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Organic farming practises amongst smallholder farmers in Willowvale, South Africa

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Dedication

"Success is liking yourself, liking what you do and liking how you do it" - ***Maya Angelou***

This thesis is lovingly dedicated to my future academics, Lizalise, Zamamvemve, Manyano, Uthandiwe and Asemahle Jabe. May this research inspire you to dream boldly, pursue knowledge relentlessly and embrace the power of education to transform lives. You are the light of my journey and the hope for a brighter tomorrow.

Acknowledgement

I am profoundly grateful to the smallholder farmers in Willowvale for their invaluable participation and for generously sharing their experiences and knowledge, which form the cornerstone of this study. Your resilience and commitment to organic farming inspire and affirm the significance of this work.

To my supervisor, Dr. Keratiloe Mogotsi, I extend my heartfelt gratitude for your unwavering guidance, mentorship and encouragement throughout this research journey. Your insights have been instrumental in shaping the direction and quality of this work.

I am equally thankful to Dr. Lungiswa Tsolekile for your technical expertise and valuable inputs, which enriched the depth of this study.

This journey would not have been possible without the collective support and wisdom of everyone mentioned, and I am forever indebted to you all.

Declaration

I, Xolisa Jabe, declare that this research study is my original work and has not been submitted for any degree or examination at any other university or academic institution.

All sources of information, including literature and contributions from other individuals, have been acknowledged appropriately in the text and reference list.

I hereby certify that this work complies with the university's policies on ethics and academic integrity.

Signed: ______

Date: _30 June 2025_____

Abstract

This study explored organic farming practices amongst smallholder farmers in Willowvale, South Africa. The study employed a qualitative method, focus group discussions with 24 participants were held. The research explored the alignment of organic farming with traditional values, the feasibility of adoption and barriers to scalability. Findings revealed that organic agriculture is deeply rooted in the participants' cultural and ecological practices. However, the transition to organic methods is hindered by structural constraints such as inadequate training, lack of access to certified organic inputs, insufficient government extension services and labour intensity. The study highlighted a generational shift, with minimal youth participation and a decline in the transmission of indigenous knowledge. Despite these challenges, participants expressed strong interest in organic farming, conditional on enhanced targeted training and improved access to the markets. The study concluded that policy interventions and youth-oriented strategies are essential for scaling organic farming sustainably among smallholder populations in South Africa. The findings contributed to the discourse on sustainable agriculture by preserving indigenous knowledge and farmer-led innovation as critical pathways toward resilient food systems.

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CHAPTER 1. INTRODUCTION

1.1 Research title

Organic farming practises amongst smallholder farmers in Willowvale, South Africa

1.2 Statement of purpose

This research was an explorative study that examined organic farming practices amongst smallholder farmers in Willowvale, South Africa.

1.3 Study introduction

This study has investigated organic farming practices among smallholder farmers in Willowvale, South Africa. It sought to explore two core research questions: (1) How consistent is organic farming with smallholder farmers' values, experiences and needs? and (2) How difficult is organic farming for smallholder farmers to adopt and maintain? It examined farmers' perceptions, experiences, challenges and the research aimed to assess the socio-economic, cultural and environmental alignment of organic farming with the realities of rural livelihoods.

1.4 Background of the study

Agriculture is a cornerstone of global economic growth, contributing significantly by feeding a growing population, supply raw materials to agro-allied industries, reducing poverty and hunger, and providing employment opportunities while promoting economic diversification. It strengthens human security, creates markets for industrial products, and facilitates intra-African trade and investment (Tunji & Oluwaseun, 2015). It also provides income for about 90% of the rural population (Tunji & Oluwaseun, 2015). However, maintaining productivity in the agricultural sector often requires the extensive use of artificial fertilisers and synthetic agrochemicals (Sudheer, 2013). Conventional farming, while contributing to food security through innovations like genetically modified seeds, heavy machinery, and chemical inputs, has presented sustainability challenges. As a result, there is increasing advocacy for organic farming as a sustainable alternative. Organic farming offers a pathway for sustainable agricultural development, providing safe food, promoting healthy living, and conserving natural ecosystems (Timsina, 2018).

Organic farming is a production system that supports the health of agro-ecological systems by enhancing soil biological activity, biodiversity and natural cycles (Food and Agriculture Organisation (FAO, 2008). It focuses on environmentally friendly, locally adaptable inputs. Small-scale farming plays a crucial role in ensuring household food security, even though its returns are often relatively modest (Baiphethi & Jacobs, 2009). Ncube (2020) highlights how the lack of access to markets, technology and credit traps African small-scale farmers in low-productivity cycles. He emphasises that unstable and low commodity prices further discourage investment in farming, reinforcing a subsistence-level engagement with agriculture. Campanhola and Pandey (2018) advocate for an integrated approach to food and agriculture, suggesting policies that support biodiversity, enhance small-scale producers' market access and balance sustainable farming with food productivity goals. These methods must prioritize eco-friendliness and safety, aligning with Sustainable Development Goals (SDGs) 3 and 12. Organic farming is gaining recognition as an effective system for small-scale farmers, address food security while improving livelihoods (Clark & Tilman, 2017). Similarly, the FAO (2012) underscores organic farming as a sustainable approach for small-holder farmers, promoting food security, enhanced livelihoods, and environmental sustainability for both plants and animals. The history of organic farming

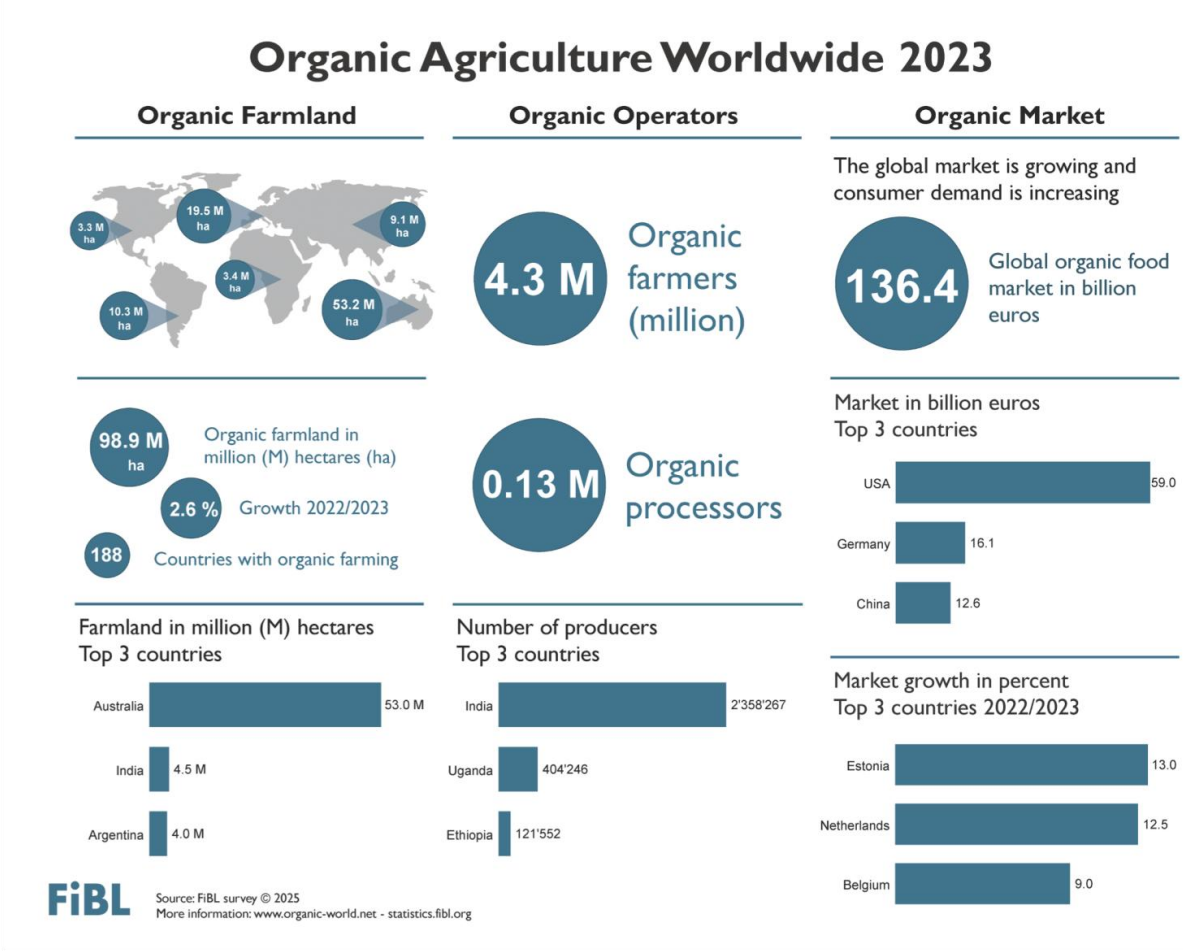
In South Africa, organic farming has evolved from small informal groups to a rapidly expanding and formalised industry. Although detailed historical records are lacking, the industry's formalisation began with the establishment of the Organic Agriculture Association of South Africa (OAASA) in 1994 (Van Zyl, 2000; Parrott and Elzakker, 2003). However, because of the absence of formal legislation and record-keeping, the true scale and value of organic agriculture in South Africa remain unclear. Nonetheless, the domestic market for organic products continues to grow robustly, alongside increasing exports.

1.5 Organic farming in developed countries

The 2023 data show continued expansion of organic agriculture, both in land use and market penetration. While Australia dominates in land area, India leads in the number of organic producers**,** which reflects its grassroots-based adoption model. Meanwhile,

consumer demand in high-income countries continues to fuel the growth of the global organic food market, now exceeding €136 billion.

Figure 1: Organic Agriculture Worldwide 2023



Note: The organic sector is experiencing continued expansion, driven by consumer demand. Despite extensive land areas under organic farming in developed countries, small-scale producers in developing countries form the majority of organic farmers.

Source: FiBL survey 2025 (www.organic-world.net/statistics.html)

Transitioning to organic farming (OF) presents both opportunities and challenges, particularly for small-scale farmers. This discussion will explore the following opportunities related to OF in developing countries: environmental, social, economic, and health and nutrition benefits (Jouzi et al., 2017). Despite global awareness of the negative effects of continuous inorganic farming practices, such as environmental degradation, climate change and threats to sustainable agricultural production, reliance on inorganic

fertilisers persists (Patidar, 2015). Proponents of inorganic farming argue that it yields significantly higher outputs compared to organic farming, which relies on organic fertilisers. Consequently, they suggest that achieving global food security necessitates the widespread use of agricultural techniques involving chemical fertilisers and other agrochemicals (Nnamonu and Ali, 2013). However, despite the lower yields associated with organic fertilisers, there are interesting reasons to prioritise organic farming over inorganic methods.

1.6 Problem statement

In developing countries, much of the food production is carried out by small-holder farmers (IFAD, 2011). Smallholder farmers often face severe poverty, limiting their ability to purchase inputs and access the markets (UNCTAD/UNEP), 2008; Toringepi, 2016). Despite these challenges, smallholder farmers demonstrate resilience through their use of family labour, traditional knowledge, and adaptability to difficult environmental conditions, which helps sustain their livelihoods.

Baiphethi and Jacobs (2009) emphasised that for small-scale farmers to succeed, several factors must be considered: their ability to increase food production and income using low-cost, locally sourced materials; their efficient use of resources without further environmental damage; and their access to markets. Morshedi (2017) suggests that organic farming offers a viable solution to these challenges by contributing to household food security and improving farmers' livelihoods. Research has consistently demonstrated that organic farming is highly suitable for small-scale farmers, it offers a pathway to alleviate poverty, enhance food security and establish a profitable business model (Beban, 2008; Ton, 2013; Ndungu, 2015). This research paper has investigated the consistency of organic farming with smallholder farmers' values, experience and needs, and further explored how difficult organic farming is for smallholder farmers, focusing on the socio-economic, environmental, and institutional factors that either hinder or facilitate this transition.

1.7 Research questions

1. How consistent is organic with smallholder farmers' values, experience and needs?
2. How difficult is organic farming for smallholder farmers?

1.8 Rationale

Smallholder farmers, especially in developing regions, face numerous challenges, such as limited access to resources, high costs of chemical inputs, and environmental degradation. Organic farming offers a potential solution by promoting sustainable practices that improve soil health, reduce reliance on expensive inputs, and mitigate negative environmental effects.

Understanding the factors influencing organic farming practices is essential for developing effective policies and support systems that can enhance food security, improve farmers' livelihoods, and promote environmental sustainability. By examining the perceived benefits of farming organically, challenges, experiences and values of smallholder farmers, this research aims to contribute to the broader discussion on sustainable agricultural systems and provide insights that can help facilitate the transition towards organic farming by smallholder farmers.

1.9 Delimitations of the study

The delimitations of this research define its scope and boundaries to ensure a focused and manageable research process.

a. The study focused specifically on smallholder farmers within Willowvale; large-scale commercial farmers were excluded.
b. The study focused solely on the organic farming practices of smallholder farmers. Conventional farming systems or hybrid models that combine organic and inorganic methods are outside the study's scope.
c. The study prioritised examining socioeconomic, environmental, and institutional factors related to organic farming, but will not explore other unrelated

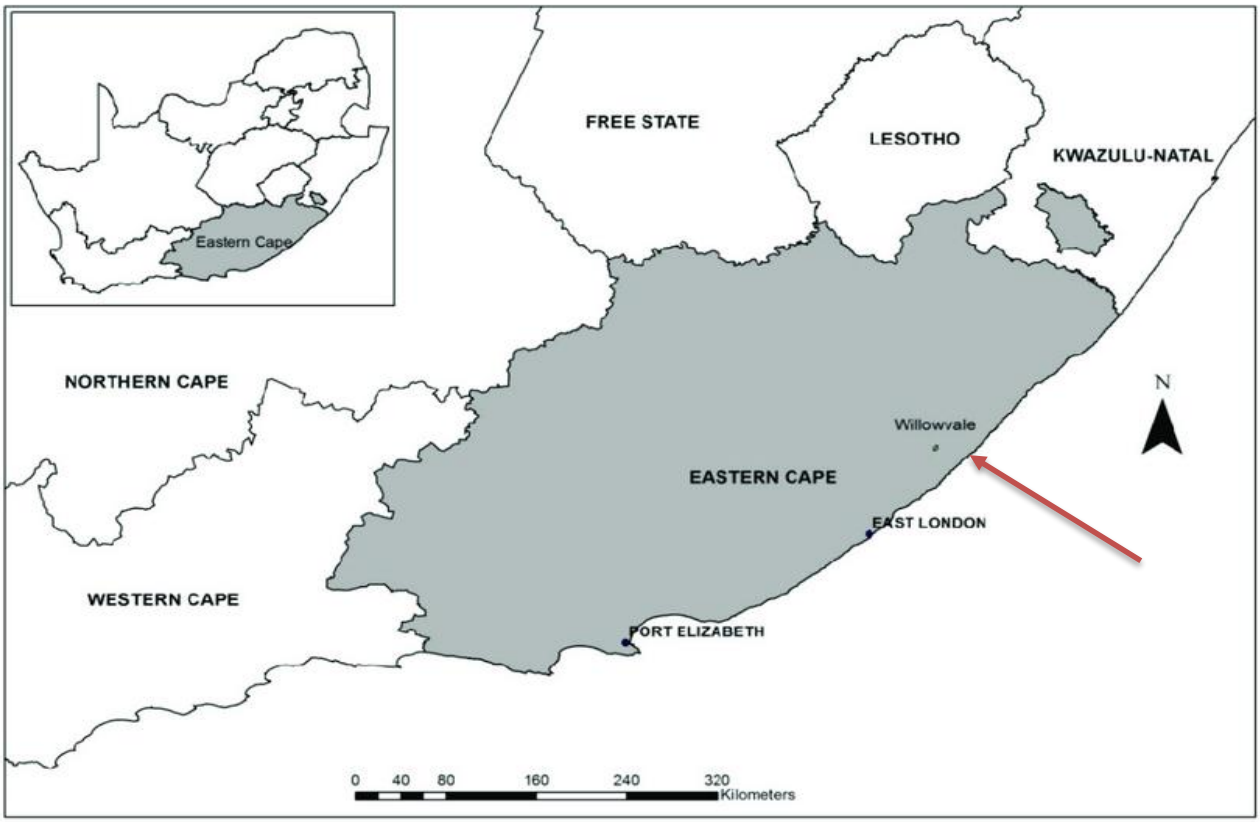
dimensions such as global market dynamics or policy effects at the international level.

1.10 Assumptions

The study assumed that institutional barriers such as high initial costs, limited training, poor market access, labour intensity, climate vulnerability and resource constraints faced by smallholder farmers significantly hinder the adoption of organic farming.

1.11 Study site description

Figure 2: Location of Willowvale, Eastern Cape, of South Africa



Source: Adapted from Shackleton (2015, p. 4).

The study was conducted in Willowvale, a rural town in the Amathole District Municipality (ADM) of the Eastern Cape Province, South Africa. Located in the historical region of Gcalekaland, approximately 32 km southeast of Idutywa.

Willowvale was originally established as a military post in 1879 and derives its name from the willow trees along a local stream. The area includes dispersed settlements extending from the town to coastal regions within the Mbhashe Local Municipality, which has a population of approximately 262,008 (Stats SA, 2021a).

The ADM encompasses diverse terrain, ranging from the Indian Ocean coastline to the Amathole Mountains, and incorporates parts of the former Ciskei and Transkei homelands. This historical legacy has resulted in stark socio-economic disparities (ADM IDP, 2010). The topography is rugged, featuring deep valleys (Andrew, 2003), and the soils, derived from the Beaufort and Ecca formations of the Karoo system, are typically nutrient-poor, poorly developed, and prone to waterlogging and desiccation (Timmermans, 2004). High rainfall exacerbates soil leaching and acidity, limiting agricultural productivity.

Willowvale lies within the former Transkei and remains largely underdeveloped, with high poverty rates and a predominantly rural population (Stats SA, 2000; Stats SA, 2009b). Natural resource use and livestock farming are central to local livelihoods (ARDRI, 2001; Palmer et al., 2002). During the homeland era, communal farmers received state support through tractors and input subsidies aimed at promoting food security (Bank & Minkley, 2005). However, agricultural output has declined significantly, contributing to increased dependence on social grants and remittances from migrant labour (Ngcaba, 2002; Timmermans, 2004).

The study focused on four villages: Mpozolo, Mendu, Lurhwayizo, and Ntsimbakazi, located within a 50 km radius of Willowvale town. These settlements consist predominantly of traditional Xhosa homesteads with a mix of dwellings, including thatched huts, livestock kraals, fenced gardens, and communal spaces. Households engage in subsistence activities such as water collection, firewood gathering, livestock tending, and gardening. Access to goods and services is limited; gravel roads often become impassable because of weather, increasing transportation costs (Andrew & Fox, 2004).

Farmland ownership is typically vested in individual households and clans. Livelihoods have shifted from field-based crop production to homestead gardening, with some

households cultivating crops like maize, beans, squashes, and pumpkins, while others depend on wild edible plants (Andrew & Fox, 2004).

The Eastern Cape, South Africa's second-largest province, covers 13.9% of the country's land area and supports a population of 6.83 million (Mucina & Rutherford, 2006; Stats SA, 2011). It is predominantly rural, with limited infrastructure and high levels of poverty. The province includes four dominant biomes: Grassland, Nama Karoo, Thicket, and Savanna and receives highly variable rainfall ranging from 700 mm to 1,200 mm annually (Mucina & Rutherford, 2006; Gbetibouo & Ringler, 2009). These climatic and environmental factors, combined with social and economic vulnerabilities, make rural communities in the Eastern Cape among the most susceptible to climate change effects in South Africa (IDRC & RU, 2010).

The terms *subsistence farmer* or *smallholder farmers* are used interchangeably to describe individuals who cultivate relatively small plots of land, primarily for subsistence, while also producing one or two cash crops. These farmers typically rely on manual labour and operate under difficult circumstances, including limited access to resources, technology, and markets (Khalil, 2017). Accordingly, the term *small-scale* or *smallholder farmers* is employed here to represent a group situated along a continuum between production for household consumption and production for market exchange (Morton, 2007). This conceptualisation appropriately reflects the farming communities under study in Willowvale.

CHAPTER 2. LITERATURE REVIEW

2.1 Introduction

This chapter provides a review of the relevant literature for this study. The review is organised under the following topics: the principles of organic agriculture, comparison of farming systems: conventional versus organic, challenges faced by smallholder farmers, and the theoretical and conceptual framework.

2.2 Principles of Organic Agriculture

Organic agriculture is founded on four interconnected principles: Health, Ecology, Fairness, and Care, as defined by the International Federation of Organic Agriculture Movements (IFOAM, 2005). These principles provide an ethical framework for sustainable agricultural practices that foster ecological integrity, social equity, and long-term resilience.

2.2.1 The Principle of Health

This principle underscores the interdependence of soil, plant, animal, human, and planetary health. It advocates for agricultural systems that sustain ecosystem vitality while producing high-quality, nutritious food. This principle promotes a preventative approach to health, discouraging the use of synthetic inputs such as chemical fertilisers, pesticides, and food additives that may pose risks to well-being. One of the primary aims of restoring soil health is to replenish essential nutrients that crops have lost, thereby enhancing their resistance to pests and diseases (Timsina, 2018). This restoration process allows for more efficient use of natural resources, particularly fertilisers and pesticides, which can be reduced without compromising crop yield. Replacing lost soil nutrients not only aligns with the principle of promoting plant health but may also be the most practical approach to achieving it (Andersen et al., 2015).

2.2.2 The Principle of Ecology

This principle emphasises agricultural practices that mimic and support natural ecological systems and processes. Rooted in ecological science, organic agriculture seeks to recycle nutrients, reduce reliance on external inputs, and improve resource efficiency. The principle recognises shared responsibility among all stakeholders in the organic value chain to maintain ecological balance and safeguard natural resources. Conserving the environment in organic farming involves a strategic restoration of inherent plant traits diminished through conventional breeding practices. This approach possesses substantial ecological promise, enabling the efficient perpetuation of environmental integrity and the reinforcement of ecological frameworks (Gamage, 2023). Organic farming endeavours to attain ecological equilibrium through the meticulous design of farming systems, the deliberate creation of habitats, and the steadfast maintenance of genetic and agricultural diversity (Gamage et al., 2023).

2.2.3 The Principle of Fairness

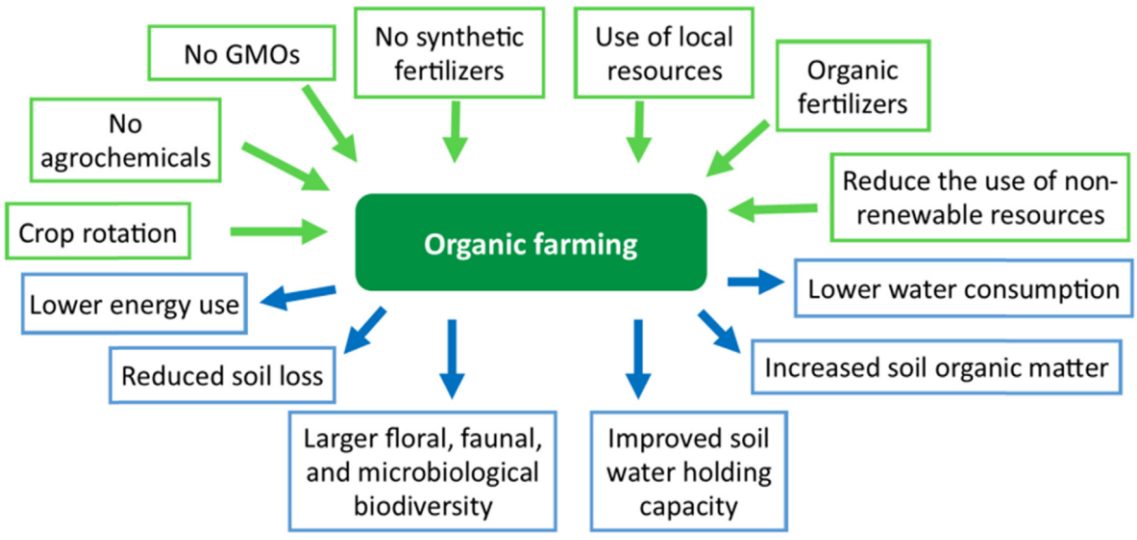
The principle of fairness emphasizes equity, respect, justice, and the responsible stewardship of the shared world, encompassing both human interactions and relationships with other living beings (IFOAM, 2005). Organic systems should serve as models for socially and ecologically equitable production and consumption through relationships founded on justice and respect. All human interactions involved in organic farming, ranging from producers and farm workers to processors, distributors, traders, and consumers, must prioritise fairness at every level. Supporting this view, Luttikholt (2007) argues that ecosystems, natural resources, organic farming practices, and all stakeholders must recognise the rights of all living beings, including future generations. This principle calls for animals in organic systems to be provided with conditions that align with their physiology, natural behaviour, and overall well-being. Organic production systems must adapt to the needs of animals rather than forcing animals to conform to the demands of production (IFOAM, 2005).

2.2.4 The Principle of Care

This principle seeks to balance efficiency with human and environmental well-being, emphasising that organic agriculture is open to innovation and new technologies. Andersen et al (2015) further suggest that while improvements in efficiency and productivity are welcomed, they must never compromise human health or well-being. Organic farming is recognised as a living, adaptive system, not static, and must continuously evolve in response to both internal dynamics and external pressures (IFOAM, 2005). Farmers engaged in organic agriculture undergo a verification process to demonstrate compliance with these standards (Elzakker & Eyhorn, 2010; Yadav, 2011). This includes annual inspections by independent certification bodies, which assess both farm infrastructure and production practices to ensure alignment with principles of environmental sustainability.

2.3 The extent to which organic farming is perceived as better than conventional farming

Figure 3: Practices and effects of organic farming.



Note: Organic farming avoids synthetic inputs like GMOs and chemical fertilisers, instead emphasising natural methods such as crop rotation and organic manure. This approach enhances soil health, conserves water, and promotes biodiversity.

Source: Reganold, J. P., & Wachter, J. M. (2016). Organic agriculture in the twenty-first century. *Nature Plants, 2*(2), 1–9.

2.3.1 Environmental Benefits

Organic farming aims to produce food sustainably by improving energy efficiency, protecting biodiversity, and enhancing the quality of water, soil, and air (Shepherd, 2003). Similarly, Mukherjee (2013 and Nasrin (2019) further assert that organic farming systems are associated with significantly higher levels of biodiversity compared to conventional agricultural practices, with research indicating increases in species diversity ranging from 30% to 34%, and organism abundance rising by as much as 50%. These systems also promote a more even distribution of species. Furthermore, organic farms tend to exhibit elevated levels of soil organic matter between 6% and 7% along with enhanced presence and activity of soil micro-organisms, contributing to overall ecosystem health and resilience (Mukherjee, 2013; Nasrin, 2019).

The reduced use of chemical fertilisers and inorganic pesticides in organic farming reduces water, air, and soil contamination (Shepherd *et al*., 2003). Ponisio (2015) further asserts that the strict exclusion of synthetic insecticides, herbicides, pesticides, and chemical fertilisers in organic farming significantly reduces health hazards linked to environmental contamination. This practice contributes to decreased pollution of water, air, and soil, mitigates soil degradation, and lowers emissions of particulate matter along with nitrogen (N), carbon (C), and sulfur (S) oxides. Soils managed organically have been found to contain higher amounts of soil organic matter (SOM) compared to inorganically managed soils (Schader, 2012). Scialabba and Hattam (2007) further argue that organically managed soils exhibit significantly greater biological activity and a higher total biomass of microorganisms, which enhances nutrient recycling and improves soil structure. Although organically farmed soils have a lower proportion of soluble nutrient fractions, organic yields are not diminished.

2.3.2 Economic Benefits

Organic farming provides small-scale farmers with economic benefits, including job creation, lower external input costs, enhanced soil water retention, access to organic

markets and the ability to sell products at premium prices (Mukherjee, 2020). Organic farming supports sustainable development in economically disadvantaged regions and aids in poverty alleviation, especially for smallholders and resource-constrained farmers by utilizing affordable local resources (Jouzi et al., 2017; Kilcher, 2007). The primary driver behind the purchase of organic food is the belief in its health benefits, followed by concerns about environmental sustainability and ecosystem preservation (Curvelo, 2019). As a result, the global organic food market has seen significant expansion, growing by an estimated 10% since 2000 (Załęcka, 2014). By 2020, the organic food production sector was valued at CAD 7 billion, with sales of organic packaged foods expected to reach USD 1.6 billion by 2025 (Shahbandeh, 2021). Given the increasing demand for healthier and more environmentally responsible food choices, it is essential to understand how public perception of organic diets has contributed to their rising popularity. Since affordability and perceived value strongly influence purchasing behaviour, higher income levels are often associated with a greater propensity to buy organic products (Akter, 2023; Rana, 2019).

2.3.3 Social Benefits

Organic farming offers significant social benefits besides its well-known environmental advantages. Firstly, it enhances public health by delivering food products that are free from pesticide residues and synthetic chemicals. Consuming organic produce lowers the risk of diseases associated with exposure to harmful substances, such as cancer, hormonal imbalances and other chronic conditions. Organic farming contributes to improved community well-being and quality of life (Martinez & Santiago, 2001). Secondly, organic farming boosts local economies and builds stronger rural communities. Small-scale enterprises and family-run farms that focus on organic production create job opportunities and stimulate local economic activity. The organic market often offers better prices for farmers, ensuring more equitable and stable incomes. This economic uplift reduces poverty, enhances living standards, and positively impacts surrounding communities (Smith, 2020). Thirdly, organic farming strengthens connections between producers and consumers through its emphasis on transparency and sustainability. Consumers interested in organic products often seek greater engagement with the production process, which enhances direct interactions between farmers and consumers via local markets and Community Supported

Agriculture (CSA) initiatives. These relationships not only build trust but also empower consumers to support sustainable and ethical farming practices (Hardman, 2020). Fourthly, organic farming promotes education and environmental awareness. The growing interest in organic practices has led to the establishment of numerous educational programs aimed at teaching sustainable agriculture and environmental stewardship. Schools, communities, and non-governmental organisations play critical roles in disseminating knowledge, raising a generation that is more environmentally conscious and equipped to make sustainable decisions for the future (FiBL & IFOAM - Organics International, 2020). Lastly, organic farming supports food security, employment opportunities, and long-term economic sustainability. Practices such as crop diversification and soil fertility maintenance help ensure that agricultural land remains productive over time. These strategies are particularly crucial in addressing global challenges like climate change and population growth. Communities contribute to a resilient and sustainable food system that meets present needs while safeguarding environmental and social well-being for future generations.

2.3.4 Health and Nutrition Benefits

The demand for organic food products continues to rise steadily, driven by growing consumer awareness of the potential health risks and environmental consequences associated with conventionally produced foods that depend heavily on synthetic agrochemicals and fertilisers. Organic products are increasingly preferred because of their limited chemical input, which enhances their perception of healthier and safer alternatives (Nenna, 2014). Similarly, Pandit (2018) emphasises that organically cultivated foods typically contain higher concentrations of antioxidants and significantly lower levels of pesticide residues and cadmium (Cd). Organic farming reduces the exposure of farmers to chemical pesticides because of the minimal use of synthetic inputs (Seufert, 2012). This diversity also improves dietary variety for farmers (Seufert, 2012; Setboonsarng, 2006). Therefore, organic farming presents a viable option for smallholders, enabling them to produce crops with minimal chemical inputs, potentially leading to higher yields and better access to nutritious food (Jouzi *et al*., 2017). Despite these advantages and opportunities, small-scale farmers still face significant challenges when transitioning to an organic system. Health-conscious consumers tend to avoid conventional products that contain pesticides, hormones, and other chemical additives,

instead favouring organic options that are promoted as natural and free from harmful substances (Gundala, 2021). Research has shown that organic foods typically cost between 10% and 40% more than their conventional counterparts (Forman, 2012). Moreover, a 2021 online survey involving up to 187,000 Canadians revealed that 18% of respondents believed organic products were no different from non-organic ones (Shahbandeh et al., 2021), likely because of the inconclusive evidence surrounding their health advantages.

Higher levels of education are also linked to increased awareness of health and environmental issues related to food choices (Akter et al., 2023). Educated consumers are more likely to understand the benefits of organic farming practices and make purchasing decisions accordingly. A recent study on Bangladeshi consumers found a strong positive relationship between education and the intention to buy sustainable organic food, with a 3.27 times greater likelihood of purchasing organic products among more educated individuals (Akter et al., 2023). Other socio-economic factors such as age, gender, cultural dietary norms, and emerging health and wellness trends also play a role in shaping organic purchasing behaviour (Shahbandeh, 2021; Rana et al., 2019).

2.4 Differences between conventional and organic farming

Organic food is often perceived as “chemical-free,” which appeals to certain consumer demographics. Organic products are frequently associated with fair trade labels, entangling social justice ethics within the production system (Nguyen et al., 2008). Variants of organic farming, such as biodynamic and regenerative systems, exist, though some lack formal governmental certification standards.

A farming system is considered sustainable when it is economically viable, enhances natural resources, delivers sufficient yields, avoids environmental harm, and supports the well-being of living organisms (Reganold & Dobermann, 2012). Conventional farming aims to maximise productivity and profit by relying on synthetic chemicals like pesticides, mechanisation such as tillage, monoculture without proper crop rotation and genetically modified crops (FAO, 2008). This has led to increased pest pressure in many areas because of pesticide-driven declines in natural predators (Zhender, 2007).

Inorganic systems leave the soil exposed, disrupting its habitat and altering its chemical and physical properties, while also harming soil organisms (Aina, 2018; Thiele-Bruhn, 2012). According to Kansanga (2018), in many countries, the reliance on fertilisers and pesticides to boost agricultural productivity has led to the consumption of less nutritious food and polluted water. The excessive use of inorganic fertilisers in farming has significantly increased nitrate levels in groundwater, posing a serious threat to life. Contaminated drinking water, rich in nitrates, has been linked to conditions such as infant methemoglobinemia and various forms of cancer, making it a well-known risk factor for human health (Kansanga et al., 2018. On the other hand, organic farming focuses on improving biological functions in ecosystems through practices that promote their health (Briar, 2007). These practices encompass crop rotation, intercropping, biological control, organic natural insecticides, organic compost, legumes, cover crops, and the use of organic materials such as compost and manure to improve soil fertility (Gomiero, 2011; Kuepper & Gegner, 2004; Watson, 2002). The documented benefits of organic farming include reduced soil erosion, lower fossil fuel use, greater carbon storage, less nitrate leaching, and reduced chemical pesticide and fertiliser use (AL-Sabary,2011). Studies by Fließbach (2007) and Mäder (2006) show that organic farming makes better use of natural resources than conventional farming. An evaluation of organic versus conventional farming, based on four key sustainability areas, is visually represented in Figure 1 (Reganold & Wachter, 2016). The figure shows that organic farming better balances production, environmental sustainability, economic sustainability and well-being compared with conventional systems. It establishes robust, environmentally sustainable farming systems capable of withstanding temperature fluctuations and drought while preventing soil erosion. Furthermore, organic farming encourages sustainable management practices, conservation efforts, and ecological restoration. Compared to modern agriculture, it requires lower financial investment. Organic farming addresses several key criteria for successful climate adaptation strategies (Muller, 2009; Murmu, 2022).

2.4.1 Product-Specific Comparisons

Qiao et al. (2016) compared the economic performance of organic and conventional tea farms in Wuyuan, China, and Kandy, Sri Lanka. In both cases, organic production demonstrated better economic outcomes. In Wuyuan, organic farming yielded a small

profit, whereas conventional tea farming was unprofitable. In Kandy, both farming systems were profitable; however, organic households exhibited slightly better financial performance. The study also highlighted the significant influence of location on organic farming. For instance, organic tea farms in China, located at higher altitudes, experienced reduced pest prevalence, leading to simplified and more cost-effective pest management. Furthermore, organic farming provided a social benefit by generating higher employment levels compared to conventional systems.

Bolwig et al. (2009) identified organic pesticides, mulching, animal manure, and composting as the most prevalent practices among organic coffee smallholder contract farms in tropical Africa. Participation in organic schemes was largely motivated by the potential for higher net coffee revenue, which averaged a 75% increase. This increase outweighed the benefits associated with implementing additional organic practices, such as low-cost, effective farming techniques, which provided a 9% revenue boost per practice because of higher coffee yields. Contracting arrangements also reduced uncertainty for farmers regarding net returns and ensured a price premium, provided quality standards were met.

Julian et al. (2011) investigated the establishment and production of blueberries, aiming to equip growers with tools for economic management and decision-making. The study revealed that blueberry cultivation is cost-intensive, with profitability depending heavily on yield and price per pound. Yields on established farms varied significantly based on cultivar, soil type, and management practices. Additionally, the time required to reach full production varied widely, with some farms taking up to seven years.

Weeds were identified as a persistent challenge in organic systems; they require effective control measures. Wann (2011) examined the effects of combining fine cultivation, sweeps, and hand weeding on weed control, productivity, and economic outcomes in peanut farming. Their findings showed that net revenues from cultivated treatments ranged from USD 3333/ha to USD 3637/ha, significantly exceeding the control group's USD 1795/ha. Longer cultivation durations (4–5 weeks) were linked to improved peanut yield, grade, and net revenue, whereas the frequency of cultivation (1–2 times per week) had no significant impact. This highlights the potential for cultivation practices to optimise productivity and financial returns under current market conditions.

The literature on organic aquaculture remains limited. However, Gambelli et al. (2019) conducted a meta-analysis that identified several trends in this area. The study noted that the profitability of organic aquaculture is not guaranteed across all species. High feed costs and low economies of scale may not always be offset by price premiums. Furthermore, the lack of uniform organic standards poses a significant challenge, particularly for developing countries aiming to access export markets. Despite these challenges, organic aquaculture presents opportunities for resource-constrained farmers by integrating seamlessly with pre-existing farming practices.

2.4.2 Country-Specific Comparisons

Jánský et al. (2003) compared the costs and revenues of organic and conventional farming systems in the Czech Republic. Their findings revealed comparable costs between the two systems, but organic farming achieved higher revenues because of the premium associated with organic products. While organic systems restrict the use of most pesticides and fertilisers, they incur higher costs for services and other direct expenses. This research, conducted before the Czech Republic acceded to the European Union, was influenced by the generous support provided through the Common Agricultural Policy.

Brozova and Vanek (2013) analysed the financial statements of 51 organic and 153 conventional farms in Southern Czechia from 2008 to 2010. Their findings indicated that a higher proportion of organic farms were profitable in all three years. However, without subsidies, most farms, both organic and conventional, would operate at a loss, underscoring the critical role of European Union subsidies. Subsidies contributed up to 20% of the income of organic farms, which outperformed conventional farms in metrics such as return on assets, return on equity, and total asset turnover.

Krause and Machek (2018) examined financial data from 291 organic and 4045 conventional farms in the Czech Republic between 2009 and 2013 to compare financial performance. Organic farming’s reliance on mechanical rather than chemical protection resulted in lower input costs but higher labour expenses compared to conventional systems. Organic cereal yields were 41% of conventional levels, while potato yields reached 39%, which are relatively low compared to global literature (MacRae, 2007).

Despite these yield differences, organic farms demonstrated higher profitability, larger firm size, and lower profit margin volatility, although they exhibited lower asset turnover than conventional farms. These results were most consistent with Náglová and Vlasicova (2016), except for a lower debt ratio observed among organic farms.

Binta and Barbier (2015) conducted a study on 20 organic and 20 conventional vegetable farms in Senegal. Their findings revealed no significant differences in labour use, which they attributed to the inherently labour-intensive nature of vegetable farming. Yield differences were minimal for onions (7%) but substantial for tomatoes (64%). Organic farms had lower production costs but did not benefit from a price premium, resulting in reduced gross margins for all vegetable crops studied. Additionally, limited consumer awareness of organic products in Senegal presented challenges for market entry.

Aslam et al. (2020) investigated 153 organic and 147 conventional wheat farms in Pakistan, focusing on cost structures. Organic farms had higher irrigation and labour costs but significantly lower expenses for fertilisers and pesticides. Overall, organic farms reduced total production costs by 14–40% compared to conventional systems, although they achieved 14–23% lower wheat yields.

Deka and Goswami (2021) evaluated the economic sustainability of small-scale organic tea cultivation in Assam, India, using a mixed-methods approach. Organic tea cultivation generated an annual income of USD 1156.83 per hectare, exceeding the USD 1047.95 income from conventional cultivation, assuming organic yields matched conventional yields of 15,000 kg. However, with a 10% yield penalty factored in, the organic income was reassessed at USD 973.10. Despite this, organic tea farming was found to be economically viable in the long term, provided yields stabilised post-conversion. Additional income opportunities were identified through optimal resource utilisation, improved farm management practices, and price premiums for organic tea.

2.5 Conventional to organic farming transition

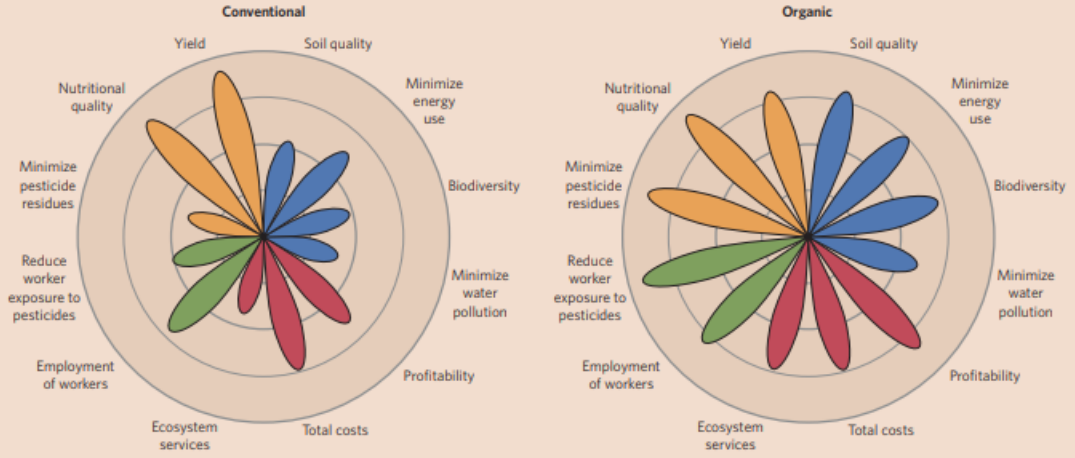
Qipao *et al.* (2016) observed that transitioning to organic farming might offer greater advantages for small-holder farmers in developing countries. Smallholder farmers can achieve better yields with a combination of improved seeds, organic fertilisers and

optimal extension services. While organic farming demands increased labour, its lower input costs can mitigate these demands. However, the transition involves inherent risks. While Aces (2009) observed that organic yields are not inherently more variable than conventional yields, the small scale and underdeveloped nature of organic markets increase price risks.

Forster *et al.* (2013) examined both agronomic and economic data collected during the conversion phase (2007–2010) of a farming systems comparison trial in central India. The trial explored cotton, soybean and wheat crop rotations under biodynamic, organic and conventional management systems, including variations with and without Bt cotton. In the first crop cycle, organic systems showed substantial yield gaps compared to conventional systems for cotton (229%) and wheat (227%). However, these differences diminished considerably in subsequent cycles. In the first cycle, conventional systems achieved significantly higher gross margins (+29%), but in the second cycle, organic systems surpassed conventional systems with significantly higher gross margins (+25%) because of reduced variable production costs despite similar yields.

Jat *et al.* (2014) observed a gradual increase in yield and profitability in a study evaluating seven combinations of tillage, crop establishment and residue management within a rice and wheat rotation among resource-limited farmers in South Asia. Although the conservation agriculture (CA) treatment initially underperformed compared to conventional tillage (CT), its advantages in yield and economic returns became apparent after two to three years. Organic farming systems are noted for being less capital-intensive than conventional systems. This feature is especially attractive to smallholder farmers who may not have the financial means to afford costly inputs and might otherwise need to rely on loans. As a result, organic farmers face reduced financial risks linked to the volatile market prices of synthetic fertilizers and agro-protectants.

Figure 4: Comparison of organic farming to conventional farming across four key areas of sustainability



Source: Reganold, J. P., & Wachter, J. M. (2016). *Organic agriculture in the twenty-first century*. *Nature Plants*, 2(2), 15221. https://doi.org/10.1038/nplants.2015.221

2.6 The level of difficulty of organic farming for smallholder farmers

2.6.1 Difficulties facing smallholder farmers

Smallholder farming has long been a central practice in South Africa, particularly among rural households. Research indicates that the majority of smallholder farmers primarily produce for household consumption, with only a small proportion engaging in market-oriented production (Rapsomanikis, 2015).

Although several studies have highlighted the opportunities and benefits associated with adopting organic farming, farmers still encounter numerous challenges during the transition to organic farming (Jouzi, 2017). These challenges include lower yields, labour-intensive practices, certification and market access issues, difficulties with weed management, delayed effectiveness of pest control because of alternative strategies, nutrient management concerns, and a lack of education and research support (Jouzi *et al.*, 2017; Mäder et al., 2006; Darnhofer et al., 2005). Some studies suggest that a large-scale shift to organic farming could lead to a 40% reduction in global yields, making it difficult to feed an additional 2.5 billion people, potentially causing global food shortages (Kirchmann et al., 2008). Because of the lack of well-controlled studies on organic yields for small-scale farmers in developing countries, it is difficult to definitively conclude whether low yield is a significant challenge for these farmers (Seufert, 2019). Organic farming requires more manual labour for activities like

composting and weed removal, with labour costs reported to be 7-13% higher than in conventional systems (Crowder & Reganold, 2015). Smallholder farms often rely on family labour, particularly from women, children, and elders, for their operations (Galhena et al., 2013). Despite this, they face numerous challenges, including climate change, gender disparities, and discrimination in land and water ownership, all of which threaten their ability to produce sufficient food (Chikazunga, 2013). Farmers often find it challenging to shift to organic farming once they have relied on synthetic chemicals and fertilisers, as organic practices prohibit their use (Wilson & Tisdell, 2001). Some research studies show that organic certification can be prohibitively expensive for resource-limited farmers (Gómez et al., 2011), and in regions without reliable organic markets or where subsistence farming is common, certification offers little benefit (Rundgren & Parrott, 2006).

Research further shows that agriculture is a key strategic sector for employment creation and rural development. However, the uptake of modern technologies among smallholder farmers, who represent the majority of rural populations and contribute significantly to the agricultural Gross Domestic Product (GDP), remains limited (Rapsomanikis, 2015). The challenges of low productivity and poor technology adoption are compounded by smallholder farmers' isolation from the broader economy and key agricultural value chains. This disconnect is attributed to the underdeveloped rural economy, inadequate infrastructure, weak market linkages, and insufficient agricultural support services (ILO, 2008). Additionally, the loss of agricultural land and water to activities such as mining exacerbates access issues to irrigation water and food production, further constraining smallholder farming efforts. The value chain from seed to plate, as well as the sources where farmers and impoverished households purchase their fresh produce, remains poorly understood. Despite these challenges, smallholder farming remains crucial in improving food security for poor households in developing countries, including South Africa.

2.6.2 Consistency of organic farming to smallholder farmers' values, experiences and needs

Improving soil fertility is essential for achieving sustainable productivity and increasing farm income. One approach to this is the use of mineral fertilisers, which supply the soil

with essential chemical nutrients. However, these fertilisers are often too expensive for subsistence farmers in Africa, who are typically smallholder farmers with limited resources (Cofie et al., 2010). The rising cost of mineral fertilisers has led many farmers across African countries to turn to organic fertilisers, which are more affordable, readily available, and recyclable.

Managing and utilising local resources can boost food production without dependence on external inputs or food distribution systems, over which smallholder farmers have limited control or access (Malek-Saeidi, 2012). Transitioning to sustainable agricultural practices, such as organic farming, is seen as a vital strategy in developing countries because of its reduced environmental impact compared to conventional farming. Organic farming also promotes human health by reducing harmful chemicals and pesticides in food, helps prevent disease, mitigates the effects of climate change, and reduces environmental pollution and degradation (Oluwasusi, 2014). This integration recognises and leverages the value of traditional knowledge in agricultural production (Rundgren & Parrott, 2006).

2.7 ANALYTICAL FRAMEWORK

2.7.1 Theoretical Framework

The study of innovation adoption has spanned over 30 years, with Rogers' model, presented in Diffusion of Innovations, being one of the most widely recognised (Abraham, 2013). This theory aims to predict the behaviour of individuals and social groups in adopting innovations, considering personal traits, social networks, time, and the characteristics of the innovation itself (Padel, 2001). According to the diffusion of innovations theory, innovators tend to be better informed and possess more social capital both within and outside their local communities than late adopters.

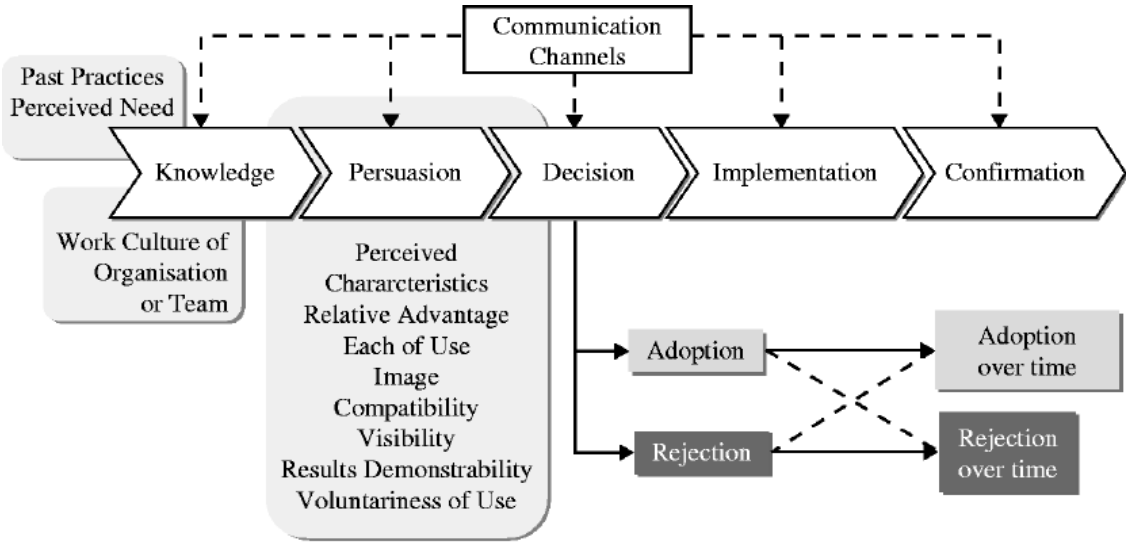
Research indicates that early adopters of organic farming are more commercially driven, prioritising financial viability over sustainability motives. The experimentation phase, crucial in deciding whether to adopt organic farming, differs significantly from that of conventional agriculture because of the technological and organisational uniqueness of organic methods (Čikić & Petrović, 2010). Some studies suggest that switching to organic

farming has been profitable for certain farmers (Offerman & Nieberg, 2000). When farmers perceive the benefits of adopting an innovation and feel an internal motivation to do so, they are more likely to embrace it (Janković, 2005). Understanding how knowledge is transferred and recognizing the differences between conventional and organic systems is crucial to facilitate this transition effectively. Despite some variations in the definition of organic farming, the primary objective of this production system is sustainability. As analysed by Padel (2001), the adoption/diffusion model has been applied to examine the diffusion process of organic farming and the decision to convert. In South Africa, organic farming, as an emerging industry, is likely in the early stages of the adoption process. As a result, organic farmers are expected to exhibit characteristics similar to innovators or early adopters of other environmental innovations (Anim,1999). However, various bottlenecks may hinder the establishment of this innovation. These challenges are anticipated to stem not only from natural factors but also, and more significantly, from socioeconomic and structural barriers.

This study is anchored in Everett Rogers' Diffusion of Innovations Theory (2003), which explains how, why and at what rate new ideas and technologies spread within a community. According to Rogers, the adoption of an innovation such as organic farming depends on five main attributes: relative advantage, compatibility, complexity, trialability and observability.

Relative advantage refers to the degree to which organic farming is perceived as better than conventional methods. For Willowvale farmers, this relates to economic viability, soil fertility, health and sustainability of practising organic farming. Compatibility examines how consistent organic farming is with farmers' existing cultural values, traditional practices and livelihood systems directly aligning with study objective 1. Complexity refers to the perceived difficulty in understanding or implementing organic methods, linking directly to objective 2. Trialability and observability reflects how easily farmers can experiment with and witness the outcomes of organic practices, influencing willingness to adopt. This framework allows the study to interpret organic farming adoption not merely as a technical process but as a social and cultural phenomenon shaped by farmers, traditions and resource constraints.

Fig 5: Theoretical framework



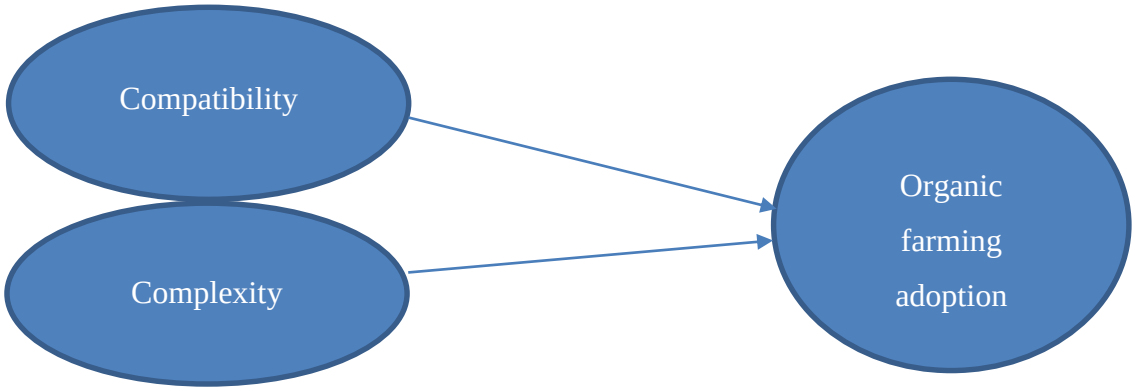
Source: Rogers (2003)

Source: *Diffusion of Innovations* (5th ed.) (p.172), by E.M Rogers, 2003, Free Press.

2.7.2 Conceptual Framework

The conceptual framework, as outlined by Cairns (2014), functions as a research model that defines key concepts, variables, and their interrelationships. Its main purpose is to guide the research design, enhance understanding of the phenomena, support decision-making and effectively communicate research findings to others. In this study, the conceptual framework (Figure 2) is based on Rogers's diffusion of innovations theory, emphasising that factors such as compatibility and complexity influence the adoption of organic farming.

Figure 6: Diffusion of Innovation Theory



Source: *Diffusion of Innovations* (5th ed.) (p.15-16), by E.M Rogers, 2003, Free Press.

These factors play a crucial role in understanding why individuals adopt or reject organic farming practices. Smit, Driessen, and Glasbergen (2009) found that external economic conditions motivated farmers to switch to organic farming, as they perceived it to be more sustainable than conventional farming. Within the OFB framework, the concept of relative advantage is particularly useful for comparing the benefits of organic versus conventional farming behaviours. Moreover, this study expands on Everett Rogers' innovation adoption theory, which explains that the adoption process is shaped by how complex the innovation appears and how well it aligns with an individual's values, experiences and needs.

The conceptual framework operationalises the Diffusion of Innovations Theory within the Willowvale context. It identifies the key factors that influences the adoption of organic farming and shows their relationships to the research objectives.

Conceptual Elements	Indicators / Examples	Link to Objective
Compatibility	Cultural alignment with traditional practices, use of kraal manure, indigenous seeds, community-based farming values	Objective 1
Relative Advantage	Economic benefits (reduced input costs), food security, improved soil health, resilience to climate variability	Objective 1
Complexity	Labour intensity, need for technical knowledge, pest control challenges, certification procedures	Objective 2
Trialability	Ability to test small-scale organic plots, peer learning, pilot community projects	Objective 2
Observability	Visible benefits such as healthier soils, community success stories, consumer demand for organic produce	Both objectives
External Factors	Access to extension services, training, government support, and market opportunities	Both objectives

This framework recognises that adoption is influenced by intersecting socio-economic, institutional and ecological conditions. For Willowvale's smallholder farmers, adoption is not only a matter of choice but also of capacity, access and support structures.

2.7.3 Conclusion

The adoption of organic farming practices is significantly influenced by factors such as relative advantage, compatibility and complexity, as outlined in Rogers's *Diffusion of Innovations* theory. Early adopters and innovators of organic farming tend to exhibit characteristics such as higher levels of social capital, greater access to knowledge and a commercially driven mindset.

However, the transition to organic farming faces numerous challenges, particularly for smallholder farmers, where socio-economic and structural barriers are pronounced. The theoretical framework emphasises the importance of understanding these barriers and factors as knowledge transfer and compatibility with farmers' existing practices, to facilitate adoption. The conceptual framework further highlights that external conditions, such as economic incentives and sustainability perceptions, play a pivotal role in motivating the shift from conventional to organic farming. This study concludes that adopting a strategic approach that addresses complexity, demonstrates clear benefits, and aligns with farmers' values is essential to promoting organic farming and achieving long-term sustainability. The integration of Diffusion of Innovations Theory within this study provides a comprehensive framework for understanding the social and behavioural dimensions of organic farming adoption among smallholder farmers in Willowvale. It links farmers' cultural compatibility (Objective 1) with their perceived challenges and complexities (Objective 2). This study not only identifies what drives alignment between traditional and organic practices but also uncovers the socio-economic and institutional barriers that influence adoption.

2.7.4 Research proposition

Farmers are more likely to adopt organic farming practices when they perceive a higher relative advantage, compatibility with their existing values, principles and reduced complexity in transitioning from conventional methods.

CHAPTER 3. RESEARCH METHODOLOGY

3.1 Introduction

This chapter entails research method for the study. Information regarding the study population and procedure followed, as well as the approaches used when collecting the data. This chapter outlines the tools employed to gather data on the socio-economic and demographic profiles of participants in the study area.

3.2 Research Design

Cresswell (2014) describes qualitative research as a method used to explore and understand the meanings that individuals or groups attach to social or human issues. Bricki and Green (2007) highlight that qualitative research is characterised by its objectives, which focus on understanding specific aspects of social life and its methods, which generate words as data for analysis rather than numbers. These methods aim to answer questions about the "what," "how," and "why" of a phenomenon. A qualitative approach is particularly suitable when the goal is to understand how a society or individuals perceive a specific issue. This research explores organic farming practices amongst smallholder farmers in Willowvale.

3.3 Data collection methods

Participation in this study was voluntary, and an informed consent form was signed by the participating smallholder farmers and the researcher before data collection. The focus group discussions provided in-depth insights into how consistent organic farming is with smallholder farmers' values, experiences, and needs, including the level of difficulty of organic farming for smallholder farmers. Transcripts were kept in a secure, password-protected database as soon as possible after collection. Data cleaning procedures were applied, including double data entry for critical variables and cross-checks for consistency and completeness. The discussions were conducted in isiXhosa for convenience and simplicity. It was translated into English during transcription and thematic analysis.

3.4 Population and sample

3.4.1 Population

Banerjee and Chaudhury (2010) describe a population as the entire group of individuals sharing a specific set of characteristics, from which all potential similar observations are drawn. The total population is estimated to be approximately 2,522 people (Census, 2022), though the study specifically targets the subset of this population involved in smallholder farming. However, for this research, only small-scale organic farmers were included. The broader population also includes agricultural extension officers and local agricultural authorities; whose perspectives are relevant to the study.

3.4.2 Sample and sampling method

Participants were purposively selected from the Willowvale farming community; the sample included both transitional and non-certified organic smallholder farmers. Because of time and budget constraints (Bhattacharyya, 2006). Twenty-four farmers were chosen, and four focus group discussions (FGDs) of about six participants each. The sample included a mix of experienced vegetable farmers and newcomers to organic farming to capture diverse levels of expertise, aligned with the purposive sampling principles. According to Teddlie and Yu (2007), purposive sampling involves selecting specific units or cases for a defined purpose.

3.4.3 Data Collection

Theoretical saturation was achieved after working with 24 participants. Strauss and Corbin (1998) argue that theoretical saturation occurs when the researcher establishes that no new or relevant data seems to be emerging from the participants, and that enough applicable information has been gathered to satisfactorily answer all the research questions. A focus group guide was developed and aligned with research questions, literature, theoretical and conceptual framework. Demographic and socio-economic characteristics information was collected, including gender, age, education level, and occupation. The FGD guide had two sections: Section A- alignment with farmers' values, experiences, and needs and Section B- the level of difficulty of organic farming.

3.4.5 Possible limitations and challenges of the study

a. Small Sample Size

The study only sampled 24 smallholder farmers because of time and resource constraints. This limited sample may not fully represent the diversity of experiences and perceptions within the broader smallholder farming community in Willowvale. Generalisation of the findings to other regions or larger populations may be limited.

b. Access to Resources and Infrastructure

Many smallholder farmers in Willowvale may lack access to necessary resources like organic inputs, training and markets. This limited their ability to fully engage in discussions about organic farming. Resource limitations may skew responses to focusing on the barriers to adoption rather than the potential benefits.

3.4.6 Quality Assurance

a. Transferability

Transferability was achieved by providing detailed descriptions of the research context, participants, and processes. The specific characteristics of Willowvale's smallholder farmers and their socio-economic, environmental, and institutional conditions, other researchers could determine if the findings are relevant to similar populations or settings.

b. Dependability

This study documented its research design, including the rationale for using a qualitative approach, the sampling strategy and the data collection methods. This transparency allows other researchers to understand the decision-making process and replicate the study if needed. The steps involved in collecting data were consistently applied across each of the four focus group discussions, and a standardised set of guiding questions was conducted under similar conditions, helping to ensure that the data was collected in a uniform and dependable manner. The use of audio recordings and comprehensive field notes during focus group discussions helped preserve the accuracy of participants' responses and allowed for a thorough review during the analysis phase.

c. Credibility

Credibility was achieved through multiple strategies that ensure the data accurately reflects the participants' views and experiences. The researcher spent sufficient time engaging with participants in the Willowvale farming community, which helped build trust, gain deeper insights, and reduce the risk of misinterpretation. The inclusion of both experienced and younger organic farmers allowed for a rich and varied understanding of perspectives, which strengthens the credibility of the overall research findings.

3.4.7 Ethical considerations

a. Informed Consent

Informed consent was sought from the participants, and in the study, participation was voluntary and participants could withdraw at any time without penalty.

b. Confidentiality

Participants' privacy was protected through secure storage of information. Only the researcher had access to identifiable data, and all personal identifiers were removed during data analysis.

c. Ethical Approval

Approval to conduct the study was to be sought from the ethics committees before the study was conducted.

d. Data analysis strategies and interpretation

All audio recordings from the interviews were transcribed. Responses provided in isiXhosa were translated into English and incorporated into the field notes. This process enabled the researcher to identify key themes that emerged during the analysis. These themes were subsequently utilised to derive findings that aligned with the study's research objectives. The analysis employed a traditional/manual approach rather than software-based methods. To ensure the validity and reliability of the findings, the study employed methodological triangulation. This approach involved comparing and integrating data collected through a qualitative method to enhance the trustworthiness

and credibility of the results. Links between themes were established, and key quotes identified.

CHAPTER 4. RESULTS

The findings are presented under the following headings: Social-Economic and demographic profiles of the participants, organic farming practices and smallholder needs - alignment with traditional practices, organic farming meeting smallholder farmers' needs, challenges or conflicts between organic farming methods and personal values or beliefs, the level of difficulty of organic farming for smallholder farmers, training, support or resources would make it easier for farmers to adopt organic farming practices, organic farming time, effort, or skill demands compared to conventional farming.

4.1 Socioeconomic and demographic profiles of the participants

Table 1: Socioeconomic and demographic profiles of the participants

Social Demographics	**Category**	**Number**	**%**
Gender	Male	9	37.5
	Female	15	62.5
Age group	18-24	1	4.2
	25-34	4	16.7
	35-44	6	25
	45-54	4	16.7
	55+	9	37.5
Education level	No formal education	5	20.8
	High school level	15	62.5
	Undergraduate degree	3	12.5
	Postgraduate degree	1	4.2
Occupation	Student	1	4.2
	Employed	2	8.3
	Self-employed	10	41.7
	Unemployed	5	20.8
	Pensioner	6	25

The table above represents social demographic data that provides insights into the surveyed population's composition across gender, age, education level, and occupation. About 24 smallholder farmers participated in this study, as presented in Table 1. The participants' age groups were classified into five categories: 18-24 years, 25-34 years, 35-44 years, 45-54 years and 55 years and above. Most smallholder farmers who formed part of the focus group discussions were predominantly females (62. 5%). About 37.5% of all interviewed smallholder farmers were aged 55 years and above, followed by the 35-44 age group at 25%. Youth only comprised 4.2 %. The results showed more participants had high school-level education (62.5%), while those with tertiary education made up 16.7% (undergraduate and postgraduate combined). Self-employment dominated at 41.7%, while pensioners form the second largest group (25%). Employment levels are notably low (8.3%).

4.2: Organic farming practices and smallholder needs, alignment with values, experiences and needs

Several themes emerged during the discussion with emerging farmers. During the discussions, it emerged that smallholder farmers feel that organic farming is aligned with their values, experiences and needs. It is aligned with their traditional farming practices.

"We grew up planting various crops including maize and vegetables, farming with sheep and goats, using kraal manure, sharing indigenous seeds and supporting each other with farming activities in my community. I grew up farming organically, it aligns with my tradition and values". 35-year-old female farmer.

Participants view organic farming as a way of life, supporting food security and the rearing of indigenous animals like cattle, sheep, goats, and chickens.

"The traditional way of planting crops organically was the best, I still favour it, our maize lasted us at home until the next season. We planted two gardens and four big fields, we used cattle to plant fields. We had enough food at home. We enjoyed the organic food production, our seeds lasted us for decades." 54-year-old female farmer.

During the discussions, it emerged that conventional farming is expensive, but that organic farming returns lower yields, especially if you want to farm on a big scale, it is limiting. Participants felt organic farming resonates with cultural values, and it is an attractive option for smallholder farmers.

"We were very happy the way things were, organic farming was aligned with our culture and way of doing things, all of us were committed to planting, very excited to do manual weeding. We used to assist each other as a community" 46 years old female.

However, they raised concerns about low yields and reliance on external inputs (e.g., organic pesticides) that the government should support to enhance its feasibility and productivity.

4.3 Organic farming meets smallholder farmers' needs

Participants felt that organic farming meets their personal needs, financially, they can feed their families and still sell their surplus organic produce within the community. The animals are also benefiting as extra produce is used to feed animals during dry seasons. However, some farmers felt that changing weather patterns pose a threat to their yield, pest infestation and reluctance of some community members to buy, they expect to be given for free.

"I don't have a problem with people who do not want to buy, my chickens eat a lot of cabbage. I never had a problem with not selling. Some community members want to be given for free" 65 years' female farmer.

Most younger farmers believe that organic farming addresses their financial and environmental concerns, but is hindered by external factors like unpredictable weather, especially in summer and pest control issues. They echoed that increasing awareness within communities about the benefits of organic farming could improve marketability and address reluctance to purchase organic products.

4.4 Challenges or conflicts between organic farming methods and your values or beliefs?

During the discussions, smallholder farmers' organic farming is culturally aligned with their personal values and beliefs, with no significant conflicts with their personal values. However, the high costs of scaling up organic farming seem to be the biggest barrier, otherwise they would adopt organic farming.

"As youth we do organic farming so that we make money, sometimes we have information gaps, when seasons change, there are times where I need to do conventional farming methods, because with organic farming principles I might make loses, we sometimes have limited information. For a small garden there is no problem but when you want to scale up to a hector to 5 hr, you cannot do manual weed control, it will be expensive. You can simple hire a tractor and spray the whole field. Another problem is disease control. When diseases are severe, bacteria thrive, so organic principles don't apply. Convectional farming becomes an option, you can spray and scale up. Scaling up is the reason I sometimes hesitate on a big scale" 35-year-old female farmer.

Participants view organic farming as compatible with their cultural and personal values. Knowledge gaps and providing access to affordable equipment can empower farmers to overcome challenges and adopt organic practices more effectively.

4.5 The level of difficulty of organic farming for smallholder farmers

It emerged that practising organic farming is labour-intensive, it needs a high level of attention to detail and is expensive to upscale because of the price of equipment, especially if there is no government support. The older farmers in the group echoed the sentiments that, in the olden days, they used to animal-draw implements to work the additional fields, but because of the loss of interest in farming by the younger generation, they are no longer capable of continuing because of age and ill-health. It was the duty of young boys to look after the livestock during the planting seasons.

"It would be difficult to plant organically because older people are few and younger generation cannot cope, I even notice with livestock, younger generation doesn't care

anymore, if you see you are getting older, sell your livestock otherwise when you are gone they will sell it to get money" 71-year-old male farmer.

"It is difficult to switch because you when you started planting with fertilizers, coming back to organic, you will need more labour workforce compared to conventional. Your soil won't be the same anymore because of chemicals used during conventional farming, it might not give you the best yield" 35-year-old male farmer.
This sentiment is backed by Wilson & Tisdell (2001), farmers often find it challenging to shift to organic farming once they have relied on synthetic chemicals and fertilisers, as organic practices prohibit their use.

What emerged from the other group of participants is the control of pests? They felt that they are no readily available organic certified pesticides to deal with the common troubling pests. The experience yields low because of pest infestation on their crops (maize and vegetables). Pest control remains a persistent challenge.

"If we can get advices on pesticides control. i.e. my cabbage is dying, it is eaten by insects, if I can get help without using strong insecticides. Otherwise I favour organic farming" 63-year-old female farmer.

4.6 Training, support or resources would make it easier for farmers to adopt organic farming practices

Participants highlighted a critical lack of financial support, with many farmers unable to access basic inputs such as tractors, indigenous seeds, and kraal manure. During our group discussions, it has also emerged that organic certified seeds or indigenous seeds are no longer available; only hybrid seeds are easily available on the market. Another important aspect is training on organic pest control and compost making. Compost fertiliser is the cornerstone in organic farming; farmers require training and support. In three of the four groups, farmers echoed the same sentiments that the government is not supportive of the smallholder farmers, especially smallholder organic farmers.

"We never get support from government and municipality, we only hear from you about organic farming. They only have one car; they ask directions from you when popular politician comes to our community". 29 years old female.

4.7 Organic farming time, effort, or skill demands compared to conventional farming

Training on organic farming principles emerged as a gap for farmers in all groups. Surprisingly, only one group, predominantly youth. They felt that with organic farming, you don't need much training, understanding seasonal changes, and the right time to plant is a perfect combination. Farmers were found to employ intercropping as a strategy to sustain agricultural activities amid changing local climatic conditions. The interesting part was their traditional knowledge and skill in classifying soils based on fertility and moisture levels, allowing them to determine suitable crops for different soil types without reliance on scientific guidance. Drawing on years of farming experience and accumulated knowledge, these farmers are adept at assessing soil quality and crop properties to recommend optimal agricultural practices under varying climate and weather conditions. For instance, crops such as maize, beans, watermelons, potatoes, and pumpkins are intercropped on relatively moist and fertile soils, while millet, sorghum, and pigeon peas are cultivated on less moist and less fertile soils. This approach is informed by farmers' understanding of the differing water and nutrient requirements of various crops, among other factors.
"There are things that don't need training, so that you know which season to plant, understand insects, the right time to plant" a 35-year-old female farmer.

Contrasting views surfaced from the same group; some young farmers felt that there is an information gap, while some farmers chose conventional farming because there is easily available information compared to organic farming.

"There's information gap sometimes, farmers opt for conventional because of easily available information, even the government extension services have conventional information not organic. 25-year-old female farmer.

The theme of additional effort required in organic farming emerged prominently, with the same cohort of young farmers underscoring that precision farming constitutes an indispensable component of organic agriculture. Planting seasons need to be planned thoroughly, farmers need to understand their market, be intentional in their efforts and lastly, understand their return on investments. Additional time also emerged as the requirement to practice organic farming. Farmers felt that patience is needed when you practice organic farming; your crops need to be nurtured. In contrast, in another group, it emerged that more time is not needed; instead, since the climate has changed, farmers should study seasonal changes and adapt their planting seasons accordingly.

A 71-year-old farmer echoed that, in the olden days, farmers relied more on indigenous knowledge; they understood certain animal behaviours, identified sounds and studied weather patterns as seasons changed.

"We don't need additional time, times have changed with planting times otherwise, weather patterns have changed, we are used to only three days and rain will come, but today sun heat us for the whole week."

Farmers emphasised the need for planning, understanding land dynamics and being business-oriented if you intend to keep your farming dream sustainable. Lastly, organic farming requires specialised knowledge of pests and soil health management.

CHAPTER 5. DISCUSSION

The findings of the study are divided into sub-sections to make reading easy, following social demographics and the specific objectives of the study, namely: understand how consistent organic farming is with smallholder farmers' values, experiences, and needs; determine the level of difficulty of organic farming for smallholder farmers.

5.1 Social demographics

The study highlights that participants were predominantly older females with limited formal education. According to Singh (2015), less educated farmers are usually uncertain about changing to organic farming. Liu (2019) asserts that older farmers are more risk-averse by nature, have limited time to commit to long-term investments, and are less likely to anticipate higher future returns. Even though participants in this study showed commitment to organic farming, they are less likely to produce for the bigger market; they farm for consumption and only sell surplus produce to the community. This study showed limited involvement of youth (4.2%), which points to generational shifts and potential sustainability concerns. However, several studies indicated that older farmers had greater opportunities for adoption compared to their younger counterparts, possibly because of stronger relationships with extension services and greater farming experience (Azam and Singh, 2015). Contrary to this study, the younger generation showed commitment to organic farming and shared innovative solutions on future organic farming scale-up.

The study also showed a significant representation of pensioners (25%) and self-employed farmers (41.7%) underscores the reliance on subsistence farming and small-scale production. Alignment of organic farming with traditional practices

In this study, farmers view organic farming as an extension of their traditional practices, which emphasises its cultural resonance and alignment with values such as food security and the environment. They further expressed sentimental value for traditional organic methods, which they associated with food sufficiency and sustainable practices, including the use of heirloom seeds, kraal manure for soil fertility, and the use of indigenous knowledge to predict weather patterns. This aligns with Ranathunga (2019), who noted that traditional crop varieties were cultivated according to seasonal changes,

particularly the onset of the monsoon in the region. However, this practice has gradually diminished with the adoption of short-duration cultivars. The cultivation of traditional seeds, which are both cost-effective and resilient to diverse climatic conditions, diseases, and pests, has similarly declined. This sentiment is echoed by Mafongoya and Ajayi's (2017) argument that, with little or no scientific guidance at all, Africans can predict weather patterns using traditional knowledge to mitigate the impact of climate change on their livelihood systems. While the value of some of these indigenous indicators may diminish over time because of the effects of climate change, they remain highly valuable to rural communities in Africa. Smallholder farmers who lack the resources to purchase hybrid seeds often rely on traditionally preserved seeds and locally made compost to sustain their agricultural practices. Farmers did not report significant conflicts between organic farming and their cultural or personal values. However, practical challenges, such as a reduction in yields over time and scalability issues, were seen as deterrents in organic farming. Participants noted a loss of traditional knowledge and responsibility, especially among youth, which affects both livestock management and the sustainability of organic practices. This shift challenges the viability of community-based organic farming unless new, youth-friendly strategies are introduced.

Organic farming partially meets farmers' socio-economic needs by supporting family nutrition and providing surplus produce for sale. However, changing weather patterns and community attitudes toward purchasing organic produce were highlighted as barriers to profitability. This sentiment is echoed by Binta and Barbier (2015), who noted limited market demand and consumer awareness, which hindered the profitability of organic vegetable production.

5.2 **Determine the level of difficulty of organic farming for smallholder farmers.**

Despite its alignment with traditional values, scaling up organic farming is perceived as a significant challenge. Smallholder farmers in Willowvale raised several issues; organic farming is labour-intensive, needs financial support, it requires more manual effort,

especially weed and pest control. Farmers cited a lack of certified organic pesticides, which poses a barrier to productivity.

High costs associated with transitioning from conventional to organic farming, especially for scaling up to larger fields and inadequate government support, lack of access to organic-certified inputs, and insufficient training in organic practices were recurrent concerns. Participants highlighted a critical lack of financial support, with many farmers unable to access basic inputs such as tractors, indigenous seeds, and manure. This financial gap severely limits productivity and discourages engagement, especially among younger generations who are increasingly disconnected from traditional agricultural responsibilities. Durham and Mizik (2021) similarly highlight that while organic farming has become a global agricultural trend, it faces several challenges that constrain production. Organic farmers incur different costs compared to conventional farmers, spending less on purchased inputs but significantly more on labour. This study also revealed that organic farming demands specialised knowledge of soil health, pest management, and precision farming techniques. Farmers noted the importance of understanding seasonal changes, market dynamics and the return on investment to maintain sustainability. They further identified major informational disparities, particularly around organic-specific practices. While conventional farming advice is widely available, even though government extension services, organic methods like no-till farming, companion planting, and pest management using biochemical are underrepresented. This gap often pushes farmers toward conventional methods despite their desire to farm organically.

Hoviet (2004) acknowledges that organic farming demands extensive knowledge, as it employs a systems-based approach to manage fertility, weeds and pests, rather than relying on external inputs. A study by Singh et al (2015) indicates that attending training sessions more than once could lead to a 13% increase in organic farming and an 11% reduction in inorganic farming. Aheibam (2017) observed that farmers are more likely to adopt organic farming practices when they receive training and are familiar with the approach. Similarly, Legesse (2013) highlighted that farmers' perceptions and adaptation methods are shaped by the frequency of extension contact and training. Moreover, Mapanje (2023) further echoes that training not only promotes adoption but also enhances the productivity of smallholder farmers. Providing training to smallholder farmers plays

a crucial role in raising awareness about organic farming practices they can adopt and equipping them with essential skills, thereby improving their productivity.

Interestingly, the youth who participated in this study expressed mixed views. While some saw organic farming as financially and environmentally beneficial, others pointed out that gaps in information and support make conventional farming more attractive. Younger farmers stressed the need for planning and business acumen in organic farming. A pervasive sentiment was disappointment in existing government and municipal support systems. Organisations like Ntinga were criticised for inefficiency, and participants felt abandoned by local authorities, who only appeared during political visits. There was also scepticism toward rhetoric about "returning to traditional ways" that lacked real implementation support.

5.3 **Business and management implications of the findings**

The study's findings hold significant implications for business and management, particularly in promoting sustainable enterprise development, rural value chains, innovation and strategic leadership. Organic farming in Willowvale aligns with farmers' traditional values but faces barriers such as limited training, poor market access and scalability issues. These insights highlight the need for inclusive, sustainable business models that integrate smallholder farmers into formal agri-economies through public-private partnerships, cooperatives and social enterprises. Improving market development and value chain management is crucial for rural farmers. Strengthened branding, certification and logistics systems can connect rural producers with urban consumers, enhance competitiveness and secure premium prices for organic products. Organic farming demands new knowledge and skills, calling for training, mentorship and youth entrepreneurship programs that build capacity and encourage generational continuity in farming. Lastly, grounded in Rogers' Diffusion of Innovations Theory, the study shows that adoption depends on farmers' perceptions of compatibility, complexity and advantage.

CHAPTER 6. CONCLUSIONS

6.1 Introduction

This chapter presents the findings of the study, which primarily aimed to explore organic farming practices among smallholder farmers in Willowvale, South Africa. The identified gaps for further research are presented with the hope that addressing them will contribute to enhancing organic crop production and improving farmers' technical efficiency.

6.2 Summary of Findings

The majority of participants were elderly female farmers with limited formal education. Youth involvement was minimal (4.2%), which highlights generational sustainability concerns. Organic farming was widely regarded by participants as aligned with traditional practices, values, and lived experiences, particularly through the use of indigenous seeds, kraal manure, and community cooperation. Farmers emphasised the role that organic farming plays in food security, environmental sustainability and reduced financial burden through the use of local resources. Farmers can feed their families and sell surplus within their communities. Despite alignment with values, participants noted low yields, labour intensity and difficulty scaling up because of a lack of equipment, certified organic inputs and government support. Pest control was a persistent challenge because of a shortage of organic-certified solutions at their disposal. Farmers stressed a need for more practical training, especially in organic composting, pest control and seasonal planning. Existing government extension services were seen as biased toward conventional farming methods. Younger farmers showed interest but identified significant information gaps and insufficient institutional support. Some felt that conventional methods were easier because of the available infrastructure and information.

6.3 Recommendations

Regarding the results presented in this study, the use of indigenous seeds, kraal manure is technically efficient in improving soil health and the environment. There is a critical

need to reform agricultural extension services to include organic farming expertise. This section shares recommendations that can be considered by policymakers, the private sector and developmental agencies to assist smallholder farmers to farm efficiently and sustainably. Policy should prioritise support structures that equip farmers with organic-specific inputs, training and exposure to the latest technologies.

 Because of the limited access to extension support among most organic farmers, it is recommended that agricultural extension services be expanded. These should include targeted educational programs and practical training aimed at improving production efficiency and addressing challenges related to economies of scale and technical capacity.

 The study further recommends the establishment of accessible credit facilities. Many smallholder farmers currently cannot scale their operations because of insufficient financial resources, limiting both productivity and value chain penetration.

 Smallholder organic farming plays a crucial role in rural South African communities, as it provides employment and food security. Therefore, sustained government support and strategic investment in these community-based initiatives are essential.

 Support for smallholder organic farming should be structured to sustainably boost agricultural productivity, increase farm incomes, strengthen food security and build resilience to climate change.

 In light of the ageing demographic among organic smallholder farmers, there is an urgent need to develop strategies that actively involve young people in organic agriculture. These may include financial incentives, entrepreneurship development programs, and the integration of digital technologies.

 The study highlights the importance of indigenous knowledge systems, recommending their incorporation into formal organic training programs to ensure cultural relevance and promote community engagement.

6.4 Limitations

- The study involved only 24 participants from one region, limiting generalizability. Broader geographic and demographic coverage would improve applicability.
- While rich in narrative insight, the study lacked quantitative yield to validate claims of organic farming's financial and nutritional benefits.
- Seasonal variability and long-term shifts in agricultural outcomes (e.g., soil fertility changes) require longitudinal research.

6.5 Directions for future studies

- Future research should track the long-term yield, income and soil health outcomes of organic farming in smallholder contexts.
- Explore in depth the perceptions, motivations and deterrents among youth in organic agriculture across rural South Africa.
- Comparative studies between organic and conventional smallholder farms can help quantify differences in cost, yield, and sustainability.
- Studies examining the effect of organic-specific subsidies, training programs and market access initiatives on farmer uptake and success would be valuable.

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8. Annexure 1: Ethical clearance

Graduate School of Business Administration

University of the Witwatersrand, Johannesburg

Wits Business School Ethics Committee

Constituted under the University Human Research Ethics Committee (Non-Medical)

Ethics protocol number: WBS/BA2704284/305

This certificate is only valid with a legitimate ethics protocol number and signed by the Researcher (below).

Project title Organic farming practice amongst smallholder farmer in willowvale, South Africa

Investigator / Researcher Mr Xolisa Jabe

Nature of Project MBA (Research Article)

Decision of the Committee: Approved, provided stakeholders and participants are guaranteed confidentiality.

Issue Date of Certificate: 24/10/2024

Expiry date: Date of submission of the project / research report

Chairperson: Dr Ayanda Magida

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Declaration by Researcher

I fully understand the conditions under which I am authorized to carry out the abovementioned research and I guarantee to ensure compliance with these conditions. Should any departure to be contemplated

Annexure 2: Focus group discussion research instrument

A. Research objectives:

1. Understand how aligned organic farming is with smallholder farmers' values, experiences, and needs.
2. Determine the difficulty of organic farming practice for smallholder farmers.

Section 1: Alignment with farmers' values, experiences, and needs

1. **Question:** How do you feel organic farming aligns with your traditional farming practices and experiences?

- **Probe:** Does it fit with the way you have always farmed? Why or why not?

2. **Question:** How well does organic farming meet your needs as a smallholder farmer?

- **Probe:** Does it address your concerns about the environment, crop quality, or financial returns?

3. **Question:** Are there any challenges or conflicts between organic farming methods and your personal values or beliefs?

- **Probe:** Are there cultural or practical reasons you might hesitate to adopt organic farming?

Section 2: Difficulties of organic farming practices

1. **Question:** In your opinion, how easy or difficult is it to switch from conventional to organic farming?

- **Probe:** What are the specific challenges or barriers you face?

2. **Question:** What kind of training, support, or resources would make it easier for you to adopt organic farming practices?

- **Probe:** Have you received any guidance or assistance? If so, was it helpful?

3. **Question:** Do you think organic farming requires more time, effort, or skill compared to conventional farming?

- **Probe:** If yes, why?

Annexure 3: Participants demographics

Section 1: Demographics

1. **Age Group:**
    - ☐ 18–24
    - ☐ 25–34
    - ☐ 35–44
    - ☐ 45–54
    - ☐ 55+9*
2. **Gender:**
    - ☐ Male
    - ☐ Female
    - ☐ Non-binary
    - ☐ Prefer not to say
3. **Occupation:**
    - ☐ Student
    - ☐ Employed full-time
    - ☐ Employed part-time
    - ☐ Self-employed
    - ☐ Unemployed
    - ☐ Retired
4. **Level of Education:**
    - ☐ No formal education
    - ☐ High school diploma
    - ☐ Undergraduate degree
    - ☐ Postgraduate degree

5. **Residential Area:**

Annexure 4: Consent form

Title of project: Organic farming practises amongst smallholder farmers in Willowvale, South Africa

Name of researcher: Xolisa Jabe

I, …….., agree to participate in this research project.

I agree to the following:

(Please circle the relevant options below)

The research study was explained to me. I understand what this study is about.	YES	NO
I understand that I can volunteer to take part in the study	YES	NO
I agree that the focus group activity may be audio recorded	YES	NO
I agree that direct quotations from my focus group activity may be used by the researcher in their research report/ manuscript/book chapter	YES	NO
I agree that my participation will remain anonymous (my name or other identifying data will not be used by the researcher in their research report/manuscript/book chapter)	YES	NO
I agree that other researchers may use the information I provide in my focus group (depending on their own ethics clearance being obtained) but my name and any personal information will not be used or passed on	YES	NO

…… (signature)
…… (name of participant)
…… (date)

…… (signature)
…… (name of researcher/person seeking consent)
…… (date)