INFLUENCE OF TECHNOLOGY ON GENDER DIVISION OF LABOUR IN HOUSEHOLDS: THE CASE STUDY OF WET COFFEE POST HARVEST HANDLING IN KASESE DISTRICT

BY

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DECLARATION

I, KULE ENOS KATYA, declare that this thesis has not been submitted for a degree in this University and any other University or institution of higher learning. All information contained here-in is original unless stated otherwise.

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This thesis has been submitted with our approval as the University supervisors.

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DEDICATION

To my Dear parents Late Mother Kabugho Yoniah and Late father Masereka Zebedayo Katya who brought me into being and shaped a career for me.

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However, the ideas and opinions expressed in this report remain my independent views and any errors and omissions are mine.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF APPENDICES

Acronyms

FAO	Food Agriculture Organization of the United Nations
NEMA	National Environmental Management Authority
WCPT	Wet Coffee Post harvest handling Technology
DCPT	Dry Coffee Post harvest handling Technology
UCDA	Uganda Coffee Development Authority
RFC	Rwenzori Finest Coffee Company
PEAP	Poverty Eradication Action Plan
UBOS	Uganda Bureau of Statistics
ICC	International Coffee Council
CQIP	Coffee Quality Improvement Program
UCTF	Uganda Coffee Trade Federation
ITC	International Trade Council
DAO	District Agricultural Officer
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MFED	Ministry of Finance and Economic Development
CRI	Coffee Research Institute

ABSTRACT

This study was aimed at finding out how the Wet Coffee Post harvest handling Technology (WCPT) has changed the way labor is divided in farming households of Kasese District as well as advantages and disadvantages of the WCPT and Dry Coffee Post harvest handling Technology (DCPT). The study was also carried out to determine the relationship between gender, access and control over income among WCPT and DCPT households. To achieve the above, descriptive research survey was conducted on 120 farmers among which 60 were using the WCPT and 60 were using the DCPT. Data was analyzed using SPSS computer program. Analysis of the survey utilized percentages, means, chi-square and correlations. It was found that among both the dry and wet coffee processors women were doing more work than men but women's work loads had significantly increased in WCPT user households. Generation of coffee that attracts higher prices and technology being less expensive were the main advantages for farmers choice of WCPT and DCPT respectively. The main disadvantage of WCPT was that of being labor intensive while the main disadvantages of DCPT was generation of coffee that attracts low prices. Men had more access to coffee income than women among both wet and dry coffee processors. Women had more access to cassava income than men among wet coffee processors while access to cassava income among dry coffee processors was gender neutral. Access to other household incomes was also gender neutral for WCPT and DCPT users. Men were controlling most of coffee income among both WCPT and DCPT users. Women were controlling cassava income among both the WCPT and DCPT users. It was recommended that WCPT be promoted in a modified form that is less labor intensive. The study be replicated in other wet coffee processing District of Uganda to compare results with those of this research.

CHAPTER ONE
INTRODUCTION

1.1 Back ground to the study

Coffee is one of the most important cash crops across the world and a major source of export earnings. It is second only to crude oil as the most important internationally traded commodity in monetary value (FAO, 2004). In spite of high export earnings from coffee globally, coffee produced in most African countries fetch low prices compared to coffee from other continents due to relatively lower quality coffee (Bibangambah, 1989). As a result, most coffee farmers in Uganda get lower incomes from coffee sales, which make very little difference in helping them out of poverty.

Under Poverty Eradication Action plan (PEAP, 2004), Uganda is encouraging its farmers to improve the quality of their coffee if they are to obtain competitive prices for their product on the world market. Kasese District which is one of the leading producers of coffee in this country has in the recent past been trying all ways possible to improve the quality of farmers' coffee whose quality had been jeopardized during post harvest handling. In effort to help farmers to step up the quality and therefore income generated from coffee, Wet Coffee Post Harvest handling technology (WCPT) was introduced in Kasese in 2004. This was through an NGO called Rwenzori Finest Coffee Company whose aim was to generate high quality coffee that fetches competitive prices at national and international markets. Like many other new technologies, the WCPT is labor intensive necessitating farmers to work up to 12 a day or more hours during the peak of the season (FAO, 2004).

Most rural labor intensive technologies are known to increase the workload of women and girl children compared to their male counter parts (Ssekikoobo, 1995). This emerges from the fact that females engage in using the technology besides performing their usual chores in the household and on-farm. The females get more affected with the technologies. Whitehead (1985) argues that most technologies introduced to rural areas do not take into consideration the resultant effect on workload distribution with respect to sex, age and economic status of households in the rural production systems. This is because most technologies have been

introduced without first making analysis of the existing gender labor dynamics with in the farming communities (Agrawal, 1985). Yet, technological change influence household gender division of labour (World Bank, 1994).

The extent to which a technology influences labor divisions depends on whether its technology designers considered gender roles and responsibilities in households of an agro-ecological zone in which the technology is intended to be implemented. Agrawal (1980) argues that the introduction of agriculture modernization schemes has generally affected rural women in developing countries through increasing their workloads with limited access and control of resultant resources. Agrawal (1985) therefore emphasized the importance of taking into accounts the implication of technological or innovation change on relative workloads, absolute and relative access to and control over income for women, men and children.

1.2 Problem statement

Coffee farmers in Kasese District have in the recent past adopted the Wet Coffee Post harvest-handling Technology in order to produce high quality coffee that generates high incomes compared to the traditional Dry Coffee Post harvest handling Technology (DCPT). FAO (2004) however noted that the WCPT is labor intensive compared to the DCPT. Studies carried out in Equatorial Guinea on the use of WCPT also indicated that women workloads increased in households using the technology (CRI, 2005). It is therefore likely that the WCPT increased the workload among women farmers in Kasese District where it is currently being practiced (DAO, 2006). Though this may be the case, no investigations have been carried out to provide evidence on how use of the WCPT influences gender division of labor with in households in Kasese. The study therefore aimed at finding out how the WCPT influenced the labor patterns and division in households so as to suggest strategies of ensuring technological use in a gender equitable manner.

1.3 Objectives of the study.

The general objective of this study was to find out how the WCPT has changed the way labor is divided in coffee farming households of Kasese District with respect to gender.

Specifically, the study aimed at the following:

1. To describe the general characteristics of households using the WCPT and DCPT
2. To determine the advantages and disadvantages of DCPT and WCPT
3. To find out labor division pattern among households using the WCPT and DCPT,
4. To find out the relationship between gender, access and control over income among WCPT and DCPT households.

1.4 Significance of the study

Many farmers in Kasese District are now using the WCPT as a replacement for the DCPT because it generates quality coffee that fetches competitive prices (Ushs 3500 for wet processed coffee compared to Ushs 2400 for dry processed coffee). However some farmers have not adopted the WCPT because of its labor intensiveness and that it would increase their workloads and yet they may not necessarily have access to and control over income generated from the technology. Establishing how the WCPT has influenced gender division of labor as well as access and control over income within households would help determine how females and males accessed and controlled income got from using the WCPT so that strategies can be sought on how to bridge the imbalances that may exist with regard to access and control of income.

The findings of the study would assist the Government agencies, Non Governmental Organizations and policy makers promoting coffee in Kasese get insights that would be used to effectively promote a technology that is appropriate to farmers' socio- economic conditions. The technology designers would be in position to redesign, modify or continue promoting the WCPT the way it is so long as it fits into the household gender labor system of the area. The study findings would also be useful to academicians who may need to review the work, replicate the study in other areas or extend the topic further.

CHAPTER TWO
LITERATURE REVIEW

2.1 Coffee Development in Uganda: a historical perspective

There are two coffee varieties grown in Uganda; Robusta (*coffea canephora*) and Arabica (*coffea arabica*). Before the coming of colonialists, Robusta coffee which is believed to be native to Uganda's natural forests was being grown in Buganda. A ritual significance was attached to Robusta coffee in Buganda. It was used as an offering to gods and the spirits. In the ceremony of brother hood the two beans were taken out of the berry; each man moistened it with blood and gave it to the other to eat. When a visitor arrived at a house, he was given coffee beans to chew before being offered food. Coffee was also used in ceremonial gifts. Only a few trees were planted around the homes to supply berries for these purposes. It was a custom among the Baganda that coffee was always planted by a visitor (Haarer, 1962).

However, the struggle to develop coffee into a commercial enterprise dates back from 1898 during the colonial era, when the colonial Government first introduced Robusta coffee at Entebbe Botanical gardens for trial as a cash crop (Haarer, 1962). Arabica coffee originated from Ethiopia (Abyssinia) transported to Southern Arabia through slavery activities around 600A.D. It was later spread to Malawi (Nyasa Land) from where Uganda under the colonial Government obtained the first Arabica coffee seed stock in 1900 (Purseglove, 1968). Both Robusta and Arabica was later introduced at Kampala trial Gardens in 1900 and eventually at Kawanda Research station in 1937 where the selection and breeding for improved seed stock has since been done.

Robusta (*coffea canephora*) is a low altitude crop grown between1000-1500M above sea level; it requires rich fertile soils and rainfall of over 700mm. This explains why Robusta coffee is mainly grown in the lake crescent zone along the shores of Lake Victoria (Jameson, 1970). Arabica coffee is grown at high altitudes of 1500-2500M above sea level in the coarse volcanic loamy alluvial soil, light textured, and well drained with slightly acidity (Ph of 5.0-6.0). This

explains why Arabica coffee is mainly grown in the high land areas of Uganda in the Rwenzori Mountains, Elgon and Muhavura ranges (FAO, 2004; MAAIF, 1993)

2.2. The Coffee Industry in Uganda

Uganda's economy largely depends on the agricultural sector. Agriculture contributes about 42% of the Gross Domestic Product (GDP) of which 80% of the monetary value is from coffee. Coffee is the leading export crop and leading foreign exchange earner. In 1997, coffee contributed about 55% of the total export earnings. Coffee provides both direct and indirect employment to over 5milliom Ugandans. This therefore calls for focusing of attention from Government and development partners to coffee industry development in order to reap more from this crop (UCTF, 2001). The quantity of coffee exported by Uganda has been fluctuating since 1964. The highest export volume of up to about 4.2M sixty-kilogram bags of coffee was registered in the 1996/97 financial year attracting up to US$ 355M.The lowest export volume was registered in 1977/78 financial year of 1,7M sixty-kilogram bags attracting US$312M. The causes for these fluctuations include political instability, poor coffee quality, unfavorable weather conditions in some years (UCDA, 2001; MPED, 1997).

Uganda Coffee Development Authority (UCDA) is championing efforts to make coffee a vibrant and strategic source of income with great emphasis on quality (Wetala, 1996). The process of achieving optimum coffee quality begins from the way coffee is managed at the farm, especially post harvest handling technology used by the farmers (Mukiibi, 2001).

2.3.0 Coffee Post harvest handling

Robusta and Arabic coffee are handled differently. Robusta coffee is only handled by the DCPT while Arabica is processed using both the WCPT and the DCPT. The DCPT has been in use since the colonial times (RFC, 2006) while the WCPT was introduced in Uganda in the early 1970s. However, WCPT was later abandoned in 1977 due to the political upheavals that escalated during that time leading to fleeing of the country by WCPT promoters who were mostly British to their home countries. The WCPT was reintroduced by RFC in 2004 in Kasese and Mbale Districts where Arabica coffee is predominantly grown. Failure to subject Robusta

coffee to WCPT (like the Arabic type) was linked more to lack of interest on the part of investors. Apparently, no investor has shown interest, yet, in promoting the WCPT among the Robusta farmers. WCPT may perhaps in future be applied even on Robusta coffee (UCDA, 2001).

2.3.1 The Dry Coffee Post harvest handling Technology

In the DCPT ripe, semi ripe, dry and berries already fallen on the ground are picked and dried (Mukiibi, 2001). Harvested cherries are sun dried on coffee yards and tapelines for about 6-8 weeks and hulled by machines which are in most cases located far away from farms in urban area (ITC, 1992). Like any other technology, the DCPT has advantages and disadvantages that influence its usage.

The advantages of DCPT include less labor demanding as it only requires picking, drying and marketing (UCTF, 1999). This creates time that allows farmers to engage in various farm and off-farm activities to diversify their livelihoods. Owners of coffee huller often reap more from accumulated seasonal coffee husks. The husks are often sold for mulch and manure generation.

The major disadvantage of the DCPT is reduced quality of coffee. The International Coffee Council (ICC) has identified dry coffee processing as one of the key ways through which coffee loses quality easily. ICC put a resolution to the effect of minimizing chances of reduced quality of coffee. The ICC resolution No.407 on Quality Improvement Program which puts the minimum export standard at 86 defects per 300g of Arabica and 150 defects per 300g of Robusta was passed in 2002. If implemented, coffee producer countries would hold an estimated 5-10 million bags of coffee previously deemed exportable and divert it to other uses or destroy it all together (UCTF, 2003).RFC (2006) describes coffee processed by the DCPT as poor quality, a reason why its price is lower than that produced by the WCPT. According to FAO (2004), Coffee produced by the DCPT is said to have a high mycotoxin content, which makes it less safe for human consumption.

2.3.2 The Wet Coffee Post harvest handling Technology

According to Rwenzori Finest Coffee Company, (RFC, 2004) the steps followed during coffee post harvest handling include; red ripe coffee berries are selectively picked leaving the unripe and semi ripe coffee berries. These berries are then poured into a basin/source pan or any container half full of clean water. Quality coffee berries sink while the poor quality coffee berries float together with other unwanted debris. Floating coffee is then removed together with other floating materials. The sunken berries are then washed and pulped using a hand driven pulpier. Coffee berries are put in the pulpier in rations that can be handled depending on the size of the pulpier dish.

Pulpiers rub off the skin and some of the mesocarps by forcing the berries between a rubber strip and a perforated rotating drum. The expelt fruit still have mucilaginous pulp adhering to the endocarp around the seeds. Pulping must be done on the same day of coffee picking to prevent loss of coffee quality. The pulp is heaped to decompose and then used as manure. The next stage is fermentation. In the fermentation stage there is enzymatic degradation of pectinaceous mucilage. Beans are placed in a pile/source pan/basin and clean water added until the beans are fully covered. This process takes 24-36 hours depending on environmental temperatures. Some beans float and the biggest percentage of the beans sink.

Floating beans are removed because they are of low value. Sunken beans are then washed 3-4 times after fermentation to prevent staining. Beans are then dumped from wash containers to wire meshed drying tables in doors for three days while still inside the endocarp/parchment. Plenty of clean water is needed for washing coffee. An estimated 22,750 liters of water have been found ideal for washing coffee that generates up to 1000 Kgs of coffee ready for sale (Mukiibi, 2001). Sun drying takes 7-14 days in dry weather on raised wire mesh drying tales. Properly dried coffee can be stored for 3-4 years at room temperatures.

The main advantage of WCPT is production of high quality coffee. According to UCTF (2003) the WCPT produces high quality coffee that meets the International Coffee Council (ICC) resolution No.47 on Coffee Quality Improvement Program (CQIP) under which minimum

standards for exportable coffee are set. The minimum export standard is 86 defects per 300grams of Arabica and 150 defects per 300 grams of 0f Robusta coffee. The levels of mycotoxins in wet processed coffee are low making it the most ideal coffee for human consumption. The benefits of wet coffee processing are not only to producers who receive higher prices but also to coffee roasters who will receive high quality beans for their customers. It is a win-win situation.

Wet processed coffee (using hand driven pulpier) generates pulp that is used as mulch by farmers who generate it. This helps farmers who may not be in position to purchase and transport coffee husks from hullers that are in most cases located far from farms in urban centers (FAO, 2004).Wet processed coffee takes a shorter period (about two weeks) to dry enabling farmers to access cash in a short time so as to meet their basic needs. In areas where wet coffee processing has been impressed like in Kenya, formation of coffee farmers savings and credit co-operative societies has taken place enabling farmers to access low interest loans and also be able to save money (FAO, 2004)

Disadvantages of WCPT include; Wet coffee Processing technology is more expensive than the Dry Coffee Processing Technology. It calls for more attention or concentration and labor right from harvesting to drying if quality coffee is to be achieved. This situation may lead to gender exploitation considering the fact that men are controllers of labor in households (Upudhay, 2004)

2.4 Influence of WCPT on household gender division of labor

Any change from one technology to another or introduction of any new technology has implications on household members' labor demands (Everts, 1998). In the literature on technological change; household division of labor, productivity and income distribution with respect to gender could be seen as influential and important paradigms (White head, 1985). Analyzing the effect of technological change using a household as a unit of analysis would be misleading as it wrongly assumes that the needs and well-being of each family member regardless of sex get equal consideration and that each member gets an equal share of the household's supply of goods and services (Agrawal 1985; Benerjee, 1985). Therefore when

analyzing the influence of technological change on house gender division of labor, the analysis should target both men and women in that household.

Bryceson (1985) noted that there is a wide array of technological devices that could positively influence household division of labor and therefore reduce labor-intensive activities for women. However there are many other technologies that are a threat to women's welfare particularly their workloads (Kabeer, 1991). For example in Papua New Guinea, the introduction of the Wet Coffee Post harvest handling Technology, to replace the Dry Coffee Post harvest handling Technology, increased the work load of rural women. Besides the traditional or usual household chores, women had to farm to produce food, and participated in wet coffee processing. The men, only participated in wet coffee processing and left other domestic chores to women(Grossman and Lawrence, 1984)

Studies carried out in Kenya and Rwanda have shown displacement of men's labor from other income generating activities to coffee as a result of introducing the WCPT (FAO, 2004). In Kasese money generated from coffee has been used by men to hire laborers which has enabled men to engage in less labor-intensive activities like retail business using the money from coffee sales (RFFC, 2006)

2.5 Influence of WPCT on house hold gender access and control of income

Technological change has got either a positive or negative effect on the incomes of household members (Whitehead, 1985). In Rwanda the introduction of the WCPT to replace the DCPT greatly increased household incomes but severely reduced the incomes of wives and children (FAO, 2004). Upudhay (2004), points out that an increase in individuals' workload cannot automatically be assumed to increase access and control over income by that individual. UNDP (1994) observed that most labor intensive technologies that have been promoted in most rural settings of Africa often have proved a thorn in the flesh of women's socio-economic success. Even where men are putting less effort they have remained in control of cash crop incomes and yet have priorities that are less related to household food security (Haddad, 1992). In Rwanda, households that have impressed the WCPT have had more cases of malnutrition since cash income earned from coffee is taken by men who use it for non house hold related expenditure.

Women in such households are poorer than those in the DCPT households. Therefore, technology-promoting agencies should focus on income generation and nutritional security.

Any technology that compromises the food security of household members by taking away the labor of women necessary for generating food and income to sustain the household should not be recommended for adoption (Booth, 1998). In Africa, farming is one of the sources of income and sometimes not the major one; Wage employment, selling labor and trading are common additional sources of income for rural households. Therefore farming systems researchers in technology generation should focus on technologies that are flexible and can be accommodated in the household diverse production activities to maximize household utility (FAO, 2002).

Gender neutral technologies (technologies socially acceptable and easy to use by both men and women) are being advocated for. Bhaduri (1985) argued that non-neutral technological change occurs when the distribution of income alters as a consequence of technological change. He defines technological change as neutral if it leaves the pattern of income distribution among relevant groups or individuals unchanged and that technological change will be said to have a bias in favor of a particular group/individual if the pattern of income distribution is shifted in favor of that group/individual.

Overlooking the influence of technological change on incomes of individuals in a household by technology intervening agency or development organization may further marginalize them (Upadhay, 2004). Women and children do not always share in the benefits of income earned from farm (cash crops) produce even though they may have done most of the work. For example In Arua district (PEAP, 2004**)** women in the early 1990s were much less enthusiastic than men about tobacco growing because of the men's pronounced control over income use. In Papua New Guinea, WCPT fetched higher income for the households than DCPT. Most households concentrated on WCPT and had to fore go alternative activities from which they were earning wages. Households that remained with DCPT whose labor requirements was low and used excess labor to earn wages had there welfare better off than those who specialized in wet coffee processing (FAO, 2002).

When focusing on the household, it is important to involve both men and women in the process of introducing a technology especially in rural communities. Feedback from the women and men to agricultural engineers should be an important input in designing and redesigning technology for appropriateness and gender sensitivity. Men and women have different interests even from the same technology. Men prefer technologies that make them generate more income while women prefer technologies that help them produce as much food for the family as possible (Haddad, 1992).

CHAPTER THREE

METHODOLOGY

3.1 The study area

This study was conducted in Kasese District (see appendix 1). Kasese is one of the leading coffee growing Districts and also where wet coffee processing was predominantly being done in Uganda (UCDA, 2005). Two parishes namely Kibandama of Kilembe Subcounty and Kitabona of Kyarumba Sub County were purposively selected. Purposive sampling was considered appropriate because according to RFC (2006), these areas were the leading producers of wet processed coffee in the district. The same parishes were also the leading producers of dry processed coffee in the district (UCDA- Kasese office, 2006) The District is located in the Western region of Uganda and is bordered by the Districts of Bushenyi to the South, Kamwenge to the East, Kabarole to the North East, Bundibugyo to the North and the Democratic Republic of Congo to the West border the District. The total land area is 2,724sq.kms of which 1,647sq.kms is available for farming activities and human settlement (NEMA, 1998). The population is estimated at 534,000 (UBOS, 2003) giving an average density population of 324 persons per square kilometer of settled areas. The major farming system is mixed farming systems of banana-coffee-livestock with average farm holdings ranging from 0.4-1.2 hectares (NEMA, 1998). The food crop systems include intercropping beans or groundnuts with maize, banana, cassava and potatoes. Cash crops include coffee, cotton, passion fruits and vanilla (DAO, 2004).

3.2 Research Design

The study was a descriptive survey. Data was collected from coffee farmers who were using the WCPT and those who were using the DCPT. Farmers using the WCPT were asked to provide information on its advantages, how labor is divided in their households with respect to gender and the rate of access and control over income by different house hold members. The same information above was collected from farmers using the DCPT in order to make comparison and

be able to ascertain how the WCPT has influenced gender division of labor, access and control of income in this area.

3.3 Sampling

The target population consisted of coffee farmers using WCPT and DCPT in Kibandama Parish of Kilembe Sub county and Kitabona Parish of Kyarumba Sub County. A list of all wet coffee processing households in Kibandama and Kitabona parishes was obtained from Rwenzori Finest Coffee Company while the list of dry coffee processors in the same parishes was made by the researcher in collaboration with the local and opinion leaders in the area. Systematic sampling was used to select households for the study. This procedure involved drawing the sample by taking every K^{th} case from the population of each of the coffee processing technology users. A decision was taken on how many subjects one wanted in the sample (n) and since the total population was known (N), the sampling interval was determined by dividing N by n (K=N/n). The first respondents were randomly selected from the first K^{th} members on the list and then every K^{th} member of the population was selected for the sample. The area had 1203 wet coffee processing households while dry coffee processing households were 1321. Every 20^{th} household on the list was selected giving a total of 60 respondents among the wet coffee processors. Selecting every 22nd case gave a total of 60 respondents among the dry coffee processors. The 60 respondents from the wet coffee processing cluster added to 60 respondents from dry coffee processing cluster made the 120 respondents that were considered for the study. Systematic sampling was preferred because of its ability to eliminate bias in selecting respondents which reduces sampling error (Saunders *et al*, 1997)

Only 120 respondents were selected because of limited resources. The respondents were either household heads or their spouses who had an equal chance of being interviewed depending on whether one is participating in coffee post harvest handling and also whether one is available. These were found more appropriate because they had a higher stake in coffee post harvest handling.

3.4 Data collection Instrument

The main instrument for data collection was an Interview schedule (see appendix 2). This was developed by the researcher with the help of supervisors in line with the objectives of the study. The interview schedule was preferred to other types of instruments because a higher completion rate was expected given that the researcher searches for respondents and interviews them face to face. Open ended and closed ended questions were used. Open-ended questions were used because the respondent was able to give his/her mind about the topic that the researcher could not think about. They also made it possible for the interviewer to probe deeper. Closed ended questions enable the researcher to gain information about predetermined answers (Kabali and Mwesigye, 2003). An interval scale of 1-5 (where 1 represented the lowest and 5 represented the highest proportion of work done by individual household members in particular activities) was adapted.

The interview schedule was pre-tested on 20 farmers; 10 in Katoke Parish of Bugoye Sub County and 10 in Kyanya parish of Maliba Sub County. Of the 20 farmers 10 used WCPT and 10 used DCPT. Maliba and Bugoye sub-counties have impressed both the WCPT and the DCPT (DAO, 2006). Pre testing the interview schedule in a different area enables the researcher to fine tune the instrument before applying the tool to the target population. It also prevents monotony of interviewing the same respondents if they happen to be in the study sample (Howe and Eisenhart, 1994)

Professionals in the Department of Agricultural extension/Education reviewed the interview schedule for content validity. Their views were sought on the clarity of the questions, the general

layer out of the instrument and whether the questions adequately covered the objectives of the study. These professionals gave their opinions and subsequent revisions were made deleting the irrelevant questions and adding some on relevant areas of study.

The interview schedule was tested for its reliability during the pre-testing exercise. Twenty farmers were selected from Katoke and Kyanya Parishes of Maliba and Bugoye Sub Counties and interviewed twice by the researcher using the same interview schedule. The interval between the interviews was two weeks. Two weeks were appropriate because the respondent would have forgotten the previous response. This was meant to check for the consistency of the responses given by the same respondents during the two interviews. When the results were correlated, reliability coefficients ranging from0.57 to0.68 were obtained. Hence the interview schedule was considered reliable for data collection, as the reliability coefficients were reasonably high.

3.5 Data collection

Data was collected in the months of August and September 2007 by the researcher. Both primary and secondary data was collected. Primary data was collected through face-to-face interviews in addition to observations made on who does what activity during coffee harvesting and post harvest handling. The most popular language in the area (Lhukonzo) was used during interviews while the responses were recorded in English. This was done because the researcher was well versed in both languages and hence it saved time during interviews. The respondents who were interviewed were either house hold heads or their spouses because they were considered to have a bigger stake in coffee post harvest handling activities carried out on their farms more than anybody else in their households. Respondents were interviewed by the researcher to generate information about the advantages and disadvantages of using the WCPT and the DCPT, gender division of labor as well as access and control of income in households using the WCPT and DCPT. Secondary data was generated through review of Rwenzori Finest Coffee Company and UCDA documents respectively about the database of wet coffee processing farmers and where dry coffee processing is done most in the District.

3.6 Data Analysis

After data collection, data was coded, entered and analyzed using SPSS computer soft ware. SPSS was used because of its ability to handle diverse numbers of variables and test them simultaneously (Schneider, 2005). Multiple response analysis was used to compute the advantages and disadvantages of the WCPT and the DCPT. Percentages were computed to find out the proportions of work done by female and male members of the household using the WCPT and the DCPT while using the chi-square to determine whether there were significant differences between work done by females and males. Chi square estimate enables the researcher to know the degree of confidence to have in accepting or rejecting a hypothesis. Chi square also tests whether or not two different groups of people are different enough in some aspects. This made it possible to compare whether there were significant differences in workloads for males and females participating in wet and dry coffee processing.

Pearson correlation was used to find the relationship between gender, access and control of income among the wet and dry coffee processors. Data was then presented in tables for easy interpretation. Pearson correlation can vary from -1 to +1. This is convenient because one can distinguish between positive and negative correlation which helps the researcher to determine the direction of correlations. Among both the Pearson correlation and chi square, two tailed tests were carried out because the direction of the relationship was not known and therefore two tailed tests would be able to handle variations in both positive and negative directions from the mean (Howe and Eisenhart, 1994)

CHAPTER FOUR
FINDINGS AND DISCUSSION

4.1. Characteristics of respondents

The general social parameters used to describe the characteristics of the respondents included sex, marital status, age, family size and land size as shown in Table 1. The characteristics apply to all 120 respondents of which 50% used WCPT and 50% used DCPT.

Table1. Sample Characteristics of Coffee farmers in Kasese District

Characteristic	**Freq (n=120)**	**%**
Sex of respondent		
Males	58	48.3
Females	62	51.7
Marital Status		
Married	93	77.5
Single	19	15.8
Divorced		06.7
Sex of Household head		
Male	109	90.8
Female	11	09.2
Age of respondents		
18-30	40	33.3
31-48	50	41.7
49-58	23	19.2
59+	07	05.8

Average family size (n=120)	9	
Average land size (acres) among WCPT users(n=60)	2.7	
Average land size (acres) among the DCPT users(n=60)	2.3	

Results in table 1 above indicate that both females and males participated in coffee production with bigger proportions of females (51.7%) than males (48.3%) participating. The estimated ratio of females to males among the study participants was 1:1 which is similar to that estimated by UBOS (2002) as the national average for Uganda. This means that coffee farming was an activity for both men and women. The majority of the respondents (77.5%) were married with only15.8% and 6.7% single and divorced respectively. This showed that labor was mostly being provided by married men and women. Most households (90.8%) were male headed while 9.2% households were female headed. The fact that most households were male headed meant that men were likely to influence women to take up bigger tasks.

Majority of respondents (41.7%) were aged 31-48, followed by 33.3% aged 18-30, 19.2% aged 49-58 and those aged 59 and above were 5.8%. This was mainly a young population capable of providing on farm labor needed for wet and dry coffee processing. Family sizes averaged nine persons per household with a minimum of one person and a maximum of 20 persons. This is in agreement with NEMA (1998) who found out the average family size in Uganda as nine persons. This shows how it could be possible for the family to provide sufficient labor if well coordinated. Since most families were depending on farming to earn a living, concerted efforts from all family members were vital in improving the status quo of their farms to be able to generate meaningful gains while sustaining food security

Land size also varied among the wet and dry coffee processors. The average land size for wet coffee processors was 2.7 acres compared to 2.3 acres for dry coffee processors. This there

indicates that the wet coffee processors were likely to do more on farm work than dry coffee processors since they owned more land.

4.2 Farming status among the respondents

The study participants were much involved in farming with over 78% of females being full time farmers and about 61% males being full time farmers among the wet and dry coffee processors respectively. The fact that females were more involved in full time farm activities shows that they were providing more on farm labor than males. Males (30%) were more part timers in farming than females (10%) among both wet and dry coffee processors. In both the wet and dry coffee processors males that were not involved in farming were about 6% while there was not a single female not involved in farming (See table 2). The above trend is in line with the findings of UBOS (2002) that females were more involved in farming at about 76% compared to men at 61%. This could have been due to the fact men who are in most cases the controllers of labor and income could have engaged females more in coffee processing as they engage in other businesses using income generated from the coffee.

Table2. Farming status of household members

Farming status	**Wet coffee processors**				**Dry coffee processors**			
	Females (%)	Males (%)	X^2	Asymp.sig 2 tailed	Females	Males	X^2	Asymp.sig 2 tailed
Full time	85.2	67.0	4.545	0.033*	78.3	61.5	5.828	0.016*
Part time	14.8	28.3	4.041	0.044*	21.7	30.3	5.330	0.026*
Not farming	0	4.7	2.321	0.000*	0	8.2	3.217	0.012*

KEY: **_Significant at 0.05*

From table 2, the Chi-square value for females and males involvement in farming was statistically significant at 0.05 level of significance among the wet and dry coffee processors.

This means that there were significant differences between females' and males' participation in farming among both the wet and dry processors with females being more full time farmers in both the wet and dry coffee processors. This was in line with NPA (2008) which asserts that over 60% of the farm labor in Uganda is provided by women. This shows how women's workloads supersede that of men in this area. Thus the introduction of wet coffee processing a more labor intensive technology was likely to have women doing more work which could increase their workloads more. In order to productively grow both food and cash, land ownership was very critical. In this farming system, the respondents owned land under various tenure systems.

4. 3 Land tenure systems in Kasese District

The land tenure systems ranged from customary, freehold, rented and borrowedland (see Table 3).

Table 3: Land tenure

Land tenure	**WCPT n=60 (%)**	**DCPT n=60 (%)**
Customary	69.2	70.1
Freehold	51.5	46.8
Rented	40.7	50.4
Borrowed	37.6	42.9

Percentages add to more than 100 due to multiple responses

The farmers owned land under various tenure systems including, customary, free hold, rented and borrowed. Land ownership systems were not mutually exclusive, one person/farmer could own land under multiple tenure systems. Among the various tenure systems, customary land ownership was the most common with 70% of the respondents under both the wet and dry coffee processors. Other type of land tenure systems included free hold, rented and borrowed that were common to almost equal proportion of wet and dry processors. The land tenure system influenced the area of land under different crops. This could be the reason behind differences in allocation of land to different enterprises (Table 4). Farmers having long term tenure systems such as customary and free hold were more likely to engage in long term enterprises such as

coffee. On the contrary, farmers with temporary land tenure such as land borrowing and renting were more engaged in annual crop enterprises.

4. 4 Farming systems in Kasese District

In Kasese, coffee is the main cash crop. Other major crops were cassava, beans, bananas (locally called matooke), Irish potatoes and sweet potatoes (table 4). These crops were primarily grown for home consumption though the excess was sold off to generate household income.

Table 4 Major crops grown in Kasese

Crop	**WCPT users n=60 (%)**	**DCPT users n=60 (%)**
Coffee	100	100
Cassava	100	100
Beans	88.3	93.3
Bananas	73.3	71.7
Irish potatoes	45.0	61.7
Sweet potatoes	31.7	46.7

Percentages add to more than 100 due to multiple responses.

Coffee and Cassava were the major crops grown by all the participating households. Beans and bananas were also among the common food crops as indicated by over 70% of the respondents. Irish potatoes and sweet potatoes were least grown as indicated by 31.7% and 46.7% by the wet and the dry coffee processors respectively. This shows how the dry coffee processors relatively had more food than the wet coffee processors whose labor was more focused into coffee production.

Since cassava and coffee were the competing crops for labor and land among both the wet and dry coffee processors, it was imperative that detailed analysis of the study be based on these enterprises.

Table 5 Size of land allocated to coffee and cassava by the WCPT and DCPT users

Land size (acres)	WCPT n=60		DCPT n=60	
	Coffee	**Cassava**	**Coffee**	**Cassava**
Average land size	1.7	0.6	1.3	0.9
Minimum land size	0.4	0.2	0.3	0.3
Maximum land size	6.0	2.4	4.0	3.0

Arabica coffee was the major cash crop produced by farmers in Kasese District. Due to the importance of the crop, each household cultivated coffee. From Table 5, the wet coffee processors had allocated more land to coffee with an average of 1.7 acres while the dry coffee processors had allocated 1.2 acres. The minimum land allocated to coffee was 0.4 and 0.3 acres among the wet coffee processors and dry coffee processors respectively. The maximum land allocated to coffee was 6 and 4 acres among the wet and dry coffee processors respectively. The fact that wet coffee processors had allocated more land to coffee than the dry coffee processors shows how the wet coffee processors were more interested in coffee due to higher prices they were fetching from their coffee sales. This also means that women who are more involved in coffee farming were likely to get much loaded with coffee work among the wet coffee processors than the dry coffee processors.

On average wet coffee processors had allocated less (0.6 acres) of land to cassava growing compared to (0.9 acres) for dry coffee processors. This could be due to the value attached to cassava as an enterprise. The dry coffee processors could be attaching more value to cassava production than the wet coffee processors because their dry processed coffee was bringing in lesser income compared to wet processed coffee resulting into more land allocation to cassava growing so as to strike a balance in income. The minimum amount of land allocated to cassava growing by wet coffee processors was 0.2 acres while the maximum was 2.4 acres. The minimum land allocated to cassava growing by dry coffee processors was 0.3 acres while the maximum was 3 acres. This further explains the fact that dry coffee processors value cassava

more than wet coffee processors. This stemmed from the fact that cassava production and sales still makes economic sense to dry coffee processors who sell their coffee cheaply compared to wet coffee processors (Ushs 3500 per Kg of wet processed coffee and Ushs 2400 per Kg of dry processed coffee).

4.5 Coffee production in Kasese

Farmers engaged in wet and coffee processing were likely to harvest varying quantities of clean coffee as the amount of care for coffee varied.

Table 6: Quantity of Coffee generated by coffee farmers in Kasese per acre

Quantity (Kgs) per season	WCPT users n=60	DCPT users n=60
Average yield	490	403
Minimum yield	209	130
Maximum yield	632	556

Due to differences in commitment and care allocated to coffee production, the coffee yield also varied among the wet and dry coffee producers (see Table 6). On average, Wet coffee processors realized higher yields (490 Kgs per acre) as compared to the dry coffee processors (403Kgs) for dry coffee processors. This was because wet coffee processors were applying better production practices gained from the trainings by the WCPT promoting extension staff. Therefore women in wet coffee processing households were likely to have more workloads than their counter parts among the dry coffee processors due to the fact that women in this area do more work on the farm than males. Farmers in this area have got different views about the advantages of the coffee post harvest handling technologies which are mainly centered on price of coffee generated and labor intensiveness of technologies.

4. 6 Advantages and Disadvantages of the Wet and dry coffee processing methods

Choice between WCPT and DCPT depended largely on farmers' understanding of the advantages and disadvantages of the technology. Below are the advantages for which farmers decided to take up either of the processing technologies;

4. 6.1 Advantages of wet and dry coffee processing

Higher price of the processed coffee was the main basis upon which farmers decided to take up WCPT while access to credit was the least basis (Table 7). Being less expensive was the main basis upon which farmers decided to take on DCPT while other advantages of dry coffee processing included the technology being less labor intensive, less time consuming and immediate payment for coffee on delivery to the market.

Table 7 Advantages of wet and dry coffee processing

Advantages	**WCPT (n=60) %Response**	**DCPT (n=60) %Response**
Higher coffee price	100	-
Quick coffee drying	94.7	-
Clean coffee generated	86.0	-
Coffee management training	84.2	-
On farm coffee husks disposal	82.5	-
Access to credit	62.4	-
Not expensive	-	71.7
Less labor intensive	-	65.0
Less time consuming	-	63.3
Immediate coffee payment	-	63.2

The percentages add up to more than 100 due to multiple responses.

From table 7 above, all the farmers (100%) using the WCPT found it advantageous because the coffee generated by the technology fetched higher prices of Ushs 3500 per kilogram compared to coffee generated by the DCPT which was sold at Ushs 2400 per kilogram. Other advantages of the WCPT included quick coffee drying (12-14 days) reported by 94.7%, clean coffee

generation (86%), through drying coffee on suspended wire mesh during the first four days of drying and then on tapelines between 5-14 days of coffee drying. Access to coffee management training by Rwenzori Finest Coffee extension staff was reported by 84.2% of the farmers while (82.5%) reported that coffee husks generated on farm were used to make on-farm manure. Among dry coffee processors, the DCPT being less expensive (71.7%) than the WCPT in terms of buying wire mesh for coffee drying, tapelines, pulpier among other equipments was the main advantage they found associated with the technology. Other advantages of dry coffee processing included the technology being less labor intensive as reported by 65%, less time consuming (63.3%) and immediate coffee payment on delivery to the market (63.2%).

4. 6.2 Disadvantages of wet and dry coffee processing

The wet and dry coffee processing methods had a range of disadvantages (Table 8)

Table 8 Disadvantages of wet and dry coffee processing

Disadvantages of WCPT	**%Response(n=60)**	**% Response(n=60)**
Labor intensive	90.9	-
Expensive	84.1	-
Time consuming	81.8	-
Leads to food insecurity	77.3	-
Delayed coffee payment	29.5	-
Low coffee prices	-	93.3
Coffee drying takes long	-	75.0
Generated coffee less clean	-	53.3
Off farm coffee husks disposal	-	56.7

Summation of the percentages adds up to more than 100 due to multiple responses.

The main disadvantage of wet coffee processing was being labor intensive as reported by 90.9% of the respondents due the fact that it has many activities. These activities include cherry pulping, selective cherry picking, fetching water for coffee processing, cherry sorting and drying. Other disadvantages of wet coffee included being expensive as it involved buying of pulpier, tapelines, and drying wire mesh (84.1%) which poor farmers could not afford. The WCPT was

time consuming as it involved selective cherry picking. Pulping of coffee on the same day of picking it which sometimes makes the farmer work up to 15hours a day (81.8%), complicated the work more. This has led to food insecurity because it takes a way some labor needed in food production and yet men who are the major controllers of income earned may be less willing to spend money earned on food (77.3%) and delayed coffee payment (29.5%) where by it can take one or two weeks for RFC to pay the farmers for coffee supplied.

> *A farmer in Kitabona Parish Kyarumba Sub County was quoted saying "I will stop selling my coffee to Rwenzori Finest Coffee Company if they do not stop making us wait for a week before we can be paid. I do not know where the proprietors come from. Suppose they disappear, where can we go to ask for our money?"*

This there shows that though farmers were motivated to use the WCPT due to its associated advantages, selling coffee on credit was demoralizing as farmers need the money to meet the day to needs.

The main disadvantage of dry coffee processing reported by 93.3% of the respondents was generating coffee that fetches a lower price of Ushs 2400 compared to Ushs3500 per kilo offered for wet processed coffee. Other disadvantages of dry coffee processing included; coffee drying takes a long time about 4-6 weeks (75%) which prompts financially needy farmers to sell their raw coffee at lower prices. Farmers (56.7%) pointed out that they were losing soil fertility because of disposing coffee husks to owners of coffee hulling factories mostly located in Kasese town. Farmers (53%) asserted that the coffee generated by the dry coffee processing method was less clean as it involved drying coffee on the bare ground. This results into low quality coffee that attracts lower prices.

4. 7 House Hold Gender Division of Labor among both the wet and dry coffee processors

Labor is one of the most constraining factors when a new innovation is introduced (Whitehead, 1985). This study therefore endeavored to find out the kind of labor changes that took place in Kasese District when a new coffee processing method was introduced among the coffee farmers.

The wet coffee processing method, unlike the dry processing methods involved a range of activities to enable the farmer produce the quality of coffee that was required to meet international standards (see table 9). The activities ranged from coffee weeding, coffee picking, carrying water for coffee processing, coffee pulping and carrying coffee to the market and these were performed in varying proportions by both men and women.

Table 9: Gender division of Labor within coffee processing technologies

Activity	Type of coffee processors							
	Wet coffee processors (n=60)				Dry coffee processors (n=60)			
	% F	% M	X^2	Asymp.Sig	% F	% M	X2	Asymp.Sig
Weeding	33	67	36.667	0.009*	38	62	20.500	0.037*
Coffee picking	40	60	34.500	0.002*	25	75	52.700	0.000*
Carrying water	70	30	14.667	0.033*	-	-	-	-
Coffee pulping	17	83	9.908	0.007*	-	-	-	-
Transportation	66	34	32.000	0.032*	68	32	28.300	0.000*
Marketing	20	80	8.453	0.003*	24	76	22.500	0.003*

Key: *X^2- Chi square, * -Significant at 0.05 (2 tailed), F -Females and M-Males*

Weeding, coffee picking, transportation and marketing were common activities for both the wet and the dry coffee processors. Among these activities however, a significant proportion of men

(over 60% among both processors) participated more in the weeding, picking and marketing of the coffee than the women. This was because coffee fetched more income than other farm enterprising. Traditionally, men associated themselves more with income generating activities in households. They, in principle, take the responsibility of meeting household bills though this may not be true in practice. It was observed that men's interest in marketing the crop (80%) was mainly to control the money. Some men even lied the amount of money realized from their wives so that they could spend it to meet their individual needs other than the family/household need.

The trend was however reversed with respect to the transportation of the coffee to the market. Under this activity, more women (over 65%) than men (less than 35%) were involved among the wet and the dry processors. Though the women did not participate in the actual selling of the coffee, by cultural norms they were obliged to carry coffee to the market.

Table 10: Gender provision of labor across the coffee post harvest handling technologies

Activity	**Gender**	**WCPT**	**DCPT**	**X^2**	**Asymp.Sig**
Weeding	F	33	38	36.667	0.009*
	M	67	62	33.212	0.278
Coffee picking	F	40	25	35.540	0.001*
	M	60	75	22.321	0.002*
Carrying water	F	70	0	34.523	0.002*
	M	30	0	34.435	0.000*
Coffee pulping	F	17	0	8.234	0.000*
	M	83	0	32.212	0.000*
Transportation	F	66	68	5.437	0.714
	M	34	32	11.363	0.276
Marketing	F	24	20	6.572	0.563
	M	80	76	7.681	0.433

Key: *X^2- Chi square, * -Significant at 0.05 (2 tailed), F -Females and M-Males*

The wet coffee processing method introduced new activities that were not previously found in the dry coffee processing method. These additional activities of processing using water and pulping under WCPT called for additional labor or shift of labor from other household activities. More women (70%) than men (30%) carried water for pulping the coffee. Carrying water for wet processing coffee was one of the most labor intensive activities. An estimated 22,750 liters of water have been found ideal for washing coffee that generates up to 1000 Kgs of coffee ready for sale (Mukiibi, 2001). This means that on average about 6000litres of water is needed to wash coffee that can generate the average 321Kgs produced by each wet coffee processing household per season. Kasese being a mountainous district, movements are always constrained by the terrain, yet farmers carry water from sources in most cases far away (1-3 Kms). In Buhunga Village-Kilembe Sub County, most women narrated how they were being over worked as they had to fetch at least 80 liters of water daily for coffee processing in addition to 20 liters water for household use. Coffee pulping was mainly carried out by men (83%) and less by women (17%). This could be mainly due to the fact that pulping required muscular people as it involves using considerable force to rotate the pulpier handle, which made men more suitable than women. It is evident that the participation of women in the various coffee related activities increased significantly with the introduction of the WCPT (see table 10).

4. 8 Household gender division of labor with respect to food production: The case of the cassava production enterprise in Kasese

Cassava is an important food crop that was grown by all households in Kasese District and in most cases competes with coffee in terms of land and labor allocation. Using it as a case study to compare the distribution of labor with respect to gender among the different coffee processing systems or technologies would give general insights into the likely consequences of a new cash crop technology on household food production. Table 11 shows that both men and women participated in all the activities as were required to produce cassava for home consumption.

Table 11: Gender division of cassava labor within the coffee post harvest handling technologies

Activity	Type of coffee processors							
	Wet coffee processors (n=60)				Dry coffee processors (n=60)			
	% F	% M	X2	Asymp.Sig	% F	% M	X^2	Asymp.Sig
Land clearing	41	59	7.950	0.000*	30	70	5.328	0.000*
Planting	80	20	57.333	0.000*	75	25	24.326	0.002*
Weeding	90	10	39.167	0.000*	70	30	20.157	0.000*
Harvesting	81	19	8.240	0.001*	75	25	22.253	0.000*
Transportation	83	17	6.752	0.000*	70	30	15.506	0.000*
Marketing	98	2	4.537	0.000*	89	11	6.679	0.000*

Key: *X^2- Chi square, * -Significant at 0.05 (2 tailed), F -Females and M-Males*

Across the two processing technologies women significantly contributed labor to cassava production activities than the men. Among the wet coffee processors women's involvement in various cassava activities was; (80%) planting, (90%) weeding, harvesting (81%), transportation (83%) and (98%) marketing of cassava. A similar trend was observed among the DCPT farmers: Over 70% of all the women were engaged in weeding, transportation, planting, harvesting and marketing of the crop. Though men were also engaged in these activities as well, their participation was very minimal with (20%) engaged in planting, (10%) weeding, (19%) harvesting and (17%) transporting cassava to the market. Nonetheless, men's participation in cassava production was more pronounced during land clearing but this does not mean that women did not participate in land clearing as well. Further scrutiny of the results indicates that men's participation in cassava land clearing, planting, weeding, harvesting and transportation to the market has significantly reduced among the wet coffee processors (see table 12).

Table 12: Gender provision of cassava labor across the two coffee post harvest handling technologies

Activity	Gender	WCPT	DCPT	X^2	Asymp.Sig
Land clearing	F	41	30	4.159	0.002*
	M	59	70	24.353	0.002*
Planting	F	80	75	6.753	0.723*
	M	20	25	9.733	0.324*
Weeding	F	90	70	8.241	0.000*
	M	10	30	3.9167	0.000*
Harvesting	F	81	75	9.333	0.423*
	M	19	25	3.546	0.002*
Transportation	F	83	70	8.689	0.000*
	M	17	30	20.235	0.000*
Marketing	F	98	89	8.539	0.000*
	M	2	11	6.859	0.003*

Key: *X^2- Chi square, * -Significant at 0.05 (2 tailed)*

The labor provided by men in cassava farming had significantly reduced due to adoption of the WCPT. That meant that women's work load increased significantly since men were doing less work in cassava production. The reduction in males' involvement in cassava activities was because coffee production was more profitable with the introduction of the WCPT as compared to cassava production which made men concentrate more on coffee leaving most cassava work to women.

A coffee farmer in Kyarumba Sub-County had this to say about cassava and coffee production.

> *"I can no longer waste time in cassava gardens because I have been poor for a long time while producing a lot of cassava. Now that wet processed coffee is gold, I must concentrate on my coffee with all my children and wife. Whoever does not want to work on my coffee must leave my home."*

The above script signified that coffee production was first priority for this male farmer and probably many more male farmers were thinking in the same way about coffee production.

Women on the other hand though otherwise as verified by the lamentation of one female farmer in Kilembe sub-county during the coffee harvesting season of April, 2008.

> *"We are going to suffer from famine in this home because we have been captured here on coffee. Rats and weeds are destroying our cassava and yet this man is going to spend the coffee money in Kasese Town without buying for us food."*

This shows that though women were providing labor in wet coffee processing, they were benefiting less form the income generated from coffee sells. Since women have to work hard in both cash and food crop enterprise, it is more likely that more labor is likely to be shifted from food to coffee production, a situation that will make most households food insecure. The situation was even aggravated by the fact that men were unwilling to invest in food purchase after the sales of the coffee.

4. 9 Household Gender division of non- farm sources of income labor.

The different household members participated in other off farm income generating activities to supplement the farm income. Table 13 shows that both men and women among the wet and dry coffee processor participated in civil service, small business and labor sales.

Table 13: Gender division of non farm income labor within the coffee post harvest handling technologies.

Activity	**Type of coffee processors**							
	Wet coffee processors (n=60)				**Dry coffee processors**			
	% F	**% M**	**X^2**	**Asymp.Sig**	**% F**	**% M**	**X^2**	**Asymp.Sig**
Civil service	35	65	5.723	0.000*	38	62	18.867	0.002*
Business	38	62	17.546	0.041*	45	55	2.770	0.001*
Selling labor	42	58	3.167	0.043*	58	42	3.934	0.042*

Key: *X^2- Chi square, * -Significant at 0.05 (2 tailed), F -Females and M-Males*

For both types of processors, more men than women were more involved in off farm income generating activities. Men were significantly involved in civil service (64.4%) and (61.4%) for DCPT and WCPT than females at 36.4% for WCPT and 38.6% respectively and all other non

farm sources of income. There was a general decline of women engagement in non farm sources of income after adopting the WCPT an indication that their workloads had increased due to participation in the WCPT as indicated in table 14.

Table 14 Gender Provision of non-farm income labor across the technologies

Activity	Gender	WCPT	DCPT	X^2	Sig.(2tailed)
Civil service	F	35	38	5.483	0.714
	M	65	62	11.031	0.276
Business	F	38	45	31.124	0.002*
	M	62	55	29.700	0.300
Selling labor	F	42	58	31.667	0.000*
	M	58	43	3.965	0.000*

Key: *X^2- Chi square, * -Significant at 0.05 (2 tailed), F -Females and M-Males*

The proportion of work done by females and males did not significantly change as a result of using the WCPT in civil service and business activities. However, there was a significant decline in females' involvement in selling labor which can be attributed to their being busy on the farm doing most of the cassava work and also participating in the WCPT. The rate at which males were selling labor significantly increased among the wet coffee compared to females as they could use any off coffee time to work on other farms while women would allocate this time to cassava cultivation. Since the trend of gender participation in non- farm activities had changed due to the adoption of the WCPT, this was likely to affect the way domestic activities were being shared between males and females.

4. 10: Household Gender division of domestic activities.

In addition to production of food and cash crops, the various household members provided their labor to meet the various reproductive roles. The reproductive roles included; fetching water for home use, preparing food, collecting fire wood, child care and home cleaning (See table 15)

Table15: Gender division of domestic activities within the coffee post harvest handling technologies

Activity	Type of coffee processors							
	Wet coffee processors (n=60)				Dry coffee processors			
	% F	% M	X^2	Asymp.Sig	% F	% M	X^2	Asymp.Sig
Fetching water	80	20	15.321	0.002*	84	16	12.33	0.000*
Preparing food	86	14	5.237	0.000*	83	17	7.663	0.000*
Collecting fire wood	80	20	5.736	0.001*	84	16	23.067	0.000*
Child care	75	25	24.300	0.002*	74	26	2.349	0.001*
Home cleaning	74	26	23.533	0.003*	70	30	7.865	0.000*

Key: *X^2- Chi square, * -Significant at 0.05 (2 tailed), F -Females and M-Males*

Results in table 15, indicate that females were significantly doing more domestic work than males in all activities among both the WCPT and DCPT. This was being done in addition to the extra labor being put into wet coffee processing. The introduction of wet coffee processing therefore did increase the workload for women.

Table 16: Gender Division of domestic activities across the coffee post harvest handling technologies

Activity	**Gender**	**WCPT**	**DCPT**	**X^2**	**Asymp.Sig**
Fetching water	F	80	84	3.632	0.891
	M	20	16	3.208	0.073
Preparing food	F	86	83	5.473	0.276
	M	14	17	11.236	0.132
Collecting fire wood	F	80	84	5.689	0.058
	M	20	16	5.048	0.080
Child care	F	75	74	2. 857	0.240
	M	25	26	2.556	0.279

Home cleaning	F	74	70	2.899	0.089
	M	26	30	2.260	0.132

Key: *X^2- Chi square, * -Significant at 0.05 (2 tailed), F -Females and M-Males*

Domestic work remained predominantly a responsibility of women because traditionally women are obliged to do such chores. However, there was an increase in men's participation in fetching water for domestic use in households using the WCPT which was attributed to the fact that it was no longer strongly culturally resisted as men were actively participating in fetching water for use in wet coffee processing. Owing to the fact that workloads for females reduced due to males increased participation in fetching water which is one of the most labor intensive domestic activities as sources of water are downhill.

4. 11: Household Gender division of communal activities

In addition to participating in various on farm, off farm and domestic activities, the different household members participated in communal activities since it was an obligation to serve the community as a way of promoting community development and family social capital. Table 17 shows that both men and women among the wet and dry coffee processor participated in communal road maintenance, building schools, churches and ceremonial activities.

Table 17: Gender division of communal activities within the coffee post harvest handling technologies

Activity	**Type of coffee processors**							
	Wet coffee processors (n=60)				**Dry coffee processors(n=60)**			
	% F	**% M**	**X^2**	**Asymp.Sig**	**% F**	**% M**	**X^2**	**Asymp.Sig**
Communal	25	75	24.323	0.002*	33	67	3.632	0.008*

Road maintenance								
Community school work	35	65	29.733	0.003*	35	65	32.733	0.001*
Church work	51	49	5.407	0.717	52	48	5.456	0.714
Ceremonial Work	63	37	15.923	0.000*	65	35	11.325	0.012*

Key: *X^2- Chi square, * - Asymp. Significant at 0.05 (2 tailed), F -Females and M-Males*

The trend of gender participation in communal work remained the same for both males and females in the WCPT and DCPT technologies with males participating more in communal road construction and school building than females while females participated more in church work and ceremonial activities than males. However for communal road maintenance, there were significant changes in the way of gender participation (See table 18)

Table 18: Gender provision of communal activities labor across the coffee post harvest handling technologies

Activity	**Gender**	**WCPT**	**DCPT**	**X^2**	**Asymp.sig**
communal road maintenance	F	25	33	5.332	0.039*
	M	75	67	5.419	0.025*
Community school work	F	35	35	6.473	0.876
	M	65	65	4.727	0.932
Church work	F	51	52	2.978	0.226
	M	49	48	5.048	0.080
Ceremonial work	F	63	65	1. 803	0.406
	M	37	35	2.356	0.269

Key: *X^2- Chi square, * -Significant at 0.05 (2 tailed), F -Females and M-Males*

The study showed that DCPT user women were more involved in communal activities than their counter parts participating in the WCPT. This could have been due the fact that the wet coffee processing females were busy with the coffee work which reduced their participation in road work. On the contrary the number of men participating in road construction was significantly higher among the wet coffee processors than the dry coffee processors. This could have been due the fact that men were hiring laborers to dig their assigned road portions.

4. 12 Relationship between access to income and gender among both the wet and dry coffee processors.

Analysis of the relationship between access to resources and gender was carried out to determine whether house hold members were benefiting from the labor invested in generating these resources. The study, carried out among the wet and dry coffee processors intended to compare how the members within the two categories accessed income generated both on and off farm. The sources of income included coffee, cassava, civil service, small business enterprises and selling labor (See table 19).

Table 19: Relationship between access to incomes and gender among wet and dry coffee processors

Income	**Wet coffee processors**		**Dry coffee processors**	
	P. corr	**Sig.level**	**P.corr**	**Sig.level**
Coffee	0.702	0.011*	0.785	0.002**
Cassava	0.370	0.004**	0.096	0.465
Civil service	0.361	0.142	0.226	0.083
Business	0.304	0.220	0.078	0.555
Selling labor	0.553	0.017*	0.081	0.234

***Key**: ** Correlation is significant at 0.01level (2 tailed), * Correlation is significant at 0.05 level (2 tailed), P.corr- Pearson correlation, Sig.level –significance (2 tailed)*

Among both the wet and dry coffee processors, there existed significant correlations between access to coffee income with gender. This implies that gender determined how one would access

income earned from coffee. It is important to note that the strong positive correlation that existed between access to coffee income and gender could have indicated that men were accessing coffee cash more than women. Studies carried out in Mbale indicated that men were accessing coffee income more than women. In one instance a woman in Mbale said,

"*I can not put much effort in coffee production because the income may as be used to marry a third wife"* (PEAP, 2004)

In addition, the strong positive correlations that existed between gender and access to sell of labor income among wet coffee processors could have indicated that men had more access to sell of labor incomes than women among both the wet coffee processors. This is because WCPT men were involved in selling labor among wet coffee processors than women. No significant correlations exited between accesses to cassava, civil service, small business, sell of labor incomes and gender among dry coffee processors indicating that one's gender could not influence access to this income. This was because civil servants tend to spend their incomes in a way that all household members benefit while cassava where women had more stakes was generating income to sustain all household members. Also the small businesses were being operated by women which included vending fish, cassava flour, maize flour, ground nuts, and onions among others. Since women are at the fore front to food provision in the household, then it was more likely that all gender in the household could access their income relatively equally. Important to note is the significant relationship between to cassava income and gender among the wet coffee processors and not among the dry coffee processors. This could be due to the fact that since men's income had increased due to selling wet processed coffee at higher prices, they no longer had a lot of interest in cassava which made women access more cassava income.

4. 13 Relationship between control of incomes and gender among wet and dry coffee processors

Control of income is synonymous to ownership of income (PEAP, 2004). It is ones control of resources that enables him or her to freely make decisions on how to allocate resources (Haddad, 1992). The study compared how income both on farm and off farm was being controlled with respect to gender among both the wet and dry coffee processors (see table 20).

Table 20: Relationship between control of income and gender among wet and dry coffee processors

Income	Wet coffee processors		Dry coffee processors	
	P. corr	**Sig.level**	**P.corr**	**Sig.level**
Coffee	0.788	0.000**	0.891	0.002**
Cassava	0.519	0.000**	0.326	0.031*
Civil service	0.439	0.003**	0.358	0.005**
Business	0.304	0.020*	0.329	0.005**
Selling labor	0.673	0.013*	0.537	0.001**

***Key**: ** Correlation is significant at 0.01level (2 tailed), * Correlation is significant at 0.05 level (2 tailed), P.corr- Pearson correlation, Sig.level –significance (2 tailed*

Table 20 above shows that there were positive correlations between control of coffee, cassava, civil service and sell of labor incomes with respect to gender among both the wet and dry coffee processors. This shows how men were in control of coffee cash while women were in control of cassava cash among the WCPT and DCPT users. This implies that men who use the WCPT were richer than men using the DCPT since the wet processed coffee fetches higher price than the dry processed coffee. Women among the WCPT users were poorer than the DCPT user women since less cassava where women get income would be produced among WCPT users compared to DCPT users since more land has been allocated to cassava production among DCPT than WCPT.

CHAPTER FIVE

CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

5.0 Summary

The purpose of the study was to find out how the WCPT has influenced gender division of labor in households of Kasese District. The population of the study included all wet and dry coffee processors in the study area. Both qualitative and quantitative data was collected using an interview schedule through face to face interviews. A Chi square test was used to find out the proportions of work done by males and females in households using the WCPT and the DCPT. Pearson correlation coefficients were used to find out the relationship between gender and access to income among both the wet and dry coffee processors.

5.1 Conclusions

Females in this area were more full time farmers compared to males among both the wet and dry coffee processors. In terms of land holding, wet coffee processors had more land (2.7 acres on average) than dry coffee processors (2.3 acres on average). Wet coffee processors had also allocated more land to coffee farming (1.7 acre on average) than the dry coffee processors (1.3 acres on average). Wet coffee processors were also producing more clean coffee per acre (490Kgs on average) than dry coffee processors (403Kgs). On the contrary, dry coffee processors had allocated more land to cassava growing (0.7 acres on average) than wet coffee processors (0.6 acres on average) which also made them produce more cassava than wet coffee processors.

In terms of labor provision, females and males were doing different activities among the wet coffee processors. Females were more in carrying water for coffee processing and transporting coffee to the market while males were more in weeding, coffee picking, pulping and marketing. The wet coffee post harvest handling technology had increased the work loads for females and males as it involved more labor intensives activities including pulping and carrying water for coffee processing which are not in the dry coffee post harvest handling technology. Females were doing more work than males in terms food production in this area. Females work loads in food production had increased among wet coffee processors than dry coffee processors as men had with drawn most of the labor from food production to participate in wet coffee processing. In addition females were doing more domestic work than males among both the wet and dry coffee. Also among both the wet and dry coffee processors, females were doing more communal work in church and ceremonies while males were doing more work in school and communal road maintenance.

Men among both the wet and dry coffee processors had more access to coffee income than females while females had more access to cassava incomes than males among both the wet coffee and dry processors. the same trend was observed in terms of control over income where by among both the wet and dry coffee processors, males had more control over coffee income while women had more control over cassava income.

5.2 Implications

The fact that females were more full time farmers than males in this area indicate that females were doing more on farm activities than males. Also allocating more land to coffee and less to cassava by wet coffee processors meant more coffee harvest and income were generated. However males had more access and control over coffee cash than women. Males in this area rarely provide food for the household even if they get money. This meant that wet coffee processing households would be food insecure as less land was available for food production compared to dry coffee processing house holds. Females in wet coffee processing house holds were worse off than those in dry coffee processing households since less land and labor was available for cassava production where they have more access and control over compared to dry coffee processors.

Females in wet coffee processing households had more work loads than females in the dry coffee processing households. This was due to WCPT being more labor intensive than the DCPT as it brought additional labor intensive activities for females like fetching water for coffee processing as well as water for domestic use.

5.3 **Recommendations**

Since Uganda is on the path of agriculture modernization, innovations that improve the quality of agricultural products like coffee are of high priority. The WCPT need to be modified. Strategies that will make the technology less labor intensive need to be adopted for example house hold water harvesting.

There is need for RFC which is promoting the technology to sensitize wet coffee processors on how males and females can share work load equitably so as to avoid over loading females with work.

There is need for RFC to sensitize males in this area on how they should equitably share coffee income with females since males were benefiting more than females yet they are both actors in coffee production.

This study was only done in a small area of two sub-counties of Kasese district due to resources constraints. The study should be replicated in other wet coffee processing districts and agro ecological zones. Information gathered in other districts could provide an appropriate yard stick for making appropriate technology redesign recommendations

Costs benefit analysis of the technology to find out its economic importance need to be carried out to find whether it is worth promoting for use by all farmers.

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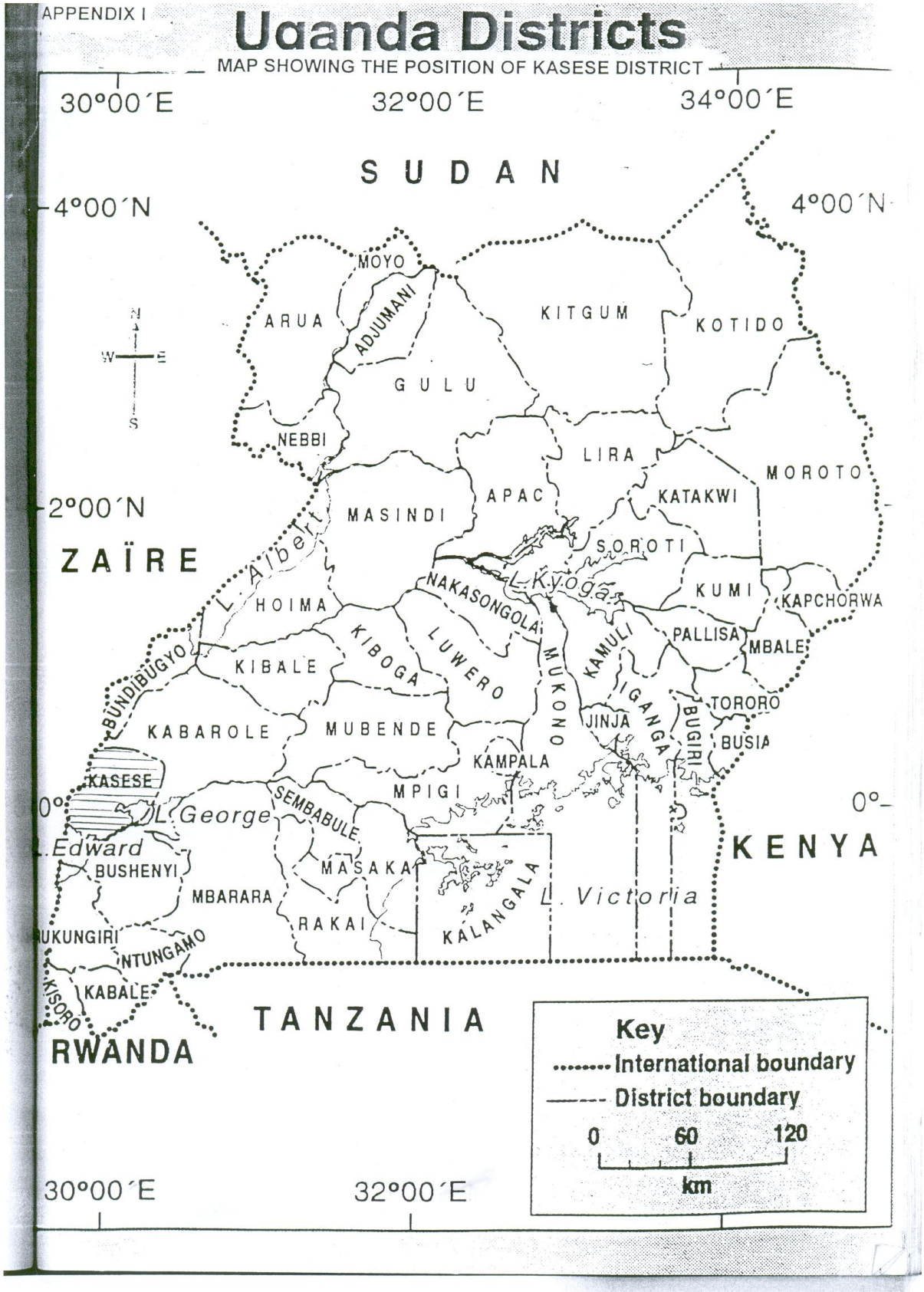
APPENDIX I

Uganda Districts

MAP SHOWING THE POSITION OF KASESE DISTRICT



INFLUENCE OF THE WET COFFEE POST HARVEST HANDLING TECHNOLOGY ON GENDER DIVISION OF LABOUR WITH IN HOUSEHOLDS OF KASESE DISTRICT.

INTERVIEW SCHEDULE FOR WET COFFEE PROCESSING FARMERS.

1. SECTION A: PERSONAL DATA

Circle or fill the blank spaces with the appropriate answers

a) Respondent number ----------

b) Sub County ----------

c) Parish ----------

d) Village ----------

e) Gender of respondent (01) male (02) female

f) Marital status of respondent

(01) Single (02) Married (03) Separated (04) Widowed

g) What is your age?.....(years)

g) Do you have children? (01) Yes (02) No

h) If yes, please indicate the number of children with respect to gender

……(boys)……(girls)

i) Do you stay with other relatives in this house hold?

j) If yes, indicate their number with respect to gender

……..(males)…….(females)

SECTION B: INFORMATION ON FARMING STATUS, LAND TENURE AND ENTERPRISE ALLOCATION

Tick the correct answer in the spaces provided in the table below

2) What is the farming status of members of this household?

Farming status	**Husband**	**Wife**	**Boy(s)**	**Girl(s)**	**Other male(s)**	**Other Female(s)**

Full time						
Part time						
Not farming						

For questions 3-11 Circle the appropriate answers

3) Do you own land? 01) Yes (go to 4) 02) No (go to 9)

4) If yes, what is the tenure of your land?

01) Customary 02) Freehold 03) Squatter

5) What is the total area of your land? (Specify the acreage).. ……

6) Have you bought land after adopting the Wet Coffee Post harvesting handling Technology? 01) Yes 02) No

7) If yes, what is the size of the land you bought after adopting the wet coffee post harvest handling technology? (Specify the acreage)…….

8) What is the size of your coffee garden? (Specify the acreage)……..

9) Do you borrow or rent land? (01) Yes (02) No

10) If yes, state the size of land that this household has currently borrowed or is renting (Specify the acreage). Borrowed land……Rented land……..

11) State the other different crop enterprises grown by this household and their associated acreage

Crop enterprise	**Size of land (acres)**

12.State the among of clean coffee this household produced last season …. (kgs)

SECTION C: INFORMATION ON ADVANTAGES AND DISADVANTAGES OF THE WET COFFEE POST HARVEST HANDLING TECHNOLOGY

13) What are the advantages of using the Wet Coffee Post harvest handling Technology over the Dry Coffee Post harvest handling Technology?

……

……

14) What are the disadvantages of the using Wet Coffee Post harvest handling Technology?

……

……

……..

……

……

……

SECTION D: INFORMATION ON GENDER DIVISION OF LABOUR WITHIN HOUSEHOLDS USING THE WET COFFEE POST HARVEST HANDLING TECHNOLOGY.

15) On the scale of (1-5) where 1 indicates the lowest level of involvement and 5 the highest level of involvement, indicate the level of involvement of various household members in coffee activities in the table below.

Activity	**Wife**	**Husband**	**Daughters**	**Sons**	**Other Males**	**Other Females**
Coffee weeding						
Coffee picking						
Carrying water for coffee processing						
Picking coffee						

Pulping coffee						
Carrying coffee to market						

16) On the scale of (1-5) where 1 indicates the lowest level of involvement and 5 the highest level of involvement, indicate the level of involvement of various household members in staple food activities in the table below.

Activity	**Wife**	**Husband**	**Daughters**	**Sons**	**Other Males**	**Other Females**
Clearing land						
Planting						
Weeding						
Harvesting						
Carrying cassava to market						

17) On the scale of (1-5) where 1 indicates the lowest level of involvement and 5 the highest level of involvement, indicate the level of involvement of various household members in off farm activities in the table below.

Activity	**Wife**	**Husband**	**Daughters**	**Sons**	**Other Males**	**Other Females**
Civil servant						
Business person						
Sells labor						
Others specify						

18) On the scale of (1-5) where 1 indicates the lowest level of involvement and 5the highest level of involvement, indicate the level of involvement of various household members in reproductive activities in the table below.

Activity	**Wife**	**Husband**	**Daughters**	**Sons**	**Other Males**	**Other Females**
Fetching water						
Harvesting food						
Preparing food						
Collecting firewood						
Child care						
Home cleaning						

19) On the scale of (1-5) where 1 indicates the lowest level of involvement and 5 the highest level of involvement, indicate the level of involvement of various household members in communal activities in the table below.

Activity	**Wife**	**Husband**	**Daughters**	**Sons**	**Other Males**	**Other Females**

Road maintenance						
School duties						
Church duties						
Funeral duties						
Wedding duties						

(20) On the scale of (1-5 where 1 indicates the lowest level of access and 5 the highest level of access, indicate the level of access of various household members to income in the table below.

Activity	**Wife**	**Husband**	**Daughters**	**Sons**	**Other Males**	**Other Females**
Coffee cash						
Cassava cash						
Civil service cash						
Business cash						
Sell of labor cash						

21) On the scale of (1-5) where 1 indicates the lowest level of control and 5 the highest level of control, indicate the level of control over income of various household members in the table below.

Activity	**Wife**	**Husband**	**Daughters**	**Sons**	**Other Males**	**Other Females**

Coffee cash						
Cassava cash						
Civil service cash						
Business cash						
Sell of labor cash						

INFLUENCE OF THE WET COFFEE POST HARVEST HANDLING TECHNOLOGY ON GENDER DIVISION OF LABOUR WITH IN HOUSEHOLDS OF KASESE DISTRICT.

INTERVIEW SCHEDULE FOR DRY COFFEE PROCESSING FARMERS.

1.SECTION A: PERSONAL DATA

Circle or fill the blank spaces with the appropriate answers

a) Respondent number ----------

b) Sub County ----------

c) Parish ----------

d) Village ----------

e) Gender of respondent (01) male (02) female

f) Marital status of respondent

(01) Single (02) Married (03) Separated (04) Widowed

g) Do you have children? (01) Yes (02) No

h) If yes, please indicate the number of children with respect to gender

……(boys)……(girls)

SECTION B: INFORMATION ON FARMING STATUS, LAND TENURE AND ENTERPRISE ALLOCATION

Tick the correct answer in the spaces provided in the table below

2) What is the farming status of members of this household?

Farming status	**Husband**	**Wife**	**Boy(s)**	**Girl(s)**	**Other male(s)**	**Other Female(s)**
Full time						
Part time						
Not farming						

For questions 3-11 Circle the appropriate answers

3) Do you own land? 01) Yes (go to 4) 02) No (go to 9)

4) If yes, what is the tenure of your land?

01) Customary 02) Freehold 03) Squatter

5) What is the total area of your land? (Specify the acreage).. ……

6) Have you bought land after adopting the Wet Coffee Post harvesting handling Technology? 01) Yes 02) No

7) If yes, what is the size of the land you bought after adopting the wet coffee post harvest handling technology? (Specify the acreage)…….

8) What is the size of your coffee garden? (Specify the acreage)……..

9) Do you borrow or rent land? (01) Yes (02) No

10) If yes, state the size of land that this household has currently borrowed or is renting (Specify the acreage). Borrowed land……Rented land……..

11) State the other different crop enterprises grown by this household and their associated acreage

Crop enterprise	**Size of land (acres)**

12. State the amount of clean coffee this household produced last season …(kgs)

SECTION C: INFORMATION ON ADVANTAGES AND DISADVANTAGES OF THE DRY COFFEE POST HARV EST HANDLING TECHNOLOGY

13) What are the advantages of using the Dry Coffee Post harvest handling Technology over the Wet Coffee Post harvest handling Technology?

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14) What are the disadvantages of the using Dry Coffee Post harvest handling Technology?

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SECTION D: INFORMATION ON GENDER DIVISION OF LABOUR WITHIN HOUSEHOLDS USING THE WET COFFEE POST HARVEST HANDLING TECHNOLOGY.

15) On the scale of (1-5) where 1 indicates the lowest level of involvement and 5 the highest level of involvement, indicate the level of involvement of various household members in coffee activities in the table below.

Activity	**Wife**	**Husband**	**Daughters**	**Sons**	**Other Males**	**Other Females**
Coffee weeding						
Coffee picking						
Carrying water for coffee processing						
Picking coffee						
Pulping coffee						
Carrying coffee to market						

16) On the scale of (1-5) where 1 indicates the lowest level of involvement and 5 the highest level of involvement, indicate the level of involvement of various household members in staple food activities in the table below.

Activity	**Wife**	**Husband**	**Daughters**	**Sons**	**Other Males**	**Other Females**
Clearing land						
Planting						
Weeding						
Harvesting						
Carrying cassava to market						

17) On the scale of (1-5) where 1 indicates the lowest level of involvement and 5 the highest level of involvement, indicate the level of involvement of various household members in off farm activities in the table below.

Activity	**Wife**	**Husband**	**Daughters**	**Sons**	**Other Males**	**Other Females**
Civil servant						
Business person						
Sells labor						
Others specify						

18) On the scale of (1-5) where 1 indicates the lowest level of involvement and 5 the highest level of involvement, indicate the level of involvement of various household members in reproductive activities in the table below.

Activity	**Wife**	**Husband**	**Daughters**	**Sons**	**Other Males**	**Other Females**
Fetching water						
Harvesting food						
Preparing food						
Collecting firewood						
Child care						
Home cleaning						

19) On the scale of (1-5) where 1 indicates the lowest level of involvement and 5 the highest level of involvement, indicate the level of involvement of various household members in communal activities in the table below.

Activity	**Wife**	**Husband**	**Daughters**	**Sons**	**Other Males**	**Other Females**
Road maintenance						
School duties						
Church duties						
Funeral duties						
Wedding duties						

20) On the scale of (1-5) where 1 indicates the lowest level of access and 5 the highest level of access, indicate the level of access of various household members to income in the table below.

Activity	Wife	Husband	Daughters	Sons	Other Males	Other Females
Coffee cash						
Cassava cash						
Civil service cash						
Business cash						
Sell of labor cash						

21) On the scale of (1-5) where 1 indicates the lowest level of control and 5 the highest level of control, indicate the level of control over income of various household members in the table below.

Activity	Wife	Husband	Daughters	Sons	Other Males	Other Females
Coffee cash						
Cassava cash						
Civil service cash						
Business cash						
Sell of labor cash						