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The Role of Gender in Livestock Rearing in the Low Rainfall and Acidic Soil Prone Areas of Rwanda

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Abstract: Livestock rearing in Rwanda including the Bugesera and Nyamagabe districts is practised under stalling. This is due to the high human population which results in a land shortage. More land is devoted to cropping than to livestock production. In the Bugesera district, animal feed is constrained by low rainfall whereas in the Nyamagabe district, it is constrained by acidic soil with aluminium toxicity. As feeds for animals have become labour-intensive within a community, men and women may have different interests in livestock production. In addition, wealth status of farmers may influence the development of livestock production under the problem of land shortage and different abiotic and biotic stress conditions. The objective of this study was to analyse the role of gender and wealth categories in livestock activities in target areas. Focus group discussions were held by 20 farmer representatives from each district. Farmers were divided into two groups of males and females and each group drew up livestock activities related to gender. It was found that in both districts, livestock activities were shared between genders but certain activities (e.g., milking cows, animal shed construction) were intended for males due to the culture beliefs. In both districts, wealth ranking showed that land, number of cattle and the type of cattle owned by farmers were the important characteristics of categorising the community.

Key words: Bugesera district, Nyamagabe district, animal feeds, wealth category, rainfall, South Africa

INTRODUCTION

Livestock production is an important component of many smallholder-farming systems throughout the tropics (Pengelly *et al*., 2003). Traditionally, livestock is one of the main sources of income and protein for the poor in developing countries (Valentim and de Andrade, 2004). In Africa, small holder systems usually have different species of animals within the farm. These animals may have different purposes in the system not only by providing food (milk, meat and eggs) for the family but also by providing cash from product sales, capital assets, provision of manure for crops and pastures, transport and others (Herrero *et al*., 2007; Rufino *et al*., 2007). In Rwanda, animal products are very important where milk is the major animal product followed by meat. Milk and meat production have significantly annually increased with high increases between 1999 and 2002 (MINAGRI, 2008). However, shortage of animal feed is a major constraint for livestock development in Rwanda. Growing grasses of non-improved forage species and lack of appropriate technologies to manage natural resources contribute to the problem of fodder shortage for smallholder farmers in Rwanda. Most farmers in Rwanda practise a mixed crop-livestock production system aiming to produce at the same time crops for humans and forages for animals. Animals are kept in sheds and their manure is used for production of food and fodder crops on a small plot.

Gender is an important socio-economic variable in analysing roles, responsibilities, constraints, opportunities and incentives of the females and males involved in agriculture (Poats, 1991). Gender analysis is an important aspect influencing livestock management in working communities. Within a community, men and women may have different interests in the livestock production. On the other hand, wealth ranking is also an important parameter to analyse in order to establish the link between wealth categories and capturing the interest of the farmers in a new technology. According to Alumira (2002), stratifying members of a community in wealth and role of gender can help researchers to direct the best developed technologies to the development pathway of that community. The increasing of gender equality and

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women's empowerment have been the instruments for poverty reduction (IFAD, 1994). So far, men's participation in agriculture is declining while women's participation is becoming more and more dominant (ILRI, 2008). All efforts of women in rural areas of tropics are concentrated on food crop production. Despite this, women keep small stock while cattle are kept by men. The livestock and home activities which incumbent upon women lead to low income of rural households (Bucyensenge *et al*., 1990). In rural areas in the tropics livestock management is practised by many household with different categories of animals (e.g., small stock, cattle and buffaloes). According to ILRI (2008) in most countries in Africa, men and women own livestock but women are facing poverty. Two-thirds of 600 million poor livestock keepers in the world are women and most of them live in rural areas. Peter (2006) showed in his study on gender roles and relationships that men dominate in making decisions within household but women as heads of household assume the same roles as men.

In Rwanda, 48% of the population are the men and 52% of the population represents the women. About 28% of households are headed by women and women live longer than men though women work hard particularly in rural areas. If the households are headed by women, 91% of the households have agriculture as the main activities and 9% of households practice other activities (MINAGRI, 2006). For this reason, it is important that women also own cattle so that they may increase the income within household. ILRI suggests that all stakeholders in agricultural development should support women livestock keepers and evaluate their works. The aim of this study was to analyse the role of gender in livestock activities and wealth categories in target areas.

MATERIALS AND METHODS

Site selection: The study was conducted in the Bugesera and Nyamagabe districts of Rwanda. The criteria for selection were exposure to low rainfall and acidic soils; the criteria were selected because they represent different constraints experienced by farmers. The other aspects were that crop and livestock production should be the major economic activities in the areas. Three sectors (government administrative division under a district) of the Bugesera district that were selected were Nyamata, Mareba and Musenyi. They were selected based on their crop-livestock integration systems and the facilities (roads and transport) to access the area. Selected sectors in the Bugesera district were highly populated with limited space for cattle grazing. Due to the high population (292,380 on 1303 km^2 of land) and the large number of cattle (89,359), large areas in the Bugesera district were overgrazed (HPI, 2005). Although, the number of cattle has been reduced to 20,950 in the whole Bugesera district (JICA, 2007) feeding is still constrained by the long dry season.

In the Nyamagabe district one sector, Gasaka was selected. It was a sector which had a large number of dairy cattle owners and had serious animal feed scarcity. This was due to the land shortage (the total area of the district is 1,090 km^2 and the population in 2007 was approximately 333,587 (MINALOC, 2008) with acidic soil. To represent the whole sector, three cells (government administrative division under a sector) Murambi, Ngiryi and Kigeme were selected. The selection of these cells was based on the integration of crop-livestock production system, easy access to the area and acidic soil (pH 4.3-4.9) (Nzamurambaho, 1996).

Selection of communities: One of the policies of the government of Rwanda in terms of poverty alleviation is to provide a dairy cow to poor farmers in order to help them to get manure and milk. For this reason, some NGOs such as the Heifer International Project (HPI) and Send a Cow Rwanda (SCR) were participating in this policy by providing dairy cows to farmers. These livestock providers were operating in the study area by supporting The Ministry of Agriculture (MINAGRI) at the district and sector level, they assisted in identification of potential farmers for the study. Farmer groups were chosen in both districts. Farmers who practised zero grazing system were recorded at a sector level. From this record in each district, 20 farmer representatives were randomly selected and later researcher contacted them in their respective cells for the participatory diagnosis. The targeted farmers were mixed crop-livestock producers or they were cattle (especially, crossbred cattle for milk production) owners. Among selected farmers were those who have been in the area for many years and practised farming. According to Ojiako *et al*. (2009), these farmers can help in categorizing the community in terms of wealth because they were well known in the community for a long period.

Participatory rural appraisal: Participatory Rural Appraisal (PRA) techniques used in this research included gender analysis and wealth ranking. Preparatory meetings were held with the livestock owners who volunteered to participate in the study in each district. In the Bugesera district, meetings were held at the Nyamata sector which was the most convenient place for all farmers from the three sectors. In the Nyamagabe district, these meetings were held at the Ngiryi cell in the Gasaka sector as this was central for all selected farmers within the

sector. The aim of these meetings was to explain the objectives of the research study, the expected outputs, as well as the use of Participatory Rural Appraisal (PRA) tools. Prior arrangements were made before undertaking the PRA exercise in each district by talking to agriculture and livestock providers in each district and visiting selected farmers at their homes. Livestock providers during that time were the representatives of the MINAGRI, HPI and SCR at sector level. The two latter organisations provide dairy cows to the farmers in collaboration with the MINAGRI. The meetings were held during the dry season when farmers were almost available because it was not a cropping season.

Wealth ranking and gender analysis were done in group discussion. The specific objectives of this exercise were to assess the distribution of livestock farming activities differentiated by gender and to determine the distribution of wealth within the community based on assets owned and income generation. The results were used to determine the link between livestock ownership (critical herd sizes) and wealth. At the same time, the relation between wealth standard by social category and farmers' motivation to invest in forages for dairy farming was investigated.

Gender analysis: An exercise to determine the effect of gender on livestock ownership and control was done with women (did not differentiate single or married) and men forming separate groups. Each group of 10 males and 10 females did an independent exercise in which they stated their activities in livestock farming and the role of boys and girls as the members of family involved in these activities. After independent work, all groups came together and presented their activities. This allowed each gender category to express its thoughts about livestock farming activities. Through an activity profile, farmers arranged seasonal constraints and opportunities throughout the year. It is in this context that the role of gender in livestock rearing was determined. The objective of this exercise was to assess the role of gender in livestock farming activities in the contrasting low rainfall and acidic soil districts.

Wealth ranking: Wealth raking is a method where community members meet and categorise farm households based on the wealth possessed by each household in a selected area (Phiri *et al*., 2004). For this study, farmers themselves identified criteria to determine the different categories of wealth in the community. This exercise was done by using the list of households who owned livestock in the areas of the study; this was done in a group of 20 farmers (10 females and 10 males). The group used characteristics that the community used to determine the household wealth and each household from the list in the area was categorised by wealth. The objective was to determine the distribution of wealth within the community based on assets owned and income. This will enable links to be determined between livestock ownership (critical herd sizes) and well-being of farmers. The results will be used to establish the link between wealth standards by social category and farmers' interests and motivation to invest in forage for dairy farming. It also helps to know where the intervention is needed for improving farmers' livelihoods.

RESULTS

Gender analysis: The results on the role of gender in livestock activities in the Bugesera and Nyamagabe districts (Table 1) have shown that different genders have different activities.

In the Bugesera district apart from cattle, farmers owned small ruminants (i.e., goats) and small stock (rabbits and chickens). Animal husbandry and activities related to it varied by gender. Both women and men carried out cattle herding, donation of cattle and cattle selling, raising of goats, rabbits and chickens were restricted to women, girls and boys. Planting forage, construction of animal sheds, seeking grazing land and animal disease treatment were men's activities whereas milking cows was reserved for men and boy's activities. The only activities in animal rearing which were common to both male and female adults and children was fetching water for cattle and feeding cattle in the shed. Women and girls were responsible for the cleaning of animal sheds. Physical hard labour was done by men while less physical tasks were done by women and children. During group discussion farmers stated that when women and children are household heads, they take care of all activities. Men do not consider small stock (chickens, goats and rabbits) as worthy animals. Women and children who spend much of their time at home, exclusively rear these animals. Selling of small stock was done by women in consultation with their husbands whereas selling a cow was done by men after reaching a common understanding with their wives. During gender group discussions, it was stated that under no circumstance could children sell or give animals (as a gift) unless their parents died.

In the Nyamagabe district, the results from the gender analysis of animal rearing (Table 1) were dissimilar to those of the Bugesera district. Cattle rearing was done by men, women and boys whereas goat keeping was done by women, girls and boys. Rabbits and chickens were managed by both girls and boys whereas pigs were only kept by women and boys. The activities of planting forage, selling and donation of animals were reserved for

Table 1: The role of gender in livestock farming activities in selected districts

	Gender balance in livestock rearing							
	Bugesera district				Nyamagabe district			
Activities	Women	Men	Girls	Boys	Women	Men	Girls	Boys
Pigs herding	o	o	o	o	x	-	-	x
Cattle herding	x	x	-	-	x	x	-	x
Goats herding	x	-	x	x	x	-	x	x
Rabbits rearing	x	-	x	x	-	-	x	x
Chickens rearing	x	-	x	x	-	-	x	x
Planting forage	-	x	-	-	x	x	-	-
Animal sheds construction	-	x	-	-	-	x	-	x
Fetching water for cattle	x	x	x	x	x	-	x	x
Seeking grazing land	-	x	-	-	o	o	o	o
Feeding cattle	x	x	x	x	x	x	x	x
Animal disease treatment	-	x	-	-	-	x	-	-
Cleaning shed	x	-	x	-	x	x	x	x
Donation of cattle	x	x	-	-	x	x	-	-
Selling	x	x	-	-	x	x	-	-
Cow milking	-	x	-	x	-	x	-	x

x: Applicable to; -: Not applicable to; o = Activity not found in the district

men and women. The construction of animal sheds, treating ticks on cattle and milking cows were carried out by men and boys. Fetching water for cattle was the activity for women, girls and boys in the Nyamagabe district whereas the activity common across gender and age groups was cleaning animal sheds and cattle feeding. The only activity reserved for men alone was the treatment of animal diseases.

In the contrasting districts, common and variable gender roles differentiated by location were identified. Fetching water for the animals was a common activity for men and children in the Bugesera district whereas in the Nyamagabe district men do not fetch water for animals. Cattle feeding was the only activity executed by men, women, girls and boys in both districts. This is a crucial activity as both districts practise a zero grazing system. Participants mentioned that cattle feeding takes time for farmers to get enough feed and that is why all categories of age and gender were involved in this activity. However, treatment of animal diseases remained men's activity in both Bugesera and Nyamagabe districts. Although, many activities in livestock rearing were shared between males and females, others were still related to only male or female. In the Bugesera district cleaning of animal sheds was reserved for only females (women and girls) whereas milking cows and animal shed construction were confined to males (both men and boys) in the Bugesera and Nyamagabe districts. In households headed by either women and/or children, all the activities could be carried out by women except milking a cow where Rwandan culture does not allow a woman to milk a cow. In this situation, she should look for assistance from a male from her neighbours. In both areas because of the zero grazing system established in both districts, most livestock activities were shared between genders but there was evidence of cultural beliefs in terms of cattle rearing in the Bugesera and Nyamagabe districts. These beliefs were based on the Rwandan traditional culture which considers cattle as a sacred animal and women could not milk a cow but could handle milk.

Wealth categories: The objective of the exercise for ranking of wealth category in the Bugesera and Nyamagabe districts was to categorize farmers in terms of wealth and relate the results to cattle ownership. Farmers first developed categories of wealth for the community. After giving all categories, they discussed the wealth of each individual farmer from the list of livestock owners availed at the sector level including the participants. After a general discussion about characteristics of each category, they allocated these to each farmer. The wealth categories defined by farmers in the Bugesera and Nyamagabe districts were the very rich, the rich, the moderately poor, the poor and very poor (Table 2 and 3). In the Bugesera district, the number of livestock owned by farmers was one of the major criteria used by farmers in categorizing community members in terms of being socially better off. The majority of people (75%) in the selected cells of the Bugesera district were in the category of moderately poor. Many of them owned land of <0.5 ha and reared one indigenous cattle. Even though, some farmers had a dairy exotic cow provided by the government of Rwanda or NGO, ownership was used as a selection criteria for differentiation. The categories of the very rich and the rich were distinguished by the amount of money they possess and daily cash income (Table 2). However, the moderately poor and poor are differentiated by the availability of food. The last wealth

Table 2: Wealth category ranking in the Bugesera district

Wealth categories	Characteristics
Very rich (UMUKIRE)	Owns: a car; a motorcycle; houses; possesses money at least 10000 US$ or much more; owns 3 exotic dairy cows or 30 indigenous cattle; owns property; has a plot of planted trees for timber and fuel; has 3 cell phones
Rich (UMUKUNGU)	Owns: Many properties; houses; 5 indigenous cows; 10 goats; 10 chickens, a bicycle; cell phone; 1 motorcycle; possesses at least 1000-2000 US$; gains at least 7.5 US$ day^{-1}; has a forest
Moderately poor (UMUKENE)	Possesses forest of <1 ha; owns 1 bicycle; 1 dairy cow; 2 goats; 3 chickens; 4 rabbits; 1 pig; possesses a house; owns: a cell phone; can pay medical insurance; can send children to school (able to pay school fees)
Poor (UMUTINDI)	Owns: a grass house; hires land for cropping; owns: 1 goat; 2 chickens, can not pay his/her medical insurance; unable to pay school fees for his or her children
Very poor (UMUTINDI NYAKUJYA)	Owns a grass house; begs for food; has no means; lives badly; wears dirty clothes

Table 3: Wealth category in the Nyamagabe district

Wealth categories	Characteristics
Very rich (UMUKIRE)	Owns: >1 car; houses for business; possesses at least 20,000 US$; owns at least 10 exotic dairy cows; owns many properties; has multiple cell phones
Rich (UMUKUNGU)	Owns: at least 5 ha of land; 10 indigenous cows; 15 goats; 100 chickens; 2 pigs; 2000 coffee trees; 1 ha of forest; a bicycle; a telephone; a motorcycle; possesses 400-2000 US$; gains at least 2 US$ day^{-1}
Moderately poor (UMUKENE)	Owns: 0.5 ha of land; 500 coffee trees; 1 pig; 1 indigenous cow; 1 goat, 8 chicken, 3 rabbits; possesses a house of 5×4 m with roofing tiles; owns a cell phone; can pay medical insurance; children can attend only primary school; has sufficient food
Poor (UMUTINDI)	Owns: a grass thatched house; a small piece of land for cropping or hires it; 1 goat; 1 pig; 1 rabbit; cannot pay medical insurance; unable to pay children's school fees and has insufficient food
Very poor (UMUTINDI NYAKUJYA)	Has no house; begs for food; has no means; lives in poverty and wears donated clothes

category is the very poor (UMUTINDI NYAKUJYA). In this category, one does not own animals or land and lives by begging and he or she has no esteem within the community. In the Nyamagabe district although, results on wealth ranking also showed five categories of farmers, the characteristics identified by farmers within each category were different (Table 3).

In contrast to the Bugesera district, in the Nyamagabe district, the very rich refers to cash income and possession (Table 3). The rich category was characterized by access to properties and food. The number of livestock and breeding type of cows owned by farmers were one of the major criteria used by farmers in categorizing the community in terms of social welfare in the Nyamagabe district. The very rich category owns exotic dairy cows whereas in other categories only the number of cows is important to be categorized into rich or moderately poor. In the selected cells of the Nyamagabe district, 50% of the farmers were in the category of moderately poor whereas 18.75% were in the category of rich. Wealth ranking in the Bugesera and Nyamagabe districts showed that even though farmers are located in different areas of Rwanda, similar criteria were used to categorize the community in terms of social livelihood. However, having the same categories for wealth ranking in the community does not mean that characteristics are the same within each category. In the Nyamagabe district, farmers mentioned a particular characteristic within the categories of the rich and the moderately poor that was the number of coffee trees. In the Bugesera district, the very rich and rich were differentiated by the number of properties owned whereas in the Nyamagabe district the very rich and the rich were defined by access to cash.

DISCUSSION

Gender analysis: In the Rwandan traditional culture, livestock farming, especially cattle rearing, was confined to men and boys. Cattle rearing was practised in the extensive farming system when communal grazing land was used by farmers. Currently, due to the land shortage in Rwanda, animals are kept in sheds and fed by the cut and carry of forage. In this situation, an analysis was done on how males and females shared livestock activities in the study areas.

Gender analysis for livestock farming activities in the Bugesera and Nyamagabe districts of Rwanda showed a variable distribution of activities according to gender. In both districts, livestock farming was part of intensive mixed crop-livestock farming systems. Small stock were overseen by women and children whereas cattle were mostly reserved for men. These results support those found in Togo and Uganda by Dolan (2002) who stated that women raised small stock and were involved in processing activities while men were responsible for large animals and marketing. The small stock were cared for women and children because they are mostly carrying out home activities and can feed small stock with kitchen residues. This was supported by Valdivia (2001) who mentioned that livestock rearing was shared by women and children in the poor rural households in Kenya, Indonesia, Bolivia and Peru where small ruminants were left to the responsibility of women either for their management or for their sale. Other reasons why women were responsible for small stock were that the latter are easier to keep and are an investment strategy enabling women either to increase the existing income earnings or

to invest in a new income generation activity and food security. In both districts, there were particular male activities for livestock according to Rwandan culture. These were milking of cows and animal shed construction. This result was found also by Njiro (2002) who stated that there are inequities in gender in rural African mountain communities of Soutpansberg Mountains in South Africa where boys and men alone are engaged in livestock activities and even if it happens that females control livestock, they are restricted to chickens. The same idea was expressed by IFAD (1994) in their study on women's role in livestock production in developing countries which stated that because of cultural differences found in the great lakes region of central Africa there were some prohibitions towards women from having any activities to do with livestock. In contrast in the Bugesera and Nyamagabe districts, apart from married female and widows who cannot milk a cow, the rest of the activities related to livestock could be done by a female. However, as both districts practise the zero grazing system both female and male participate in their activities but as stated by IFAD (1994) the larger part of activities are carried out by women and children who stay at home during the day doing household activities and can care for homestead animals. Looking at these livestock activity divisions by gender in both districts, it is likely that new technology especially, forage options can be followed by both females and males.

Wealth categories: The objective of this exercise was to determine household wealth categories in the communities in the study area. This helps to find out relevant development projects for a given category of wealth within the community (Grosvenor-Alsop, 1989). In both districts, household livestock owners were classified into five categories by 20 farmer representatives chosen to participate in the exercise. The five categories were very rich, rich, moderately poor, poor and very poor. These categories are almost similar to those defined by GoR (2002) during the assessment of poverty reduction (Howe and Mckay, 2007). The wealth category of the resourceful poor could not be distinguished during this study in the Nyamagabe and Bugesera districts. It may be similar to the household category of poor in the study. Wealth categories vary from one country to another and from culture to culture, thus they need to be seen in a specific context. An example is given by Bahamondes (2003) who found that in Chile wealth categories could be classified into four categories (high, medium, medium poor and poor) and their characteristics are different from what we found in the study areas. While livestock were not an important characteristic in differentiating household wealth in Chile, livestock played a considerable role in wealth ranking in the Bugesera and Nyamagabe districts. The number of cattle and other stock were mentioned as key criteria used to differentiate categories of farmers. The very rich and the rich were more likely to own exotic cattle breeds and the animal herds increased with wealth status. This is in agreement with findings by Sieff (1999) among the Datoga pastoralists of Tanzania and for Zimbabwe (Alumira, 2002) where the wealthy households were able to increase their cattle and small ruminant herds whereas in poor households the rate of livestock off-take was high reducing livestock numbers. In the Nyamagabe and Bugesera districts livestock, especially cattle was a key characteristic of wealthy households because cattle ownership requires a high investment which is not affordable by poor households. Another characteristic of wealth categories was landholding in which its size increased with welfare of households. The bigger land size is more likely to increase the number of agricultural commodities and forage plots for livestock and the use of casual labour in all crop-livestock production activities. However, some households may own a piece of land but are unable to produce crops because of a low number of family members. Even if the land is not used within the community, this household will be classified into the category of Umutindi (the poor). In South Africa, this category of the poor is characterised by a life of begging in order to survive (Hargreaves *et al*., 2007) whereas in the Bugesera and Nyamagabe districts this characteristic was for the very poor category. From the poor to very rich wealth categories found in both districts, land and livestock farming activities were able to support the income of households by selling animals and crops. This was also found by Thornton (2009) where in Peddie, a former homeland town in South Africa, livestock rearing was an important activity for improving livelihoods of peri-urban low-income households.

CONCLUSION

Gender analysis carried out in these two districts showed the common and diverse activities related to livestock rearing between men and women. Because of zero grazing found in the two districts, both genders shared livestock activities. However, due to the Rwandan culture, activities like milking cows, construction of cattle sheds and treatment of animal diseases are confined to men and boys. This could potentially block the development of livestock production in stalling because a household that does not have a boy or husband may not raise cows for milk production. In addition, wealth ranking has an impact on livestock management. For

example, of the five wealth categories the top two (the very rich and the rich) were characterized by the possession of cows and land. These two characteristics are important in the areas where there are dense populations like in the Bugesera and Nyamagabe districts. This is because where small plots are over-exploited agricultural production can only be increased if there is addition of manure. Thus, very poor to moderately poor' households will have plots prone to low production.

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REFERENCES

Alumira, J.D., 2002. Rural household investment behaviour implications for technology targeting and development pathways: A case study of the semi-arid tropics of Zimbabwe. Proceedings of the CGIAR International Social Research Conference, September 11-14, 2002, Cali, Colombia, pp: 1-26.

Bahamondes, M., 2003. Poverty-environment patterns in a growing economy: Farming communities in arid central Chile, 1991-99. World Dev., 31: 1947-1957.

Bucyensenge, G., H. Fabiola, A. Regmi and L. Uwamariya, 1990. Role of woman in Rwandan agriculture: Report. MINAGRI, Kigali.

Dolan, C., 2002. Gender and diverse livelihoods in Uganda. LADDER Working Paper No.10, UK. http://sd-cite.iisd.org/cgi-bin/koha/opac-detail.pl?biblionumber=27169.

GoR, 2002. Poverty reduction strategy paper. Ministry of Finance and Economic Planning, Government of Rwanda (MINECOFIN), Kigali, Rwanda. http://www.imf.org/external/np/prsp/2002/rwa/01/063102.pdf.

Grosvenor-Alsop, R., 1989. Wealth ranking in a caste area of India. RRA Notes, IIED, London, UK., pp: 5-12. http://www.planotes.org/documents/plan_00401.PDF.

HPI, 2005. Livestock distribution in Rwanda. The Heifer Project International, Rwanda.

Hargreaves, J.R., L.A. Morison, J.S.S. Gear, M.B. Makhubele and J.D.H. Porter *et al*., 2007. Hearing the voices of the poor: Assigning poverty lines on the basis of local perceptions of poverty. A quantitative analysis of qualitative data from participatory wealth ranking in rural South Africa. World Dev., 35: 212-229.

Herrero, M., E. Gonzalez-Estrada, P.K. Thornton, C. Quiros, M.M. Waithaka, R. Ruiz and G. Hoogenboom, 2007. Impact: Generic household-level databases and diagnostics tools for integrated crop-livestock systems analysis. Agric. Syst., 92: 240-265.

Howe, G. and A. Mckay, 2007. Combining quantitative and qualitative methods in assessing chronic poverty: The case of Rwanda. World Dev., 35: 197-211.

IFAD, 1994. Women livestock managers in the third world: A focus on technical. http://www.ifad.org/gender/thematic/livestock/live_2.htm.

ILRI, 2008. Feeding tomorrow's hungry livestock. International Livestock Research Institute, Africa.

JICA, 2007. The study on sustainable rural and agricultural development in the Bugesera district, Eastern province in the Republic of Rwanda. Ministry of Agriculture and Animal Resources, Japan International Cooperation Agency, Kigali.

MINAGRI, 2006. Agriculture policy document. Ministry of Agriculture and Animal Resources, Kigali, Rwanda, pp: 17.

MINAGRI, 2008. Evaluation of agricultural yield during first and second rainy season. Ministry of Agriculture and Animal Resources, Kigali, Rwanda.

MINALOC, 2008. Annual report. Ministry of Local Government, Kigali, Rwanda.

Njiro, E.I., 2002. Gender inequalities continue in rural African mountain communities. Mountain Res. Dev., 22: 300-303.

Nzamurambaho, E., 1996. Training report done in world vision international-Gikongoro. NUR, Faculty of Agriculture, Butare, Rwanda.

Ojiako, I.A., V.M. Manyong, C. Ezedinma and G.N. Asumugha, 2009. Determinants of wealth and socioeconomic status of rural households: An application of multinomial logit model to soybean farmers in Northern Nigeria. J. Social Sci., 19: 31-39.

Pengelly, B.C., A. Whitbread, P.R. Mazaiwana and N. Mukombe, 2003. Tropical forage research for the future-better use of research resources to deliver adoption and benefits to farmers. Trop. Grasslands, 37: 207-216.

Peter, G., 2006. Gender roles and relationships: Implications for water management. Phys. Chem. Earth: Parts A/B/C, 31: 723-730.

Phiri, D., S. Franzel, P. Mafongoya, I. Jere, R. Katanga And S. Phiri, 2004. Who is using the new technology? The association of wealth status and gender with the planting of improved tree fallows in Eastern Province, Zambia. Agric. Syst., 79: 131-144.

Poats, V.S., 1991. The role of gender in agricultural development. Consultative Group on International Agricultural Research, Washington, DC., USA., pp: 68. http://www.worldbank.org/html/cgiar/publications/issues/issues3.pdf.

Rufino, M.C., P. Tittonell, M.T. van Wijk, A. Castellanos-Navarrete, R.J. Delve, N. de Ridder and K.E. Giller, 2007. Manure as a key resource within smallholder farming systems: Analysing farm-scale nutrient cycling efficiencies with the NUANCES framework. Livestock Sci., 112: 273-287.

Sieff, D.F., 1999. The effects of wealth on livestock dynamics among the Datoga pastoralists of Tanzania. Agric. Syst., 59: 1-25.

Thornton, A., 2009. Pastures of plenty? Land rights and community-based agriculture in Peddie, a former homeland town in South Africa. Applied Geogr., 29: 12-20.

Valdivia, C., 2001. Gender, livestock assets, resource management and food security: Lessons from the SR-CRSP. Agric. Hum. Values, 18: 27-39.

Valentim, J. and C. de Andrade, 2004. Perspectives of grass-legume pastures for sustainable animal production in the tropics. Proceedings of the 41st Annual Meeting of the Brazilian Society of Animal Science, July 2004, Campo Grande, Mato Grosso do Sul, Brazil.