvement of crops, improvement of food safety and quality to improve farms' competitiveness and farmers' income (OECD, 2020).

State fiscal support towards agriculture can improve availability of key resources consequently leading to strengthened overall agricultural performance and improving local food production which in turn supports the domestic sector (Ikpe, 2018). However, Moyo (2016) argues that in South Africa though the state has adopted a developmental state approach to boost its industrial base and reduce structural constraints through various policies, there is need for new approaches to development and management. These approaches should allow for wider technological and skills transfer within the context of the country's needs and historical limitations as there is no one-size-fits all approach to successful state engagement for development. "Using the agrarian question as an analytical point of reference, it is extremely difficult to identify how increases in productivity and income in smallholder agriculture can be achieved without forceful state action and a sustained injection of resources" (Harrison, 2016, p. 354). In South Africa compared to Israel, the state's approach to promoting socioeconomic development post-apartheid has been weak and yielded poor results, consequently delaying rural development due to weak bureaucratic processes as well as policies with poor implementation. This raises the critique that the country lacks a functional and competent bureaucratic system that can coordinate government departments centrally to ensure that development objectives are met (Karriem & Hoskins, 2016). An agrarian

developmental state where policies, intervention and peasant agency complement each other is a useful strategy for attaining success in the farming sector (Harrison, 2016).

To advance the argument towards an agrarian developmental state a brief analysis of Denmark's application of the 4IR now ensues.

Denmark

Denmark is another model case where farming technologic development has been rapid and has reached extremely advanced levels. Currently regarding the 4IR it is one of the top 10 countries in the world that is spending a significant amount of its GDP on research (Schiølin, 2020, p. 554). Denmark has been utilizing precision agriculture for over 15 years with a fast adoption rate by both its small-scale and large-scale farmers who are mostly young, have received solid continuous formal training and education and have embraced the innovation and efficiency brough by technology to farming (Mutale & Xianbao, 2021). These technologies come with high costs to purchase as well as train the farmers and Denmark has invested this training into its farmers (Tamirat et al., 2018). Information on the technologies has been made readily available and accessible for farmers thus speeding up the adoption rate (Hansen, 2015).

These young farmers have displayed keenness to try new farming technologies resulting in high productivity, profitability, low losses and less working hours for them (Vecchio, 2020). Agriculture makes up 25% of total goods exported from Denmark and is the main source of income exporting mainly to Germany, UK, Sweden and China and contributing an approximate 5.6% to the country's GDP (Mutale & Xianbao, 2021, p. 73). Denmark produces enough food to feed a population three times its size and utilizes two thirds of its land area for wheat and barley (Food Nation Denmark, 2021). Some examples of technologies being used leading to this success in farming are satellite systems, crop sensors, sprayer section control, nitrogen application software, drone images, yield monitoring and mapping software amongst others (Future farming, 2021). The advantages of precision agriculture are that as a management strategy it "gathers, processes, and analyses temporal, spatial, and individual data and combines it with other information to support management decisions according to estimated variability for improved resource use efficiency,

productivity, quality, profitability, and sustainability of agricultural production" (Mutale & Xianbao, 2021, p. 71).

The success of Danish agriculture is a result of longstanding family farming and land distribution by the state from the 1700s which allowed peasant farmers living in small villages to meet market demands by choosing what they desired to farm (Kjaergaard, 1994). The state has historically played a significant role in boosting agriculture through policies which cater for farmers needs, international trade policies which encourage export and allowing farmers to create farmers' unions, as well as the creation of local savings banks which helped to finance farming cooperatives (Pyykkönen et al., 2012). "Denmark is among the countries that historically embraced the so-called Nordic Model, a model built on economic and social policies that stress a far-reaching welfare state, a corporatist system, and a high percentage of unionized workers, who, along with employer unions and the government, are equally included in tripartite collective bargaining processes" (Schiølin, 2020, p. 554). The state also facilitated agrarian reform through educating the peasants and introducing universal primary school education in 1814, then high schools in the 1840s and the Royal Agriculture university in 1856 so that the peasants could become more educated thus making more learned farming decisions such as bookkeeping (Averbuch et al., 2021). The state also ensured good transportation systems to facilitate agricultural trade locally and abroad (Fi-compass, 2019).

Given the above case study analysis of Denmark it is evident that an agrarian developmental state approach where policies and the implementation work hand in hand to complement each other will lead to success in the farming sector without necessarily compromising farmer agency. Becoming a successful agrarian developmental state requires "heavy investment in infrastructure and agricultural development-led industrialisation" (Nem Singh & Ovadia, 2018, p. 1049). Youth agriculture in South Africa requires genuine transformation in order to be of value and appeal to the young (Yoboah et al., 2020). It is imperative that youth structures for development allow for genuine participation and engagement by the young (Kwon, 2019). I argue that the South African state in its pursuit and adoption of a developmental state agenda needs to become more intentional towards empowering all farmers and not just focus on already established farmers as success by rural small-scale farmers leads to economic prosperity for the entire nation.

Policies should be put in place that are specifically tailor-made to suit the needs of young farmers and youth farming cooperatives so as to enable them to grow and ensure active and productive youth participation in agricultural transformation. The multiple case studies explored in this thesis revealed that there is insufficient state support to match the zeal that young farmers have. Lessons from other countries show that there is a need for combined effort between the corporates, NGOs, government and other stakeholders towards assisting young farmers to boost productivity. Government can assist with access to markets for the young farmers' produce. Government procurement services in favour of young farmers should not follow conventional bidding and tendering processes as these automatically disqualify the young farmers before the match has even begun. Provision of reliable and relevant state extension services should be made available for the young farmers to access on demand and at an affordable (or possibly free) rate. Training should also be provided as part of these informative and educational services to improve the farming experiences and boost productivity of the youths. Government should provide grants or tax subsidies as incentives to seasoned farmers so that they are encouraged to offer mentorship to young farmers as part of giving back to the community. That way these youths have direct and easy contact with their mentors for inspiration and key practical lessons. Stipends from the state should also be made easily available for young entrants to farming as most of them do not have other financial muscle to carry them through the periods when they do not harvest (as they harvest seasonally).

Given that young farmers are techno-savvy and appreciate the use of advanced technology and social media, the state can use these as mediums for promoting agriculture as well as boosting youth productivity. State land needs to be made readily available along with the security of tenure so that young farmers are able to use this as collateral for acquiring financial loans. Alternatively, government can provide some form of loan system which makes it easy for young farmers to access. These loans can come with terms and conditions that make it compulsory for the young farmers to attend training sessions amongst other initiatives to ensure that the loans yield the desired results such that the youths are able to pay back the loans too. Lastly, the experience with the COVID-19 crisis requires the state to reconstruct post-COVID-19 agricultural systems which have the ability to avoid or resist disruptions in food supplies and production which is a key service offered by young farmers to their local communities.

5.4 Conclusion

This chapter has presented findings on the perceptions of young farmers on farming technology and the 4IR in agriculture. It was evident that young rural farmers have a limited understanding of what constitutes the 4IR in agriculture. There was a discordance in how 4IR is conceptualized and should be theoretically practiced versus what was on the ground due to poverty and marginality experienced by the farmers which limited their exposure to these technologies. Smallholder rural farmers were unable to equally compete with bigger farms due to poor access to farming technology thus further widening the gap between technologically advanced farms and those with basic technology. Dunga (2019) highlights that agricultural technological revolutions only benefit those who adapt early whilst the poor and late adapters are marginalised. The question then becomes how best can these technological barriers be removed to boost rural farming?

State involvement in assisting the young farmers to adapt 4IR technologies or modern technologies in general was minimal and almost non-existent. In contrast, an agrarian developmental state which forcibly ensures intentional and sustainable injection of resources towards smallholder agriculture will widely boost the productivity of the farming sector and its impact across farmers. A desire for state assistance was echoed given the dual nature of the agricultural sector which emanates from the history of apartheid in which state support was racially skewed towards white farmers. The transition from apartheid has had a lasting impact of polarization which sees young black farmers barely surviving whilst white commercial farmers are firmly established. Dismantling the barriers affecting the young farmers will have a ripple effect that spans generations as more young people will become interested in farming.

Further, young farmers form social solidarity and online alliances via social networks such as WhatsApp and Facebook that they use to market their products, mobilize for progress, as well as for acquiring up-to-date agricultural information that is relevant to them. The young farmers were visibly still at the infancy of the 3IR which largely constitutes the use of ICT for advancing agricultural production. Nonetheless, technologies in the 3IR are still significant towards

improving youth farming experiences as they create opportunities for enhancing youth livelihoods and economic growth (Frost & Sawa, 2017.

The following chapter builds on this discussion by providing a final analysis of young farmers in the context of COVID-19.

CHAPTER SIX: YOUTH FARMING IN THE CONTEXT OF COVID-19

Us young farmers are still starting out and right now this corona virus has presented good opportunities for us to make money but we do not have adequate capacity to supply consistently and in bulk all the time. The opportunities this time are many because people need to eat and survive during this lockdown but we are still behind. (research participant, 12/6/20)

6.1 Introduction

The above quote is a narrative that COVID-19 presented opportunities which the youths could have effectively tapped into provided the relevant structural support existed. This final chapter of discussion of findings offers an academic analysis of how COVID-19 implicates the overall argument of this thesis although an analysis of the pandemic was not the core focus of this thesis. The chapter questions young farmers' responses and engagements during the emergence of COVID-19. COVID-19 has opened up a vein for understanding potential vulnerabilities and resilience strategies within smallholder farming systems given the vast challenges that have existed in smallholder agriculture prior to the pandemic (Middendorf et al., 2021). The unforeseen COVID-19 global pandemic and current emerging write-ups by researchers on this pandemic presents a strong case of a conceptual and academic analysis as it has a bearing on youth and farming.

Academic discourse has questioned what should constitute the most appropriate food system in South Africa which can appropriately address the weaknesses unearthed by COVID-19? (Paganini et al., 2020; Wegerif, 2022). An account of the impact of COVID-19 on young rural farmers is necessary because as key players in agriculture they have immediate contact with elements from the food supply chains in their rural settings (Yazdanpanah et al., 2020). This chapter seeks to develop further the main argument of this thesis on youths as active agents in socio-economic development through farming by arguing that the food system should be made more flexible and state interventions should become more supportive to accommodate young farmers with ease. This is because rural youths possess great potential to engage in local food production in the face of future disruptions of the formal food systems caused by pandemics or other shocks.

Various approaches can be used to analyse the effects of COVID-19 on agriculture. An exploration of the impact of COVID-19 on smallholder farmers using an African perspective helps to identify factors that strengthen smallholder farming in the presence of both anticipated and unanticipated shocks so as to reduce the negative impacts and boost the rate of recovery of rural areas and their food systems. This approach allows for a holistic approach which considers the experiences of young, black small-and-medium farmers in the entirety of their rural environment. The possible impacts of COVID-19 can also be viewed from the lenses of the direct and indirect effects on producers, business people, institutions, and consumers, and activities that the agents are involved in" (Nchanji & Lutomia, 2021, p. 2). For example, FAO's Food Systems Approach concerns itself with the linkages and interdependencies amongst all activities and agents engaged in "food production, processing, distribution, and consumption, including socioeconomic and environmental outcomes (Devereux et al., 2020; Ericksen, 2008; HLPE, 2017). This approach is partially used in this chapter to analyse the effect of COVID-19 on the young farmers experiences as it integrates well with the African perspective towards agriculture. This helps to analyse and interpret the impact of the pandemic on African rural food systems.

This section begins with a constraint analysis of how the young farmers navigated the new challenges brought by COVID-19 amidst existing structural challenges.

6.2 Navigating Covid Challenges Amidst Pre-Existing Structural Challenges: Constraint Analysis

In previous chapters the thesis discussed in depth the structural challenges that the young farmers experienced as they navigated the agricultural trade. The emergence of COVID-19 then introduced new challenges as well as magnified the existing struggles. What then does this double tragedy brought about by COVID-19 in the presence of pre-existing challenges mean for the young farmers? It emerged in this study that the pandemic enhanced as well as complemented existing structural challenges which were exacerbated by youth marginalisation. The government-imposed restrictions on movement to curb the spread of the disease led to the young farmers being "unable to transport" their goods to the city to sell since they all used public transport which had been

halted except for essential service providers.[25] Due to the remoteness of their location from the inner city as well as due to lack of reliable information sources, these farmers were not even sure of where to go and acquire letters of permission to travel which would categorize them as essential service providers thereby allowing them to trade. However, in light of these challenges, the South African government has been critiqued for its (mis)handling of the informal food traders who are typically the immediate point of food markets for the urban poor yet they were not treated nor recognized as essential service providers along with the formalized industrialized food systems (Wegerif, 2020). The state undermined this sector in favour of the corporate food industry yet it too makes a significant contribution towards food security thereby justly requiring government support to survive.

The global disruption in the supply chain also interrupted how farming inputs were acquired and this saw the young famers studied not having access to farming inputs as there was a general shortage of these inputs in their local stores. Many of them stated that they "could not purchase any spinach seedlings because these supplies are only found in the city which is about 60km away" (research participant, 5/05/20) from their location in the periphery of Johannesburg. This hurdle to movement and purchase of farming supplies was experienced briefly at the time of the initial hard national lockdown in South Africa.[26] However, once travel restrictions were eased other hurdles such as increased prices of farming inputs in the city due to shortage in supply were experienced. For example, vegetable seedlings increased by as much as R20 due to the increased demand and artificial shortage created by the lockdown and the young farmers felt the pinch as they stated that seedlings were not available locally in their community so they were forced to travel far to purchase them. Using an African lens to youth farming the question then becomes about how best to locally secure the resource needs of marginalized young rural farmers in order to create a self-sustaining localised food system in the presence of unforeseen pandemics?

"Food systems comprise all the processes associated with food production and food utilisation: growing, harvesting, packing, processing, transporting, marketing, consuming and disposing of food remains" (Van Berkum et al., 2018, p. 6). "A Food Systems Approach is a way of thinking

[25] At this point only commercial farmers were being recognized as essential service providers and not the informal farmers as all informal trade was halted for purposes of managing the spread of COVID-19. This was on 3 April 2020.
[26] 26 March 2020-1 May 2020 was the period of the initial Level 5 lockdown also referred to as the hard national lockdown in South Africa at the onset of the global spread of the corona virus pandemic.

and doing that considers the food system in its totality, taking into account all the elements, their relationships and related effects" (FAO, 2023, p. 2). It allows for assessing the vulnerability of food systems to future shocks broadly looking at how food is produced, processed, distributed and consumed, as well as the interlinked relationships of key stakeholders (Ingram, 2011). It utilizes a broad and systematic analysis and framing of a problem through assessing the interlinked causal relationship between social, environmental and economic variables in order to create sustainable transformational change (FAO, 2023). This approach acknowledges that food systems are complex, and allows for understanding the food system holistically as interactions in one part of the system can have a ripple effect on other parts of the system as the whole system is interwoven (Ingram, 2011).

This approach does not narrowly focus on a specific sector but looks at the broader picture thus allowing for the creation of long-lasting solutions that involve multi-stakeholder engagement to address future challenges (Van Berkum et al., 2018). It pays attention to the interactions and feedback from the socio-economic system allowing for mapping out opportunities for more sustainable and efficient use of resources, shedding light on the impact of different processes and intervention strategies (Pinstrup-Andersen, 2007). It also allows for identifying potential adaptation interventions (Ingram, 2011). The Food Systems Approach as a lens for analysing the inefficiencies and possible food insecurity in the food system caused by COVID-19 states that "restricted mobility may reduce farmers' access to inputs, labor, and financial services, disrupting food production and distribution whilst lockdowns and closure of food markets could result in unstable availability and access to food" (Nchanji & Lutomia, 2021, p. 2).

State support towards key resources and infrastructure during COVID-19 would have proved useful and beneficial towards sustaining rural farming and allowing the young farmers to quickly adapt to the 'new normal' that the pandemic introduced. There existed a large gap between state actions and assistance for young farmers versus the actual challenges that these youths faced with most state assistance being secondary level such as training and advisory services. Meanwhile, key primary assistance in the form of financial capital to address resource and infrastructural challenges was lacking. As a form of parental support, assistance was expected from government to help the youths stay in business. Not only did these youths continue to highlight a need for a financial buffer from government (during and post-pandemic) which they viewed as their parent

but they also highlighted a need for assistance with access to markets given the newly imposed travel restrictions during the pandemic. Commenting on the need for government assistance during the pandemic one farmer had this to say and this sentiment was shared widely:

> *Right now because of COVID-19 we have many limitations because we are still starting up and so it would be nice for government to help us along until we are stronger on our own because farming has potential for absorbing more youths. This pandemic has been ongoing for over 6 months now and there seems to be no end in sight so government must accept this 'new normal' and help us adjust to it and overcome it. We still need sponsorship. Things are hard for everyone at the moment and getting sponsorship is very hard right now. Government must be our parent and help us with money to expand our operations and also to get us even more markets that pay well because on our end we are working very hard to grow as much vegetables as we can. (research participant, 20/10/2020)*

Evidently, government assistance with access to markets during unprecedented events such as pandemics was seen as critical by the young farmers as many of them initially experienced reduced local sales as the fear of the pandemic had gripped community members. In such cases the young farmers would require reliable existing markets for their produce in order to have stability in their sales. This was also coupled with the fact that prior to the pandemic the youths were already struggling to access guaranteed markets (as discussed in earlier chapters) which exacerbated their frustration towards the system. Government's unpreparedness as well as existing weak support structures were largely blamed for this poor handling of young rural farmers. For example, as discussed in Chapter four, the youths struggled to access business grants and so it was no surprise that during the pandemic they also struggled to access government relief funding aimed at small businesses. Again, it was also no surprise that they perceived this lack of parental support as abandonment which required them to fight to self-sustain in farming. The expectations set out by the young farmers towards the state versus the delivery of these expectations played a significant role in how state interventions and strategies towards enhancing youth agriculture were perceived and received.

Given that the youths identified themselves as 'millennials' (as discussed in earlier chapters) they also echoed a desire for easier access to government's online agricultural training and extension services which could be easily accessible and affordable virtually during the COVID-19 period. As discussed in Chapter two, millennials have strong use of technology and the internet to form virtual social networks as well as to access desired infromation (Eastman et al., 2014). However, the youths studied expressed that during the pandemic the virtual agricultural extension services

they desired were being offered by independent sources and not government via WhatsApp and Facebook [as these were found to be cheaper and data conserving than using platforms such as YouTube, Zoom or Microsoft Teams] almost weekly and were being offered mostly by various NGOs in the agricultural sector for free. The youths found these methods to be a better alternative to physical extension services as they could easily refer to the content any time online. Thus, given the poor engagements of state extension service providers discussed in Chapter four it was refreshing for the youths to access easier skills training and consultations virtually due to social distancing regulations. According to Bannon et al (2011, p. 62) it is important to understand the needs of millennials in order to boost their morale, retain them as well as boost their efficiency within the workplace as they are "excellent at integrating technology into workplace".

The farmers highlighted a desire for a permanent (free of charge) online platform provided by the state to facilitate their training and offer these extension services in a manner that allows the youths to select the appropriate service they require as they highlighted that the government extension officers who visited them pre-COVID period were often unreliable or not appropriately skilled with the required information. Commenting on the issue of extension services during the COVID-19 lockdown one farmer had this to say and this sums up similar sentiments which were shared by other farmers:

> *These days because of COVID-19 we now get easier access to training and other consultations we require online. People are circulating lots of helpful materials for our produce via WhatsApp and on Facebook farmers' groups. These are very helpful because we can get to ask questions and get reliable answers from professionals. There are lots of NGOs that are offering these services for free although some are charging a small fee like R100 then they give us a Zoom link to join the training class. Zoom is expensive for us because of the data cost but Facebook and WhatsApp are the easiest for us. I know that the department of Agriculture also had a training two months back online but I could not join it because of data so they must use cheaper platforms like Facebook that we use more. Also, with Facebook and WhatsApp its easier for us to refer back to the information at a later stage so we always have the information with us for easy access when we need to use it for our farming practice. And also with Facebook and WhatsApp its easy because we don't have to wait and wonder if the government officer is going to show up or not to help us with some farming tips so online access to the information we need is much better and the department of Agriculture should just stick to that but on Facebook and WhatsApp. (research participant, 15/10/2020)*

The need for easier access to agricultural extension services online by the farmers came as no surprise as COVID-19 has resulted in an increased necessity for online and remote learning. Also, true to millennial form, such online engagements excited the young farmers. This does however call for the necessary infrastructure and training to be initiated in order for a more meaningful

experience to be achieved for the farmers. According to Saravanan et al (2021) many young farmers have utilised YouTube videos to gain more knowledge on areas of interest during the pandemic. COVID-19 presented an opportunity for introducing virtual learning for improved access to farm education and training for young farmers which previously was uncommon, and this development presents an opportunity for tech-savvy youths to take on agribusiness due to easier access to agricultural extension services. Digital agricultural extension services are critical to address the gap of poor access to agricultural training for the youths which was a challenge prior to the pandemic.

However, preexisting structural challenges such as poor satellite connectivity, poor electricity supply and low access to computers and other essential electronic gadgets have made it difficult for young people to easily adapt to virtual learning in the presence of COVID-19. Unequal access to the internet and digital services for young farmers and farming students has also meant unequal access to virtual learning therefore calling for investment strategies that intentionally address this ICT gap to minimize vulnerabilities, increase resilience and coping mechanisms given the new realities brought by COVID-19. A support system that adequately supports young farmers through easy access to appropriate extension advisory services virtually can ensure sustainable rural development in the long run.

However, it has been revealed that there exists a few pockets of excellence in the implementation of digital learning in South Africa although the failures noted are largely associated with costs of setting up as well as scaling up such technologies for wider access by many especially the poor (Mhlanga & Moloi, 2020). In Tunisia the government has managed to successfully transition to providing online agricultural education as a form of continued support for young farmers and agriculture students during the pandemic (FAO, 2020). Since 'youth' in itself as a concept is the central and starting point in which the discourse on youth farming and development is premised on in this thesis, there is a need for a youth-inclusive agrarian transformation which also takes into account lessons learnt from the pandemic in order to secure the experiences, interests and aspirations of young farmers when formulating and implementing holistic, appropriate and relevant interventions.

Analysis of the effects of COVID-19 on agriculture can also be approached from FAO's four pillars of food security which "associate food security with availability (measure of food supply), accessibility (the ability to have food either from own production or markets), utilization (the dietary quality of food), and food stability (a dynamic concept that requires that availability, access, and utilization are stable or adequate over time) at micro and macro levels" (FAO, 2008 as cited in Nchanji & Lutomia, 2021, p. 2). Using this approach as a tool for analysis, the young farmers highlighted an awareness that farming typically protects youths from labour market shocks as their industry had remained open for business during COVID-19 despite experiencing a few challenges of its own. Other youths in their communities had begun to inquire from them about prospects in agriculture and others had begun to seek farming mentorship from these youths as social distancing regulations had disrupted many other informal trades. Thus, the families of the young farmers had been fairly financially protected as some form of income continued to be generated from agriculture during this pandemic period and especially since their fresh produce was now selling at higher prices as mentioned earlier.

A survey conducted to assess the labour market dynamics in South Africa during the time of COVID-19 between end of March to end of April 2020 (in the initial period of the lockdown) showed that previously vulnerable groups had been affected the most by job losses and the youths formed part of this already marginalized group of people (Ranchhod & Daniels, 2020). The emergence of COVID-19 has forced young workers to rethink their employment options as most formal industries were temporarily halted or heavily disrupted leaving youths in need of alternative survival options. Farming consequently became a key attraction for young people which presented opportunities for sustainability of the future of farming and generational renewal in agriculture as youths have a greater capability to adopt and adapt to modern farming technologies (Mantra et al., 2021). Young farmers being amongst the larger group of smallholder farmers struggle the most to cope with the disruptions brought by COVID-19 particularly in rural areas where poverty and vulnerability is rife (Woomer et al., 2021). Young farmers are faced with additional pre-existing challenges which have been experienced prior to the emergence of COVID-19 make it difficult for young farmers to adequately utilise state COVID-19 assistance which comes in the form of funding until the preexisting barriers have been addressed.

COVID-19 presented opportunities for the farmers to increase their customer base as follows:

> *Us young farmers are still starting out and right now this corona virus has presented good opportunities for us to make money but we do not have adequate capacity to supply consistently and in bulk all the time. The opportunities this time are many because people need to eat and survive during this lockdown but we are still behind in terms of the new farming technology needed to increase our harvests and for better quality harvests. Government should also be prioritizing our needs and listening to us to be able to help us create more jobs because right now only the agricultural sector can employ more youths in this pandemic. Better technology can help us to harvest more and supply more especially now that demand for fresh food is high but right now government is not yet ready to help us move forward and advance in our farming. (research participant, 12/6/2020)*

Evidently, the period of the initial hard lockdown[27] proved that the young farmers could easily become localized and become active, reliable food producers for their community, such that if other pandemics occur this community would not be affected if its local food systems were well established as farmers became the main source of fresh produce supplies. Genuine participation and collaboration through an enabling environment which allows for the interests of the farmers to be represented and negotiated for mutually beneficial results is what was believed to achieve success in a post-COVID environment. In particular, the farmers maintained that improved agricultural technologies would help them to become more resilient, competitive and survive amidst the existence of well-established corporate food systems. However, the transfer of technology alone does not benefit smallholder farmers and their livelihoods as other complementary supporting structures are necessary.

A key critique raised by scholars is that post-COVID digital technologies and approaches alone will not aid in improving commodity supply chain resilience of smallholder farmers nor improve their livelihoods as they already currently participate in complex systems with many existing challenges that leave them vulnerable (Quayson et al., 2020). The youths studied operated in a complex environment and were at the bottom of the food chain such that they did not get easy access to any forms of government assisted farming technologies as they lived in remote areas. A post-COVID technological inclusion approach which is feasible and which could sustainably empower the young smallholder farmers is key but did not exist. Engaging youths in order to understand these contextual issues is key for formulating appropriate tech-solutions.

[27] 26 March 2020-1 May 2020 was the period of the initial Level 5 lockdown also referred to as the hard national lockdown in South Africa at the onset of the global spread of the corona virus pandemic.

Given the disruption in global food systems many African states have been criticized for focusing on providing emergency temporary food relief which has often been surrounded by corruption scandals instead of offering support to local small-scale food production systems (family farming) that can offer a more sustainable solution to community/family food security during the pandemic and post-COVID-19 (Mukiibi, 2020). In the case of this study, the government food relief program during the pandemic has been in the form of menial government relief grants between R300-R500 as well as some food parcels containing basic groceries for the unemployed community members although the quantities of the relief packages have been criticized by the youths studied for their inability to feed their families for barely more than a week. However, in India the government has offered support specifically targeted at rural young farmers in particular by providing them with INR 500 (equivalent to R113) stipends to assist them with basic needs until a time when their farming activities could resume and these stipends were seen as helpful (FAO, 2020). Though this is not much, it is the concept of specific youth-targeted farming relief that the youths studied yearned for which was not generalised but rather tailored to young farmers' needs and for a longer period until a time when they could self-sustain. The COVID relief funds had no long-lasting duration but were intended to be temporary with the period in question being too short to be truly helpful to the young farmers. Further, if relief was specifically tailored for young farmers it would not provide them with groceries but rather provide relevant farming inputs and skills trainings which are tailor-made for the young farmers' needs.

Commenting on the issue of food security in the midst of the pandemic one farmer had this to say and this sentiment resonated with many other farmers:

> *This government takes us for granted. Instead of uplifting us with land and finances so that we can boost our farming they are busy giving us small grants between R300-R500 which can barely feed our families for one week. Even their food parcels are barely enough. This is not what we want. We want to be able to expand our farming activities so that we can support our own families and the community and create jobs for others which are more sustainable than temporary grants. That is the best food that they can give us. (research participants, 5/6/2020).*

Evidently, the most desirable source of empowerment desired was that of assistance with relevant farming support structures to boost productivity and ensure ongoing fresh produce supply. Temporary relief state grants were viewed as menial and an insult as they could not adequately provide for the needs of an entire family. The youths did not want handouts but wanted genuine empowerment which would give them the ability to make their own income and livelihoods

decisions. Rather these grants should have targeted their farming ventures thus offer more sustainable livelihoods solutions in the crisis. This brings into question the relevance and sustainability of state intervention approaches towards youths in remote areas and how effective these methods are towards addressing the youth and farming problem in South Africa before, during and after the pandemic?

The next section explores how the young farmers studied fulfilled the needs of their market in the presence of COVID-19.

6.3 Fulfilling Market Needs

In previous chapters the thesis discussed in depth the existence of youth farming interests which contradict public discourse that youth are not interested in farming. How then has this interest been impacted by COVID? It emerged that the pandemic forced the youths in the community studied to look to alternative avenues for income once the economy was halted by COVID-19 regulations. This led to agriculture being perceived with a renewed interest by those youths who had never considered its potential as it became the only career option that was allowed to continue working as it was viewed and categorised by the state as an essential service critical for human survival. COVID-19 opened up opportunities for increased online sales of fresh produce for the youths. Similarly, research conducted in Bali has shown that due to high unemployment levels induced by COVID-19 many young people switched to farming as a career and have displayed great potential and enthusiasm for learning agricultural production as a survival strategy (Mantra et al., 2021).

For the youths studied, online food purchases actually increased due to the restrictions in movement. This contradicts the experiences of some young farmers who according to Nurlaela and Sujono (2021) experienced losses during the pandemic due to unsold produce as markets were disrupted. Firstly, for the young farmers studied, their idea of online sales involved marketing their produce on WhatsApp as discussed in earlier chapters, although due to the pandemic a significant number of them used Facebook too to market their produce whereas pre-COVID-19 not many of them actively sold their goods via Facebook in preference of WhatsApp. This in itself arguably

displayed a form of resilience against the pandemic by these young farmers as they adapted by using the affordable technology at their disposal. Commenting on their use of WhatsApp and Facebook during COVID for selling their vegetables, one farmer had this to say which was also a sentiment expressed by many other farmers:

> *Because of COVID-19 many people now order stuff from us via WhatsApp and Facebook. Previously we used to only sell our vegetables on WhatsApp even though we used to market our products on Facebook too but not many people would buy via Facebook. Now because of COVID-19 we get orders even on Facebook then the people pay us either cash or ewallet on delivery. People want to reduce the number of visits they make to the supermarket so they contact us to deliver vegetables to them and some people also now earn less money so they reach us because we are cheaper than the shops and they can save some money by buying from us. The only challenge though is that we always have to have data in our phones otherwise we will delay in attending to our customers. (research participant, 2/9/2020).*

Evidently, due to social distancing regulations, online engagements became the 'new normal' which the young farmers quickly adapted to using the resources at their disposal. An investigation into the effects of the pandemic on the demand for online food shopping services in Taiwan showed that online sales increased as more confirmed cases of COVID-19 increased (Chang & Meyerhoefer, 2020). Arguing in the context of Ghanaian cocoa sector, it is believed that creating online sales platforms and digital payment platforms will reduce the amount of physical cash circulating and especially during and post the COVID-19 pandemic as cash poses a threat to human life when faced with contagious diseases (Quayson et al., 2020). However, for the farmers studied they widely accepted cash as a form of payment during the pandemic as their lower end community customers largely did not yet have easy access to online or digital payments although they were fully aware of the dangers of handling cash during times of a contagious disease. Also, the young farmers themselves did not have online payment gateway systems[28] due to the high setup and maintenance costs involved. Also, a significant number of them did not have bank accounts either, citing costly service fees of maintaining the accounts. This challenges state contribution towards assisting marginalized young farmers towards adjusting and thriving in the 'new normal' brought about by COVID-19 by understanding their environment and farming needs better as discussed in Chapter four and five.

The African perspective towards agriculture and FAO's Food Systems Approach view access to food from a socioeconomic perspective. Using these perspectives one notes that food access is

[28] All farmers interviewed did not have online payment gateways and depended on cash payments and electronic money vouchers redeemable for cash from customers who would order online.

uneven based on availability of wealth and resources which are unequally distributed in society resulting in unequal experiences regarding food production, labour, trade and transfer entitlement. The COVID-19 outbreak and hard lockdown particularly level four and five[29] in South Africa strictly allowed food producers and other critical services only to remain operational whilst all other businesses and services had to shut down. This tested the young farmers' ability to respond to shocks whilst also taking advantage of a situation which involuntarily propelled food producers who were prepared and well-resourced by creating new markets for them whilst all other businesses were brought to a halt. The young farmers largely did not benefit from this privilege and were unable to adequately fulfil the needs of their market as they had not been strategically positioned and operationally sound, nor had adequate resources which would allow for easy expansion and mass production prior to the national lockdown. Also, largely due to their remote location and difficulty in accessing accurate timely information, the young farmers struggled to get travel and trade permits which would allow them to move around to supply shops with their produce. Success for them would have been possible when opportunity meets the prepared.

However, Le Nestour et al (2020) argue that COVID-19 has had some positive impacts on agricultural activity and productivity in rural areas as lockdowns shifted labour from urban areas to rural areas instead. The general global price increase in agricultural supplies also gave farming producers bargaining power (Mastronardi et al., 2020) which the young farmers studied benefitted from. Those who had access to local supermarkets stated that they were able to sell their products at a higher price of R9 (on average) for a bunch of spinach which the farmers felt was really high given that the same supermarkets were known to only purchase at a fixed price of R5 (on average) per bunch prior to COVID-19. However, their unpreparedness to sell in large quantities due to low productivity resulted in only 3 cooperatives having the opportunity and capacity to sell their spinach to local supermarkets during the initial hard lockdown as the rest were not producing enough and at consistent levels to meet the high demand. Even those who did supply the local supermarkets still complained that they were not able to meet the demand due to insufficient arable land to expand their production given that they were organic farmers. It is worth noting here that the 3 cooperatives that got opportunities to supply local supermarkets had previously not had these

[29] Level 5 was the highest COVID-19 alert level followed by level 4 and at these stages COVID-19 had the highest spread whilst the health system was least prepared to cope with the rate of infection. These stages were also characterized by very strict movement and social distancing regulations to curb the spread.

opportunities but due to the disruptions in logistics and supply chains these local supermarkets then allowed these local producers to sell their fresh produce to them thus opportunities were created through COVID-19 disruptions for the youths to fulfil market needs. According to Nurlaela and Sujono (2021) young farmers have limited business contacts and networks due to limited experience and exposure in the industry making it difficult for them to significantly penetrate markets such as shops during COVID-19 with the state being expected to offer a protective shield for young farmers during the pandemic in the form of capital, markets and mentorship from established farmers.

Commenting on the higher purchasing price for fresh produce one farmer had this to say and this sentiment was shared by all farmers who got the opportunity to supply supermarkets during the first lockdown:

> *These local shops now respect our vegetables. Before this Covid we would go to the managers and tell them that we can supply vegetables and they would offer us sick money and when we would tell them that it is too little then they would say that they do not buy vegetables for less than that. So they were robbing us and they actually did not want to buy from us to sell to the people but now they are happy to buy from us because they are desperate. They are no longer able to receive the vegetables from the city easily and now they are encouraging us to supply them for an even higher price that what they used to offer us. So in a way this Covid has been good to us in terms of selling our produce. The only bad thing is that we are not able to supply the large quantities that the supermarkets want weekly because our land is small but we are trying the best we can. (research participant, 15/4/2020)*

The young farmers also explained that their local community buyers were initially afraid of buying from them due to fear that the corona virus would also be on the vegetables. However, as news spread that healthy lifestyles were key to fighting COVID-19, community members began to get comfortable with the realization that the virus was not on the vegetables. Consequently, they began to actually buy more fresh vegetables than before in an attempt to lead healthier lifestyles that would ensure strong immune systems that could fight off the virus. Consequently the young farmers actually experienced increased income during the first national lockdown as the community members were restricted to local purchases only. Commenting on this issue one farmer had this to say:

> *These people in our community were at first afraid that our vegetables would have corona virus on them and they stopped buying from us. But after about two weeks they discovered that the lockdown would be around for a long time and they would not be able to go to the city to buy vegetables there and they also discovered that corona does not live in vegetables then they started to support us by buying all fresh vegetables like spinach, tomatoes and carrots because they wanted to stay healthy so*

that they do not catch COVID-19. We are all being told by the social workers to eat healthy so that our bodies can fight the virus and so the community people now really appreciate buying from us so that they can stay healthy and fight corona virus. (research participant, 2/5/2020)

The fact that the sector was one of the least affected proves its potential as a job creator for youths and one that is fairly stable in the presence of unforeseen pandemics as food is a basic need for survival which presence an opportunity for the development of policies that strengthen youth resilience against socio-economic shocks. However, the pandemic has exposed as well as increased the difficulty of not having the voices of rural youths being heard in dialogues and processes that concern their complex, heterogenous and multifaceted needs due to the pre-existing underdevelopment of rural areas (FAO, 2020). This results in their exclusion from making potentially critical contributions during COVID-19 processes and policies aimed at supporting them during and post the pandemic resulting in ineffective support measures.

It is however worth noting that this sector saw some significant increases during the initial lockdown period which is worth considering towards engaging youths in farming. For example, the South African agricultural sector rose by 27.8% (contributing 0.5% to the nation's GDP) in the first quarter of the year 2020 and has been predicted to rise even further as other sectors decline due to COVID-19.[30] One agricultural economist has stated that food is an essential need which thus sees agriculture appreciating in times of crisis (Ciaran, 2020). Further, this sector has seen an increase of 3.3% in its number of employees in the first quarter of 2020 compared to the same period in 2019 thereby showing its potential to absorb and lure unemployed youths therefore justifying the demand for more farming land (and title deeds to the land) by the youths studied as well as those who spoke at the public debates on Expropriation of land without compensation in 2018 (as discussed in Chapter four).

Prior to the global spread of COVID-19 the youths studied stated a desire to create their own local food markets for the benefit of their local community as they already perceived the corporate food system as too pricey and unreliable to meet the food needs of their poor community (as discussed in Chapter four). During the pandemic it became apparent that the young farmers' cooperatives

[30] Ciaran, R. (2020). Agriculture blossoms while the rest of the economy shrivels. Moneyweb. https://www.moneyweb.co.za/investing/agriculture-blossoms-while-the-rest-of-the-economy-shrivels/

were in their own small way a form of territorial food source as their communities began to rely on them for localized access to fresh vegetables. One farmer had this to say:

> *We the farmers are now providing food to the community. It is now difficult for people to go to town and buy vegetables. Also, our local shops are more expensive than us because they are buying from us and then reselling to the people so the people now prefer to come to us because we are cheaper and we get the vegetables directly from the garden whilst the customer is watching so they now trust us. (research participant, 15/5/2020)*

An ability to generate income through selling fresh produce which was perceived to be healthy was a benefit which many unemployed youths in the community were believed to now see and appreciate and which ignited a new interest in agriculture as a potential source of income since other informal trades were not doing so well during the pandemic. However, the farming youths were not able to meet the increased local demand and to adequately fulfil the needs of their market as their land was small and so their quantities were limited thus continuing the food insecurity in the community. Commenting on the importance of farming during COVID-19 period one farmer had this to say and this comment was shared by many others:

> *Because of this COVID-19 us young people are able to sell our produce and keep busy in a time when many who are formally employed have been told to stay at home or have even lost their jobs. Farming is the future and can create jobs for the youth in this country especially if another disease similar to Covid happens again. It is just unfortunate that we have very small pieces of land to work on but if we can get more young people being food producers we will definitely have less unemployed youths and more healthy families because our families eat our produce everyday. (research participant, 6/10/2020)*

The issue of poor access to adequate farming land re-emerged in the context of COVID-19 as it was seen as a hinderance to the young farmers' ability to fulfil the increased demand and needs of their market. Young people's profitability in farming will increase with improved access to security of tenure. Acquiring farm land is the most common significant obstacle that youth farming cooperatives encounter as most young farmers do not inherit the land which they use to begin farming but rather buy or lease the land. COVID-19 is argued to have triggered a new way of thinking around the management of land use globally as the impact of outbreaks on humanity and development is largely related to how society perceives, relates to and uses land (Choudhury et al., 2020). These authors further argue for a transformation and redrawing of land-people relations as pandemics are now perceived as the "new normal" which must necessarily be incorporated into development discourse as it is believed that there are five new human diseases emerging yearly.

Farming is naturally a decongested form of employment that made social distancing practices easier 'at work' whilst also allowing for continued food production in the midst of the national restrictions making it relevant to study these contexts created by the pandemic as they shape future conversations about youth interests and the land question in South Africa. Commenting about their shortage of land during the pandemic one farmer had this to say:

> *This Covid period has been our best one ever as we have sold the most vegetables and instead of us looking for people to buy from us it is the people who have been looking for us to sell them our vegetables. We have been kept really busy since the lockdown started but we just do not have big enough land for us to produce more food to meet such high demand. This land issue limits us. We can do better but government won't give us the land to farm. More land means more produce especially for us organic open-air farmers. (research participant, 12/9/20)*

For these farmers COVID-19 presented opportunities for supplying both the community and the local supermarkets with fresh produce due to disruptions in the formal food supply chain thus requiring an increase in local production of food. Some scholars who discussing a post-COVID-19 environment state that there is a need for faster land reform which will allow for increasing access to land and boosting the skills of young people so that they can provide the labour required for the land as this is seen to be one of the best ways that will give a country an economic competitive edge post the pandemic (Choudhury et al., 2020).

Implications of COVID-19 on issues of land and youth interest in farming also bring into question issues of racism which the farmers highlighted prior to the pandemic as they viewed land as wealth, source of belonging, empowerment and livelihood yet they argued that the predominantly white minority commercial farmers and government had created a form of 'agricultural influx control' to keep them out of the sector and in continued poverty through withholding access to productive land (as discussed in chapter four). This also brings into question issues of survival for marginalized groups such as youths when faced with a global crisis that affects all? For example, social protection mechanisms that are being implemented in the context of the COVID-19 crisis to safeguard incomes have not been easily accessed by rural youth and have not taken into consideration the specific vulnerabilities that young rural farmers face (FAO, 2020).

COVID-19 only magnified the farmers' interests in farming upon the realisation of increased profits and an ability to fulfil market needs hence strengthening youth resilience in the face of pandemics opposes the discourse which argues that youths are disinterested in farming and

supports the narrative that young people are not passive recipients of change but are key actors in development solutions. The land question in South African discourse requires a greater and more critical engagement and integration with the contemporary post-apartheid rural millennial youth narrative through a youth lens in agriculture and development which strategically analyses their interests and aspirations.

However, despite the pre-existing challenges which intertwined with the pandemic young farmers remain tech-savvy and more likely to easily adopt and adapt to newer modern farming technologies than their older counterparts which makes them a key resource for the sustainability of food of the future. With more youths having been lured to farming due to employment constraints created by COVID-19, it is expected that young people with their knack for implementing modern technologies will thrive in farming to ensure efficient, continuous good quality produce as they experience less challenges in adapting to the latest farming technology compared to their older counterparts (Mantra et al., 2021). Lastly, rural youths though disadvantaged and marginalised have proved to be innovators towards solutions against the negative impact of the pandemic when actively engaged towards solutions for their sector.

6.4 Conclusion

This chapter has analysed the impact that the COVID-19 pandemic has had on the experiences of young farmers in the agrarian industry and the impact that it is likely to have in the future of agriculture, academic research on agriculture and development practice. COVID-19 has presented some challenges and opportunities for young farmers which are worth discussing and rethinking for development practice. Opportunities for growth came through increased local sales and increased use of social media for marketing and sales of their produce. The general global price increase in agricultural supplies gave farming producers bargaining power which the young farmers in studied benefitted from. A conclusion was reached that COVID-19 has pushed the need for advanced agriculture at a much faster rate than would have been the norm given the need for remote working, less contact and a need to keep food production going to ensure food security. This need for advanced technology is argued to also potentially be a source for enticing youths to farming given that the young farmers in this study emphasized that access to improved farming

technologies is what their peers are attracted to as they are techno-savvy and well exposed to technology.

Challenges encountered that hindered maximum utilisation of the opportunities were largely related to resource shortages such as poor access to advanced technologies and larger land for bulk and continuous food production to meet the increased demand. More land is required for redistribution to the youths as it is a source of low-contact (for social distancing purposes) yet effective income-generating source of employment which is highly likely to have the least retrenchments and job losses during and post the COVID-19 period. Easier access to advanced farming technologies is most desirable for advancing both youth interest and aspirations in farming through more resilient youth policies (Oladele & Vieyra-Mifsud, 2021).

The increase in virtual interactions ignited by the pandemic also means that access to online learning platforms as well as e-commerce platforms need to be set up to help the young farmers given the new ways of shopping and learning that have now emerged due to regulations for social distancing. Consequently, ICT integrated learning is seen as a necessity to aid in ensuring that social distancing rules are complied with (Ali, 2020). Further, from a policy level government intervention in favour of young farmers can boost opportunities and growth of youth agriculture towards community development, ensuring food security and boosting youth employment given the unprecedented job losses, increased food insecurity and increased poverty levels fuelled by the COVID-19 pandemic. The agricultural sector needs more locally-based systems in place that are more resilient and can easily adapt to unprecedented and unforeseen sudden changes that can be imposed due to global pandemics. The following chapter provides concluding remarks to the thesis.

CHAPTER SEVEN: CONCLUSION

7.1 Conclusion

This thesis set out to explore the experiences of rural youth engaged in farming amidst agrarian transformation in Orange Farm, South Africa. Youth agriculture has been the subject of numerous studies, journals and books. Public discourse and existing narratives underline how there is a notable disparity between the number of young people versus older individuals engaged in agriculture in the country, and reveals how this is a problem for the future of food security and generational renewal in farming. Scholars writing on youth participation in the South have recommended a comprehensive understanding of young people's interests, attitudes, and expectations regarding farming as a necessity, as well as the integration of rural/agrarian development and youth studies (see Geza et al,. 2021; LaRue et al., 2021, for more detail). This thesis explores 'youth' as a concept interwoven within the concepts of rural and agrarian development to investigate young rural farmers' interests and aspirations in their trade.

The central argument of this thesis has been that young people are active participants and capable citizens rather than passive beneficiaries in food systems and towards rural/agrarian development. As the study shows, such a perspective is crucial for developing diverse strategies that can aid in reducing poverty, securing food of the future and developing rural areas. However, as this study has also argued and shown, the young rural farmers are often overlooked, without youth-specific policies or interventions targeted at their needs within a rural setting, consequently, with their farming experiences riddled with a myriad of challenges. However, the passion for farming revealed by these youths contradicts existing public discourse that youths have lost interest in farming in favour of urban careers.

This thesis set out to answer five research questions: the thesis asks **(1) how the emergence of technologies such as the Fourth Industrial Revolution in agriculture influenced the commonly held narrative that youth interest in farming is waning?** The study questioned **(2) government's responses towards youth involvement in agriculture and the agricultural development agenda to ensure success of agrarian transformation?** The study asks **(3) how**

youth aspirations for farming are (de)constructed in the various farming cooperatives and what forms these aspirations take at the wake of the agrarian transformation in South Africa? The thesis asks **(4) what the role of youth farming has been in South Africa's land reform context?** Lastly, **(5) how have the young farmers responded to the emergence of COVID-19?**

Methodologically, this thesis advanced a qualitative approach to investigate the rural youth farming space as a significant amount of scholarship that exists on the subject has been derived from quantitative studies that examine statistics concerning the population of young farmers (see Is et al., 2021, for more detail). This study provides insight into the everyday experiences of young farmers at local community levels drawing on evidence from multiple case studies within Orange Farm in Gauteng Province of South Africa. Orange Farm is a largely peri-urban area with a mix of both rural and urban dynamics as it is located at the peripheries of the province. Thus, the area has a significant number of young open-air organic farmers. Empirical data was mostly gathered through face to face interviews, focus groups and conversations with the young farmers with the remainder of interviews having been conducted virtually via Skype, WhatsApp chats and WhatsApp calls upon the emergence of COVID-19 which converged with this study. The thesis also relied on published journals, statistical reports, media reports, policy documents as well as videos from the public hearings regarding the amendment of the Constitution to allow for expropriation of land without compensation in order to bolster the empirical findings.

In the context of this study, I employed an 'African perspective' towards agriculture to guide analysis, interpretation, and presentation of findings as this approach allows for developing a critical and contextual understanding of Southern African rural youth agriculture and development. Briefly summarized, this approach recognizes the crucial function of agriculture as a fundamental channel towards economic advancement, given that a substantial population in Africa earns their livelihoods from this sector (see Abate et al., 2000; Jama & Pizarro, 2008; Wiggins, 2014, for more detail). Further, this perspective asserts that farming serves as a significant way out of poverty for most rural households, as it constitutes a considerable portion of their means of subsistence and serves as a catalyst for development (Binswanger-Mkhize & McCalla, 2010; Scoones et al., 2005. This thesis argues and suggests that utilizing an 'African perspective' towards interventions for

youth engagement in farming presents an opportunity for youth-centered, contextually relevant rural/agrarian transformation as well as enhances discourse on rural youth.

Conceptually, the study defined young people as youths according to the South African National Youth Policy although focus was specifically on the age range of 20-35years for the sake of finding relevant data from farmers in this age range as they would have had significant or fair experience in farming post school. In this thesis, 'youth' as a concept is the central and starting point in which the discourse on youth farming and development is premised. This study acknowledges that 'youth' as a category is a fluid concept as this group of people do not have homogenous characteristics, are diverse and complex although in most African countries and for the African Union 'youth' are categorized within the 15-35 years age bracket (see Girard, 2017; Sumberg et al., 2014; White, 2019, for more detail).

Below is a summary of the key findings presented in this study:

Theme One:

Discussion of findings began by questioning **how youth aspirations for farming are (de)constructed in the various farming cooperatives and what forms these aspirations take at the wake of the agrarian transformation in South Africa?** The study found that the farming aspirations of the youths studied were independent of their deficits and marginalisation but were closely shaped by their being active citizens and participants of development. This thesis argues that farming is a form of resistance and resilience against the chains of poverty and a means to creating youth employment in a jobless environment, hence aspirations to improve expertise in the trade and create their own locally competitive food stores. It was also revealed that youth farming aspirations were intertwined with youth desires for successful futures. The study of youth interest and aspirations for farming provides a shift from studying youth disinterest and creates a new arm of research on rural youth resilience in farming through a youth lens in agriculture and development.

The structural challenges encountered by the young farmers play a key role in shaping the discourse on youth farming, youth marginalization and rural development. The concept of an

'agrarian developmental state' is key towards addressing the challenges that these youths faced towards the strengthening of agricultural opportunities and the relevant institutional structures to support youth farming in rural South Africa where the economies are generally stagnant and youth unemployment very high. In consistency with Mbunda (2016) and Ikpe (2018) this is because in farming, a developmental state approach towards improving agricultural experiences for the ordinary rural folk results in food self-sufficiency and food sovereignty. However, in South Africa state bureaucracy is not functional and the market-oriented policies do not benefit the very poor towards access to land and improved livelihoods (Karriem & Hoskins, 2016).The agrarian question in South African discourse thus requires a greater and more critical engagement and integration with the contemporary post-apartheid rural 'millennial youth narrative' for development.

Theme Two:

The study also investigated **government's responses towards youth involvement in agriculture and the agricultural development agenda to ensure success of agrarian transformation.** The thesis argues that the administration of youth involvement in agriculture is a complicated undertaking because of the complex interaction between the state, which is expected to play a parental role and provide vital structural backing, and young farmers, who perceive themselves as entitled children with expectations from the state. The high expectations set out by the young farmers towards the state play a significant role in how state interventions and strategies towards enhancing youth agriculture are perceived and received. There was a widespread perception that the farming setting was incapacitating, attributable to inadequate resources, insufficient farming knowledge, and inadequate state structural support, including the lack of adequate arable land, access to markets, training, and extension services. Nevertheless, this did not dissuade them from continuing their engagement in farming, driven by their passion and aspirations to grow in this field, contrary to commonly held narratives that young people lack interest in pursuing careers in agriculture.

This thesis argues that these realities weigh significantly on the meanings that young farmers attribute to farming thereby leaving youths as 'an endangered species near extinction' in agriculture as the gap for them to catch up or even effectively compete is too wide in a highly uneven playing field. Taking into account the background of agrarian reforms in South Africa,

young black individuals have been neglected and made incapable of succeeding in farming, lacking sufficient support from the post-apartheid state. This has resulted in their seemingly unimpressive involvement in local farming which Turok (2018) explains to be potentially a result of the fact that contemporary youths in South Africa did not experience apartheid, but they have to cope with its legacy. This thesis argues that priority attention should be given to the youth in the emphasis on agrarian reform because they are frequently ignored and excluded in the struggle against poverty and inequality that has been systemically induced. State silence towards the youth agriculture plight is then interpreted as 'purposeful ignorance' which "invisibly inflicts harm on those categories of people most often in need of advocates, activists, allies, and empathy" (Pillay, 2016, p. 157) consequently solidifying a continued suffering of the young farmers in the face of unequal competition. This thesis argues that empowering young farmers with appropriate support structures will transform the rural economy in the long run.

Youth farming cooperatives play a key role towards grooming young farmers although the state is the most critical player towards empowering cooperatives for meaningful socioeconomic engagement and improvement of livelihoods. Though focus of the thesis was not on cooperatives but rather on the youths within the cooperatives, it emerged that cooperatives were useful towards empowering young farmers. They empower youth to successfully acquire land and funding for farming, foster social solidarity as well as provide skills training and knowledge transfer.

Theme Three:

The study also interrogated **the role of youth farming in the South African land reform context.** It emerged that for young black people in South Africa, land was viewed as a heritage, a source of identity, and a right that they deserved as citizens. While access to land was crucial, having secure tenure to that land was an even more significant means of empowerment, as it would allow for access to loans and other forms of funding for farming enterprises where title deeds are required as a minimum investment expectation by financiers. The unclear state policies and programs designed to support young farmers have created land tensions, particularly as they do not explicitly address the issue of youth access to farming land across all regions of South Africa. This has become a significant point of contention for young farmers. This thesis argues that an agrarian developmental state should also have a role in land leasing processes, as it has the ability to

implement significant structural changes that can benefit farmers, which the private sector cannot accomplish. However, the South African state utilises a market-oriented approach which has not favoured the rural poor towards access to land (Karriem & Hoskins, 2016). The youth studied demonstrated a manifestation of the idea of "citizenship" by expressing a sense of social solidarity in their desire for land redistribution that addresses their specific needs. This notion of citizenship allows marginalized groups to secure and guard their property rights (Everingham & Jannecke, 2006). Communities of property beneficiaries are sustained through good citizenship (Van der Walt, 2008). The study argues that the young farmers had a strong force of citizenship that they were utilizing to mobilise for change. Given that the youth are most marginalised and vulnerable to poverty and food insecurity, this thesis calls for rethinking the approaches to land reform for the benefit of marginalised groups to enable them to utilise opportunities brought about by land and farming.

Theme Four:

The thesis also questioned **how the emergence of technologies such as the Fourth Industrial Revolution in agriculture influenced the commonly held narrative that youth interest in farming is waning?** The young farmers studied were an epitome of true 'millennial form' as they were "tech-savvy" and fully immersed in online social media engagements and regular use of the internet. Using an African perspective to agriculture, the thesis acknowledges that there was a manifestation of Western contemporary traits amongst the rural African youths hence they were characterized as being 'millennials'. The farmers appreciated that farming had moved beyond tilling and ploughing which were the most common farming practices known to young people and were also the most commonly practiced in their poor community.

This thesis argues that the youths were interested in farming which contradicts existing discourse as well as challenges the general narrative and consensus that youths are not interested in farming or that youth interest in farming is waning. Rather, youth interest in backward farming specifically is what was waning. However, the existing poverty and marginalization experienced limited their access to and understanding of advanced farming technologies. The existing tension was that of youths having a preference for modern farming over traditional manual ways of farming. In consistency with Adesina and Reeve (2017) and Is et al (2021) this thesis reiterates that young

people are attracted to modern technology hence agriculture as the centre of wealth creation in Africa needs to be made more attractive and technologically modern in order to lure the youthful population that will eventually replace the older generation of farmers. This brings into question the issue of youth interests, aspirations and capabilities in the presence of ever-evolving technology. Engaging the youth themselves in advancing youth farming technology solutions taps into their keen interest towards technology and provokes thoughts on how best to navigate rural farming in favour of young millennials.

Further, these youths were categorized and conceptualized as 'woke farmers' who despite their lack of advanced technology (that they desired) were still very much aware of its existence and utilized that which was within their reach to advance one another in the trade. The concept of being 'woke' is used to depict the manner in which the young farmers exuded ongoing vigilance and consciousness of the existing racial and social injustices and embarked on an active struggle against these injustices that were rooted in historically embedded white privilege which dispossessed and exploited other races (see Glass, 2017, for more detail).

Further, this thesis argues that the concept of 'individual agency' manifested in the form of active engagement in 'social media solidarity' through use of WhatsApp as a cheap tool for alliance formation, information sharing, education and as a marketing tool given that most youths could not afford other expensive alternatives. The concept of 'agency' recognizes and values youths for the active and independent citizens that they are with a great capacity for transforming society (see Girard, 2017, for more detail). The social media solidarity was an active defiance and resilience against a supposed invisible force in South Africa's agricultural trade that was keeping them out through an 'agricultural sector influx control'. The thesis also argues that the concept of social networking facilitated by use of social media was a powerful tool for unity and resistance against unfavourable farming environments as well as for continuing to fuel the interests for innovative farming. Thus, the concept of 'youth agency' is deeply interwoven with young people's desired futures and their actions to achieve this future.

Theme Five:

Finally, as an auxiliary analysis, this thesis interrogates **how COVID-19 implicates the youth and agriculture problem as the pandemic converged with my ongoing work towards the**

conclusion of this thesis and write up. An analysis of the COVID-19 pandemic was added as an extended subsidiary area of scrutiny but is not one of the primary areas of analysis for this thesis. In consistency with Yazdanpanah et al (2020) a discussion on the impact of COVID-19 on young rural farmers is relevant as they are key stakeholders in rural agriculture (Yazdanpanah et al., 2020).

Using FAO's Food Systems Approach in conjunction with an 'African perspective' towards agriculture for analytical purposes on the effects of COVID-19 provides various explanations for the different outcomes as experienced by the young farmers studied. There emerged two contradictory perspectives in this study, one of COVID-19 having presented opportunities for growth and success for the young farmers and another of the pandemic having further marginalized and disrupted the already struggling young farmers. This study revealed that the emergence of COVID-19 made it impossible for the young farmers to access markets outside of their community due to restricted mobility imposed by government to curb the spread of the virus and ensure social distancing measures at the beginning of the pandemic.

Debates have been ongoing regarding what a post-COVID-19 food system should look like (Paganini et al., 2020; Wegerif, 2022). I reason that provision of adequate localised resources for the farmers can empower them in the event of future movement restrictions thus creating localised, sustainable, rural food systems. This minimises potential future disruptions to food production and supply in rural communities.

This thesis argues that state contribution towards assisting marginalized young farmers allows for adjusting and thriving in the 'new normal' brought about by COVID-19. This allows for tapping into the interests of the youths as well as understanding their environment and farming needs better. The pandemic presented an opportunity for the development of policies that strengthen youth resilience to economic shocks as well as for strengthening existing structures to ensure regional and global competitiveness of young marginalised farmers. Strengthening youth resilience in the face of pandemics opposes the discourse which argues that youths are disinterested in farming and supports the narrative that young people are not passive recipients of change but are key actors in solutions that concern them. However, the pandemic further increased the difficulty of not having

the voices of rural youths being heard in dialogues and processes that concern their complex, heterogenous and multifaceted needs (FAO, 2020). This is due to the pre-existing underdevelopment of rural areas which resulted in their exclusion from making potentially critical contributions during COVID-19 processes aimed at supporting them during and post the pandemic resulting in ineffective support measures. This challenges government to improve their methods of engaging rural young farmers who are marginalized by virtue of being poor and living far from the cities.

This thesis argues that the tension between the opportunities versus the challenges presented by COVID-19 makes the delivery of interventions for rural young farmers more complex as their environmental dynamics are already characterized by complexity. Despite the complex politics of young farmers' vulnerabilities which have been worsened by COVID-19, a multifaceted approach to addressing rural youth challenges and their perceived marginalisation would be useful. The existing discourse on rural young farmers needs to broadly cater for the circumstances brought about by the pandemic. The study of COVID-19's impact on young farmers creates a new vein of research on young farmers as active agents of development in the midst of a novel pandemic.

Synergistic efforts from different government programs aimed at rural young farmers are essential for the provision of holistic interventions that can significantly and sustainably empower the target audience.

7.2 What Next?

In light of the practical experiences of young farmers studied I conclude by asking where to from this research? This thesis opens a vein for further utilizing knowledge and thinking tools to better explain young farmers' challenges and the development of new theoretical insights about the tripartite relationship between food security, youth farming and community development which this thesis has started. The study therefore opened up a new frontier to study young farmers using an African perspective given that youths do not have homogenous characteristics. On a conclusive note, I reiterate the need for an African perspective integrated with a youth lens in agriculture and development towards providing appropriate state support and policies that are specifically tailor-made to suit the needs of rural young farmers. These support measures should be of contextual relevance to enable the youths to grow and contribute meaningfully towards local community food

security and rural development with an accurate understanding of the heterogenous characteristics and needs of young farmers. This requires an appropriate understanding and description of youth and the farming problem in South Africa.

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