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PERCEPTIONS OF WOMEN AND MEN SMALLHOLDER PIG KEEPERS IN UGANDA ON PIG KEEPING OBJECTIVES, AND BREED AND TRAIT PREFERENCES

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SUMMARY

The objective of this study was to compare the perceptions on livestock keeping objectives, breed and trait preferences of smallholder women and men pig farmers in Uganda. To this end, the study interviewed adult males and females from 200 pig keeping households, within two study sites. The main pig keeping objectives of both women and men were savings and insurance, income from the sale of pigs for fattening or slaughter, or income from the sale of pigs for use as breeding animals. The most preferred breed-types for both women and men were the same with exotic breeds the most preferred, followed by the cross of the exotic and local breeds. Many key traits, such as those for reproduction, growth and disease resistance, were of similar importance to men and women. Overall, the results suggest that gender differentiated breeding objectives, and breed and trait focus, are not required as part of a pig breeding program in Uganda.

INTRODUCTION

Uganda, located in East Africa, is one of the world's poorest countries. Within Uganda, pig farming is an important livelihood to about 1.1 million poor smallholder farmers. Uganda's current pig population is about 3.2 million and rapidly increasing. Currently there are no structured pig breeding programs within Uganda, however efforts to establish one at a national level are underway. In low-and-middle income countries, there is strong recognition that the gender of stakeholders is important to consider in the design of rural development interventions. This ensures, for example, that both adoption and benefits are maximised and equitable. Gender has also been shown to matter in the design and implementation of livestock breeding programs in terms of ownership and control of animals (Marshall *et al.* 2019).

As background information feeding into the design of such a program, this paper compares Ugandan women and men smallholder pig farmers, in terms of their reasons for keeping pigs, and preferences for breeds and traits. The implication of these results on design of the potential Ugandan pig breeding program is also discussed.

MATERIALS AND METHODS

Study site and pig breeds present. The project study sites were within Kamuli and Hoima districts of Uganda, selected due to having a relatively high number of pig keeping households. Two hundred pig-keeping households, with 100 households in each site, participated in the study. The main pig types kept comprise local, exotic, and crosses between the two. The local breed is a small black pig, well adapted to the local environmental conditions. The exotic breeds comprise of Large White, Landrace, and the Camborough line from PIC. The exotic breeds are recent introductions to increase productivity. Various crossbreed types exist because of the unstructured crossbreeding between the local and exotic breeds.

Baseline survey. A baseline survey was administered separately to the female and male adult

within each study household between April and May 2018. There were 200 female respondents (of which 19.5% were household heads and 80.5% were spouses) and 161 male respondents (all household heads). The survey comprised a questionnaire that collected data on household characteristics (such as structure, membership, education, livelihoods, asset base, food security etc.), as well as pig production practices.

Rating scales and statistical analysis. All ratings were based on Likert scales. For ratings of the importance of reasons for pig keeping and traits, the scale was 0 to 5, where 0 was no importance, 1 was the lowest importance, and 5 was the highest importance. For breed preference, the scale was 1 to 5, where 1 was strongly dislike and 5 was strongly like. To test differences between the average ratings by men and women, an independent t-test was applied under assumptions of normality and equal variances. The level of significance used was 0.05.

RESULTS AND DISCUSSION

Types of household pig enterprises, and their importance to livelihoods. Most households (92%) practiced a combination of farrow to wean and farrow to finish pig production systems. Most commonly, 1 to 3 sows were kept, with 2 to 16 piglets. Pig farming was the primary livelihood for 32% of women and 15% of men and secondary for 45% of women and 63% of men.

Reasons for keeping pigs. Women and men farmers rated reasons for keeping pigs, using a pre-defined list of reasons from literature (Ouma *et al*. 2015) with the option of including additional reasons (Table 1). The most important reasons for both genders were for savings and insurance purposes (keeping of pigs to sell in times of need) and income from sale of animals (both for fattening or slaughter, and as breeding animals). Women rated the keeping of pigs for savings and insurance purposes significantly more important than men, though the difference was small (Table 1). A similar result has been previously reported (Marshall *et al.* 2014). Both genders assigned lower importance to keeping pigs for income from boar sire service (likely because not all households keep boars) and manure for cropping. Keeping of pigs for home consumption of pig meat and income from manure sale was of almost no importance. This information was asked to help inform development of breeding objectives for the Ugandan pig breeding program. Results suggest that a common breeding objective, i.e. for both women and men, is appropriate. This objective would centre around ensuring pig keeping translates into household income from both planned and emergency pig sales. Further development of this objective will be performed in collaboration with stakeholders.

Table 1. Average ratings for reasons for keeping pigs, by women and men farmers. The P-value indicates the significance of the difference between women's and men's ratings

Reason for keeping pigs	Women	Men	P-value
Savings / insurance (keeping of pigs to sell in times of need)	4.2	3.9	0.04
Income from the sale of pigs for fattening or slaughter	3.7	3.8	0.71
Income from the sale of pigs for use as breeding animals	3.7	3.8	0.40
Income from boar sire service	1.2	1.1	0.66
Manure for cropping	0.9	0.7	0.40
Home consumption of pig meat	0.3	0.3	0.65
Income from the sale of manure	0.1	0.1	0.09

Breed preferences. Women and men respondents were asked to rate their preferences for the breed-types they were familiar with. The proportion of women familiar with local, crossbred and exotic pigs were 69%, 41% and 12%, respectively, whilst for men it was similar at 70%, 41% and 17%, respectively. Results (Table 2) showed breed preferences not to be significantly different between the

genders, with the most preferred breed (for both sows and fattening pigs) to be the exotic, followed by the crossbreed. Combined results across both genders showed the average rating for the exotic breed was significantly (a difference of 0.5 and P=0.019) higher to that for the crossbreed. Also, the ratings for the local were significantly lower than for cross (-0.73, P<0.001) and exotic (-1.24, P<0.001).

The same respondents named the advantages and disadvantage of the different breeds. The main advantages of local pigs included being adapted to the local environmental conditions (disease resistance, general adaptation, eating local feedstuff) and not requiring special housing, whilst the main disadvantages included low performance (growth, weight, litter size) and low market prices. The main advantages for exotic breeds were high performance, high market price and demand, whilst the main disadvantages were poor adaptation to local environmental conditions, high feed intake, feed cost, and the requirement for housing. For the crossbreed, the named advantages and disadvantages were as for the exotic breed. Whilst both genders generally named similar breed advantages or disadvantages, the proportion of women versus men naming a particular advantage or disadvantage differed. Most notably more women than men named 'high litter size' and 'high market price and demand' as an advantage for the crossbred. On the other hand, more men than women named 'faster growth' and 'high market demand' as advantages for the exotic breed.

In terms of breeding program design, the breed advantages and disadvantages gives some weight to focusing the program on exotic rather than cross-bred or local breeds. However, this result will later be combined with other results from the same study (such as the profit from keeping different breed-types) before a final decision on this choice is made. Continual feedback from the pig-keepers on preferred breed is also recommended, as breed preferences may change as people become increasingly familiar with the breed options.

Table 2. Average ratings for breed preference, by women and men farmers. The P-value indicates the significance of the difference between women's and men's ratings

	Sows			Fattening pigs		
Breed	Women	Men	p-value	Women	Men	p-value
Local	3.6	3.6	0.68	3.6	3.5	0.50
Crossbred	4.4	4.3	0.42	4.3	4.3	0.65
Exotic	4.8	4.9	0.62	4.8	4.9	0.47

Trait importances. Women and men respondents rated the importance of traits of sows and fattening pigs, using a pre-set trait list based on Ouma *et al.* (2015), with the option of including additional traits. The traits comprised of reproduction, growth, size, adaptation, body features (which farmers use to help indicate the breed-type), and other. Trait ratings were not statistically different between the genders, with two exceptions (Table 3). Sow traits that were considered moderately or more important (average ratings of ≥ 3) by both genders were reproduction, and growth / size, as well as disease resistance, ear-shape and feed intake. Traits that were low to moderately important for both genders (average ratings of ≥1 and <3) were heat-resistance, other body feature traits, and temperament. Traits of importance for fattening pigs were similar to those for sows (barring the reproductive traits that are not relevant to fattening pigs). It is of note that temperament was significantly more important to women than men for fattening pigs (and almost for sows), though the difference in ratings was small. This may stem from women being the main labour providers in cooling pigs, which is commonly done via dousing the pigs with water, with the water sometimes fetched from far away. Further, women rated feed intake significantly higher than men did. However, both genders desired the same direction of change in the trait (see Table 3). In considering breeding program design, these results indicate no

concerns in having a common trait focus for both women and men pig keepers.

Table 3. Average ratings for trait importance, by women and men farmers. The P-value indicates the significance of the difference between women's and men's ratings

Trait group	Trait	Direction[1]	Sows			Fattening pigs		
			Women	Men	P-value	Women	Men	P-value
Reproductive	Return to heat	Faster	4.0	4.0	0.80			
	Litter size	12,10	4.7	4.5	0.20			
	Teat number	14,12	3.6	3.7	0.51			
Growth, size	Growth rate	Faster	4.4	4.3	0.51	4.6	4.6	0.90
	Body length	Longer	4.3	4.5	0.06	4.4	4.5	0.48
	Wither height	Taller	3.2	3.0	0.48	3.0	2.7	0.26
Adaptation	Disease resistance	Higher	4.2	4.0	0.15	4.2	4.0	0.26
	Heat resistance	Higher	2.3	2.2	0.89	2.2	2.2	0.71
Body features	Ear-shape	Floppy	3.5	3.3	0.35	3.0	2.8	0.34
	Back-shape	-[2]	2.5	2.5	0.61	2.4	2.2	0.27
	Mouth-shape	Short	3.1	2.8	0.12	2.8	2.6	0.43
	Colour	White	2.8	2.7	0.51	2.4	2.2	0.26
Other	Temperament	Docile	1.9	1.6	0.06	2.0	1.6	0.03
	Feed intake	High	3.8	3.5	0.02	4.0	3.9	0.17

[1]Direction of desired trait change or optimal value. The most common answer, giving singularly if the same for women and men, else for women and men, respectively.
[2]Both a curved and straight back shape was almost equally cited by both women and men

CONCLUSION

This work adds to a small, but growing, body of work on whether / how gender matters in the implementation of livestock breeding programs within low-and-middle income countries. In this case gender differentiated breeding objectives, and breed and trait focus, do not appear necessary. However, other studies have found significant differences between women and men for livestock keeping objectives and trait preferences (Marshall *et al.* 2014; Ramasawmy *et al*. 2018), which could impact on breeding program design. Despite the similarities between women and men on the issues reported here, a gender-lens should still be applied when considering other aspects of the potential pig breeding program for Uganda (see Marshall *et al.,* 2019 for more details).

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