

## Factors Affecting Livestock Farmers Perception of Risk of Disease in along Villages along South Africa and Namibia

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**Abstract:** This study examines the factors affecting livestock farmers' perception of risk of disease in along villages along South Africa and Namibia. 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' perception of risk of disease. Descriptive statistics were used to analyze farmers personal and farm characteristics. Regression analysis was used to determine the relationship between livestock farmers' perception of risk of disease and other study variables. The results show that 32% of the livestock farmers fall within the age 61 years and above. The 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 farmers' perception of risk of livestock diseases are marital status ( $t = 2.407$ ); labour sources ( $t = 4.202$ ); farming experience ( $t = 2.361$ ).

**Key words:** Livestock farmers, perception, risk of disease, farm characteristics, risk

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### INTRODUCTION

Livestock production is vital in the agricultural production of developing countries (Upton, 2004). Apart from its products, egg, meat and milk serving as food and major source of protein, it also serves as a means of livelihood and source of foreign exchange earnings through exports of its products and by products. Livestock also enhance cropping activities through the provision of organic manure for soil fertility, draught power for land cultivation and a cheaper means of transport to move products, inputs and even farmers in and out of the farm (Powell *et al.*, 2004). In mixed farming systems livestock reduce the risks resulting from seasonal crop failures as they add to the diversification of production and income sources (Sansoucy *et al.*, 1995). In South Africa, livestock production contributes 49% of its total agricultural output while its dairy industry provides employment for about one hundred thousand people (Department of Agriculture Forestry and Fisheries Accessed 28/2/2013). However, diseases remain a major hindering factor to livestock productivity in Sub-Saharan Africa. The outcomes and severity of infectious diseases are the result of complex relationships between the infectious agent, animal husbandry systems, human

behaviour and the environment. Enticott (2008) in a study reported that farmers understanding of the nature of biosecurity risks are influenced by their local experience of disease which may vary from the stereotypes put across by government views or research or that of any other organisation in animal health intervention. Therefore, farmers generate this knowledge of animal health from their own local experiences, shared with their friends and neighbours. However while this does not translate that farmers perception of risk of animal diseases is completely isolated and substandard to that of other stakeholders in animal health services, an understanding of the factors influencing their attitude towards risk of livestock diseases will be a precursor to fine-tuning their inadequacies and accommodating their inventiveness. These will be necessary input to effective livestock disease prevention and virile animal health services.

Thus, this study sought to find out factors influencing farmers' perception of risk of livestock diseases in 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' perception of risk of disease. Descriptive statistics were used to analyze farmers personal and farm characteristics. Regression analysis was used to determine the relationship between the demand for animal health and other study variables.

**RESULTS AND DISCUSSION**

Table 1 shows that 32% of the livestock farmers fall within the age 61 years and above. The 26.4% of them fall within the age range of 51-60 while 16.4% of the farmers fall within the age range of 30-40 years. Those farmers whose ages are <30 years are just 2.1%. The age distribution of the respondent revealed that older people are involved in the management of communal livestock in the study area. This may be as a result of experiences and skills needed in the management of cattle in this type of system which the young people lacked. 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 whereas their female counterparts are just 16.4%. This show that livestock farming is male dominated. This agreed with the findings of Duguma *et al.* (2012) which reported that dairy cattle keeping is mainly male domain. The 56.4% of the farmers are married; this implies that family members will help in meeting the labour demands on the farms. Some roles in livestock production by culture seem gender specific for example the processing of milk and fetching of water for the animals. Women play these roles to complement the effort of their male counterpart in taking care of the animals and also generating income for the family. This is supported by the findings of Vabi *et al.* (1993) which reported that Fulani women process and market fresh milk as a means of

**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                    |           |            |
| 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 dependants</b> |           |            |
| <5                          | 95        | 67.9       |
| 5-10                        | 40        | 28.6       |
| ≥11                         | 5         | 3.6        |

livelihood and to also support the family financially. The 22.1% of the respondents were widows; animals kept by these 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. It is also revealed in Table 1 that 67.9% of the respondents have <5 dependents, 28.6% have between five and ten respondents and 3.6% have above eleven respondents. These dependents are ready and cheap sources of labour for 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 reveals that the farmers are not new entrants into the business of animal husbandry and might have

Table 2: Farm characteristics of 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       |
| Parastatals                                      | 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       |

graduated into owning live stocks by inheritance from their parents. This years of experience also counts in good management practices which evolves over many years of 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 affect rapid livestock development because farmers' management decisions may be subjected to the approval of the land owners. About 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 encourage blacks to take up farming. 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 most practiced 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 may be ignorant of the benefits of integrating animal production with crop farming as done in the mixed farming system. 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 underscored the large land area demand which particularly characterizes large livestock keeping. 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 inadequate extension officer or logistics problem or lack of technical skill in livestock management. The 42.9% of the farmers say that they have regular contact with extension agents, 27.9% said they 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 perception of risk of livestock diseases. The independent variables were significantly related to the farmers' perception of risk of livestock diseases. The F-value of 4.302 shows a strong relationship between the independent variable and farmers' perception of risk of livestock diseases. The significant determinant are marital status ( $t = 2.407$ ); labour sources ( $t = 4.202$ ); farming experience ( $t = 2.361$ ).

Table 3: Multiple regression analysis of the relationship between farmers personal and farm characteristics and farmers perception of risk of livestock diseases

| Variables          | Unstandardized coefficients |       | Standardized coefficients |         |       |
|--------------------|-----------------------------|-------|---------------------------|---------|-------|
|                    | B                           | SE    | (Beta)                    | t-value | Sig.  |
| Constant           | 15.148                      | 2.412 |                           | 6.279   | 0.000 |
| Sex                | -0.369                      | 0.803 | -0.026                    | -0.459  | 0.646 |
| Age                | 0.006                       | 0.023 | 0.017                     | 0.275   | 0.784 |
| Marital status     | -1.131                      | 0.470 | -0.151                    | -2.407  | 0.017 |
| Household size     | -0.007                      | 0.108 | -0.004                    | -0.067  | 0.947 |
| Source of land     | 0.314                       | 0.199 | 0.084                     | 1.574   | 0.116 |
| Farm size          | -6.450E-005                 | 0.000 | -0.035                    | -0.589  | 0.556 |
| Group membership   | -0.689                      | 0.662 | -0.058                    | -1.040  | 0.299 |
| Extension contact  | -0.929                      | 0.604 | -0.084                    | -1.538  | 0.125 |
| Labour sources     | 1.673                       | 0.398 | 0.252                     | 4.202   | 0.000 |
| Income             | 1.235E-005                  | 0.000 | 0.079                     | 1.244   | 0.214 |
| Farming experience | 0.064                       | 0.027 | 0.135                     | 2.361   | 0.019 |
| R                  | 0.356 <sup>a</sup>          | -     | -                         | -       | -     |
| R <sup>2</sup>     | 0.127                       | -     | -                         | -       | -     |
| F                  | 4.302                       | -     | -                         | -       | -     |

This implies that livestock farmers year of farming experience affect their perception of risk of animal diseases. The F-value of 4.302 at p = 0.05 shows that there was strong correlation between the independent variable and livestock farmers perception of risk of animal diseases. The R-value is 0.277 while the R<sup>2</sup> is 0.127.

Their source of labour and the marital status also affect their perception of risk. In this study, labour is supplied by the farmers and their family members with a little supply from higher labour. It therefore implies that family members who are permanent source of labour must have been familiar with the health status of these animals and could easily notice signs of disease outbreak among the animals. Moreover, family members will tend to show more commitment and concern to the welfare of the animals because animal diseases impact directly on their means of livelihood. Skilled labour tend to perceive risk better than the unskilled ones. Farmers' years of farming experience also affect their perception of risk of diseases, farmers with long year of farming experience tend to be more familiar with signs of diseases outbreak and will quickly respond. They must have also witnessed cases of disease outbreak with their devastating effects this may influence their alertness to signs of diseases outbreak on the farms. Moreover, experienced farmers must have invested so much into their farms and will therefore be more responsive to signs of disease invasion to forestall loss of their business which took them years to build.

### CONCLUSION

Livestock farmers need to be sensitized on the need for a vibrant risk perception behavior. This can be achieved through training of livestock farmers on livestock disease risk predisposing practices on farms and to expose them to risk-averse steps and good livestock management practices. Factors that are harbingers of livestock farmers' indulgence in animal disease risk

avowed tendencies like poor income, poor inspections of farms, poor welfare package for farmers, poor extension coverage and poor animal movement and trade regulations should be avoided. Machineries should therefore be put in place to ensure efficient and effective routine inspection of livestock farm by animal health officials. Livestock farmers can also organize themselves into cooperatives or groups not to only pool their resources together but for older and experienced livestock farmers to mentor young and inexperienced young farmers or to cross fertilized ideas on risk of animal diseases and management practices that can forestall outbreaks.

### 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).

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