Research article

Smallholder livestock farmers coping and adaptation strategies to agricultural drought

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Appendix 1

To calculate appropriate sample sizes for a survey, two formulas were developed for continuous and categorical data by Cochran [33]. The questionnaire that was used, collected both continuous and categorical data. Thus, to ensure that the sample size was appropriate, the calculation for categorical data was applied and is expressed as Equation 1.1:

Total sample size calculated using:

$$M_O = \frac{u^2 \times fi}{e^2} \tag{1.1}$$

Where: M_0 = sample size; u = value for the selected alpha level; $(f)(i)$ = variance of estimate = 0.25 (maximum possible proportion (0.5) × 1 − maximum possible proportion (0.5) produces maximum possible sample size); e = acceptable margin of error for proportion being estimated = 0.05 (Error researcher is willing to take).

Alpha level (u) of 1.65-estimated variance of 0.5 and an error level of .05 were used; the formula would look as follow:

$$M_O = \frac{(1,65)^2 \times (0.5)(0.5)}{(0.05)^2} = 272 \tag{1.2}$$

Resulting in a sample size of 272 respondents. Note that, if the sample size exceeded 5% of the population, the correctional formula of Cochran [33], expressed as Equation 1.3 was applied:

$$M_1 = \frac{M_0}{1 + \frac{M_0}{population}} \tag{1.3}$$

$$M_1 = \frac{272}{1 + \frac{272}{868}} = 207 \tag{1.4}$$

Where M_o sample size, M_1 is the final sample size (Table 1.1).

Table 1.1. Number of farmers who received assistance from government and sampling procedure.

Local Municipality	Number of farmers	Share of farmers (Number of farmers/Total)	Number of samples (percentage *total sample size (207))
Dikgatlong	347	40%	83
Magareng	119	14%	29
Sol Plaatjie	263	30%	62
Phokwane	139	16%	33
Total	868		207

Source: Northern Cape Department of Agriculture, Forestry, and Fisheries [34] and Author.