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Stated preferences of llama keeping functions in Bolivia

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Background

Llamas constitute a major component of high altitude farming systems in Bolivia. As cropping is restricted by climatic and ecological factors, farms depend on a variety of farming activities to secure their subsistence. Llamas are especially well adapted to the fragile ecosystem and contribute to the economic and social life of their herders by a variety of functions and products. Little is known about the order of magnitude of the multiple functions the animals provide, which are however useful inputs in designing breeding strategies and a prerequisite when formulating sustainable breeding goals.

Objective

- The objective was to assess farmer's preferences on the importance of the functions llamas fulfil in smallholder Andean communities in Bolivia.

Materials and Methods

- 75 farmers from 6 communities located at an altitude between 3400 and 4300 m a.s.l. in the province of Ayopaya (Eastern Andes cordillera) were interviewed.
- 10 important functions of llama keeping were selected, covering the categories transport, sale or use of products, integration of animals in cultural events and herd size as a capital asset.
- The functions were presented visually in the form of illustrations and each farmer was asked to rank his or her reasons (first to tenth) for keeping llamas.
- Ranking frequencies of stated preferences were calculated. Gender comparison was performed by non-parametric Wilcoxon rank-sum test.

Results

- Functions most frequently preferred over all groups were 'Herd size as capital asset', 'Transportation to cultivated areas', 'Transportation for other purposes' and 'Sale or consumption of fresh or dried meat'.
- In all groups, the first two and the last functions were consistently ranked.
- Men ranked the 'Sale of live animals in case of emergency' and the 'Sale of live animals for free disposal' significantly higher than women.
- Women perceived the 'Dung as energy source' more valuable than men.
- Though not statistically significant at α=0.05 level, the ‚Domestic use of fibre' received more attention by women.

Table 2: Wilcoxon rank-sum test for gender differences in preference ranking*

Functions of llama keeping	Mean (SD)		Wilcoxon rank-sum test+
	Men	Women	Two sided p-value
Sale of live animals in case of emergency	5.58 (2.59)	3.50 (1.70)	0.0006**
Sale of live animals for free disposal	5.34 (2.60)	4.00 (1.94)	0.0371*
Dung as energy source	4.66 (2.85)	6.19 (2.77)	0.0376*
Domestic use of fibre	5.00 (1.99)	6.07 (2.35)	0.0607
Number of respondents	*48*	*27*	

* Only a selection of results reported here; + Test statistic is the rank sum associated with the smaller sample; * significant at α=.05 level.
** significant at α=.01 level.

Table 1: Frequencies of llama keeping functions for total respondents, by gender and community provenance

	Ranking groups				
	Total	Men	Women	Central village	Remote villages
*Stated primary preference (%)**					
Herd size as capital asset	**14.6**	**13.8**	**15.9**	**15.7**	**13.6**
Transportation to cultivated areas	**13.7**	**13.7**	**13.7**	**14.0**	**13.4**
Transportation for other purposes	**10.8**	**10.1**	**12.2**	**10.8**	**10.9**
Sale or consumption of fresh or dried meat	**10.6**	**10.8**	**10.3**	**10.7**	**10.5**
Domestic use of fibre	9.9	9.1	**11.2**	**10.2**	9.6
Dung as energy source	9.4	8.3	**11.4**	8.8	**10.0**
Sale of live animals in case of emergency	8.8	**10.2**	6.2	8.3	9.2
Sale of live animals for free disposition	8.7	9.5	7.1	8.2	9.1
Sale of fibre	8.5	8.9	7.8	8.1	8.9
Integration of animals in cultural events or rituals	5.0	5.6	4.2	5.3	4.9
Number of respondents	*75*	*48*	*27*	*35*	*40*

* Percentage of total ranking frequency indicated; Identically ranked functions for all ranking groups encircled; Functions passing the 10% mark in **bold**

Discussion and Conclusions

- The traditionally important functions of llamas in terms of wealth accumulation ('Herd size') and transportation remain indispensable.
- The importance of the transportation function to cultivated areas highlights the strong integration of the animals into a mixed farming system.
- Results for the dung utilization and the domestic use of fibre emphasize the importance of gender-specific analysis.
- According to selection theory, the inclusion of traits in breeding goal definition is limited; knowledge on the relative importance of the roles and functions of the animals can give additional information for the decision-making process when setting up breeding programmes.

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