

## Determinants of Agricultural Market Participation in the Sarah Baartman District, Eastern Cape of South Africa

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**ABSTRACT** This paper highlighted the determinants of agricultural market participation and the promotion of the establishment of vegetable markets, fruit markets and nurseries in the Sarah Baartman district, Eastern Cape, South Africa. The research was conducted by taking a representative sample consisting of 49 agricultural projects, with 664 beneficiaries participating in this project. The following 9 local municipalities were visited: Ndlambe, Makana, Blue Crane, Camdeboo, Ikwezi, Sundays River, Kouga, Karkara and Baviaans. Quantitative and qualitative design was used as a detailed questionnaire written in English, with a focus group discussion, a stakeholder's discussion, and field observations as part of the data collection. A purposive sampling technique was used to select forty- nine (49) projects, in order to cover uniformity and homogenous characteristics such as infrastructure requirements, skills availability, production challenges, agricultural training needs, water source needs, educational level and others. Data was coded, captured and analysed with a software package for social sciences (SPSS version 20) using Descriptive Analysis and Univariate Regression Analysis. The results showed a significant association among the following variables: age, educational level, farming experience, land, land acquisition, crop planted, water source, water rights, agricultural training and market participation. Based on the results, it is recommended that fruit and vegetable markets be established, as well as the creation of a complete, viable agro value chain that will expand community driven agricultural production and processing.

### INTRODUCTION

According to Altshul (1998) and Lyster (1990), marketing plays a critical role in meeting the overall goals of food security, poverty alleviation and sustainable agriculture, particularly among smallholder farmers in developing countries. It was further emphasised by Dittoh (1994) that agricultural/food marketing is the principal determinant of agricultural growth and contributes to overall development. South Africa, like any other developing country, is facing challenges of low output and productivity, characterized by inefficient marketing support structures and constrained input supply patterns, which contributes to food insecurity and non competitiveness of the sector for smallholder farmers.

According to Makhura (2001) and Maponya et al. (2014) in South Africa, very few farmers

participate in the markets due to several marketing challenges. Among other factors, for example smallholder farmers produce small marketable surpluses which cannot attract formal traders, cannot adhere to quality requirements and incur high transaction costs in marketing. It was further emphasised by Kherallah and Kirsten (2001) that high marketing costs stem from individual transportation of few produce, weak negotiation power and uninformed marketing arrangements (Kherallah and Kirsten 2001).

Sarah Baartman district is ranked third largest economy in the Eastern Cape, with 9 percent of provincial value added. Agriculture dominates the district's economy, contributing 28 percent of all value added and 41 percent of formal employment (CDM 2014). Small-stock farming is more popular in the Karoo and cattle and dairy farming are strong in the areas around Grahamstown, Cookhouse, Alexandria and Humansdorp. According to CDM (2014) the Langkloof valley is home to deciduous fruit production of apples and pears and major citrus farming areas are irrigated from the Sundays and Fish Rivers. There

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is commercial forestry around Tsitsikamma and Grahamstown and a small fishing industry operates from St Francis (CDM 2014). Agriculture remains the biggest employer (32.4%), manufacturing employs only 7 percent while government services 22 percent of formal employment.

The Agricultural Research Council (ARC) is currently involved in an agricultural project in the Sarah Baartman district in Eastern Cape where beneficiaries were trained and mentored so as to implement sustainable production and develop markets. In the present study, research was conducted with the overall aim of establishing if sustainable agricultural markets are viable in the Sarah Baartman district.

### Objectives

The major objectives were: (1) To identify and describe the characteristics of selected agricultural projects in the Sarah Baartman district, (2) To determine factors that influence decision making to participate in agricultural markets.

### METHODOLOGY

Quantitative and qualitative methods were used. A detailed questionnaire written in English was developed for the data collection. The questionnaire used both open and closed ended questions. Focus group discussions and field observations were also part of the data collection. As part of standard protocol for conducting the study, meeting was held with all stakeholders in the Sarah Baartman district namely: (1) Districts Municipalities, (2) Department of Agriculture, Forestry and Fisheries (DAFF), (3) Department of Rural Development and Agrarian Reform (DRDAR), (4) Local Economic Agencies and (5) Local Farmers. The aim of the meeting was to introduce and explain the aim of the study, and future plans of the potential market.

A purposive sampling technique was used to select 49 agricultural projects. The sampling was used to assess uniformity and homogenous characteristics like infrastructure needs, skills availability, production challenges, agricultural training needs, and water source needs, educational level, land acquisition, size of land farming experience, source of water, inputs and implements used. Agricultural projects visited in the Sarah Baartman district were prioritized based on the agriculture potential of the area namely

project type, numbers of projects around an area, size of the land, chances of extending production, water availability, commitment of members to their projects, internal conflicts and working material and infrastructure. The Eastern Cape lies in the southern eastern of South Africa, and has great natural beauty, particularly the rugged cliffs, rough seas and dense bush of the stretch known as wild coast (StatsSA 2011). It has a total number of 6 district municipalities, namely: Amathole district, OR Tambo district, Sarah Baartman district, Alfred Nzo district, Chris Hani district and Joe Gqabi district (StatsSA 2011). The study was conducted in the Sarah Baartman District Municipality in the Eastern Cape Province of South Africa as shown in Figure 1. The work was done by Agricultural Research Council together with officials from Department of Rural Development and Land Reform (DRDLR), Department of Agriculture and Local Municipalities. A total of 49 projects in 9 local municipalities were visited and they all formed part of the study. The nine local municipalities that were visited are as indicated in Table 2, which gives an overview of the characteristics of the projects in the districts: Ndlambe, Makana, Blue Crane, Camdeboo, Ikwezi, Sundays River, Kouga, Karkara and Baviaans. Table 1 defines variables used in the model.

**Table 1: Definition of variables included in the model**

<i>Variables</i>	<i>Description of variables</i>
Age	Age of the respondent/ farmer
Gender	The gender of the respondent
Educational level	The highest educational level that a respondent possesses
Land acquisition	The form in which the farm was acquired or purchased
Size of the land farmed	The size of the farm which is under crop production
Number of years in farming	Farming experience of the respondent(s)
Soil sample	If whether the soils of the farm have been tested
Crop planted	Type of crops that they produce
Inputs available	Inputs that they use for production activities
Implements used	Implements that are used for production operation
Source of water for irrigation	Where the respondent get water for irrigation of their farms

Data was captured and analysed using the software package for social sciences (SPSS ver-

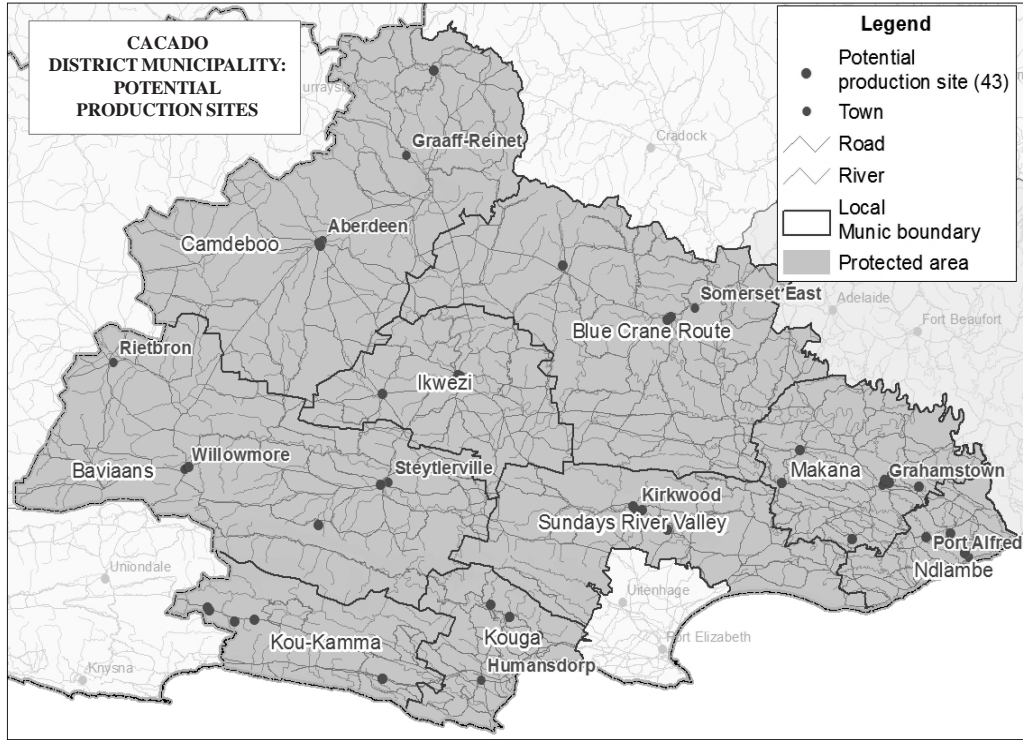


Fig. 1. Study area map

Table 2: Summary characteristics of agricultural projects in the Sarah Baartman District, Eastern Cape

	Agricultural projects	Percentages
<i>Number of Projects per District</i>		
Sarah Baartman	49	100
Total	49	100
<i>Number of Projects per Local Municipality</i>		
Ndlambe	5	10.2
Makana	8	16.3
Blue Crane	3	6.1
Camdeboo	3	6.1
Ikwezi	2	4.1
Sundays River	5	10.2
Kouga	10	20.4
Kaukama	11	22.4
Baviaans	2	4.1
Total	49	100

sion 20). Descriptive Analysis was used to describe data and Univariate Regression Analysis

was conducted to demonstrate the relationship and association of variables. The following econometric model was used to determine association of variables (Mozza Bauzza et al. 2005):

$$W_i = \beta_0 + \beta_1 X_i + \epsilon_i \quad (1)$$

$W_i$  is the dependent variable value for person  $i$  (2)

$X_i$  is the independent variable value for person  $i$  (3)

$\beta_0$  and  $\beta_1$  are parameter values (4)

$\epsilon_i$  is the random error term (5)

The parameter  $\beta_0$  is called the intercept or the value of  $W$  when  $X = 0$  (6)

The parameter  $\beta_1$  is called the slope or the change in  $W$  when  $X$  increases by one (7)

### RESULTS AND DISCUSSION

As indicated in Table 3, Sarah Baartman district projects have 664 beneficiaries. The 664 beneficiaries are from the 49 agricultural projects that were adopted by the Agripark project. It

must be emphasised the beneficiaries skills were audited and offered training as per outcome of the skills audit. Representatives of project beneficiaries were trained on the following agricultural activities: (1) Soil preparation (2) Seed sowing (3) Marketing (4) Post harvest handling (5) Harvesting (6) Pests and Diseases and (7) Transplanting.

**Table 3: Number of beneficiaries per local municipality**

<i>Local Municipality</i>	<i>Number of beneficiaries</i>	<i>Percentages</i>
Ndlambe	58	8.7
Makana	101	15.2
Blue Crane	21	3.2
Camdeboo	17	2.6
Ikwezi	18	2.7
Sundays River	108	16.2
Kouga	111	16.7
Kaukama	202	30.4
Baviaans	28	4.2
Total	664	100

The results from Table 4 show that 12.2 percent of the farmers in the Sarah Baartman district are between the age of 18 and 35, this percentage is very small. This is a clear indication that youth or young people are not actively involved in agriculture related activities and production in the district. This was also highlighted by Maponya and Mpandeli (2012) in the study done in Capricorn and Sekhukhune districts in Limpopo Province. It was found that youth perceived their involvement very difficult due to the fact that agriculture is labour intensive which seems to be indicative of a trend in South Africa and they need to spend a lot of time in the field. Table 4 also shows that the majority of farmers (40.8%) that are actively involved in agricultural activities in the Sarah Baartman district are between 46 and 60 years. Table 4 also shows that at least 38.8 percent of the farmers are involved in agricultural activities are above 61 years. The trend for the district is therefore that it is the older generation that is actively involved in agriculture.

**Table 4: Age of respondents**

<i>Age</i>	<i>Number of respondents</i>	<i>Percentages</i>
18 - 35	6	12.2
36 - 45	4	8.2
46 - 60	20	40.8
61 >	19	38.8
Total	49	100

The number of years spent on active farming by farmers in the Sarah Baartman district varies. Table 5 shows that 22.4 percent of the farmers in the Sarah Baartman District have been farming for less than 5 years (1-5 years). At least 4.1 percent farmers have been farming in the area for more than 50 years. This is mostly farmers who are more than 60 years old and are on pension. These types of farmers are also relying on social grants in order to sustain their livelihoods. The results from Table 5 also show that 36.7 percent of the farmers have been farming in the area for not more than 10 years (6 -10 years). Table 5 also shows that 16.3 percent of the farmers in the area have been farming for 11 – 20 years and 18.4 percent of farmers have 21 – 49 years of farming experience.

**Table 5: Number of years in farming**

<i>Years</i>	<i>Number of respondents</i>	<i>Percentages</i>
1- 5	11	22.4
6-10	18	36.7
11- 20	8	16.3
21 - 49	9	18.4
50 >	2	4.1
Total	49	100

The results presented in Table 6 indicate that majority of farmers (89.9%) in the Sarah Baartman district are farming full time. The majority of these farmers are producing products for both households consumption and for the street vendors. At least 6.1 percent are farming full time and working full time which means that there are farmers who generate income on non-farming activities, for example, some of these farmers are working in provincial government departments, some are school teachers etc. These results are in line with sampling criteria used, which only included farmers that are farming full time.

**Table 6: Employment status**

<i>Employment</i>	<i>Number of respondents</i>	<i>Percentages</i>
Farming full-time	44	89.9
Farming full-time and unemployed	1	2
Fulltime farmer and shop owner	1	2
Farming fulltime, working fulltime	3	6.1
Total	49	100

In terms of educational attainment (Table 7), 10.2 percent of the respondents completed primary education followed by primary education incomplete (18.4%), secondary education completed (16.3%), secondary education incomplete (14.3%), tertiary education completed (12.2%), tertiary education incomplete (28.6%). This trend is a typical feature of rural areas farming. However, the primary, secondary and tertiary education completed figures were relatively high as compared to other rural communities from other South African districts (Maponya et al. 2014).

**Table 7: Education level**

<i>Education level</i>	<i>Number of respondents</i>	<i>Percentages</i>
Primary education completed	5	10.2
Primary education incomplete	9	18.4
Secondary education completed	8	16.3
Secondary education incomplete	7	14.3
Tertiary education completed	6	12.2
Tertiary education incomplete	14	28.6
Total	49	100

It was also noted during the survey that the majority of these farmers do not want to disclose on how they have acquired land due to political reasons, land ownership squabbles in the area. Table 8 shows that only 12.2 percent of the projects acquired their land using their own finance and 2 percent acquired farm through permission to occupy. At least 22.4 percent of projects acquired through government land redistribution for agricultural development. The majority of projects (36.7%) got their land through lease either from municipalities, department of agriculture and agrarian reform. According to Maponya and Mpandeli (2013) some farmers in Limpopo Province especially in areas such as Capricorn and Sekhukhune got their land through inheritance, trust land and municipalities, etc. The same trend is seen in Sarah Baartman District (Table 8).

As seen in Table 9, most of the respondents farm on land which is 1-5 hectare in size (53.1%), while only 12.2 percent, 2 percent and 8.2 percent of projects were 6 – 10, 11 – 20 and 21-50 hectares in size respectively (Table 9). A num-

**Table 8: Land acquisition**

<i>Land acquisition</i>	<i>Number of projects</i>	<i>Percentages</i>
Own finance	6	12.2
Land redistribution for agricultural development	11	22.4
Permission to occupy	1	2
Lease	18	36.7
Municipal	1	2
Trust Land	1	2
Inheritance	1	2
Total	49	100

ber of projects had land of >51 ha (24.1%). This results confirms that most farmers are producing at a small scale.

**Table 9: Size of land**

<i>Size (Ha)</i>	<i>Number of projects</i>	<i>Percentages</i>
1- 5	26	53.1
6-10	6	12.2
11- 20	1	2
21 - 50	4	8.2
51 >	12	24.5
Total	49	100

According to Mbengwa (2009) extension services have an important role to play in assisting farmers to acquire new technology, skills, innovation and production advice. Table 10 shows that 36.7 percent of projects interacted with extension officers (formal extension) in terms of

**Table 10: Extension service**

	<i>Number of projects</i>	<i>Percentages</i>
<i>Access to Extension Service</i>		
Yes	49	100
<i>Form of Extension Service</i>		
Formal extension	18	36.7
Farmer to farmer	3	6.1
Formal extension, farmer to farmers	8	16.3
Formal extension, farmer to farmer and family support	8	16.3
Formal extension, farmer to farmer, neighbours and family support	9	18.4
Formal extension, family support/ neighbours	3	6.1
Total	49	100

information sharing and exchange. It is unbelievable that only 6.6 percent of projects interacted amongst themselves (farmer to farmer). It was also noted that 6.1 percent of projects are getting the extension service from family support, neighbours and formal extension. About 18.4 percent of projects are getting support from formal extension, farmer to farmer, neighbours and family support.

The majority of farmers in Sarah Baartman district are men. According to Table 11, 74 percent of farmers were men. This highlighted that most men in the Sarah Baartman district are involved in farming activities. It also shows that most men do not migrate to other provinces in the country for better employment opportunities especially in provinces such as Gauteng, North West etc. Only 26 percent of farmers were women. This situation in Sarah Baartman is different from other South African districts that are part of the agripark project (Maponya et al. 2014).

**Table 11: Gender of respondents**

<i>Gender</i>	<i>Number of respondents</i>	<i>Percentages</i>
Male	36	74
Female	13	26
Total	49	100

Table 12 showed that 55.1 percent of projects produce vegetables, 24.5 percent produce grain and vegetables, and 6.1 percent produce vegetables, grain and citrus. Very few projects produced a combination of fruits and vegetables. This information is very important, as it gives an indication of how many projects will support the markets and nurseries to be established by the project. The results are also in line with sampling criteria used, because only fruits and vegetable projects were targeted.

**Table 12: Crops planted**

<i>Crops</i>	<i>Number of projects</i>	<i>Percentages</i>
Vegetables	27	55.1
Citrus	1	2
Deciduous	1	2
Grain, vegetables, citrus	3	6.1
Grain, vegetables	12	24.5
Vegetables, deciduous	1	2
Grain, vegetables, citrus, deciduous	1	2
Not applicable	1	2
Total	49	100

Majority of the farmers (61.2%) did not attend any training (Table 13). This might be due to lack of interest on the training topic, hectic farm schedule and other household matters. Only 38.8 percent of farmers were trained in the past regarding agricultural practices. But those who got the opportunity to attend training were able to manifest it on their farm practices, hence, it is confirmed that those who had been trained were more likely to make successful changes to their farm production practices. As discussed in Table 3, projects beneficiaries were trained as per outcome of skills audit.

**Table 13: Respondents agricultural training**

<i>Training</i>	<i>Number of respondents</i>	<i>Percentages</i>
Yes	19	61.2
No	30	38.8
Total	49	100

According to FAO (2012) irrigation now claims close to 70 percent of all freshwater appropriated for human use. Projects used different water sources for irrigation, with dams being the most utilized (32.7%), boreholes (14.3%) and rivers (6.1%). Some projects used combination of water sources as seen in Table 14 and this results are in line with sampling criteria used, which identified projects with access to water sources.

**Table 14: Source of water**

<i>Source</i>	<i>Number of projects</i>	<i>Percentages</i>
Dam	16	32.7
River	3	6.1
Borehole	7	14.3
Dam, river	1	2
Dam, borehole	3	6.1
Municipal water	9	18.4
Tanks	2	4.1
Taps	1	2
Total	49	100

Table 15 shows positive association among the following variables: age, education, farming experience, land acquisition, land size, crops planted, water sources, agricultural training, water rights and market participation. The odds of association is at >1 and its confidence interval (CI) at 95 percent.

**Table 15: Univariate regression analysis of the determinants of markets participation in Sarah Baartman District**

<i>Variable</i>	<i>Total</i>	<i>(%)</i>	<i>OR [95%CI]</i>
Age	49	100	1.00[0.168 – 7.001]1
Education level	49	100	1.00 [0.225 – 4.999]1
Farming experience	49	100	1.00[0.246 – 9.000]1
Land acquisition	49	100	1.00[0.100 – 3.002]1
Land size	49	100	1.00[0.36 – 2.400]1
Crops planted	49	100	1.00[0.156 – 4.006]1
Water source	49	100	1.00[0.50– 4.331]1
Agricultural training (Yes)	19	38.8	1.00[0.12 – 5.456]1
Water rights	49	100	1.00[0.555 – 8.000]1

OR= Odds ratio; 95%CI = 95% confidence intervals; 1< = no association; 1> = association

According to Table 15, the odds of age to determine market participation in Sarah Baartman district are at 1.00, which indicated a positive association among age and market participation. This means any age categories of farmers can participate in the market and as a farmer ages, he or she will have more experience hence planning and organisation of the farm will improve drastically. This results are in line with other studies (Makhura 2001; Maponya et al. 2014; Gani and Adeoti 2011; Xaba and Masuku 2013). As indicated in Table 15, education and training variables revealed a positive and significant association with market participation by farmers. The findings showed that the odds of market participation increased with the level of education. A unit increase in the level of education and training increases the odds to participate in market. According to Hlongwane et al. (2014) and IFAD (2013) education and training is an important means by which farmers improve their farming practices and hence to participate in the market. Better educated and trained farmers have better access to information about markets, farming practices etc.

There is a positive association among land acquisition, land size and market participation in Sarah Baartman district as shown in Table 15. The results are in line with study conducted in Mpumalanga province by Randela et al. (2008). Authors emphasised that access to land is a necessary condition for market participation. The larger the size of arable land a farmer uses, the higher the production levels are likely to be, and the higher the probability of market participation (Randela et al. 2008). It was further emphasised by Heierli and Gass (2001) that productive land as an asset empower the rural poor by increasing their incomes, reserves against shock and choices to escape from harsh and

exploitative conditions. Land acquisition in particular makes a farmer less vulnerable to shocks, determines market participation and land size is a surrogate for wealth (Feder et al. 1985). Similarly, a study done by Masuku et al. (2010) showed a positive significant relationship between land size and market participation.

As indicated in Table 15, water source and water rights have a positive association with market participation. The odds of water source and water rights to determine market participation is at >1. This is true because food depends increasingly on irrigation and market participation and food security is closely linked with water security. According to FAO (2012) between 30 and 40 percent of the world's food comes from the irrigated 16 percent of the total cultivated land. Association between farming experience and market participation in Sarah Baartman district is positive. This indicates that when farmers experience increase, the probability of participating in the market increases through experience and information gained overtime. Table 15 indicated the positive association of crops produced and market participation. This is true as farmers produce more, they have surpluses to supply to the market. The findings are in line with a study conducted by Maponya et al. (2014) who found that the value of crop produced increased the probability of market participation.

## CONCLUSION

It is very clear from the study that rural links with the outside world in terms of market participation is a function of the quantity and quantum of human capital, skill, physical infrastructure, basic services and utilities and the institutions and norms that influence socio economic

interaction. The study indicated that the determinants of market participation in the Sarah Baartman district are: (1) age (2) education (3) farming experience (4) land acquisition (5) land size (6) water source (7) water rights (8) crops planted (9) agricultural training. There seem to be an opportunity in Sarah Baartman district to improve market participation if each one of the determinants factors are improved. Objectives of the study were achieved through the description of each project (Tables 1 – 14) as well as the regression analysis (Table 15). The results indicate that specific actions should be implemented to ensure increased market participation.

### RECOMMENDATIONS

From the study it is recommended the improvement of education and training among farmers should receive first priority as this will improve knowledge on agricultural practices and markets. This will aid in decision making on market participation as well as the level of marketed surplus, which in turn will lead to increased productivity, high marketable surplus and enhances the likelihood of farmers participating in the proposed mini / large agripark market in Sarah Baartman district. Once the mini agripark is established it will also create a demand stream to farmers, which will enhance their ability and viability to produce more.

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