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Understanding Socio-economic Challenges Facing Smallholder Farmers in Gondokoro, Central Equatoria State (South Sudan)

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Declaration

I, Ben Mune Ezbon Museli, declare that this thesis is a result of my research investigations and findings. Sources of information other than my own have been acknowledged and a reference list has been appended. This work has not been previously submitted to any other university for a ward of any type of academic degree.

Signature-----

Date-----

DEDICATION

This research is dedicated to my dear beloved wife, Ms. Estella Killei Santino. She has been a very powerful force behind this academic achievement. Her courage and willingness to take care of the kids in my absence, enabled me to complete this Master's program. I am grateful to the Almighty God, for having chosen her for me.

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Abstract

Smallholder farmers in Gondokoro of Central Equatoria state (now Jubek state) have failed to increase food production due to socio-economic challenges. This study was designed to identify critical factors that hinder smallholder's ability to become food sufficient and the means they used to cope with these challenges. A sample of 60 smallholder farmers were purposively (convenient) selected to participate in the study. In addition, 8 focus group discussions/interviews were conducted. Semi-structured questions were used to obtain data from the participants. The socio-economic constraints the study revealed include: crop diseases, lack of tools, seeds supply, land constraints, household labour shortage, marketing challenges affecting women, credits, infrastructure problems (poor roads), extension services, challenges associated with livestock and fisheries, absence of smallholder's association, community obligations and lack of proper medical facility. And the Smallholders' means to cope with the challenges are irrigation and off-farm activities such as charcoal burning, making canoes and mats, and selling tea by women. The study recommends that there is a high need for both national and state governments, development agencies and NGO's working in the field of agriculture to support smallholder farmers in Gondokoro. Addressing these constraints will enable them to produce food for household consumptions and markets around Juba town. This will in turn reduce dependency on food aid and food imports from neighbouring countries.

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Abbreviations

FAO: Food and Agriculture Organization of the United Nations

FDG: Focused Group Discussion

GDP: Gross Domestic Product

IFAD: International Fund for Agricultural Development

IFPRS: International Food Policy Research Institute

NCA: Norwegian Church Aid

NGOs: Non-Governmental Organizations

NORAD: The Norwegian Agency for Development Cooperation

NORAGRIC: Department of International Environment and Development

NMBU: Norwegian University of Life Sciences

PDU: Project Development Unit

SCC: Sudan Council of Churches

SPLM/A: Sudan Peoples' Liberation Movement/Army

UNDP: United Nation Development Program

USAID: United States Agency for International Development

WFP: World Food Program

Chapter One

Introduction

1.1 Background

In many developing countries, smallholder and family farming is the dominant mode of agricultural and pastoral production (Quan, 2011). Smallholder farmers are the major food producers in this region (Pingali, 2010). However, due to lack of agricultural support, they are unable to increase food production. Poor agricultural performance leads to persistent hunger and poverty (Haggblade & Hazell, 2010). To improve regional diets and ensure food security, it is essential to support smallholder farmers (Pingali, 2010).

Smallholder agriculture in South Sudan have also experienced low food productivity due to socio-economic constraints. Odra, Deng & Nhiem (2004) observed that the successive governments in Sudan did little to improve the food production of rural farmers in South Sudan. The regional government (1972-83) attempted to better the food productivity of smallholders through the implementation of the Project Development Unit (PDU) of the World Bank, Norwegian Church Aid (NCA) and the Sudan Council of Churches (SCC). However, due to late payment of laborers, lack of tools, poor roads and marketing difficulties, these projects collapsed (Yongo-Bure, 2007).

A study by Odra et al., (2004) revealed that the constraints facing rural farmers have led to low levels of production. Continuous drop in food supplies creates food scarcity, which is a threat to the citizens of South Sudan. Therefore, for the population to become food sufficient, the government should improve the agricultural production of smallholder farmers (Odra et al., 2004). Also, making use of the huge potentials of the small producers, will promote sustainable agriculture which is necessary for food security and farm income (Dorlochter-Sulserb & Martineit ,2008).

Agriculture contributes one-third of South Sudan's GDP and it employs about 67% of the population (UNDP, 2012). Household income and employment are generated mainly by crop production and livestock rearing (Tizikara and Lugor, 2011). Fishing too, is an important diet throughout the riverine and swamp countries (FAO/WFP, 2015). Improvement in the agriculture

sector is necessary for the attainment of food sufficiency in South Sudan (Lupai, 2014). Support to small-scale agriculture beyond food security, is critical to long term growth and development of South Sudan (World Bank, 2012). In addition, investment in the agricultural sector will reduce the country's dependence on the oil resource. South Sudan can easily overcome food insecurity, because it has good climate and fertile lands suitable for food crop production (Oxfam, 2012). Also, social aspects which hinders agricultural practice should be addressed at the grassroots level.

More than 80 percent of the population of South Sudan lives in rural areas, relying on farming as their source of food and income (World Bank, 2012). The smallholder farmers in Gondokoro payam of Juba are the principal suppliers of food crops to the town on daily basis. According to USAID report (2013) many South Sudanese continue to grow food crops despite agricultural challenges. Thus, investing in smallholder farmers will reduce dependency on expensive food imports and prevent food insecurity in the country.

Therefore, this study seeks to identify the socio-economic challenges facing smallholder farmers in Gondokoro. Since they depend on agriculture for their livelihoods, smallholder farmers can play a significant role in the supply of food and grain crops to the urban areas. They can produce more and better quality food if the constraints affecting them are addressed.

1.2 Statement of the Problem:

Smallholder farmers in South Sudan will continue to produce less food, if the socio-economic challenges facing them are not addressed. Infrastructure, loans, gendered division of labour, labour, Land ownership, distant markets and other inputs (World Bank, 2012) have affected smallholders' ability to increase food production. This has made 4.7 million people food insecure (Lupai, 2014). Because of the limited agricultural productivity, the country's dependence on food imports and food aid have increased (USAID, 2013). Food imports accounted for nearly half of all imports in 2010 (Lanzer, 2013). In addition, these food crops and livestock products

come at high prices and with little benefits to rural areas that should otherwise be their natural suppliers (World Bank, 2012). Therefore, Smallholders failure to produce more food due to socio-economic challenges, leads to food decrease and raises the level of poverty in the country.

Several studies show that the problems facing smallholders have existed for decades. The many schemes established in the country during the regional government 1972-83 (Tizikara & Lugor, 2011) collapsed partly due to socio-economic constraints. The impressive yields did not last because problems associated with marketing and processing of the crops, discouraged smallholder farmers (Yongo-Bure, 2007). Also, the onset of the civil war in 1983 disrupted farming activities which resulted in food shortages (Tizikara & Lugor, 2011).

Furthermore, support to smallholder agriculture decreased since the start of oil production in the Sudan in the early 2000s (Farida, 2014). In this period, the meagre budget allocated to agriculture dropped from 3.4% to 1.6% (Farida, 2014). And after independence of South Sudan, the oil sector contributed 95% of the country's budget (UNDP, 2012). Much reliance on oil revenues led to a decrease in the allocated budget for agriculture by 4% in 2012/13 budget (Tizikara & Lugor, 2011). This small budgetary allocation shows that the agriculture sector is the most neglected (Lupai, 2014). Thus, oil production has negative impact on the agricultural sector.

Despite these challenges, smallholders in the country continue to produce limited amount of food for their households and the market. They cannot abandon farming activity, because it is their main source of livelihood. That means, it is possible for smallholder farmers in South Sudan to play a significant role in addressing food concerns, because many of them practice agriculture in the rural areas. But, they can only produce surplus food to meet both household and market demand, if the socio-economic constraints affecting their productivity, are addressed. Therefore, the aim of this study is to identify the socio-economic challenges facing smallholder farmers in Gondokoro payam (Central Equatoria state).

1.3 Objectives and Research Questions

The objective of this study is to identify the socio-economic factors affecting smallholder farmers' ability to increase food production. Factors such as infrastructure, access to markets and credits, labour availability and access to land by women could be some of the constraints preventing rural households from producing more food crop. Since farm households experience similar problems, it is also within the scope of this research to find out their coping mechanisms. Therefore, the significance of this research is to show that smallholder farmers can contribute to food availability if the obstacles identified by this study are addressed.

Research questions:

1. What are the socioeconomic challenges facing smallholder farmers? And how have these challenges affected their ability to become food sufficient?
2. What are the ways in which the smallholder farmers cope with these challenges?
3. What is the attitude of the smallholder farmers in this community towards farm work?

1.4 Justification and Significance.

Odra et al. (2004) observes that many publications put the number of South Sudanese living in rural areas at around 80-90%. This rural population practice traditional agriculture and animal husbandry as a source of their livelihood. However, they are unable to produce enough food for their households and the urban markets due to socio-economic challenges. Therefore, the study intends to document the problems of smallholder farmers in Gondokoro. The information revealed by this research will possibly assist government institutions, NGOs and research institutions to provide agricultural support services to smallholder farmers in South Sudan. Since agriculture is the main source of income and employment in rural South Sudan, improvement in the agricultural sector, is necessary for economic development.

1.5 Difficulties encountered.

Literature on agriculture in South Sudan is scarce. It became even more difficult to get books on agriculture in Central Equatoria state of which Gondokoro is part. The lack of access to such valuable information deprived the researcher of expanding the literature review.

The project money for research was given late, after the research student had waited for four months. This affected the early start of the data collection process.

The July 2016 violence that erupted in Juba, had a negative effect on the data collection process. Due to security concerns, the researcher had to wait for the situation to calm down before starting the data collection process. In addition, getting clearance from the state and payam authorities was necessary for starting the data collection process.

Because of poor roads, the researcher reached other payams using motor boat. It took the researchers at least two weeks to get a boat to hire. Also, the start of the journey to these areas was possible after the researcher bought some fuel.

1.6 Outline of the thesis

This thesis is composed of five chapters. The first chapter introduces the topic from the regional perspective and presents challenges affecting smallholder agriculture in South Sudan before and after its independence, gives statement of problem, objectives and research questions, justification and significance of the study and the problems faced in carrying out the research. And the second chapter presents previous studies on challenges facing smallholder farmer around the globe. The third chapter on the other hand is the methodology used for collecting data that answers the research questions. However, chapter four deals with the findings and the discussions aspects. Lastly, chapter five concerns the thesis summary, conclusion and recommendations.

Chapter Two: Literature Review

2.1 Introduction

Agriculture is necessary for food production worldwide. However, many developing countries have failed to make full use of its potential (Pingali, 2010). Agricultural work is done by smallholder farmers who have become major sources of food production in many low-income countries (IFAD, 2013). They produce food for their families and the urban markets. Approximately three billion people live in rural areas and depend on agriculture as farmers or workers (Quan, 2014). In Sub-Saharan African alone, smallholder farmers generate 34% of gross domestic product (Quan, 2014). Therefore, the importance of this food producers in the developing world, cannot be ignored.

Oni et al. (2013, p. 93) defined smallholder farmers as “those farmers whose farms are characterized by low income generation, small size land utilization, lack of proper inputs, and lack of resources, which limit productivity and further increase level of poverty”. Smallholder farmers use household labor to cultivate small lands, to produce food for household consumption and the market.

The definition adopted from NORAD report (2014), described smallholder farmers as resource poor, who farm around or less than 2 ha, and rely on farm productivity to meet their basic needs. This definition indicate that smallholders have small lands that they used for producing their food. Due to several challenges, many of them cannot produce enough to improve their conditions.

Vorley (2002) observed that smallholders in poor countries are primarily self-provisioning with limited access to markets and to productive resources, largely unskilled and uneducated, vulnerable to adverse trends and hazards and depend on diverse livelihood systems. Lack of educations makes it difficult for smallholders to adopt new technologies necessary for improving their farm productivity. In addition, the current climatic conditions is a big threat to smallholders agriculture, as harvest reduces resulting to little economic benefits.

Generally, the following indicators are some of the features of smallholders:

Labour input: this refers to the origin, type and quantity of labour input on the farm (Calcaterra, 2013). Multilateral organizations such as FAO (2013) considers family members the main labour source in smallholdings. In most cases, they also hire external labour to do most of their work (Calcaterra, 2013). Smallholder agriculture includes crop raising, animal husbandry, forestry and artisanal fisheries, which are run by family groups, mostly headed by women (FAO, 2013)

Land holdings: In areas with less population density, smallholders usually cultivate less than one ha, which may increase up to 10 ha in less densely populated semi-arid areas (Calcaterra, 2013).

For many smallholders in Africa, access to land depends primarily on inheritance and social relationships, linked to customary, king group-based institutions and systems of land management (Quans, 2011).

Income: in the FAO (2013) conception, smallholders' farm work should generate income for smallholders. Off-farm activities play an important role in providing smallholders with additional income and as a way of diversifying risk, thus improving their resilience to the shocks that affects agricultural work (FAO, 2013). Income from farming is also shared in the household (Calcaterra, 2013). Improving farm incomes and markets opportunities requires better infrastructure for transport and communications, credit and other financial services (Quan, 2011).

With regards to socioeconomic development, although the formal definitions of socio-economics are complex, in this study, the concept is used to refer to those factors affecting smallholder farmers' ability to increase agricultural productivity namely; infrastructure, access to credits and markets, land ownership, labor availability and organization, gendered division of labor, community obligations, education and health.

2.2 Status of Agriculture in South Sudan

Before the Addis Ababa agreement, mechanized sorghum schemes were limited to the northern parts of South Sudan, basically in Renk (Yongo-Bure, 2007). However, these schemes were owned by businessmen from the North because Southerners never had access to public and private sector credits (Yongo-Bure, 2007). To meet the food demands of the population, the regional government established two mechanized sorghum schemes: at Jebel Lado (north of Juba and at Aliab in Yirol (Yongo-Bure, 2007). Due to managerial and capital difficulties, the harvest was poor (Yongo-Bure, 2007).

During the period between 1972-83 Sudanese government showed limited interest in the development of agriculture in Southern Sudan (Tizikara & Lugor, 2011). This was manifested in the approval of developmental projects such as roads, agricultural and forestry projects and a host of health and education sector improvements (Harir & Tvedt, 1994). Regrettably, all these agricultural projects were never fully executed (Harir & Tvedt, 1994). Also, the war of liberation that began in 1983, disrupted the full implementation of these projects.

Furthermore, the Southern region experienced the establishment of government agricultural schemes. Aweil and Malakal mechanized Rice scheme supplied the Southern market with good quality rice. Rural farmers sold large grain surpluses to the urban markets of Juba, Malakal and Wau (Tizikara & Lugor, 2011). However, these schemes faced challenges, including lack of capital and late payment of salaries (Yongo-Bure, 2007).

Mongalla and Melut became suitable for sugar cane production (Yongo-Bure, 2007). However, due to bad policies of the Khartoum government, the planned sugar industries were transferred to Guneid and Khasm el Girba in northern Sudan (Yongo-Bure, 2007).

Important cash crops like Tobacco and cotton were grown in Southern Sudan. Tobacco growing was carried out by smallholder farmers in the former districts of Torit and Yei (Yongo-Bure, 2007). Producers sold their tobacco to Haggard and the national Tobacco company (Yongo-Bure, 2007). Huge cotton production in Zande scheme attracted smallholder farmers' attention. However, marketing difficulties discouraged farmers from growing the crop (Yongo-Bure, 2007)

Inland fisheries were considered important source of fish protein and necessary for food security strategy (Lupai, 2014). The exploitation of the fishery sector, supported the economy of the regional government. This was seen in the dried fish trade practiced by Dinka and Nuer fishermen (Harir & Tvedt, 1994). Therefore, the fishery sector made huge contribution to the Southern region's export earnings (Harir & Tvedt, 1994).

In terms of livestock, the pastoral economy of Bahr el Ghazal and Upper Nile supplied the meat markets of Equatoria and met some of the demand in Northern Sudan (Harir & Tvedt, 1994). In Juba, the Bilinyang farms provided milk, eggs, for the residents of Juba town (Tizikara & Lugor, 2011). Also, the Marial Bai farm supplied Wau town with fresh milk (Tizikara & Lugor, 2011). When the National Salvation regime came to power (1989), it recommended policies for food security in the Sudan (Tizikara & Lugor, 2011). It recognized agriculture as the backbone of the economy. The slogan, "we eat what we produce", was applied to all the regions of the country (Tizikara & Lugor, 2011) However, this agricultural revolution failed to improve the production condition of smallholder farmers due to lack of agricultural credit support. The allocation of credits favored large-scale farmers more than smallholders.

After South Sudan independence in 2011, agriculture became the main source of income and livelihood for majority of the rural population (Odra et al, 2004). This shows the importance of agricultural development in job creation and poverty reduction. South Sudan's government policy considers agriculture the vehicle for non-oil growth and economic diversification (Tizikara & Lugor, 2011). As such, it strives to make the country food secure and produce surplus products for regional and international markets (Lupai, 2014). But oil production has overshadowed the importance of the agricultural sector. The sector contributes about (60%) to the economy of the country (Tizikara & Lugor, 2011). Oil exploration in the country made the implementation of agricultural policies impossible. The neglect of the agricultural sector, results from the quick revenue the oil sector generates. Agricultural sector on the other hand, requires a lot of work before its benefits are reaped.

South Sudan is blessed with large areas of agricultural lands and substantial water resources (Lupai, 2014). Its diverse ecology provides a growing season ranging from 280-300 days in the greenbelt and 130-150 in the northern states (FAO/WFP, 2015). In the Greenbelt of greater equatorial alone, the same plot produces two to three harvest per year (FAO/WFP, 2015). Almost all agricultural production is rain-fed (FAO/WFP, 2015). That means crop performance is determined by the quantity and distribution of rainfall (FAO/WFP, 2015). With all these agricultural potentials, the country is food insecure due to the neglect of the agriculture sector (Lupai, 2014).

Large scale mechanized farms are about a quarter of land cultivated while the remaining part is devoted to small-scale subsistence farming (UNDP, 2012). Cereal production from rainfall mechanized sector is found in Upper Nile. Mechanized farms elsewhere include the Aweil Rice scheme (FAO/WFP, 2015).

Livestock rearing is an important resource in the livelihood of many people in South Sudan (Odra, et al,2004). Livestock provide milk, meat and blood for household consumption and supply skins and hides for other services or sold for cash (Odra et al. 2004). The main species being cattle, goat and sheep, raised under transhumant system of management (FAO/WFP, 2015). Also, poultry and pig production occurs at backyard level (FAO/WFP, 2015). However, the poor health of animals resulting from poor veterinary services has affected livestock productivity. This low production of the traditional subsistence system limited milk and meat supply to the market (Lupai, 2014).

Most of the areas in South Sudan are suitable for fishery activities (Odra et al. 2004). Fishing is considered an important part of the diet throughout the riverine and swamp areas (FAO/WFP, 2015). Fishery activities are carried out along the White Nile and its tributaries. The current estimate of annual fish potential, using remote sensing techniques is 14,000 tons per year (Odra et al. 2004). However, fish production is low in the country because many communities regard it as an inferior profession (Odra et al. 2004). Also, modern processing and preservation facilities are lacking (Lupai, 2014).

2.3 Impact of conflict on Agriculture

Since gaining independence from Egyptian and British colonial rule in 1956, Sudan continued to experience internal conflicts and tensions (Alasdair, 2012). These conflicts, which resulted from ethnic, cultural and religious divisions, coupled with unequal distribution of wealth and power, restrained relationships between north and south, for many years (Tizikara & Lugor, 2011). Two civil wars were fought between 1955-1972 and 1983-2005. The second Sudanese civil war fought between the SPLM/A and Sudan government ended in 2005, after the signing of the comprehensive peace agreement. This was followed by a referendum that led to the independence of South Sudan in 2011 (Alasdair, 2012).

In these two wars, over 2 million people died and 4-5 million were displaced (Tizikara & Lugor, 2011). As these wars were fought in the rural areas, many smallholder farmers were deprived of their normal agricultural work (Tizikara & Lugor, 2011). Some of the farmers uprooted from their livelihood systems, became internally displaced people or refugees in the neighbouring countries (Tizikara and Lugor, 2011). However, many smallholder farmers in Gondokoro remained in the Island practicing agriculture despite the war. Even people from Eastern Equatoria, who came to Juba for security reasons, received lands for cultivation in the area. Smallholder farmers in Gondokoro continued supplying food crops to Juba town in the most difficult period, because of its proximity to Juba town, where the big military garrison in Equatoria is stationed.

Conflicts wherever they occur, tend to disrupt agricultural activities. Its most obvious impact on agriculture is the destruction of crops and livestock, leading to food insecurity, at worst famine and deaths (FAO, 2000). Also, these agricultural produce is use to feed the armed groups for no payment (FAO, 2000). Such a loss of crops discourages farmers from expanding their cultivated areas during conflicts.

The 1983-2005 had considerable impact on the livelihoods in South Sudan. In Bahr, el Ghazal alone, over 40% of families lost their cattle and this became a contributing factor to the famine of 1998 (Biong, 2013). Livestock raising is one of the most vulnerable agricultural activities in war

times (FAO, 2000). Looting of cattle by armed groups is a common phenomenon in conflict. Due to fear pastoralists movement is restricted. In dry season, it becomes more difficult to access pastures and waters, leading to high deaths in cattle.

Agricultural production remained the same even after the comprehensive peace agreement (Biong, 2013). The migration of people from rural to urban, for employment opportunity, partly explains the country's failure to exploit its agricultural potentials (Biong, 2013). Many citizens who acquired some skills from the neighbouring countries, moved to the capital cities to work. The capital city Juba attracted even more young men from the states, because of somehow better services and better employment opportunities. This led to a decline in agricultural production in the rural areas because of labor shortage.

Furthermore, during the liberation war period, many families sent their children to Khartoum for protection, employment opportunities and education (Biong, 2013). These children failed to acquire farming skills due to lack of exposure to agricultural work. Because of studying in the major towns of northern Sudan, association with farmers was virtually impossible. This explains why their contribution in agriculture work at home now is difficult to see.

Agriculture also suffers during conflicts as labour becomes scarce. War casualties or the diversion of men from farming activities to the armed groups, undermines the viability of agriculture (FAO, 2000). The massive recruitment of young men to fight either along Sudanese forces or the SPLM/A group, seriously deprived the agricultural sector of potential labour. These fighters became official soldiers of South Sudan after independence. Their continued service in the army reduced their participation in the agricultural work.

2.4 Importance and Significance of Smallholder Farmers

Smallholder farmers are the main producers of food in many developing countries. Their importance in the development strategy was first enhanced by Tomlinson commission in South Africa in the Mid-1950's (Innis, 1997). This commission realized the potential of traditional rural areas in producing surplus food crops. That means, smallholder farmers contribute to food security and nutrition while performing other related roles in their countries (FAO, 2013). History reveals that, smallholder agriculture supported by private and public sectors, has the capacity to contribute to food security, food sovereignty, and significantly to economic growth, the generation of employment, poverty reduction, and emancipation of neglected and marginalized sections of society (FAO, 2013).

In many developing countries, a high percentage of the population lives in rural areas. Promoting food productivity means improving the output of smallholder agriculture (Pingali, 2010). Smallholder farmers depend on agriculture for their food, income and jobs (Dethier & Effenberger, 2011). Wealth creation for them is only possible through supply of agricultural produce to markets. Likewise, the urban populations rely on these markets for their food, which is produced by the smallholders. Some researchers are however pessimistic about the role of smallholder in meeting market demands, due to simple technologies and lack of resources and skills (IFPRS, 2005). Still others like Pingali (2010) argues that smallholders play a leading role in productivity growth, which is a vehicle for food surplus and poverty reduction. Smallholder agriculture is the foundation of food security in many countries and an important aspect of socio-economic landscape (FAO, 2013).

Support to smallholder farmers has declined over the years (Dethier and Effenberger, 2011). Awareness creation about their importance in the agricultural sector, always lack concrete action (IFAD, 2013). However, amidst numerous challenges, they continue to produce food in limited supply. Increasing food productivity especially in Sub-Saharan Africa will depend on the work of smallholder farmers (IFAD, 2013). This will require finding solutions to policy issues, including rural infrastructural connection to markets, agricultural extension, credits, land ownership, gender issues and rural non-farm employment (Dethier & Effenberger, 2011). If these challenges are not addressed, smallholder farmers will produce less food, leading to food

shortfalls and poverty, because of high food prices. However, the need to produce enough food and make it available to the populations of the third world, remains the best option (Beets, 1990).

In South Sudan, the role of smallholder farmers became more significant after the Addis Ababa agreement. The regional ministry of agriculture (1972-83) with support from the World Bank's project development unit (PDU), enabled them to cultivate 10,000 feddans of coffee (Yongo-Bure, 2007). Also, a scheme for smallholder production of European potatoes established at Gilo (Imatong mountains) had high yields of between 5 to 7 tons per feddan (Yongo-Bure, 2007). In addition, they planted 25 feddans out of 200 in Upper Talanga tea project, financed through European Commission (Yongo-Bure, 2007). Support to smallholder farmers is necessary for addressing food shortage in the country.

2.5 Challenges to Smallholder Agriculture

Access to land for cultivation is a constraint in some countries. This constraint include insecurity to land tenure, unequal access, absence of proper mechanism to transfer rights, which have resulted to under-developed agriculture and degraded natural resources (Salami et al, 2010). Intensive cultivation in small plots for many areas, leads to reduced yields as the land becomes exhausted. Also, denial of women's right to access and own land, have compromised the productivity of the agricultural systems. Women in South Africa for instance can only acquire rights to land through marriage (Thamaga-Chitja & Morojele, 2014). In other countries, women can only inherit land if they have children with a deceased husband. Land constraints, as well as market problems affects women more than men.

Also, a study conducted by Salami et al, (2010) found that many East African countries still face challenges in the marketing of both agricultural and inputs and outputs. In these countries, many farmers live very far from the market centers (Salami et al, 2010). Smallholders must walk for many hours to reach the markets. This is particularly hard for women, who must leave house to sell produce in a distant market (Thamaga-Chitja & Morojele, 2014). This also implies the

(1 feddan is equivalent to 0.42 ha)

gendered division of labour, in which women do most agricultural work, but are not part of the decision-making process (Beets, 1990).

The road network, which is necessary for market development in terms of distribution of farm outputs, is also the most underdeveloped in many developing countries (Salami et al, 2010). Because of this poor road system, smallholders rely on inefficient means of transportation, including animals (Salami et al, 2010). The allocation of funds is urban biased, because cities roads are improved before those in the rural areas and town offices are constructed at the expense of storage facilities (Beets, 1990). In their policies, governments give more priority to urban areas rather than the rural areas which produce food for the city's residents.

FAO (2013), found that investment in infrastructure development, availability of agricultural banks, extension services, fell considerably since Mid-1980s. The portion of commercial bank's loans to agriculture has been very low, affecting the expansion and adoption of technology (Salami et al, 2010). In Kenya for instance lack of access to loans, is the main factor responsible for decline in agricultural productivity (Salami, et al, 2010). In South Sudan, the role of agricultural extension officers has diminished (Lupai, 2014). Worst still, the program lacks the resources needed to improve production (Lupai, 2014). The absence of loans, extension services in the rural areas, deprives the smallholders of the necessary advice they need to increase food production.

It is now widely recognized that institutional challenges at both national and international levels affects smallholder agriculture. Large enterprises, which focuses on agro-exports are favored more than the smallholder sector that produces for domestic markets (FAO, 2013). Smallholding farming is associated with low status and considered backward activity, to be performed by rural poor (Beets, 1990). Their neglect by governments and private sectors deprives them of necessary farm inputs to raise agricultural output. However, due to a decrease in food supply, there are signs of renewed interest in promoting agricultural productivity especially in Sub-Saharan Africa from national governments and international agencies (Pingali, 2010).

All the above constraints show that lack of agricultural support discourages farmers from hard work. It reduces their motivation to pull together the available resources to improve food crop productivity (Beets, 1990). Many of them would prefer to do off-farm employment, to provide for the needs of their families. And when farmers leave agricultural work, the amount of cultivated land reduces, leading to a sharp fall in food supply.

However, the lack of external inputs cannot be considered the only challenge responsible for food crop decline in a country. The absence of farmers' associations can become a challenge to agricultural development (Lupai, 2014). And where no progress has been made, the reasons are often human (Beets, 1990). Part of these challenges lies within the farmers themselves. Even if the external factors are fulfilled but the will to improve production is missing, there will still be food insufficiency. Therefore, addressing the role of cultural factors in food crop production, is very important. Decrease in food supply cannot be blamed on external inputs alone (Vorley, 2002). Social norms also affect farmers' efforts to cultivate more land to increase the amount of food needed for both household consumption and the market. Time lost for farm work due to ceremonies reduces productivity. This research will also focus on the pressures of community obligations, as they too can have negative effects on food crops production.

Chapter Three: Research Methodology

3.1 Introduction

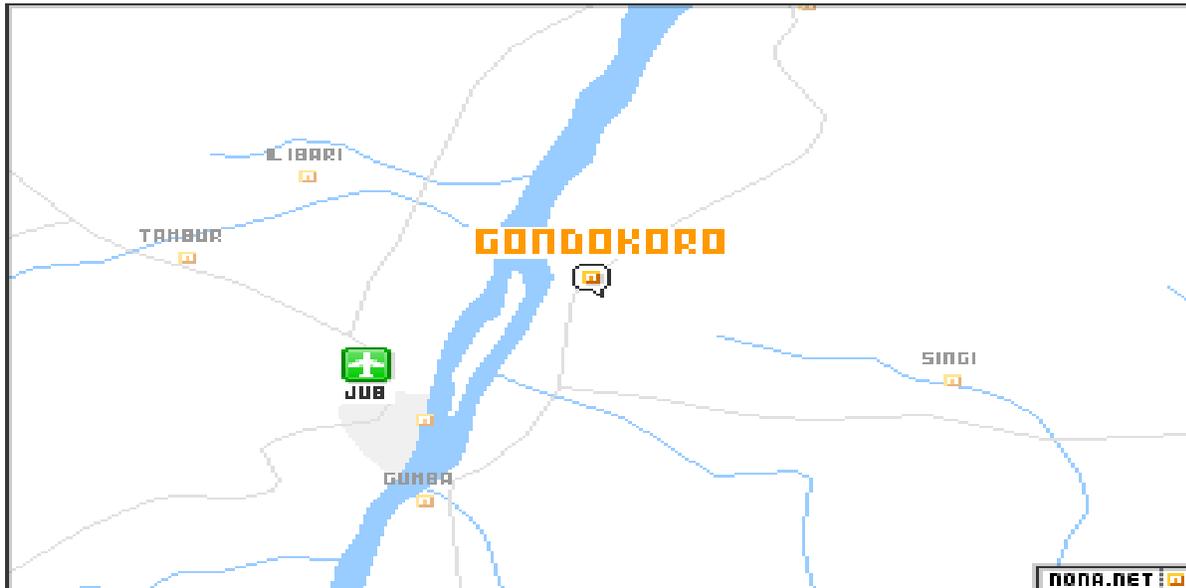
This was an explorative study carried out in Gondokoro of Central Equatoria (Now Jubek state) of South Sudan between May 2016 to March 2017. It collected data on the challenges hindering smallholder farmers' ability to become food sufficient. These agricultural food producers in Gondokoro faces various agricultural constraints. However, this study looked at the socio-economic constraints affecting them. Both men and women talked about their lived experiences in farm work and how they struggled to overcome their problems to survive.

Also in in this chapter, the researcher gave the description and the reason for choosing the study site. This study was guided by qualitative research technique. In terms of Sampling procedure both individuals and focus groups are included. The data were collected from all the bomas (villages) of Gondokoro payam. As for the sources of data, the focus was on individual interviews, focus group discussions/interviews, key informants and systematic observation and photography. Data analysis was done using both preliminary analysis and classification and categorization of data. For issues of trustworthiness, respondent validation and triangulation were considered.

3.2 Description of Research Site

This study was carried out in Gondokoro payam of Mangalla county, Central Equatoria State (now Jubek state). The population of Gondokoro payam is 6,522 and the total number of households are 1,457(Census, 2008). Gondokoro is inhabited by the Bari people. They are found on both sides of the River Nile, in the area extending from Mangalla to Lobonok, South of Juba (Yokwe, 2014). There are about 50 clans among the Bari people, each of which is governed by a traditional chief called "Monye Kak", meaning the owner of the land (Yokwe ,2014).

Fig. 3.1. Map showing the location of Gondokoro



Smallholder farmers in Gondokoro depend on rain-fed agriculture for their livelihoods. The rainy season, which is from April to October (and sometimes to November), is the right period for cultivation. During this time, traditional crops planted includes; maize, sorghum, beans, cassava, sweet potatoes along with a variety of vegetables and fruits. With good rains, crops are grown twice in the same farm plot. However, in the dry season, those with generators and people living by the river banks, practice irrigation to cultivate and plant vegetables. Also, smallholders in this area like elsewhere in South Sudan, practice mixed cropping. In the same field, portions of land are allocated for different crops.

Shifting cultivation and rotational cultivation dominate the crop production in the country (Odra et al. 2004). Land is cleared and burnt after drying. However, in Gondokoro, the land use system is mainly rotational. When yields of crops in used land decline, a different crop is planted in this same land next season. And because farmers inherited lands near settlements, they plant on them several crops required for home consumption and markets. It is only farmers in Nyori and Mori villages who cultivates near and away from homes. Shifting cultivation is practiced in fields

away from homes, because the land is plenty in supply. During the civil war, it remained fallow for many years. Now, for farmers to cultivate, they must clear only part of the forest.

Although primarily a farming community, the farmers in this area engage in off-farm activities such as charcoal burning, handcrafts work; making baskets, mats, pottery and boats among others. Canoes are important means of river transport. They are used on the river Nile to cross to and from Juba town (Yokwe, 2014). Farm produce reaches the markets of Juba by means of these canoes.

Gondokoro has important history. In 19 C, it was a trading post and a mission located in Juba area (Victorian Explorer, 2005). Being a Turkish garrison in the South, it was the headquarters of the governor general (Samuel Baker) of the Equatorial Nile (Victorian Explorer, 2005). Gondokoro was also the base of the explorer and anti-slavery campaigner Samuel Baker during his expedition to modern day South Sudan and Northern Uganda in 1872 (Statistic yearbook, 2010). It was from Gondokoro that Samuel Baker and his wife Florence moved Southward to find the exact route of the Nile from the Karuma falls (Victorian Explorer, 2005). In 1871, Baker made this statement, “Everything in Gondokoro was in order. There was peace; food was abundant and the station securely fortified”

3.3 Selection of Research Site

Gondokoro payam was selected for study based on the following reasons:

Gondokoro has fertile land that can produce enough food to feed the population of Juba. During the liberation war (1983-2005), people from different parts of Equatoria fled their areas due to insecurity. Some stayed in Gondokoro because they could grow food to sustain their families. Gondokoro in Bari language is written “Gandukuru” meaning “You will get tired of cultivation”.

Furthermore, Gondokoro became the choice of this study, because majority of its inhabitants are smallholder farmers. This island supplies vegetables, fruits and other food crops to Juba residents on daily basis. It has fertile lands and surrounded by River Nile, which makes it suitable for crop

cultivation. It was therefore necessary to interview farmers in this island, to understand the effects of agricultural challenges on their food crop production.

Gondokoro is also close to the seat of the government of South Sudan. That means it supplies the markets in the capital city with vegetables, fruits and other food crops. In other words, what Gondokoro produces, benefits the residents of Juba who come from the different parts of South Sudan.

The selection of Gondokoro also suits the objective of the project sponsoring the studies of the researcher. The Sudd region (known also as flood plain) is one of the largest freshwater swamps in the world (Farida, 2014). It's environmental conditions, gives rise to a mixed economy of herding, traditional cultivation, fishing and hunting (Farida, 2014). Main crops grown include maize, sorghum, cowpeas, tobacco and pumpkins (Farida, 2014).

3.4 Research Method

This study used qualitative research technique, because it allowed the investigator to be involved in accessing experiences, interactions and documents in their natural setting (Angrosina,2007). In such a phenomenological study, it is important that, the participants have all experienced the phenomenon being explored and can express their lived experience (Creswell, 2013). In other words, qualitative researchers seek lived experiences in life. This means, the use of qualitative method in this study had the potential to provide a textual description of how smallholder farmers experience socio-economic challenges. Also, the data collected is descriptive in nature, that is, expressed in non-numerical terms. Therefore, this qualitative inquiry enabled the researcher to collect details about the problems of smallholders in Gondokoro. The method was appropriate, because it generated data required to answer the research questions.

3.5 Sampling Method

3.5.1 Selection of individuals

The sample size of individual smallholder farmers was 60 of whom 30 were women and 30 were men. A convenient sampling procedure was used for selecting respondents for individual interviews. That means the number of respondents interviewed depended on the number of smallholder farmers found in homes and farms. To keep the equal percentage of respondents based on gender, the researcher interviewed equal number of men and women each day of the interviews. The individual interviews were preferred because they gave respondents the opportunity to express their opinions without interference from other interviewees.

3.5.2 Selection of focus group discussions:

A total of 8 focus group interviews were conducted, 4 for women, 3 for men and 1 mixed. Women focus group comprised of 5-10 persons and men group was made up of 10-25 persons. The small size of women group was due to their participation in the market activities. A discussion guide was employed to conduct the focus group interviews. Interviewees were formed by the research guide. And the interviews were held in quiet places (under mango trees) selected by the respondents and the guide. The advantage of focused group interviews was that it allows participants to share their experiences and saved time.

3.6 Data Collection

As Gondokoro payam was the research site, all the villages of this payam were selected for data collection. Obtaining data from the bomas, enabled the researcher to compare the information concerning challenges facing smallholder farmers. There are four (4) bomas in Gondokoro payam; namely Mononyik, Mori, Logumari and Kangu. The villages selected for interviews in these payams were Kuda and Hai Telej (Mononyik), Nyori and Yamba (Logumari) and Mori. The residents of Kangu were found in Yamba village and Hai Teleij. They left their ancestral fertile lands of Kangu due to insecurity caused by child abductors and cattle raiders. Focus group discussions (men and women) and key informant interviews were conducted in all the mentioned villages.

In the main Island of Gondokoro, both individual and focused group discussions/ interviews were held. A total of 60 smallholder farmers, both men and women were interviewed. These interviews took place in farms and homes. But in Mori village, focused group discussions were conducted at home, because the houses and the farms are separated by a big stream. So, it was difficult for the researcher to reach the farms.

3.7 Sources of Data

Before conducting interviews, the co-researcher (translator) and the research guide, were properly introduced to the research topic, questions and interview questions. This enabled them to ask questions in the Bari language. And so, the method used for data collection include the following:

3.7.1 Individual interviews

Individual interviews using semi-structured method were conducted at homes and farms by the researcher and the co-researcher who was fluent in the Bari language. The interview questions were asked in the Bari language to enable respondents express themselves better in their native language. This was then translated into local Arabic and English to allow the researcher to take notes. This individual interviews enabled the interviewees to talk about their farm difficulties without interference from other participants.

3.7.2 Focus group discussions/interviews

Eight (8) group discussions were conducted. These discussions were also visually recorded. The discussions were moderated by the co-researcher because of his vast knowledge of the research objectives and fluency in the native language. In these discussions, the participants shared their experiences on the negative impact of agricultural constraints on their livelihoods (tools, climate conditions, seeds, poor roads and transport difficulties, and health problems dominated the group discussions). The mentioned obstacles to increase food production helped to validate the data collected from individual interviews. Focus group discussions permitted a lively discussion that generated in-depth knowledge concerning socio-economic challenges facing smallholders in

Gondokoro. In addition, the use of interactive-based method generated more qualitative and interpretive data.

However, to avoid dominance of individuals in the group discussions, each was given one chance to speak. This was also done to allow other participants to contribute their experiences. Individuals who wanted to talk a lot were taken out from the group sessions for separate interviews. Such decision was necessary for their continuous cooperation.

3.7.3 Key Informant interviews

Individual and group interviews were held with some officials of the state ministry of agriculture and opinion leaders (Chiefs, military officers and teachers in the community. Their total number is 12. Some of the challenges raised included states inability to provide seeds and fertilizers, improve roads for easy transportation of produce, crop diseases(worms), security, incomplete tractors and farmers' little knowledge of agriculture. Key informant (individual interviews) complemented the FDG's in that the respondents provided detailed information concerning constraints to food crop production.

3.7.4 Systematic Observation and Photography

The researcher took photographs and observed the behaviors of the respondents during interviews. Photographing was done with the consent of the respondents. It captured smallholder farmers in their homes and farms. Various crops and livestock were also photographed. Women respondents in their various activities, ranging from fetching water to taking crops to the markets were captured.

In summary, instruments used for data collection included observations, individual interviews and focus group discussions, key informants and photography (Visual documentation). According to Maxwell (2013), observation is suitable for describing the settings, behaviors and events, while interviewing is appropriate for understanding the perspectives and goals of actors. Semi-structured interviews were administered by the researcher. Questions were generally open-ended, because the intent was to develop themes from the data. Note writing was used for

recording the interviews. Audio recording was not possible due to lack of consent from the respondents. This is considered a weakness, because note taking cannot capture all the participant's responses. The data collection period was from Sept. 20th to Nov. 20th, 2016.

3.8 Method of Data analysis

In this research, thematic analysis was the technique employed for data analysis. This type of analysis allows the researcher to go through the data repeatedly to identify patterns and themes (Bryman, 2013). As a phenomenological study, the themes are extracted from the essential meanings found in the descriptions of the participants. Also, thematic analysis was preferred because it enables preliminary data analysis (Creswell, 2013). This is true because qualitative data analysis can also be done concurrently with data collection, making interpretations and writing reports (Creswell, 2009). In this way, coding, making summaries, and direct quotations became part of the analysis. Analysis was done manually. This method presented a purely qualitative and detailed information about the socio-economic challenges facing farmers.

Data analysis was done in two stages:

3.8.1 Preliminary analysis

After interviews, the researcher examined the data by highlighting important points and writing some comments in the margins of the field-notes. This was done to get the general ideas presented by participants and to identify common themes and issues from first interviews and discussions. This preliminary analysis enabled the researcher to avoid the piling up of collected data. In addition, efficient daily briefing enabled the researcher to focus on answering the key research questions, and identify interview questions that were not asked.

3.8.2 Classifying and Categorizing Data

In this stage, the field-notes were organized in a systematic manner. Reading and re-reading of field-notes and coding the data facilitated the identification of major categories or themes. In addition, the data that summarizes the socio-economic challenges facing smallholder farmers, is accompanied by table and figures (visual documentation), to aid understanding. All the different ways of representing the data, became the bases for interpreting the analysis.

3.9 Validity

The validity of this qualitative study rests upon two standards, namely respondent validation and triangulation.

In the respondent validation, the findings and the interpretations of the researcher were presented to a group of respondents before the final analysis. The aim of this exercise was to find out if the researcher had accurately represented the views, feelings and experiences of the participants.

For triangulation, the use of several methods of data collection (individual interviews, focus group discussions, key informants and observation) increased the chances of accuracy. In addition, all initial conversations with the respondents were thoroughly reviewed for exactness and completeness. This was also attained through comparison of the field notes taken by the researcher and the co-researcher (research translator).

3.10 Ethical Issues

Before conducting interviews, the researcher presented the research proposal to the state ministry officials and the payam authorities. And on the ground, the paramount chief of Gondokoro read the proposal before giving the researcher the go ahead. He then gave copies of the research proposal to all the sub-chiefs in the bomas. This was meant to inform them about the research topic, purpose and above all to gain their consent.

According to Creswell (2009), researchers develop an informed consent for participants to fill before taking questions. However, in this study the consent of the respondents was verbally made. It was possible to achieve this, because the chief had informed them in advance. And at the start of each interviews and focus group discussions/interviews, the research student through the translator and the research guide again explained the research topic and purpose to the participants. In addition, the choice for sites of interviews and group discussions was left to the participants and the research translator and the guide.

Another serious ethical issue that was properly handle, was the refusal by the participants to have their voices recorded. For security fears, it was not possible to record their voices. Allowing interviewees to retain their voices is very important (Creswell, 2009).

Regarding the interpretation of the findings, much effort has been made to try to present accurate information. In qualitative studies, it is always necessary to use one of the strategies to check the accuracy of the findings with the participants (Creswell, 2009). This was done through the respondent validation, as seen in the validity part. Since this is an academic work, the respondents have been assured of the safe keeping and management of the data.

3.11 Limitation of the Methodology.

Translating the interviews from Bari and Arabic languages to English was time-consuming. It is indisputable that some of the respondent's expressions were lost in the process of translation. Using tape-recorder for recording interviews would have minimized these problems, had the participants consented to it.

This research generated data that is only descriptive in nature. That means the lack of numerical values makes it difficult to measure and uncover the strength of each socio-economic challenges affecting smallholder farmers in Gondokoro. In addition, the results of this research cannot be generalized to a larger population, because the findings have not been statistically tested.

Chapter Four Findings and Discussions

4.1 Introduction

This chapter presents the findings of the study on the socio-economic challenges facing smallholder farmers in Gondokoro which include the type of crops grown in the area and the unavailability of tools. In addition, problems of seeds, land, labour, credits, markets and infrastructure, are also discuss. Other issues addressed include extension services, problems associated with livestock and fisheries, smallholders' association, impact of community obligations and medical facilities.

This chapter also focuses on the discussions of the means smallholders use to cope up with agricultural failures in their farms. They experience many difficulties from planting to harvesting of crops. All these factors are partly responsible for the poor harvest of crops they experience every year. As their source of livelihood is threatened, they seek other ways of overcoming these challenges. The fact that smallholder farmers continue to grow crops despite several challenges, shows how resilient they are.

The final aspect of the chapter discussed the attitude of the community members towards agriculture. This is also the part that explains the shortage of labour as experienced by several households. The amount of food produced in the family is very much influenced by the attitude of each family member towards farm work.

4.2 Challenges Affecting Smallholder Farmers in Gondokoro

4.2.1 Types of crops Grown and Plant Diseases

Smallholders grow several crops and the table below shows the different crops grown in Gondokoro villages.

Table 4.1 showing types of crops grown in Gondokoro

Village	Types of Crops
Mononyik	Cereals (Maize, Sorghum): Vegetables (Okra, Jewsmallow, Rocket, Cucumber, Pigweed, Cowpea): Fruits (Mangoes, Papaya, Guavas, bananas, lemons)
Mori	Maize, Sorghum, Cassava, Sweet potatoes, Okra, Rocket, Cucumber, Pigweed, Cowpea, Groundnuts, Mangoes, Pawpaw, Guavas, Bananas, Lemons
Nyori	Maize, Sorghum, Okra, Jewsmallow, Rocket, Cucumber, Pigweed, Cowpea, Eggplant, Tomatoes, Papaya, Mangoes, Lemons.
Hai Teleij(Kangu)	Maize, Sorghum, Sweet potatoes, Sugarcane, Okra, Jewsmallow, Rocket, Purslane, Pigweed, Cowpea, Mangoes, Papaya, Guavas, Bananas, Lemons

Source: Field Data (2016)

Respondents expressed that, some of the crops don't do well in other villages, due to rain shortages and crop diseases. As the table indicates, these crops are cassava, groundnuts, sweet potatoes and sugarcane. The losses in root and tuber crops such as sweet potatoes and cassava, is due to insects and diseases. Like other crops, they are also affected by heat. Eggplant and tomatoes don't do well in many villages, because they are crops that require proper care. Lack of consistent water availability does not encourage their growth. Also, they are vulnerable to pest and disease such as beetles, mites and worms. Sugarcane grows well in Hai Teleij, because of stagnant water that over flows the bank of the River Nile. It is a crop that is susceptible to heat. Fruits generally do well in the villages. But the respondents are worried about the dropping yields of mangos. They attribute this to insufficient rains and the old age of many mango trees. However, vegetables grow well in all the villages. Some of these are grown more than twice a year, because they take short periods and fetches money quickly for the farmers. A respondent from Mononyik explained that,

“Crops of different types grow well here. But groundnuts are destroyed by abu hamsin(millipedes). We concentrate on vegetables, because they grow quickly and fetch money for helping children. If you depend on lodaka(sorghum) alone, your children will suffer”.

Another female respondent from Mori village further said,

“We grow vegetables such as ajur, bamia, hudra and gwedegwede. These vegetables take only 45 days to mature. But lodaka(sorghum) requires many months to harvest. We also grow maize yearly. Our people were cultivating far from homestead, but due to insecurity we moved closer to our homes to avoid being killed”.

Fig. 4.1 Samples of vegetables and fruits



Source:Field data 2016

4.2.2 Lack of Mechanical tools.

Insufficient rains compel farmers to use generators and water pumps to irrigate their crops. They make such decision due to many economic, social and environmental difficulties (Norad report, 2014). The first constraint mentioned by respondents in Gondokoro, is the mechanical tools. Generators and water pumps are some of the agricultural implements that they lack. Rain invariability have made the availability of these tools very necessary as narrated by respondents, *“We always produce little food due to lack of generators for pumping water into the fields. And the little money we get from our produce is not enough to buy generators and pipes. The Nile water passes through our place but it is difficult to make it reach the farms. One of the NGO’s had promised to supply us with generators, but the July violence disrupted the whole process”*.

“The sun has destroyed most of our crops. This year we planted during the first rains but when it stopped, the heat followed and destroyed the crops. You can even see with your own eyes (pointing to the crops), how the crops are struggling to grow. I am lucky because I have generator that pumps water into the fields. But many smallholder farmers are hard hit by the heat. Without generators, our situation will remain as it is; no proper harvest”.

Fig. 4.2 Smallholder farmer irrigating his crops



Source:Field data 2016

Some smallholder farmers in Gondokoro use generators and water pumps for irrigating their farms. They use these tools when rains are insufficient and during the dry season. Without generators, it would be difficult for residents of Juba town to get vegetables. Smallholders irrigate their fields to minimize the loss of crops because of hot weather. The effect of heat on food crops threatens smallholders as this female respondent from Logumari explains,

“We had good harvest when these three streams were still flowing. The Nile water that flows to these streams, enabled us to produce enough food. But now the streams have dried up due to lack of rain. Each year, our crops are destroyed by heat. We depend on the wells we dug to water our crops, to harvest small amount of grains. This little harvest is then used for feeding the children and pay their school fees”.

But smallholders without generators use other means. Women fetch water from streams and the river using jerricans for irrigating crops. They use their heads for carrying water. And in some

areas, the distance between the water source and the farm is long, as narrated by a female respondent,

“Using our heads to carry water is seriously affecting our health. Digging and watering plants takes a lot of our energy. These hardships can be reduced if generators and water pumps are used in the farms.”

However, insufficient rains, which necessitates the use of generators by farmers, is not the only factor blamed for reduced harvest. Floods in Mori boma, are frequent factors responsible for loss of crops. A woman from the village made this clear when she said,

“Our big problem is the flood and the sun. Rainwater from Bilinyang mountains usually destroys our crops. And last year the sun ruined our crops. However, the sun is better than the flood because it doesn't destroy all the crops. On the other hand, floods destroy everything in a matter of three days due to its stagnant waters”.

Respondents views demonstrate their frustration with the negative impact of both heat and floods on their crops. In Logumari and Mononyik bomas, their opinion suggests late rains affected their crops. But in Mori boma, early rain-based flooding destroyed crops. The threats of climatic conditions on productivity are visible in the fields. To cope with this insufficient or rain invariability, some smallholder farmers use generators and water pumps to irrigate their farms. These tools are necessary during the dry season, because of the economic gains from crops. The use of these mechanical tools, shows the vulnerability of crops to climatic conditions. Weather changes reduces productivity levels and threatens the income of smallholder farmers. Every farmer in this area mentioned insufficient rains as the first constraint. This is due to long dry spells that the country experiences sometimes. Rains can start very early and stops when crops are at the early stage of growth. They become vulnerable to heat, unless rescued by irrigation. However, it is also important to note that, the supply of water in the fields does not depend only on the use of generators. Some local technologies made from wood could be constructed on the bank of the Nile to supply water into the fields, using canals. This is considered a point of weakness on the part of the farmers themselves.

4.2.3 Seeds related problems

Realizing the inadequacy of seeds for farmers, Vorley (2002), proposed that, firms and other agencies can supply farmers with seeds, fertilizers and pesticides, to improve productivity. After good harvest, smallholder farmers usually keep their seeds for the next season separate from what they consumed. But when crops are destroyed by either floods or heat (due to insufficient rains), they will not have enough seeds. This will force them to seek help from neighboring villages, the government and the NGO's. However, getting seeds have not been easy for the smallholders in Gondokoro as some female respondents from Mononyik revealed,

“We are also facing problems of seeds. Previously, some non-governmental organizations used to provide seeds for us but not fertilizers. They told us to buy fertilizers from the market using our money. One time the NGO's gave us rotten seeds. And after planting they never germinated and that annoyed us very much. Some Non-governmental organizations have deceived us many times. They tell us do this and that, but at the end they give no help. We are cultivating small land due to lack of seeds. Being a widow makes matters worse for me, because there is no man to help me in the farm. The land I am cultivating is the one left by my late husband”.

Fig. 4.3 Women focus groups doing homework



Source: Field Data 2016

A woman from Kangu focus group had this to say,

“Sometimes, the government assist us with seeds but it comes late. And at times they bring onions and potatoes seeds which are not good for our soil. Farmers here don’t know how to grow them. Late bringing of the seeds by the government does not help. It is better for them to give us seeds in February and March because this is the right planting period. In the 90s ACCORD used to supply us with seeds at the beginning of the planting season. Back then, the harvest was good”.

A key informant on the other hand said,

“Financial difficulties have made the supply of seeds to farmers impossible. Partner organization such as FAO usually provide seeds in South Sudan from January to February. Any distribution beyond this period is not helpful. The worst part is that, seeds entering the country are not properly processed to test their performance”.

These quotes indicate that, the respondents lack enough income to buy seeds in times of crop failure due to unreliable rains. Crop failure leads to dependence on external support. The above statements suggest that, the government and some non-governmental organizations sometimes supplied seeds to farmers. But they either come late or provide spoiled seeds. Giving poor quality seeds to farmers means ignoring their needs and interest. Contaminated seeds lead to poor harvest and bring losses to farmers. Besides, it frustrates them and encourage them to lose hope of getting any meaningful help from the government and the Non-governmental organizations.

It is to be acknowledged that, the smallholder farmers here also use their traditional system of seed saving and sharing. In case of crop failure, they get seed from other kin-group and friends from the near villages or even other tribes. But sometimes due to insecurity, making such long journeys becomes risky. In such situation, their dependence on government and non-governmental organizations for seed provisions, becomes unavoidable.

Respondents seed problems include both the past and the present. This was evident in their expressions meant to exaggerate the intensity of the problem. Heat don’t destroy all crops. Instead, its negative effects are seen in crops that cannot tolerate it. Maize and groundnuts are vulnerable to heat effect. High temperatures reduce their yields.

4.2.4 Land constraints

Netting (1994), confirmed that smallholder farmers have well-defined tenure rights in land that are long term and often heritable. Land is one of the most important resources in any farming systems. In these communities, farm size is determined by the amount of land a household owns. And so, the quantity of food crops produced depends on the family's farm size. In Gondokoro Island, land inherited by brothers is becoming small due to increase in the family sizes. Land constraints reduces the amount of food crops smallholder farmers produce as reported by female respondents from Kuda and Hai Teleij (Mononyik boma)

“Our farm land is very small. Some brothers are sharing a piece of land left by their deceased father. They cannot produce enough food crops. We cannot also grow sesame here, because the land will not be enough. We only plant food crops that can be sold quickly in the market and requires small land for a good harvest”.

“My family is cultivating on the land given by the owners of this village. Each of us (my co-wife and mother in-law) has a portion of land for growing food crops. Although the land is small, it produces food for feeding the whole family. We shall go back to Kangu once security is restored. We have plenty of land there and it is also fertile”.

Land shortage is only a challenge to few smallholder farmers. Big number of sons to a family, means each will inherit a small portion of land from the father. And this land will continue to reduce as the family size continue to expand. Also, farmers who moved to the Island because of insecurity are given small portion of land by their host. However, many of those interviewed have enough land to cultivate on. Some of those residing in the city, rent their land to foreigners (Ugandans).

4.2.5 Insufficient Household Labour

In the developing world, family labor is the backbone of agricultural production (Quan, 2011). The amount of land cultivated depends on the labour contributed by each household member. That means big harvest requires the strength of all the children in the house. However, in the case of Gondokoro smallholder farmers complained about the limitation of labour as reported by female respondents from Hai Teleij (Mononyik),

“Our husbands were hardworking farmers in their youthful days. From their farm produce, they bought goats and cows for our bride-wealth. But our sons don’t want to cultivate. They go to Juba town in the planting season and come back home after harvest. They are good at enjoying what we parent produced. And we cannot refuse them food because we gave birth to them”.

Indeed, grown up boys don’t participate fully in household food crop production. Some of them see farming as an old activity to be performed by parents. While others prefer to do off-farm work such as riding motor bikes and washing cars in the city. However, the few, who have interest to cultivate, are discouraged by family members who reside in the town, as revealed by a female respondent from Mononyik,

“I am cultivating alone, because my husband is old and cannot dig for many hours. At the same time my children are in Juba for studies. Their uncle will not allow them to come and help me even when they are for holidays. It is also very expensive to hire laborers to work in your farm as other farmers do. So, because I depend on my hands only, I always get small harvest”.

In many rural societies, group farming used to be a very important source of labour. Even without the efforts of children, the family can still use available resources such as grain and livestock to cultivate vast land for a big harvest. However, this practice is becoming less important in Gondokoro, as this man from Nyori focus group narrated,

“In the old days, we used our hands to cultivate, whether individually or in groups. But now mole (group work) is very expensive. Communal digging requires a lot of beer and food to satisfy a big number of people. Sometimes, its burden equals marriage ceremony. Because of high expenses, households prefer to hire labor from Wewe (Ugandans) and Langos (young men from Eastern Equatoria)”

Fig. 4.4 Men focus group discussions



Source: Field Data 2016

Although, some respondents prefer hired labour, others can't afford it due to lack of money. This group cooperates with young men in the village, who still values the traditional communal farming. And this what a woman from Logumari said,

“If you don't have money here, you cannot hire laborers. At the same time, the traditional group farming(mole) is also disappearing. But there are still some few young men, who accepts to cultivate your land for food and beer. Other farmers prefer to pay money for work not food and beer. As for me I don't want hired labor, because it is very expensive”.

These statements show the mixed reaction of respondents towards hired labour. Only respondents with additional sources of income, hire laborers in their farms. They use their money to bridge the gap of labour shortage in the household. Hiring labor means that some members of the household do not participate in farm work. The fact that some interviewee preferred hired labor to communal farming, shows how commercial oriented they have become. However, the benefits of working in each other's farm (cultivating, weeding, planting harvesting) is losing its importance. Also, allocating labor based on age, is slowly disappearing in this community. That means reliance on kin relations in farming matters continue to decrease.

The closeness of Gondokoro to Juba town, is another factor that pulls away young boys from agricultural work, especially those out of school. In this city, there is access to other petty jobs, such as riding motorbikes, owning small shops, washing cars and many other activities that fetches money. Even within Gondokoro itself, boys are making money out of bodaboda (motorbike) work. Boys involved in such businesses have less or no time for farm work.

Furthermore, hired laborers in this area, come from Uganda and some parts of Eastern Equatoria. They are here to make money for settling problems back home. But surprisingly, they also escape the cultivation season back home. That means, their families are also missing their labor. They prefer working for money in Gondokoro to cultivating their farms back home. Their absence will also affect the production ability of their households.

4.2.6 Marketing challenges Affecting Women

Smallholder farmers grow crops for both subsistence and the market. So, they can become effective in the market place if government give priority to agriculture and rural development (Beets, 1990). However, government action in markets did not favor women in Gondokoro. With a sign of anger and frustration, some members of the focus group commented,

“Because of poor harvest, our problems have increased. The money from our crops, doesn’t satisfy our household needs. Transport is expensive. The municipal authorities also charge us. At the end of the day, we are left with small amount of money. It is painful, because we do a lot of work just to get one day’s food. With the rising dollar, the price of maize flour has gone up. To buy 50Kg of maize flour, you need to sell four to six bags of vegetables.

“In the markets, we are discriminated against by the municipal authorities. Though they take money from us, they still consider us illegal traders(vendors). We don’t have rights in the markets. Sometimes, we move through residential areas to sell our vegetables to avoid the municipal authorities”.

A man from Nyori focus group added that,

“For a woman to take crops to the markets requires two days. The first day is for collecting vegetables in the field and putting them ready for the market. The second day is for crossing the Nile using local boat to reach the market. However, the boat owner can only accept to take many people. If you are alone, you should wait for some days. Some of the vegetables will rot in process of waiting for the boat. Indeed, we are like people cut off from the town. The distance from the village to the town is long”.

Fig. 4.5 A woman in the field and men with the canoe at the bank of River Nile



Source: Field Data 2016

Women in this community like elsewhere, have multiple roles to perform including home care, farming and marketing of agricultural products. Their contribution to agricultural work compared to men is very significant. They work on the farms until the crops are ready for household consumption and the market. In the markets, they sell their produce with little freedom. Because

of disturbances from municipal authorities, they sell their crops quickly and cheaply. Market charges and transport fees deprives them of getting enough money from their long and exhaustive farm work. This implies that smallholder farmers make little savings from their farm produce.

Marketing of vegetables and fruits, reveals some form of unequal gendered division of labour in this community. It is the duty of women and girls to collect this produce in the farm and take them to the markets. This implies that, the management of farm work falls directly on women because they take the major burden of the agricultural work.

4.2.7 Failure to Access Credits

Provision of credits to farmers is a means to deal with the continuous circle of low income, low savings and low productivity (Lupai, 2014). However, smallholder farmers face difficulties in accessing loans or credit due to several factors, as described by the following respondents:

A woman from Logumari

“I have not seen and heard of financial institutions or agencies that loans money to farmers like us. What I only saw here some years back were munazamat (Non-governmental organizations), giving people food for work. Those who worked in their farm were given sorghum, beans and oil. But they never gave money”.

A male respondent from Nyori said,

“As poor farmers, nobody cares about us. If the government and NGOs cannot supply us with seeds and pesticides, how will it be possible for a financial institution to give us money? Also, Loans often go with interest. If you take loans but have poor harvest due to heat, how will you pay back? The little you have will be taken and your family will suffer. Rains are no longer consistent as in the old days. With good rainfall, we can make money without depending on anybody”.

These interviews and quotes indicates that, many farmers in Gondokoro have not encountered microfinance institutions. And those with some knowledge of the existence of these agencies, don't want to take the risk of borrowing money that may be difficult to repay later. This lack of exposure to lending institutions and the fear associated with it is a result of not being organized.

For farmers to access credits, they should be organized. Because lack of organization will continue to hinder their' income improvement needed to better their living condition.

4.2.8 Infrastructure Problems

Cypher & Dietz (2004), acknowledge the road difficulties small cultivators face in bringing their output to the market. For them to take their products to the markets in time, requires good roads. However, in Gondokoro, participants' opinions show that, there is no proper infrastructure to support the easy movement of farmers. Here is the description of the status of roads given by different groups:

Mori women focus group,

“Our big problem is transport. We take our crops to the markets in Juba town using bodaboda (motorbike) and gadigadi (three-tyre motorbike). Hiring these motorbikes is very expensive. Sometimes, it is difficult to get them. In such circumstances, we reach the market late and this forces us to sell our crops cheaply. The money we get cannot buy enough flour for the house. We spent almost half of the money we get on transport. We are using these motor bikes, due to the poor state of our roads. During rainy season, cars hardly reach our village. It is only land cruisers and other strong vehicles that come to our place”.

Fig. 4.6 Motorbikes carrying women and their food crops to the bank of river



Source: Field Data 2016

A man from Nyori focus group said,

“This place is dangerous. You need a boat to reach your farm at the other side of the Nile. Taking crops to the market requires a boat. It becomes even worse if you want to take a sick person or a woman in labor to the hospital. Transport difficulties is affecting the lives of smallholder farmers in this boma. If the government can connect our villages with good roads, we shall have less problems”

Roads in Gondokoro are not passable in the rainy season. The condition of these roads is worse for smallholder farmers in Nyori village. They depend on canoes as their easy means of transport. However, it takes them more than one hour to reach the markets at the other side of the Nile. In Mononyik, the construction of a bridge could ease the movements of farmers. But the response of a key informant from the area, revealed a negative position towards the construction of a bridge to connect the main Island with the town. He said,

“I personally, am opposed to the construction of a bridge to connect the Island to the town. Having a bridge means allowing land grabbers to come to the Island. Many people in Juba desires this place (you know what I mean, shaking his head). I don’t want them to come here and contaminate our environment. The resources in this land is enough to keep our lives and that of our descendants”.

Poor roads within the villages deprives smallholder farmers from taking their crops to the markets in time. At the same time, it prevents business people from coming to the farms to buy crops. It is risky to transport crops (perishable ones) through rough roads, because they will rot before reaching the markets. The poor status of roads is responsible for the little earnings that smallholders get from their produce. And if smallholders don’t earn a fair return to their labour, their motivation to produce more crops reduce.

Smallholder farmers in Gondokoro, can still stand a better chance, because they have access to markets in Juba. Food crops from other areas such as Yei, Magwi, Western Equatoria cannot be easily transported to Juba due to the poor status of roads. In addition, the insecurity along the roads, makes journeys long. This is not good for business people. Also, traders from Uganda, bring food crops to Juba, but they cannot transport perishable good. Therefore, smallholders in Gondokoro could benefit from the markets, as Juba lacks proper roads connectivity with other food producing areas in the country.

4.2.9 Absence of Extension Agents

Extension services increases the efficiency of family farms, resulting to increase in food production (Lupai, 2014). To improve productivity, smallholders require information, skills and attitude. They will only acquire this knowledge through government extension officials. But the absence of extension agents in Gondokoro have disappointed many smallholder farmers, as this respondent from Mononyik explained,

“I am happy that my children do help in farm work. They have the interest to learn agricultural work, because they know it is the source of food in the house. With good rains, we produce enough food. But these years, we experienced hot weather that destroyed our crops. Although the

land is fertile, we are still using traditional method of cultivation. And nobody has ever talked to us of how to improve our farming method “.

This experience is shared by many respondents. The limited farming knowledge has contributed to low harvest. However, one of the key informant cited soil diseases as another factor responsible for low productivity,

“Our soil has been affected by a disease from Lake Victoria. We have also worms that destroys crops. Our farmers concentrate on growing vegetables because they take less than 45 days to harvest. Worms have no opportunity to destroy vegetables because of their short duration”.

Smallholder farmers have also contributed to poor harvest, because they failed to put into action farming advices given by agriculturalist from their community, as reported by some key informants,

“Many of the smallholder farmers cultivate less than two feddans because they rely more on traditional system of cultivation. They pay less attention to their crops. Even those using generators fail to water their crops in time. And this explains why they always produce less food. Instead Ugandans and Darfurians hiring land, do have good harvest. They pay much attention to the needs of their crops. They plant and water their crops at the right time”.

“We told our farmers not to plant crops at one time to avoid wastage. If crops are planted at the same period, they will be harvested within the same period. These food crops surplus will be wasted(rot), because the market demand will be low. But crops planted at different period, will be harvested in different months. The second harvest will reach the market after the first one is finished. In this way smallholder farmers, will gain from their produce”.

The responses from smallholders indicate that, insufficient agricultural knowledge has affected yields. The respondent’s reliance on traditional farming skills only, have compromised their attention to plant’s needs and inability to deal with plant diseases. Lack of extension services means smallholder farmers are not introduced to modern agricultural methods of production. Dependence on traditional knowledge and skills alone cannot raise productivity. This implies that, the government, through its ministry of agriculture, have contributed to low productivity, because it failed to send extension officers to Gondokoro. It is also true that, without adequate

finances, the government cannot facilitate the work of extension officials. The smallholder farmers are also to be blamed for low harvest, because they don't listen to farming advices given by some members of their community.

4.2.10 Problems associated with livestock and Fishery

Livestock rearing is rooted in the livelihood system of most South Sudanese (Odra, et al.,2004). The smallholder farmers in Gondokoro prefer goats to cows, because they are less destructive to crops. In addition, goats don't attract the attention of their neighbors who are cattle keepers. Here is the view of a key informant from Kuda village about livestock,

“We don't keep cows in this place because they are a source of insecurity. Some of us who had cows were continuously attacked by our immediate neighbors, who are cattle keepers. I hope you understand the people I am referring to. We even decided to send out of this village their relatives, because they were spying on our cows. Since then, this village has experienced peace and security”

Also, a female respondent from Mononyik had this to say,

“In this village, we keep goats because they can be controlled. They are tied down so not to destroy crops. On the other hand, cows are kept very far from here. The reason is that their free movements is very destructive to crops. Cows and crops cannot be together in the same place. Farmers who own cows, are not safe. Their cows are always stolen by cattle keepers. So, it is better to keep goats than cows, because you can sell them in times of crop failure. In addition, you can use them for marriage”.

Cows are a source of problems to farmers. Cows are the causes of many conflicts between farmers in this community and the pastoralist from the neighboring communities. However, the absence of cows means that farmers are deprived of one source of food. Fish is also another type of food that smallholders here don't enjoy. They don't participate fully in fishing because of the conditions mentioned by one of the respondents,

“It is difficult to catch fish here. They are found in big quantity at Rejaf and Mangalla. At Gondokoro Island, fish are disturbed by sounds of motor boats and other machines at the bank of the Nile. All these factors deprived us of fish that want to produce here”.

“Our chicken here helps us very much. We slaughter them when we are fed up of eating vegetables and during big occasions like Christmas and Easter. They can also be sold quickly to get money for meeting urgent needs”.

Respondents’ expressions show that cows are considered a threat to household’s security. To avoid problems, families keep goats and chicken. Also, cows destroy crops more than goats. Indeed, the inhabitants of Gondokoro are farmers rather than pastoralist. Their livelihood system is based on agricultural work. They keep goats and chickens for food, income, rituals and marriage. Goats also fetch money for domestic needs when crops fail. However, lack of cows in this community, is an indication of insufficient animal manure, necessary for soil fertility. And soils characterized by insufficient nutrients can have low crop productivity. It is also clear that, smallholders here lack the animal power that would compensate the shortage in household labour.

4.2.11 Lack of Farmers’ association

Through an organized body smallholder farmers could create relationship with merchants to better sell their products (Thamaga-Chitja & Morojele, 2014). Local producers in Gondokoro are unable to support themselves due to lack of an association. They find it difficult to form a group that can represent their interest, as suggested by a key informant,

“Smallholder farmers don’t listen to us. We told them to organize themselves in 20’s or 30’s. In this way, they will be able to dig even a canal. For example, in Nyori the land is covered with big mango trees. They clear the trees, make charcoal and sell to the bakeries. Use the money for paying Ugandans who cut down trees. Once the land is ready, they can plant maize in the rainy season (from February). After the maize harvest, plant lodaka(sorghum) during dry season, because it requires little water. Even the dew can make lodaka grow”.

Lack of producer's association is another factor responsible for low crop production. The absence of farmer's group, has made it difficult for individual farmers to tackle production problems that lowers crop yields. In addition, farmers' groups could minimize markets and transport difficulties. As a group, they would hire lorries to transport farm produce to the markets. If smallholders fail to form associations, they will not overcome their agricultural challenges. It will be hard for them to raise farm productivity necessary for increased incomes, needed for improving living standards.

4.2.12 Impact of Community Obligations on Farm Work

Community obligations reduce smallholder's level of concentration and therefore affects productivity (Oni et al. 2013). Funerals are notable community obligations that have serious influence on smallholder farmers. It is a taboo for a farmer to work in his field when there is a funeral in the village. During such sad moments, all agricultural work stops because people go and console the family of a deceased. And this is what some men from Nyori focus group said,

“Today you found us together under this tree, because we are preparing to go to the funeral house. One of our members lost a brother yesterday and we buried him here. So, we cannot go to our farms because we have the duty to console this family. This is a duty for every one of us, because death visits every home. Today the funeral is in that house and tomorrow it will be in somebody's house”.

“Our funeral takes three to four days. In all these days, most heavy work cannot be performed. If you don't spend time in a funeral house, you will be left alone in a sorrowful time. Sometimes you are considered somebody who rejoices over other people's death. And, if the cause of that person's death is unknown, fingers can be pointed at you. Other people can say many evil things about your crops and that can lead to crop failure. So, to avoid all these, one has to observe the funeral occasions in the village”.

Fig. 4.7 Men found at a funeral house in Nyori village



Source: Field Data 2016

Traditional beliefs are very strong in the lives of the smallholder farmers in Gondokoro. During funeral days, less attention is paid to crops. And with insufficient rainfall, crops will not be watered in time. Paying little attention to the growth of crops will lead to a poor harvest. Societal obligations such as funerals and other ceremonies that last for many days, are internal constraints that affects smallholder's time of work.

4.2.13 Lack of Proper Medical facility in the Area

The research participants in Gondokoro also complained about the absence of proper medical attention in their villages. The health condition is a big concern for respondents in all the villages as expressed by some of them,

“Our community lacks proper health facility. The facility itself does not look like a dispensary. There are no well-trained medical personnel. Usually, you find a person there distributing tablets to the sick. He is not constant in the center. Very sick people in this place, are always taken to Juba teaching hospital for treatment”. (Male respondent from Mononyik).

“The government does not care about our lives. We are just relying on God’s providence. We treat ourselves using local medicines, due to lack of medical facility. This is our major challenge. Since there is no hospital here, we take our sick persons to Juba. Again, it is difficult to transport the sick to Juba teaching hospital because the road is bad. Cars rarely come to this area in the rainy season. So, canoes are the only means of transport that helps us. Tell your government to build a hospital for us”. (Male interviewee from Yamba village).

Fig. 4.8 View of medical facility at Mononyik village



Source: Field Data 2016

The facial expressions of respondents on this issue, is marked with anger. The absence of medical personnel and good medical facilities has negative impact on their health. Sick farmers in the different villages go to Juba town for treatment. But due to low incomes and poor roads,

quick access to treatment, is difficult. The condition is even worse for women in labor because they deliver at home. When sick farmers are deprived of quick medical attention, their health deteriorates further. Also, prolonged sickness compels the family to sell their asset such as goats, to provide for treatment. As the family member remains sick, he/she cannot participate in farming activities. And as household's labour forces reduces, the amount of land cultivated becomes small resulting in small harvest. Therefore, the lack of medical facilities, reveals the extent of neglect faced by smallholders in Gondokoro.

4.3 Means of Coping with Agricultural Challenges

4.3.1 Strategies for dealing with rain invariability

Although smallholder farmers face socio-economic challenges, they also have strategies for dealing with some of these difficulties. Irrigation system is one of the strategies for dealing with rain invariability, is presented below by various focus groups:

“Sometimes we cultivate near streams to use its water for irrigating our crops. This practice is good for vegetables, because they take 1-3 months to mature. By the time the streams dry up, we turn to our wells to grow crops, especially in the dry season”.

“For those possessing water pumps, growing vegetables (hudra and gwedegwede) is done after every one month. Gudra (okra) is grown after every three months. These vegetables are watered twice a week. This year the rains stopped for three months and it almost destroyed lodaka. But when it resumed in October, some of the crops survived. Lodaka is a good grain because it can resist heat. Initially, our people were growing merese (red grain), but due to little rain, they shifted to lodaka in 2000”.

“Seeds of different crops grow well here. But groundnuts are destroyed by millipedes. We also concentrate on vegetables because they grow quickly and fetch money for meeting the needs of the family. Sometimes the money from vegetables is used to hire laborers. If you depend on lodaka (grain)only, your children will suffer because it takes many months to mature”.

“If crops failed due to lack of rains, we use money we get from selling mangoes for buying seeds. Part of the money is also spent on flour. Money generated from mangoes is also used for buying goats needed for paying bride-wealth”.

4.3.2 Non- Farming Activities among smallholders in the area

Although farmers perform off-farm activities to generate additional income, they don't abandon agricultural work (Netting, 1993). Smallholder farmers in Gondokoro burn charcoal and make papyrus mats to get money. Charcoal production is a business that is carried out by men. But mat making is done by both men and women. Such activities are intensified when crops fail due to insufficient rains.

Fig. 4.9 View of off-farm activities smallholders do to get money



Source: Field Data 2016

Some women sell tea and local beer to generate money for meeting domestic needs, as explained by a female respondent,

“I sell tea in the market and beer at home to provide for my children. The profit I make, goes for the school fees and food in the house. However, I am still unable to cover all the basic needs of my children. Sometimes, I fail to pay all my children’s’ school fees”

Fig. 4.10 A widow selling tea and bread as off-farm activity



Source: Field Data 2016

The respondents’ statements indicate the existence of a variety of activities in Gondokoro for making money. Though not enough, have enabled them to provide for household’s needs. When farm work becomes less rewarding for some smallholders, they will be forced to seek other employment opportunities in urban areas. These non-farm jobs are beneficial, only when family members send money back home for the improvement of agricultural work. Otherwise, the lack of it will lead to reduced family labour needed for agriculture.

4.4 Attitude towards farming

Beets (1990) confirmed that agriculture in most developing countries, is both an economic activity and a way of life. It is difficult for farming communities to abandon agriculture. Likewise, in Gondokoro, the attitude of the people towards agriculture is mixed. Older generation still maintains positive attitude towards farming. But the younger generation is showing negative attitude towards agriculture, because of other work opportunities in Juba town. This is what Nyori men focus group said,

“We black people in Equatoria, our first occupation is farming. Livestock keeping is our second occupation. And fishing is our third occupation. We had good harvest when God was still listening to us. But now we have poor harvest due to late rains. However, this cannot stop us from cultivation, because farming itself is very important in our society. A young man who refuses to dig, will find it difficult to marry. No parent will allow their daughter to marry a lazy man”.

And the women of Kuda focus group added the following comments,

“Agriculture has always been the source of our lives. Whatever we have in our houses such as food, clothes, money comes from farm work. Without agriculture, we shall all die. Even with the little rains, we are still able to produce our own food. We also have hope that in some years to come we shall have plenty of rains for a better harvest”.

“Young men don’t want to cultivate because it is tiresome. They said work in the farm is very hard. At times, they told us they will leave school if forced to work on the farm. One day my own son made it clear that, farming was good during the old days. But the youth of nowadays do work that brings money now”.

This last statement reveals the negative attitude of some adults towards agriculture. They perceived it as a difficult work whose benefits takes time to reap. However, the opinions of other participants, indicates that agriculture is the life of this community. That is why despite low productivity due to socio-economic and climatic conditions, smallholder farmers remain resilient. Even if some of them perform off-farm jobs to generate income, they cannot abandon farm work.

Some members of the community have moved to Juba town for other types of employment, leaving their land unused. while others rent their lands to foreigners such as Ugandans, as this man from the village said,

“Some community members employed in Juba have rented their lands to Ugandans. They allow the Ugandans to use the land for a period more than four years. But before the contracts ends, their land is already exhausted. Ugandans method of cultivation is destructive to the fertility of the soil. When digging, they make sure that no grass is left on the soil”.

These views demonstrate that the older generation still regard agriculture their main source of food in the house. However, a good number of young men do not engage in subsistence farming. They are preoccupied with activities such as riding motorbikes, working in shops and washing cars in the urban areas. These activities earn them money and encourage them to disregard agriculture. Some of them bring part of the money to their parents and others do not. That means, their non-farm work contributes little or nothing at all to improve household’s food condition.

Allowing Ugandans to rent land means a big portion of it is lying idle. Since land is acquired through inheritance, family members have the right to contract it to others, to get money. But the use of too much fertilizers by contractors to increase profits, will in a long run reduce the fertility of the soil. This is the negative consequences of renting lands to foreigners whose interest is only to make profits. But the truth of the matter is that, the land contracted to foreigners, is the unutilized agricultural land of the community. Non-use of this land also reduces the productivity of the community. Some city dwellers from this area are not involved in farming. Their absence contributes to a drop-in food supply.

Chapter Five: Summary, Conclusion and Recommendation

5.1 Introduction

Smallholder farmers in Gondokoro face several socio-economic challenges. Whatever the nature and magnitude of each constraint, all have negative impact on smallholder agriculture. The low productivity has hindered the progress of these crop producers. Henceforth, these challenges threaten the livelihood strategies of the farming community.

5.2 Summary of the Findings

In view of the findings, the research aims of understanding the socio-economic challenges facing smallholder farmers in Gondokoro, have been answered by the participants. This was achieved through the data collected to answer research question one, followed by data that answered research questions two and three. Also, these responses agree with the literature review. The study findings indicate that, the socio-economic challenges include, lack of mechanical tools used for irrigation due to insufficient rains, access to seeds and pesticides, poor roads and market systems, failure to access loans, and poor extension services, and medical facilities. In addition, factors such as household labour, land, farmers' association, and cultural norms are also responsible for smallholders' inability to increase food production. The latter are problems within the smallholders themselves. They can solve them. Agricultural progress requires human will. Respondents use irrigation and off-farm activities as coping mechanisms. While, a good number of young people do not participate fully in farming, the older generation continue to devote their time and energy to their farms. Their resilience, demonstrate the importance of agriculture in their lives. However, their agricultural productivity could improve if the identified socio-economic constraints affecting them are addressed.

5.3 Conclusion

Due to dry spells respondents use irrigation to minimize the risk of crop losses. Small generators are used to pump water into the fields. This provides some smallholders with high yields needed for household consumption and market. Because of the profitability of the irrigation system these farmers have become commercially focused. The use of motor pumps shows that some

smallholders are gradually moving away from subsistence agriculture. Because of the economic return they are encouraged to invest on generators. This market orientation is supported by the fact that they also need money for the maintenance of the generators and hiring labour. However, smallholders concern with the growing of vegetables and fruits because of their economic value, could explain the decrease in grain production. Some respondents said they use the money generated by vegetables and fruits for buying flour from the market. Therefore, irrigation in this area is only useful for growing short term crops.

Furthermore, irrigation system that depends on the use of such small machines, is not sustainable under the current fuel problems in the country. Petrol scarcity forces smallholders to buy it in the black market at high price. Sometimes, it is rare to get. Also, running the machines requires continuous services. With the current economic crises in the country, spare parts for repairing machines have become expensive. The maintenance of generators is costly. Some smallholder farmers cannot repair their spoiled generators due to high charges. That means the continuous use of these water pumps will depend on smallholder's good earnings from their off-farm activities. However, as farmers spent more money on the irrigation system, the consumers pay more for food crops. Therefore, challenges affecting smallholders are directly felt by the urban residents, who depend on their food crops.

It has been observed that some respondents hire labour in their farms. However, reliance on this type of labour, is not a long-time solution to family labour shortage. The young men from Uganda and Eastern Equatoria are in the area to make money for solving problems back home. Once they achieve this goal, they will go home. In addition, complains about monetary reward from their labour means they can leave at any time. So, the earlier, the better for smallholders in Gondokoro to reconsider the importance of group farming for a better harvest.

Hired labour implies that some respondents are moving away from the traditional group farming system. Little attachment to communal farming is likely to affect the production capacity of small size families. This system of farming used to be an important source of strength and labour for these families. As some smallholders continue to rely more on hired labour at the expense of group work, they become individualistic and non-cooperative. This has been proved by the absence of smallholder farmers' association in this area. Therefore, labour acquired from external sources through money, is slowly destroying the sense of group cultivation.

Also, connected to the same issue, is the rural-urban migration. The presence of young men from Eastern Equatoria is a reminder of labour migration from rural to urban areas. They come to Gondokoro to sell their labour. They are not considered seasonal labor migrants, because they continue to work in the irrigated farms during the dry season. Surprisingly this appears to be a rural to rural migration, because they come from the village to this area, which is also a village. The reason is quite clear. Cultivation is the only skill through which they can earn a living until other opportunities arise. In most cases, they do join their kinsmen in the urban areas who work in grinding mills. In addition, their labour needed in the farm work back home, is also missing, leading to reduced harvest in their households.

5.4 Recommendations

From the findings and conclusion, the impact of socio-economic constraints on smallholder agriculture is apparent. These challenges reduce the ability of smallholder farmers in Gondokoro to produce enough food for themselves and the markets around Juba town. The subsequent effect has been the dependence of Juba residence on many food items from Uganda. Nevertheless, smallholders in this area have the capacity to increase food supply. This can be achieved if some of the following problems affecting them are addressed.

The government and NGOs working in the field of agriculture can provide one big generator for irrigating fields when rains fail. This would enable farmers situated far from the river Nile to have access to water for growing crops. Besides, it is better to assist smallholders with generator, rather than spend huge sum of money on tractors that remained unutilized up to this date. If smallholders produce crops throughout the year, they will not lack seeds. They will generate more income for meeting other domestic needs.

The government should facilitate the movements of extension officers to Gondokoro. They could encourage smallholders to use local materials to construct instruments for lifting water from the Nile. The water then reaches the fields through canals. If generators are not forthcoming, this local technology is a better alternative. In addition, extension officers will advise smallholders to form an association, which would cater for their agricultural needs. Also, their role would be to

encourage smallholders to appreciate their system of communal cultivation, practice by their ancestors since time immemorial. This is a remedy to household labour shortage. Since smallholder farmers find it difficult to agree among themselves on issues of mutual concern, extension officials will bridge the gap.

Construction of internal roads to connect Gondokoro to Juba town is a need. Proper roads will better the movement of produce between the producing areas and the markets. Businessmen and women will be encouraged to come and buy agricultural produce directly from Gondokoro. Good roads will have positive impact on women. It will reduce their expenses on the motorbikes that they usually hire to transport their produce to the markets. In addition, market charges and other problems they encounter in Juba markets, will be reduced. All this implies that better roads will enable smallholders to benefit from their farm work. Roads are also important for quick delivery of health services.

The improvement of the health services, is a prerequisite for a healthy farmer. For smallholders to be productive, they need to stay healthy. Coming to Juba teaching hospital for treatment requires money and time. A prolonged sickness deprives family members of their full participation in agriculture. Therefore, having a proper medical facility in the area, together with the medical staff, will help farmers to access treatment in time and recover within short period. And the time for missing agricultural work will also reduce. Better health services and security, will enable farmers to concentrate on their farm work.

Good security is a necessity for agricultural work. The smallholders in Hai Teleij come from Kangu, located at the eastern of the Nile. This area is very fertile. But the residence cannot go there due to insecurity. In addition, other villages like Nyori experiences insecurity caused by cattle owners. These cows destroy crops and the owners are aggressive, because they have guns. Therefore, deployment of government forces in the area, will boost agricultural production.

Finally, future research needs to go deeper into the impact of climatic conditions on the economic decisions that smallholders must take. Also, the use of both qualitative and quantitative methods will be required to facilitate the understanding of the magnitude of each socio-economic challenge. Furthermore, the researcher recommends special focus on the impact of socio-economic challenges on the livelihoods of the smallholder farmers. The current research

concentrated on the constraints only. But there is also need to look on the opportunities available to these smallholders so that any targeted action to improve their lives can start from what they already possess. This is considered an entry point for future research.

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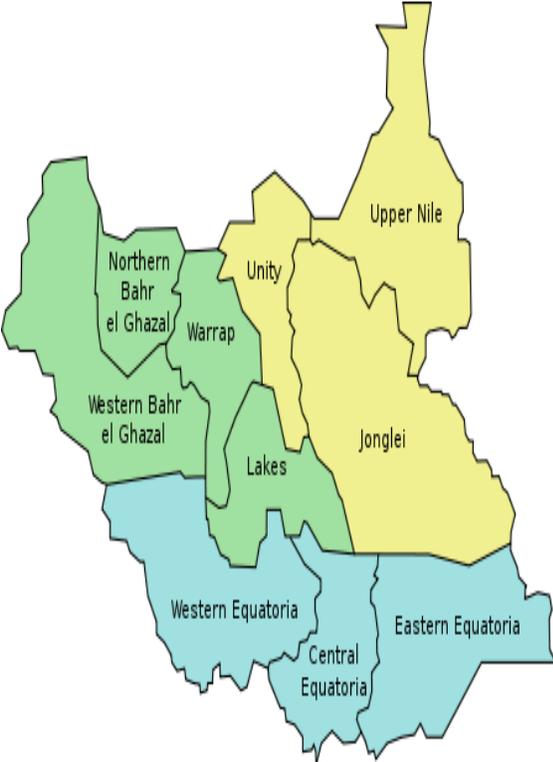
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Appendix 1: Map of South Sudan



Old Map (10 states)



New Map (28 states). Source: Wikipedia

Appendix 2: Map of Central Equatoria state



Source: Wikipedia

Appendix 3: Interview Questions

The following interview questions have been formulated to generate relevant data about the socio-economic challenges facing smallholder farmers in Gondokoro Island.

1. Crops grown in the area

1.1 What type of crops do you cultivate?

1.2 What type of crop rotation do you practice?

2. Land

2.1 Do you have enough land for producing food crops?

2. 2 Who owns the land on which you cultivate?

2. 3 Do women have rights over the land they cultivate?

2. 4 What land problems do you face?

3. Tools

3.1 What type of tools do you use to cultivate your farm?

3.2 Do these tools allow you to cultivate big land?

3. 3 If no, why not use tools like water pumps, generators and tractors?

4. Household Labour

4.1 Do all your family members participate in agricultural work?

4.2 On what basis is farm labour allocated in the family?

4.3 What are some of the reasons for labour shortage in your household?

4. 4 How do you supplement the labour shortage in your family?

5. Access to Markets

5.1 What crops do you sell in the market?

5.2 Are there merchants who come to buy your produce from the fields?

5.3 How do you transport your crops to the market?

5. 4 What transport difficulties do you always encounter when taking food crops to the market?

6. Infrastructure

6.1 What is the status of your roads?

6.2 What impact does it have on your crops?

6.3 Would you accept the construction of a bridge to connect your village to Juba town?

7. Income

7.1 Does the money you get from your agricultural products satisfy your domestic demands?

7.2 If no, what other off-farm activities do you perform to generate income?

8. Seeds and Fertilizers

8.1 Do you always have seeds ready for the planting season?

8.2 Do you use fertilizers in your farms?

8.3 If you don't have enough seeds and fertilizers, will the government or NGO support you?

9. Storage facility

9.1 After the harvest, where do you store your food?

9.2 Do you have good storage facilities for your crops?

9.3 Does the harvested food crops sustain your family until the next harvest?

9.4 Do you sometimes buy imported food?

9.5 How do you react to food imports?

10. Smallholder association

10.1 Do you have farmers' association?

10.2 If yes, how do you view its role?

10.3 If no, what are the obstacles for its establishment?

11. Extension services

11.1 Do extension officers give you farming advices?

11.2 If no, who then give advices necessary for improving your productivity?

12. Access to credits

12.1 Have you ever received loans or credits to support your farm work?

12.2 If no, what do you think are the reasons?

13. Livestock

13.1 Do you also keep livestock?

13.2 What kind of livestock do you keep?

13.3 What benefits do you get from your livestock?

13.4 What challenges do you face with regards to animal keeping?

14. Fishery

14.1 Do you go to the River Nile to fish?

14.2 What important role does fishing play in your life?

14.3 Which problems affects your fishing ability?

15. Health services

15.1 Is there any medical facility in your area?

15.2 Does this facility provide good medical care?

15.3 If no, where do you treat yourselves?

16. Cultural issues

16.1 What do you think are some of the traditional practices that affects your farming activities?

Interviews with some key Informants in the state Ministry of Agriculture dwelled on issues of seeds and fertilizers, plant diseases in the area, extension services, farmers' association and mechanical tools(tractors).

Appendix 4: List of tables and Figures

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Figure 4.3 Women focus group doing homework

Figure 4.4 Men in focus group discussion

Figure 4.5 A woman in the field and men with canoe at bank of River Nile

Figure 4.6 Motorbike carrying women and their crops

Figure 4.7 Smallholders found at a funeral house

Figure 4.8 Medical facility in Mononyik village

Figure 4.9 View of off-farm activities

Figure 4.10 A widow selling tea and bread as off-farm activities



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