Preliminary Gender-related Analysis of Household Survey Conducted in Houet Province, Western region of Burkina Faso

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1. Introduction

Funded by the GLDC CRP, the study was conducted in Houet Province in the Western region of Burkina Faso. The administrative center for the Province is located in Bobo-Dioulasso, an area characterized by two topographic features: plateaus and plains. The area is inhabited by local or indigenous agro-pastoralists and migrants who have temporarily settled there. Migrants are only given temporary rights to land to circumvent the possibility of their permanent settlement.

Production in the area is based on an agro-pastoral system dominated by rainfed agriculture, supplemented by seasonal rivers. Farmers mainly grow sorghum, millet, maize, and rice in rotation or intercropped with yam, sweet potato, Bambara groundnut, and millet; or with cash crops such as cotton, groundnut, sesame, or soybean. However, the production system is heavily dominated by the production of cereals which occupy 67% of the cultivated area, followed by cash crops which occupy 30% (twice the national average)[1]. The remaining area is covered with irrigated and rainfed rice. Market-oriented vegetables including onions, cabbage, tomato, eggplant, carrot, chili, lettuce, potato and green bean are also grown in the area. Monoculture of fonio or crop rotation (sesame-groundnut fonio-millet) and planting on ridges are commonly practiced to cope with soil erosion and degradation. Livestock is an integral component of the agricultural production system in the area, supplementing crop production by generating cash income. Farmers mainly rear chicken, goats, and sheep for selling or as an investment (savings) and not for eating. Chicken are at times consumed by the household in times of celebration. The main source of protein for households comes from dried river fish - often imported from Cote Devoir, groundnuts, cowpea, and soy bean.

While some degree of irrigation is practiced in the area, the high dependence on rainfed agriculture exposes farmers to the effects of water scarcity especially during the dry season. Farmers access agricultural related information and inputs either through national extension services which provide inputs at subsidized prices, or through the private sector. For instance, the extension service provides subsidized fertilizers for maize, cowpea and rice; and improved seeds for rice, maize, sesame, cowpea, and sorghum. Legumes, particularly improved varieties of cowpea, are also extensively promoted to enhance soil fertility, and forage as opposed to its nutritious values. The extension service is, however, understaffed and underfunded with one extension agent covering an average of 20km (Some et.al 2016). Extension agents thus often use the village representative for rural development – which includes agriculture, livestock, and other environmental interventions, - as an entry point to communicate essential information including availability and benefits of using selected agricultural inputs.

As a direct reflection of the extension system, application of agricultural inputs is generally low, and mostly limited to cotton and rice growing areas (where farmers use NPK and urea fertilizers). Major challenges to adoption of improved varieties include - lack of access to timely, sufficient and practical information on improved practices, timely arrival of the seeds for planting – often arrives after the planting season has passed, private traders often get the improved seeds faster than the extension

system but they sell it at a much higher price, distance from the villages to the office of the extension service provider is too long for farmers to make frequent visits to check on availability of the seeds or for consultation visits, the taste of some of the improved seeds is not as good as the local variety (e.g. cowpea).

The GLDC target crops considered in the study area are millet, sorghum, and cowpea. The four villages selected for this study all grow most of the GLDC target crops.

2. Data collection and preliminary analysis

The study was conducted in the sub district of Satiri, in the Houet province, Western Burkina Faso. The farming system is the Satiri department is characterized by mixed crop-livestock farming. Five villages were purposively selected based on the criteria of legume production in pure cultivation cropping system and associated to cereals crops cropping system. From literature review and information provided by agricultural extension services, the villages of Sissa, Neferelaye, Ramatoulaye and Kadomba were selected. Household-farms were randomly sampled from a list of households of the village provided by local leaders.

Data for the study was collected from 428 households out of which 340 (79%) are migrants and 88 (21%) are natives. 96% of the household heads interviewed were men. However, more native women were interviewed as compared to migrants. The number of migrants interviewed is higher because 3 out of the 4 villages considered for the study are predominantly migrant villages.

2.1. Household endowments, food security and access to improved seeds

The data analysis, in as much as possible, makes distinctions between natives and migrants, male and female-headed households, and different age groups to capture the variations in access and control of natural resources and essential services required for effective adoption of recommended agricultural packages. As noted earlier, majority of the households interviewed about 79% were migrants, while 21% were natives. Migrants are people that have 'temporarily' settled in the area and require special permission to use the land to grow crops, but not trees or other long-maturing crops and investments to avoid future disputes on land ownership. These also include construction of semi-permanent soil and water conservations structures such as stone bunds. Even though more migrants were interviewed than natives, there were relatively more women available for the interview from among the natives as compared to the migrants (Table 1). A total of 17 female-headed households were interviewed for the study.

Table 1: Number of households interviewed

		Female	Male	Total
Migrant	Count	7	333	340
	% within H_MIGRANT	2.10%	97.90%	100.00%
Native	Count	10	78	88
	% within H_NATIVE	11.40%	88.60%	100.00%
Total	Count	17	411	428

	% TOTAL	4.00%	96.00%	100.00%

The average family size for the surveyed population is 11. However, there are marked differences between household size among the natives and the migrants, with the natives having an average of 9 members per household while the latter had 12. The difference is statistically significant at 1%.

As indicated above, land ownership by migrants is strictly monitored and highly discouraged. Comparison of average per capita land holding between natives and migrants shows that migrants on average farm 0.52 ha while natives hold 0.95 ha. The difference is statistically significant at 1%. Comparison of area covered by GLDC crop between natives and migrants shows that migrants have an advantage over the migrants owning an average of 1 ha while the natives had dedicated 0.79 ha. The difference is statistically significant at 1% and can partially be explained by the quality of land owned by the migrants, and preference to grow short maturing legumes as opposed to long-maturing cereals. The proportion is reversed in case of land under cotton production where the average land dedicated for growing cotton by natives (7.52 ha) far exceeds those of the migrants (4.31 ha). The difference is statistically significant at 1%. The actual differences between the two groups concerning these variables is presented in Table 2.

Table 2: Household asset endowments

	H_MIGRANT	N	Mean	Std. Deviation	Std. Error Mean	T-test sig
H_SIZE	Migrant	340	12	7	0	1%
	Native	88	9	5	1	
H_CULT_LANDCP	Migrant	340	0.52	0.28	0.02	1%
	Native	88	0.95	0.44	0.05	
GLDC_AREA	Migrant	340	1.00	1.26	0.07	1%
	Native	88	.79 ha	1.59	0.17	
H_COTLAND	Migrant	340	4.31	4.15	0.23	1%
	Native	88	7.52	5.53	0.59	

Differences between natives and migrants were also noted in other variables including number of bullocks of the farm household, tropical livestock units owned, number of visits from extension agents, and years of classic education, membership in farmers organizations, use of improved seeds, and use of sorghum-cowpea or millet-cowpea associations. However, these differences were not statistically significant. Actual differences in numbers are presented in Table 3 below.

On the other hand, statistically significant (at 1%) differences between natives and migrants were found concerning membership in credit associations (Table 3), financial support for legume cropping (Table 4), and food security (Table 5). Differences in training on legume cropping were statistically significant at 5% (Table 6). In all these cases, the migrants fared better. Possible explanations for these differences including possible association of migrants with legume cropping as compared to the natives will be explored in future studies.

Table 3: Membership in credit associations

Chi-Square Tests					
	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	37.352[a]	1	.000		
Continuity Correction[b]	35.855	1	.000		
Likelihood Ratio	44.043	1	.000		
Fisher's Exact Test				.000	.000
Linear-by-Linear Association	37.265	1	.000		
N of Valid Cases	428				
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 32.69.					
b. Computed only for a 2x2 table					

Table 4: Financial support for legume cropping

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	11.599[a]	1	.001		
Continuity Correction[b]	10.793	1	.001		
Likelihood Ratio	11.546	1	.001		
Fisher's Exact Test				.001	.001
Linear-by-Linear Association	11.572	1	.001		
N of Valid Cases	428				
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 38.86.					
b. Computed only for a 2x2 table					

Table 5: Food security

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	5.086[a]	1	.024		
Continuity Correction[b]	4.541	1	.033		
Likelihood Ratio	5.285	1	.022		
Fisher's Exact Test				.026	.015
Linear-by-Linear Association	5.074	1	.024		
N of Valid Cases	428				
a. 0 cells (0.0%) have expected count less than 5. The minimum expected count is 32.07.					
b. Computed only for a 2x2 table					

Table 6: Training on legume cropping

	Value	df	Asymp. Sig. (2-sided)	Exact Sig. (2-sided)	Exact Sig. (1-sided)
Pearson Chi-Square	4.405[a]	1	.036		
Continuity Correction[b]	3.107	1	.078		
Likelihood Ratio	3.688	1	.055		
Fisher's Exact Test				.047	.047
Linear-by-Linear Association	4.395	1	.036		
N of Valid Cases	428				
a. 1 cells (25.0%) have expected count less than 5. The minimum expected count is 2.88.					

According to the data collected, 52% of the households access improved seed varieties through various ways. The most common one is through extension services that provide the seed at government subsidized rates (65%). This is followed by provision of the seeds by the government for free (16%), and purchases from model farmers in the sub-district (8.5%) (Table 7).

Table 7: Access to improved seed varieties

Mode of access	Percent of farmers who have access
Buying from model farmers producing improved seeds in the sub-district	8.50
Donation from Government	16.30
Donation from fellow farmer	4.10
Donation from NGO/Project	0.80
Subsidy from Government	65.10
Subsidy from NGO/Project	2.10
Buying from market	3.10

Out of the total 428 households surveyed under this study, 390 households or 91% grow one or more of the targeted crops while 38 households or 9% of the responding households do not (Table ____).

Table 8: Use millet, sorghum or cowpea

	Frequency	Percent
No	38	8.90
Yes	390	91.10
Total	428	100

2.2 Livestock

In addition to crop production, households in the area also rear different animals. On average a household owns a couple of bullocks and cattle, 4 pieces of sheep and goats each, one pig, one donkey, and about a dozen chicken. Livestock reading is an income generating investment and rarely used to

supplement household food demand. On average households make 149, 000 CFA Franc which is equivalent to 1370 USD (Table 9).

Table 9: Average livestock holdings

Species	Average	N	Std. Deviation	Std. Error of Mean
Bullock	2	428	1.5	0.1
Cattle	2	428	6.6	0.3
Sheep	4	428	5.6	0.3
Goat	4	428	5.1	0.2
Pigs	1	428	3.0	0.1
Donkey	1	428	0.8	0.0
Poultry	12	428	15.3	0.7
Livestock income (selling of the last 12 month)	149,346	428	324,481	15,684

2.3 Gender

Resilience of smallholder farms depends on having a functional agri-food system that is gender inclusive and cuts across the socio-economic ladder within a society. However, the contribution of women in agriculture is rarely acknowledged in technology development and dissemination efforts. Literature on technology adoption clearly indicates that the propensity and speed of adoption is not the same among all members of a society (Rogers, 1982); and identifies a gender gap in technology adoption with women being less likely to adopt new technologies because of their relatively lower access to information, land, credit, and markets (Conley and Udry, 2010, Mendola, 2007, Neill and Lee, 2001). But when given access to improved technologies, women have been known to be good stewards of natural resources, and good mediums to trickle down secured benefits to members of the household (Alene et.al. 2008, Deere, 2010, and Doss 2001).

Sex-disaggregated data was collected and analyzed to identify gender-based constraints to adoption of improved agricultural packages including information, inputs, and recommended practices. The analysis focused on selected variables that serve as proxy indicators for access to some essential resources including land, education, extension services, credit, and production tools.

Land is traditionally owned by men. Women rarely inherit land for fear that they may give it to their husbands or lose it to their husbands in case of divorce. However, women are often given small plots of land of poorer quality to grow ground nuts, sesame, cowpea, millet, and other short-maturing, less labor-intensive cash crops to generate funds to cover their needs. Women thus don't grow cereal which requires a larger and better-quality land. Men on the other hand, grow cereal such as sorghum. Young men are also like the *women* in terms of types of crops they grow and access to agricultural land. But they do have the advantage of farming on the family land, can grow whatever they want, and can even be granted ownership when he gets married. While there were marked differences

between per capita land (ha) owned by female (9) and male-headed households (11), the difference was not statistically significant.

Both men and women are actively, and in some cases, equally engaged in most agricultural activities including sowing, fertilizer application, hand weeding, cereal and cowpea harvesting; as well activities related with livestock including processing, packaging and marketing animal products. Young men, while also active in different aspects of the agricultural productive system are particularly responsible for grazing the animals. Adult men, on the other hand, predominantly take on the responsibilities associated with soil preparation and ploughing, as well as crop packing and marketing of cereal and cowpea.

Most extension agents use motorbikes to cover the large area under their jurisdiction, and so there are not many (if any) women extension agents. While there are no cultural or religious barriers for male extension agents to directly communicate with female farmers, extension agents often prefer to communicate with women through Women-based associations. Using information delivered by the agents, the women often apply for small loans from NGOs and other agencies to engage in income generating initiatives. Comparisons between male and female-headed households on number of visits by extension agents reveal no gender-based bias to access information relayed by the agents. Further analysis of sex-disaggregated data collected indicate that there are no statistically significant differences between male and female headed households in terms of household size, per capita land holding, number of bullocks in the farm household, tropical livestock units owned, gross income, total area dedicated to GLDC crops, area allocated for cotton production, and years of education. The actual differences in numbers are presented in Table 10 below.

Table 10: Gender-responsive characteristics of surveyed farm-households

		N	Mean	Std. Deviation	Std. Error Mean
H_SIZE	Female	17	8.706	7.31236	1.77351
	Male	411	11.382	6.72981	0.33196
H_CULT_LANDCP	Female	17	0.648	0.37632	0.09127
	Male	411	0.604	0.36425	0.01797
H_BULLOCK	Female	17	1.530	1.505	0.365
	Male	411	1.870	1.465	0.072
H_TLU	Female	17	3.700	5.484	1.33
	Male	411	3.970	5.556	0.274
H_GROSINCCP	Female	17	98662.163	67615.59117	16399.18967
	Male	411	115791.280	67029.10382	3306.30186
GLDC_AREA	Female	17	1.751	1.08107	0.2622
	Male	411	1.907	1.35652	0.06691
H_COTLAND	Female	17	3.514	3.50861	0.85096
	Male	411	5.033	4.68276	0.23098
H_NBRE_VISIT	Female	6	1.830	0.753	0.307
	Male	133	2.290	1.247	0.108
H_HEAD_EDU	Female	17	0.470	1.7	0.412
	Male	411	0.680	2.022	0.1

The findings, however, do not give insight into the quality or state of the land owned, level or degree of implementation of recommended packages, ability to market agricultural outputs, etc. which have substantial impact on the income and overall livelihood of the household. Such questions will be tackled in the follow up qualitative study which will seek deeper understanding of the socio-economic

status of the households and the effective ability of men and women, young and old, to adopt recommended packages to grow GLDC mandated crops.

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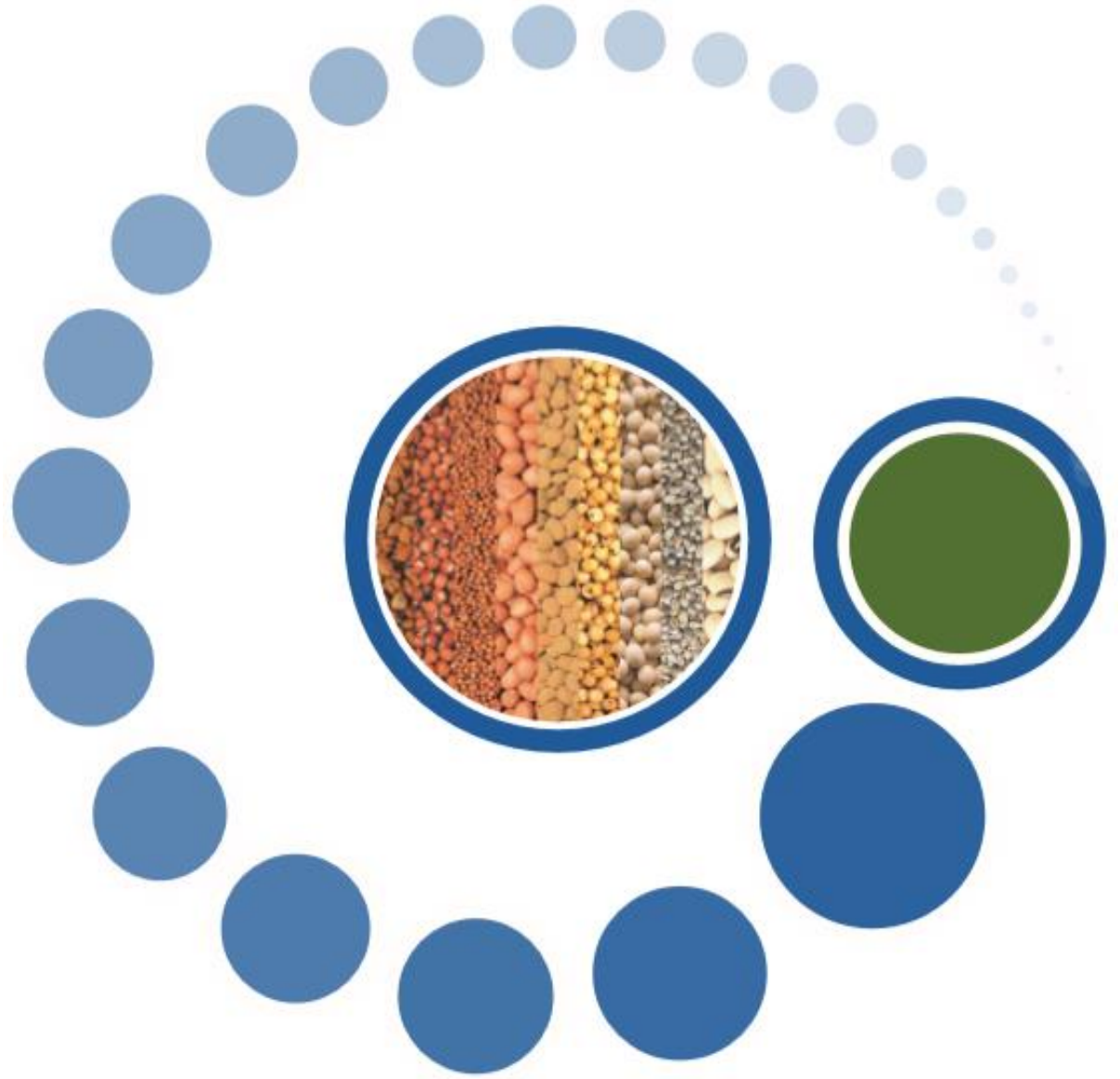

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