A different kettle of fish?

Gender integration in livestock and fish research

RHIANNON PYBURN AND ANOUKA VAN EERDEWIJK, EDITORS

Royal Tropical Institute

CGIAR Research Program on Livestock and Fish
http://livestockfish.cgiar.org

Royal Tropical Institute (KIT)
PO Box 95001, 1090 HA Amsterdam, The Netherlands, www.kit.nl

Writeshop facilitation and content editing
Rhiannon Pyburn and Anouka van Eerdewijk, Royal Tropical Institute (KIT)

Film production and editing
Geneviève Audet-Bélanger, Royal Tropical Institute (KIT)

Language editing and layout
Paul Mundy, www.mamud.com

Artwork
Nyotumba Bonaventure, nyotsz@yahoo.com

Cover design
Ad van Helmond, helmond@hetbadhuis.nl

Publishing and distribution
LM Publishers, Volendam, Netherlands, www.lmpublishers.nl

ISBN 978 94 6022 433 1

Correct citation
Pyburn, Rhiannon, and Anouka van Eerdewijk (editors). 2016. *A different kettle of fish? Gender integration in livestock and fish research*. LM Publishers, Volendam.

4 INCLUDING GENDER EQUITY IN A SURVEY TOOL FOR RURAL HOUSEHOLDS

Mark T. van Wijk,[1] James Hammond,[2] Simon Fraval,[1] Randall S. Ritzema,[1] Adrian M. Bolliger[3] and Chau T.M. Long[4]

[1] International Livestock Research Institute (ILRI), [2] World Agroforestry Centre (ICRAF), [3] International Center for Tropical Agriculture (CIAT), [4] Western Highlands Agriculture and Forestry Science Institute (WASI), Vietnam

Organizations

ILRI, WorldFish, CIAT, WASI

Species

Methods: Survey, standardized tool/ framework, "big data"

Summary: Integrating a module on women's decision-making in a integral and standardized rural household survey that is building up harmonized datasets across systems, to understand relationships between agricultural productivity, livelihood strategies, food security and gender.

Locations

If men and women in a household have an equal say on the running of their farm, does it produce more or less? What happens to the household's income and the quality of its diet? Its impact on natural resources? What are the relationships and trade-offs between these factors? And if the household's income rises, what happens to the status of women? Do they have more or less say over what to eat and what to sell?

Such questions are crucial to improving the situation of women and in targeting interventions effectively. Many factors are involved: not just gender equity, but also productivity, the production of food crops versus cash crops, off-farm income, nutrition, food security and poverty, to name a few.

Surprisingly, there is a lack of harmonized, quantitative data that covers all of these issues across a wide range of farming systems. Without such data, it is difficult to compare among areas or to draw general conclusions about the relationships and trade-offs between farming, gender equity and food security.

RHoMIS

In response to this gap, we designed RHoMIS, the Rural Household Multiple Indicator Survey, that interviewers can use to gather a standard set of indicators on farm households. The survey tool is an integral part of an analysis framework we have been developing in recent years (e.g., Ritzema at el. 2016) which weaves data collection, the re-use of existing data, analysis approaches and impact assessment tightly together. In RHoMIS the interviewer inputs the data into an Android smartphone or tablet. The data are then uploaded directly to a webserver, where a set of analysis tools extracts the data and calculates indicators.

RHoMIS is suited for baselines, comparisons, and opportunity identification (Hammond et al. 2016, Van Wijk et al. 2016). It has been used to measure the interplay between livelihood strategies, farm management, agricultural productivity, nutrition, food security and poverty in sites in Central America, West Africa and East Africa. It was designed to be:

- **Rapid** enough to avoid fatigue or annoyance on the part of the respondents.
- **Utilitarian:** it avoids collecting superfluous data: all the questions are used in pre-defined analyses.
- **User-friendly,** to make data-gathering and analysis easy and quick.
- **Flexible,** so that it can be modified easily to suit the particular situation and survey needs.
- **Reliable:** the questions are easy to understand and based on observable criteria or the respondents' direct experience, rather than abstract scales or concepts.

Adding a gender module

RHoMIS is designed so it is easy to add new modules of questions and indicators as required. As part of this study, we added a gender module consisting of four questions:

- Sex and age differentiated information on household composition, and the sex of the interviewee

and for each farm product or income source:

- Who does most of the work
- Who usually decides how much and when to eat the product
- Who sells it.

For the last three questions, possible answers are "men", "women" and "children" in the household, and also joint work or decision making is an option.

We used the last two questions to build a new "female decision-making" indicator. The scores obtained from these questions are multiplied by a weight for each product or income source that depends on its importance as a source of food for the household (this information comes from the food availability calculations of RHoMIS). The data are then aggregated into an overall score ranging from 0 to 1. A "1" means the woman decides what to do with the products or income source; a "0" means the man has full say; a value close to 0.5 means joint decision-making over all the food and income benefits of on- and off-farm activities. This score does not reflect the ownership of the resources, but rather the "agency" or ability to decide how the benefits will be used.

Various gender surveys already exist, so why did we decide to not use one of them? Because the alternatives were too detailed and complex for our purposes. For example, the Women's Empowerment in Agriculture Index (Feed the Future 2014) requires 60–80 minutes of interview time per household. That is longer than completing our whole questionnaire takes. We decided to create a new, simpler index for this reason, and hope to compare both approaches in future work.

Applying the tool

We applied the RHoMIS survey with the gender module in two contrasting farming systems:

- 150 households in Lushoto, Tanzania
- 300 households in the Central Highlands of Vietnam.

We looked at six main household performance indicators (Table 4.1):

- Food availability (high score = high availability)
- Food insecurity (measured by the Household Food Insecurity Access Scale, HFIAS): high score = food insecure.
- Dietary diversity (Household Diet Diversity Score, HDDS): high score = diverse diet.
- Progress out of poverty index (PPI): high score = less poverty.
- Greenhouse gas emissions (high score = greater greenhouse gas emissions, for example reflecting emissions from livestock or from the soil).

In both Tanzania and Vietnam, we found a high degree of correlation among the six main household-performance indicators (Table 4.1). This suggests that the challenges measured by these indicators are highly interlinked. We found many of the expected relationships in both locations. Higher food availability was correlated with decreased food insecurity, declining poverty and better dietary diversity (in the "bad" season only). Greater food insecurity was associated with worse dietary diversity in both seasons, and worse poverty status.

Table 4.1 Correlations (Spearman's rho) among six main household performance indicators in Lushoto (Tanzania) and the Central Highlands in Vietnam.

Tanzania (n=150)

		Food availability	Food insecurity "Good" season	Dietary diversity		Progress out of poverty	Greenhouse gases
				"Good" season	"Bad" season		
Food insecurity		–0.21*					
Dietary diversity	"Good" season	0.09	–0.18*				
	"Bad" season	0.20*	–0.31***	0.51***			
Progress out of poverty		0.14†	–0.31***	0.11	0.18*		
Greenhouse gases		0.24***	–0.12	0.20*	0.12	–0.03	
Female control		–0.08	0.03	–0.19*	–0.18*	–0.02	-0.24**

Central Highlands, Vietnam (n=300)

	Food availability	Food insecurity	Dietary diversity	Progress out of poverty	Greenhouse gases
Food insecurity	–0.28***				
Dietary diversity	0.29***	–0.43***			
Progress out of poverty	0.27***	–0.46***	0.33***		
Greenhouse gases	0.35***	–0.33***	0.28***	0.39***	
Female control	0.05	–0.06	0.02	0.04	–0.17**

Significance levels: † p<0.1; * p<0.05; ** p<0.01, *** p<0.001. Cells with p<0.1 are shaded.

Female control (the last rows in the tables) did not show many correlations with other indicators. There were two exceptions to this. In Tanzania, lower female control was associated with a more diverse diet in both seasons. And in both countries, lower female control was correlated with greater greenhouse-gas emissions.

We need to interpret these correlations with care: of course, increased female control does not lead directly to higher emissions, and also a more diverse diet with lower female control is likely to be an indirect effect. Typically, activities in farms with more cattle are normally more controlled by men (e.g., selling of the animals or milk) than by women; such farms tend to have lower female control scores. At the same time, greenhouse-gas emissions by cattle are higher in these farms. The correlations between higher female control and lower diet diversity are because smaller households with fewer crops and livestock are more often than not female-headed households.

Exploring further

The previous analyses showed that interpreting correlations between the different indicators across a farm population is not straightforward. Therefore we took the Lushoto, Tanzania, data and performed more detailed analyses. We wanted to know whether different types of households have different types of relationships among these variables. To explore this, we divided the families into three different types:

- Male-headed households.
- Female-headed households.
- Female-managed households (where the husband is working away from the farm and most of the time not residing on the farm).

The results of the analyses are presented in Figure 4.1.

Type of household and female decision-making

Surprisingly, the highest value for female decision-making was observed in the female-managed households (the grey bars). These score almost a value of one, which means the adult female takes almost all decisions. One would expect a similarly high score in the female-headed households, but that score is actually between the scores of the two male-headed household types. Further analysis showed that in the female-headed households the oldest children take over quite a lot of the decision making, especially related to the marketing of products. This does not happen in the female-managed households.

Type of household and the other indicators

The type of household has strong relationships with the other indicators. Male-headed households (the white bars in the figure), with the lowest female

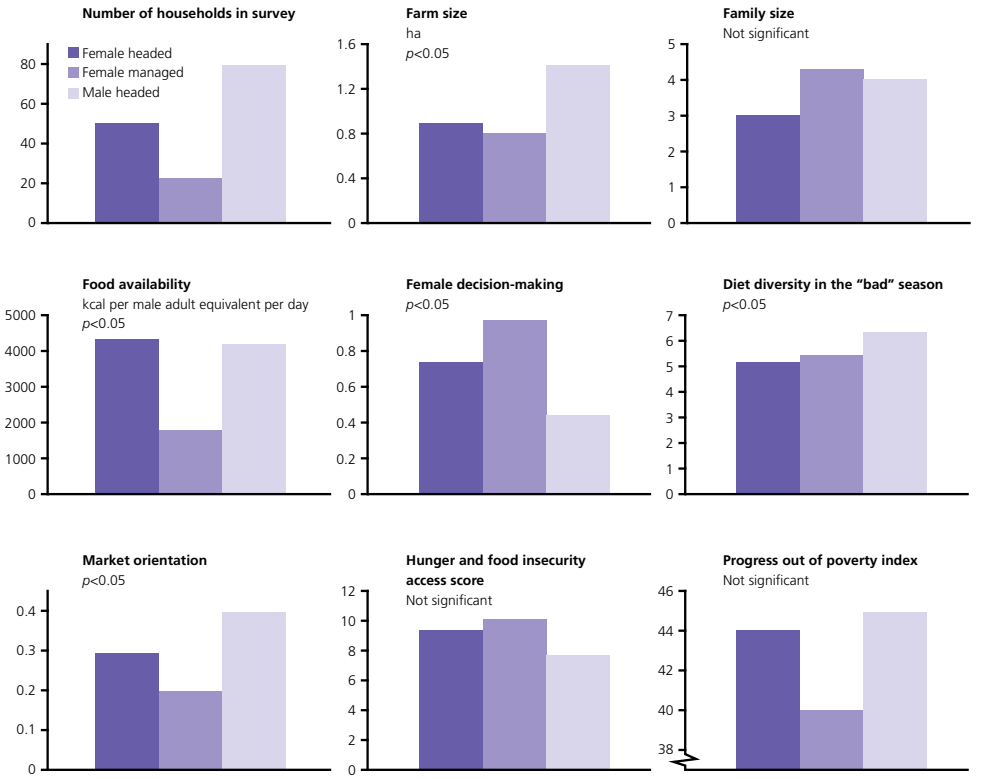


Figure 4.1. Key indicator values for female-headed, male-headed and female-managed households. Significance levels are for effect of family type on the indicator

decision-making score, have the largest farms of the three groups (almost twice the size of the other groups) and also own most livestock (results not shown). They have the highest market orientation (the proportion of products sold), and have the highest diet diversity. The food insecurity score and the poverty index are better than those of the other groups, though these differences are not statistically significant.

The female-managed households have smaller farms than the male-headed households, and this is likely to be the reason that the men are away to earn money for the family. These farms also have the lowest market orientation and are the poorest. Their diet diversity is significantly lower than in the male-headed households.

Female-headed households (the black bars) have the smallest farms and the smallest families (an important factor in labour availability). Their potential food availability is equal to that of the male-headed households, but their diet diversity is significantly lower. Poverty-wise they are in between the other groups.

Implications of research

Our analysis of the correlations captures potential negative correlations between food security, diet diversity, poverty and greenhouse emissions and female control. This shows that the gender module in RHoMIS can be used to capture unintended negative consequences of development process on gender relations.

The more detailed analysis showed the complexity of the relationships between gender and factors such as food security and control over assets. That makes it difficult to formulate generic statements. For different groups, the effects of gender may play out differently. This calls for a nuanced approach, in which technologies and interventions are matched to the local circumstances and the type of farm. A wider application of harmonized survey instruments like RHoMIS can help us to quantify how gendered decision-making is linked to the local socio-economic conditions and how gender equity is related to other indicators. It is also clear that using a tool like RHoMIS is only a first, descriptive, step in the research cycle; RHoMIS can be used to identify key relationships, but further on-the-ground research is needed to disentangle the cause-and-effect relationships.

Next steps for research

In this project we have developed a simple gender-sensitive decision-making indicator and applied the new tool in two contrasting sites. This work forms the basis of our current effort to develop harmonized indicator sets in combination with rapid data-collection and -analysis tools. We currently focus on expanding the number of sites for which we have harmonized indicator sets. RHoMIS has now been applied to roughly 4,000 households in 11 countries in Central America, West and East Africa and Southeast Asia. We are expanding this number rapidly in West, Central and Southern Africa, and in Central and Southeast Asia. This will result in a unique dataset spanning a wide range of systems that will give us new insights into the relationships between gender, agriculture, poverty, food security and nutrition, and reveal how these relationships are affected by household, socio-economic and biophysical characteristics. This is essential if we are to say something about the big factors driving smallholder farming systems and to predict where interventions might most efficiently make a difference for these often poor and food-insecure

"It helps us design interventions and be more realistic about the effects we can expect. Hopefully it will allow us to design interventions that can improve imbalances and gender equity."

Mark van Wijk
Scientist – system analysis, ILRI

https://youtu.be/DcNNuzNw2HE

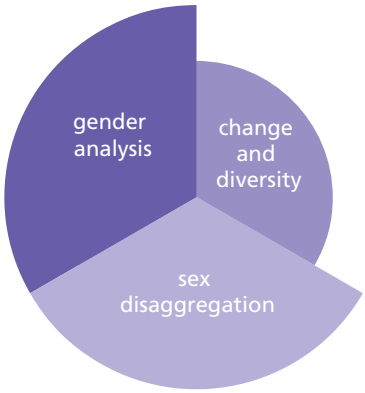
households (Van Wijk 2014). Recent work building on existing datasets has shown the power of analysing such "big data" (Frelat et al. 2016).

Situating the research

This projects addresses both research questions from the integrated gender research agenda. The standardized survey and harmonized dataset allow for understanding the relations and trade-offs between food availability and security, dietary diversity, poverty and greenhouse emissions and gender equity. These can be explored in both directions: how does gender equity relate to these other factors, and how do these factors relate to gender equity? The more detailed analysis of the Tanzania data shows that the relationship of female decisions-making with the other factors varies considerably between male-headed, female-headed and female-managed households. This suggests that assumptions about the interlinkages cannot be assumed nor generalized across household types.

In terms of qualifying the gender analysis, this gender integration project:

- *Disaggregates data on decision-making and control over farm products and income source by sex. It also considers the sex of the household head in the analysis. The data can (and do) come from both women and men in households, but no intentional effort is made to ensure both are represented for each household.*
- *Incorporates gender analysis, with a very specific focus on decision-making and control over farm products and income sources, and a consideration of provision of labour to those.*
- *Takes diversity and change into account, by more detailed analysis of relationships between factors for different types of households. It also allows for investigating how wider change processes like commercialization and market orientation interact with gender relations.*



References

Feed the Future. 2014. The Women's Empowerment in Agriculture Index. https://feedthefuture.gov/lp/womens-empowerment-agriculture-index

Frelat, R., S. Lopez-Ridaura, K.E. Giller, M. Herrero, S. Douxchamps, A. Djurfeldt, O. Erenstein, B. Henderson, M. Kassie, B. Paul, C. Rigolot, R.S. Ritzema, D. Rodriguez, P. van Asten, and

M.T. van Wijk. 2016. Drivers of household food availability in sub-Saharan Africa based on big data from small farms. Proceedings of the National Academy of Sciences of the United States of America, 113(2), 458–63.

Hammond, J., S. Fraval, J. van Etten, J.G. Suchini, L. Mercado, T. Pagella, R. Frelat, M. Lannerstad, S. Douxchamps, N. Teufel, D. Valbuena, and M.T. van Wijk. 2016. The Rural Household Multi-Indicator Survey (RHoMIS) for rapid characterisation of households to inform climate smart agriculture interventions: Description and applications in East Africa and Central America. Submitted to Agricultural Systems.

Ritzema, R.S., R. Frelat, J. Hammond, and M.T. van Wijk. 2016. What works where for which farm household: rapid approaches to food availability analysis. In Öborn, I., B. Vanlauwe, M. Phillips, R. Thomas and K. Atta-Krah (eds). Integrated systems research for sustainable intensification of smallholder agriculture. Earthscan.

Van Wijk, M.T. 2014. From global economic modelling to household level analyses of food security and sustainability: How big is the gap and can we bridge it? Food Policy 49(P2), 378–88.

Van Wijk, M., J. Hammond, J. van Etten, R. Ritzema, and T. Pagella. 2016. The Rural Household Multi-Indicator Survey (RHoMIS) for rapid characterisation of households to inform climate smart agriculture interventions. Infonote, CGIAR Research Program on Climate Change, Agriculture and Food Security.