

An Analysis of Challenges Facing Smallholder Crop Farmers and Informal Food Traders in the Agri-Food Value Chain in Gauteng Province, South Africa

Msomi, L.¹ and Zenda, M.²

Corresponding Author: L. Msomi. Correspondence Email: lmsomi66@gmail.com

ABSTRACT

The study's main objective was to investigate the challenges faced by smallholder crop farmers and informal food traders in the agri-food value chain in Gauteng province. A sample of 32 smallholder crop farmers and 32 informal food traders was gathered using questionnaire surveys. The different challenges identified have negatively influenced the progress and development of these actors. For example, COVID-19 lockdown regulations have destroyed the trading jobs of informal food traders, directly affecting smallholder crop farmers' income. This was because informal food traders were identified as the major customers for smallholder crop farmers, as indicated by the study data. Other challenges faced by smallholder crop farmers included a small amount of arable land, lack of grower schemes, regulatory barriers, lack of agricultural management skills and extension services, and lack of credit facilities and resources. As part of the recommendations for the smallholder crop farmers, it was proposed that the Department of Agriculture Land Reform and Rural Development should improve policies on the reaction and management of shocks like COVID-19 in the economy to protect the vulnerable groups in society. Additional recommendations included addressing gender disparity in the smallholder crop farming sector as males dominated the agricultural sector; introducing easy eligibility criteria for micro-loan applications by DFIs to enable smallholder crop farmers to access loans; and the proposal for extensive arable land to aid smallholder crop farmers to expand and grow in their business trajectory. For the informal food traders, it

¹ Master's student, Department of Sustainable Food Systems and Development, Faculty of Natural and Agricultural Sciences, University of the Free State, Republic of South Africa, lmsomi66@gmail.com.

² Research associate, Department of Sustainable Food Systems and Development, Faculty of Natural and Agricultural Sciences, University of the Free State, Republic of South Africa, mashyit@yahoo.co.uk

was recommended that the municipal authority improve the by-laws that govern how informal food traders are treated.

Keywords: Smallholder Crop Farmers, Informal Food Traders, Agri-Food Value Chain, Informal Food System.

1. INTRODUCTION

The role of smallholder farmers in developing countries is critical in solving the many challenges that exist in the fast-changing agricultural sector, including climate change, soil degradation, soil erosion, food insecurity, and the latest COVID-19 pandemic (Musvoto *et al.*, 2019; Paloma, Riesgo & Louhichi, 2020). It is desirable to find solutions to address these challenges if the goal of developing an agricultural sector that produces sustainable results in all its facets is to be achieved (Musvoto *et al.*, 2019). The important question is whether the government provides enough support to the smallholder farmers for their growth, development, and resilience in the sector?

In South Africa, the answer to this question is unsatisfactory. There has been a low impact on the smallholder agriculture sector in general, despite large amounts of money being allocated (Zantsi, Mulanda & Hlakanyane, 2021). Even though the post-apartheid government has focused on supporting smallholder agricultural farming to advance to a commercial level, the fruition of this plan has not been realised. However, rather several challenges facing smallholder farming businesses persist (Zantsi *et al.*, 2021).

This study analysed the challenges facing smallholder crop farmers and informal food traders in the agri-food value chain in the Gauteng province. To address the challenges facing agricultural extension, it is essential to focus on the educational aspects of the problem. This includes providing access to relevant and up-to-date information, developing effective training programs, and supporting farmers in implementing sustainable practices. By taking an educational approach, we can empower farmers to make informed decisions and create lasting change in their communities.

South Africa has a dual farm system consisting of smallholder and commercial farmers. The commercial farmers are predominately white farmers, emerging strongly from the apartheid government subsidies. They farm on big land and operate machinery to produce substantial

agricultural food for South Africa and international markets (Vink & Kirsten, 2003; Khapayi & Celliers, 2016).

Conversely, smallholder farmers are predominantly black, mainly occupying former homeland areas with smaller hectares or plots to work on (Chikazunga & Paradza, 2013). Many of these smallholder farmers mainly produce for subsistence with minimal profit margins. This is mainly due to their lack of access to enhanced farming technologies, relying on intense manual labour and outdated traditional production methods, resulting in low productivity (Pienaar & Traub, 2015; Zantsi *et al.*, 2021).

Despite the low productivity of smallholder farming systems, they have great potential to contribute to the South African agricultural sector through job creation and food production, which could enhance food and nutrition security. The smallholder sector is also critical in ensuring environmental sustainability as farmers often recycle food waste and have the potential to develop a more inclusive agricultural sector, one where youth, women and people with disabilities are capacitated and supported (DAFF, 2014; Chandini *et al.*, 2019; Newton *et al.*, 2020).

For this study, the focus was on smallholder crop farmers as they have a direct channel through which they can sell their produce to informal food traders. The informal food traders are also a major part of this research study, including street vendors, hawkers, and market traders. The livelihoods of informal food traders depend on selling fruit and vegetables purchased from smallholder crop farmers (and other markets) to the community. These traders are important actors in the informal food system as they provide agricultural food to low-income earners and poor people in South Africa (Moyo, Pereira & Scholtz, 2020; Wegerif, 2020).

The trade relationship between informal food traders and smallholder crop farmers is important and forms the major focus of this study. For example, the 21-day nationwide lockdown over the coronavirus (COVID-19) pandemic caused devastating effects on livelihoods across the country (Lukani *et al.*, 2020; Cogta, 2020). During that time, the informal food traders were among those who were not declared essential service providers, i.e., they were not permitted to operate their businesses (Skinner & Watson, 2020). As a result, the income earned by smallholder crop farmers from their sale of fresh produce to traders was affected (Chen *et al.*, 2021).

The importance of this study is that it gets insights through data collected from smallholder crop farmers and informal food traders into the challenges they experience in their line of business, thus making the study different from the existing body of literature within the same theme. Therefore, incorporating the views of informal food traders into the socio-political and economic mainstream discourse assisted this study in better understanding how the informal food system operates in Gauteng and how the system can be improved and strengthened to safeguard vulnerable groups in South Africa.

This approach (incorporating the views of informal food traders) borrows from what Drimie (2016) calls “transdisciplinary research”. Transdisciplinary research recognises that science, social, and experimental knowledge are all relevant and equally important in solving society’s persistent problems (Drimie, 2016).

The second point about the distinctiveness of this study is that it showed the disruption caused by the COVID-19 pandemic and its lockdown restrictions in the supply chain linkage, wherein the specific focus was on smallholder crop farmers and informal food traders. Put differently, the study looked at the impact of COVID-19 on these two actors of the food system to understand their challenges during that time and make recommendations to avoid future shocks.

Thirdly, this study's distinctiveness stems from wanting to know how these two actors of the food system handle food waste. The conversion of food waste into organic compost can benefit smallholder crop farmers with healthy soils and quality crops and reduce chemical fertiliser costs (DAFF, 2014; City of Bonn, 2021). This promotes a move toward an organic farming approach for smallholder crop farmers, thus promoting a circular food system and sustainable agriculture (City of Bonn, 2021).

The study analysed the challenges facing smallholder crop farmers and informal food traders in the agri-food value chain in Gauteng province, South Africa.

2. METHODOLOGY

2.1. Study Area

The study areas for this research were located within Gauteng province. This province is known to fall within the so-called “Maize Triangle” region (GCIS, 2022). The province of Gauteng is

the smallest of the nine provinces in South Africa, covering only 1.5% of the land area; however, it accommodates 26.6% of the South African population (Oelofse, Muswema & Ramukhwatho, 2018; Stats SA, 2022). This suggests that the province is densely populated.

Specifically, four area locations were used for the study, namely Johannesburg central business district (CBD) (which falls under the City of Johannesburg Metropolitan Municipality), Soweto (City of Johannesburg Metropolitan Municipality), Cullinan (City of Tshwane Metropolitan Municipality) and Meyerton (Midvaal Local Municipality which falls within the Sedibeng District Municipality) (GCIS, 2022).

In addition, Gauteng is the only landlocked province in South Africa without foreign borders (Sheetal & Ludger, 2014). Lastly, Gauteng has four cities: Tshwane, Johannesburg, Germiston and Vereeniging (Gaur *et al.*, 2017).

2.2. Data Collection Phase

2.2.1. Data Collection Techniques

The primary data collection technique used as part of conducting research for this study was questionnaire surveys (Pandey & Pandey, 2015). Furthermore, the questionnaire had a series of closed-ended questions related to the problem at hand, and each group of participants received a specific set of questions to answer. The language was taken into consideration. The questionnaire was formulated in English and designed to encourage the participants to understand, read and respond to the questions meaningfully. The questionnaires were used to collect data because they can be distributed quickly and easily, and the respondents can complete them without the need for face-to-face interaction. In addition, questionnaires allow for standardised responses, which can be analysed more easily than open-ended responses.

The study applied quantitative research methods as a guide to conducting research in Gauteng province, with both informal food traders and smallholder crop farmers as the unit of analysis for this study.

Closed-ended questions were posed to participants in a questionnaire survey to try to answer the problem at hand. Each group of participants was given their questionnaires to answer; i.e., informal food traders answered their questions from the questionnaire survey, and smallholder crop farmers answered theirs separately.

The study collected data from 32 smallholder crop farmers and 32 informal food traders. The 32 informal food traders were selected through different selling spots such as taxi ranks, outside shopping malls, sidewalks, and Johannesburg CBD buildings. These traders were chosen randomly from their trading spots. This simple random sampling technique was applied because it afforded the population of informal food traders an equal chance of being selected for the study (Datta, 2018). Its advantages included the following: reduced chances of systematic errors, minimum chance of sampling biases, and better representation of the sample group (Taherdoost, 2016; Datta, 2018). The groups of informal food traders that were selected were hawkers, market traders and street vendors, and these groups were located within the Johannesburg CBD area and Soweto. Lastly, the study included all age groups, races and genders of informal food traders.

The study used the convenience sampling technique for the 32 smallholder crop farmers in Gauteng. This technique was selected because of the convenience it afforded the study, considering the limited time available. The already existing smallholder crop farmers in Meyerton and Cullinan areas made locating other farmers for the study easier. The other reasons for considering this technique included less expenses and less time used (Taherdoost, 2016; Datta, 2018). Lastly, the advantage of applying this technique is that fewer resources are needed (Datta, 2018). The descriptive analysis was done using the Statistical Package for the Social Sciences (SPSS version 22) programme to identify the means, modes of variables, frequencies and percentages.

3. RESULTS AND DISCUSSION

3.1. Demographic Information

3.1.1. The Smallholder Crop Farmers' Gender, Age, Dependents, and Level of Education

The 32 smallholder crop farmers who participated in the questionnaire survey in the four area locations of Gauteng province showed a strong male gender presence (Figure 1). The male gender represented 71% of the total respondents, while the female gender was just 29% of respondents (Figure 1). This suggests that the issue of gender disparity is still prevalent in the agricultural sector in South Africa, and the government should continue to work hard to correct this issue (DAFF, 2019; Zenda & Malan, 2021).

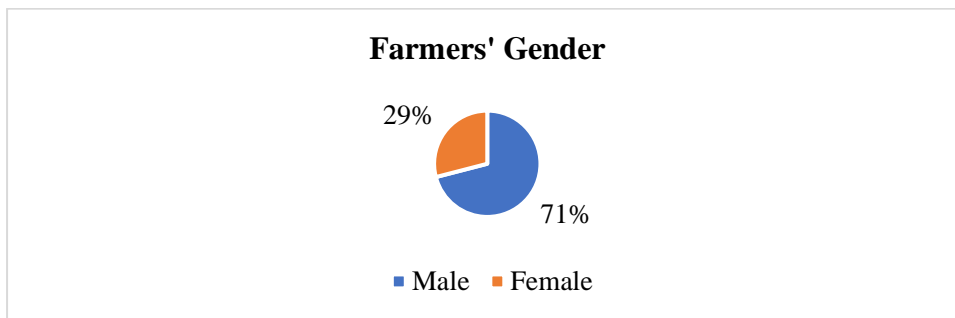


FIGURE 1: Smallholder Crop Farmers Gender

The sector needs to actively tackle the issue of gender inequality as it excludes women from participating fully in their abilities to grow the sector and the economy. This issue is interrelated with other social inequality conditions like income, education, race, and so on, all working against the progress and development of women in particular (Botreau, 2019).

Figure 2 shows the age group of the respondents and the percentage of each age group. The age group between 41 and 50 years old was the highest at 21.9% of respondents in the age group category. The second highest age group of smallholder crop farmers in Gauteng province was 51 to 60 years and 61 years or older at 18.8%, while the lowest age group to participate in farming was between 21 and 25 years, at 6.3%.

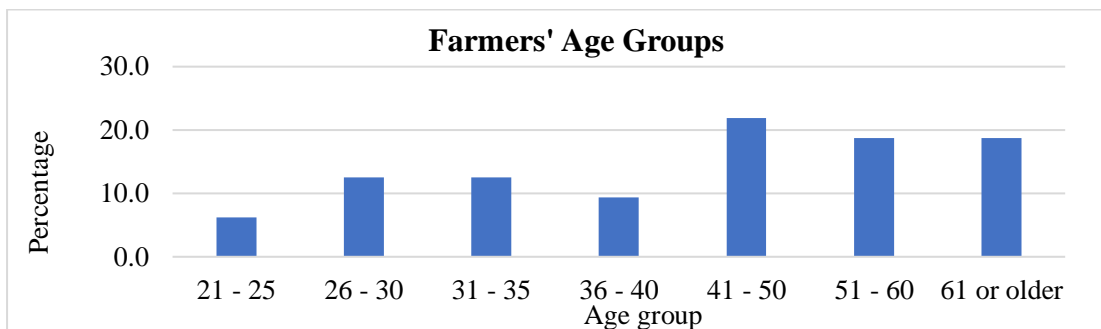


FIGURE 2: Smallholder Crop Farmers Age Group

The study results revealed that 9% of the respondents were youth (Figure 2). This suggests that the youth in Gauteng province might not be interested in agriculture. This agrees with the results of Zenda and Malan (2021), who reported that the challenge of attracting youth to agriculture is great in South Africa. Critically, many young people should be involved in agriculture so that (technical) knowledge can be transferred to them, and food production can increase further, leading to job creation and food security for a growing population in Gauteng.

Furthermore, young people have more years ahead of them, thus making it easy to invest in them through (lifelong) learning for long-term benefits; also important is that most of them embrace technological changes better than the old farmers who tend to struggle with it (Kollmann *et al.*, 2019).

The highest level of education for the smallholder crop farmers in Gauteng was 28.1% of respondents holding tertiary qualifications (Table 1). This was followed by the respondents who matriculated and those who had Grade R to Grade 8, each at 21.9%. The lowest number of respondents in the survey were those who had never been to school, at 12.5%.

TABLE 1: Smallholder Crop Farmers Level of Education

Farmers' Level of Education		
Levels of education	Frequency	Percent
Grade 9 to Grade 12	5	15.6
Grade R to Grade 8	7	21.9
Matriculated	7	21.9
Never been to school	4	12.5
Tertiary qualification	9	28.1
Grand Total	32	100

Regarding the dependents of smallholder crop farmers, Figure 3 shows that 78.1% of the respondents indicated that they had dependents. In contrast, 21.9% of respondents indicated they do not have dependents. In the literature available (Carelsen, Ncube & Fanadzo, 2021; Zantsi, 2021a), smallholder crop farmers tend to rely on family labour to work on the farm.

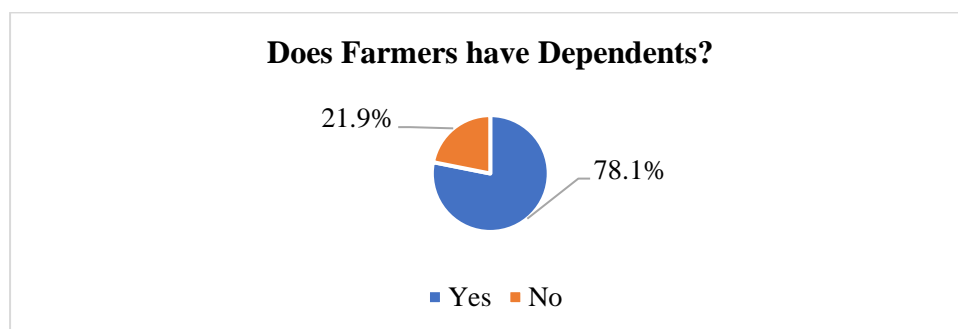


FIGURE 3: Smallholder Crop Farmers Dependents

Still, on the farmer's family, the respondents were further asked if family members assisted them in their farm operations, and 53.1% of respondents indicated that they did not farm with family members (Table 2). In comparison, 46.9% stated that they farmed with family members.

TABLE 2: Smallholder Crop Farmers Farm Operations with Family Members

Farm Operations with Family Members		
Response	Frequency	Percent
Yes	15	46.9
No	17	53.1
Total	32	100.0

3.1.2. The Informal Food Traders' Gender, Age, Dependents, and Level of Education

The demographic information of informal food traders in Gauteng was analysed as follows. There was a gender disparity between male and female informal food traders' as shown in Figure 4. The female gender was the majority of the respondents in Gauteng at 62.5%, whereas the male gender was 37.5%. Unlike the gender disparity of smallholder crop farmers, where males were the majority in the survey, female informal food traders, on the other hand, were in, where males were the majority in the survey, and female informal food traders were the majority. In addition, females form one of the vulnerable groups in the South African economy, and the government should continue prioritising them if positive change affects society (Mahlati, 2019). This also considers that females commonly play an important role in feeding family members, thereby reducing food insecurity in South Africa (Moyo, Pereira & Scholtz, 2020).

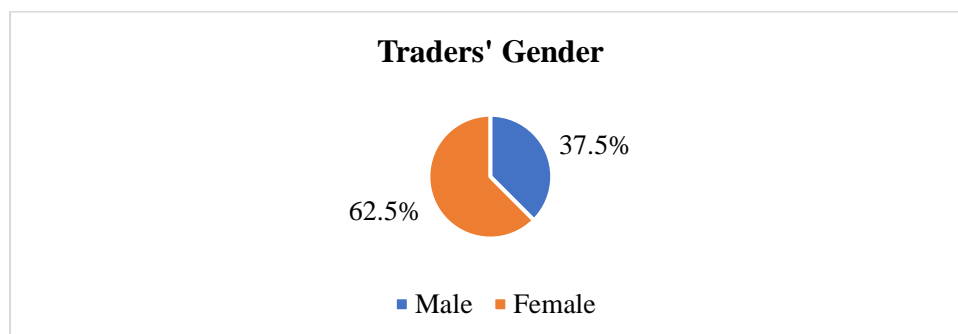


FIGURE 4: Informal Food Traders Gender

The age group of informal food traders with the highest percentage was between 41 and 50 years old at 40.6%, as shown in Table 3. This was followed by the age group 51 to 60 years old at 37.5%. The lowest age group was the young (ages 26 to 30) at 6.3%.

TABLE 3: The Age Groups of Informal Food Traders in Gauteng Province

Traders' Age Group		
Age group	Frequency	Percent
26 – 30	2	6.3
36 – 40	5	15.6
41 – 50	13	40.6
51 – 60	12	37.5
Total	32	100.0

The results in Figure 5 show informal food traders responding to the question about whether they had dependents. The majority (96.9%) of the respondents indicated that they had dependents, while the minority (3.1%) of respondents stated that they did not have dependents. Informal food traders play an important role in the informal food system by providing agri-food trade to poorer householders at an affordable price. They also play a crucial role in feeding their family members (Moyo, Pereira & Scholtz, 2020; Wegerif, 2020).

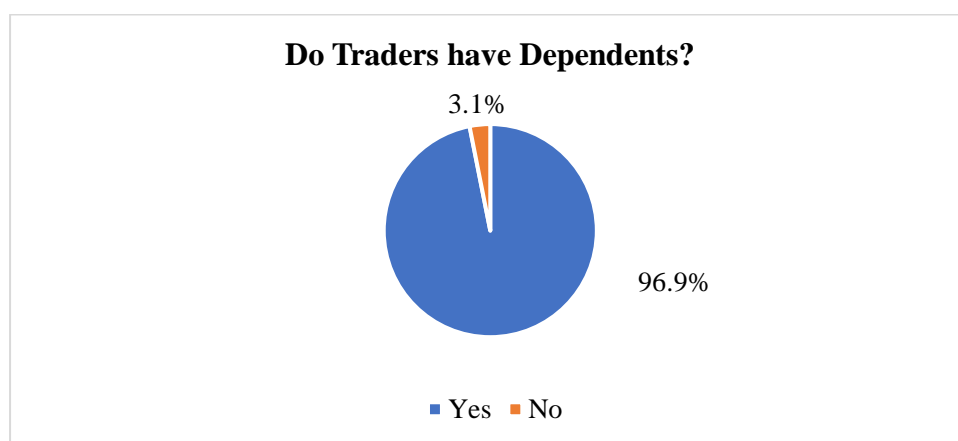


FIGURE 5: Informal Food Traders Dependents

The levels of education for informal food traders in Gauteng show that 62.5% of respondents had attained Grade R to Grade 8 as their highest education (Table 4). The following category

was respondents who had never been to school at 21.9%. The lowest category of informal food traders was those respondents with tertiary qualifications, at 6.3%.

TABLE 4: The Levels of Education for Informal Food Traders in Gauteng Province

Traders' Level of Education		
Levels of education	Frequency	Percent
Grade 9 to Grade 12	3	9.4
Grade R to Grade 8	20	62.5
Never been to school	7	21.9
Tertiary qualification	2	6.3
Total	32	100

3.2. Production of Smallholder Crop Farmers and Their Direct Sale to Consumers

Horticultural crop production by smallholder crop farmers was divided into three categories: vegetable crops, fruits, and both fruits and vegetable crops (Figure 6). The results in Figure 6 indicate that farmers who produce vegetable crops (and sell to consumers) had the highest presence in the survey at 59.4%, while farmers who produce both fruit and vegetable crops and sell to consumers followed at 38% in the survey. The last category of farmers who produce only fruits and sell that produce to consumers showed an extremely low presence in the survey at 3%.

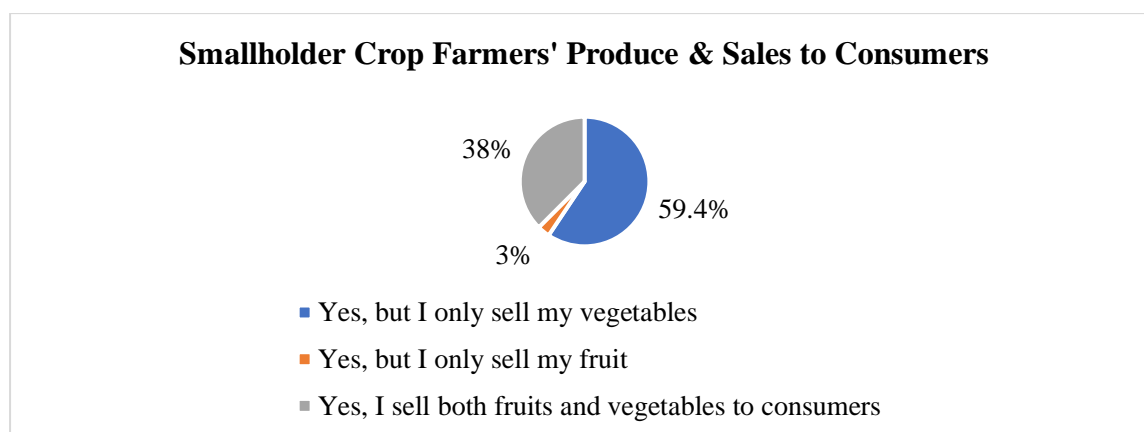


FIGURE 6: Smallholder Crop Farmers Production and Sales to Consumers

The second issue to discuss in Figure 6 concerns smallholder crop farmers' sales of these commodities in Gauteng. Depending on the advancement of the farm, some farmers have had

the choice of distributing their produce to National Fresh Produce Markets (NFPM) (and other distribution channels), but many farmers in this survey, as will be discussed later, could only manage to distribute through the direct sales channel.

This direct sales channel is important to many farmers because of the multiple benefits it brings to them, such as the following: i) direct sales channel does not require any food safety certificate such as SA-GAP; ii) direct sales channel offers certainty that the produce of the farmer will be bought by the individual consumer who is not into “grades” of produce, but instead cares for produce that is free from damage, excessive dirt, or rot; iii) direct sales channel does not involve middle-man deals like the market agents in the NFPM, and this saves such costs; and iv) direct sales channel affords farmers to be price-makers because there is no competition around them, unlike in the NFPM environment where the market determines the prices (Borgman & Gerhart, 2022).

The informal food traders (and the other groups, including neighbours) make up the consumers to whom the smallholder crop farmers sell their produce (Stats SA, 2020), especially with farmers who cannot access lucrative markets for all the reasons mentioned earlier. The survey of informal food traders and smallholder crop farmers confirmed the positive correlation between these two actors in the (informal) food system.

The results in Table 5 show the direct sales channel between informal food traders and smallholder crop farmers. The majority (62.5%) of informal food traders confirmed that they purchased their stock of fruits, vegetables, or both from smallholder crop farmers, whereas the minority (37.5%) informal food traders purchase at municipal fresh produce markets (or NFPMs) constantly for their stock.

TABLE 5: Informal Food Traders Stock Purchases

Traders’ Response to Where They Purchased Stock		
Sale channel	Frequency	Percent
Direct from smallholder crop farmers	20	62.5
Municipal fresh produce markets	12	37.5
Total	32	100.0

A further narrative is that 62.5% (majority) of informal food traders purchase their stock directly from smallholder crop farmers, as shown in Table 5, suggesting that the negative impact of COVID-19 during lockdown restrictions also affected the business and livelihood (as well as the health) of smallholder crop farmers as it did with informal food traders in Gauteng province.

3.3. COVID-19 Pandemic as a Cause of the Challenge Facing Both Actors

This study component focused on the COVID-19 pandemic and its lockdown restrictions as a cause of the challenge faced by smallholder crop farmers and informal food traders in Gauteng. The trade relationship between these two actors was negatively affected by the government's lockdown restrictions. Furthermore, Skinner and Watson (2020) note that traders were not allowed to operate during the first ten days of lockdown restrictions. However, after pressure from civil society the government declared that spaza shops and informal food traders (excluding those selling cooked food) were 'essential service' providers. It was understood that the first ten days of lockdown were difficult for traders as their income was no longer coming in, and feeding their families was a struggle (Skinner & Watson, 2020). Therefore, it is not surprising that 100% of informal food traders indicated in the survey that they lost their trading jobs during the lockdown period.

The results in Figure 7 illustrate smallholder crop farmers income loss or gain due to lockdown restrictions. There was a lot of variation between respondents regarding their loss of income due the lockdown. It was found that 90.6% of respondents indicated that their income was affected due to COVID-19, while 9.4% stated that they were not affected. These results indicate that lockdown was one of the contributing factors to the challenges facing smallholder crop farmers.

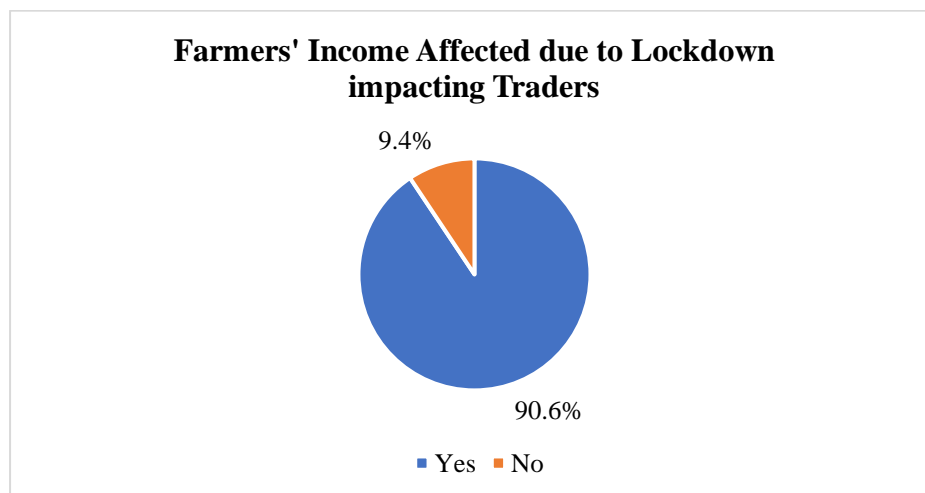


FIGURE 7: Income Loss for Smallholder Crop Farmers Due to Lockdown Restrictions Affecting Informal Food Traders

When informal food traders lost their income during the lockdown, 90.6% of smallholder crop farmers also indicated an income loss due to temporarily unemployed informal food traders. This is because smallholder crop farmers are the main produce supplier to informal food traders (see Table 5). Another important point to emphasise was the disruption of the informal food system, which further affected people who depend on it to feed themselves and their families. According to Wegerif (2020), around 70% of households in poorer neighbourhoods in South Africa source some food from the informal sector. This shows the important role played by these actors in the informal food system and the number of households they feed. Therefore, the disruption of the informal food system during the lockdown meant that the supply of low agri-food through trade could no longer reach low-income and poor households, further exacerbating hunger and food insecurity (Moyo *et al.*, 2020; Skinner & Watson, 2020). When the COVID-19 regulation was changed to allow for informal food traders to operate, some traders who attempted to return to work experienced several challenges. The first challenge was accessing permits from the municipal authority and suppliers for products such as clear plastic packaging bags. The second challenge was around transportation since movement was restricted. The third and last challenge was on food parcels. Skinner and Watson (2020) note that while food parcels are important, they are likely further to undermine the viability of the informal food system. The inception of Social Relief of Distress (SRD) grants (of R350.00 per month) was another way the government was intervening in the lives of the poor (DSD, 2021).

The COVID-19 pandemic and lockdown restrictions form the first challenge to be discussed in this section.

3.4. The Challenges Facing Smallholder Crop Farmers

The challenges that negatively affected smallholder crop farmers in the agri-food value chain and their production include the following: lack of access to markets, agricultural produce losses due to lack of technical knowhow (and resources), lack of agricultural training and skills, lack of refrigerated vehicles and storage facilities. Figure 8 shows the challenges facing smallholder crop farmers in Gauteng.

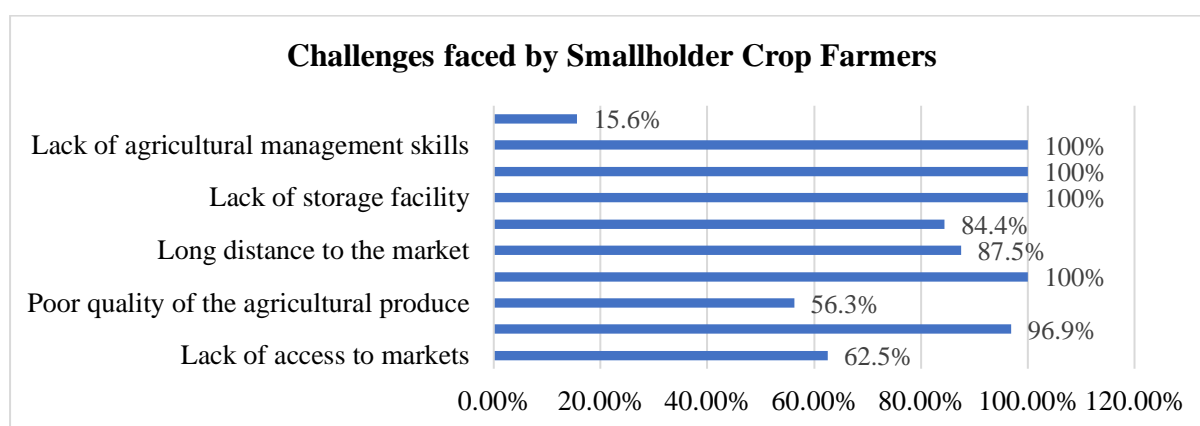


FIGURE 8: Challenges Faced By Smallholder Crop Farmers

Four categories in Figure 8 each indicating 100%, meaning that all respondents indicated that they were affected by the challenges wholly in those categories. These categories include lack of agricultural training and skills, crop damage due to pests and diseases, lack of storage facility, inadequate transportation, and spoiling produce. These results are important because they indicate what smallholder crop farmers feel they lack the most in their business of producing food for people.

Lack of storage facilities, inadequate transportation spoiling produce, and lack of agricultural training and skills all point to a lack of resources as a huge challenge which deprives farmers of expansion, growth and development opportunities (Khwidzhili & Worth, 2019; Mtombeni *et al.*, 2019), while crop damage may be attributed to pests and diseases.

Still discussing the results of Figure 8, agricultural produce losses followed at 96.9%, also appearing as a high challenge to smallholder crop farmers as it affects their income. Eliminating the losses in the production process will result in high income earned and savings in input costs.

The other two categories of high challenges to smallholder crop farmers also included long distance to the market (87.5%) and lack of refrigerated vehicles to the market (84.4%).

Farmers who viewed the lack of access to markets as a challenge were 62.5% in the survey, which indicated that some smallholder crop farmers (37.5%) did not see or indicate it as a challenge to them. The latter results demonstrate two things. First, 37.5% of *those* smallholder crop farmers have access to markets, meaning they can supply their produce. Second, their ability to supply markets indicates they have the necessary regulatory certificate(s) like the SA-GAP certificate. This was a step in the right direction, but more still needs to be done to involve every farmer in the system (DAFF, 2019).

Furthermore, an additional question about access to contracts was asked in the survey, and 40.6% of smallholder crop farmers indicated that they have access to contracts and supply their agricultural produce to markets. This ability to access contracts could also be linked to owning regulatory certificate(s), which lucrative retailers (or markets) put forward as a prerequisite for producers to have to trade with them (Mtombeni *et al.*, 2019). On the other hand, 59.4% of smallholder crop farmers indicated they do not have access to contracts from (lucrative) markets.

The poor quality of the agricultural produce, as shown in Figure 8, was a challenge for 56.3% of smallholder crop farmers in Gauteng. The “other” category constituted the lowest challenge for smallholder crop farmers at 15.6%. This category involves things such as technology on the farm, climate change, lack of appropriate agricultural infrastructure, high levels of degradation, agro-processing and value-adding (Khwidzhili & Worth, 2019).

The other crucial variables, like the size of farmland and the difficulty of accessing micro-loans, also need to be discussed. The results show that the majority (100%) of the respondents indicated that small farmland was challenging their growth (and development). The issue with producing on small farmland is that the farmer will be limited in the crop size they can plant, thereby constraining profits in the long run and investment.

On the issue of micro-loans being difficult to access, this causes a challenge for smallholder crop farmers. As a result, 87.5% of respondents confirmed that accessing a micro-loan was a challenge for them (Table 6). However, 12.5% of the respondents indicated they are not

challenged with getting a micro-loan. These aforementioned challenges indicate that extension advisers need to address the challenges facing smallholder farmers to reduce losses.

TABLE 6: Smallholder Crop Farmers Challenges Experienced in Accessing Micro-Loans From Financial Institutions

Difficulty of Accessing Micro-Loan from DFIs		
Response	Frequency	Percent
Yes	28	87.5
No	4	12.5
Total	32	100.0

3.5. The Challenges Facing Informal Food Traders and Operational Information

The challenges for informal food traders included municipal by-laws affecting the operation of small trade businesses. The results show that the majority (100%) of respondents indicated that municipal by-laws affected their Gauteng trade operations.

On the operational issues of the informal food traders, the first variable is the number of years the traders have been in business. The results in Table 7 show that 81.3% of the respondents had ten years or more of business trade experience. This was followed by 12.5% of respondents indicating they had seven to nine years of business experience. The least group of respondents had 3.1%, for both: four to six years of business experience and one to three years of business experience categories.

TABLE 7: Informal Food Traders Number of Business Years

Traders' Number of Years in Business		
Business years	Frequency	Percent
1-3 years	1	3.1
4-6 years	1	3.1
7-9 years	4	12.5
10 years or more	26	81.3
Total	32	100.0

The second variable was the type of stock (or produce) informal food traders sold to consumers. The results in Figure 9 show that 50% of respondents sold fruits and vegetables to their customers, while 37.5% sold vegetables only to customers. The least group of respondents, at 12.5%, only sold fruits to customers.

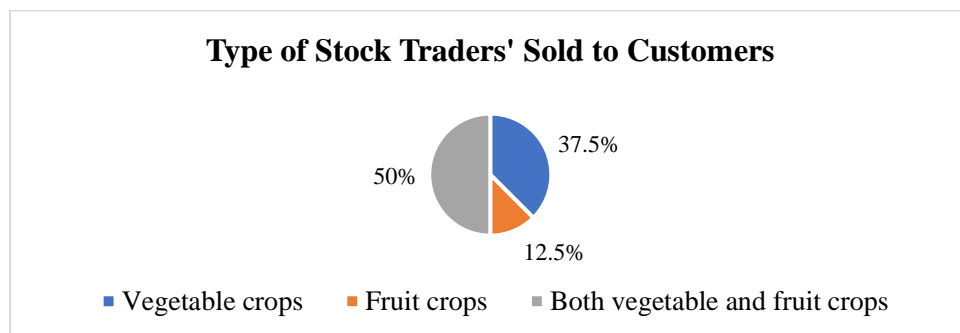


FIGURE 9: Informal Food Traders Types of Produce Sold to Customers

3.6. How Smallholder Crop Farmers Handled Food Waste in Gauteng Province

Food waste is another important issue to discuss as it can be converted into organic compost, improving the poor quality of the agricultural produce (and offering other benefits as well). Table 8 shows how smallholder crop farmers handled food waste in Gauteng and divide them into three categories, namely: i) those farmers who throw food waste away, ii) those who re-use and convert food waste to organic compost, and iii) those who use food waste for other things such as feeding animals (pigs, chickens, etc.).

TABLE 8: Smallholder Crop Farmers Food Waste

How Farmers Handled Food Waste		
Response	Frequency	Percent
Throw it away	15	46.9
Re-use as compost	8	25.0
Other	9	28.1
Total	32	100.0

The first category of smallholder crop farmers is those who throw away food waste after production, and this constituted 46.9% of the surveyed farmers in Gauteng (Table 8). This suggests that a large number of farmers are still not aware or knowledgeable about how food

waste can be converted into organic compost, thereby reducing negative environmental impacts and improving soil conditions (Kawai, Liu & Gamaralalage, 2020).

Only 25.0% of respondents in the second category indicated that they reuse food waste as organic compost in their soils. This suggests that these farmers saved money since converting food waste into organic compost is a natural process, assuming everything else is in place. As mentioned above, other benefits of organic compost are also enjoyed by these farmers.

The third and last category shows 28.1% of respondents who use food waste for other things, such as feeding animals like pigs, chickens, etc. While this group of farmers may benefit from feeding animals with wasted food, the opportunity cost of converting waste into organic compost, which will immensely benefit the crop soils, still exists.

Turning attention to informal food traders and how they handle food waste in their spaces, it should be highlighted that municipalities use underground storage bins in areas with high pedestrian traffic, like in taxi ranks where informal food traders operate as part of collecting waste (CSIR, 2011). The results in Figure 10 show that 71.9% of informal food traders throw away food waste from their stock. From the underground storage bins provided, it can be deduced that they throw away their waste there, whereas 28.1% of the respondents used food waste on other things, such as feeding livestock, for example.

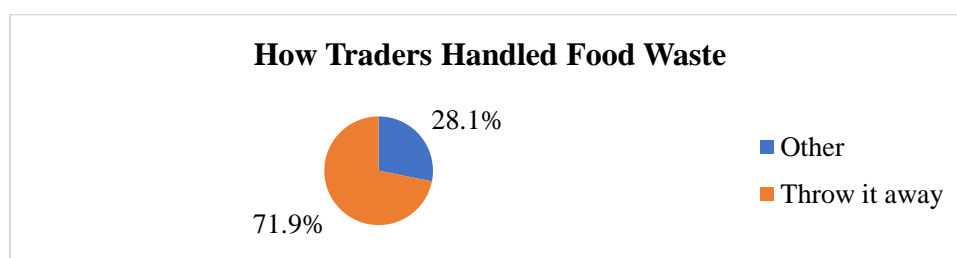


FIGURE 10: Informal Food Traders Food Waste

4. CONCLUSION AND RECOMMENDATIONS

This research study makes a few recommendations in line with the results discussed in the previous chapter. The gender disparity between farmers in Gauteng province was high, with the male gender represented at 71%. The Department of Agriculture, Land Reform and Rural Development needs to correct this situation quickly. Empowering women will also yield good results for the family members (Moyo *et al.*, 2020; Skinner & Watson, 2020).

The other recommendation that the study puts forward is improved policies on reacting and managing future shocks. The COVID-19 pandemic is a good example of a shock. All (100%) of the informal food traders lost their jobs due to the government's reaction to the pandemic. In addition, 90.6% of smallholder crop farmers' income was affected as a result of traders not being permitted to work, thus disrupting the trade relationship between these actors. This suggests that the Department of Agriculture, Land Reform and Rural Development did not have a proper plan to save livelihoods, but, more important, rising levels of hunger were experienced during that time in South Africa (Moyo *et al.*, 2020).

An allocation of extensive agricultural land for smallholder crop farmers to utilise is another recommendation that the study advocates. The majority (100%) of farmers in the survey indicated that farming in a small arable land hindered their growth. This suggests that small farmland is a cause of challenge and is among the pressing issues that the Department of Agriculture, Land Reform and Rural Development needs to address to help farmers improve.

The other recommendation is that the Department of Agriculture, Land Reform and Rural Development needs to make it easy for smallholder crop farmers to access micro-loans. Again, all (100%) of the farmers indicated that accessing loans was challenging for their enterprises. These financial institutions can address farmers in a group meeting to teach them about the application processes and what documentation is needed.

The last recommendation looks at improving municipal by-laws to accommodate and protect traders. The informal food traders indicated in their majority (100%) that municipal by-laws negatively affected their trade businesses. This shows that the municipality authority must intervene to correct this situation. Female traders comprise the majority at 62.5% of the survey, so if the municipality makes their business environment easy to work from, traders will thrive, jobs will be secured, and the livelihoods of all will be secured.

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