

Factors Affecting Market Participation for Horticultural Projects: A Case of Smallholder Farmers in Alfred Nzo District Municipality in Eastern Cape Province, South Africa

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ABSTRACT This paper highlighted the factors affecting market participation by rural smallholder farmers in Alfred Nzo District Municipality. To date, there was no clear assessment done on the horticultural projects within the district to identify contributing factors to poor market participation by smallholder farmers. Project assessment was conducted in Alfred Nzo District by Agricultural Research Council (ARC) in collaboration with the Department of Rural Development and Land Reform (DRDLR) with attempt to identify market needs in the district. A total of 48 horticultural projects participated in the study and were from the following local municipalities: Umzimvubu, Matatiele, Ntabankulu and Bizana. 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-eight (48) 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, market availability and other factors. Data was coded, captured, and analysed using SPSS. The following analysis were conducted: Descriptive and Univariate regressions. The results showed positive association among the following variables: age, gender, educational level, farming experience, land size, crop planted, water source, agricultural training. The results showed that there are major factors hindering market participation like long distance to market, lack of knowledge and inputs as well as lack of irrigation and equipment. It is evident that interventions should be implemented focusing on three identified major challenges faced by farmers in order to improve market participation by smallholder farmers.

INTRODUCTION

Agriculture remains the backbone of the South African economy, not only does it contribute to the Gross Domestic Product (GDP), but it is an important earner of foreign exchange, provides employment, has some of the strongest forward and backward linkages in the economy, as well as strong employment multipliers and, it provides food security (MALA 1998). A majority of emerging farmers in South Africa are

involved in subsistence and small scale farming mainly due to poor resource endowment and numerous constraints related to the socio-economic environment (Moloi 2008). It has been argued that market-oriented production can achieve welfare gains through specialization and comparative advantage, economies of scale and regular interaction and exchange of ideas (Mathenge et al. 2010). Unfortunately, the most vulnerable who need this kind of welfare boost may be constrained by several factors in their quest to participate in the market.

The South African government, in recent years, has been spending a significant amount of its budget on supporting the development of emerging farmers. However, several constraints still prevent the smallholder farmers from reaching their full potential. These constraints (that is, socio-economic factors, resource endowment, amongst others) make it very difficult if not im-

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possible for the emerging farmers to participate successfully in commercial agricultural markets despite some of them having improved access to land (Moloi 2008).

Study by Maponya et al. (2014), suggested that rural industrialization promotes the alleviation of rural poverty, and enhances a sustainable economic growth and localization of markets encourages linkages between the rural sector and the mainstream. The study further explains that linking rural farmers to the markets is vital in increasing agricultural production, generating economic growth in rural areas and reducing food insecurity and poverty. However, the study by Baloyi (2010) stressed that it is easy to link farmers to markets, but it is difficult for a smallholder farmer to satisfy the market, achieve consistency, and remain sustainable. Furthermore, the study suggests that before linking farmers to markets, there is a need to ensure that farmers are consistent in marketing their produce.

Although previous studies have been conducted in other provinces of South Africa regarding market participation (Moloi 2008; Jari 2009; Senyolo et al. 2009; Baloyi 2010; Department of Agriculture, Forestry and Fisheries (DAFF) 2011; Ramoroka 2012; Maponya et al.

2014; Hlongwane et al. 2014). The studies focused on different challenges influencing low market participation of smallholder farmers, however there was no study conducted on factors affecting market participation of the horticultural farmers in the Alfred Nzo District. The study complements studies conducted by other researchers in other areas and will make possible to promote market participation and sustainable smallholder farmer sector in Alfred Nzo District Municipality.

METHODOLOGY

The Alfred Nzo District is regarded as the poorest in the Eastern Cape and is characterised by unemployment and a lack of employment opportunities, low income levels, low education levels (55% are considered literate), low business growth with poor markets for local products, and problems in accessing finance by small businesses (Gaffney's 2009). The district is predominantly rural and most agricultural activities are at subsistence level. As indicated in Figure 1, the district is divided into four local municipalities, namely (1) Matatiele (2) Umzimvubu (3) Ntabankulu and (4) Mbizana.



Fig. 1. Alfred Nzo District Map
 Source: Alfred Nzo District Municipality,

Quantitative and qualitative methods were employed and a detailed questionnaire written in English was used for the data collection which contained both open ended and closed questions. Focus group discussions and field observations were also part of the data collection. As part of standard protocol for conducting the study, meetings were held with all relevant stakeholders: Department of Rural Development and Agrarian Reform (DRDAR), Local Municipality (LM) and Department of Rural Development and Land Reform (DRDLR). The purpose of the meetings was to familiarize the Agri-Park concept with local officials and projects beneficiaries and explain the aim of the study, and future plans of the potential market.

Purposive sampling methods was employed to select horticultural projects in the district. The method was used to assess uniformity and homogenous characteristics, namely infrastructure needs, skills availability, production challenges, agricultural training needs, water source needs, educational level, land acquisition, size of land farming experience, source of water and inputs and implements used (Table 1). Horticultural projects visited in the district were prioritized based on the production potential of the area, including the following factors namely; numbers of projects around the area, size of the land, chances of expanding production, water availability, commitment of members to their projects, internal dividing issues, working equipment and infrastructure. Table 2 showed all local municipalities that formed part of the study within the Alfred Nzo District.

Table 1: Definition of variable included in the models

<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
Water source	Source of water for irrigation
Implements	Implements that are used for production operation
Size of farm	The size of the farm which is under crop production
Farming experience	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

RESULTS AND DISCUSSION

As indicated in Table 2, 48 projects with 563 beneficiaries were assessed. Each project was represented by 1 beneficiary during data collection. The projects showed a wide range of age representation from the participant, youth category of twenty-one percent, middle age of thirty-seven percent and forty percent old group, but educational level of participant is very low with fifty-eight percent without formal education (Table 3). The importance of education to smallholder farmers was realized in various studies. A study by Anley et al. (2007) mentioned that improving education and employment is a key requirement to stimulate local participation in agricultural production and natural resource management initiatives and it was further emphasized by Maddison (2007) that educated and experienced farmers possess more knowledge and information about agricultural production activities.

Table 2 : Horticultural projects visited in Alfred Nzo District

<i>Local Municipality</i>	<i>Projects</i>	<i>% of horticultural projects</i>
Bizana	15	31
Matatiele	11	23
Ntabankulu	12	25
Mzimvubu	10	21
Total	48	100

Education is important to farmers because it determines the ability of a farmer to adjust to new innovations (Gidi 2013) and it was further emphasised by Land Bank Research Report (2011) that education enables a farmer to manage farm operations more effectively and a skilled farmer is more likely to succeed. Table 3 also showed age group category actively involved in agriculture, which satisfy that all age group in Alfred Nzo District is actively involved in crop production. It is further notable that the commitment of participant to their project is high as all participant spend full time at their projects. Gender equality is widespread with 58.3 percent males and 41.7 percent females.

Table 4 showed different methods that participant acquired land: Own Finance (6%), Land Redistribution (8%), Permission to occupy

Table 3: Socio-economic factors of beneficiaries

<i>Variables</i>	<i>Beneficiaries</i>	<i>% of socio-economic factors</i>
<i>Local Municipality</i>		
Bizana	203	36
Matatiele	126	22
Ntabankulu	95	17
Mzimvubu	139	25
<i>Age (years)</i>		
18-35	10	21
36-45	18	37
46-60	19	40
60>	1	2
<i>Educational Level</i>		
No schooling	1	58
Primary education	28	2
Secondary education	17	31
Post-secondary education	2	4
<i>Gender</i>		
Male	28	58.3
Female	20	41.7
<i>Employment Status</i>		
Farming full time	48	100

(65%), Household gardens (8%), Municipality lease (8%), and School land (8%). Land is one of the major natural resource required for crop product farming, and it is evident that most of land in Alfred Nzo district is administered by tribal authority as supported by sixty-five percent PTO as shown in Table 4. However, the allocation of land in rural areas is not a lengthy process as compared to land redistribution program by government which requires high transaction costs. Other land acquisitions methods showed to be minimally preferred by farmers, as they reasoned to find them being costly and time consuming to secure.

Table 4: Types of land acquisition

<i>Land acquisition</i>	<i>Projects</i>	<i>% of land acquisition</i>
Own finance	3	6
Land redistribution	4	8
Permission to occupy	31	65
Household gardens	4	8
Municipality	4	8
School land	2	8
Total	48	100

Table 5 showed that most of land in production is under five hectares (77%) and followed by (17%) which is less than 10 ha, 11 to 20 ha (4%), 20 to 25 ha (2%) and greater than 51 ha (0%). Jari

(2009) explained that in favourable areas, smallholders may reap larger quantities of produce from cultivating less than one hectare of land compared to smallholder farmers in semi-arid areas cultivating more than 10 hectares. The same view is shared by Rosset (1999), who is of the view that small farms produce far more per acre or hectare than large farms. It is clear that any arable land area has the potential to produce sufficient crop yield as long as it is utilised effectively.

Table 5: Size of land in production

<i>Size</i>	<i>Projects</i>	<i>% of land size</i>
1-5	37	77
6-10	8	17
11-20	2	4
21-50	1	2
>51	0	0
Total	48	100

The results showed projects variation in terms of farming experience acquired over time (Table 6). Almost 91.2 percent of projects beneficiaries had 1 - 20 years in farming. This confirms that majority smallholder farmers within Alfred Nzo district have extensive experience in plant production.

Table 6: Number of years in farming

<i>Years</i>	<i>Projects</i>	<i>% of years in farming</i>
1-5	19	40
6-10	10	21
11-20	15	31
21-49	2	4
>50	2	4
Total	48	100

As shown in Table 7, seventy-seven percent of projects had received agricultural training before the start of the current study. Most of the respondents agreed that government departments, local economic development agencies,

Table 7: Agricultural training available

<i>Respondent</i>	<i>Projects</i>	<i>% of agric training</i>
Yes	37	77
No	11	23
Total	48	100

non-governmental organizations, local municipalities and private companies were playing a vital role in terms of rendering different training service to smallholder farmers. Such positive response definitely give credit to South African government in terms of its effort geared towards capacitating smallholder farmers with relevant skills for good agricultural practice. Only twenty-three percent of participants did not receive any formal crop production training. The importance of education is indeed realized and many studies have emphasized the benefits of investment in education. According to Anley et al. (2007), improving education and employment is a key requirement to stimulate local participation in agricultural production and natural resource management initiatives.

Table 8 showed that most projects have access to minimum inputs required for crop production such as seeds, kraal manure, conventional fertilizers and pesticides. Most of the project members received support from government but stressed that there was no follow-up to make sure that farmers had tools and that the resources were properly utilised. Another study in Malawi shows that smallholder agriculture sector in Malawi remains unprofitable and is characterised by low uptake of improved farm inputs, weak links to markets, high transport costs, few farmer organizations, poor quality control and lack of information on markets and prices. This generally showed that close monitoring and proper support to farmers at an emerging stage be treated as priority.

Table 8: Type of inputs used for production

<i>Inputs</i>	<i>Projects</i>	<i>% of production inputs</i>
Seeds	1	2
Kraal manure	1	2
Fertilizer	3	6
Kraal manure, fertilizer and pesticides	16	33
Seeds, kraal manure, fertilizer and pesticides	16	33
Kraal manure, fertilizer and seedlings	11	23
Total	48	100

Table 9 showed that 91.7 percent of the projects had access to tractor, hand-tools, and plough, which is evident that smallholder farmers are self-motivated since they managed to

utilize limited resources to cultivate their land. Only 8.3 percent of participant had access to hand tools. The high costs of hiring tractors was marked as major constrain during planting season and farmers are forced to hire since bigger land area is difficult to cultivate by hand. According to FAO (2012), farm-raised crops and livestock are the major source of food for people. In order to grow crops and raise animals on the farm, implements play an important role.

Table 9: Implements used

<i>Implements</i>	<i>Projects</i>	<i>% of implements used</i>
Tractor, plough, hand tools and sprayer/pivot	44	91.7
Hand tools	4	8.3
Total	48	100

Agriculture requires large quantities of good quality of water for use in various production processes. According to FAO (2012) irrigation uses up to seventy percent of all fresh water appropriated for human use. In the Alfred Nzo district, farmers used different water sources for irrigation. Table 10 showed sixty percent of projects used river water, three percent for both municipality, dam, borehole and dam and river. It is not surprising to see many projects using river water for irrigation which is a results of not having enough capital to source water from either dams or municipality sources. Most projects are located near rivers for convenience of free water source for irrigation.

Table 10: Sources of irrigation water

<i>Sources</i>	<i>Projects</i>	<i>% of irrigation source</i>
Dam	3	6
River	29	60
Borehole	3	6
Borehole, river	1	2
Dam, river	3	6
Municipality water	3	6
Total	48	100

Table 11 confirmed the need for the establishment of agricultural markets in the Alfred Nzo district. The results showed that eighty-one percent of projects recognised the lack of markets as the 1st most challenging stage, as compared

to ten percent of projects who recognised lack of markets as a least challenging stage. Scientific evidence showed that lucrative markets can change the livelihoods of poor farmers, and if smallholder farmers lack access to these markets, they will not be motivated to produce on a sustainable basis (Jari 2009). According Omiti et al. (2009), there is an urgent need to strengthen market information delivery systems, upgrade roads in both rural and peri-urban areas, encourage market integration initiatives, and establish more retail outlets.

Table 11: Lack of markets as a challenge

Challenge	Projects	% of lack of markets
1 st challenging stage	39	81
2 nd challenging stage	1	2
3 rd challenging stage	2	4
4 th challenging stage	1	2
5 th challenging stage	5	10
6 th challenging stage	0	0
7 th challenging stage	0	0
Total	48	100

Lack of knowledge and agricultural inputs are the major causes of poor production leading to struggles in accessing markets (Table 12). Results showed that sixty-three percent of projects had no knowledge and inputs to produce for formal markets, and explained why projects beneficiaries need agricultural training before the establishment of markets. Only a few projects recognised a combination of lack of knowledge, inputs, workers and budget as causal factors. Again internal group conflicts is not

ally a causal factor as seen in Table 12 because projects with internal issues were excluded during projects sampling.

Table 12: Causal factors for lack of markets

Causal factor	Projects	% of casual lack of markets
Lack of knowledge	3	6
Lack of inputs	1	2
Lack of workers	2	4
Lack of knowledge and inputs	30	63
Lack of inputs and workers	10	21
Lack of inputs, workers and group conflicts	1	2
Lack of knowledge, inputs, workers, group conflict	1	2
Total	48	100

Table 13 showed regression analysis results, which identified factors influencing market participation by horticultural farmers in Alfred Nzo District. There was a positive association among the following variable; age, gender, educational level, farming experience, land acquisition, land size, crop planted, water source, agricultural training and knowledge, inputs and workers.

According to Table 13, there is a positive association between age and market. The results showed that not all age categories have an association with market participation, which is not surprising as the results concur with study by Maponya et al. (2014). According to Maponya et al. (2014), any age category can participate and sell their produce to markets, older and younger generations can learn from each other's experience to participate in markets. It was further emphasized by Makhura (2001) that farm-

Table 13: Univariate regression analysis of markets participation

Variable	Total	(%)	OR [95%CI]
Age (18-35 yrs)	10	21	1.00 [0.068- 7.441]1
Age (36 -45 yrs)	18	38	1.00 [0.133- 6.441]1
Age (46-60 yrs)	19	40	1.00 [0.058- 5.222]1
Gender	48	100	1.00 [0.200- 4.112]1
Education level	48	100	1.00 [0.345- 6.999]1
Farming experience	48	100	1.00 [0.446- 9.999]1
Land acquisition	48	100	1.00 [0.100- 3.112]1
Land size	48	100	1.00 [0.56 - 3.466]1
Crops planted	48	100	1.00 [0.256- 3.566]1
Water source	48	100	1.00 [0.50 - 3.011]1
Agricultural training (yes)	37	77	1.00 [0.22 - 3.666]1
Knowledge, inputs and workers	48	100	1.00 [0.22 - 4.222]1

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

ers of different ages apply different technologies and inputs with varying degrees of efficiency and middle-aged farmers appear to be more successful than younger and older farmers. Education, agricultural training and farming experience of participants have showed positive association to market participation.

Effect of education on market participation was also realized in the study by Mashau et al. (2012), which realized that lack of higher education could have been responsible for the failure to notice other causes of fruit loss due to over ripening in the Tshakhuma fruit market. The odds of land acquisition and land size showed positive association to market participation. It is notable that farmers with large bigger land tend to participate in the markets, which means an increase in land size has positive influence in farmer's decision to participate in the markets. Farm size was found to have a positive and significant influence on farmers' likelihood to participate in horticultural crops market (Maponya et al. 2015). The result implies that with 0.125 ha of additional land, the household allocate for horticultural crops would increase the farmers' likelihood of market participation by 6.5 percent.

Knowledge, inputs and workers have a positive association to market participation. The same results were found by Kotze (2007) and Mumba et al. (2012) that emerging farmers lack knowledge on how to use inputs effectively, and extension services are almost non-existent. It was also expected for water source to have a positive association to market participation because of its contribution to effective and profitable crop production. Farmers with poor access to reliable and sufficient water source tend to produce less or cease production thus no produce to send to the market.

Study by Muchara (2014) found that number of consecutive days that farmers spend without access to irrigation water per week was used as a proxy for water scarcity, and was confirmed to be a significant determinant of farmer participation in irrigation water management. It has been observed during production site visit that most of the project lack reliable water source for irrigation and as a result their production scale becomes limited to availability of water and also product quality deteriorate as a result of water scarcity. The same view is shared in the study by Maponya et al. (2014).

CONCLUSION

Univariate regression analysis results showed positive association among age, gender, educational level, farming experience, land acquisition, land size, crop planted, water source, agricultural training and knowledge, inputs and workers to market participation. It can be concluded that in order to improve low market participation of the smallholder farmers, it is important to improve smallholder farmers education level in the form of year to year training and workshop relevant to their existing challenges on the ground, and facilitating land allocation to farmers in order to cater expansion of production and lastly it is important that smallholder farmers receive subsidised ploughing service and inputs during planting season.

RECOMMENDATIONS

It is recommended that future development and policymakers direct their attention to the identified factors which are hampering smallholder farmers from participating into lucrative markets.

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