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The Production (Reproduction, Mortality and Herd Size) of Beef Cattle in 'Fast Track' A1 and A2 Resettlements Schemes in Bubi, Gwanda, Umguza and Matobo Districts of Zimbabwe

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Abstract – **This paper explores the production (number of calves per herd per year, number of animals that die per herd per year and average herd size) of beef cattle in villagised A1 and individualised A2 model of the "Fast Track Land Reform Programme" in the Matabeleland region of Zimbabwe. The resettlement model was premised on increasing herd productivity through increasing the availability of grazing land and water with the assumption that the resettled farmers would abandon subsistence agriculture in favour of market driven production. The follow up assumption was that improvement in beef cattle production would significantly increase household incomes for the farmers and contribute to poverty alleviation. Determining the productivity of beef cattle from A1 and A2 schemes was frustrated by poor record keeping. This study focused on three indicators that the farmers could easily quantify and verify, namely: number of calves per herd per year, number of deaths per herd and herd size. Quantitative and qualitative surveys were used to collect information from sampled farmers and key informants. A total of 196 records were collected (47 from Bubi, 39 from Gwanda, 50 from Umguza and 60 from Matobo Districts). Eighty six (86) records were collected from A1 settlements (37 from Bubi, 5 from Gwanda, 15 from Umguza and 29 from Matobo Districts) 110 records were collected from A2 settlements (10 from Bubi, 34 from Gwanda, 35 from Umguza and 31 from Matobo Districts).The data was analysed using SPSS. A Fixed Effects Regression Model (FRM) and the Maximum Likelihood Estimation (MLE) procedures were applied. The study revealed that average herd size was 29.8±13.7, numbers of births per year were 16.6±9.6 calves/herd and numbers of deaths were 4.7±1.1 animals per herd during the one year period of reporting. The findings compare very well with the national averages of 46% (compared to 56%) and 16% (compared to 16%) for birth and death rates respectively in the communal sector and fall far lower than the then large scale commercial sector (LSCS) rates which had mean calving averages of 79% and mortality rates (rangeland) of 3%. It was suggested that the increased production of A2 farmers over A1 farmers was a function of scale due to increased grazing land rather than improved efficiencies of production. A study of success factors showed that tenure security, type of resettlement scheme, livestock husbandry, breed composition, and education had a larger coefficient of determination value (R^2 = 66.17%) hence a significant effect on cattle production in resettlement areas. The implication of these findings is that beef production in Fast-Track resettlement areas has not reached the pre Fast Track levels of large scale commercial farms but close to the levels of communal farms. However, this study shows that there is scope for improvement. The resettled farmers have not made significant investments in securing inputs and technology to enhance their productivity. Improving the competitiveness of the beef sector in Zimbabwe's resettlement areas will require farmers to raise their management levels, improve input supply, provide adequate water and enhance use of superior genetics to achieve greater productivity.**

Keywords – **Fast Track Land Reform, Villagised A1 Settlement Model, Individualised A2 Settlement Model, Beef Production, Matabeleland Region, Subsistence Production, Market Driven Production.**

I. Introduction

In early 2000 the compulsory acquisition of land for redistribution and resettlement through the 'Fast Track Land Reform Programme' (FTLRP) transformed the face of agriculture in Zimbabwe. The latter was previous bi-modal comprising communal agriculture (largely subsistence) and large scale commercial (that was driven by markets). The FTLRP resulted in more than 80% of former large scale commercial farms (LSCF) being subdivided and redistributed to beneficiaries including ex-communal farmers (Scoones *et al,* 2010; Moyo *et al* 2009; Rukuni *et al* 2006; GoZ , 2001).The need to address previous imbalances in land utilisation for agriculture and increase smallholder cattle production was necessary to create room for new players in the livestock industry and afford them an opportunity to engage in commercial or market driven beef cattle production. As reported by Rukuni, 1999; Moyo *et al*, 2009; Mahenehene, Mavedzenge, Murimbarimba, Scoones, and Wolmer, 2006, one reason for FTLRP was to decongest the communal areas, provide land to the landless peasant farmers and offer them an opportunity to rear livestock using systems that are driven by markets.

The beneficiaries of the FTLRP were settled using two popular models, namely: A1and A2 farmers (Scoones, 2010; Moyo *et al* 2009). The A2 model was an individualised ownership model in which one individual was allocated land holdings from 100 to 1500 hectares. The latter scheme was expected to promote market driven cattle production and produce raw materials for high level beef commodity chains. The villagised A1 model was a structured communal settlement with demarcations for communal arable land and grazing land. This scheme allocated each farmer more arable and grazing land than was the case with the traditional communal areas (Moyo, 2004) and had a potential to also produce excess product for markets. In both resettlement schemes the new farmers are required to show responsibility and begin to deliver the commodities to support the agro based industrial sector since the industry had collapsed within the period in question. In the communal farming sector cattle play a significant role in the provision of income, meat, milk and are used as a strategy for risk aversion (Barret, 1991). Cattle are a form of capital asset and can be used for other social functions such as transport and payment of lobola (Zhou *et al*, 2013; Barret, 1991). In this sector off-take to the processing value chain remains low at 5% (Sibanda, 2005). However, livestock have the potential of making a significant contribution to the national economy, as indicated by the performance of the sector prior to FTLRP (World Bank, 2008). Market driven beef farming in particular, presents the best opportunity of transforming the beef production industry in Zimbabwe. It is thus imperative that the newly resettled farmers cover the gap left by large scale commercial farmers that supplied most of the product needed by the industry. Farmers settled under the villagised A1 model have the potential of increasing the volume and quality of product delivered to the market if they desist from consumer oriented farming to market oriented beef cattle production.

The objective of this study was to determine the production levels of resettled farmers and establish their ability to engage in market driven production. This study was carried out in the Fast Track resettlements (A1 and A2 farms) of Bubi, uMguza, Gwanda and Matobo districts of Matabeleland Provinces which are traditional cattle producing areas. The poor record keeping by farmers negatively impacts on monitoring the indicators of beef production to (such as calving rate, mortality rate, and off-take rate). The study also sought to identify success factors associated with the more productive herds.

II. Materials and Methods

2.1 Study Sites

The study was carried out on the following A1 and A2 settlements; in wards 21 and 23 of Matobo district, in Wards 21 and 23 of Gwanda district in Matabeleland South Province; in wards 14 and 19 of Umguza district and in wards 10 and 14 of Bubi district of Matabeleland North Province. The two provinces are in different ecological zones. Districts in Matabeleland South Province (i.e., Matobo and Gwanda districts) are characterized by relatively low rainfall (450 – 650mm) per annum with periodic seasonal droughts (Meteorological Department, 2011). The vegetation comprises mainly of a Tree Bush Savannah (TBS) type with Acacia and *Combretum* species being the most dominant tree species. Mopane is the second dominant tree especially in patches of sodic soils. The grass type found in the area comprises mainly of the *Panicum maximum, Heteropogon corntotus, Erasgrotis curvula and Setaria sp.* In contrast districts of Matabeleland North Province are characterized by predominantly red and hard wood bushes, Hyperrhenia grass, and pockets of Heteropogon sp and receive on average 550mm rainfall per annum (Vincent and Thomas, 1960).

2.2 Sampling Technique

Two districts from each province (i.e. Matabeleland north and Matabeleland south) were selected. Within each district two wards comprising of A1 and A2 models were randomly selected. In a separate exercise 30 plot holders/farmers with cattle were randomly selected from within each ward. In addition, a snowball technique, in which identified key informants further referred researchers to other informants knowledgeable about issues being investigated, was used to identify and select sixteen successful farmers among the selected districts. The success of farmers was measured in terms of the herd size and off-take rates per year.

2.3 Data Collection and Analysis

The data was collected using structured questionnaires that were administered through face-to-face interviews and observations. Because of the lack of credible records among these farmers groups, the data was collected within a period of one year (2013) to allow fresh memory to recall, increase accuracy of information delivery and reduce speculation. The questionnaires were administered on 240 plot holders / farmers in eight wards (30 from each ward). The information collected included house demography, cattle husbandry practices, cattle production parameters (calving, mortality rates and herd size); government assistance offered to farmers in resettled areas, breed composition, and cattle marketing. Calving rate was defined as number of animals that are born within the year in question. Mortality rate was defined as the number of animals old and young that die within the year in question and herd size was defined as the total number of cattle that are kept by farmers within a particular district at a particular time.

The response rate was 82 %. 86 records were collected from A1 settlements (37 from Bubi 5 from Gwanda, 15 from Umguza and 29 from Matobo Districts) 110 records were collected from A2 settlements (10 from Bubi, 34 from Gwanda, 35 from Umguza and 31 from Matobo Districts).

Success Factors	Economic rationale for selecting variable
Right of tenure	Absence of tenure rights (offer letters and title deeds) reduces confidence of farmers to increase cattle production.
Type of Resettlement	A2 farmers in resettlement areas are more likely to increase their production than A1 farmers due to bigger farm sizes
Level of Level of Education	Education may promote adoption of new technologies by increasing farmers' access to information and ability to adapt to new opportunities.
Good livestock husbandry practices	Low risk aversion in experienced farmers. Experienced farmers are more kin to adapt new farm technologies.

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Use of Crop Residues	Farmers who keep stover for supplementary feeding during winter have more potential to save their cattle from poverty.
Access to Water	Water inaccessibility has a negative effect on ensuring cattle survival. Farmers with readily accessible water have better opportunities to raise their cattle production
Breed composition	Farmers with mixed breeds (exotic and indigenous breeds) showed positive growth in herd size than farmers with either indigenous or exotic breeds only.
Government input assistance	Farmers invest more if they have resources at their disposal

III. Statistical Analyses

The data collected on identified production parameters was analysed qualitatively using SPSS version 21 (2011) and quantitatively using SAS (2009). Production parameters (comprising herd size, number of births and mortality) was analysed using regression models that independently fitted the fixed effects of location (ward within district) and type of resettlement scheme (namely A1 and A2 resettlements). The model used is shown below:

$Y_{ikj=}$ intercept$_i$ + fixed effect $_k$ + error$_j$ (1)

Where:

$Y_{ikj\ represents}$ the dependant variable determined by the fitted effects i, j and k. (The dependable variables comprised calving rate, mortality rate and herd size).

Fixed effect $_k$ = the fixed effect k comprising ward within district, OR type of resettlement.

error$_j$ = the random effect due to error of measurement.

This process was undertaken to each of the production traits (herd size; number of births; and number of deaths). Least squares estimated for all key fixed effects were determined.

The following multivariate linear regression model was used to test the importance of success factors shown in the table above.

$Y_{ikjm=}$ intercept$_i$ + fixed effect $_k$ + fixed effect $_j$ + ……. + error$_m$ (2)

Where

Y_{ikjm} represents the dependant variable determined by the fitted effects i, j, k to m. (The dependable variables comprised calving rate, mortality rate and herd size).

Fixed effect $_k$ = the fixed effect k comprising the first success factor

Fixed effect $_j$ = the fixed effect j comprising the second success factor

,,,,,.. = the fixed effects representing other individual success factors.

error$_m$ = the random effect due to error of measurement.

A step up regression process was used to determine important factors. The R^2 value (Coefficient of Determination) was used as the criteria for determining the goodness of fit of the model. A high R^2 value indicated a good model with the lowest residual variance (error) and a low R^2 value indicated a poorly fitting model with a high residual error variance.

IV. Results

Ward effect was a major factor affecting production parameters (i.e. herd size, calving and mortality levels). Farmers in Ward 23 in Matobo had the largest average herd size of (49.0±11.3) while Bubi ward 10 had the least mean herd size of 11.6±8.2 (Table 1). High numbers of calves were born in ward 23 of Matobo with 27.7±8.1 calves born within the period under study and least deaths of 3.4±2.1 animals. Umguza district in ward 19 came second after Matobo in both high herd ownership and number of calves of 39.9±16.1 and 14.9±11.6 respectively. Best average herd size ranking among the districts were Matobo ward 21 and uMguza ward 19, (Table, 1).

Table 1: The effect of ward within district on herd size, number of calves born and mortalities within the 2012/3 period in Bubi , Gwanda, Umguza and Matobo districts of Zimbabwe

Ward within District		n[1]	Herd Size	Births/farm	Deaths/farm
			Mean ±se[2]	Mean ±se	Mean ±se
Bubi	10	19	11.6±8.2	5.1±13.1	5.0±1.0
	14	28	32.7±11.3	10.6±8.1	4.9±0.9
Gwanda	21	17	13.1±4.7	16.4±7.8	4.4±1.1
	23	22	15.1±8.0	20.0±12.9	5.4±1.0
Umguza	14	32	38.8±10.2	16.0±7.4	5.0±0.9
	19	18	39.9±16.1	14.9±11.6	4.7±1.0
Matobo	21	32	38.8±10.3	27.7±8.1	3.4±2.1
	23	18	49.0±11.3	22.3±8.1	4.8±1.0
Overall			29.8±13.7	16.6±9.6	4.7±1.1

[1]n = Number of observations; [2]Standard error

Resettlement models had substantial effect on herd size; births and mortality with performance from A2 settlements being superior to A1 settlements (refer to table2). The impact of the resettlement model was recognised across all the wards; for instance, in Matobo district A2 farmers had better average herds, births and lower mortalities than A1 farmer. Herd size in Matobo district for A2 model was 74.3±16.6 vs. 23.8±15.6 in A1 farms, births 33.3±11.8 vs. 11.4±11.2 in A1 farms and deaths of 7.3±1.1 vs.37.4±17.1 in A1 farms than A2 model by virtue of bigger land holding of up 1500 ha (Moyo *et al,* 2009). A2 models tend to carry larger herd sizes than individual herds in A1 farms. Hence the observed superior performance of animals in A2 farms is due to scale of operation rather than improved efficiency of production.

Table 2: The effect of resettlement model (mean ± standard error) within district on herd size, number of calves born and mortalities within 2012/13 period in Bubi, Gwanda, Umguza and Matobo districts of Zimbabwe.

District	n[1]	Resettlement Model	Herd Size	Births/farm	Deaths/farm
Bubi	19	A1	3.8±1.6	2.8±1.2	3.9±1.1
		A2	19.5±3.1	7.5±**3.7**	12.0±**6.3**
	28	A1	17.9±14.1	3.0±0.1	2.4±1.5
		A2	47.5±17.7	18.3±12.7	9.1±1.4
Gwanda	17	A1	8.0±6.7	1.0±3.4	7.0±5.1
		A2	18.1±16.5	3.1±1.8	22.4±18.1
	22	A1	7.5±3.0	10.5±3.6	5.5±6.3
		A2	22.7±14.0	29.5±10.1	16.8±7.1
Umguza	32	A1	27.6±15.6	19.1±11.2	13.7±7.1
		A2	50.1±13.5	13.0±9.7	12.5±14.8
	18	A1	6.6±1.7	8.0±2.7	5.8±1.8
		A2	50.3±14.1	17.0±10.1	5.9±5.5
Matobo	32	A1	23.8±15.6	11.4±11.2	37.4±17.1
		A2	74.3±16.6	33.3±11.8	7.3±1.1
	18	A1	14.7±6.9	5.0±1.3	6.2±2.6
		A2	65.1±1.7	24.7±12.7	84.1±9.1

[1]n = Number of observations

The key success factors to beef cattle production in resettlement farms are shown in table 3 below. Tenure, Farm Category, Livestock husbandry, Breed Composition, and Education had a larger coefficient of determination value (R^2 = 66.17%) hence a significant effect on cattle production in resettlement areas. Model 3 and Model 7 have similar R2 value (R^2 =65.96% but model 3 is better than model 7 because it has got fewer parameters. In model 6 crop residues have no significant effect in cattle productivity. The best model chosen is model 5. Therefore the factors that affect herd size in A1 and A2 farms were farm category, tenure, breed composition, education livestock husbandry.

Table 4 shows a strong positive correlation (r=0.6) between the herd size and the number of heifers and track oxen kept by farmers. Positive correlation (r=0.7) between the herd size and number of track oxen in both A1 and A2 scheme shows that farmers reserved track oxen for draught purposes. A negative correlation (r=-0.07) between the herd size and the bulls (for example in Matobo district) indicated that farmers kept fewer bulls per herd. The positive correlation between the herd size and number of cows in A2 schemes (Bubi, uMguza and Matobo) shows that the farmers were still building up their herd size.

Table 3: Key success factors to beef cattle production (Herd size) in A1 and A2 resettlement farms in within 2012/13 period in Bubi, Gwanda, Umguza and Matobo districts of Zimbabwe

Model	Success Factors Fitted	R^2
1	Farm Category	64.51%
2	Tenure, Farm Category	64.91%
3	Tenure, Farm Category, Education	65.96%
4	Farm Category, Tenure , Education , Government Assistance	66.15%
5	Tenure , Farm Category, Education, Livestock Husbandry, Breed Composition	66.17%
6	Farm category, Tenure, Breed Composition, Livestock Husbandry, Crop Residues, Education	66.11%
7	Farm Category, Tenure, Breed Composition, Education, Livestock Husbandry, Crop Residues, Water Access , Government Assistance	65.96%

Table 4: Correlations between herd size and classes of stock in A1 and A2 farms in within 2012/13 period in Bubi, Gwanda, Umguza and Matobo districts of Zimbabwe

		Pearson's Correlations Coefficient (r)						
District	**Model**	**Bulls**	**Cows**	**Heifers**	**Young Bulls**	**Track Oxen**	**Steers**	**Calves**
Bubi	A1	0.2	0.4	0.6**	0.3	0.6*	0.4	0.5
	A2	0.8	0.7	0.9**	0.3	0.5	0.3	0.5
	A1	0.3	0.7**	0.6	0.8*	0.7*	0.5	0.7
	A2	0.9	0.8	0.7	0.8	0.6	0.9	0.8
Gwanda	A1	0.2	0.3	0.4	0.5	0.4	0.4	0.3
	A2	0.1	0.2	-0.1	0.3	0.4	0.05	0.2
	A1	0.3	0.5	0.5	0.4	0.2	0.2	0.4
	A2	0.4	0.4	0.7**	0.7*	0.6*	0.7**	0.4
Umguza	A1	0.3	0.5	0.3	-0.2	0.06	0.2	0.5
	A2	0.4	0.7**	0.6**	-0.1	0.3	0.7**	0.5*
	A1	0.5	0.3	0.5	0.5	0.5	-0.1	-0.1
	A2	0.5	0.8**	0.7**	0.7**	-0.09	0.9**	0.8**
Matobo	A1	-0.1	0.4	0.2	-0.07	0.6	0.1	0.4
	A2	0.2	0.4	0.4	0.3	0.05	0.4	0.4
	A1	0.3	0.7*	0.6*	0.3	0.6*	0.4	-0.1
	A2	0.5	0.6*	0.4	0	0.3	0.5	0.02

** Significant $P < 0.05$; *Significant $P < 0.01$;
r – Correlation coefficient

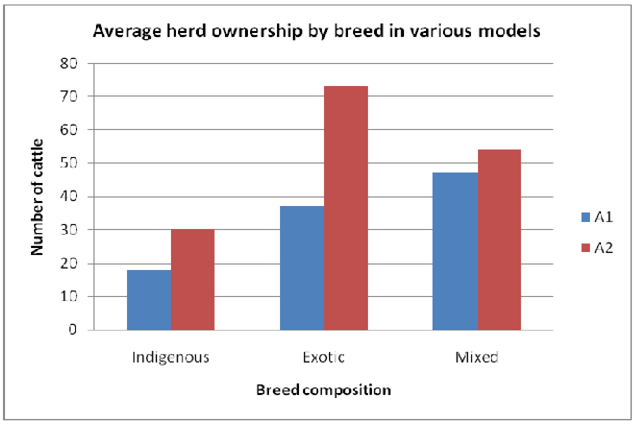

Fig.1. Average cattle ownership of various breeds by A1 and A2 farmers within 2012/13 period

Average herd size ownership per model is shown in Figure 1. Most farmers in A2 schemes had more exotic breeds than indigenous cattle. On average A2 schemes had 71 exotic cattle breeds compared to 36 in A1. Farmers acquired cattle from white farmers who left their farms during the FTLR programme. Moyo et al (2009) has also reported that the former commercial farmers left some of the cattle for farm workers which were later adopted by the new settlers. In comparison to the A1 sector, the A2 sector had higher percentages of households owning all the different breeds found in the resettled areas. For instance, average herd sizes of 52 of mixed breeds were found in A2 sectors compared to 48 in A1 sector (Figure 1)

Table 5 shows the comparative analysis in baseline data of cattle numbers, births and deaths per herd of 100 in various schemes against the observed data in FTLR schemes. According to Matowanyika (1998); ZIMVAC report (2012) and Mahenehene et al (2006), average cattle numbers Large Scale Commercial Sector (LSCS) were 1230 with mean births of 79 calves and deaths of 3 per herd of 100 .Communal Areas (CAs) and Resettlement Areas (RAs) had more or less similar cattle herd size, number of births and deaths per year (Table 5)

Table 5: Average household herd size, number of births, and number of deaths comparison between large Scale Commercial Sector (LSCS), Communal Area sector (CA) and Fast Track Land Resettlement Areas (FTLR)

Category	LSCS	CA	RA (FTLR)
Herd size	1230	30	29±13.7
Number of births	79	46	16.6±9.6
Number of deaths	3	16	4.7±1.1

Source: ZIMVAC, 2012; Central Statistical Office, Matowanyika, 1998.
LSCA – Large Scale Commercial Area
CA – Communal Area
RA – Resettlement Area
NB. The births and deaths are expressed as numbers of animals that are born or die per herd of 100.

V. Discussion

The study identified; tenure, farm category, livestock husbandry, breed composition and education as the key drivers to beef cattle production in resettled areas. Studies made by Matunhu (2011 and Chiremba and Masters (2003) all concur that herd management, extension and breed genetics are major factors with a significant impact on livestock production by smallholder farmers. Sibanda (2007) further reported that health herd management is very crucial in ensuring productivity of cattle. Success factors in beef cattle production have been reported by Masunda and Mutetwa (2008) who together concur that farm sizes, genetics or breed composition, herd management, nutrition and feed supply key aspects to beef cattle production. Scoones (1990) has also emphasized availability of sufficient grazing as an important characteristic to cattle rearing in communal areas and cattle ranches. The study revealed that large herd sizes were observed in Matobo and uMguza areas. These areas are characterized by sweet grass (predominantly *Panicum maximum*) *Combretum imberbe* and acacia trees, which provide adequate foliage for grazing (Vincent and Thomas, 1960). Moyo and Mugabe (2008) defined a livestock sustainable rangeland as one with capacity to provide adequate protein throughout the year for foraging animals. Muir and Blackie (1994) further indicate that nutrition is a major key success factor in cattle production on rangelands.

Moyo (2004) observes that A2 farmers have larger grazing areas of 150 to 3000 ha than A1 (25-100 ha) which allows more cattle to be kept per unit area. Although the A1 farmers had a higher proportion of household owning cattle, the A2 farmers were dominant in the number of heads of cattle owned per household. Scoones (2010) has also noted that reduced land size in A1 resettled areas has a negative impact in the number of animals kept by the farmers as a constraint to cattle production. In the commercial sector calving rate of up to 84% and mortalities of less than 3% (Sibanda, 2005) have been recorded. This proves that superior performance in A2 resettled farms is due to scale of production and not necessarily the efficiency of production. Average cattle ownership by farmers positively correlates with the areas in which farmers are resettled where A2 farmers have bigger farms than A1 farmers (Moyo, 2004). Off-veld cattle rearing require bigger land area per livestock unit (LU) to allow for maximum production. In region V carrying capacities of up to 8-10 ha per LU have been cited (Mugabe, 2008).

There was a strong significant ($P<0.0001$) and positive correlation (r) between herd size and number of heifers. Heifers also showed a robust ($r=0.91$) correlation against the herd size. These two observations show that the number of females determines the growth of the herd. In this regards a weak correlation, between herd size and track oxen essentially in A2 resettlement farms shows that a few track-oxen are kept for by farmers within the districts mainly for power Mutema (2012). The potential for growing the herd was shown to be high as indicated by high correlations between the herd size and the cows (Table 4). Farmers have therefore, a high potential to develop a commercial herd against the theory of a 'full drinking glass hypothesis' (Khombe, 2008) because they appeared to have adequate replacement heifers particularly in A2 resettlement schemes. The "full drinking glass hypothesis" shows that farmers can begin to consistently sell excess cattle once the maximum number of breeding females/cows is attained.

Cattle ownership trends tended to be skewed towards possession of mixed breeds in both A1 and A2 schemes. However, A1 one farmers who are mostly villagised and self contained (Scoones *et al.,* 2010) have bulk of their herd comprised of exotic breeds. Mutema (2012), Matunhu (2011) and Moyo (2004) have all reported that after the (FLRP) most former white commercial farmers left some of their cattle and property, which would have been adopted by the new A1 farmers. This explains the abundance of exotic germplasm in most of the resettled farms. In certain instances for example in Matobo and Bubi the coexistence between resettled farmers and former white commercial farmers allows for cross breeding between the herds. While indigenous breeds have good traits for survival (disease and pest tolerance) under dry regions, they have shown a low performance on carcass yield under the current grading system. Farmers have resorted to keeping exotic and mixed breeds in an endeavour to produce competitive animals that will fetch bigger price at the market.

Khombe and Ndlovu (2008), and Sibanda (2005) reported that the revolutionary changes of the Fast Track agrarian land reform resulted in the break-down of the beef industry resulting from the reduction of the commercial herd from 30% to 7 % of the national herd. Reduced cattle productivity in the new settlements farms (A1 and A2) have been as a result of the scarcity of inputs, that is, stock feed (due to inadequate grazing areas and drought), damaged animal husbandry infrastructure and disrupted systematic breeding` (Mutema , 2012). Lack of capital has been a major constraint to A2 farmers to finance beef cattle production operations as loans from the banks are not accessible (Zhou et al, 2013). Hazell et al (2007); Taman et al (2004) and Poulton (2008) have cited that success in the beef sector is enabled by investment incentives in the form of long term leases, infrastructure and input loans/subsidies and training at market linkage. It is not clear how much of the reduction in marketable beef is a result of the substitution of market oriented production with subsistence production.

VI. Conclusion

Improving the competitiveness of the beef sector in Zimbabwe will require farmers to have access to have adequate inputs and be able to practice improved husbandry levels to achieve greater productivity. This includes achieving higher calving rates, lowering age at first calving, reducing calving intervals, enhanced use of superior genetics and lowering mortality rates. The study revealed that good cattle management, good breeds, tenure, farming category (A1 or A2 models) and education are key success factors to cattle production in A1 and A2 resettlement farms. High birth rates and low mortality rates were realised in A2 schemes which had relatively better access to extension and bigger grazing area than A1 villagised schemes. Therefore, it is agued in this paper that superiority of A2 farms is just due to scale and not necessarily a result of improved efficiency of production. Hence there is no evidence that the resettled farmers are able to commercialize.The factors that affect beef production in A1 and A2 resettlement areas can be broadly categorised under nutrition factors, extension, cattle genetics, and tenure policy.

RECOMMENDATIONS

Policy intervention initiatives to address issues of farm sizes are prime issues to be further explored to ensure sustainable production in A2 farms. A sound cattle production industry is supported by a policy environment that allows farmers to borrow money from the markets to invest in inputs and technology. The failure of Government to give full tenure or tradable leases to the farmers has jeopardised their ability to mobilise funds from financial institutions. Long term cattle finance instruments are a key to ensure continuity in cattle production enterprises. Accessibility to marketing information and provision of marketing infrastructure such as (selling points) in A2 farms is of paramount importance to ensuring effective marketability of cattle in A2 farms.

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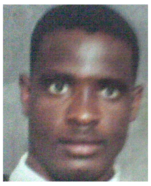

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