CHARACTERIZATION OF GENDER RELATIONS WITHIN FARM HOUSEHOLDS: CASE-STUDY IN SEMI-ARID BURKINA FASO

Minor Thesis Report
March through May 2016

Name student: Justine Santamaria, MSc Organic Agriculture
Registration number: 940111-727-100
Course code: FSE-80424
Name course: MSc Thesis Farming Systems Ecology
Supervisors: Georges Félix (PhD Candidate), Théo Saunier-Zoltobroda (IRD technician), Jeroen Groot (Associate Professor)

Farming Systems Ecology Group
Droevendaalsesteeg 1 – 6708 PB Wageningen - The Netherlands
CONTENTS

Abstract ................................................................................................................................................................................... 2
Acknowledgments ............................................................................................................................................................... 3
List of abbreviations ........................................................................................................................................................... 4
Definitions .............................................................................................................................................................................. 5
1. Introduction ................................................................................................................................................................ ...... 6
2. Purpose of this study ................................................................................................................................................... 10
   2.1. Research sub objectives .............................................................................................. 10
3. Materials and methods ............................................................................................................................................... 11
   3.1. Context of the study .................................................................................................... 11
   3.2. Study area .................................................................................................................... 11
   3.3. Analyzed period ........................................................................................................... 14
   3.4. Sample selection ......................................................................................................... 14
   3.5. Sample composition .................................................................................................... 15
   3.6. Progress of the interview ............................................................................................ 15
4. Results ............................................................................................................................................................................... 21
   4.1 Household characterization ......................................................................................... 21
   4.2 Resource Allocation ...................................................................................................... 27
   4.3 Seasonal activities ........................................................................................................ 24
5. Discussion ........................................................................................................................................................................ 33
6. Conclusions ..................................................................................................................................................................... 38
7. References ................................................................................................................................................................ ....... 40
8. Appendix .......................................................................................................................................................................... 43
In Sub-Saharan Africa, that is the most food insecure area in the world, men and women in agriculture have specific roles and relations that emerge from customary laws. Whereas women are the ones with less access to education, land and resources ownership, recent studies and interests highlight their role in agriculture, which is estimated at 70% of the food production. The objective of my study was to analyze the gender roles and relations within farm households of the Mossi ethnic group in Yilou village in Burkina Faso. The aim was to assess how men and women share farm work. It was implemented within a Mossi village, the most important ethnic group on the Central Plateau of Burkina Faso, which relies on subsistence rain-fed agriculture. From March to May 2016, 22 persons from 12 households were interviewed to find out which tasks and by whom they had been conducted in the household and the farming system from June 2015 to June 2016. Quantitative questions allowed an assessment of household composition and structure, and farm resource availability. For each respondent I quantified the decision-making, ownership and labor roles for each farm resource to understand patterns in gender roles and relations within the household. Results indicated that male respondents usually owned rights to use croplands and possess prestigious livestock like beef cattle and sheep, as they are responsible to provide incomes for the family and the cutting big wood for construction. Decision-making in the household is responsibility of the elders. Women were busy with activities concerning household tasks and farming activities: they usually support the household head on communal fields, fulfilling tasks that include breeding livestock, cooking, fetching water and collecting fuel wood. Women in all households (except one where everybody farmed on the same 2 fields) benefited from a “personal” field given by their husband where they could grow cash crops and leafy greens to complement daily nutrient intake, and sell them in the market to get personal money. Children provided also an important workforce as well. Finally, labor organization in the farm household was clearly set according to the gender, the work capacity and the age. This household organization allows a specialization in each farm task; therefore it is important to understand gender relations when implementing peasant research/development projects for instance.
Acknowledgments

I am grateful to people who helped me in this thesis process. Whereas it was my first scientific writing, the people I will mention invested a lot of time, energy and support with me. I would like to thank them here:

- Georges Félix: our daily supervisor and first contact with the project. He helped us for the whole process of the thesis writing and data collection, from building the subject to correcting final work. We benefited from his good reputation in the village to interact with people. Thank you for the time you spent with us on this long process!
- Jeroen Groot our coordinator for giving precious advices to enhance our work and correcting lots of mistakes.
- Théo Saunier for the warm welcome he gave us with Marie when we arrived in Burkina. Beside his help for my thesis writing and advices for scientific writing, his help in finding accommodation and explaining local behaviors facilitated greatly our acclimation in the country.
- Jean Sawadogo, the local translator who was always very patient for surveys, available anytime and devoted to his work. I am very happy that I had the chance to work with him. He teached me a lot about the Mossi culture and the moose language.
- Laurent Cournac, main coordinator of the WASSA project (Woody Amendment for Sudano-Saharan Agriculture) and researcher at the IRD (Institut de Recherche pour le Développement).
- Anne Attané, who provided great advices thanks to her anthropologic work in Burkina Faso and scientific knowledge.
- Marie Le Garff, my thesis colleague. I discovered her personality while traveling in Burkina. I don’t know how different my stay would have been without her. She greatly helped me just by accompanying me in all daily times.
- The farmers of Yilou for their cooperation to my work. They were always very welcoming and patient with me. Working with them was the part of the thesis I enjoyed the most.
- My parents who gave me financial support but beside, supporting me in this travel whereas they were very afraid for their daughter.
LIST OF ABBREVIATIONS

AM: Active Men
A.s.l.: Above sea level
ASM: Artisanal Small scale Mining
AW: Active Women
Cons: Consumption
DRL: Decision, Responsibility, Labor
FSE: Farming Systems Ecology
GAP: Gender Activity Profile
HH: Household
HHH: Household Head
IRD : *Institut de Recherche pour le Développement*
Prod: Production
RW: Ramial Wood
WASSA: Woody Amendments for Sudano-Sahelian Agriculture (Research project)
WEF: World Economic Forum
WUR: Wageningen University & Research Centre
DEFINITIONS

Gender concept: deals with the perceptual and material relations between men and women, it governs the processes of production, reproduction, consumption and distribution of roles and relations (FAO, 1997).

Gender role: defined as a cultural construct that attaches gender-specific roles and responsibilities. Gender roles are often conditioned by household structure, access to resources and have specific impacts of the global economy (Bravo-Baumann, 2000).

Gender relations: are the way in which a culture or a society defines rights, responsibilities and identities of men and women in relation to one another (Bravo-Baumann, 2000).

Household: Two or more nuclear family members living in the same district area. (West, 2010)

Gender study: Gender study is a field for interdisciplinary study devoted to gender identity and gendered representation as central categories of analysis. This field includes women’s studies (concerning women, feminism, gender, and politics), men’s studies and queer studies (Whitman College, 2012)

Decision maker (D): the HH member that will take decision to manage farm tasks. It can be for instance taking decision about the crop variety to grow, the sale of cattle, or the management of harvested fruits from trees (Geilfus, 2009).

Responsible (R): the HH member who will take care of accomplishing tasks ordered by the decision maker (Geilfus, 2009).

Labor (L): the HH members who execute the decision. This concerns all tasks related to crop production, taking care of the cattle, fetching water, fetch wood, etc. (Geilfus, 2009).
1. INTRODUCTION

GENDER AND FOOD SECURITY

The gender concept refers to the separation of sexual identity from cultural identity. That means that according to their cultures, men and women have specific roles and relations. In the world, 97% of farms are smaller than 2 ha. Among these farms, 70% of the farmers are women who take a big share of agricultural activities (IFAD Rural Poverty Report, 2011). A study from FAO showed that if women had the same access to inputs in farms such as tools and fertilizers compared to their male counterpart, agricultural productivity would increase, and would also decrease hunger in the world (Nelson, 2012). This is due to the overall tendency of women to invest in health, school, child nutrition, and clothing when they have the same economic status as men (Pehu, 2009). Therefore, a gender approach is of key importance to understand women’s obstacles to increase their yields and incomes to sustain, fully or partially, their households.

GENDER IN SUB SAHARAN AFRICA

Sub Saharan Africa is the region that suffers the most from food insecurity in the world (IFAD, 2011). Recurring droughts, soil erosion, and arable land scarcity constantly increase food shortage and malnutrition which keeps more than 60% of rural inhabitants to live in extreme poverty (less than 1.25$ a day) (IFAD, 2011; Badu, 2007). Because both genders rely on different resources, each change in the environment can affect men and women’s livelihood differently (Pehu, 2009).

Men and women usually rely on specific resources. For instance, in many parts of Sub-Saharan Africa, women fetch water and fuel wood for cooking whereas men use big wood and clay soil for construction. As climate change modifies environmental characteristics, resource availability decreases and affects each gender’s livelihood sustainability (Mckune, 2015).

MOSSI SOCIAL STRUCTURE

West (2010) summarized Mossi household (HH) dynamics as follows: “Mossi households extend by producing and retaining males and also by recruiting wives for their male members. Similarly, they also fragment along these same lines. When an extended household breaks up, each individual nuclear family composed of a man, his wife (or wives), and their children become a
Gender relations in farming systems of Burkina Faso. Figure 1 provides a graphical overview of the typical Mossi extended and nuclear households that is the main pillar of household structures. A family unit composed of two or more nuclear families is said to be an extended household (West, 2010). In this ethnic group, people usually live in extended households where gender roles are defined by a patriarchal kinship system which is a social structure where an individual’s family membership derives from his or her father’s lineage. It generally involves the inheritance of property, rights, names, or titles by persons related through male kin (Guiella, 1990). Women migrate to their husband’s lineage when they get married and form a constituent part of the household and until they give birth, they are under the moral authority of the husband’s father or the elders of the household. When children reach a mature age and are able to work with their parents, women are then supported with the right to farm on a personal field, usually a fragment of a larger field.

The customary power of the village is split between the landlord and the village chief. The territory management belongs to the Tengsoba (landlord) and politics (or human relations) belong to the village Naaba (village chief).

VILLAGE CHIEF FAMILIES

Village chiefs’ families are recognizable by their names: Ouédraogo, meaning “the studhorse.” It is a very common family name that recalls the foundation of the Mossi realm. It originates from the legend that the princess of the Dagomba kingdom, who, after traveling northward to the valley of the Nakambé River, allied herself with an indigenous hunter named Rated. From this union was born the ancestor of all Mossis surnamed Ouédraogo, in particular the social group Nakomé, conquerors and founders of kingdoms (Yoda, 2005). The family name refers
to the horse that the princess Yennega was riding when she encountered the hunter in a remote forest (Paceré, 1979). All Ouédraogo are commonly said to be family with Naaba Ouédraogo (the Mossi chief). Yet it doesn’t seem that Ouédraogo individuals possess more power than any other Mossi individuals.

Mossi people are still very attached to the traditional power that influences their way of thinking and behaving. The traditional power is dominated by the Moogo Naaba, who is the king of Ouagadougou realm, as well as the paramount chief of all Mossi people. His political influence during the election period is also noticeable (pers. obs.). Politicians seek his support to gain the vote of “subjects” from which he still exercises authority (Badini 1994).

**LANDLORDS**

*Tengsoba* (landlords) possess the religious power and are territory landlords. They are in charge of land distribution among family lineages and new comers of his village (Imbs, 1987). Land ownership can only be attributed to men. Nevertheless, the Tengsobas’ power tends to disappear with the country socio-economic and political transformation (Skinner, 1989). Authentic Yilou Mossi natives are usually named *Sawadogo*, meaning “the small cloud or rain managers”, and are attached to the landlord family.

Sawadogo and Ouédraogo families are often linked through marriage bonds, thus, preserving a social *ancient* alliance between the “native” Mossi (Sawadogo) and the “migrant” Mossi from northern Ghana (Ouédraogo).

**YARSI**

Yarsi social groups used to be from nomad tradition with their own language speaking “Yari” (Berthelette, 2002). Yet, Yarsi families in Yilou were settled since several generations and mingled completely with local Mossi culture, however observing Muslim festivities and restrictions (Soumbougma 1989). Usual Yarsi last names in Yilou include: *Guira* and *Sakandé*, usually marrying within Yarsi groups.

**METALSMITHS: A CLAN WITHIN A COMMUNITY SYSTEM**

The social group of metal smiths possesses a status that arises from special tasks and repartition of roles. They are seen as a clan, which means a social group with a given institution-situation inside a hierarchic system with endogamy and work specialization (Jonckers, 1979).
Because of their knowledge of fire and iron, they occupy, in the Mossi society, the role of intermediates, mediators and intercessors, listened and respected by all (Partie R.E, 2002).

Male Metalsmiths will commonly exercise the art of metallurgy while female members of metalsmith clans will master pottery. Mastery of fire is a particularity of Metalsmiths and marital exchanges occur between family groups of similar social level.

**FULANI SOCIAL STRUCTURE**

The Fulani people were an important part of the Mossi ethnic group as they shared farm services and lived close to Mossi HH. Conflicts between farmers and herdsmen (Fulbe) exist since decades and constantly increase in the central plateau of Burkina Faso because of a raise of the pressure on natural resources caused by population increase, the growth of herds and the extension of cultivated areas outpacing population growth (Breusers, 1998).

**GENDER RELATIONS AND FARMING SYSTEMS**

Farming systems are organized through the household where constellations of plots are radially spread from the family ‘district’ towards bush fields. Mossi fields can be classified in two categories according to Baerends (1988):

- **Pugkêenga**, large communal fields in which several nuclear families belonging to the same zaka (district) cultivate cooperatively
- **Beolga**, smaller fields cultivated by nuclear families within an extended household or individual field of nuclear households.

Only men own Pugkêenga and Beolga; however, the household head can allocate one or several Beolga to his wives. This allows women to manage plots by themselves and get personal money by selling their yields in the market (IMBS, 1987).

The analysis of gender relations within Mossi farm household allows recognizing both gender knowledge and labor differentiation. Indeed, a gender approach is often exempt from development and research projects. The result is that individuals can be marginalized from an innovation and this could even increase the gender gap. As a consequence, projects might remain stagnant (Nelson & Chaudhury, 2012). Yet both genders take part in land resources management and are worth being recognized for their actions.
2. PURPOSE OF THIS STUDY

Our research took place in Burkina Faso from the beginning of March 2016 to the end of June 2016. The main objective of this study was to assess Gender Activity Profiles (GAPs) in farm households of Yilou, in Burkina Faso, but also to assess the impact of gender relations on ownership and decision-making regarding use management of woody biomass and agroecosystem resources.

2.1. RESEARCH SUB OBJECTIVES

(1) What is the household and farm structure?
   • Objective 1: To characterize the structure of selected households.

(2) What assets contribute to socioeconomic diversity between HHs?
   • Objective 2: To characterize resource use and access of each farm HH.

(3) How are tasks allocated amongst genders within a given HH?
   • Objective: Assess the nexus between gender and farm resources.
3. MATERIALS AND METHODS

3.1. CONTEXT OF THE STUDY

WASSA project (Woody Amendments for Sudano-Sahelian Agriculture) conducts research activities in Yilou, a village from Burkina Faso, in West Africa. It analyzes the use of indigenous woody amendments to enhance soil quality and crop productivity in a Mossi community of Burkina Faso. It aims to optimize the use of agroecosystem components, and particularly woody branches and leaves, to amend the soils to improve soil fertility. This raises several gender topics. I wanted to understand how farm resource use and woody amendments sharing are affected by HH structure and internal organization in Yilou village, Burkina Faso.

3.2. STUDY AREA

Burkina Faso, known as “land of righteous people,” is a landlocked Sub-Saharan country in West Africa. Its main cities are the capital of Ouagadougou with 1.5 million inhabitants, and Bobo-Dioulasso with 490,000 inhabitants (INSD, 2006). With an area of 274,200 km² and an average altitude of 400 m.a.s.l, Burkina Faso’s landscapes figure plateaus, hills and shallow valleys. The highest peak reaches only 740 m (Imbs, 1987). Climate goes from Saharo-Sahelian type to Sudano-Guinean (Arbonnier 2002). The High Plateau region where I focused on was under a Sudano-Sahelian climate, with two contrasting seasons: a dry period between October and April, and a rainy season between May and September.
The country is divided in 45 provinces, 382 departments, and more than 8000 villages (INSD, 2007). Its population of 17 million (of whom 70% lives in the countryside) is expected to reach about 41 million by 2050 with an annual growth rate of 3% (Diarisso, 2015). This country is one of the ten poorest countries of the world with a Human Development Index of 0.305 in 2010 (HDI scores high when lifespan, education level and GDP per capita are high and the fertility rate and the inflation rate are low). The economy is heavily reliant on agricultural production, with close to 80% of the active population employed in the sector (World Bank, 2016). This makes the country vulnerable to environment changes related to global warming and rainfall patterns that could lead to yield vulnerability; as well as unstable market prices (World Bank, 2016).

Despite poor biophysical conditions, the country possesses a rich culture and well structured social organization. Even after 64 years of colonial occupation (from 1896 until 1960), the cultural heritage of ethnic kingdoms remains present in the Burkinabè culture (Imbs, 1987). Each of the sixty ethnic groups that compose the country is organized according to specific traditions and social structures emerging from and determined by the inhabitants’ actions (Konaté, 1988).
Our analysis took place in Yilou (13°01’ N, 01°32’ W), a Mossi village, the most important ethnic group on the Central Plateau of Burkina Faso, holding almost one third of the country with an area of 94,000 km² (Diarisso, 2015). The Mossi economy in rural areas is heavily reliant on subsistence rain-fed agriculture and main cultivated crops are cowpea, pearl millet, white sorghum, and groundnuts (Diarisso, 2015). The village is situated approximately 75 km North of Ouagadougou, in the commune of Guibaré, Bam province. This village territory is characterized by severe soil degradation, materialized by patches of unproductive areas, with reduced soil water infiltration and storage capacity (Diarisso, 2015). Nevertheless, most of the farmers are producing sorghum, maize, rice and millet for food self-supply. Local staple crop agriculture is largely rain-fed, except nearby the riverbed where there are intensive vegetable productions. Yearly rainfall is between 400 and 700 mm (Appendix 1; CIRAD, 2015).
3.3. ANALYZED PERIOD

I collected data of a one-year lapse, from June 2015 to June 2016 to analyze the cycle of households with all crops and seasons differences. The calendar started in June as it is the beginning of the rainy season and constitutes a concrete reference date for farmers.

3.4. SAMPLE SELECTION

Sample of household selection was based on plot-level surveys carried out by Georges Félix in 2014, from a list of interviewees constructed by Marcel Ouédraogo (2013). Farmers were asked to show the two most extreme fields of their farming system, i.e. the one where production was perceived “best” and the one where production was usually perceived as “worst”. This inquiry resulted in 76 plots observed. These plots were managed by 40 farming families surveyed in Yilou in 2014, 36 having shown two plots (i.e. best and worst) and 4 having shown only one plot (i.e. best). Geographical location, rotations, perceived yields across years, soil types, and management operations were recorded during 2014. Woody biomass, including shrub and tree vegetation types, was assessed on 60 out of 76 plots in 2015, within the minor thesis project of Timothée Chérière (2015). From the gathered data, perceived yields across years and labor input were plotted as a proxy to efficiency. Plots of farmers who only had shown one plot and extreme outliers in yields (i.e. 40 donkey carts of fresh sorghum per hectare) or labor input (i.e. 0 or 8000 man-days per year) were excluded from this dataset.

For the present study, a sample of 12 HH farms have been selected by Georges Félix, with the aim to cover the variability of productivity or labor input of the HH. A range of farmers were chosen by first looking at their labor input per plot, in combination with field productivity as perceived by the interviewee. We chose three farm HH with low labor input and low field productivity, three with low labor inputs and high field productivity; three with high labor input and low field productivity; and three with high labor input and high field productivity. Another characteristic taken into account during the sample selection was the status of the HH head to analyze the diversity of gender roles and relations; with 3 female widows and 9 males as HH head.
3.5. SAMPLE COMPOSITION

Interviews were conducted in 12 different HH of Yilou. Table 1 provides an overview of HH composition and the sample composition of the interviews.

**TABLE 1: QUANTIFICATION OF PEOPLE SURVEYED.**

<table>
<thead>
<tr>
<th></th>
<th>Men (16-65 years old)</th>
<th>Women (16-65 years old)</th>
<th>Children (6-15 years old)</th>
<th>Young children (0-5 years old)</th>
<th>Elders (&gt;65 years old)</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender repartition from the 12 HH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>211</td>
</tr>
<tr>
<td>Total number of people interviewed from the HH</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>22</td>
</tr>
</tbody>
</table>

For each household, I paid attention to interview both men and women to cross check information and asked them to answer for them and for all members of the HH. During surveys, we always interviewed the HH head and one of his brothers, and the wives of the HH head and his brother that were available. Classifications of the respondents in Table 1 are a classification of social categories according to their work capabilities and age (Gastellu, 1980). Children and old people are only part of the consumption group as they are not able to work in the farm. The others are from the production group even though children are not completely able to participate to all of the farm tasks.

3.6. PROGRESS OF THE INTERVIEW

3.6.1 DATA COLLECTION

The first part of the experience was to enter in contact with Yilou inhabitants. Starting with meeting the land chief (*Tengsoba*) and producers. We presented clearly our goal, research topics and the time we will spend in the village. Then we observed the village and its environment. It helped us to understand the general context and link our research approach to farmer’s reality.

We benefited from the positive relations our Supervisor Georges Félix has built for three years with farmers of Yilou. Thus, respondent household members already had some experience with external researchers, local experimentation and surveys.
3.6.2 ANALYSIS OF HOUSEHOLD COMPOSITION

For this objective, we wanted to understand household organization to assess each member’s role towards field practices. For this purpose, we needed to point out who helps the HH head for the production process and how yields are shared.

Therefore, two types of units were distinguished (Gastellu, 1980):

- **The production group**, perceived as a group of people contributing together to animal and human food production.

- **The consumption group**, perceived as the group of people who consume together yields of the production group (i.e. it can be the production group plus young children and elders).

These different subunits are materialized in the field through household physical separation. This suggests that people who share resources live close together in the same household, spatially separated from other consumption groups (i.e. other households) (Gastellu, 1980).

For this survey, we focused on the production groups directly related to crop management. Appendix 2 shows an example on how we analyzed the consumption and production groups, using gender and age as variables.

3.6.3 MAPPING HOUSEHOLD RESOURCE USE AND MANAGEMENT

During the surveys, I mapped the perception that household members have on the use of space at the farm level through reduction of reality to a two-dimensional (2D) map (see Figure 4). The information I wanted to point out from the farming system with the survey is schematized in Figure 5, including possible agro ecosystem structure during the dry season. Land structure types were characterized by local availability of woody biomass for soil amendment as a function of woody species diversity at field level, mainly constituting a scheme of what a field could look like, by considering the perceived degree of transformation from the original landscape (Table 2). I showed the respondent some illustrations of land structure types with different degrees of woody perennial abundance to assess provision of tasks from each land use type.
Table 2. Possible field-level structure of woody perennials during dry season in semi-arid Burkina Faso (Félix, 2017).

<table>
<thead>
<tr>
<th>Field structure during dry season</th>
<th>Description for Yilou, Burkina Faso</th>
<th>Graphic representation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shrubs and trees (max)</td>
<td>First stage after clearing a fallow for agriculture, where richness and composition of fallow is slightly eroded. Trees and shrubs sum up a canopy cover higher than 50%.</td>
<td><img src="image" alt="Graphic representation" /></td>
</tr>
<tr>
<td>Shrubs and trees (min)</td>
<td>Same as ‘Shrubs and trees (max)’ but with a canopy cover of 20-50%, as perceived by the interviewee</td>
<td><img src="image" alt="Graphic representation" /></td>
</tr>
<tr>
<td>Only shrubs</td>
<td>Mainly shrub species dominate the field structure during the dry season. Species include <em>Piliostigma</em>, <em>Guiera</em>, and <em>Combretum</em> genus.</td>
<td><img src="image" alt="Graphic representation" /></td>
</tr>
<tr>
<td>Only trees</td>
<td>Mainly tree species dominate the field structure during the dry season, with species representatives like <em>Mangifera indica</em>, <em>Vitellaria paradoxa</em>, <em>Lannea microcarpa</em>, and <em>Anogeissus leiocarpus</em></td>
<td><img src="image" alt="Graphic representation" /></td>
</tr>
<tr>
<td>Fields surrounded by trees (Hedgerows)</td>
<td>A diversity of shrubs and trees surrounds this type of fields, but none are present (or very little) on the field itself.</td>
<td><img src="image" alt="Graphic representation" /></td>
</tr>
<tr>
<td>Bare field</td>
<td>No vegetation found during the dry season.</td>
<td><img src="image" alt="Graphic representation" /></td>
</tr>
</tbody>
</table>

Figure 4 is a picture taken during the first interview in Yilou. In the middle of the cardboard is a drawing that represents the HHH's farm resources and the respondent's HH. Around the household, pictures of fields from Table 2 are split according to their spatial direction (North, for instance). In this example, the HHH indicated that he is owner of four fields and one riverbed plot. He indicated as well the biomass present on each field so one can assess how much green materials they have, and how they share it. Below the house we can see pictures of animals he owns: chickens, donkeys, beef, guinea fowl and sheep so one can assess the livestock variety diversity of the HH. This information helps us to settle the farm resources that one will link to gendered roles within the household afterward.
The 2D cardboard map facilitated the discussion. It helped to picture the whole farm system and start the discussion together with creating entertainment with pictures that farmer was not used to see.

Subsequently, I assessed gendered decision-making roles (DRL; decision maker, responsible, labor provider). For each crop we wanted to know what varieties were grown and who had DRL roles for each variety. This means that the respondents answered for themselves and described DRL roles of the other members from the production group, as well. Discussing with different actors allowed crosschecking the information given by all respondents within the same household. I also asked questions about access and use of animal, water and wood resources, as well as economic activities that took place during the dry season (activities during rainy season being exclusively oriented towards farming operations and market sales). The survey was managed with closed questions first (see Appendix 3) and then with open questions to complete details explaining the whole farm management. All activities were reported on a monthly-based calendar to assess rainy season activities and dry season activities.
The map in Figure 5 is a synthesis of the survey Figure 4. In total, 12 maps were created corresponding to the number of HH (see Appendix 4).

FIGURE 5: MAP OF THE FARM WITH GENDER ASPECTS.
4. RESULTS

4.1 HOUSEHOLD CHARACTERIZATION

4.1.1 HOUSEHOLD AND FARM RESOURCES AND STRUCTURE

Household structure is presented in Figure 6 and Table 3. On average households has 17 members, but there was a large variation in household size, ranging from 4 to 38 members.

Children were working with their parents in 8 HH out of 12 (Figure 6) and they provided a mean workforce of 15% in these 8 HH. In the six HH where men represented less than 35% of the total production group, there was a mean of 30% of children workforce for five HH, and one with no children workforce. In the HH where men represented more than 35% of the HH workforce, 3 HH did not have children as workforce, and in the 3 others, children represented 12% of the workforce.
Table 3: Details of household composition and resource availability. The ordering of households is the same as in Figure 6.

<table>
<thead>
<tr>
<th>HH</th>
<th>Social group</th>
<th>Religion¹</th>
<th>Prod. gp²</th>
<th>Cons. gp³</th>
<th>P:C ratio⁴</th>
<th>AW:AM ratio⁵</th>
<th>Nr of fields</th>
<th>Livest. types</th>
</tr>
</thead>
<tbody>
<tr>
<td>G.O.</td>
<td>Yarsi</td>
<td>M</td>
<td>23</td>
<td>38</td>
<td>61%</td>
<td>0.8</td>
<td>4</td>
<td>6</td>
</tr>
<tr>
<td>H.S.</td>
<td>Landlord</td>
<td>A</td>
<td>11</td>
<td>28</td>
<td>39%</td>
<td>1.7</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>S.G.</td>
<td>Metalsmiths</td>
<td>M</td>
<td>12</td>
<td>20</td>
<td>60%</td>
<td>0.7</td>
<td>5</td>
<td>5</td>
</tr>
<tr>
<td>S.Y.G.</td>
<td>Metalsmiths</td>
<td>M</td>
<td>14</td>
<td>19</td>
<td>74%</td>
<td>1.8</td>
<td>4</td>
<td>2</td>
</tr>
<tr>
<td>S.M.</td>
<td>Yarsi</td>
<td>M</td>
<td>14</td>
<td>19</td>
<td>74%</td>
<td>0.8</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>P.Z.</td>
<td>Metalsmiths</td>
<td>M</td>
<td>9</td>
<td>17</td>
<td>53%</td>
<td>1.3</td>
<td>5</td>
<td>3</td>
</tr>
<tr>
<td>S.N.S.</td>
<td>Landlord</td>
<td>M+A</td>
<td>9</td>
<td>16</td>
<td>56%</td>
<td>1.0</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>I.O.</td>
<td>Village chief</td>
<td>M</td>
<td>11</td>
<td>14</td>
<td>79%</td>
<td>2.7</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>P.S.</td>
<td>Landlord</td>
<td>M+A</td>
<td>7</td>
<td>12</td>
<td>58%</td>
<td>1.5</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>R.O.</td>
<td>Village chief (w)⁶</td>
<td>M+A</td>
<td>6</td>
<td>8</td>
<td>75%</td>
<td>1.0</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>C.A.O.</td>
<td>Landlord (w)</td>
<td>C</td>
<td>4</td>
<td>7</td>
<td>57%</td>
<td>1.0</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>G.A.O.</td>
<td>Landlord (w)</td>
<td>C</td>
<td>4</td>
<td>4</td>
<td>100%</td>
<td>1.0</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td>Avg.</td>
<td></td>
<td></td>
<td>10.3</td>
<td>16.8</td>
<td>65%</td>
<td>1.3</td>
<td>3.9</td>
<td>4.8</td>
</tr>
</tbody>
</table>

¹ Religions: M=Muslim, A=animist, C=catholic.
² Production group, family members involved in agricultural activities.
³ Consumption group, all members, including non-active young children and elderly persons.
⁴ Ratio between production and consumption group.
⁵ Ratio between active women (AW) and men (AM).
⁶(w): widow

FIGURE 7: RELATIONSHIP BETWEEN PRODUCTION AND CONSUMER GROUPS.
There was a linear relation between the number of consumers and the number of producers (Figure 7).

![Figure 8A and 8B: Comparison between consumption group mean repartition, and the ratio active women (AW) and active men (AM).](image)

Figure 8A and 8B reflect that young children are highly represented in the HH mean repartition. There were slightly more women than men in the household and they both represented about 50% of HH members. Also, from the ratio AW: AM in the production group, there are more active women than active men per HH.

In the respondent HH, nine out of twelve household heads were men while three of the participant households were headed by a widow. After their husband deceased, those women became responsible for the production group and stayed in their husband’s family.

![Figure 9: Relation between consumer unit and number of fields.](image)
From Figure 9, there is a hyperbolic correlation where the number of fields increase with the number of consumers up to 29 consumers. Then, the number of fields possessed by HH does not increase anymore.

### 4.3 Seasonal Activities

Table 4 compiles all activities carried out during each of the seasons where they take place.

**Table 4: Seasonal Time Spent per Activities, Mixed Gender.**

<table>
<thead>
<tr>
<th>Seasons</th>
<th>Activities</th>
</tr>
</thead>
<tbody>
<tr>
<td>Only rainy season</td>
<td>Agriculture</td>
</tr>
<tr>
<td>Only dry season</td>
<td>Searching for wood; House construction; Bricks construction; Pots building; Working with iron; Gold prospecting</td>
</tr>
<tr>
<td>Both seasons</td>
<td>River bed cultivation; Fetching water; Cooking; Washing clothes; Selling at the market; Animal breeding</td>
</tr>
</tbody>
</table>

Some activities are strongly correlated with climate conditions. During the rainy season, farmers spend most of their time in the field, as it requires additional labor work and time. During the dry season, except near the riverbed, no crops are growing in fields thus farmers use their time with economic activities as shown in Table 4 to complete their revenues and prepare for the rainy season. Prior to the onset of the rains, women make a stock of dry wood and men build bricks and construct houses and walls.

**Table 5: Economic Activities for the Dry Season Sorted by Gender**

Justine Santamaria (2016)
**Table 5:** Gender distribution of activities during the day

<table>
<thead>
<tr>
<th>Activity</th>
<th>Men</th>
<th>Women</th>
<th>Children</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sell in the Market</strong></td>
<td>Agrarian tools*</td>
<td>Clay pots*</td>
<td>Clay pots and agrarian tools*</td>
</tr>
<tr>
<td></td>
<td>Livestock</td>
<td>Donuts</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cereals</td>
<td>Cakes</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Vegetables</td>
<td>Soap</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Iced water</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cereals and agrarian tools*</td>
<td></td>
</tr>
<tr>
<td><strong>Build/construct</strong></td>
<td>knifes, pickaxes, axes with iron*</td>
<td>Pots with clay*</td>
<td>Collect dry bricks</td>
</tr>
<tr>
<td></td>
<td>make ropes out of cereal plastic bags**</td>
<td>Cotton spinning for traditional clothes**</td>
<td></td>
</tr>
<tr>
<td><strong>Agriculture</strong></td>
<td>Work in the river bed</td>
<td>Gold prospecting</td>
<td></td>
</tr>
<tr>
<td><strong>Others</strong></td>
<td>Gold prospecting</td>
<td>Making and selling</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gold prospecting</td>
<td>Dolo (local beer)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gold prospecting</td>
<td>Take care of livestock</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Gold prospecting</td>
<td>Charges cell phones</td>
<td></td>
</tr>
</tbody>
</table>

* Metalsmith activities
** Elders

Women have much more activities related to merchandizing than men (Table 5). Only two women were identified with gold collection activities. Men carry out labor-intensive tasks such as work in the river bed, gold prospecting and construction. It has been noticed in Yilou the presence of two kinds of gold sites: the ones for women with shallow pits, and the ones where only men work at approximately 40-m deep pits, North of the central market.

One could find a diversity of activities within respondent women since some were selling food and goods in the market, while others were buying cereals in Yilou to sell to women from Ouagadougou at higher prices. Others were gold prospectors.

Another woman was processing germinated millet, for *dolo* preparation. This activity requires a lot of fuel wood since after being crushed and ground into a paste, the sorghum is boiled for one to three days, depending on the preparation style. The *dolo* is a local beer that provides an important income for rural women. It is prepared by a woman all year round, the *dolotière*, who runs a business called *cabaret* (Breuser, 1999).

Respondent men were prospecting for gold and merchandizing in livestock market and constructing houses and bricks. The house construction requires several steps: men are building earthen bricks with water and clay that they let dry in the sun. They have to search big wood for houses structures. Big woods can be found in the forest (far away from the village) or in the farmer’s fields. Then, to assimilate bricks, they are doing *banco*, a softer layer of earth and water
to stick bricks together. The principal advantage of earth bricks is the cheap cost: it is made from local clay mixed with water (Madiega, 1996).

Elderly persons and children do activities that go in hand with their labor force capacities. One respondent elderly woman from H.S. HH was sewing traditional tissues with cotton. Cotton spinning is a traditional female activity (Diallo, 1986). It is easier for elderly women to be responsible for spinning cotton as this activity doesn’t require much physical force.

One respondent child from G.O. HH was taking care of his parent’s livestock, collecting bricks and charging cell phones in the market to get money during the dry season.

### 4.3.4 GENDER ACTIVITY PROFILE

The repartition of farm tasks and HH tasks is represented in Table 6. It describes all recurring and essential activities for HH management. Crosses indicate activities being done by gender and degree of involvement in task (i.e. D for decision maker, R for in charge, and L for labor provider).

**TABLE 6: FARM TASKS REPARTITION.**

<table>
<thead>
<tr>
<th>Task \ Work load</th>
<th>Men</th>
<th>Women</th>
<th>Children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>D</td>
<td>R</td>
<td>L</td>
</tr>
<tr>
<td>Collect big wood</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>House construction</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Bricks construction</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Breed animals</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Fetch water</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Collect small wood</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Cook</td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Wash clothes</td>
<td></td>
<td></td>
<td>X</td>
</tr>
</tbody>
</table>

D= Decision maker  
R= Responsible for task progress (e.g. in charge of harvest transportation to HH silo)  
L= Labor force of the task
Concerning non-crop activities, I observed a clear distribution of tasks between men and women. Women are DRL for carrying activities such as fetching water and fuel wood. They are also in charge of cooking and washing clothes.

Men are responsible for tasks that require force. Mainly construction tasks are allocated to them, from fetching wood for construction to making bricks and building houses. Mainly men are working in the river bed, producing horticultural crops for local and regional markets.

Children have R and L roles for animal breeding and fetching fuel wood and water. Male children also play a role in helping in bricks construction, along with male adults.

### 4.2 RESOURCE ALLOCATION

#### 4.4.1. CROP REPARTITION

Crops grown by women were mainly cash crops, including ground pea, hibiscus, peanut, sesame and sorrel (see Figure 10). They grew it in their personal fields and sold it in the market to get personal money. Bean and sorghum are cash crops and they were highly represented in farmer’s fields. No women were working in the river bed. Indeed, it is a painful work and the riverbed was far away from the village. Women would go by turn to the river bed to bring food to their husband during the dry season.

Men were growing mainly cereal crops (maize, millet, sorghum) as well as onion, rice and bean. Indeed, it is the responsibility of men to provide food for the household granary. The harvest will be shared between HH granary and sales. We recalled one granary cooperative in Yilou village. Where farmers can stock and sell their cereals harvests.

Men and women shared equal responsibility tasks concerning bean, maize, millet, sorghum, sorrel and (intercropped) sesame crops (Figure 11). However, crops where men are entirely responsible are: onions, rice and riverbed vegetables. Crops like ground pea and hibiscus are completely under women responsibility.

From Figure 12, it can be noticed that decision roles on croplands is not necessarily correlated to labor input. Women seem to provide more workforce for crops than men (maize, millet and sorghum). Men provide little labor force in fields managed by women (sorrel, peanut, hibiscus and ground pea). Children provide a regular workforce of 30% for most of the crops except riverbed vegetables where they share 50% of the work with men.
FIGURE 10: DECISION PATTERN REPARTITION AMONG MEN AND WOMEN PER CROP VARIETY.

FIGURE 11: RESPONSIBILITY PATTERN REPARTITION AMONG MEN AND WOMEN PER CROP VARIETY.
4.3.2. LIVESTOCK MANAGEMENT

Both men and women were breeding livestock. However, the managed livestock species differed among genders (Figures 13 and 14), leading to different decision-making and labor roles for women and men.
Men possess prestigious, larger livestock like donkey and oxen (Figure 13) that they could sell for high prices in the market. For instance, there is a high demand of donkey skins coming from China because they use it for their traditional medicine. Despite the interdiction of the state to kill donkeys for exportation, farmers affirmed that they still do it (BBC News, 2017). In 60% to 80% of the cases, men possessed the hens, guinea fowl and sheep of the HH.
Women possess mainly goats and pigs. They share the responsibilities to breed livestock of men ownerships for donkey, oxen, guinea fowl and sheep (Figure 14). However, in a widow-headed HH, one could see that a man was responsible of pigs, which in that case, was a woman ownership.

Women and children provide a complementary workforce for the management of animals that are owned by men (Figure 15). For instance, for donkey and oxen (that were owned almost 90% by men), women and children represent half of the labor work. Then, the work is shared almost equally for hens, oxen and sheep, but women have L roles for pigs and goats in more than 50% of cases (for which they have also D and R roles).

4.2.3. WOOD RESOURCE ALLOCATION

![Figure 16: Field biomass repartition by gender. See Table 2 in Materials and Methods for biomass description.](image)

Men own most of the fields with “only trees” biomass (Figure 16), which was linked to the fact that among the respondents, some farmers were fruit growers. Concerning (min) trees and shrubs, bare fields and (max) trees and shrubs (see Appendix 4), it seems that the share between
Gender relations in farming systems of Burkina Faso

Justine Santamaria (2016)

men and women does not follow gender allocation. Women managed most of the fields with only shrubs (65%) and the two bare fields surrounded by trees.

Wood tasks are defined by activities linked to tree management and use. Activities observed were: collecting fuel wood (<5 cm in diameter), cutting wood for timber, harvesting fruits, leaves, bark and crop mulch. Wood tasks are clearly distributed between genders in correlation of the wood size and its use. When it concerns small wood, it is of duty to children and women to care about it. When it comes to big wood (>10 cm in diameter) for construction, it is the duty of men.

Women need fuel wood for cooking dinner, and in the case of metal smiths HH, they need small wood to cook pots. They go generally with their children to collect wood. The wood is collected around the HH and cultural land rights allow harvesting dead branches from crops that are not possessed by their HH. Sometimes they have to walk long distances when the wood becomes scarce. They go either by foot, with a wagon or with a donkey and a wagon. This task occurs every day or two to three times a week. They don’t go during the rainy season because the wood is wet. Moreover, they don’t have time in rainy season for this activity. They need to anticipate. Therefore they have to stock all the wood before the rainy season.

Women have DRL roles and children have L roles for trees in the agroecosystem. They are using leaves, roots, fruits and barks for cooking and medicinal use. Trees species managed by women and children are: *Vitellaria paradoxa* (shea tree), *Parkia biglobosa*, *Adansonia digitata* (baobab trees), *Balanites aegyptiaca* (desert date). Shea-related activities are dominated by women, and include collecting the nuts of the Shea tree and processing them, by crushing and grinding, to yield Shea oil/butter. In the respondent households, two women affirmed that when there are enough fruits in Shea trees, they are allowed to collect fruits from the ground, dry them, and produce oil for their own consumption or for small businesses at the market.

Men have DRL roles for construction wood. About 10 km away from the village is located a forest when after paying a tax; villagers can go to cut wood. They go either with a wagon and a donkey or with bicycle. One respondent man was selling construction wood in the market. If they don’t go in the forest, they can find construction wood in their fields or in the river bed.
5. DISCUSSION

5.1. MAIN FINDINGS OF THIS STUDY

5.1.1. HH CHARACTERIZATION

HH were characterized by their social groups, composition and structure and also their available farm resources. The main social groups in Yilou (Village chief families, Landlords, Yarsi and Metalsmiths) had similar lifestyles and DRL roles repartition amongst men and women, except for the Metalsmiths who observe special social position in regards to mastery of fire.

The mean ratio between consumption and production groups was of 1.6; it reflects that in almost 90% of HH, the production group produced food and resources to sustain themselves as well as non-active members of the community. Children were helping their parents in crops during holidays and weekends; and the ones who did not go to school were daily working in fields with their parents or taking care of small ruminants (sometimes larger cattle).

5.1.2. SOCIOECONOMIC ASSETS DIVERSITY

The number of owned fields in a HH and the number of consumers number were not proportional. The field number cannot increase with its consumer population since it is a limited resource in space. In case of population increase the yields of the fields cannot meet all the consumer needs. This can lead to food shortage or an increased dependency on imported food products. We hypothesized that the larger the production group is, the more fields and animals were owned. Nevertheless, no correlations were found between production group size, numbers of fields and variety of livestock owned by HH.

No pattern was observed in the allocation of fields with different amounts of woody biomass to women and men. However, tree management respected specific DRL roles. Women used trees to harvest fruits, leaves and bark for medicinal and cooking use, whereas men used trees for construction or sold fruit for export or market. Both men and women used *Piliostigma reticulatum* for mulching their fields.

5.1.3. TASKS ALLOCATION AMONG GENDERS

DRL roles and repartition among men, women and children differed between seasons. The rainy season is the time of agriculture, whereas the dry season is spent with fetching wood,
house and bricks for construction, working with clay and iron and gold prospecting. Gold prospecting was done by both genders during the dry season. However, from field observation we could assess that women prospect for gold in the topsoil of the fields (from 0 to 2m) whereas men both dig in the soil surface and deeper thanks to homemade tunnels (the depth is unknown).

Activities realized all year round were: riverbed cultivation, water fetching, cooking, washing clothes, sales in the market and animal breeding. Dry season activities complement incomes to the agriculture-based rainy season activities. When compared to European social structures where gender roles and relations tend to mingle (Oedl-Wieser, 2015), DRL roles were clearly defined and organized in Yilou village. Inhabitants explained us during open discussions that gender roles repartition offers strong complementarities and order in farm management. Farmers are attached to their tasks to show that they are good workers.

Concerning the agrarian work, men own most of decisions roles (>60%) for cereals crops such as rice, maize, millet, sorghum and riverbed vegetables, bean and sesame. Women own more than 70% of decisions roles for sorrel, peanut, ground pea and hibiscus. Responsibility role for onion, rice and riverbed vegetables were allocated only to men (one has to notice that those crops were rarely found in our samples therefore occupied only by men responsibility). Responsibilities for a large number of crops (bean, maize, millet, sorghum, sorrel, sesame and peanut) were shared between men and women. Ground pea and hibiscus crops were only under women responsibility. Finally, concerning labor role, women and children provided an important workforce for crops they do not manage (sorrel, peanut, millet and sorghum) and they receive low men labor force on crops they managed (sorrel, peanut, hibiscus and ground pea). This is a reflection of patriarchal HH structure where men own most of the decision roles.

Considering livestock DRL role repartition, we observed that men possessed more than 80% of decision roles for donkey, oxen, hens and guinea fowl and almost 60% for sheep livestock. Goats and pigs are more than 65% of the time under women decisions’ role. Concerning responsibility and labor, women and children share a mean of 45% for livestock responsibility role for donkey, oxen, guinea fowl hens and sheep managed by men. And in pigs and goat, men take responsibility roles at a level of 20%. Same for labor role, the women and children breed a mean of 55% of the livestock managed by men whereas men breed 15% of the livestock managed by women. We can highlight a jointly managed breeding system, as each gender has its own production subunits. It permits to complete agrarian incomes, and all family members’ takes part
in the breeding process. However, males own prestigious livestock as they are responsible to support the family.

Women have DRL roles for carrying activities like fetching wood and water. Such activities require time that is a limited resource for women to ensure all their daily tasks to feed their family and take care of hygiene practices (water is needed for cooking and drinking, washing clothes and body, water livestock, construct bricks). Women are also responsible for food preparation thus is crucial to the dietary diversity of the household. They are responsible for selecting food purchased to complement staple foods and to balance the household’s diet. Men are DRL for fetching big wood for construction, building bricks and houses that requires more work forces.

A specific situation where women had the same DRL roles of men HHH was widow women. The widows we interviewed systemically used the Lévirat 1 to stay in their husband’s family.

5.2. CONTRAST WITH OTHER STUDIES

Household structure and composition was very diverse. The mean household size was 17 people per household. The fact that we found more active women than active men (average ratio AM: AW of 1.27) might be indicative of polygamy wedding where a man is allowed to be married to several wives that provide labor force. All the respondent male HHH were polygamous and had between 2 to 4 women; which may have as a consequence, larger number of children per HH. In Mossi culture, when a woman got married, she has to leave her family HH to settle in her husband’s HH (Imbs, 1987). Polygamy, besides tradition and culture where one try to imitate the social group they belong to (Taverne, 1995), is a strategy linked to food security. Indeed, a woman represents a great workforce for the household and can enhance field productivity (as we saw that people for the production group produce for themselves and for the consumption group). Moreover, Boltz & Chort in 2015 found a positive impact of polygamy on women savings thanks to reduced consumption and non food expenditure (Boltz, 2015). Nevertheless, some issues can be related to this social structure. For instance, it can lead to the intensive use of land, since

1 Lévirat: Institution which recommends or commends widow women to marry a close relative of her diseased husband (Taverne, 1996).
farmers need a larger area to obtain enough products to feed their family. The expansion of food production combined with land degradation accentuates labor requirements in the period of farm work (Bisilliat & Ouédraogo, 1994).

For widow women, the Lévirat is a way to keep the social protection from their husband’s family. Despite its interdiction in the Code of Family and person, it persists in rural areas (Bisilliat & Ouédraogo, 1994). It allows them to stay in the household with their children, and benefit from their husband’s production group (Taverne, 1996). HHH widows were decision-makers regarding management of crops, wood, animals and water. One can note that because of their advanced age, they made a symbolic wedding with a young child. If a widow is still able to give birth, she would marry a man and this latest would take the decision power on the household production tools (Bisilliat & Ouédraogo, 1994). Moreover, they had the right to cultivate their husband’s fields, which were given to their new husband. It happened in just one case that a widow was not allowed to decide for her animals, because her husband’s brother was deciding. That could mean that the livestock is in this case a family asset managed communally (Taverne, 1996).

Children represented a great complementary workforce for both men and women. Note that in the central plateau of Burkina Faso, between 1999 and 2000, the primary school completion rate was of 30% for boys, and 15% for girls (UNESCO, 2015), leaving approximately 70% of boys and 85% of girls without school, thus, not inclined on reading and writing.

After Burkina Faso became independent, the management of forest reserves was governed by legislation that excluded local populations from any decisions regarding state property (Sedogo, 1999). The Burkinabè government has introduced a number of measures governing arable, woodland and grazing areas, which are regarded as public protected forests. Any exploitation of these bush land areas for firewood and any clearing of land are subject to the user obtaining a permit from the forestry services (Dorlöchter-Sulser, 2000).

In sub-Saharan Africa, Artisanal Small scale Mining (ASM) is practiced since decades and continues to be widespread despite the advent of large-scale mechanized mining (Hien, 2014). Most ASM activities were labor-intensive, populated by persons or groups who used traditional techniques and/or low-tech equipment (Anon., 1999 and Hein, 2007). Because of rainfall declines, ASM takes a greater importance in Yilou, as evidenced by its recent land-use dynamics.
5.3. BOTTLENECKS

Our sample was not large enough for statistical tests for significance of differences as few HH were interviewed (12) and within the total HH members from the respondent HH, 10% of the people were surveyed. Then, it could have been relevant to do more assessments on fields and see the productivity of communal versus personal plots, assess the productivity of fields to know more about the types of fields allocated to women. It can inform about household strategies concerning food security. Moreover, household sub-units roles repartition could have been more investigated. For instance, the number of women married to the HHH determines women’s rank, the first rank is the first bride; the second rank is the second bride etc. In the Mossi culture, the first bride exercises authority among others. According a study of UNICEF concerning food insecurity, polygamy and complex households, women’s rank modifies the relationship between household and women’s food insecurity in complex households. It means that women will not share the same access to household goods including income, food, and household resources (Nanama, 2012). Then, other patterns might exist among these women’s rank linked to children birth. The more women got children, the more she can gain importance in her husband’s lineage and then gain more millet to cook for instance (Yoda, 2005).

Possible biases of our analysis concerning farm resources could be linked to the fact that we did not record size of fields nor the number of livestock within each given households, only presence.

5.4. RESEARCH PERSPECTIVES

Women’s role in protecting biodiversity has to be further assessed. The Food and Agricultural Organization (FAO) indicates that they are responsible of 80 percent of the basic foodstuffs for household consumption and sale in Sub-Saharan Africa (FAO-ILO-IUF, 2005); also from our results, we could see that men tend to grow more cereal crops to sell in the market or for export that are less rich in biodiversity; whereas women grow a diversity of vegetables in their personal plots to complement the dietary diversity of the household. Moreover, women provide most of the labor for post-harvest activities such as storage, handling and processing of
grains; which means that they are the keystone of food production through food selecting and processing to HH feeding. However their agrarian knowledge and role is underestimated in literature. It would be interesting to highlight the nexus between gender, food security and farm tasks.

Strategies concerning HH economy are another topic to investigate. Household food security is not only influenced by total household income but the proportion of income controlled by women is shown to have a positive and significant influence on household caloric intake (Kennedy, 1992). Incomes can be related to gender and women's rank; it means that a women which arrives in a third position in a man’s HH will have less incomes than the first bride; also regarding these factors it would be relevant to see how the money is spent in child care, school fees and food stuffs.

Out of 144 countries, Burkina Faso owns the 123 rank on the Global Gender Gap Report of 2016 made by the World Economic Forum (WEF). When compared to the 2006 report, the country loosed 19 places in closing the gender gap; as it was before in the 104th position. It means either that the gender gap is increasing or that others countries are closing their gender gap much faster than Burkina Faso. In Figure 17, one can observe the different categories made by the WEF to characterize the Gender Gap and the scores of Burkina Faso between 2006 and 2016.

<table>
<thead>
<tr>
<th>Category</th>
<th>2016 rank</th>
<th>2016 score</th>
<th>2006 rank</th>
<th>2006 score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Global Gender Gap Index</td>
<td>123</td>
<td>0.640</td>
<td>104</td>
<td>0.585</td>
</tr>
<tr>
<td>Economic participation and opportunity</td>
<td>44</td>
<td>0.714</td>
<td>49</td>
<td>0.639</td>
</tr>
<tr>
<td>Educational attainment</td>
<td>136</td>
<td>0.809</td>
<td>112</td>
<td>0.646</td>
</tr>
<tr>
<td>Health and survival</td>
<td>116</td>
<td>0.967</td>
<td>68</td>
<td>0.973</td>
</tr>
<tr>
<td>Political empowerment</td>
<td>127</td>
<td>0.068</td>
<td>74</td>
<td>0.084</td>
</tr>
<tr>
<td>Rank of Burkina Faso</td>
<td>144</td>
<td>115</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

FIGURE 17: GENDER GAP IN BURKINA FASO, (WORLD ECONOMIC FORUM, 2016).

Thus, the aim of the report is not to show a need to modify gender roles or Mossi social structure in order to reach gender equality in DRL roles, but in contrary; the aim is to show the need to adapt each research outcomes, business plan, or development project to gender’s role specificity and resources access in order to be more efficient.
6. CONCLUSIONS

The HH could be characterized by their social groups, consumption and production size, and resources access. The separation of the DRL roles was an efficient tool to assess gender roles and relations. The respondent inhabitants of Yilou HH were shown to follow a patriarchal social structure where men and women observe a clear distribution of roles and tasks in farm and HH management. The production group produces for themselves and for the consumption group, and children are in between these two units as their workforce is still limited and they cannot contribute to all HH tasks. Men own most of the decision roles for the HH management whereas women own most of the labor roles, and contribute greatly to the HH dietary diversity since they are producing, selecting and cooking food for all HH members. Then, wood resources are managed by both gender but still follow a gendered tasks distribution. It would be relevant to see if any changes happen in the future in DRL roles repartition between men and women to assess the drivers of change in gender relations.
7. REFERENCES


Baerends, Els A.,(1988) Usage et droits fonciers et risques dans l’approvisionnement alimentaire du Plateau Mossi, Burkina Faso. AGRISK


Geilfus, F., (2009), 80 Herramientas para el desarrollo participativo- diagnóstico, planificación, monitoreo y evaluación. Instituto Interamericano de Cooperación para la Agricultura (ICCA), 2002


Kennedy E., Peters P., (1992), Household food security and child nutrition: the interaction of income and gender of household head. Worl Development http://dx.doi.org/10.1016/0305-750X(92)90001-C


8. APPENDIX

ANNEX 1. OMBROTHERMIC DIAGRAM
Source: Jean-Marie Douzet, CIRAD, 2015

ANNEXE 2 : SURVEYS

HHH name:

Justine Santamaria (2016)
### Production group

<table>
<thead>
<tr>
<th>Age</th>
<th>Female</th>
<th>Male</th>
<th>Female</th>
<th>Male</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-15</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15-50</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>51-60</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>61&lt;</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Respondents’ name:**

**Migrations?**

**Activities outside farmwork:**
HH:

<table>
<thead>
<tr>
<th>Gender</th>
<th>Culture + D R L</th>
<th>Rainy season</th>
<th>Dry season</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>J  J  A  S  O</td>
<td>N  D  J  F  M  A  M</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments:

<table>
<thead>
<tr>
<th>Gender</th>
<th>Wood+ D R L</th>
<th>Rainy season</th>
<th>Dry season</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>J  J  A  S  O</td>
<td>N  D  J  F  M  A  M</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Type of transportation+ comments:

<table>
<thead>
<tr>
<th>Gender</th>
<th>Livestock+ D R L</th>
<th>Rainy season</th>
<th>Dry season</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Gender</td>
<td>Water+ D R L</td>
<td>Rainy season</td>
<td>Dry season</td>
</tr>
<tr>
<td>--------</td>
<td>-------------</td>
<td>--------------</td>
<td>------------</td>
</tr>
</tbody>
</table>

Comments:

Type of transportation+ comments:
ANNEXE 3. NUMBER OF CROP VARIETY GROWN IN HH FIELDS, WITH DRL GENDER PATTERNS

### TABLE 8: NUMBER OF CROP VARIETY GROWN IN HH FIELDS, WITH DRL GENDER PATTERNS.

<table>
<thead>
<tr>
<th>Crop variety</th>
<th>Men</th>
<th>Women</th>
<th>Children</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DRL</td>
<td>RL</td>
<td>L</td>
</tr>
<tr>
<td>Bean</td>
<td>39</td>
<td>-</td>
<td>1</td>
</tr>
<tr>
<td>Ground pea</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>Hibiscus/Sorrel</td>
<td>-</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>corn</td>
<td>10</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>millet</td>
<td>14</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>peanut</td>
<td>4</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>sesame</td>
<td>22</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>sorghum</td>
<td>37</td>
<td>-</td>
<td>2</td>
</tr>
<tr>
<td>sorrel</td>
<td>8</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>River bed</td>
<td>3</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>

ANNEX 4. RESULTS: MAP OF FARM HOUSEHOLD TASKS, WITH GENDER ASPECTS
Georgette Ouedraogo Abibou

exploitation, with gender aspects

Legend:

List of family members
- woman ♀ man ♂
- child
- young child ♀ old person ♂

Seasonal activities
- Rainy season → all year round
- Dry season
- sesame: sells in the market

Gender DRT patterns
- D: Decision maker
- R: Responsible persons
- T: Executors

List of household activities
- animals
- gold
- water
- wood
- River bed
- sell fresh water and soap in the market

List of woody biomass available on field
- Only shrubs
- Bare field surrounded by trees
- Bare field
- Trees and shrubs
- (max) trees and shrubs
- Only trees
Salam Nongodo Sawadogo
exploitation, with gender aspects

Legend:

List of family members
- woman
- man
- child
  ▲ young child ▼ old person

Seasonal activities
- Rainy season - all year round
- Dry season
  ▼ grows, sells in the market

Gender DRT patterns
D: Decision maker
R: Responsible persons
T: Executors

List of household activities
- animals
- gold
- water
- wood
- River bed

List of woody biomass available on field
- Only shrubs
- Bare field surrounded by trees
- Bare field
- Trees and shrubs
- (max) trees and shrubs
- Only trees
Gender relations in farming systems of Burkina Faso

Justine Santamaria (2016) 53
Christine Abibou Ouedraogo’s exploitation, with gender aspects

Legend:
- List of family members
  - woman
  - man
  - child
  - young child
  - old person
- Seasonal activities
  - Rainy season
  - All year round
  - Dry season
  - Sells in the market
- Gender DRT patterns
  - D: Decision maker
  - R: Responsible persons
  - T: Executors

List of household activities
- animals
- gold
- water
- wood
- River bed
- Set fresh water and soap in the market

List of woody biomass available on field
- Only shrubs
- Bare field surrounded by trees
- Bare field
- Trees and shrubs
- (max) trees and shrubs
- Only trees
### ANNEXE 4: HH CHARACTERIZATION

#### TABLE 9: CONSUMPTION AND PRODUCTION COMMUNITIES’ ASSESSMENT SORT BY AGE PERIOD AND GENDER.

<table>
<thead>
<tr>
<th>Age</th>
<th>People consuming household yields</th>
<th>People producing yields</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-5</td>
<td>🗞️ ♂</td>
<td>🗞️ ♂</td>
</tr>
<tr>
<td>Young children</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6-15</td>
<td>🗞️ ♂</td>
<td>🗞️ ♂</td>
</tr>
<tr>
<td>Children</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16-65</td>
<td>🗞️ ♂</td>
<td>🗞️ ♂</td>
</tr>
<tr>
<td>Adults</td>
<td></td>
<td></td>
</tr>
<tr>
<td>66&lt;</td>
<td>🗞️ ♂</td>
<td>🗞️ ♂</td>
</tr>
<tr>
<td>Old people</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>