

## Perceived Social Impacts of Disease Outbreak among Livestock Farmers along Border Villages of South Africa and Namibia

O.I. Oladele, M.A. Antwi and A.E. Kolawole  
Department of Agricultural Economics and Extension,  
North West University, Mafikeng Campus, 2735 Mmabatho, South Africa

**Abstract:** This study examines the perceived social impacts of disease outbreak among livestock farmers along border villages of South Africa and Namibia. This was due to the high volume of trans-boundary activities particularly with respect to animals. The Northern Cape shares boundary with Namibia. The population of study is all livestock producers in border villages along Northern Cape provinces, a mix of purposive and random sampling were used to select 140 respondents for the study. Data were collected through the use of questionnaires, on farmers personal and farm characteristics and farmers perceived social impacts of disease outbreak. Descriptive statistics were used to analyze farmers personal and farm characteristics. Regression analysis was used to determine the relationship between livestock farmers' perceived social impacts of disease outbreak and other study variables. The results show that 32% of the livestock farmers fall within the age 61 years and above 83.6% of the farmers are male, 56.4% of the farmers are married; most of the farmers are literate, 67.9% of the respondents have less than five dependents, 97.9% of the farmers have livestock based farming system, 70% reported that they have no contact with extension agent, 89.3% have access to market. Significant determinant of perceived social impacts of disease outbreak are marital status ( $t = 3.753$ ), farm size ( $t = -1.82$ ), farming experience ( $t = -1.836$ ).

**Key words:** Perception, social impacts, disease outbreak, livestock farmers, farm

---

### INTRODUCTION

Animal diseases have always come with their devastating correlates experienced in different forms and magnitudes by stakeholders in the livestock industry. This degree of debilitating impacts of animal disease are directly related to the type of disease, breeds of animals, type of animal husbandry, farmers perception of animal disease risks, emergency strategies put in place and government policies on livestock disease. These impacts could be direct and incidental consequences of animal diseases. The direct impact which is the immediate consequence of the actual disease outbreak include animal weight loss, impaired food security, loss of income, and negative impact on human health. Maropofela and Oladele (2012) asserted that a major direct economic impact of animal disease is a reduction in production efficiency whose severity is determined by the diversification of the farm economy. However, the impact is more felt and become a threat to local food security if the local economy depends on one or a few susceptible commodities (FAO, 2004). Paarlberg *et al.* (2002) submitted that animal disease can lead to production

problems which include interruptions of production on infected farms and reduction in animal products for exports with an attendant fall in price. The implication of this is that both poor and rich livestock producer are marginalized from higher-price livestock markets which restrict their capacity for value added trade (FAO). The incidental or social impact of animal disease is the indirect consequences of animal diseases. They are often the result of exposure to prolonged stress and anxiety whose cause ranges from financial distress associated with loss of income, feelings of failure or guilt or response to peer pressure due to a devastating effect of animal diseases. Its attendant fall out among livestock owners and other stakeholders in the industry include loss of productivity, domestic violence, marital and family breakdown or even suicide. Farmers can also suffer inability to access fund, withdrawal of children from school, isolation and can discourage younger generation from taking to agriculture. It can also result in social behavior that undermines effective disease control (Evans 2006). Moreover, it can be growth or decline in regional output, employment and population; ratio of younger population to older population; age of agricultural owner-operators and

agricultural workers; median income relative to the national median; educational and skill profile of inhabitants; extent of housing ownership, unemployment rate, degree of structural change from declining industries to expanding industries; degree of remoteness; frequency and scale of shocks. Therefore, considering this milieu, assessing social impact of animal disease is an important integral part whose inclusion in animal disease impact investigation, gives a holistic view of animal disease impact assessment. Thus, this study tends to investigate the socio impact of animal disease among livestock farmers along border villages of South Africa and Namibia.

**MATERIALS AND METHODS**

The study was carried out in selected villages of the Northern Cape Province. South Africa has land boundaries: total of 4,862 km and has land boundaries with countries such as: Botswana 1,840 km, Lesotho 909 km, Mozambique 491 km, Namibia 967 km, Swaziland 430 km and Zimbabwe 225 km. Land boundaries is the total and individual length for each of the contiguous border countries, when available, official lengths published by national statistical agencies are used (CIA, 2012). The selection of the study area was due to the high volume of trans-boundary activities particularly with respect to animals. The Northern Cape shares boundary with Namibia. Communities were purposively selected based on the concentration of livestock practices while farmers were randomly selected from each community. The population of study is all livestock producers in border villages along Northern Cape provinces, a mix of purposive and random sampling were used to select 140 respondents for the study. Data were collected through the use of questionnaires, on farmers personal and farm characteristics and farmers perceived social impacts of disease outbreak. Descriptive statistics were used to analyze farmers personal and farm characteristics. Regression analysis was used to determine the relationship between livestock farmers’ perceived social impacts of disease outbreak and other study variables.

**RESULTS AND DISCUSSION**

Table 1 shows that 32% of the livestock farmers are between 61 years old and above. The 26.4% of them fall within the age bracket of 51-60 years while 16.4% of the farmers are between 30-40 years old. Those farmers whose ages are <30 years are just 2.1%. The age distribution of the respondent reveals that old people are involved in the management of communal livestock in the study area.

This may be as because of the poor interest in farming by the younger population who might have chosen other job as means of livelihood explain rural urban migration. This finding tallies with findings of Oladele and Moilwa (2010) which reported that herds were managed by older married men. It is also revealed in Table 1 that 83.6% of the farmers are male while 16.4% are female. It shows that livestock farming is a male dominated enterprise. This agreed with the findings of Belay *et al.* (2012) which reported that dairy cattle keeping is mainly male domain. The 56.4% of the farmers are married; the implication of this is that family members the wife and the children will readily supply the labour needs on the farm. Agricultural tasks are at times gender defined, determined either by the difficulty of the various agricultural tasks or by the prevalent culture in an area. Therefore, farmers wives will come in handy in carrying out those tasks that are assumed gender biased. In livestock processing of milk and fetching of water for the animals is regarded as women tasks. Women play these roles to complement the effort of their husbands and to improve the family income. Vabi *et al.* (1993 ) reported that Fulani women process and market fresh milk as a means of livelihood and to also improve family income. The 22.1% of the respondents were widows. Animals kept by these

**Table 1: Personal characteristics of livestock farmers**

Variables	Frequency	Percentage
<b>Age</b>		
<30	3	2.1
30-40	23	16.4
41-50	32	22.9
51-60	37	26.4
≥61	45	32.1
<b>Gender</b>		
Male	117	83.6
Female	23	16.4
<b>Marital status</b>		
Single	19	13.6
Married	79	56.4
Widow	31	22.1
Divorced	10	7.1
Widower	1	0.7
<b>Religion</b>		
Christianity	138	98.6
Bahai	1	0.7
Hinduism	-	-
Islam	-	-
Other	1	0.7
<b>Educational level</b>		
Primary	49	35.0
Secondary	37	26.4
High school	41	29.3
College	4	2.9
University	4	2.9
Others	5	3.6
<b>Number of dependents</b>		
<5	95	67.9
5-10	40	28.6
≥11	5	3.6

widows must have been inherited from their husbands. It therefore implies that these women must have been actively involved in the raising of these animals while their husbands were still alive and could sustain that because of the experience gathered over the years. This is also made possible because of the support probably given by the children. The 16.4% were single, 7.1% were divorced and 0.7% is widower.

Table 1 also shows that 35% of the farmers have primary school education, 26.4% have secondary school education, 29.3% attended high school and 2.9% of the respondents went to college and university. This reveals that most of the farmers are literate. High literacy among farmers is a precursor to technology adoption. Table 1 also reveals that 67.9% of the respondents have less than five dependents, 28.6% have between five and ten respondents and 3.6% have above eleven respondents. These dependents will be readily available for work on the farm.

Table 2 reveals that 42.9% of the farmers have <10 years of farming experience, 39.3% have between

10-20 years of experience and 10.7% have between 21-30 years of experience. This length of farming experience shows that livestock farmers are not new in the livestock production. Their substantial years of experience in livestock farming also counts in good management practices which comes from years of experience in livestock farming, particularly as it affects distinct identification and record keeping of diseases that affect their animals. As revealed in Table 2, 18.6% of the farmer own the land they use for keeping livestock, 20.7% rented their land. This may not be good for rapid livestock development because farmers' management decisions may be subjected to the whims and caprices of the land owners. The 60% of the farmers have the land they use for livestock keeping allocated to them; this may be a fall out of the land reform policy in implementation in South Africa which makes land available to emerging farmers.

Table 2 also shows that 97.9% of the farmers have livestock based farming system, 0.7% practiced crop based farming whereas 1.4% of the respondents practiced mixed farming system. This revealed that livestock farming is the culture in the area of study. The low percentage recorded by crop based and mixed farming among the respondents may be as a result of the poor rainfall because of the arid nature of the area and the vast area of savanna which support livestock farming, especially ruminants. Also, farmers' poor awareness and knowledge of the benefits inherent in these practices, specifically as it affects mixed farming in which animal wastes, dungs and dropping serves as manure and the remains of harvested crops serves as fodders for animals. Table 2 further revealed that 64.3% of the respondents have farm size of about 2000 ha, 25.7% have between 51-2000 ha whereas 10% of the respondents have <50 ha. This large area of land owned by farmers revealed that the most of the animals keep large stock; it also typifies the large land area requirement for livestock production particularly large area for pasture which animals can graze interchangeably to avoid overgrazing. Table 2 shows that farmers themselves provide 50.7% of the labour requirement, 20.7% comes from the family while 28.6% comes from hired labour. The 30% of the farmers reported that they have contact with extension agents while 70% reported that they have no contact with extension agent. This may be as a result poor coverage of extension officer which may be due to dearth of extension officer or inadequate livestock extension officer or poor working conditions particularly as it affects logistics, most of the time extension coverage is limited because of poor means of transportation 42.9% of the farmers say that they have regular contact with extension agents, 27.9% said they

**Table 2: Fam characteristics among livestock farmers**

Variables	Frequency	Percentage
<b>Years farming experience</b>		
<10	60	42.9
10-20	55	39.3
21-30	15	10.7
31-40	6	4.3
≥41	4	2.9
<b>Source of land</b>		
Personal	26	18.6
Rented	29	20.7
Allocated	84	60.0
Others	1	0.7
<b>Farming system</b>		
Livestock based	137	97.9
Crop based	1	0.7
Mixed	2	1.4
<b>Farm size</b>		
<50 ha	14	10.0
51-2000 ha	36	25.7
≥2000 ha	90	64.3
<b>Contact with extension agent</b>		
Yes	42	30.0
No	98	70.0
<b>Frequency of contact with extension agent</b>		
Regularly	60	42.9
Occasionally	39	27.9
Rarely	41	29.3
<b>Source of extension messages</b>		
Government	139	99.3
Prastatals	1	0.7
<b>Labour sources</b>		
Self	71	50.7
Family	29	20.7
Hired	40	28.6
<b>Access to market</b>		
Yes	125	89.3
No	15	10.7
<b>Access to credit</b>		
Yes	50	35.7
No	90	64.3

occasionally meet with the extension agents while 29.3% of the farmers reported that they rarely meet with extension agents. This can also be the fall out of inadequate extension officer either in number or by specialization it could also be as a result of poor supervision of this the 89.3% of the farmers have access to market while 10.7% of the respondents do not have access to market. Also, in Table 2, 99.3% of the respondent reported that government extension agents are the source of their extension messages while parastatals only provides 0.7% of the extension messages. This development reveals that non-governmental agencies are not actively involved in livestock extension in the area of study. The 35.7% of the farmers have access to credit while 64.3% of the respondents have no access to credit. This low percentage of farmers having access to credit may be as a result of stringent conditions attached to accessing credits by lending institutions which farmers find difficult to meet up with.

Table 3 shows the multiple regression analysis of the relationship between farmers personal and farm characteristics and farmers' perceived social impact of disease outbreak. The independent variables were significantly related to the farmers' perceived social impacts of livestock diseases. The F-value of 2.78 shows a strong relationship between the independent variable and perceived social impacts of livestock diseases. The significant determinant are marital status ( $t = 3.753$ ); farm size ( $t = -1.82$ ); farming experience ( $t = -1.836$ ). This implies that livestock farmers year of farming experience affect their perceived social impacts of livestock diseases. The F-value of 2.78 at  $p = 0.05$  shows that there was strong correlation between the independent variable and farmers' perceived social impacts of livestock diseases. The R-value is 2.78 while the  $R^2$  is 0.77; this implies

that the independent variables predict 77% of the dependent variable. The farm size, marital status and farming experience are independent variables which influences farmers' perceived social impact of livestock diseases. This therefore mean that married livestock farmers, farmers with large farm size and those with many years of farming experience perceived social impact of livestock diseases better than those farmers who are still new in livestock production. This may be because married farmers and their family members depend on the income from livestock farming so a threat to this source of income is a threat to the well-being of the entire family so married farmers tend to be more conscious of the impacts of disease outbreak than those who are not married. Farm size is another correlate to farmers perception of social impact of disease outbreak, this is because the larger the size of the farm the greater the investments and the greater the returns from the farms, larger farm size tends to employ more people who get their means of livelihood from there, either directly as paid employees or indirectly through participation in the value chain of production. Therefore, a disease outbreak in large farms tend to have a larger scale of social impact on the farmers, the products, the employees and those engaged in the value chain of production. Farmers years of experience also counts in their perception of socio impact may be as a result of their experience of disease outbreak and the attendant social impacts witnessed in their many years of livestock farming. Many of these experienced farmers might have made livestock rearing their major source of livelihood so an outbreak of disease impacts higher on them than somebody just coming into the business. Paarlberg *et al.* (2002) reported that Foot and Mouth Disease (FMD) have the potential to cause devastating damage, like death of animals, reduction in animal product for export and interruption in production in an uninfected farms.

Table 3: Multiple regression analysis of the relationship between farmers personal and farm characteristics and farmers' perceived social impact of disease outbreak

Variables	Unstandardized coefficients		Standardized coefficients		
	B	SE	(Beta)	t-value	Sig.
Constant	42.305	8.725	-	4.849	0.000
Sex	-3.431	2.906	-0.069	-1.181	0.239
Age	0.161	0.082	0.125	1.973	0.049
Marital status	-6.379	1.700	-0.242	-3.753	0.000
Household size	-0.119	0.391	-0.017	-0.305	0.761
Source of land	-0.264	0.721	-0.020	-0.367	0.714
Farm size	-0.001	0.000	-0.111	-1.820	0.070
Group membership	1.705	2.395	0.041	0.712	0.477
Extension contacts	1.040	2.185	0.027	0.476	0.634
Labour source	1.731	1.441	0.074	1.201	0.230
Income	-3.074E-006	0.000	-0.006	-0.086	0.932
Farming experience	0.181	0.099	0.108	1.836	0.067
R	0.278*	-	-	-	-
R <sup>2</sup>	0.077	-	-	-	-
F	2.488	-	-	-	-

## CONCLUSION

It can be seen from the study that social impact of diseases are felt differently between married farmers and those who are not married between experienced livestock farmers and those who are less experienced and between those farmers who operates on a large scale and those who have small farm sizes. It therefore become important therefore that enlightenment campaigns be organized for all categories of farmers to sensitize them on these multiple effects of socio impacts of disease outbreak in the study area. Socio impacts of livestock disease should also be a package in extension messages given to farmers in this area. Posters and billboards can be put in places with

messages on the impact of livestock diseases. Also, jingles or dramas can be run or staged in local Medias in the farmers ethnic languages to sensitize them on the devastating socio fall outs of disease outbreak. However, beside these sensitization and preventive methods structures should be put in place to ameliorate the social impacts of disease in case of disease outbreak, these can include forms of socio safety nets encourage and supported among farmers to cushion the effects of diseases. Hospitals should also be built to take care of those who need clinical attention. Moreover, a form of socio therapy like counseling units for the depressed farmers should also be provided to encourage them, this may not necessarily mean recruiting a retinue of personnel to do this, religious and traditional institutions in these domains can be saddled with the tasks of creating awareness and encouraging the farmers to ensure stability and a recapitalization after the loss with little supervision. Policy thrust that will take care of the emergencies like inability to pay school fees, poverty and socio disorder should also be provided by government to bail out livestock farmers. This may include offering of scholarships or bursaries award to children of affected farmers.

#### **ACKNOWLEDGEMENT**

Researchers gratefully acknowledge the financial support from Land and Agricultural Development Bank of South Africa Pretoria for the Land Bank Chair research activities in North West University (Mafikeng Campus).

#### **REFERENCES**

- Belay, D., K. Yisehak and G.P.J. Janssens, 2012. Socio-economic factors influencing urban small-scale dairy management practices in jimma town, Ethiopia. *Libyan Agricul. Res. Center J. Int.*, 3: 7-12.
- CIA., 2012. Fact Book, South Africa Land boundaries. Skyhorse Publishing Inc., USA., ISBN: 1616083328, Pages: 834.
- Evans, B., 2006. The social and political impact of animal diseases. *Vet. Ita.*, 42: 399-406.
- FAO, 2004. Globalization, Urbanization and Changing Food Systems in Developing Countries. In: *The State of Food Insecurity in the World*, FAO (Ed.). Food and Agriculture Organization of the United Nations, Rome, Italy, pp: 18-19.
- Maropofela, K. and O.I. Oladele, 2012. Farmers competencies on identification of lumpy skin disease causes symptoms and management practices in mafikeng municipality of North-West province, South Africa. *J. Anim. Veterin. Adv.*, 11: 3493-3498.
- Oladele, O.I. and M.N. Moilwa, 2010. Cattle farmers willingness to establish private grazing lands in Mahalapye, Botswana. *Livest. Res. Rural Dev.*, Vol. 22.
- Paarlberg, P.L., J.G. Lee and A.H. Seitzinger, 2002. Potential revenue impact of an outbreak of foot-and-mouth disease in the United States. *J. Am. Vet. Med. Assoc.*, 220: 988-992.
- Vabi, M.B., C.E. Williams and P.A. Francis, 1993. Involving fulani women in livestock extension strategies: A case study of borgu in kwara state of Nigeria. *J. Rural Extens. Dev.*, 1: 3107-3117.