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**SOCIO-ECONOMIC FACTORS INFLUENCING SUSTAINABILITY  
OF THE HOMESTEAD FOOD GARDENS: A CASE OF  
HOUSEHOLDS IN GAUTENG PROVINCE, SOUTH AFRICA**

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**ABSTRACT**

Homestead Food Gardens (HFG) are considered a means through which households can improve their living through food production. Too many resources are directed to the HFG program to help eradicate poverty and food insecurity. The study aims to create sustainable management for homestead food gardens in the Germiston and Randfontein regions of Gauteng Province, South Africa. The following objectives were followed: to identify socio-economic factors that encourage homestead food gardens in Germiston and Randfontein regions, to assess production practices of the homestead food gardens in the Germiston and Randfontein regions and to recommend an improved sustainable mechanism for the homestead food gardens in the Germiston and Randfontein regions. A total of 880 households participated in the study. Both qualitative and quantitative study methods were applied and the English language was used during writing in the questionnaire, and discussions with stakeholders and observations were also part of the data collection. Purposive sampling was used to select 880 households from the list provided by the Gauteng Department of Agriculture and Rural Development (GDARD). The data were captured, analyzed and coded through the use of Statistical Package for Social Science (SPSS version 21). Out of the 880 households that participated in the study, 340 indicated that this practice was good, 445 good, 54 fair, 19 poor and 22 very poor. In terms of homestead food gardens sustainability: 147 were able to generate income, 179 were only aware of environmental matters and 527 were supporting social initiatives. Correlation results also indicated a positive association among the following variables: availability of garden, household members, age and household income. The study recommended the following activities to be improved in the program: Communities and stakeholder mobilisation, situation analysis, food gardens inputs, demonstration, training and technical assistance, educational nutrition, monitoring and evaluation and crop based approach.

**Keywords:** *Food Security, Homestead food garden, Germiston and Randfontein Regions, Gauteng Province, South Africa.*

## INTRODUCTION

According to Galhena (2013), Homestead Food Garden (HFG) is amongst the most ancient practices of food production that is practiced throughout the world. It differs often in biodiversity, size and products are adapted to local resources and the preference of culture. HFG are referred sometimes to as backyard, mixed, roof top garden, farmyard, kitchen and homestead gardens or compound and can also be categorized into the following two groups: “promoted gardens” – they receive support and intervention from outside organization and “traditional gardens” – those which are cultivated independently without any intervention.

The homestead food garden advantage in terms of its benefits to the economy includes growing your own vegetables and fruits becoming less expensive than purchasing products from the markets. According to FAO (2012), a surplus can be sold in addition, providing household with livelihood additional source of income and opportunities. Generally, surplus income can be used for the purchase of supplement food items, it further increases the diversification of the diet of the family thus overcoming seasonal foods availability and ensuring self-sufficiency promotions in the households. According to Stemele (2014) and Maponya (2019), South Africa is a nation seen to be ‘food-secure’, enough calories are produced to feed 53 million of its people adequately. However, since 1994 during the birth of democracy, some progress has been realised, in four people every one of them currently on a regular basis suffers hunger and a population of more than half finds themselves living in similar circumstances which are precarious risk of going hungry. At the country and national level, South Africa exceeds the benchmarks of most global for amounts of food exported and produced. However, the same cannot be said at the household level (Stats SA, 2017).

Gauteng Province population is over 12 272 263 million individuals contributing 23.7% of the population at the total national level (StatsSA, 2018). According to different Gauteng Province household’s studies, almost 20% go to sleep without having food due to income unsustainability and food insecurity (Maponya, 2019). In addition, different studies indicated food gardening as a means to supplement household income, and for addressing food security as it addresses more precisely nutrition (Maponya, 2019). Different food security programs were initiated by the Gauteng Province in the current situations and past e.g. Siyazondla, HFG; growing own campaigns of food which are to be recognized and accepted since improvements were significantly made in the rural provincial residents and their livelihoods. Various interventions in the province have been done to address the food security issue through the consideration of food gardening and the challenge facing Gauteng Department of Agriculture and Rural Development (GDARD) is to ensure that the programs remain sustainable and active even after the government ceases its support.

According to Kongolo & Bamgose (2002) characteristics of the socio-economic effect are amongst forces that discourage or encourage change towards agriculture behavior in the rural people. A revelation in recent studies showed a great linkage

of individual importance, socio-economic level and its participation and involvement in the development of agriculture.

Socio-economic factors impact men intricacy, farming is a function performed by human and subsequently their benefits and achievements from agriculture. Meenar & Hoover (2011) after the assessment of 52 issues of hunger, food insecurity in the community and the garden results in the neighborhoods of Philadelphia emphasized factors in the socioeconomics may determine most importantly participation in household gardens.

The research aim is to create sustainable management for homestead food gardens in the Germiston and Randfontein regions of Gauteng Province, South Africa. The following objectives were followed: To bring out socio-economic factors that encourage homestead food garden sustenance in Germiston and Randfontein regions, to assess production practices of owners of the homestead gardens in the Germiston and Randfontein regions and to recommend an improved mechanism sustainable for the homestead gardens in the Germiston and Randfontein regions.

## **MATERIAL AND METHODS**

### **Study Area**

The research focused on the Randfontein and Germiston Regions. In the Randfontein region, the following municipalities were included: City of Johannesburg Metropolitan Municipality, Mogale City, Randfontein, Merafong City and Westonaria. In the Germiston region, the following municipalities were included: Ekurhuleni Metropolitan Municipality, Lesedi, Midvaal and Emfuleni.

### **Study Design**

The research employed both qualitative and quantitative methods concurrently and this was applied with the aim of making sure that one type of limitations of the data is extremely balanced through the strengths of the other. Integrating different ways of knowledge ensured improved understanding. HFG beneficiaries were interviewed in such a way to assess the type of vegetables that the beneficiaries of homestead food gardens prefer to grow, the type of soil, if the soil is suitable for the preferred planted crops. Data collection methods were via interviews, site observations, focus groups, past researches, web and governmental reports. A detailed questionnaire was developed for the collection of data in English. Pre- and post-intervention questionnaires were developed and pilot-tested with researchers working on community development within the Agricultural Research Council (ARC) organization. Homestead food gardens beneficiaries were interviewed. The questionnaire focused on obtaining socio-economic characteristics, as well as the frequency of eating vegetables, food security and field observation checklist for cultivation practices. Additional open-ended questions were also included to identify key challenging areas, which are likely to affect the sustainability of homestead food gardens. The focus group discussions also were undertaken among 32 officials in the GDARD as follows: Combined West Rand and City of Johannesburg (18), Sedibeng (7) and Ekurhuleni (7).

#### Sampling Procedure and Analytical Technique

A purposive sampling technique was used on selected 880 households from the Districts and Metropolitans within the Randfontein and Germiston Regions. The list of 8800 households were supplied by the GDARD and all received starter packs. The research sample size was agreed with the stakeholders. A rule of thumb was applied, which is the minimum selection of 10% of the population and it is considered as a good sample size.

Data collected was analysed quantitatively using the Statistical Package for Social Sciences (SPSS) Windows version 25. Descriptive and correlation analyses were done. Correlation is a bivariate analysis that measures the strengths of the association between two variables and the direction of the relationship. In terms of the strength of the relationship, the value of the correlation coefficient varies between +1 and -1. When the value of the correlation coefficient is around  $\pm 1$ , then it is said to be a perfect degree of association between the two variables. As the correlation coefficient value moves towards 0, the relationship between the two variables will be weaker. The direction of the relationship is simply the + (indicating a positive relationship between the variables) or - (indicating a negative relationship between the variables) signs of the correlation. Usually, in statistics, four types of correlations are measured: the Pearson correlation, the Kendall rank correlation, the Spearman correlation, and the Point-Biserial correlation. In this example, Spearman correlations were used.

#### Homestead Food Gardens Model

There are different and several agricultural sustainability models, to this end MESMIS (Management Systems Assessment Framework Incorporating Sustainability Indicators) was found to be relevant to this study. The model does the systems characterization, the critical points identification and the specific indicators selection for the sustainability of the social, environmental and economic dimensions. Obtaining information through indicators means it is integrated through mixed techniques (quantitative and qualitative) and the analysis of the multi-criteria (Cruz *et al.*, 2018). The MESMIS model, however, doesn't touch base on tangible issues such as innovations in the homestead food gardens production. Consideration of high-value crops, an initiative to take homestead food gardens to greater heights and to ensure that their commercialisation can be realised is thus critical. Plantation of crops with repellents and the capabilities in the households' food gardens would ensure maximisation of production since this action would curb the challenge of insect pests. The establishment of the central pack house which can accommodate neighbouring communities on their household production, is an initiative that will ensure commercialisation and market access.

## RESULTS AND DISCUSSION

### Households Socio-Economic Characteristics

The majority of households interviewed were females (703) as compared to males (177) and this happened again in metropolitans and districts. Maponya and Moja (2012) indicated that in Limpopo Province, household females include a significant number of active populations economically and households headed by females usually fall within the categories of food insecure, marginal, and vulnerable categories. The results showed different households ages and most households were found in the age > 56 (320) and few households age fall in the category < 35 years (110). The same categories of age trends appear in districts and metropolitans. These trends show a need for youth involvement in the homestead garden programme as any agricultural future developments in the metropolitans and districts should attract youth.

When considering attainment of education, the majority of households obtained secondary education (449) and a few with tertiary education (21). The education level is consistent for all metropolitans and districts in the Province. Heckman (1999) indicates that education has proven to be key to improving household food security, reducing poverty and improving the poor's livelihoods.

The results also indicated that most households were found to be in income level of between R1001 – R2500 and the majority of households do not have income (150). On the spending, the majority of households' food expenditure were > R601 per month. It was further emphasised before the COVID-19 pandemic that between November 2015 and April 2017, the cost of a food basket comprising the most basic of items rose from R1 648.10 to R2 053.98 (PACSA, 2017). Items that are included in the basket focused on the staples that people buy on a monthly basis in order to service their food needs. These included starchy foods such as mealie meal and rice, vegetables like onions and cabbage, fruit such as oranges and bananas, dry beans, meat and poultry, milk, oils, sugars and salt. Currently, South Africans are paying nearly R300 more for the average food basket in May 2021 compared to 2020 September (PMBEJD, 2021). This is according to the latest Household Affordability Index report compiled by the Pietermaritzburg Economic Justice & Dignity Group (PMBEJD, 2021), which tracks food price data from 44 supermarkets and 30 butcheries in Johannesburg, Durban, Cape Town, Pietermaritzburg and Springbok in Northern Cape. The majority of household size were between members of 1 – 5 and the same trend is found across metropolitans and districts. Amaza *et al.*, (2009) indicated the importance of household size as it is contributing to food security through the provision of labour.

### Homestead Food Garden Initiative

As indicated in Figure 1 many households felt that homestead food garden initiative is very good (340); good (445) and fair (54). Few households indicated that the homestead food garden initiative is poor (19) and very poor (22). Monitoring and evaluation of the initiative remained the challenge for some households.

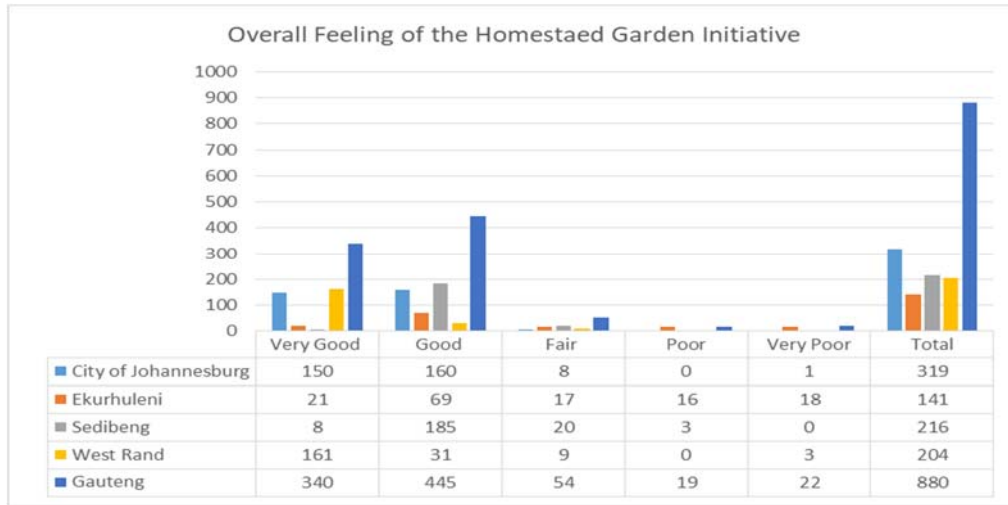


Figure 1. Overall Feeling of the Homestead Garden Initiative.

As indicated in Figure 2 more households felt that the support received is very good (227), good (310) and fair (151). Furthermore, the majority of households had a feeling that the support received was poor (101) and very poor (91). A complaint from households about the monitoring and evaluation of the initiatives of the homestead was also registered as the reason for their fair, poor and very poor responses. The same scenario was also observed across metropolitan areas and districts. Hence, GDARD needs to make follow-up on this situation.

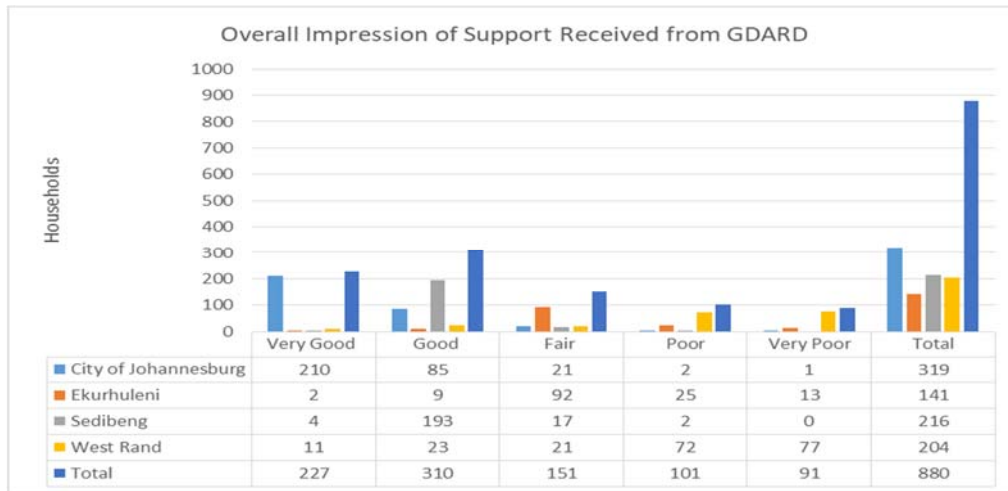


Figure 2. Households' Overall Impression of Support Received.

### Sustainability of the Homestead Gardens

In terms of *economic sustainability*, 733 of the households agreed that there is no income generation from the gardens. Furthermore, 147 households indicated that there are income generation from their gardens. This situation is against the benefits from some food gardens i.e. the household reduction on expenses for food purchase, and the income generation through the surplus produce sale. In terms of *social sustainability*, there is an equal response regarding social initiatives supported by the gardens: Yes (527 households) and No (353 households). HFG contribution of the gardens is noted very well towards social initiatives and should further be supported. In terms of environmental sustainability, the priority on environmental awareness should be prioritised by GDARD, as 701 households were not aware of the issues of the environment. Households should be trained about environmental benefits including waste nutrients and recycling water, erosion and dust, controlling shade, increasing or maintaining local biodiversity.

### Correlations among variables

As indicated in Tables 1 and 2, there is a positive correlation between variables: household size/members and gardens still available. It is generally expected that employed household members can contribute to the household food intake either through being involved actively or through formal employment. Maponya et al. (2012) indicate that households that have financial resources with more members are more food secure as compared to those with less financial resources. As indicated in Table 1, there is a positive correlation between gender and garden still available. These results are in line with Ndobbo *et al.* (2013) who cited that female-headed households are more likely to face moderate-to-mild as well as severe food insecurity forms than those of male-headed headed. Mohammadi *et al.* (2014) also reported severe food insecurity amongst households headed by females. The same study emphasised that there is a positive correlation between garden availability and age. As shown in Tables 1 and 2, both variables are significant at 5%. The results further indicate that any age category can participate in food gardening provided there is a garden available. As indicated in Tables 1 and 2, a positive correlation exists between gardens still available and income. It is expected that with garden availability an extra income can be achieved from surplus production. An increase in households' income can also reduce food insecurity. Maponya and Moja (2012) cited that the combination of production and income generation among households improves food security.

Table 1. Spearman Correlation Coefficients among Variables.

	GAR	GEN <sup>2</sup>	HOU <sup>3</sup>	AGE <sup>4</sup>	HOU1 <sup>5</sup>
GAR	1.00	0.011*	0.040	0.027*	0.013*
GEN	0.011	1.00	0.009	0.180	-0.19
HOU	0.040	0.009	1.00	-0.76	-0.025
AGE	0.027	0.180	-0.76	1.00	-0.57
HOU1	0.013	-0.19	-0.025	-0.57	1.00

<sup>1</sup>Garden Still Available, <sup>2</sup>Gender, <sup>3</sup>Household Members, <sup>4</sup>Age, <sup>5</sup>Household Income  
\*5% Significant Level; \*\*1% Significant Level

Table 2. Pearson's Correlation Coefficients among Variables.

	GAR <sup>1</sup>	HOU <sup>2</sup>	AGE <sup>3</sup>	HOU1 <sup>4</sup>
GAR	1.00	0.052*	0.017	0.014**
HOU	0.052	1.00	-1.00	0.50*
AGE	0.017	-1.00	1.00	-2.85
HOU1	0.014	0.50*	-2.85	1.00

<sup>1</sup>Garden Still Available, <sup>2</sup>Household Members, <sup>3</sup>Age, <sup>4</sup>Household Income  
\*5% Significant Level; \*\*1% Significant Level

### CONCLUSIONS

It can be concluded that homestead food garden programme has a great potential. The study further established some challenges from the programme but is benefitting households in different ways: beneficiaries received seeds, tools and starter packs and using these resources to grow food which is augmenting households' income and nutritional intake. The study further established that some households are still gardening but the garden sustainability can be improved by: environmentally friendly techniques of soil improvement and control of pests; participation and involvement of the community in the design of homestead programme, regular water supply implementation and evaluation (information exchange two-way channels plays a role for improved achievements, garden sustainable practices); training and demonstrations, assistance, education in nutrition within the activities of gardening and monitoring are all important because it is used as a tool for making that the activities are carried out as planned and to improve the required performance. Furthermore, the results will facilitate the problem identification and solution development on sharing between the households and the Gauteng Department of Agriculture and Rural Development (GDARD). Correlations results indicated positive associations among the following variables: Availability of Garden, Household members, Age, Household Income and Gender. The study recommended the following activities to be improved in the programme: Communities and stakeholder mobilisation, situation analysis, food garden inputs, demonstration, training and technical assistance, educational nutrition, monitoring and evaluation and crop-based approach.



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