

Effect of agricultural extension services on beneficiaries of the Nguni cattle project in the Eastern Cape Province, South Africa: A case study of two villages

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Abstract

The objective of the study was to determine the effect of agricultural extension services on beneficiaries of Nguni cattle project in the Eastern Cape Province of South Africa. A survey was conducted on 73 Nguni cattle project beneficiaries in Ncera and Kwezana communities of the Nkonkobe local Municipality. These communities were selected from a list of communities that benefited from the Nguni cattle project. Interviews were conducted at the community halls where the beneficiaries gathered. The questionnaire included the socio-demographic characteristics, questions on the quality of extension services offered and communication strategies adopted by extension officers to communicate with the beneficiaries of the Nguni cattle project. The results revealed that the majority (62.2 % Ncera and 75% Kwezana) of the beneficiaries were males between the ages of 60-79 years old. An association between gender and extension services was also observed. Lack of extension support services was the main challenge faced by farmers. It was concluded that extension services were not effectively addressing the needs of beneficiaries of the Nguni cattle project. However, there must be an effective way of monitoring and evaluating extension services delivery which will improve current and future extension service delivery to farmers so as to ensure provision of appropriate information and services enabling farmers to obtain good understanding of projects being initiated.

Keywords: Cattle Contribution, Communication Strategies, Sources of income

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Introduction

The Eastern Cape Province has a large number of cattle, with an estimate of over 3.2 million cattle. Cattle production in communal areas of South Africa is a norm (Mngomezulu, 2010); hence development strategies aimed at improving livelihoods in these areas involve cattle production, with the Nguni cattle project being an example. The Nguni cattle project was initiated in 1998 by three stakeholders namely the University of Fort Hare, Industrial Development Co-operation (IDC) and the Eastern Cape Department of Rural Development and Agrarian Reform (DRDAR). In this project both farmers and communities are given two Nguni bulls and ten heifers (Fuller, 2006) at the age of two years. After five years, farmers and communities give back to the project two bulls and ten heifers, which are then passed on to another community (Raats, Magadlala, Fraser & Hugo, 2004). The objective of the project is to improve the genetic merit of communal herds (South African Government Information, 2010), replacing the existing breeds with the Nguni breed, and thereby improving the livelihoods of communal farmers (Musemwa, 2009). Moreover, most non-descriptive breeds have been replaced by the Nguni breed in beneficial communities and farms.

The Nguni breed has good forage ability, low maintenance requirements and produces good quality beef (Muchenje, Dzama, Chimonyo, Raats & Strydom, 2008). Its suitability for extensive production systems makes it an ideal breed for communal livestock production (Mapiye, Chimonyo, Muchenje, Dzama, Marufu and Raats, 2007; Muchenje, Dzama, Chimonyo, Raats and Strydom, 2008; Nqeno, 2008; Marufu, Chimonyo, Dzama and Mapiye, 2009). However, success of the Nguni cattle project depends largely on the provision of extension services in order to ensure that the purebred Nguni retains its genetic value through accurate administration (IDC, 2007) and also helps to upgrade or improve the genetic value of communal

cattle. These services include training of livestock farmers, infrastructural support, and veterinary services. Research (Mapiye *et al.* 2007, Muchenje *et al.* 2008, Nqeno 2008, and Marufu, Chimonyo, Dzama, and Mapiye, 2009) on the Nguni cattle project has been conducted. However, these studies mainly focused on breeding aspects. Furthermore, studies focusing on marketing constraints (Musemwa, 2009) faced by beneficiaries of the project have also been done.

However, there is still scanty information on agricultural extension support services provided to the beneficiaries of the project. Moreover, Tada, Muchenje & Dzama (2013), conducted a study on breeding objectives of indigenous Nguni cattle where high bulling and mortality rate were identified as major challenges on the project. These problems might indicate lack of access to extension services by the beneficiaries of the Nguni cattle project. Agricultural information is a basic necessity for farmers as it plays a vital role in enlightening them, raising their level of knowledge and eventually help in the decision making process regarding farming activities (Asaduzzaman and Itohara, 2009). Communal cattle producers need training in cattle management, animal performance and extension services in order to form communication linkages with farmers (Tada *et al.* 2013) and also build farmers' capacity; thus increasing cattle production (Musemwa, 2009). This should not be seen as the only important aspect for the ability of the livestock sector to attain its full productive potential. This was asserted by Agholor (2012) who believed that it can be influenced by the availability of extension support services. This need to address the access and provision of extension services, particularly amongst communal farmers was also identified by Nel and Jack, (2013). These services are key to agricultural development and improvement of livestock production in rural areas. Hence, the objective of the study was to determine the effect of agricultural extension services on beneficiaries of the Nguni cattle project.

Materials and methods

The study was conducted in Ncera and Kwezana communities under the Nkonkobe local Municipality of the Eastern Cape Province, South Africa. There were eight communities benefiting from the Nguni cattle project in the Nkonkobe local Municipality. Due to limited financial support Ncera and Kwezana were selected as they were easy to reach.

A total of 73 Nguni cattle project beneficiaries (45 in Ncera and 28 in Kwezana) in the quantitative survey were interviewed. Data was collected from respondents' using semi structured questionnaires. The questionnaire was designed in a way that it encompassed household demographic information (age, gender, education and employment status), animal possession, extension services and visits, communication strategies and management practices. To enhance data collection methods, trained enumerators who understand both vernaculars IsiXhosa and English, assisted in data collection since the respondents were Xhosa speaking and needed translation. All enumerators were trained on how to approach and record information gathered from farmers as to minimise problems that might affect research results. During the interviews, the participants were informed on the objective and confidentiality of the study and were required to sign consent forms indicating that they had agreed to participate in the survey. Interviews were conducted at the community halls. The respondents were household heads.

The ethical clearance certificate was obtained from the University of Fort Hare Ethics Committee (Certificate Reference Number: MON01SGWA01). The rationale for ethical approval was followed to ensure that the research process was conducted ethically. This involved establishing procedures for the informed consent of Nguni cattle project beneficiaries involved in the research as well as appropriate handling of research findings (secure storage of data, confidentiality where agreed).

The frequencies of socio-demographic characteristics (age, gender, employment status and education) was analysed using PROC FREQ of SAS (version 9.1.3). Chi square test (for categorical variables) was used to determine degree of association between age, gender, education level, quality of extension services offered to the beneficiaries of the Nguni cattle project and communication strategies adopted by extension officers to communicate with the beneficiaries of the project.

Results and discussion

Socio-economic status of Nguni cattle project beneficiaries

The demographics of the beneficiaries interviewed are presented in Table 1. This showed that the Nguni cattle project beneficiaries mainly consisted of male farmers, 62.2% and 75% at Ncera and Kwezana respectively (Table 1). This accords with results of Montshwe (2006) who found a domination of males in the agricultural sector is common in rural areas of South Africa. This may be due to the fact that women manage complex households and pursue multiple livelihood strategies. The strategies may include activities such as processing and preparing food, collecting fuel and water, caring for family members and maintain their homes. Forty percent and 59.3% of beneficiaries in Ncera and Kwezana, respectively, falling between the ages of 60-79 years dominated the project compared to those in other age groups. The age of beneficiaries ranged from younger than 20 years of age, with 7% of beneficiaries older than 80 years of age. The majority (48.9%) of beneficiaries in Ncera were not married whereas in Kwezana most beneficiaries were married (46.4%).

Table 1 Demographic characteristics of household heads benefiting from the Nguni cattle project (n=73)

Characteristics	Ncera		Kwezana	
	No	%	No	%
Gender				
Male	28	62.2	21	75
Female	17	37.8	7	25
Total	45	100	28	100
Age (yrs)				
20-39	12	26.6	1	3.7
40-59	12	26.7	10	37
60-79	18	40.0	16	59.3
≥80	3	6.7	0	0
Total	45	100	28	100
Marital Status				
Single	22	48.9	11	39.3
Married	14	31.1	13	46.4
Widowed	5	11.1	2	7.1
Divorced	4	8.9	2	7.1
Total	45	100	28	100
Education level				
No formal education	10	22.2	7	25.5
Grade 1-7	26	57.8	17	60.3
Grade 8-12	9	20	4	14.2
Total	45	100	28	100
Employment Status				
Employed	1	2.2	0	0
Pensioners	20	44.4	16	57.1
Unemployed	18	40.1	9	32.1
Informally employed	6	13.3	3	10.7
Total	45	100	28	100

Moreover, at Kwezana, 7.1% of beneficiaries were widowed and 7.1% divorced participants. A total of 57.8% and 59.3% of beneficiaries at Ncera and Kwezana respectively had primary education (Grade 1-7); followed by those with no formal education and few had reached secondary education (see Table 1). Table 1 also shows that 44.4% of participants at Ncera and 57% at Kwezana were pensioners. Only one participant was employed in Ncera and none in Kwezana. This may be due to the fact that the majority of the

beneficiaries of the project in the research area were pensioners. It was observed that most (84% at Ncera and 85% Kwezana) participants spent their time at home practising agricultural activities such as growing crops and looking after their animal herds. Lack of extension support services and veterinary services for cattle production was reported as a challenge. This may be due to limited communication between farmers and extension officers. Dold and Cocks (2001) reported similar findings, namely that resource-poor farmers in rural areas have limited access to veterinary care in terms of support services. However, providing basic livestock inputs could boost production.

As shown in Table 2, each community had an association with the type and quality of extension services, communication strategies, frequency of communication and the relationship of farmers with extension officers. Both communities explained that they do not receive extension services; and beneficiaries in Ncera further explained that they do try to get hold of extension offices but to no avail in terms of assisting them with the type of extension services in need. Age of a farmer was associated with the following aspects; type, quality and frequency of extension services, communication of farmers with extension officers, frequency of communication including extension visits and relationship between farmers' and extension officers. The reason for this association maybe because beliefs and cultural norms of a community are kept by older people as compared to young ones. Old people usually do not adapt easily to some of the services provided to them and tend to resist change until they see benefits of such change.

Table 2 Association between community, demographic information, extension services and communication strategies

	Access to extension services	Extension services	Quality of extension services	Frequency of extension services	Communication with extension officers	Communication on strategies	Communication on frequency	Relationship between farmers and extension officers
Community	NS	***	***	NS	NS	**	*	*
Age	NS	**	*	***	***	NS	*	***
Gender	NS	NS	*	NS	NS	NS	*	**
Education level	*	*	*	NS	***	*	NS	*

***p<0.001;**p<0.01;*p<0.05

This is in line with the findings of a study by Truong & Ryuichi (2002) which stated that age and education have an influence on adaption to change and that farmers evaluate service provided to them according to its outcomes. Cruz (1987) also reported that norms and social status may be another reason for different behaviour of farmers. However, it is important for the extension officer to always enlist support from local leaders to build closer ties with local farmers and encourage farmers' confidence in the extension service. All Nguni cattle project beneficiaries from both genders were served equally in terms of support services from the Nguni Cattle Development Project. The support provided to beneficiaries includes dipping and vaccinating to prevent diseases, branding for animal identification and farm management; whereas the extension support services from government extension officers is limited. Nevertheless gender was associated ($p<0.05$) with quality of extension services and communication frequency. This might be because sometimes in rural areas female extension officers face difficulty in delivering or providing extension services and using effective communication strategies due to norms and belief in rural areas. For example, in most rural areas there are beliefs that a female extension officer should not go near the kraal so those belief sometimes may have an effect on the frequency of extension visits as well as the quality thereof. This agrees with (Agholor, 2013) that gender is associated with the quality of services delivery and outcomes of extension services.

Results also indicate a relationship between farmers and extension officers. This is so because frequency of extension services by extension officers to farmers may be connected to the availability of resources and the nature of agricultural activities (Agholor, 2012). Both male and female beneficiaries suggested that, in order to improve quality of extension and the relationship between them and extension officers; frequency of communication and understanding of farmers local needs is key. There was also an association between educational status and access to extension services, type of extension services, quality of extension services, communication strategies and the relationship between farmers and extension officers. This association could have been caused by education level of farmers. Nguni cattle project beneficiaries with secondary education communicated more with extension officers as compared to those with no formal education. This is so because farmers with secondary education are more equipped with ways of communication than the ones with no formal education. However, there was still limited access to extension services because extension officers sometimes do not respond or get back to the queries raised by beneficiaries.

Lack of access to extension support services

In this study, 62.2% and 67.9% of beneficiaries at Ncera and Kwezana respectively, indicated that they had no access to extension services (Table 3). This was evident in a study by Hart & Aliber (2002) that farmers need access to agricultural extension support and extension practitioners lack skills to support the farmers in the current landscape. These support services are needed because for any development or technology to work there is a need to access extension services. Limited access to extension support services such as markets for skin hides production may be another reason for minimal contribution of skin hide in communal areas. Musemwa (2009) also reported the same findings. In both communities, lack of extension support services from government was mentioned to be a challenge that affects cattle production. Farmers also mentioned that government used to support communal farmers with veterinary support such as dipping of livestock for ticks and vaccination, but of late government is providing veterinary support for only state controlled diseases. As a result, farmers are experiencing high rates of cattle diseases. According to Mwale *et al.* (2005), conventional veterinary medicine costs are rising and becoming unaffordable to many resource-limited livestock farmers in most African countries. Farmers also explained that agricultural extension interventions to support farming projects are limited.

Table 3 Extension services received by beneficiaries of the Nguni cattle project in Ncera and Kwezana (n=73)

Characteristics	Ncera		Kwezana	
	No	%	No	%
Extension services				
No access to services	28	62.2	19	67.9
Access	17	37.8	9	32.1
Service providers				
Extension officers	5	29.4	0	0
University of Fort Hare	10	58.8	9	100
Both	2	11.8	0	0
Type of extension service				
Marketing of animals or animal products	6	35.3	1	11.1
Animal health advice	11	64.7	8	88.8
Frequency of extension services				
Monthly	4	23.5	1	11.1
Quartely	9	52.9	5	55.6
Yearly	4	23.5	3	33.3

Communication Strategies in the Nguni cattle project

As indicated in Table 4, the majority (60% Ncera and 75% Kwezana) of beneficiaries reported poor communication between them and extension officers. Low interaction of farmers and government extension agents was also discovered by Mutimba *et al.* (2011). It was observed that the communication strategy that was mostly used by extension officers to communicate with the farmers were agricultural pamphlets which are distributed once a year. Farmers rated this strategy as poor, due to the fact that they usually did not understand what is written in the pamphlets and is a one-way communication strategy.

Farmers further explained that using agricultural pamphlets as a communication strategy is a challenge to them because in this strategy they do not get a chance to explain their problems and suggested solutions as it is the case on extension visits, farmer days and workshops. Hence, the majority of beneficiaries in both communities rated the quality of extension services offered to them by extension officers and the relationship between beneficiaries of the project and extension officers as poor.

Table 4 Communication strategies used by extension officers in the Nguni cattle project (n=73)

Characteristics	Ncera		Kwezana	
	Freq.	%	Freq.	%
Communication with extension officers	18	40	7	25
No communication	27	60	21	75
Communication strategies				
Extension visits	3	16.7	1	14.3
Telephone	4	22.2	2	28.6
Workshops	2	11.1	1	14.3
Agricultural pamphlets	9	50	3	42.8
Frequency of communication				
Weekly	5	27.8	0	0
Monthly	3	16.7	1	14.3
Quartely	2	11.1	0	0
Yearly	8	44.4	6	85.7

Uses of Nguni Cattle in households of beneficiaries

Nguni cattle have a significant contribution on beneficiaries' socio-economic status (Figure 1) and the contribution played by Nguni cattle differs according to each household. Findings of the study reported animal sales as the main contribution of Nguni cattle project to their households', with Tada *et al.* (2013) having similar findings. Manure provided by Nguni cattle was used as a fertiliser for crop production. This was also evident in a study by Van Averbek & Yoganathan (2003). The latter is the case due to limited access to crop production inputs (extension support services) as reported by beneficiaries of the Nguni cattle project. As shown in Figure 1, few farmers kept Nguni cattle for skin hides production due to limited knowledge on how to process animal skin. This is in line with a study by Mapiye *et al.* (2007) which highlighted that handling, preservation and storage practices and facilities for raw skins and hides in communal areas are inadequate and primitive. Musemwa (2009) further explained that development of local agro-processing industries and training of farmers in cattle processing deserves attention. Only 10% and 7.2 % of beneficiaries, at Ncera and Kwezana respectively, used Nguni Cattle for cultural rituals. Small body size of these breeds was reported as the reason. However, the small body size of the Nguni breed is the advantage of the breed for commercial production. They further explained that if they had access to extension services and having a good relationship with the extension officers, contribution of the Nguni cattle project to their livelihoods would be more than what it is at present.

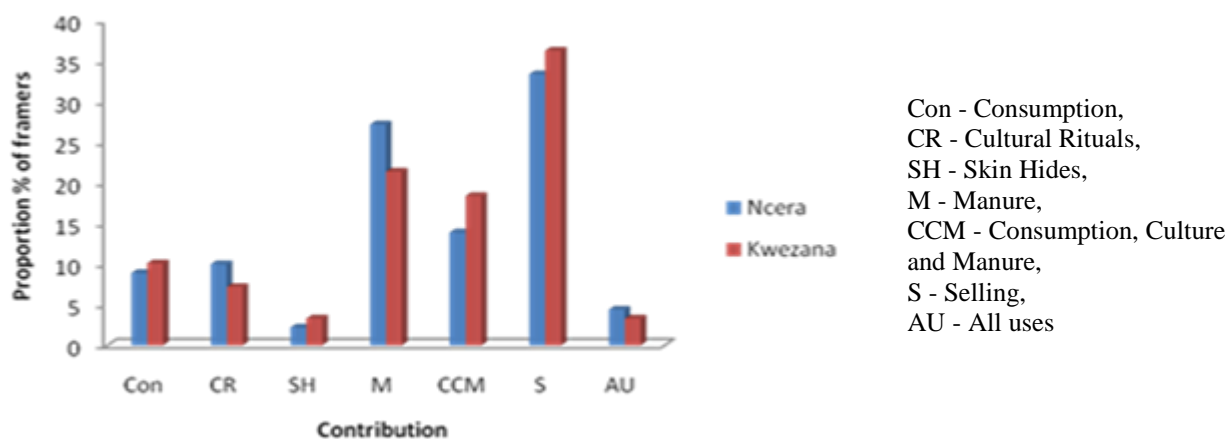


Figure 1 Uses of Nguni Cattle in households of project beneficiaries

Constraints faced by Nguni cattle project beneficiaries

Although Nguni cattle have socio-economic contribution to households of beneficiaries, farmers indicated some challenges preventing sustainable cattle production. This includes a lack of fencing for rangelands, veterinary support, infrastructure (roads, dipping and cattle handling facilities). Infrastructure is generally a capital stock that can help to provide goods and services to the public (Chaminuka, 2008). Yet, there is a lack of infrastructure in former homeland areas and the roads and fences are in a poor state. In order to address the infrastructural disparities, improved service provision is needed and extension officers should intervene and find ways of giving advice to farmers as what help they can get to review infrastructure gaps and ensure a co-ordinated list of infrastructural requirement is provided (Jacobs, 2003). In cattle production systems these include farm infrastructure like fencing and watering tanks. Moreover, stock theft was also mentioned as a challenge for the Nguni cattle project. Farmers suggested government should employ stock inspectors or rangers, to reduce stock theft. They further explained that stock theft seems to be associated with the absence of fencing. This is a problem in all communal areas and can only be alleviated by private ownership of land. In a study by Ainslie *et al.* (2002) and Delali *et al.* (2006) it was highlighted that the Eastern Cape Department of Agriculture also regards lack of fencing as one of the constraints in cattle production of the province. The majority (34.7% Ncera and 32.9% Kwezana) of Nguni cattle project beneficiaries reported lack of veterinary support services (dipping facilities and vaccines) from government as a major constraint that affected cattle production. They highlighted that the dipping tanks were built by the community and received no assistance from extension officers. In Kwezana beneficiaries reported that, during rainy seasons they do not fetch their cattle from the veld, because the area is dominated by dongas and eroded soil. Hence, the cattle are at risk of theft. They further explained that they reported the challenge to government, but no infrastructural support has been provided yet. Furthermore, the lack of road infrastructure hinders development.

Additionally drought, lack of technology and farming skills, marketing challenges and limited participation of the youth in agricultural activities were also highlighted constraints facing the beneficiaries. The supply of water infrastructure, depending on the nature and scale of technology, has great potential for stimulating small and large-scale agricultural activities. However, a study by Nqeno in 2008 reported similar constraints in the communal production system of the Eastern Cape Province. Lack of knowledge from beneficiaries may sometimes lead to marketing challenges because cattle herds in most rural areas are firmly locked into systems of use by the household, with very few animals being available for disposal on the formal market and are not actively traded. Furthermore, lack of access to market information makes them

less willing to sell their animals through the formal market (Soji, Chikwanda, Chikwanda, Jaja, Mushonga, Muchenje, 2015). In order for farmers to get the required marketing skills for the project(s) being initiated, extension officers have to facilitate training for these farmers (Jacobs, 2003).

Conclusion

The Nguni cattle project has been of importance to the beneficiaries; since it has played a role in improving cattle ownership, socio-economic status, upgrading the communal herd and also promoting breeding of pure Nguni cattle. Project beneficiaries do receive assistance or support from the Nguni Cattle Development Project, but extension support services from government extension officers is limited. Challenges such as limited access to markets and veterinary services also need to be addressed. Provision of extension support services to the beneficiaries of the Nguni cattle project can be used as a tool to improve such challenges. According to farmers' perceptions, agricultural extension services have not been effective and efficient in improving their livelihoods. Extension officers have an important role to play in supporting beneficiaries of the project through provision of basic infrastructure and appropriate technologies (for veterinary support services) that can be sustainably implemented within the rural context. Therefore, it was concluded that poor or limited access to extension services had a negative effect on beneficiaries of the Nguni cattle project. Thus, communal farmers should be given a priority to support services like training, knowledge transfer and supply of farming inputs. Furthermore, there is a need for regular training of farmers in the form of workshops and in-service training so that they can acquire skill needed to maintain the success of the Nguni cattle project.

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