



Prevalent Constraints Towards Production and Commercialization of Cattle Owned by Smallholder Farmers in South Africa – A Review

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Abstract | Smallholder cattle farming in most developing countries and Africa has been fingered as an area of agriculture that forms a major driver through which the aims of poverty reduction and community development can be realized. For instance, about twenty-five to thirty percent of cattle farming contributes to the sum aggregate of farm produce to the South Africa economy yearly. Several prevailing factors have however limited the prospect and sustainability of cattle production among rural farmers who happen to be a major player in cattle production in South Africa. Such prevalent factors that have been identified to decline cattle productivity include poor animal breeding, lack of available feed resources, marketing constraints and animal health challenges among others. These limiting constraints have in turn negatively affected the potential of communal cattle farmers from exploring both the local and global markets. To upsurge farm practices that can be sustainable and the involvement of cattle production to defeat starvation and financial lack among poor-resourced areas and in the nation at large, there is need by the government and other vital stakeholders to tackle the prevailing challenges faced by cattle farmers. This can be achieved by adopting workable initiatives that will promote best farming practices in rural communities with the view of utilizing locally adapted cattle breeds to boost cattle production.

Keywords | Cattle farming, Local farmers, Prevailing challenges, Production initiatives, Commercialization

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INTRODUCTION

There is an aggregate of about nineteen million cattle with large numbers of these animals being raised by local farmers in rural communities. Bester et al. (2001) in their study points that local farmers are well recognized in most countries for rearing local beef animals on range-lands with little or no additional feed supplement. Their contribution to the livelihoods of local farmers is crucial in the production of cash, meat, manure, milk and other socio-cultural benefits (Masikati, 2011; Maburutse et al.,

2012). As part of the recognition of the important role of cattle farming among local farmers in South Africa, the government inaugurated projects including the Nguni Cattle Scheme to promote effective cattle production systems (such as gifting Nguni cattle breeds to farmers) for communal farmers.

The reason for this government program is aimed at preserving the utilization of the local cattle among poor-resource communities. However, the poor performance of local cattle has affected their recognition and use in the

formal market space as a result of their inferior body conformation and small body condition score (BCS) when compared to exotic breeds. The report by [Musemwa et al. \(2008\)](#), showed that local cattle breed produce in South Africa are sold via varied outlets such as the informal and formal industry. A particular challenge encountered by financially constrained farmers that prevents them from partaking and selling their animals in the formal industry is due to poor admission to the formal market. The switch of small scale farming industry into the commercial sector is largely a function of its admittance into the large commercial marketspace ([Jooste, 2001](#)). The commercialization of cattle seems to be part of the complex government policy issues that require urgent attention in promoting small-scale husbandry among cattle farmers. However, the competence of livestock sales is a sole result of its level of output indexes like animal management.

Studies reported several factors that local farmers are faced with include lack of animal food, increased occurrences of ailments and diseases, deprived animal breeding programmes among others ([Hesterberg et al., 2007](#); [Mapiye et al., 2009b](#); [Tada et al., 2013a](#)). The afore-mentioned challenges are presumed to contribute to in animal (cattle) numbers, inferior body condition, and productivity; which in turn, hampers their sale in both informal and formal markets. There is scarce information on how these challenges negatively affects the commercialization of cattle sales in South Africa. For clearer comprehension, the present review will discuss some of these challenges as they affect cattle farming and commercialization in South Africa under selected sub-headings.

COMMON DESCRIPTIONS OF SMALLHOLDER BEEF CATTLE HUSBANDRY

In South Africa, smallholder cattle farming could also mean subsistence cattle husbandry, small-scale animal production, financially constrained farming, as the case may be ([Calcatterra, 2013](#)). Smallholder animal ranchers are emerging, small-scale, and local (According to [Palmer and Ainslie, 2006](#)). Part of the recognized characteristics of local animal farmers comprises large labour involvement, reduced farm practices and management, reduced size of landholding, inferior marketing skills ([Calcatterra, 2013](#)). Although, most cattle raised in the local communities of South Africa are mostly for beef purposes, except in some few cases where farmers use the milk from local cows for domestic consumption and share some of them as gifts to clans and neighbours. However, there is a report that raising local beef cattle on range-lands with little or no additional supplements is a major attribute of local farmers ([Bester et al., 2001](#)).

Interestingly, according to [Collins-Luswet \(2000\)](#), the

previously thought-out government's initiatives to grow cattle production among local farmers have recently focused on encouraging the utilization of cattle of European descent, because they are judged to possess fast-growing traits with superior body size. Likewise, [Bester et al. \(2003\)](#) in their study, stated that the superior body size of exotic cattle breeds of European descent, made them preferable in comparison with native breeds. However, it has been argued that exotic foreign cattle breeds are susceptible to harsh weather conditions prevalent in rural communities of South Africa ([Muchenje et al., 2008a](#)). Furthermore, [Muchenje et al. \(2008a\)](#) alleged in their findings that, unfavourable climatic and socio-economic conditions, including poor general management practices (pasture scarcity, low-quality feed etc.), are faced by cattle in several poor communities and which causes major difficulties for exotic livestock to thrive in local communities of South Africa. Raising exotic cattle in local communities of South Africa with little or no adequate facilities to maintain them may be as good as "putting a fish on the land to swim". The production constraints of using exotic breeds in unfriendly environmental conditions have contributed to the increased search for indigenous breeds of cattle with high adaptive traits that can withstand the harsh conditions of their immediate environment.

As part of conscious efforts by the South African government to promote local production of cattle husbandry, a special cattle scheme was established to repopulate communal areas with native breeds specifically the Nguni cattle. This strategic program is known as the Nguni Cattle Project. The scheme is created specifically to promote the utilization of indigenous cattle breeds which is judged to contribute immensely in terms of food availability and sustainability among local farmers in rural communities of South Africa.

CATALOGUES OF ROLES PLAYED BY CATTLE PRODUCTION IN COMMUNAL AREAS OF SOUTH AFRICA

Cattle farming is a principal agricultural resource among poor resource farmers regardless of its trivial economic contribution to the household economy of rural farmers. The reason for this, can be seen from the poor management skills and several other uses of free-ranging cattle in local communities. Conversely, the query raised is whether the cattle beef production among rural societies is their economic yield or whether they are only interested in satisfying the social, and cultural functions of local farmers. [Ogunkoya \(2014\)](#) in their study pointed that any momentous achievement of beef cattle production in the agricultural industry of any society relies upon the provision of cattle sustainability in local areas. Again aside from this vital point, cattle farming also supports the financial em-

powerment of households including hides, fuel, draught power, organic fertilizer and it assist families to generate income through sales of farm animals and their products (Moyo and Swanepoel, 2010).

In several parts of local communities, cattle rearing in South Africa achieved numerous purposes such as the provision of manure, beef, and milk (Ndlovu et al., 2009), serving as a yardstick for someone's financial status (Maburutse et al., 2012), providing draught energy (Chimonyo et al., 1999), with the supply of beef and hides as final yields (Mavedzenge et al., 2006). According to Musemwa et al. (2010), cattle hides are utilized for manufacturing drums, tents and sleeping mats. Ndebele et al. (2007) also discovered that cattle are utilized as status symbols and asset, and they create financial income for rural households from animal and animal product sales. Meanwhile, the advancement in cattle rearing and modernization may be a route that could provide more employment privileges to many persons both in the rural and urban areas. This may be possible by employing people that will assist in marketing cattle at varied phases in the production cycle (Tavirimirwa et al., 2013).

In many developing countries of Africa, cattle play an important part in socio-cultural usefulness including the payment of dowry also known as "*lobola*" for marriage and for appeasing of perceived ancestors' (Maburutse et al., 2012). According to a study by that was done at a particular District in the Limpopo Province of South Africa, no known information was retrieved that, local farmers reared their livestock for non-market gains (Sikweni and Hassan, 2013). The reason for this may not be unconnected with their cultural beliefs and the use of cattle for mostly income generation. Likewise, according to Tessema et al. (2011) in their study, it was fingered that cattle farming plays a role in recycling nutrients in rangelands of local farmers. According to, Mavedzenge et al. (2006), the utilization of cattle was for the improvement of neighbour intimacy by way of loan and exchange. Conversely, the authentic contribution of cattle at rural household levels is not duly recognized because the present scheme of assessment relies on monetary values which disregards the non-monetary cattle roles in the household, like the delivery of draught power, milk, and manure (Chimonyo et al., 1999). There is no doubt a high premium for expertise in agro-economists to come up with research indexes that can incorporate the monetary and non-monetary livestock impact of rural household cattle husbandry and cost of living.

CHALLENGES FACED BY CATTLE FARMERS IN RURAL AREAS OF SOUTH AFRICA

In South Africa, a prolongation of land extension for local agricultural purposes has previously been described (Sikweni and Hassan, 2013). Intentional procedures have been

laid down to boost local food security and generation of funds via diversification to improve the production of animals; the reason being that most rural farmers are known to rear livestock for their economic and social benefits (Thornton et al., 2002). Despite the well-reported impact of cattle farming, local farmers are known to encounter some challenges that limit them from making financial gains from their animals. These challenges comprise restricted access to water and land, poor grazing management, smaller herd size and stock theft, privation to market outlets, poor feed resources, incidences of animal diseases among others (Musemwa et al., 2008; Montshwe, 2006; Bester et al., 2003). Furthermore, Lapar et al. (2003) reported in their findings that, financially constrained farmers have insufficient capita such as monetary resources, education, and extension, physical resources, intellectual capital resources, which reduces farmers' activities.

PRODUCTION RELATED CHALLENGES OF CATTLE HUSBANDRY AMONG SMALLHOLDER FARMERS IN SOUTH AFRICA

A. Poor Breeding and Breeding Programmes:

Inferior breeding programmes that are done by most small-scale livestock owners in several developing countries usually leads to in-breeding which in turn promotes slow growth rates of cattle and other farm animals (Mueller et al., 2015; Mashoko et al., 2007). Small-scale rural farmers in South Africa are not left out of this predicament. From the study of Palmer and Ainslie (2006), it was reported that most cattle raised in rural communities of South Africa are not well-defined breeds (non-descript crossbreds) and a small group of local breeds including Drakensberger, Bonsmara, and Afrikaner. The reason for the small population of these indigenous breeds may largely be as a result of inbreeding that is being practiced by smallholder farmers. However, Scholtz (2008) reported that most developing countries including South Africa have tried to introduce imported breeds for crossbreeding; which largely may put native breeds at risk when looking at the reproduction and breeding performance at large. The consequences of non-descript genotypes of cattle breeds could contribute to a situation that may lead to the occurrence of unidentified genetic characterization of cattle in several countries of which South Africa may not be spared.

It has been previously argued by Abeygunawardena and Dematawewa (2004) that the reproductive performance of local cattle breeds in the large sector market is lesser compared to the exotic breeds in the sub-tropical areas. The reason for the difference in reproductive performance of local and exotic breeds may be because farmers in the temperate regions practice highly skilled breeding management such as using artificial inseminations (AI) of high performing bulls for breeding among other well-known tested breed-

ing practices. The South African Nguni cattle raised in local communities are normally bred in small units and they are kept along with the farmland redistribution areas and with emerging farmers. In successful breeding practice, the utilization of proxy indices has been adopted as selection criteria for animals meant for adaptation; these criteria comprise weaning weight, calving interval, daily gain, and age at first calving (Scholtz et al., 2008).

Reproduction trait indices, which is often defined by fertility, mortality of calves, and prolificacy, is another area of cattle demographics and performance that researchers consider in livestock farming when fattening animals and during replacement of cows in their herd (Gerber et al., 2015). However, cattle reproductive performance in subsistence cattle husbandry where animal breeding is usually unchecked, is a poor method of breeding cattle which negatively affects their performance. The claim of this author is somewhat correct, the reason being that, local farmers in some developing countries including South Africa are faced with several issues which have to do with insufficient supply of water for their herds, paucity of grasses in dry seasons, inferior mating practices and susceptibility to tick, and heart-water disease.

The fertility traits of cattle raised in rural communities of South Africa are known to be low when using the calving percentage as a key determination for performance and production (Mokantla et al., 2004). According to Scholtz (2008), the calving rate of cattle raised in rural areas in South Africa is given at approximately 25%. Conversely, when comparing the calving rate to their counterparts in Zambia, it was reported to be 44 % (Perry et al., 1984). These calving percentages as reported in rural communities show that it is small as compared to their expected values from commercially raised cattle. According to Radostis et al. (1994), the calving percentage in the commercial market should fall within the range of 95-99%, to reach 98%. The use of calving percentages to judge the performance of cattle is a reliable indicator for assessing the reproductive attributes and fertility of cattle herds (Collett, 1998). Furthermore, Vanroose et al. (2000) is of the opinion that, when there is a reduced calving percentage in cow, the situation illustrates that the bull also have low fertility, and/or there may be incidences of diseases that may result to pregnancy difficulties and discordancy between the immediate surroundings and the cattle genetics.

Suffice to state that, according to Tada et al. (2013b), factors including deprived control of disease, the occurrence of tick-borne diseases, and low fertility of cows are contributing to the decline in the reproduction performance of locally raised cattle meant for beef production in the country. Mickelson (1987) also pointed that fecundity proficiency

in cattle is about five times a more significant indicator for the beef industry compared to their rate of growth, and ten (10) times vital indicator compared to meat quality. From the view of the significance of calving percentage (%), rural cattle herders are endorsed to align their breeding schemes in such a way that will guarantee high returns. Some suggested ways that farmers can generally use to improve the calving percentage of their animal include good nutrition, maintain a healthy herd, and ensuring adequate body condition score of the cow meant for breeding among others. More importantly, it is needful to note that, the age when a local cow calf is judged to be significant aspects that define the reproductive efficiency of the cow. For instance, a study from Mozambique reported that a local Nguni ecotype (cattle) at first calving age was 35.7 months with less calving interval of one year and two months (Maciel et al., 2012). Nonetheless, on the contrary, Tada et al. (2013b) reported in their study that the local Nguni cattle breed which is calves at 31.5 months, but with a calving interval of approximately one year and four months.

Disease Prevalence:

Parasitism, diseases incidences, and animal death rate are also part of the main challenges that cattle farmers face in local communities in South Africa (Hesterburg et al., 2007). Of importance is the fact that most communal farmers in South Africa like other developing countries have poor accessibility to veterinary medications and services that include information on animal disease treatment, and strategies for disease prevention among others. Most communal local South African farmers finds it difficult to purchase animal drugs for their cattle due to high cost and the inability to afford it (Mbatia et al., 2005). Some studies done in local communities by Mbatia et al. (2005) and Hesterburg et al. (2007), reported that, local farmers indicated that, diseases caused by ticks are crucial health threats of cattle raised in rural areas. With this kind of response raised by local farmers in South Africa, there is no doubt that there will be more deaths of cattle resulting from improper and/or lack of treatment of sick animal in this region. These challenges may no doubt contribute to low cattle numbers of local cattle breed in South Africa. Likewise, the negative effects of ecto- and endo-parasites of local cattle breeds raised in the local communities cause a consistent increase in weight loss and mortality at periods of dry seasons and this adds to the decline in fertility triggered by poor diet as a result of induced stress during dry seasons.

In South Africa, ticks are the most popular external parasites associated with cattle husbandry in rural communities (Mbatia et al., 2005). Ticks are known to have an immense effect on cattle farming via the transfer of tick-borne diseases including, ehrlichiosis, babesiosis, and anaplasmosis

leading to increase deaths of cattle (Peter et al., 2005). The mode of operation of tick and their infection is that, when they bite cattle, it mutilates the vital delicate parts of the animal skin like eyes, teats, ears and vagina thereby rendering susceptible to infection and possible death. Peter et al. (2005) further stated in their study that bites from ticks cause the blood loss leading to wounds that predispose cattle to several bacterial infections and other kinds of diseases associated with it. Muchenje et al. (2008b) in their study showed that, tick bites lowers weight gain, reduce the quality of meat, fertility, and consequently causes diseases in cattle raised in local areas of South Africa. Barker and Murrell (2004) reported that, approximately, there are nine hundred different types of ticks and they are often found globally, and various countries have at least a particular type of tick species associated to their livestock. Ticks could be an important threat for farm animals worldwide and most importantly in the African continent having their socio-economic demographics and farmers' financial status impaired their ability to control ticks in their herds (Mugabi et al., 2009). Table 1 shows different kinds of pathogens and ticks associated with cattle.

Marufu et al. (2010), in their study, reported that, most poor-resourced farmers in South Africa hardly use medications when treating cattle as a result of insufficient veterinary services and lack of information on the well wither to avoid tick infestations in their herds and how to treat their diseased animal from tick-borne disease. However, these local cattle herder mostly rely on trado-herbal medicines to tackle the challenges of parasites including ticks and nematodes (Tada et al., 2013c; Mashoko et al., 2007). The FAO (2001) recommended that alternative means of controlling pests and parasites like the utilization of ethno-veterinary herbs should be well examined to put leverage with that of the conventional methods of control. An alternative source of medication for treating ticks is recently gaining recognition in South Africa as these are what most communal farmers are exposed to right from a young age. Matlebyane et al. (2009) in their study reported that, ethno-veterinary medicines provide affordable drug alternatives as health care for simple animal health issues in livestock for South Africa local farmers. However, caution should be exercised by local farmers on the use of locally made herbal remedies for treating their animals so that they don't apply the wrong dosage that will damage the skins of their animals which may be intended for the sale of their hides in the future.

Mortality Occurrences:

Generally, calves are known to have the highest mortality rate in communal areas. This is not different from the reports from studies in South Africa. In the investigations by Mapiye et al. (2009a), French et al. (2001), and Chatikobo et al. (2001), it was indicated that part of the primary live-

Table 1: Ticks and pathogens they transmit in cattle raised in South Africa

Tick species	Description	Pathogens transmitted
<i>Rhipicephalus (Boophilus) spp</i>	Bluish ticks with hexagonal basis capitulum, short compressed and ridged palps, faint/absent anal groove	<i>Babesia bigemina</i> , <i>Babesia bovis</i> , <i>Anaplasma marginale</i>
<i>Rhipicephalus appendiculatus</i>	brownish, reddish-brown or dark ticks with short palps and reddish-brown legs	<i>Theileria parva</i>
<i>Rhipicephalus evertsi evertsi</i>	Medium sized, beady-eyed, dark brown ticks with reddish-orange legs	<i>Anaplasma marginale</i>
<i>Hyalomma spp.</i>	dark-brown-bodied ticks with numerous punctations on the scutum and long, banded legs	<i>Anaplasma marginale</i>
<i>Amblyomma hebraeum</i>	brightly ornamented ticks, that have eyes and long, robust mouthparts	<i>Ehrlichia ruminantium</i>

Source: Horak et al. (1991), Walker (1991) and Coetzer et al. (1994).

stock mortality in communal areas is caused by drought, tick-borne diseases and animal starvation caused by drought. However, it is also vital to note that, the cause of many deaths of cattle in local South African communities are not known as a result of insufficient access to lack of proper record keeping. According (Mapiye et al. 2009a), local cattle herders are deprived of admittance to veterinary services when their animals are sick, hence, this may be a contributing factor to the high rate of mortality of cattle in South Africa.

Furthermore, Morignat et al. (2014) pointed that, other crucial constraints leading to cattle death in livestock husbandry include poor shelter conditions, unfavourable weather conditions, poor feeding and management. Rumor et al. (2015) further reported that an unbalanced diet that caused metabolic disorders led to 42 % of cattle deaths in livestock farming. It is not out of place to state that the negative effect of high mortality rates results in huge financial loss to local farmers in South Africa, hence, planned programmes and interventions are needed to be employed to lower the situation of cattle death. At present, the National Red Meat Development Programme (NRM-DP) under the auspices of the National Agricultural Marketing Council (NAMC) is a programme set up to reduce the rate of mortalities of farm animals in South Africa (Mmbengwa et al., 2015). Table 2, showed a summarized

picture of factors that are linked with cattle mortality in communal areas with animal disease topping the list of causes of mortality. Even though the study in Table 2 was carried out in Namibia, similar findings are also reported in South Africa. According to Somoro (2009), it was discovered that approximately 76.9 % of animal deaths in local communities of the Eastern Cape Province are as a result of diseases (See Table 3).

Table 2: Summary of causes of mortalities and losses of cattle in some selected communal areas in Omaheke Region

S/N	Causes of mortality (N=570)	Proportion (%)
1	Drought	48
2	Diseases	31
3	Strayed from owners	22
4	Theft	17
5	Ate poisoned leaf	7
6	Predators	2
7	Diarrhoea	1
8	Eating of litters	0.5
9	Dystocia	0.5
10	Local sacrilege	0.3

NB: Number of sample size = 570 (Source; based on authors' calculation: Hangara et al. 2011).

Table 3: A case study of the major causes of livestock mortality in communal areas of the Eastern Cape Province of South Africa

Causes	Responses	Total (%) of Yes
Diseases	20	76.9
Poor diet	5	19.2
Extreme weather	1	3.8
Predators	0	0

Source: Adopted from Somoro (2009)

Forage Quality And Accessibility:

Extensive foraging is the generally practiced type of feeding adopted by communal farmers in South Africa (Tada et al., 2013a; 2013b). This type of animal husbandry is a system of farming in which livestock completely depends on communal rangelands as food with little or no other source of feed substitute from local farmers. Seasonal drought resulting in deficiency of forage quality and quantity often experienced during the second half of the winter season is a serious issue faced by small-scale local farmers in South Africa. Similarly, reports of low feed quality resulting from poor veld due to seasonal changes have also been pointed as a challenge to communal cattle farmers in Zimbabwe, a region with similar climatic conditions to South Africa (Masikati, 2011).

Andersen et al. (2005) in their study also added that poor veld management and natural pasture fires limit fodder accessibility and quality feed in communal areas. Mapfumo and Muchenje (2015) and Katiyatiya et al. (2014) discovered that the natural forage quantity and quality in some areas in South Africa are inconstant around the tropic area, with low crude protein (CP) content of about 5 % during winter. Likewise, Nyamushamba et al. (2017) discovered that the peak scores of CP contents are gotten during the summer season in the sourveld areas of South Africa. Reduced amino acid (protein) of grasses with increased lignin content during dry seasons reduces the digestibility of forages (Van Soest, 1995). The effect of the dynamics of seasons on the forage aspects of cattle for smallholder cattle farmers, is an area that requires more critical attention if cattle farming in South Africa will be sustained and its products used as a potential hub for economic growth. Local farmers from this region can be supported (in the area of feed substitute during drought seasons) by the government and other voluntary organizations for better productivity of local breeds during unfavourable seasons.

Mapiye et al. (2010), reported that the local Nguni cattle breed of South Africa origin was reported to have a smaller body weight and size than cross breeds for cattle raised in sweet veld areas than those raised on sour veld rangelands. The study added that the carcass weights of Nguni and mixed-bred cattle reared on sweet veld are at their peak during the rainy season compared to other periods of the year. The quality of feed grazed by cattle has been shown to correlate with their body frame as poorly feed cattle may have smaller body frames as a result of poor skeleton development compared to those fed with quality feed (Adachi et al., 1997). The reason for the small body frame by poorly fed cattle could naturally be linked with lower feed intake by the animals as compared to their well-fed counterparts. However, one of the advantages of rearing indigenous cattle breeds by communal farmers despite several environmental and management challenges is that, they can survive drought cope on natural forages, which at some periods have scarce pastures. These indigenous cattle consequently, needs to be preserved and properly invested in to foster a national economic boost and more financial profits for local farmers.

Extension Services:

Another important aspect that may indirectly affect local beef production in South Africa is the services of extension workers. The chief duty of extension officers is to gather data from scientific and conventional studies and make the information and out-puts known to the local herders (Kimaro et al., 2010). Nyamushamba et al. (2017), in their study reported that, the work of extension officers can be effective if they ditch out their responsibilities to local

farmers, from their experience and skills about the novel technologies and inventions that are trending and would be of help to farmers. This can be achievable by a strong linkage of extension workers with researchers from government or academic institutions. Mapiye et al. (2008) described that the lively contribution of extension officers to small-scale husbandry speeds up the farming advancement and service conveyance. However, in the study carried out by Gwala et al. (2016), it was reported that the achievement of any animal husbandry governmental enterprises (e.g. Nguni Cattle Scheme) to improve cattle production in communal areas depends on the establishment of extension amenities to reserve the genetic worth of indigenous cattle breed. Part of the work that is expected to be carried out by extension officers is to provide facilities, official training of livestock herders, advisory services and consultation services related to medications and veterinary among others.

However, on the contrary, it has been argued that in several emerging countries the influence of extension services in lowering the poverty level of farmers is greater than the influence of just providing infrastructures to local farmers who may lack adequate skills on how to use them (Dercon et al. 2009). Evenson (2001) reported that, the investment in extension services in local cattle farming may confer high profit to farmers worldwide.

Looking at the impact of extension services on local cattle farming in South Africa, Gwala et al. (2016), reported, 67.9% and 62.2% of Nguni cattle farmers in 2 villages lack access to services from extension workers which according to the farmers may contribute to poor performance of their cattle. However, Ndoro et al. (2014) in their study reported that 63 % of rural household farmers got services from extension workers in the KwaZulu Natal region of South Africa with these services had some beneficial effect on cattle production. Conversely, Ndoro et al. (2014) further reported that profits gotten by local cattle farmers from partaking in animal husbandry workshops by extension workers for cattle farming and their economic contributions may be minimal; firstly due to farmers' attitude towards adopting new technologies and secondly, due to the expertise of the extension officers in service delivery. There is, therefore, the need to improve the efficiency of extension services to smallholder farmers in communal areas of South Africa.

Infrastructures And Cattle Handling Amenities:

The common farm animal infrastructures, handling areas, and other facilities including dip tank systems in several local communities were built from money gotten from the government and other voluntary institutions (Tada et al., 2013c). Cattle infrastructure makes it quite easy for herd-

ers to carry out some rudimentary animal farming activities including castration, animal vaccinations and treatment, pregnancy diagnosis, animal identification, and live-weight calculations. Masika and Afolayan (2002), showed that around 75% of financially constraint herders of South Africa utilize handling amenities during the treatment of their animals from any ailment. However, several of these infrastructures in local communities of South Africa are either dilapidated or requires replacement due to lack of proper maintenance or machine breakdown. It is therefore essential for the appropriate authorities in charge to sought ways of providing new infrastructures and livestock handling facilities as part of development enterprises since these amenities saves time put into farm work and it also makes farming convenient and efficient for livestock herders to carry out their farming in rural areas.

MARKET RELATED CHALLENGES AS IT AFFECTS CATTLE FARMING IN SOUTH AFRICA

Poor Market Management

The lack of and/or inappropriateness of effective market channels to sell their cattle is a part of the livestock marketing bottle-neck encountered by smallholder farmers of South Africa (Van Rooyen, 2007). Most cattle farmers sell their animals in an informal market. The implications of farmers selling their animals in the informal market is that cattle are priced according to visual assessment and not by the actual value based on their body weight. Mavedzenge et al. (2006), reported that, the chief buyers of cattle in informal markets are those that buy in bulk (wholesalers) and who purchase live animals from local farmers, but who later re-sell them to the abattoirs and during auctions from where they generate more money than the producers themselves who happens to be the local farmers. Another market-related constraint encountered by local farmers in South Africa is that, they are met with a lack of ready markets or buyers that will accept to buy their animals which sometimes possess small body frame as a result of poor feeding management in some certain seasons of the year and therefore, they end up lowering the price value of their animals.

Low Off-Take

Off-take is seen as a voluntary animal departure from their owners which may be through the means of exchange, slaughter, selling, or donations (Scholtz and Bester, 2010). The RMRDT (2008) reported that, the yearly off-take of cattle in the commercial sector in South Africa is approximately twenty-five percent and it is considerably more in comparison to the informal sectors which include the emerging (7.5 %) and the communal (10 %) cattle farmers. The cause of reduced off-take in local communities of South Africa is considered vital because it permits policy administrators and the government to make sustainable

cattle husbandry schemes in rural communities that will further inspire farmers to vend their animal. [Musemwa et al. \(2010\)](#) in their study reported that the determination of off-takes of cattle will assist policy administrators to predict livestock prices and develop plans for curbing the challenges encountered by resource-limited farmers. However, [Marandure \(2015\)](#) believed that, the reduced level of cattle off-take for rural herders is commonly triggered by the several roles of cattle to the households. [Mapiye et al. \(2009b\)](#) pointed out that the several rural herders of South Africa raise cattle solely for sale and quick cash for their household use. Conversely, the same author also reported in their study that, the actual figure of cattle traded during off-take is less in the communal areas of South Africa.

Although, it was noted that the cost of selling cattle was more, across various localities in the country, however, the rate of off-take was considerably low ([Musemwa et al., 2010](#)). [Marandure \(2015\)](#) further highlighted that, the increase in beef production is likely to raise the cattle off-take rates and will consequently have a remarkable impact on the economic situation for sustaining cattle farming. It may be ascertained, that large herds of cattle possess the ability to give a higher market surplus as compared to small herds at most instances in cattle farming in South Africa. Furthermore, [Nowers et al. \(2013\)](#) in their study found that cattle off-take for small-scale herder may be very difficult to increase their prices, except if there are comprehensive financial, social and ecological interventions by the stakeholders. This may, however, be possible if the cattle performance owned by rural farmers is improved before they are sold, linking local herders to official markets and growth in profitability for marketing livestock via recognized large markets.

Transaction Cost Between Local Farmers And The Formal Market

Small-scale farmers are confronted with several issues that negatively impact their involvement in the large (formal) markets among them is the transaction cost. The cost of transaction for a small or large herd of cattle in the formal market is another hiccup for smallholder farmers in South Africa. [Holloway et al. \(2000\)](#) in their research discovered that, the cost of trade deals is an important market limitation encountered by small-scale herders in developing countries. For a clearer understanding of transaction cost, the term can be defined as the cost of establishing and transacting exchanges including the price of accessing data about the substitute cost of discussing and monitoring contrast. Before the advent of any monetary exchange, producers normally get hints of the cost of animals as they make effort to look for buyer and the price of selling the animals ([Mabuza et al., 2013](#)). [Mdlalose \(2016\)](#) also pointed that the price of information gathering is solely

based on the period spent in carrying out the search. Conversely, [Tshuma \(2014\)](#), stated that the information gathered by farmers clarifies the sales control, the current price, and forecast of market inclinations. However, most of the small-scale herders do not possess the admission to such vital information.

Again, most smallholder farmers in South Africa are not well exposed to go through such rigorous exercise of transaction cost probably because some of them may be showing a sense of inferiority complex due to their humble background and low level of education. In addition, [Taruvunga and Fraser \(2009\)](#) found that poor resource farmers of South Africa hardly believe in the information of the cost received from formal markets because they allege that it is a piece of undependable information. In the report by [Machethe \(2004\)](#), it was pointed that, the increased transaction cost for cattle is principally credited to inferior facilities, which is part of the core restraining factors for the development of small-scale livestock keepers among African countries. The improvement of farming infrastructures further plays a vital function in lowering transaction costs, thereby, enhancing participation in the larger economy. According to [Arega et al. \(2007\)](#), it was reported that, increased transaction costs are capable of reducing the transport amenities and advancement of institutional inventions including cooperatives for beef production and marketing among rural farmers.

Transportation

The movement of livestock from one point to another, also known as transportation is a vital commodity for businesses to thrive, as it links the sellers of the livestock with their buyers. Most of the rural small-scale herders in South Africa have virtually little or no contact to proper movement of their animals including trailers and trucks, and to transport them from farms to their buyers. Ordinarily, the mode of moving goods on its own as a constraint factor may have a negative influence on livestock.

Researchers have reported that, movement of livestock usually exposes animals to stress including pre-transport management, climatic factors, rest deficiency, vehicle noise, restraining, loading and unloading of animals and transportation duration stress for long distances among others [Swanson and Morrow-Tesch \(2001\)](#) and [Kadim et al. \(2006\)](#). Too long hours of moving animals from one point to another with an inferior or ill-equipped vehicle could be unhealthy and stressful to the welfare of livestock ([Tarrant et al., 1992](#)). In tackling the problems of transportation being encountered by rural cattle farmers, it is expected that, the issue of transportation of livestock from one point to another should also be considered so as to mitigate the issue of animal welfare and also reduce animal stress which

may affect the market value before sales.

According to [Mota-Rojas et al. \(2006\)](#), the transportation period for animals from the point of take-off to the place of slaughter (abattoirs) may not exceed sixteen hours to curb the challenge of vibration stress that animal encounters during long journeys. A common situation that is often seen with most small-scale cattle herders in remote communities of South Africa is that, they are faced with situations of bad and untarred roads which usually result in extended hours before animals reach the market. This situation in turn makes it challenging for the farmers to partake in the large sector market. [Chulayo et al. \(2015\)](#), in their study, pointed out that, longer transport movement of cattle in local areas of South Africa from farms to the point of sales led to unwarranted stress of the animals which in turn resulted in increased cattle heat shock protein 70, (commonly reported as HSPA1A); lower levels of body sugar and higher plasma cortisol an important indicator of animal stress.

Conversely, [Jacobs \(2008\)](#) in their findings stated that most small-scale herders depended on public vehicles to carry their animals/ animal products for sales as against using private vehicle owners with good vehicles, because private vehicle owners do not ply on bad roads in rural communities. In addition, [Gustavsson et al. \(2011\)](#) pointed out that, bad roads, the cost of transportation, and market distance are critical determinants to access products from in and out of market and farms which invariably impact economic growth. The inability of most rural farmers to afford personal transportation means to move their animals, further increases the transaction prices of farmers when selling their livestock ([Clover and Darroch, 2005](#)).

TOWARDS PROMOTING NOVEL INITIATIVES FOR CATTLE PRODUCTION

The earlier European settlers who lived in South Africa see local indigenous cattle breeds to be of low-grade in terms of performance to their foreign counterparts. At that time, several people including livestock farmers were purportedly made to believe that the indigenous South African cattle breeds performed poorly compared to their imported counterparts. However, according to [Bester et al. \(2003\)](#), it was reported that, in the year 1934, a governmental Act was published in line with the local cattle breeds which proscribed local South African cattle breeds as “scrub” livestock. [Bayer et al. \(2004\)](#), further described part of the ingenious comments against South African cattle contained in the Act which comprises widespread scrutiny of bulls in rural areas and the eventual castration of the low performing bulls among the herds as they were judged inferior. This exercise eventually resulted in practicing cross-mating of local cattle, as indigenous herders were

made to believe these wrong assumptions in the utilization of local breeds. Howbeit, these cross-bred and exotic cattle were discovered to require ample amount of tick control and management, increase veterinary attention and feed supplementation ([Bayer et al., 2004](#)). The result of the government Act on local bulls resulted in the decline of local cattle, with a rise in numbers of exotic breeds, namely; Hereford and Simmental.

Howbeit, over time, scientists and livestock farmers developed a special interest in the local Nguni breed of South Africa because of some interesting traits that were discovered in them such as; efficient forage intake of feed as compared with exotic breeds; due to its potential to balance dietary nitrogen (intake and deposition i.e input/output of N) more than other breeds ([Bester et al., 2003](#)). In addition, more livestock farmers now found out that, the local Nguni cows retain considerable exceptional mothering traits and that they can be utilized in cross-breeding with large beef cattle for better productivity as reported by [Bayer et al. \(2004\)](#).

OVERVIEW OF THE INDIGENOUS NGUNI CATTLE SCHEME TO PROMOTE THE RE-INTEGRATION OF LOCAL BREEDS INTO COMMUNAL AREAS

In addressing the situation of extinction/scarcity of the South Africa local cattle breeds, several deliberations by government, institutions, researchers, livestock farmers, and Non-governmental organizations (NGO) supported cooperatives constantly sorted out ways to re-integrate some local cattle breed among which was the Nguni cattle. An academic institution namely; the University of Fort Hare in partnership with the government and other local improvement organizations instigated the Nguni Cattle Development Trust to support the re-integration of Nguni cattle in rural communities. The project was initiated because of the perceived high performance of Nguni cattle which possesses some outstanding characteristics against harsh environments and parasite infection (e.g. ticks).

[Fuller \(2006\)](#) in his study revealed that the model of the Nguni Cattle Scheme that was employed as a system to be used, was to provide ten (10) heifers and two (2) bulls to local herders in designated rural communities, under a loan treaty of five (5) years of managing the herd. The purpose of this Scheme was necessitated to grow the numbers of Nguni cattle in local communities and to establish its nucleus herd. The exercise of giving the cattle (10 heifers and 2 bulls), usually last for five years at most, after which, each local community returns ten (10) heifers and two (2) bulls to the closest communal area by way of “pass on the gift” practice ([Raats et al., 2004](#)).

After some years, the Nguni cattle Scheme Board reached

a consensus of growing the cattle numbers to thirty (30) in-calf heifers with two (2) indigenous bulls, from which community recipients are anticipated to give back the exact amount of cattle they collected from the Scheme after five (5) years of ownership. The reason for the top-ups of the cattle was as a result of the brilliant productive attributes of Nguni cattle. Another reason for the top-up process for communities who benefited from the Nguni cattle beneficiary initiative is that policy administrators use this strategy in encouraging communities who benefited from the Scheme to be exposed to commercial markets having large stock numbers of local cattle.

However, before giving out cattle to the local beneficiaries, certain requirements have to be met by the beneficiary communities. These requirements include among others; the fencing of forage areas, the replacement of bulls in the beneficiary area with registered Nguni bulls by either castrating or culling them and the practice of a rotational grazing system in the area. The sole objective of promoting the Nguni Cattle scheme is to raise the marketing value of Nguni cattle and its products (which include offals, beef, skin and hides) while equipping rural herders for the commercial market from the beef market (Raats et al., 2004). The Nguni cattle Scheme is also liable for training herders on improved cattle farming including health and nutrition management among others.

Musemwa et al. (2008), in their study, pointed out that, part of the responsibilities of policy administrators to local farmers should be; provision of adequate training skills for herders, redeployment of cattle, and improvement of amenities and other equipment including holding areas among others. Presently, over fifty-five (55) locations and forty (40) farm communities have gained from the Nguni Cattle Scheme with more communities still to benefit from the project in the coming years. Furthermore, the Nguni cattle Scheme is currently in the process of rebranding and commercializing animal products from financially restrained herders with preferred farming equipment.

CATTLE COMMERCIALIZATION AND MARKETING OUT-LOOK OF COMMUNAL PRODUCTION SYSTEMS IN SOUTH AFRICA

Livestock commercialization is a condition whereby animal products are sold, with the earnings gotten from labouring on the farm is solely utilized to obtain other goods and services including shelter, health, food, energy, education and communication amenities (Makhura et al., 1996). Zhou et al. (2013) also defined animal commercialization to be a process of transforming livestock, where herders are shifted from consumption-oriented farming practices and to a more profit-oriented farming system. The commercialization of smallholder farmers of South Africa via

the means of vibrant participation of cattle market outlets can to re-invent local economies and to contribute to the gross income of the economy. The commercialization of local farming systems is capable of adding value to the rise of cattle husbandry which in turn will advance the quality of cattle produced by these farmers, thereby, leading to income generation for local herders.

The commercialization of livestock for small-scale herders has attracted rural policy administrators, which has resulted in the setting up and implementing of policies that will better transform the local animal husbandry sector into a large commercial market (Ndoro et al., 2014). The strategies are targeted towards supporting small-scale herders for global benefits and enhancing competitiveness. These rural development strategies in commercializing smallholder farmers may be realized via the establishment of favourable environment for herders, investment in commercial infrastructures, training and research of farmers, and participation in agricultural sustainable programmes aimed towards promoting smallholder farmers' commercialization.

The demand for meat gotten from cattle raised from free-range by several consumers has increased, leading to a rise in the utilization of natural resources for the production of beef outside the use of any added chemicals like acaricides and growth promoters (Musemwa et al., 2010). Indigenous Nguni cattle breeds have been reported to possess the ability to produce meat with considerable high quality with/ or without the utilization of synthetic feed ingredients to boost their performance (Mapiye et al., 2009a). According to Muchenje et al. (2008a), it was reported that, the indigenous Nguni cattle acclimatize and produce substantially well despite the inferior foraging and heat stress situation that they found themselves. It is on this pedestal that the government together with an academic institution (University of Fort Hare) and other cattle stakeholders agreed to initiate the Nguni Cattle Scheme. Although, it may be safe to state that the Nguni breed has distinctive breed attributes in terms of performance and productivity, there is still room to further advance its market outlets to determine a specified market area for its product.

The indigenous Nguni cattle herders encounter various marketing limitations including lack of information, inferior farming amenities, and a rise in transaction cost (Musemwa et al., 2008). Several Nguni cattle beneficiaries live in remote areas, with or without physical and institutional amenities that will boost the sustainability of local cattle. Meanwhile, some cattle beneficiaries have amenities that are non-functional or in bad conditions because the farmers lack financial resources to maintain their facilities. Moreover, poor dissemination of market information is

another possible dynamic that hinders the advancement of cattle farming in South Africa (Musemwa et al., 2008). In a situation that portrays insufficient market information, small-scale herders become victims of corrupt livestock buyers who exploits them because they are better informed than local farmers with poor negotiating acumen that want to sell their animals. Another important area that affects the cattle commercialization of smallholder farmers in South Africa that we will like to talk about in this review is cattle traceability. This area is also pointed to be one of the areas that may potentially affect the commercialization of cattle by local farmers who were the beneficiaries of the indigenous Nguni cattle scheme and other small-scale herders in South Africa. Traceability is the competence of herders to go through the procedures whereby an item/ or items follow the due process from one stage of the supply channel to another (CFIA, 2018). It can also be mentioned that, some basic elements of livestock traceability include among others; the proper monitoring of the movement of cattle for forage/sales, area identification, and animal identification. These information and tracking systems are used to monitor the performance and productivity of cattle in rural communities. In summary, all the market limitations encountered by herders who benefited from the indigenous Nguni scheme as earlier discussed may reduce their involvement in the formal sales sector and therefore lower their prospect for commercialization in the long run.

A LOOK AT VARIOUS MARKET OUTLETS FOR SMALLHOLDER FARMERS IN SOUTH AFRICA AND THEIR POTENTIAL BOTTLE-NECKS

The integration of small-scale and financially limited resource herders into the large market sector has attracted more attention by the bodies advancing local husbandry development and researchers globally as was earlier reported by Barrett (2008). For example, several programmes were organized in South Africa including the Eastern Cape Red Meat Project which was targeted at lowering the level of poverty among herders via livestock husbandry. Mkhabela (2007) in their report pointed that, the sole reason for establishing the Eastern Cape Red Meat Project is to boost famers' lively participation in the large sector markets, where they will receive better chances of increasing the returns from the sales of their animals. Conversely, the government initiatives do not halt the advancement of the local sales sectors that is normally practiced by local household farmers. Barrett (2008) argues that, for a rise in production of marketable products and the enhancing of food security, small-scale livestock herders do not necessarily need only the privilege to better agricultural amenities, rather, they also need access to private/public functional facilities which including landed properties land and equipment. The informal local out-lets for livestock sales is known to be the sole channel for livestock husbandry in

rural areas of South Africa. However, the ECRMP has put in place various market interventions animal/ animal product sales including animal auctions, Custom Feeding Programme (CFP), known as communal feedlots and cattle buyers' special exhibition days (Mkhabela, 2007). For a clearer explanation, we shall be discussing some currently practiced market channels available for smallholder cattle farmers in South Africa which include the following; butcherries, speculators, auctions, private buyers, and abat-toirs among others.

Pre-Slaughter Sale Treaties

The pre-slaughter sale treaties occur when smallholder herders secure livestock products for future pledges via contractual procedures with retailers by giving them the livestock products (e.g. meat, offals, hide and skin, etc.) that they produce from their farms. Mkhabela (2007), in their research, pointed that some large retail outlets in South Africa from which local herders go into contract with them for pre-slaughter sale agreements include; Shoprite-Checkers, Spar, Pick 'n Pay, Boxer and Rhino supermarket; just to mention a few. However, the majority of poor-resource famers faced the constraint of not being able to meet the market standards of these large retailers by their inconsistency to regularly meet up with production target. In addition, it should be noted that another challenge faced by local cooperative farmers who are involved in the sales of their animals and products do not work together to meet up with the targets of supplying their goods as required by large retailer outlets which may be mainly because of community politics and lack of co-operation among the farmers. There is a need for strategic plans to address these shortcomings among local farmers by employing the use of either extension officers or other stakeholders in the cattle industry to tackle the challenge, as this may negatively affect the commercialization of sales of cattle and their products.

Auctions

Auction is another means through which local farmers sell their cattle in South Africa. Auctioning of livestock takes place where animals are joined at steady intervals and are sold through a bidding procedure, in which the buyer who bargains the highest price gets the livestock (Nkosi and Kirsten, 1993). The advantage of the auction market can be seen in the view that every potential buyer has the privilege to bid in public without any discrimination. According to the NDA (2005), the sole buyers during public auction exhibitions include persons who purchase goods for household utilization, butchers, commercial farmers and speculators. Meanwhile, Musemwa et al. (2008), reported that, the indigenous Nguni cattle could be directly sold to the breeders' societies, other smallholder farmers and commercial farmers for breeding purposes. It should

however be noted that, the number of cattle sold during auction varies according to location. This is because some local farmers who have poor road access to the market may have a problem transporting their animals for auctioning as compared with those farmers with better road networks. Benson et al. (2001), in their findings also pointed out that, the area where markets are located also has an impact on buyers which may on the other hand affect the price that will be paid for cattle and their products. Although selling livestock products via auction markets portends an avenue for rural herders, it may still be a potential challenge to local farmers in South Africa, because, most times, cattle that are sold during auction exhibitions must have been registered and certified with certain societies of which most local farmers are not registered.

Butcheries

In South Africa, there are several butcheries (both formal and informal) where local farmers can sell their cattle. This is true because it is common knowledge that South Africans love eating meat. However, according to Musemwa et al. (2008), butcheries are usually not a common outlet for communal farmers to sell their cattle as most of them do not make a profit via this channel. Nkhori (2004) also suggested that affordable prices and intelligent negotiating prowess for price are what is used to determine the stock of cattle of which is the main reason for herders' satisfaction with meat sellers. Moreover, in the study of Musemwa et al. (2008), it was reported that butchers increase their animal price by assuming the place of buyers since they possess a right to act both as a buyer and seller during auction exhibition days. The indigenous Nguni cattle herders are at an advantage sell their animals to meat shops who deal sole on beef market, hence, it is imperative for the government, livestock support entities or other non-government organization (NGO) supported cooperatives to establish more abattoir outlets for free-range beef cattle herders to trade their cattle. Likewise, it is imperative to regulate the prices of cattle that should be sold in the butcheries to put leverage on the increasing cravings by buyers for beef in butcheries and farmers' profits.

Abattoirs

The NDA (2005) reported that abattoirs are the least utilized market out-let for livestock smallholder herders in South Africa; the reason being that, there are numerous bottle-necks the out-let is faced with. Some of these bottle-necks include; high risk of animal condemnation based on health grounds, travel distances of livestock from the producers, slow financial refund of farmers from cattle sales among other charges for the use of this channel. Most times farmers depose a handful of their cattle when selling them to abattoir operators probably due to the need for urgent cash. Howbeit, it is usually uneconomical to sell

a small number of animals at a time, which is mostly to the disadvantage of the farmers in terms of monetary value. Most financially limited farmers in South Africa may not be able to afford the price of hiring trucks for transportation of their cattle to the abattoirs. However, several ways may be employed to tackle the constraint of transportation encountered by the farmers. Musemwa et al. (2008) in their study pointed that group marketing practiced if embraced by local herders could be adopted by famers to transport their animals so that the cost of transportation can be shared among them, thereby, enjoying the benefit of the economic scale through this channel. Notwithstanding, proper planning is needed for this method to work. This is because group marketing has a challenge because most herders have different periods that they want to sell their cattle which may be because of the times their animals attain market weight. Another bottle-neck with the use of abattoirs as a means of selling their cattle by small-scale herders could be because of the evaluation benchmarks which include; grading, weight and animal age. All these aforementioned criteria play a negative part on the reason why abattoirs pose a constraint for local household farmers in South Africa. The sales of natural beef in the abattoirs results in the generation of large financial rewards in both native and international markets as compared to that of the genetically modified ones (Musemwa et al., 2008). The promotion of sales of free-range cattle beef should therefore be supported by government policies which allow herders to sell their beef in locally-owned abattoirs solely managed by farmers' co-operative Schemes, so that these farmers can be a role player in these abattoirs.

CONCLUSION

Cattle farming maintains a vital position in several rural communities because it boosts economic empowerment and provides animal products including milk, meat, hides and skin. To improve cattle production, some concerned bodies including the South African government instigated some improvement programmes one of which is the Nguni Cattle Scheme to support herders in cattle husbandry. Conversely, cattle husbandry in rural areas is still being bedeviled by a host of other issues which include poor marketing and production. Likewise, constraints such as diseases and the inability of smallholder farmers to directly (unless by middle-men) partake in the formal market also negatively affects cattle commercialization for poor-resourced farmers. There is the need for all stakeholders including the government, local farmers, and meat industry partners among others to look into the matter of issues related to marketing and production of cattle as faced by indigenous herders, as well as implement policies that will promote formal marketing of cattle to the ever-increasing demand of beef by consumers for safe meat

and eventual financial profits of communal farmers from cattle sales.

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NOVELTY STATEMENT

Smallholder indigenous cattle farming in South Africa has been pointed as a sector of agriculture that forms a major driver through which poverty reduction and community development can be realized. However, several constraints have risen in this sector to threaten progressive production benefits on cattle in this area. Thus, the present study aimed to unravel workable initiatives that will promote best farming practices in rural communities with the view of utilizing locally adapted Cattle breeds to further boost cattle production.

AUTHORS' CONTRIBUTIONS

The author's made substantial contributions

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