Uganda's Tea Value Chain: Understanding Challenges and Opportunities

Final Report

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List of Acronyms

Acronym	Description
ASSP	Agricultural Sector Strategy and Investment Plan
BOU	Bank of Uganda
EAC	East African Community
EATTA	East African Tea Trade Association
FGD	Focused Group Discussions
GoU	Government of Uganda
Kg	Kilogram
KIIs	Key Informant Interviews
MAAIF	Ministry of Agriculture, Animal Industry and Fisheries
MTA	Mombasa Tea Auction
NAADS	National Agriculture Advisory Services
NARO	National Agriculture Research Organization
NDP	National Development Plan
NPA	National Planning Authority
OWC	Operation Wealth Creation
SME	Small Medium Enterprises
UNADA	Uganda National Input Dealers Association
UTGA	Uganda Tea Growers' Association
VSLAs	Village savings and loan associations

Executive Summary

Tea is an important commodity for Uganda because it is the country's third largest agricultural export commodity by value, following coffee and fisheries. Ninety three percent (93%) of Uganda's tea products are exported, and largely sold in the Nairobi's auction market. Tea production is continuously extending from the original tea growing regions to new regions such as south western Uganda (Kabale and Kisoro) and West Nile (Nebbi and Zombo).

Despite its potential, tea production and productivity remain low. In addition, the quality of Uganda's tea is low and hence used to blend other tea in the auction market. This is largely due to low quality of clones produced, poor harvesting practices that do not follow the set requirements of 2 leaves and a bud. There are also challenges of limited access to market especially during the rainy seasons when the productivity is high.

The aim of this study was to establish the status of tea production, value addition, and marketing; and to examine the challenges and opportunities at different segments of the tea value chain in Uganda. By using a multi-stage sampling method, the study conducted focus group discussions with farmers, and key informant interviews with tea estates, nursery operators, traders and transporters, and tea processing plants. The study also elicited information from the key implementers at district and sub-county levels (district and sub-county agricultural officers). The data was gathered using structured questionnaires for all value chain players, and interview guides for district agricultural officers, NAADS, and other implementers.

Key Findings

There are a number of organizations that are promoting tea production in Uganda. A large percentage of communities reported that there are organizations supporting tea production and these were mainly NAADS, local government, and Private organizations. The forms of support provided to farmers vary across the supporting organizations. The local government mainly provided trainings, NAADS provides seedlings and trains farmers, whereas the private organizations train farmers, links them to the market, and provides agro-inputs.

There are significant price variations across tea growing regions. The price paid to farmers was higher is south western regions at 519 Ugx per Kilogram, followed by western region (469 Ugx/Kg) and Central region at 358 Ugx/kg of tea. It was reported that in central region, processing plants are owned by large estate owners who largely process their produced tea are offer a small price to smallholders.

NAADS plays a critical role as a major contractor of all seedlings produced and needs to do more. It was observed that seedling multiplication is a very profitable venture and can enhance household welfare. However, it was clear in this survey,

that many seedlings produced without clear contractual arrangements were not taken leading to big losses across all tea producing areas.

Tea processors are also engaged in production and trading. In some regions such as western and south western Uganda, there is over capacity utilization of the processing plants, where as in central the processing plants' capacities are underutilized. Over/under capacity utilization is explained by the level of production in the particular sub-region. The large proportion of processed tea is sold in the auction market.

The tea value chain is male dominated. There were more males employed at production, trading, and processing levels of the tea value chain compared to females. Females were more employed at seedling multiplication level by nursery operators. However, most of them were employed on a part time.

There are variations in the profitability of tea business across the segments of the value chain. The study found that farmers were making losses if only one acre of tea was considered, suggesting that the break-even point for tea tradition was above one acre. The very small profits at production level were observed in the central region. However, estates made profits even when one acre was considered, and this might be explained by the high level of technology application by the estates compared to smallholders. The other segments of the value chain made positive profits. The study found that seedling multiplication and processing were more profitable compared to trading, and production.

Challenges facing Tea Value Chain Players in Uganda

The tea value chain study established the challenges faced by players at different segments of the value chain in Uganda: nursery operators, smallholder farmers and estates, traders, and processors. Given that these players are interconnected, the following challenges need to be addressed in order to aid the upgrading of the entire tea value chain in Uganda.

1. Limited use of improved tea clones/varieties. Moreover, farmers and estates have limited knowledge of the tea clones/varieties they grow. The recommended improved clones by NAADS such as 31/8, 6/8, and 303/577 clones are used by the less than 20% of the farmers each. The limited use of improved seeds has key implications on production and productivity of crops.
2. Limited use of productivity enhancing technologies such as fertilizers. However, majority of the farmers used herbicides because it significantly reduces weeding costs given that tea is grown on large land.

3. Weak farmer organizations as exhibited by limited group among farmers because. Ninety seven percent of farmers reported that they sell individually.
4. There is limited tea grading according to attribute, 83% of tea communities reported that they do not grade tea when marketing. Lack of tea grading affects the quality of tea, and this partly explains why Uganda's tea fetches a low price in the auction market.
5. There is limited access to finance for production and for those accessing credit, they obtain it mainly from informal credit sources such as village savings and loan associations (VSLAs). Commercial banks and SACCOs are used by very few farmers. The reasons for the limited use of formal credit sources were collateral requirements, and long loan application processes.

Recommendations

(i) There is need to improve tea extension services and probably have a focused tea extension system to cover areas with high impact on tea productivity and quality. These areas include;

a) Knowledge on clones being planted and what is appropriate for a particular planting area.
b) Appropriate inputs to enhance production and productivity.
c) Household level grading of tea before marketing to enhance quality.
d) Seedling multipliers achieve minimum requirements of quality seedlings
e) Post-harvest handling to reduce quantity and quality losses

(ii) There should be a deliberate effort to help small holder farmers to cooperate and form farmer groups and/or cooperatives. This will help in;

a) Reducing the costs of inputs to smaller holder farmers and will help the buy in bulk.
b) Facilitate group marketing to reduce on middlemen and increase on the farm gate profitability.

(iii) There is need to regulate, register and certify seed multipliers to ensure standards and ultimately quality of tea produced. Only 20% of the seed multipliers are certified with only 50% receiving institutional support. Seedling producers need support in: knowledge of the different clones; technologies and inputs of seedling production; access to finance; and marketing of their products.

(iv) The tea processing factories in the West and South-West are operating beyond the installed capacity. There is therefore need to invest more in processing especially in the west and south-western regions. Further, processing is a highly profitable venture with high employment creation potential.

1.0 CHAPTER ONE: INTRODUCTION

1.1 Background

Tea growing in Uganda was introduced by the colonial government as early as 1900 in the central region, but real production did not start until the 1950s. By the 1950's, there were three estates in Toro, Mityana, and Kimara. The Uganda Development Corporation (UDC) was crucial in the development of the tea industry and established Agricultural Enterprises Limited, a private company to development tea estates and factories. Six factories were established in Hoima, Bushenyi, Kabarole, Kyenjojo, Kibaale, and Mukono.

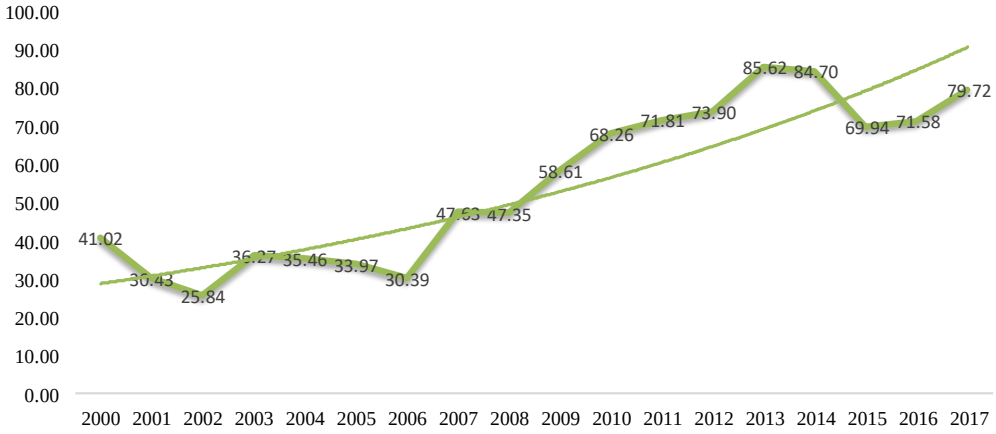
The Uganda Tea Growers Association (UTGA) which had been established in 1966 to support the sector was largely ineffective following the political instability in the early 1970s which led to the expulsion of Indian in 1972 who largely owned the estates. It is estimated that tea production during this period fell from 23,000 MT in 1972 to 3,000 MT by 1984.

In 1970s, the Uganda Tea Authority (UTA) was formed after the expulsion of Indians to regulate the tea industry, as well manage the processing and marketing of Uganda's tea.

By 1994, with the repatriation Indian property, tea production began to pick up, and production increased.

Tea is Uganda's third largest agricultural export commodity by value, following coffee and fisheries, with average production at 60,000 MT and earnings averaged about USD 76 million in the last eight years (BoU, 2008). Ninety three percent (93%) of Uganda's tea products are exported (MAAIF, 2012). Uganda tea production reached over 66,000 Metric tons (2014). The exports earned the country more than US$ 85.62 million in 2013 when the auction price was good and dropped slightly to about US$84 million in 2014 due to the decline in the auction tea price. Since 1990, the average price of Ugandan tea has remained relatively stable ranging between US$ 1.50 to USD 2.00 per Kg, however, there were transitory upward variations in 1997, 1998, 2006 and 2007, mainly explained by reduction in supply of tea due to drought. Prices did, however, return to their historical trends in 2008.

Figure 1: Uganda's Tea Exports for the Period 2000-2017 (in US$ Million)



Data source: Bank of Uganda, 2018

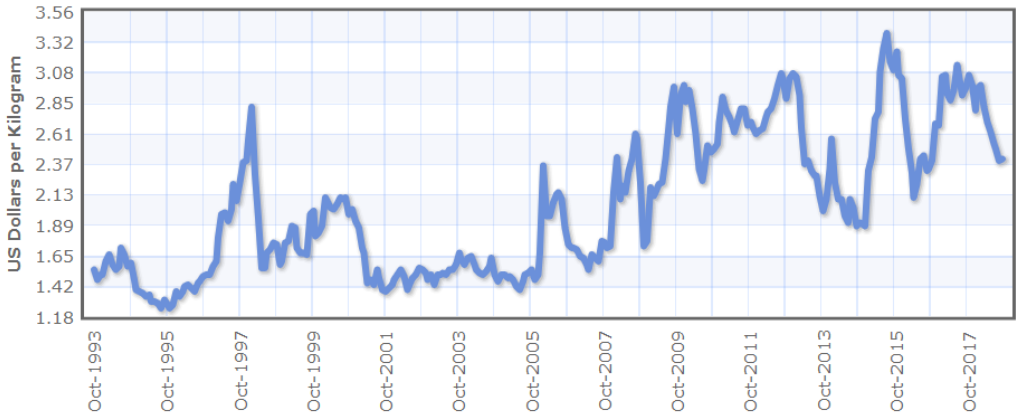
Figure 1 shows variations in tea export earnings for Uganda for the period 2000 to 2017. The variations in export earnings are majorly explained by changes in tea export volumes and changes in tea prices. Therefore, maintaining competitive prices for Uganda's tea remains as critical as the need to sustain increases in tea production and productivity. Even then, variations in tea export volumes account for more than 90% of the variations in tea export earnings for Uganda. Despite the variations in tea exports, there has been a general upward trend in overall export performance which can be attributed to a number of interventions by both Government and the private sector.

The current acreage of tea in the country is estimated at 35,000 hectares which is about 17 percent of the estimated total suitable land area for tea of 200,000 hectares countrywide. The sub sector production grew by 3.4% in FY2017/18 to a tune of 60 million Kilograms. According to Uganda tea growers' association (UTGA), this growth is attributed to good rains and maturing new crops resulting from the free seedlings issued to especially small holder farmers by Government through NAADS. The industry is 100 percent controlled by the private sector with large estates contributing 72% of the total production. Over the last few years until 2013 there was a steady increase in production and the prices in the international market went up. However, for the year 2014 the international market price declined and this was mainly attributed to increased tea production in the major producing countries including China, India, Kenya and Sri Lanka.

Tea price stabilization remains critical for the growth of Uganda's tea sub sector as well as leveraging its impact on poverty eradication and wealth creation. Kiwanuka & Ahmed, 2013 note that, farm gate prices continue to be a disincentive for tea growing especially for lower level farmers. Although the tea market at the upper level of the value chain is fully liberalized, producers' prices deviate significantly from the reference prices. On average, prices paid to tea leaves producers were 27.73 percent below the reference price. The observed indicators suggest that while tea factories are able to receive the full reference price, these incentives are not shared equally along the value chain (Kiwanuka & Ahmed,

2013). Overall, as shown in figure 2, tea prices have been volatile over the years with significant price changes between short time periods.

Figure 2: Monthly Variation in Mombasa Auction Tea Prices 1993-2017 (in US$ Million)



Data Source: Index Mundi, 2018

In Africa, Uganda is the third leading producer and exporter of tea after Kenya and Malawi (MAAIF, 2010). Tea is one of the priority cash crop commodities in the Agricultural Sector Strategy and Investment Plan (ASSP) for the period 2015/16-2019/20. Close to 80,000 farming households are involved in tea production and it supports over 150,000 skilled and unskilled workers. Approximately, 1,000,000 people directly derive their livelihood from tea growing. The crop is grown by large estates (46 percent of production) and small growers organized as either small estates affiliated with particular tea factory or small scale out-growers producing 54 percent of the tea. Approximately the out growers produce 28 percent of the total production of tea with the remaining 72 percent produced by the tea estates (Kiwanuka and Ahmed, 2013). Traditional tea growing districts are: Mukono, Buikwe, Mubende, Mityana, Masaka in the central region; Kyenjojo, Kibale, Hoima and Kabarole in the western region; Bushenyi, Buhweju, Kanungu and Kabale in south western Uganda. Recently, tea growing has expanded to new Districts like Kabale, Kisoro, Rubanda, Rukungiri, Sheema, Nebbi, Zombo, Isingiro, Ntungamo, Mitooma, Rubirizi, Kamwenge and Mbarara. To date, Government through NAADS/OWC has supported farmers with 446 million tea seedlings worth UGX 202 bn (NAADS, 2018).

National Agriculture Advisory Services (NAADS) has been distributing tea seedlings to farmers since 2013 in Kigezi, Western and West Nile sub-regions, and has continually supported the farmers to go through the whole tea value chain systems utilizing different models of distribution. NAADS has largely used the lead agent model and contracting Nursery Operators through delegated procurement in collaboration with the Local Governments. The distribution of these seedlings is aimed at improving the livelihood of, especially, the small holder farmers. The impact of these seedlings to farmers is not only generated at the production stage but along the entire value chain. NAADS continues to support agricultural services including tea growers under the Operation Wealth Creation

(OWC) to access critical agricultural inputs essential for increasing production, as well as increasing their sales and hence their incomes.

Through the Operation Wealth Creation (OWC) interventions and programs, the Government of Uganda aims at transforming agriculture from subsistence to commercial agriculture with a target of raising household incomes to a minimum UGX 20 million per household per year. Significant attention is given to generating and disseminating improved research through the National Agriculture Research Organisation (NARO) and the refocused National Agriculture Advisory Services (NAADS) that is now responsible for procurement of improved agro-inputs.

The ASSP targets to produce 112,000 MT of tea by 2020 which will increase exports to approximately US$155 million. It also stipulates actions and activities that will be pursued to increase tea production. These are: i) formulation of a tea policy favorable to investors and other actors in the industry; ii) mobilization of small holder tea growers into independent legal farmer groups/associations with a critical mass of shareholders owning processing facilities through Government loan guarantees; increased funding for tea research;

iii) providing extension services for tea; iv) production and distribution of 34,965 million quality tea plantlets per annum; and v) building tea factories (at least 25 single line in Kisoro, Kabale, Kanungu, Zombo and Mityana) with a capacity to produce 800,000 - 1,000,000 MT of tea per annum. These interventions will be carried out with the support of the Uganda Tea Association (UTA) and Uganda National Farmers Federation (UNFF). The total amount of funds required to achieve these interventions is UGX532.42 billion over the 5 years of ASSIP 2015/16-2019/20 (ASSP, 2015).

To implement the key interventions stipulated in the ASSP (2015-2020), there is need to understand the structure of tea value chain in Uganda. Although tea is one of the major traditional exports of Uganda, there is limited literature on the commodity production, processing and marketing, especially on the key constraints facing different players and the untapped opportunities along the tea value chain components (Kiwanuka and Ahmed, 2013). There is, thus, a need to study the organization of the key players along the tea value chain, the challenges they face and the existing opportunities so as to recommend key policy interventions that can transform the tea sub-sector. To fill this gap, NAADS commissioned Ace Policy Research Institute to undertake the tea value chain analysis so as to identify the key challenges and opportunities in the tea sub-sector.

1.2 Study Objectives

The overall objective of this study is to analyze Uganda's tea value chain with the view of identifying gaps, opportunities and making recommendations to strengthen the current and future interventions along different segments of the value chain.

The specific objectives of the study are to:

(i) Identify the key players and their roles along the segments of the tea value chain.
(ii) Identify the constraints and opportunities along the different segments of the tea value chain
(iii) Carry out a profitability analysis along the different segments of the tea value chain.
(iv) Examine the policy, legal and regulatory mechanisms along the different segments of the tea value chain.

1.3 Rationale and justification

The National Agricultural Advisory Services (NAADs) Programme was created in 2001 by an Act of Parliament to specifically address constraints of lack of access to agricultural information, knowledge and improved technology among rural poor farmers in the country. NAADs is currently being implemented in all Districts, Municipalities and Sub counties of Uganda. Tea is one of the agricultural products that has benefited widely from the NAADS programme interventions.

Tea is traditionally Uganda's third largest agricultural export commodity by value and tea production is expected to grow by at least 3% annually. This growth is attributable to good rains and maturing new crops resulting from the seedlings issued by government. NAADS has been supplying seedlings to farmers since 2013 in Kigezi region, Western region and West Nile. The distribution of these seedlings is aimed at improving the livelihood of farmers and increasing their household incomes. The programme has reached to many farmers through giving out of Tea seedlings and has continually supported them to go through the whole Tea value chain process.

Further, the second National Development Plan for Uganda, 2015/16-2019/20 identifies the need to increase production and productivity in the 12 selected agricultural enterprises of; Tea together with other commodities such as Coffee, Cotton, Rice, Maize, Beans, Cassava, Bananas, Diary, Beef, Fish, and Citrus. This makes tea a critical development priority for Uganda's socio-economic transformation and the drive towards attaining the desired middle-income status.

However, despite these interventions, there has not been any comprehensive studies to understand the challenges and opportunities along the various segments of the tea value chain. Further, there is need to profile all the players, understand

their constraints and available opportunities in order to inform future programming and interventions. As the programme progresses to another level and for better service delivery, it is important to analyse and understand the challenges, achievements and opportunities of the tea seedling distribution programme along the value process.

2.0 CHAPTER TWO: REVIEW OF LITERATURE

2.1 Attempts at Formulation of a Tea Policy

Until 2006, there was no specific law governing the tea sector in Uganda. The Uganda Tea Board and the Uganda Tea Authority which had been formed in the 1960s and the 1970s respectively were repealed by Parliament. The Parliament recommended that the Ministry of Agriculture develop a tea policy to guide and regulate the sector. The first draft of the Tea Policy was developed and presented to the president for signing in 2007. This however, did not happen.

The tea sector has not been guided by any policy framework. The self-regulation in the sector partly explains the low pricing of Uganda's tea in the Mombasa auction market. Further, failure to regulate has resulted into factories being established without ensuring that there is enough leaf to supply them which also compromises the quality in harvesting, for example, farmers harvest branches (poor quality) instead of the bud and two leaves in order to satisfy the market demands.

There are on-going efforts by the Ministry of Agriculture and the Ministry of Trade to jointly develop a Tea Policy. The mission of this policy is to "enhance production, processing, and marketing of high-quality Ugandan tea brand for the domestic, regional, and global markets". While this policy is still in draft form and has not been approved, it goes a long way in laying the foundation for development of a competitive and inclusive tea sector.

The objectives of the draft national tea policy development policy are to[1]:

i. Strengthen the legal and institutional framework for governance of the tea sub-sector;
ii. Enhance research, data and service extension capacity to support the entire tea value-chain;
iii. Promote investments that elevate production and productivity at farm level through adoption of modern tea farming practices;
iv. Promote modern technologies for post-harvest handling; processing and packaging;
v. Support adherence to and adoption of appropriate tea standards, certification and accreditation;
vi. Ensure environmental sustainability and resource-use efficiency across the tea value chain; and

[1] Draft National Tea Development Policy

vii. Popularize and promote the trade of a diversified Ugandan tea brand domestically, regionally and globally.

Specifically, the draft policy aims to achieve the following outcomes by 2030[2]:

i. Increase sub-sector oversight bring about streamlined and coordinated tea sub-sector governance;
ii. Enhanced needs-based research and data to support targeted and strategic interventions across the tea value chain leading to increased efficiency and productivity;
iii. Increased operational capacities of factories hence optimizing processed tea output;
iv. Enhanced local tea consumption as a result of domestic campaigns;
v. Diversified Ugandan tea brand able to meet domestic regional and international demand, tastes and need; and
vi. Increasing in capacity for Government to mobilize resources using the policy as an instrument to attract domestic and foreign financing and investments in the sub-sector.

2.2 Tea Value Chain

A value chain refers to a whole range of activities required to bring a product from conception, through the different stages of production, to final delivery to consumers (Kaplinsky 1999; Kaplinsky and Morris 2001). Value chain analysis involves looking at a complex range of activities implemented by various actors; the primary producers, processors, traders, and service providers to transform raw materials to final products.

The tea value chain in Uganda, similar to tea value chains in other countries, is characterized by many producers but few downstream players. The tea supply chain begins in a smallholder farm or a plantation, where the tea leaves are grown and plucked. Small farmers sell their crop to middlemen, plantations and or to 'bought leaf' factories i.e. factories that buy up the raw tea (Kiwanuka & Ahmed, 2013). According to the study conducted in Uganda's Kabalore district by Odoch (2008), once tea leaves are harvested, they are either transported to a leaf factory by agents/traders, in the case of smallholders, or processed in the factory on-site in the case of large plantations as delays in processing lowers quality or lead to spoilage. In most cases it is the factory that collects the leaf directly from the smallholder, with whom there is usually a contract. For smallholder farmers, the buyer collects the tea from designated leaf collection sheds. The farmers are not charged directly for the leaf collection service but buyers factor this cost in the price paid to smallholder farmers (Kiwanuka & Ahmed, 2013; Odoch Martin, 2008).

[2] Ibid

Tea factories are owned by the estate's owners or farmers' cooperatives. On a smaller scale, many Ugandan farmers associations own their own factory (Oxfam, 2002) as a result of the government sale of its factories to growers in the 1990s. Processing starts with oxidization or fermentation of the green leaves. After fermentation the leaves are taken into a drying process to lower the moisture content between 3.0 and 3.3 percent. Tea is then sorted into the four primary grades and three secondary grades according to size and fiber content. Teas are taken for tasting which marks the end of the processing in the factory (Kiwanuka & Ahmed, 2013).

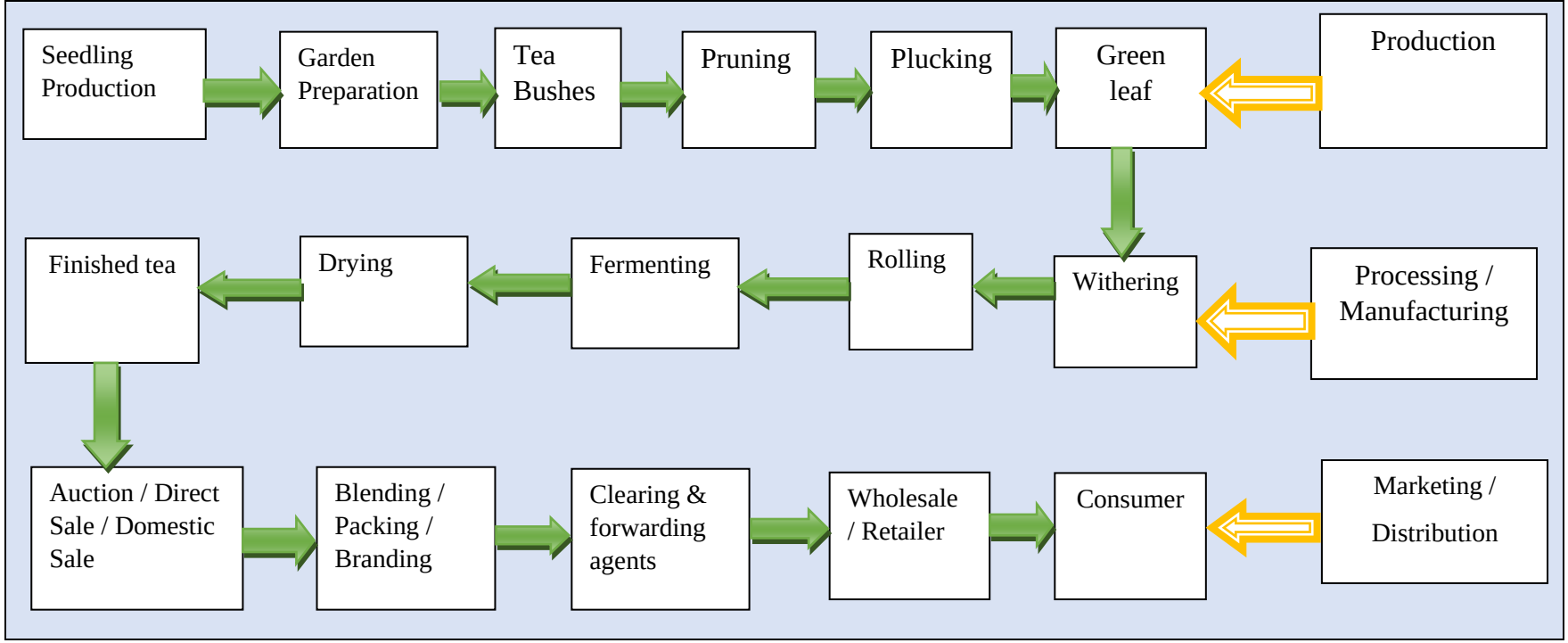
Regarding marketing, most (about 93 percent) of Uganda's tea products are exported. About 90 percent of the production is exported to Mombasa Auction, 7 percent is sold on Direct Sale basis and 3 percent is sold to local packers and Blenders (NPA, 2016). Mombasa auction, the major tea auction in Africa, was initiated in 1956 in Nairobi on a very small scale under the auspices of the East African Tea Trade Association (EATTA) and moved to Mombasa in 1969 (EATTA, 2018). Uganda produces medium (sub-prime) quality tea popularly referred to as 'price reducers', as opposed to premium brand of tea produced by Kenya. Price reducers are primarily used to blend premium teas. Consequently, Uganda receives a lesser price than Kenya. At the Mombasa Tea Auction; teas are classified and priced based on quality such as strength, aroma, liquor and appearance. Most of Kenyan teas are classified from ''Medium'' to ''Best'', while most Ugandan teas are classified as "Plainer" and only five or six Ugandan estates are grouped under "Lower medium" teas. Accordingly, Kenyan teas attract a higher price relative to the Ugandan ones (NPA, 2016; MTTI, 2006).

Tea produced in Uganda is of a medium quality tea primarily used in blends with premium quality teas, such as those from Kenya (MTTI, 2006). At the auction, the selling broker announces the line of tea on sale, and invites bids in US Dollars per kilogram. The buyers announce their bid, which advances by at least one US cent per kg. Through ports in Kenya, tea is shipped to various tea consuming countries where it is blended and packed into various brands.

Figure 3 details the elements along different value chain segments: production, marketing and value addition. At production level, the chain starts with the support elements such as seedling production, and agro-input supplies which support the production base. The main elements at production include: garden preparation, planting of seedlings, weeding, pruning, plucking, and the product at production level is green leaf which is either sold at the collection centres, or to agents, traders, and sometimes directly to processors.

At processing level, the activities include withering, rolling, fermenting, drying and the product at this stage is finished tea. The marketing of finished tea is either through auction sale, direct sale or domestic sale. The finished tea is blended, packaged and branded, after which it joins the transportation/ deliveries by clearing and forwarding agents. The tea then goes to wholesales and/or retailers who sell to the final consumers.

Figure 3: The Elements of Tea Value Chain



2.3 Existing strategies for supporting the tea value chain

Recent National strategies for strengthening the tea value chain are presented in the Second National Development Plan (2015/16-2019/20), the National Export Action Plan (NPA, 2016) and the Agriculture sector Strategic Plan. These strategies need to be further informed by detailed assessment of the current progress of ongoing interventions while clearly capturing available opportunities to further inform programming.

In line with Uganda's export action plan, key interventions to increase production and productivity of tea include the provision of quality planting materials that targets supplying an additional 40 million seedlings annually to the tea zones, certification of existing nurseries and doubling the no. of certified nurseries to match the demand that will be created. Further, Government committed to establish a fully-fledged tea research programme which will also include focus on rehabilitation of existing tea structure and infrastructure at Rwebitaba, construct green house /shade, establishing lab facilities, equipment for bio chemical, pest and disease identification and increasing the stock of parent material through multiplication and dissemination of disease resistant varieties.

With regard to marketing, Government aimed at designing a brand for Uganda teas. This was to be accompanied by a training program in tea blending skills targeting relevant tea products towards existing markets and establishment of an institution to promote Uganda tea and create awareness among the international buyers. Further, Government plans to establishing Uganda's own tea auctioning Centre e.g. at Namanve where teas can be housed for both local and international buyers. Also, Government planned to establish other markets for direct sales e.g. African markets of Nigeria, Niger, Ghana, Mali, etc. and others like Kazakhstan, Ukraine, Poland and the Caucasian countries which have a traditional tea drinking culture.

All these interventions imply increased service delivery demands from NAADS and hence the need to have a comprehensive assessment of Uganda's tea value chain in order to clearly identify the key players, their roles and constraints along the segments of the tea value chain. This will help to inform future programming and the required supportive policy, legal and regulatory mechanisms.

3.0 CHAPTER THREE: METHODOLOGY

3.1 Research Design

The study was designed to take a value chain approach so as to identify and understand the constraints facing different players from tea production, marketing and processing. At production level, the survey elicited information from farmer groups on production technologies, activities, financing, and marketing arrangements. The study also surveyed traders/agents on tea marketing dynamics, and processors on processing technologies. The survey extended to cover source of inputs and hence surveyed agro-input dealers and tea nursery operators. The value chain approach is very crucial in providing an overall picture of the industry unlike studies that focus on a single point on of the commodity value chain.

3.1.1 Production level analysis

The analysis at this level aimed at understanding what is done at production. Focus group discussions (FGDs) were conducted with tea growing farmers to elicit information on production costs; revenues, and marketing of tea, land acreage and land tenure security, productivity and profitability. Data was captured on the farming practices, access to extension services, inputs like fertilizers and herbicides, storage facilities used, prices and level of marketing, as well as gender involvement in tea production at a community level. Interviews with farmers in focus groups, agro-input dealers, and tea research agencies were critical at this level. The constraints, challenges and opportunities at this stage were explored.

3.1.2 Processing level

Survey of tea processing plants was conducted to capture processing costs, and revenues so as to determine whether tea processing is a profitable business. In addition, information was captured on; processing capacity, linkages between processors and farmers on one hand and their linkage to the market and observed change in tea supplies from farmers since NAADS' intervention in 2013.

3.1.3 Marketing level

A survey of agents/traders and transporters was conducted to examine the challenges facing tea transporters (from farms to processing plants and to markets) to understand the quality control measures along transportation, the modes of transport, transportation costs, and regulation. From the processors, the study aimed at understanding the tea export market forces, dynamics and implications in order to infer messages for policy makers and regulators in the industry.

3.2 Study Area

The study was conducted in eight districts, drawn from thirteen districts where NAADS has had deliberately targeted tea production interventions since 2013. The selected study districts are Kanungu, Kisoro, Kyenjojo, Mityana, Mukono, Nebbi, Bushenyi, and Zombo. A key imperative in the selection of study districts

was to ensure that all tea growing regions in the country are represented to offer a cross-regional comparative analysis along the entire tea value chain.

It is understood that beyond the specified districts, there are other districts in Uganda where tea is grown at both big-holder estate and small holder out grower levels. The selection however emphasized districts where Government through NAADS has had directed targeted interventions for tea production since 2013. The ideal would have been to conduct the study on all the 13 districts that NAADS suggested. However, 8 out of 13 districts were selected because of financial constraints, and the fact that the findings from 8 districts can very well represent all the 13 districts. The choice of the districts has been based on analysed attributes.

Table 1: Characteristics of 13 districts where NAADS has had an intervention since 2013

Sub region	No.	District	Attributes
South Western	1.	Kanungu	It is a traditionally tea growing district with well-established processing plants. It presents opportunity for experiential case learning.
	2.	Kisoro	It is a new adopter of tea growing; share favorable volcanic soil and climate; is densely populated hence not favorable for big tea plantations. The district has received enormous, deliberate government interventions for tea production and processing such as processing plants; follows the *Garuga Model.*
	3.	Kabale	Characteristics are akin to Kisoro district.
	4.	Rukungiri	It is a very new adopter for tea growing, majorly driven by recent government intervention for tea production; has limited tea production and has no tea processing plant. District largely focuses on cattle keeping and other crop enterprises and presents learning opportunities from a nascent tea industry.
Western	5.	Bushenyi	It is a traditionally tea growing district; provides a good comparison basis on tea production variations with other districts in the sub region.
	6.	Kabarole	Traditionally tea growing district, with more established big holder tea plantations and more processing plants.
	7.	Kyenjojo	• Traditionally tea growing district more small holder farmers. • Presents similar characteristics as Kabarole
	8.	Mbarara	New adoptor of tea growing, and still on a relatively smaller scale.
	9.	Mitooma	Presents similar characteristics as Bushenyi district.
West Nile	10.	Nebbi	• Tea growing in Nebbi and Zombo districts, which had started in the 1960s, was only revived recently around 2011, having been abandoned years back. The two districts have received targeted government intervention for tea production. They present a learning case on the recovery of tea production copying mechanisms for a potential scale up of the tea enterprise in the West Nile.
	11.	Zombo	

Central	12.	Mityana	• Traditional tea growing district • More small holder tea farmers compared to Mukono • Representative comparative case in Central region
	13.	Mukono	• Relatively traditional tea growing district • More big holder estate growers than small holder farmers • Presents good comparative case in the Central region

In each of the 8 districts, all the tea growing sub-counties were listed, from which two sub-counties were randomly selected for survey, giving us a total of 16 sub-counties. Where two or less sub-counties were growing tea, a census was conducted. In each sub-county, two parishes where tea is grown were randomly selected, giving a total of 32 parishes for FGDs. However, tea growing is still new in some districts such as Zombo and Nebbi in west Nile and hence there were less than targeted samples. As a result, the survey covered 30 communities. In each parish, the survey concentrated on the most tea growing villages (LC1s).

3.2.1. Sampling Methods

Stratified purposive sampling was conducted on district, sub-county, and parish village levels of beneficiaries.

a. Sampling farmers to participate in FGDs

In each parish, the survey concentrated on the most tea growing villages (LC1). A list of tea growers was generated and 10 persons with good knowledge on tea growing were purposively selected for FGD interviews. The study paid specific attention to gender and age group balance. In total, the survey covered 30 FGDs with a total of 248 persons, an average of 8 persons per group surveyed. In addition to smallholder farmer interviews through FGDs, eight individual large estate farmers were surveyed. The purpose was to generate evidence that would allow comparison of production practices, and tea profitability between smallholder farmers and estates.

Table 2: Stratified Sampling size

Location			**Districts**	**Sample (Number)**
Sub regions		South Western	Kisoro Kanungu Rukungiri	3
		Western	Kyenjojo	1
		West Nile	Nebbi Zombo	2
		Central	Mityana Mukono	2
1.	Districts			8
2.	Sub-countries (2 per district)			16
3.	Parishes (2 per sub-county)			32
4.	Farmer respondents (up to 10 per Parish to participate in FGD)			up to 320

b. Sampling seedling multipliers

During community (parish level) FGDs, using snowball sampling, a list of nursery operators (seedling multipliers) who sell seedlings to farmers was generated. From the list, one nursery operator was randomly selected. However, in some sub-countries, it was noted that one nursery operator would serve more than one parish. The overall total was 28 tea nursery operators.

c. Sampling processors

Since there are not many processors in a district, the sampling was at a district level through a census. Where there was no single tea processor in a district, processors in the neighboring districts were surveyed. Up to three processing plants per district were targeted, but for districts with fewer processors, a census was conducted. Overall, the survey covered a total of 8 processing plants. There is no tea processing activity in west Nile, and therefore no processors interview was conducted in Nebbi and Zombo districts.

d. Sampling transporters

The same snowball method was adopted to sample traders. The specific focus was on the traders and transporters who link farmers to processors and those who link processor to the market. However, the study found that all processors transport their processed tea to the markets both local and international. There were also a significant number of processors who would directly pick tea from the farmers, mainly at collection centers to their factories. Accordingly, the survey captured questions on the transportation arrangements in the processors questionnaire. In addition, the study sampled listed traders who linked farmers to markets and sampled a total of 12, making an average of three traders per district.

Table 3: Samples per Value chain actor

No.	Value chain segment	Samples
1.	FGDs at community level, and Estates	38
2.	Seed multipliers (Nursery operators)	28
3.	Processors	8
4.	Traders/transporters of green leaves	12

4.0 CHAPTER FOUR: RESULTS OF THE STUDY AND DISCUSIONS

4.1 Analysis of Tea Production in Uganda

4.1.1 Characteristics of Tea producers in Uganda

Table 4 presents the characteristics of the participants in the study through Focus Group Discussions (FGDs) for the different districts of Uganda. Overall, about 80% of the FGD participants were males. It is evident that tea is a male dominated commodity, and there is a high composition of males in village administrative committees. The participants were on average 48 years, with some variations across districts. Participants in West Nile were the youngest (44 years) while those in Central region were the oldest (aged 53 years). The findings on the age of participants are consistent with the years spent in tea production. Overall, the FGD participants reported to have been growing tea for an average of eleven (11) years. Tea growing is still new in West Nile (Zombo and Nebi) where farmers have been growing tea for less than 2 Years, followed by South Western region (8 years), western region (13 years), and those in central region reported to have been in tea production for approximately21 years. In terms of education, the participants in west Nile are the least educated with about 60% of them not having studied beyond primary level, while Central had the most educated participants with 61% having education level of Secondary and above.

Table 4: Characteristics of Tea producing farmers

Region	**Overall**	**West Nile**	**SWEST**	**WESTRN**	**CENTRAL**
Variables		**Mean (A)**	**Mean (B)**	**Mean (c)**	**Mean (c)**
Proportion Males	0.81	0.81	0.78	0.85	0.79
Age	48.25	44.15	47.70	48.37	52.58
Years producing Tea	11.11	1.38	8.38	13.04	21.36
Levels of Education					
Never Went to School	0.05	0.13	0.04	0.03	0.04
Primary Level	0.46	0.47	0.51	0.47	0.35
Secondary Level	0.32	0.26	0.20	0.36	0.48
Tertiary Level	0.17	0.15	0.24	0.15	0.13
	248	47	74	75	52

Source: Authors computation using tea Value chain Survey data, 2018

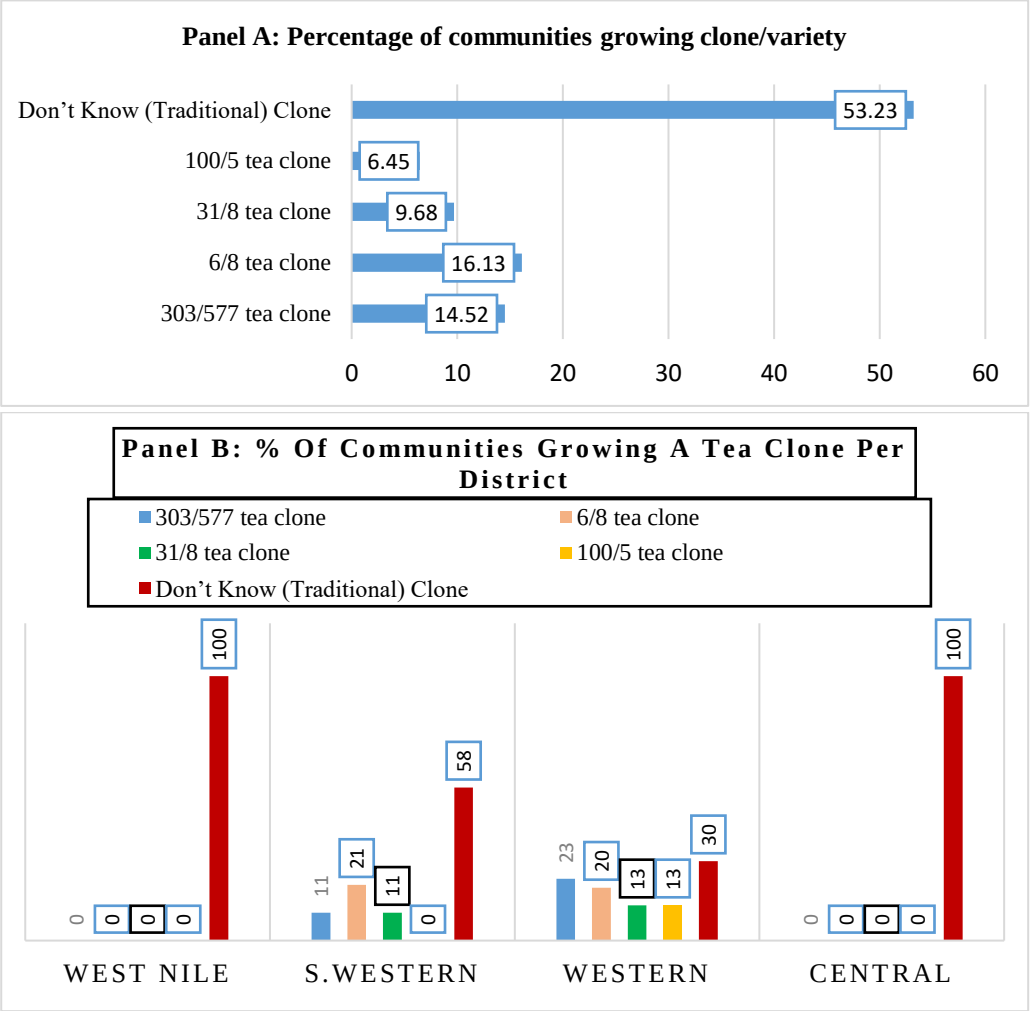
4.1.2 Tea Clones/Varieties for the different tea growing regions

The study reveals that there are over 5 tea clones/varieties grown in Uganda. According to the Community level responses from FGDs (Figure 4), these varieties include: traditional clones whose names are not known, 100/5 clone, 31/8 clone, 6/8 clone, and 303/577 clone. The results also indicate that farmers do not know the clones they grow. For instance, overall, 53% of the surveyed communities reported that they grew traditional clones and did not know the

names (Figure 4, Panel A). When we disaggregate the data by region, the results indicate that in West Nile and Central regions, 100 percent of the communities do not know the tea clones they grow (Figure 4, Panel B). It is farmers in Western and South Western Uganda who know over 40% of the clones they grow.

Failure of the farmers to know the clones they grow means that they cannot differentiate the tea by the quality components. As such, different tea clones are mixed at planting and harvest which affects the quality of tea. Indeed, Uganda's tea is of relatively low quality and is used to blend tea from Kenya at the auction market. It thus important to teach farmers the differences between different tea clones, their quality attributes so as to guide their production and marketing decisions.

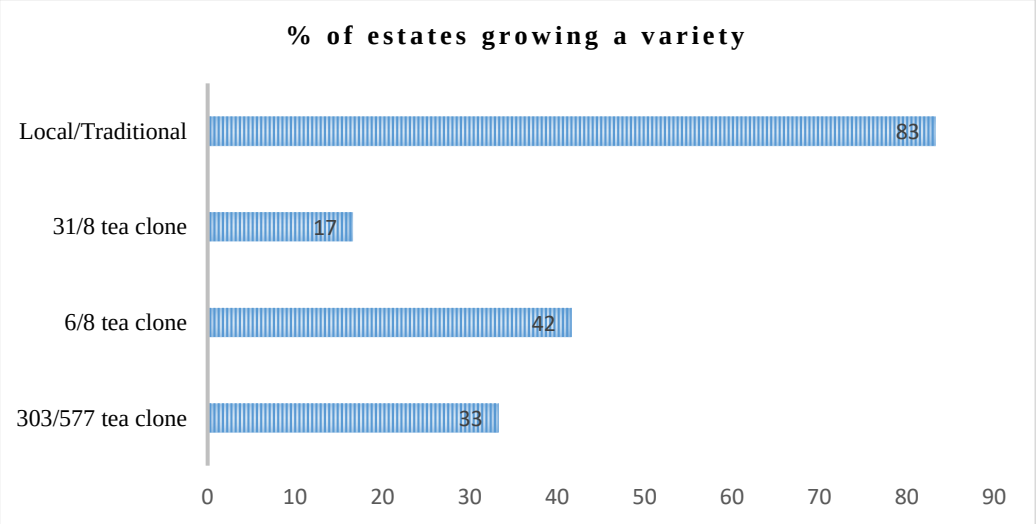
Figure 4: Tea varieties grown by region in Uganda



Source: Authors computation using Tea Value chain survey data, 2018.

The results also reveal that it is not only smallholder farmers who are not aware of the tea varieties they produced but also tea estates. Figure 5 below shows that 83% of the estates grow traditional clones whose names they do not know. The clones are called "Local/traditional" because they have been grown in the community for long. The other tea clones grown by the tea estates include: 31/8 clone, 6/8 clone, and 303/577 clone.

Figure 5: Tea Clones grown by Estates



Source: Authors computation using Tea Value chain survey data, 2018.

4.1.3 Inputs used in Tea production

The study found that the main tea production inputs are: tea clones (Improved and local), inorganic fertilizer, herbicides, and fungicides/insecticide. Table 5 (Panel A) shows that most communities (83%) use herbicides, followed by improved clones (70%), and inorganic fertilizer which are applied in 57% of communities. Fungicides/Pesticides are the least used inputs which are applied in 30% of communities.

Table 5 (Panel B) presents the ranking of the key inputs in terms of yield improvement. Inorganic fertilizers were ranked as the best in improving yield followed by improved clones/varieties. Herbicides were ranked the third followed by pesticides. It is evident from the results that what farmers believe is key in improving yield is not what is mostly applied. Indeed, while farmers report that fertilizers are key in improving yield, herbicides are mostly used in production. FGDs participants reported that counterfeits in the market, high cost of fertilizers and limited accessibility are some of the major reasons hindering the application of productivity enhancing technologies.

Table 5: Use of productivity enhancing technologies in tea production

Panel A: Use of better farming technologies and technology costs by farmers				
	Overall	**SWEST**	**WESTRN**	**CENTRAL**
% of the communities that use a technology in Tea Production				
Proportion using Improved Seed	70	100	100	0
Inorganic Fertilizer	57	50	100	56
Herbicide	83	100	100	100
Pesticide	30	38	50	22
Input Prices for different Units				
Seedling Prices (Price per seedling)	314	500	350	.
Inorganic Fertilizer (Kgs)	2,915	2,860	2,471	3,580
Herbicides (Litres)	15,360	15,500	14,750	15,778
Pestcides (Litres)	25,778	25,000	24,500	29,500

Panel B: Ranking of Inputs that are more effective input in improving yields					
	1st	2nd	3rd	4th	5th
Local/traditional Seedlings	3	14	20	25	100
Improved clone Seedlings	34	19	7	0	0
Inorganic Fertilizers	38	5	20	13	0
Herbicides	21	52	33	25	0
Fungicides/pesticides	3	5	20	38	0

Source: Computed by Authors using Tea VC data 2018

Table 6 presents results on the extent of input use by estates. Overall, a high percentage of estates use inputs compared to small holder farmers. For instance, 82% of estates use inorganic fertilizers compared to 57% of farmers (Table 5, Panel A) who apply inorganic fertilizers. The results are similar for other inputs. It is also worth noting that the cost of inputs reported by the estates is lower than that reported by smallholder farmers. This might be because estates buy in bulk and hence buy cheaply. Also, it could be that estates buy from Kampala and other cheaper sources while smallholders buy from agents close to them who sell the inputs expensively. To benefit from cheap inputs, tea farmers need to organize themselves in groups and purchase inputs in bulk.

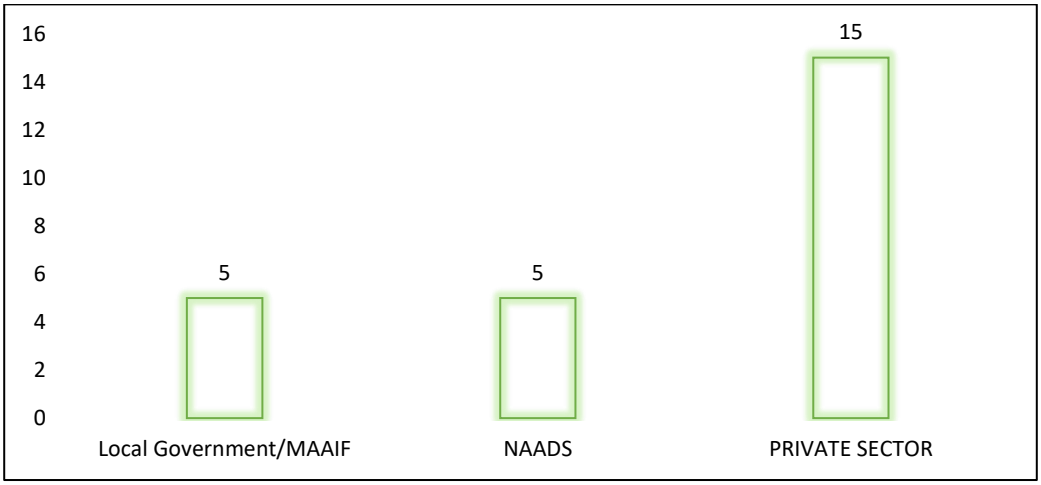
Table 6: Estate use of technology enhancing inputs					
	Overall	**West Nile**	**SWEST**	**WESTRN**	**CENTRAL**
Inputs used in Production					
Proportion using Improved Seed	0.82		1.00	0.67	0.75
Inorganic Fertilizer	0.82		0.75	1.00	0.75
Herbicide	1.00		1.00	1.00	1.00
Pesticide	0.55		0.25	1.00	0.50
Input Prices					
Seedling Prices (Price per seedling)	360		450	300	330
Inorganic Fertilizer (Kgs)	2,341		2,033	2,007	2,983
Herbicides (Litres)	15,220		14,750	27,500	9,550
Pestcides (Litres)	13,100		20,000	7,250	15,500
	8	1	4	3	

Source: Computed by Authors using Tea VC data 2018

4.1.4 Extension and Organizational support for Tea Production

The survey captured information on the access to extension services. Figure 6 shows that less than 15% of the tea growing communities receive extension services. The few that do, receive extension services from the private sectors who are mainly large-scale processors. Indeed, 15% of the communities reported that they received extension services from the private sector compared to 5% who reported that they received extension from MAAIF/Local Government and NAADS. Limited access to extension services affects production. The findings above showed that most tea farmers do not know the tea clones they grow. The results also showed that there is limited use of yield enhancing technologies. This can be explained by the limited access to extension services as shown in Figure 6.

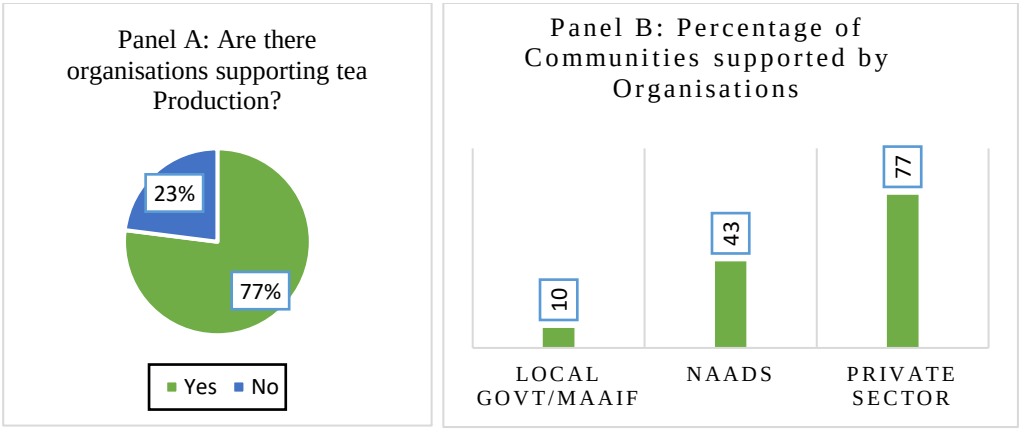
Figure 6: Communities that received extension services and organizations that supports extension



Source: Computed by Authors using Tea VC data 2018

The tea value chain study captured information on the organizations that are supporting tea value chain players. Figure 7 (Panel) reveals that 77% of the communities have had an organizational intervention that supports tea production. Consistent with the results on extension provision, Figure 7 (Panel B) indicates that the private organizations have supported more communities compared to local Government/MAAIF and NAADS. About 77% of the communities reported that they and received support from private companies compared to 43% and 10% of the communities that reported to have received support from NAADS and MAAIF respectively.

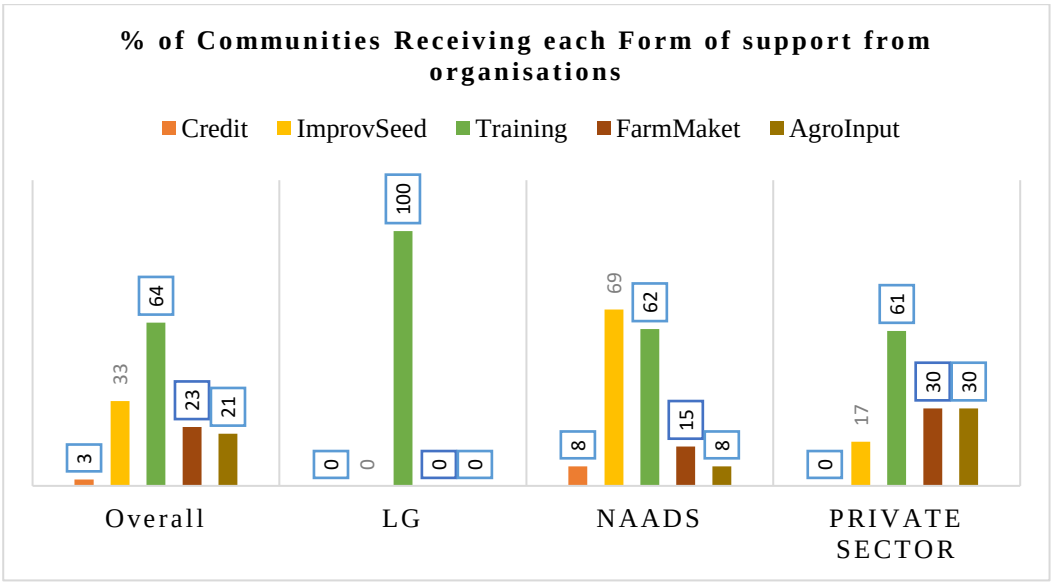
Figure 7: Organizations supporting tea production in Uganda



Source: Computed by Authors using Tea VC data 2018

Different organizations that support tea production focus on different areas. Figure 8 breaks down the areas of focus for each of the organizations that are supporting tea production. The results show that organizations are supporting farmers in terms of access to improved seed, credit, training, market access, and access to agro-inputs. Local government is largely providing training to support production. NAADs main support is through provision of improved seed, training, and market access. The private sector on the other hand supports tea production by training farmers, and enhancing access to agro-inputs, and market access.

Figure 8: Forms of support provided to tea producers



Source: Computed by Authors using Tea VC data 2018

4.1.5 Marketing of Green Tea

This sub-section examines the market for green tea and the modes of marketing tea by farmers. Figure 9 shows that farmers largely (65%) sell their green tea directly to the processors, and a small percentage (35%) sell to traders. Disaggregating the data by district shows that there are variations in marketing by farmers. In south western region (Kisoro and Kanungu), 99% of the communities reported to be selling directly to the processors while only 10% sell to traders. In western region (Bushenyi and Kyenjonjo), almost an equal number of communities sell to processors and traders, while in Central region (Mityana and Mukono) 84% of the communities sell directly to processors and 24% sell to traders. In communities where there are large processing plants such as Kisoro and Kanungu, that sometimes support farmers, processors will provide the market. However, if there are many smallholders that are not clearly linked to the processors like it is in Kyenjojo and Bushenyi, farmers sell to agents and traders who have established contacts with processors. Selling to traders comes with costs because middlemen are also profit oriented and they can eat into the farmers' profits.

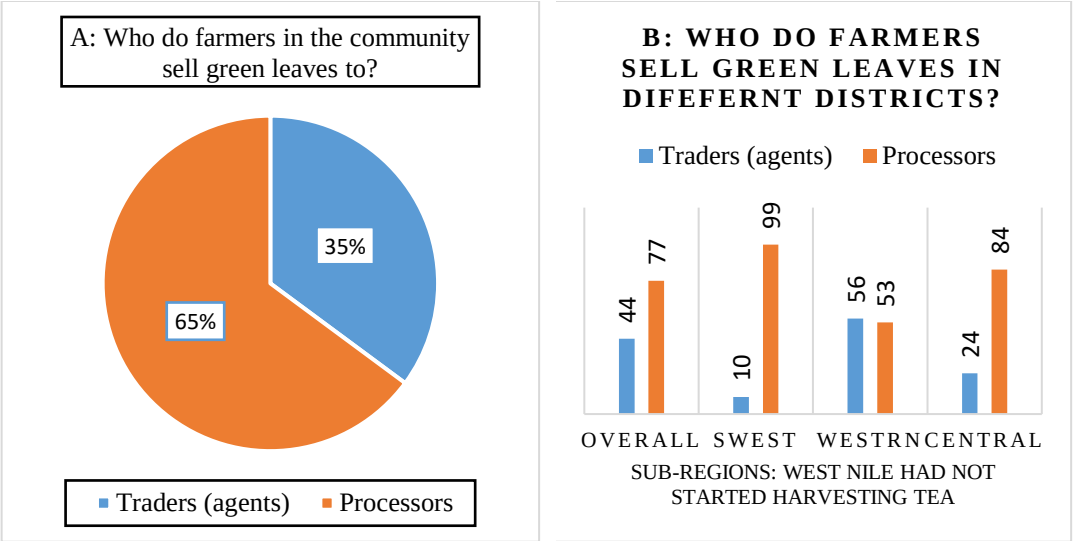
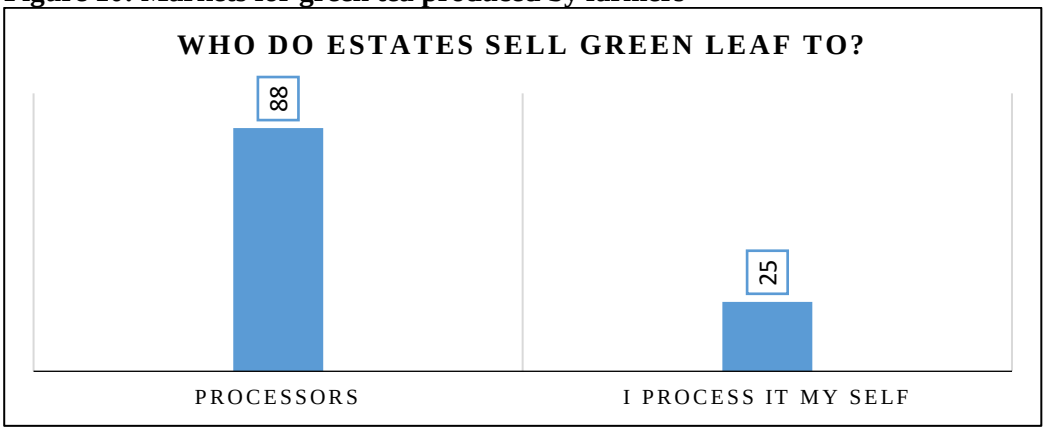


Figure 9: Markets for green tea produced by farmers

Source: Computed by Authors using Tea VC data 2018

Figure 10 shows that estates either sell to processors or process the tea by themselves. The implication of this is that, a number of estates also process tea themselves. None-the-less, majority of the estates sell to processors (88%) while 25% process the tea they produce.

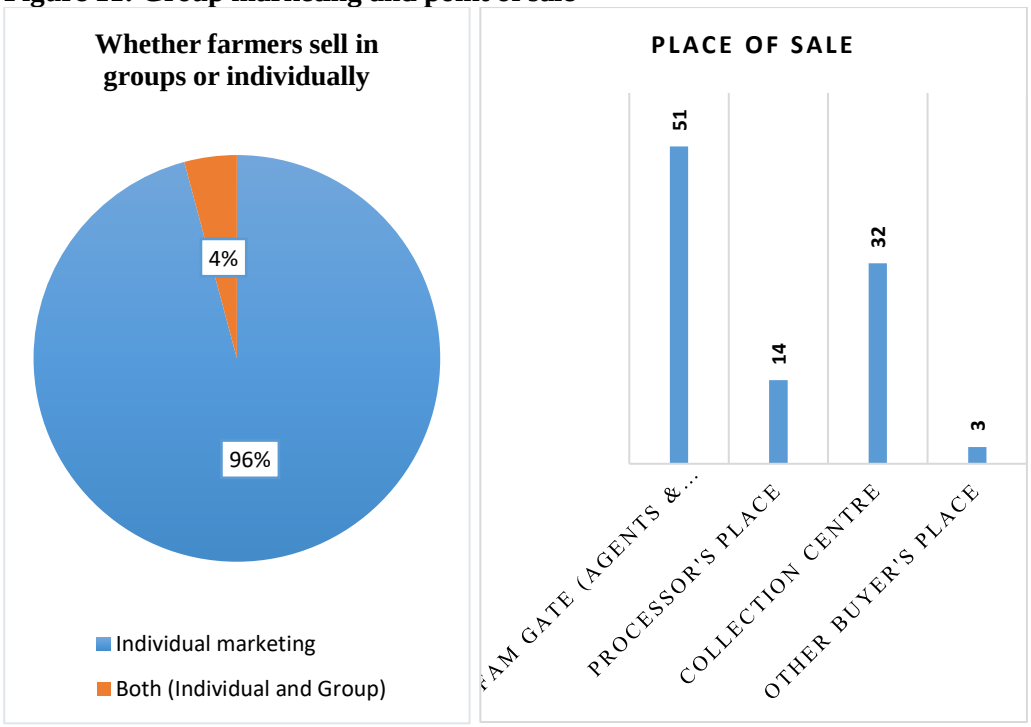
Figure 10: Markets for green tea produced by farmers



Source: Computed by Authors using Tea VC data 2018

The study also elicited information regarding group vs individual marketing. Figure 11 shows that most of the famers (96%) sell individually and only 4% sell in groups, meaning that there is low level of group marketing. On the point of sale, most farmers (51%) sell at the farm, 32% sell at the collection centers while only 14% transport green tea to the processors place.

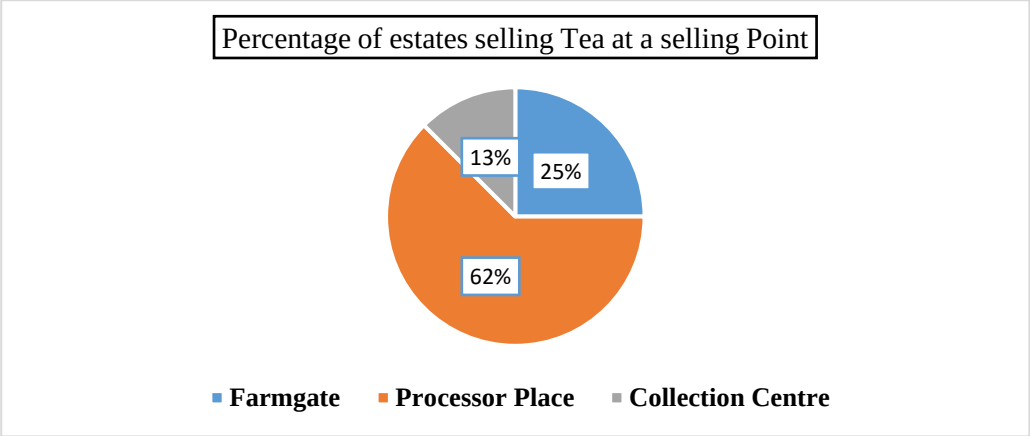
Figure 11: Group marketing and point of sale



Source: Computed by Authors using Tea VC data 2018

Figure 12 shows that majority of the estates (62%) sell at the processor place, while 25% sell at the farm. Only 13% sell at the collection centres. Estates sell to processors place because they own means of transport and they do process tea they produce.

Figure 12: Group marketing and point of sale

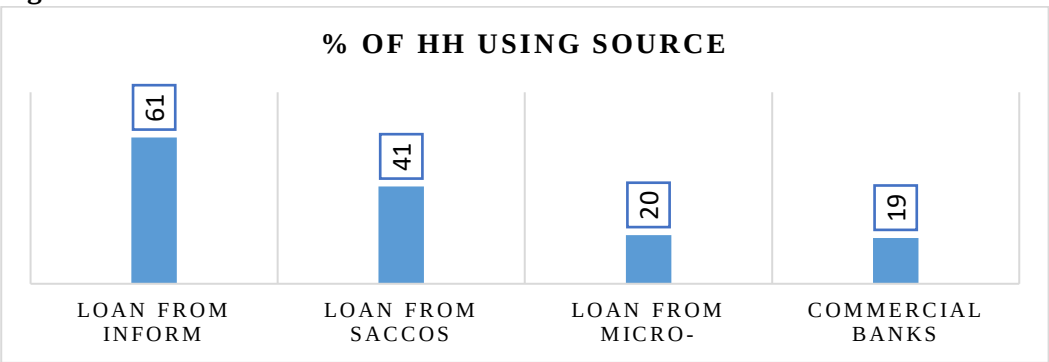


Source: Computed by Authors using Tea VC data 2018

4.1.6 Production Financing

Financing is a key input in production and limited access to finance remains one of the key constraints to production. Figure 13 below presents the major sources of finance to tea producers. The results show that most of the famers (61%) obtain loans from the informal credit sources such as Village savings and loan associations (VSLAs) and these VSLAs are not exclusive for tea farmers but rather open for any community member. The second major source of credit is SACCOs which serves about 41% of farming communities. Formal credit sources (commercial banks) are the least used. This is because of long loan application process, and high collateral requirements which limits farmers' access to credit. The main challenge with using informal credit sources is that they are less capitalized and hence cannot provide enough credit to sufficiently meet farmer credit requirements.

Figure 13: Main Sources of Finance to farmers



Source: Computed by Authors using Tea VC data 2018

4.1.7 Gender roles in Tea Production

Some commodities especially cash crops have been dubbed "men crops" because of the bias towards participation of men. In other words, some commodity value chains are dominated by men as key players which suggests unequal opportunities to both men and women in terms of employment in agriculture. Table 7 shows men and women contribution in different activities of tea production. Apart from ploughing activity, a large percentage of men participates in different activities from land preparation to transportation of harvested green tea. These findings suggest that employment in tea production is largely dominated my males. Overall, 68% of production activities are performed by men while the women only perform 31%.

Table 7: Gender Roles in Tea Production

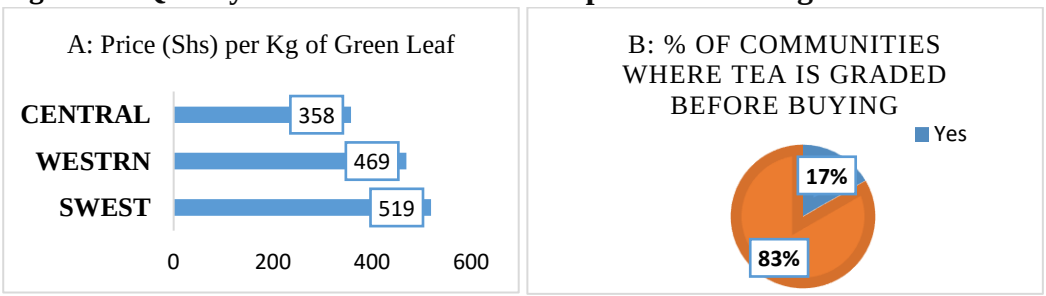
	% of work done by:	
Tea growing Activity	Males	Females
Land levelling	82	18
Slashing	55	45
Ploughing	49	51
Weeding	65	31
Harvesting	84	16
Transporting	74	26
Overall Activities	***68***	***31***

Source: Computed by Authors using Tea VC data 2018

4.1.8 Tea grading at household level

Tea quality is reflected by the grade and the prices they fetch. Therefore, most agricultural commodities are graded according to quality and taste attributes. Figure 13 shows whether tea producing communities grade tea before selling. Panel B shows that 83% of tea producing communities do not grade tea suggesting that tea is largely not graded. Regarding prices, Panel A shows tea prices vary across regions. The prices are higher in south western Uganda (519 shillings per kg) and lowest in central Uganda at 358 shillings per Kg. The possible explanation for these differences might be explained by the variations between tea plants and available supply across regions.

Figure 14: Quality attributes of tea and tea prices across regions



Source: Computed by Authors using Tea VC data 2018

4.1.9 Profitability of Tea Production

Farmers follow incentives and they would, therefore, continue to invest and produce tea if it is profitable. This sub-section presents the results on the costs, revenues and profits per acre of tea. Given that costs and revenues vary by the age of tea (tea harvesting starts at 1.5 years but more costs are incurred during the first years of production), the analysis is disaggregated by the age of the garden and by regions.

Table 8 presents results on the costs, revenues, and profits from an acre of tea for different garden ages. It should be noted that these are indicative figures from FGDs and not from individual farmers. Nevertheless, the results mirror what is happening at farm level. The findings show that farmers are making losses if considering production per one acre of tea. In west Nile, tea production is new and hence farmers have not started harvesting. Farmers in western Uganda make more losses compared to those in south western and central regions. Farmers in Central regions reported profits of about 69,511 Uganda Shillings per acre. The results also show that costs of production reduce with an increase in age of the tea gardens. Accordingly, there are higher losses for younger tea gardens compared to the old ones. Indeed, farmers in central region reported profits because they operate older gardens.

Table 8: Production Cost, Revenues and Profits per acre operated by smallholders

	Overall	WNILE	SWEST	WESTRN	CENTRAL
Production cost per acre					
0-1.5 Years garden	2,080,991	1,706,667	2,422,955	1,924,783	.
1.5- 3 Years	405,660	.	323,217	486,500	
3 Years and above	88,299		184,950	475,800	133,600
Revenues Per Acre					
1.5- 3 Years	49,200		37,000	147,500	-
3 Years and above	219,773		151,400	281,250	203,111
Profits/Loss					
1.5- 3 Years	***(356,460)***		***(286,217)***	***(339,000)***	
3 Years and above	***(68,526)***		***(33,550)***	***(194,550)***	***69,511***

Note: Tea gardens in West Nile are young (less than 1.5 years) while in Central region, they have gardens of more than 3 Years of age. Computed by Authors using Tea VC data 2018

The study also examined the profitability of tea estates so as to compare it with farmers and other actors in the value chain. Table 9 shows that overall and across regions, estates are making profits on each acre of tea. As observed from farmer analysis, Table 9 also shows that estates make more profits on older gardens compared to the young gardens. The results that estates make profits from an acre of tea while farmers make losses might suggest that estates are efficient and produce at a lower cost. In addition, these findings might suggest that estates have

a strong financial capacity to invest in productivity enhancing technologies such as fertilizers and improved clones which in turn increases their profits.

Table 9: Production Cost, Revenues and Profits per acre operated by Estates

	Overall	WNILE	SWEST	WESTRN	CENTRAL
Production cost per acre					
0-1.5 Years garden	375,714	90,000	525,000	220,000	
1.5- 3 Years	322,333		364,000	239,000	
3 Years and above	93,333		95,667	132,500	72,000
Revenues Per Acre					
Price per KG of Green Leaf	522	.	593.3	560.0	440.0
Tora Revenue (1.5-3 Year Garden)	1,887,200	.	798,000	2,613,333	.
Total Revenue (>3 Year Garden)	1,418,150	.	542,833	3,685,000	374,500
Profits/Loss					
1.5- 3 Years	***1,564,867***		***434,000***	***2,374,333***	
3 Years and above	***1,999,834***		***447,167***	***3,552,500***	***302,500***

Note: Tea gardens in West Nile are young (less than 1.5 years) while in Central region, they have gardens of more than 3 Years of age. Computed by Authors using Tea VC data 2018

4.1.10 Challenges for Tea Production

- Limited access to specialized extension services. Less than 15% of the tea growing communities receive extension services, and where it is received, the available extension workers lack specialized skills in tea production.
- About 90% of small holder tea farmers lack knowledge about tea varieties grown or provided by seedling multipliers.
- Limited use of productivity enhancing technologies such as fertilizers, and irrigation. This is due to the limited access to, and the high cost of the technologies.
- Limited application of best tea production practices such as the appropriate spacing, soil mix, size of the planting hole, among others.
- Poor quality inputs such as fertilizers due to existence of counterfeits on the market.
- Land tenure insecurity especially in west Nile where communal land ownership and use is predominant.
- Land fragmentation which increases supervision costs and affects efficient land utilisation. This is due to land shortage and hence most farmers are considering venturing into growing other cash crops.
- Limited access to finance for production. Production is supported by personal savings and a few loans from VSLAs, SACCOs and microfinance institutions.

- Poor harvesting practices that affect the tea quality. In particular, where as farmers are expected to harvest one bud and two leaves, they often times pick more than is required (shrubs and branches).

4.2 Tea Seedling multiplication/ Nursery operators

4.2.1 Characteristics of Seedling Multiplier

The study captured information of years the nursery operators have spent in seedling production, registration and certification status, organizational support for tea seedling multiplication, and nursery inspections. Table 10 shows that on average individuals have been in seed production for 7 years. There are, however, variations across districts with those in west-Nile sub-regions reporting that they've been producing seedlings for only 2 years because tea production is a new enterprise in the sub-region, while those in central region have been producing seedlings for 10 years. Overall, 70% of seedling producers are registered and only 20% are certified. Disaggregation by district shows that none of the seedling producers in central region is registered nor certified. In addition, there are very few certified seedling multipliers compared to those that are registered indicating that nursery operators value registration more than certification. Moreover, very few seedling multipliers understand the conditions for certification.

The findings also show that there is limited support to seedling multipliers. Overall, about 50% of seed multipliers reported that there are institutions supporting seedling production. However, for western region, only 20% reported that there are organizations supporting tea seedling multiplication. Almost all seedling producers in all sub-regions reported that they have been inspected (90%). However, about 50% of seedling multipliers in central region have not been inspected.

Table 10: Seed Multiplier Characteristics

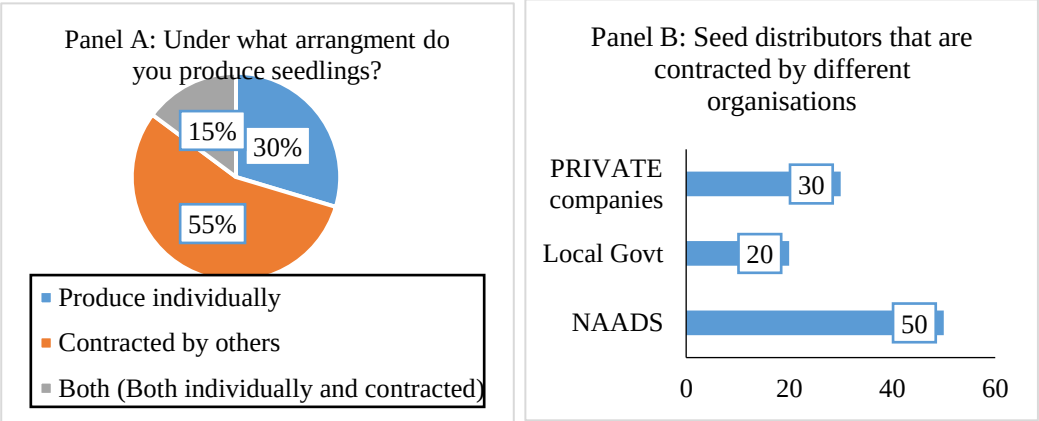
	Overall	**West Nile**	**SWEST**	**WESTRN**	**CENTRAL**
Years in seedling production	7.5	2.2	5.7	12.8	10.0
Registered Nursery operators	0.7	0.7	0.9	0.6	0.0
Certified Nursery operators	0.2	0.2	0.4	0.1	0.0
Those who understand conditions for registration	0.7	0.4	0.8	0.7	0.5
Those who understand conditions for certification	0.2	0.0	0.4	0.1	0.5
Those who report that there are organisations that support seed production	0.5	0.2	0.5	0.6	0.5
Those whose nurseries were inspected	0.9	1.0	1.0	0.9	0.5
Total interviewed nursery operators	28	6	11	9	2

Source: Computed by Authors using Tea VC data 2018

4.2.2 Seedling production arrangements

As part of the affirmative action of distributing planting materials by government, they follow a process where NAADS procures and OWC distributes. This study examined the existing contractual arrangements for input distribution. Figure 15, Panel A, shows that 55% percent of the seedling multipliers are contracted by others, 30% are producing on an individual arrangement, while 15% are contracted by others and produce individually. Figure 15, Panel B, presents the statistics on who contracts seed multipliers (50% who reported that they are contracted by others). The findings show that NAADS is the major contractor (contracts 50%) followed by the private companies, and local government.

Figure 15: Seed Production arrangement



Source: Computed by Authors using Tea VC data 2018

4.2.3 Seedling production and selling trends

Table 11 presents results on the quantity of seedlings produced and sold by the seedling multipliers for the last 3 years (2015/16-2017/18). A close analysis by districts reveals that the quantity of tea seedlings produced has reduced over time. For instance, in south-western region tea seedling production 292,640 seedlings and the production fell to 180,000 seedlings by 2018. In addition, seedling production in western region reduced from 1,962,500 seedlings to 1,113,750 seedlings.

Table 11 shows that not all the produced seedlings are sold out to farmers and estates. The results show that there is a big gap between seed production and seed marketing. Overall, 321,375 of the produced seedlings were not sold. This might be explained by the fact that a large number of nursery operators do not produce under contracts and hence do not have a market identified beforehand. In addition, the key informant interviews with un-contracted nursery operators revealed that

NAADS had promised some to buy seedlings from local nurseries which later did not happen. There are also local seedling multipliers who target the formally contracted officials as their seedling market but have no formal contracts with them.

Table 11: Seed production and sell between 2015/16 and 2017/18

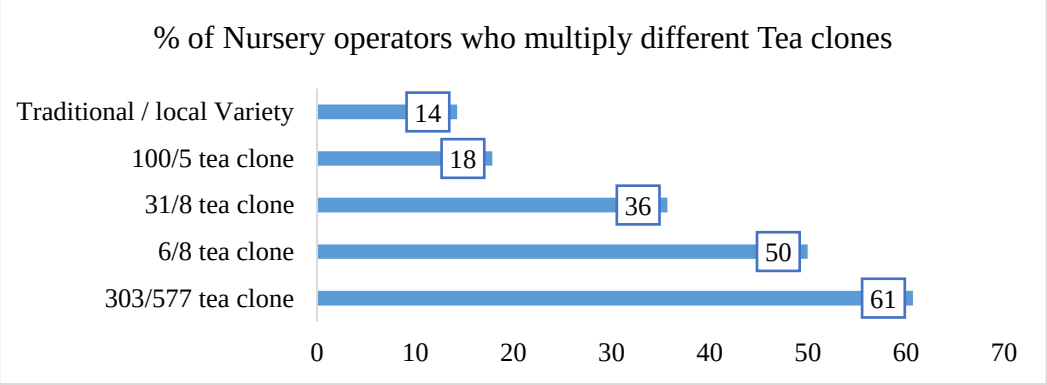
	Overall	West Nile	SWEST	WESTRN	CENTRAL
How many seedlings did you **produce** in:					
2015/16	882,002	1,300,000	292,640	1,962,500	.
2016/17	924,068	1,400,000	243,002	1,551,429	.
2017/18	944,375	-	180,000	1,113,750	2,500,000
How many seedlings did you **sell** in:					
2015/16	650,565	-	133,404	1,512,500	.
2016/17	653,868	-	187,377	1,187,000	.
2017/18	623,000	-	159,667	901,111	900,000
Unsold Seedling					
2015/16	***231,437***	***1,300,000***	***159,236***	***450,000***	-
2016/17	***270,200***	***1,400,000***	***55,625***	***364,429***	-
2017/18	***321,375***	-	***20,333***	***212,639***	***1,600,000***
Interviewed Seedling producers	16	2	10	9	1

Source: Computed by Authors using Tea VC data 2018

4.2.4 Tea clones/Varieties produced by nursery operators

Figure 16 presents the tea clones multiplied at nursery level. The results show that 303/577 is the most grown clone (grown by 61%) of the seed multipliers. This is followed by 6/8, 31/8 and 100/5 clones in that order. Only 14% of the nursery operators grow traditional/local varieties. These finding indicate that what farmers and estates grown is not harmonized. This is because farmers reported that traditional clones/varieties are the most grown yet they are the least multiplied by the nursery operators.

Figure 16: Tea clones/ Varieties multiplied

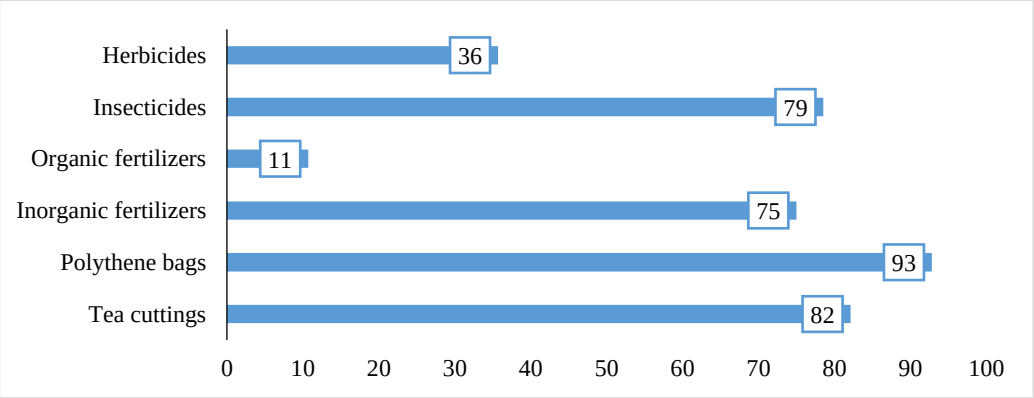


Source: Computed by Authors using Tea VC data 2018

4.2.5 Technologies used in Seedling production

Seedling production requires a number of inputs ranging from polythene bags, tea cuttings, herbicides, insecticides, and fertilizers. Figure 17 shows that organic fertilizers are the least used inputs (used by 11% of the nursery operators) while the polythene bags are used by 93% of the seedling multipliers. Overall, a large percentage of seedling multipliers use technologies compared to farmers and estates.

Figure 17: Percentage of seed multiplier using the input



Source: Computed by Authors using Tea VC data 2018

4.2.6 Market for seedlings

Figure 18 shows that nursery operators sell seedling largely to NAADS (64%), individual farmers (43%), and other seedling multipliers (4%). Nursery operators sell to other multipliers when they have more demand than their supply capacity. It is one of the seedling markets that is targeted by the nursery operators who are not operating under any contract, and it is one of the reasons as to why there is a mismatch between what is produced and sold and indicated in Table 11 above.

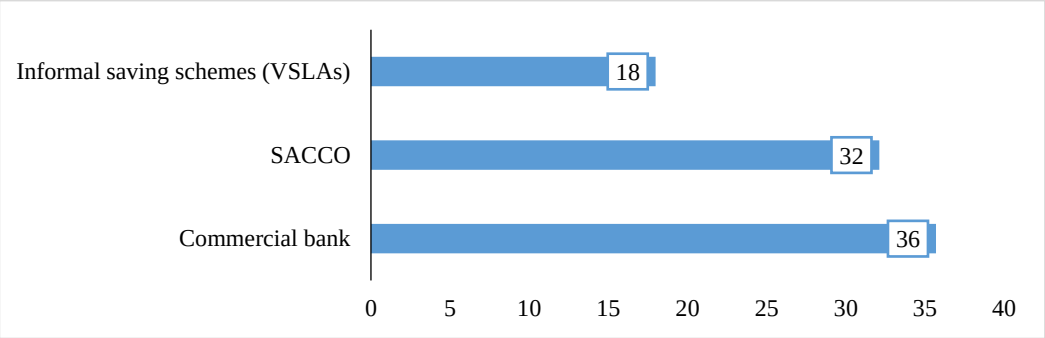
Figure 18: Percentage of nursery operators who sell to different seed markets

Source: Computed by Authors using Tea VC data 2018

4.2.7 Access to Finance by seedling producers

Limited access to finance is a key challenge facing different players a lot the tea value chain. This study found that farmers largely use informal credit sources such as VSLAs which are less capitalized and high a relatively high interest rate compared to commercial banks. Figure 18 shows that a relatively large number of nursery operators obtain credit from commercial banks (36%), followed by SACCOs (32%), and only 18% use VSLAs. The relatively high use of formal credit sources (commercial banks and SACCOS) suggests that seedling multipliers can afford collateral and are bankable compared to smallholder farmers and hence find it easy to secure loans.

Figure 19: Percentage of Nursery operators using a credit source



Source: Computed by Authors using Tea VC data 2018

4.2.8 Employment and Gender roles at seedling production level

Gender participation varies at different segments of tea value chain. The findings showed that men dominate activities at production. Table 12 shows that nursery operators employ more staff on a part-time basis. For instance, out of the 47 overall employs, 29 were on part-time basis while 18 employees were on full time basis. In addition, the results show that there is an equal number of males and females on full-time basis. However, there are more females employed on part-time basis compared to males. Overall (part-time and full-time combined), there are more females employed at seedling distribution level compared to males.

Table 12: Employment in seedling production by Gender					
	Overall	**West Nile**	**SWEST**	**WESTRN**	**CENTRAL**
Number of Full time					
Total Employees	***18***	9	6	27	31
Female Employees	***9***	5	3	7	21
Male Employees	***9***	3	5	20	11
Number Part time					
Total Employees	***29***	24	33	30	30
Female Employees	***20***	20	23	20	20
Male Employees	***8***	4	11	8	10
Overall					
Total Employees	***47***	33	38	56	61
Total Female	***29***	25	26	27	41
Total Males	***18***	7	15	28	21

Source: Computed by Authors using Tea VC data 2018

4.2.9 Costs, Revenues, and Profits at Seedling Production level

Table 13 shows that seedling multiplication is a very profitable business. Overall, seedling multipliers make 326,500,000 Uganda Shillings in Profits. Seed multipliers in the central region make the highest profits, followed by those in the western and south western regions respectively. Profit figures for west Nile were not computed because tea production is still new and seedlings are still in the gardens. Nursery operators have not started selling seedlings.

Table 13: Costs of Producing seedlings, Revenues and Profits from Seedlings					
	Overall	**West Nile**	**SWEST**	**WESTRN**	**CENTRAL**
Seedling Production Costs					
Total cost in 2017/18	30,500,000	23,600,000	14,600,000	61,000,000	1,525,000
Revenues from Seedlings					
Number of Seedlings sold in 2017/18	914,632		372,500	1,187,526	900,000
Price Per Seedling	339		390	260	480
Revenue in 2017/18	357,000,000		139,000,000	456,000,000	432,000,000
TOTAL PROFITS(REVENUE-COSTS)	***326,500,000***		***124,400,000***	***395,000,000***	***430,475,000***
	28	6	11	9	2

Note: Computed using 2018 Tea Value Chain Data

4.2.10 Challenges at seedling multiplication level

- Lack of regulation and quality standards for nursery operators which compromise the quality of seedlings
- Lack of involvement of R&D institutions i.e Rwebitaba ZARDI in clone development and sourcing of cuttings, and verification and certification of nurseries.

- Limited registration and certification of nursery operators which impedes quality control.
- Lack of regional/district-level mother gardens. There are long distances between the source of cuttings and where nurseries are operated. For instance, nursery operators in west Nile source their cuttings from Kanungu and Bushenyi.
- Off-season deliveries of inputs to farmers due to delays in the procurement process.
- Compromised input quality due to poor input handling during transportation e.g, withering and drying of seedlings.
- Excess production of seedlings in relation to what is demanded.
- High cost of credit
- High cost of production inputs such as fertilizers, labor, and irrigation.
- Delayed payments by the contractors such as NAADS.
- Limited knowledge of clones.

4.3 Green Tea Marketing

Tea is marketed at two levels: green leaves from gardens to processors and the processed leaves from processors to the market or other processors for blending, and further value addition. This study revealed that transport at post-harvesting level is managed by the processing plants while at post-harvest level (transportation of green leaves) is managed largely by traders and agents. This section thus provides the status of green tea trading and transportation.

4.3.1 Characteristics of tea traders

Table 14 presents the general characteristics of traders, and the profitability of the trading business. On average, traders reported to have been in the tea transportation business for 6 years. However, there are variations at the district level depending on how long the tea production has been undertaken in the district. Accordingly, traders in south western region had the least experience (2 years), followed by western region (6 years), and the central region traders have the highest experience (8 years). The results are consistent with production and seedling multiplication findings which indicated that central region has been producing tea for a long time compared to other regions. The results also show that most tea traders are not registered. For instance, none of the tea traders in south western and western regions are registered, whereas only 33% of the green tea traders in central region are registered.

The results indicate that tea trading is dominated by males. Overall, out of the 6 traders interviewed, 6 are males while only one is a female. The results are similar across regions. The study did not find any female trader in western and south

western regions, while there were only female 2 traders in Central region (Table 14, Panel A).

Quantities of traded tea fluctuates across seasons and month (Table 14, Panel B). Overall, the traders reported that they traded 25,257 Kgs of green tea in a peak month and this quantity drops to less than a half (11,543 Kgs) in a low month. These variations are caused by seasonality where during the rainy season the yields increase but decline during the dry season.

The study also shows that traders in all regions make profits both during the peak and low season. However, as it is with the quantity of traded tea, the profits are lower during the low season compared to the peak season (Table 14, Panel C).

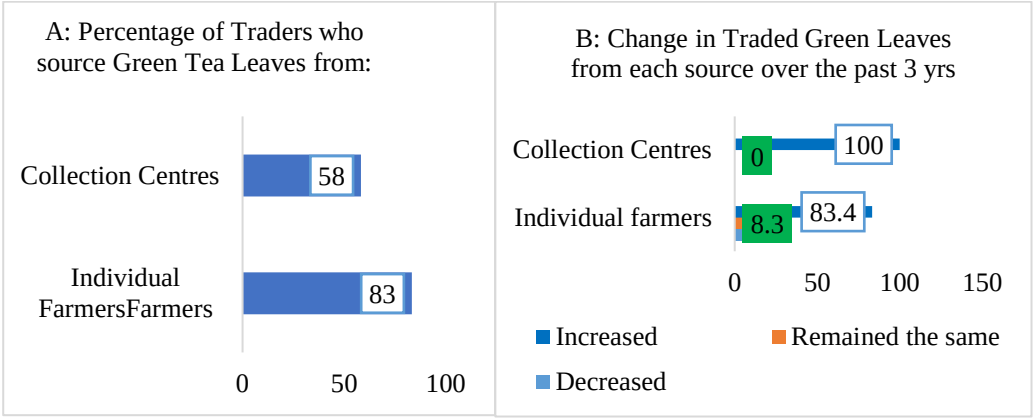
Table 14: Trader characteristics

	Overall	SWEST	WESTRN	CENTRAL
Years in trading Business	6.25	2.00	6.25	7.67
% of registered traders	0.08	0.00	0.00	0.33
A: Employment in Tea Trading Business				
Total Number of Employees	6	16	3	12
Number of Male Employees	5	16	3	10
Number of Female Employees	1	0	0	2
B: Quantity of Green Leaf Traded per Month				
Tea traded in a Peak month (Kgs)	25,257	6,000	26,160	40,000
Tea traded in a Low month (Kgs)	11,543	4,000	11,960	17,000
C: Profits in Tea Trading				
Peak Season Profits	898,182	300,000	941,250	1,025,000
Low Season Profits	327,273	100,000	350,000	350,000
Number of Interviewed Traders	12	1	8	3

Note: Computed using 2018 Tea Value Chain Data

Figure 18 shows the source of tea green leaves to traders and the perceptions on whether the tea from the source has increased/decreased. The results show that most traders (83%) source the tea from individual farmers and about 53% of the traders buy tea from collection centres (Figure 20, Panel B). Regarding the trends, 100% of the traders who source green leaves from collection centres, and 83% of those who buy from individual farmers reported that the tea from the source has increased over the past three years (Figure 20, Panel B).

Figure 20: Source of Tea green leaves to traders



Source: Computed by Authors using Tea VC data 2018

4.3.2 Challenges with marketing of green tea leaves

- Limited grading of green leaves which affects quality
- Individual marketing which reduces farmer bargaining power, and increases transportation cost.
- Farmer exploitation by middlemen
- Seasonal fluctuations in production which leads to inconsistences in the green leaves supply to processors. There is over supply during rainy seasons which cannot be absorbed by the available nearby markets. As a result, farmers transport green leaves to markets in different regions. This results in high transportation costs and low prices.
- Traders' time for collecting green leaf is unreliable. Most of the green leaf is left to wither on the roadsides.
- Prices are very low and not uniform. Worse still farmers have low bargaining powers because of low competition in factories-they are very few and always take advantage of the situation.
- Transportation cost to the factories is high and the deduction of 100= by the factory for transport is a disincentive to farmers.
- Processors take time to pay and at times send back green leaf to farmers if they have excess. Which is a typical loss as farmers would have already incurred the cost of 100/= for plucking.

4.4 Tea Processing

4.4.1 Capacity and Capacity Utilization at the Tea Processing Factories

Under capacity utilization remains one of the key challenges affecting value adding industries of different crops. It is mainly due to limited production and hence inadequate supply of raw materials to processing industries. Table 15 shows that overall there is under capacity utilization of about 3,900 Kgs per week. However, disaggregating the data by regions revealed that there are variations in results. There is over capacity utilization among the processing plants in south Western and western regions, meaning that they process tea quantities that are higher than the installed capacity. On the other hand, there is under-capacity utilization in central region which means that processing plants process less tea than the actual installed capacity.

Table 15: Processing Capacity Utilisation

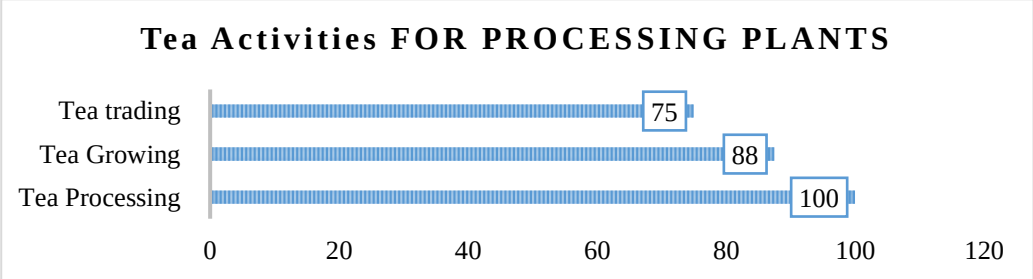
	Overall	SWEST	WESTRN	CENTRAL
Days the plant processes per week	6	6	7	6
Plant capacity per day (Kgs)	49,675	18,400	62,250	43,333
Actual quantity processed per day (Kgs)	45,713	20,700	72,000	19,000
Capacity Gap	***3,963***	***(2,300)***	***(9,750)***	***24,333***
Number of Processing Plants	8	1	4	3

Note: Computed using 2018 Tea Value Chain Data

4.4.2 Overall activities that tea processing plants are involved in

Figure 20 presents the overall activities that tea processing plants are involved in. The results show that the primary activity is tea processing, followed by tea growing, and tea trading, in that order. These results suggest that most tea processing plants are involved in many activities along the tea value chain.

Figure 21: Tea processing activities.



Note: Computed using 2018 Tea Value Chain Data

4.4.3 Employment at the processing level of the tea value chain

Tea processing is dominated by males. Overall, there were 357 total employees on average out of which 262 employees are males and only 95 employees are females. These results hold even when the analysis is disaggregated at regional level. In all the regions, the number of females employed at the processing level are less than a half of men. In terms of employee remuneration, processors in the south western region are the worst in payments compared western and central regions.

Table 16: Employment in Tea Processing

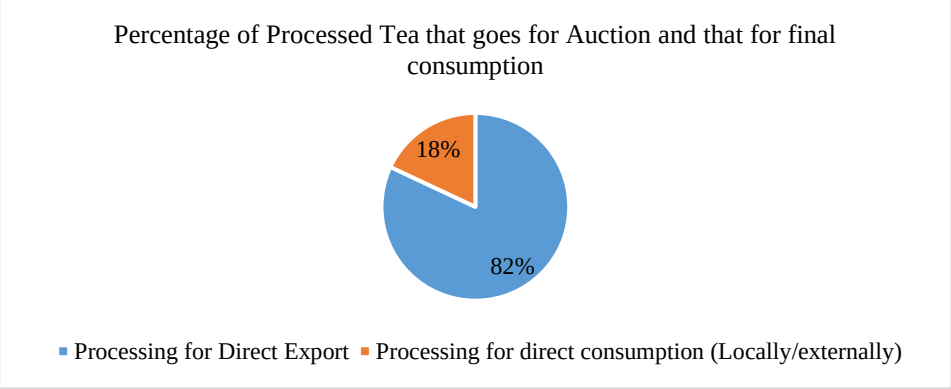
	Overall	SWEST	WESTRN	CENTRAL
Number of Employees	357	600	304	346
Number of Male Employees	262	494	220	240
Female Employees	95	106	84	107
Employees: Full time	317	565	213	315
Part time	40	35	91	31
Average Monthly Salary	215,000	150,000	228,333	240,000
Number of Processing Plants	8	1	4	3

Note: Computed using 2018 Tea Value Chain Data

4.4.4 Markets for processed Tea

About 82% of the processed tea is exported to the auction market in Kenya while only 18% is further processed for external/local final consumption. However, as stated in the introduction, the tea exported to the auction market is of low quality and is used to blend other teas, and as a result it fetches a low price.

Figure 22: Tea processing activities.



Source: Computed using 2018 Tea Value Chain Data

4.4.5 Processing Cost, revenues, and Profits

Tea processing is a profitable business but costly. Table 17 shows that overall, tea processing plants incur processing monthly costs of 973,000,000 Uganda

Shillings. However, the value of monthly sales is higher than the costs (1,220,000,000 Shillings) resulting in profits of 247,000,000 Uganda Shillings. This study reveals that seedling multipliers and Processors make more profits than other players along the tea value chain. Farmers make the least profits, with some regions recording losses on an acre of tea.

Table 17: Processing costs, Sales and Profits

32Monthly costs and Sales	Overall	SWEST	WESTRN	CENTRAL
Monthly costs (UGX)	973,000,000	2,200,000,000	848,000,000	250,000,000
Monthly Sales (UGX)	1,220,000,000	2,500,000,000	1,130,000,000	345,000,000
Monthly Profits	***247,000,000***	***300,000,000***	***282,000,000***	***95,000,000***
Number of Processing Plants	8	1	4	3

Note: Computed using 2018 Tea Value Chain Data

4.4.6 Processing Challenges

- Limited processing capacity to absorb the produced leaf especially during the rainy season.
- Complete lack of processing facilities especially in west Nile which is a disincentive to production.
- High operation cost such as electricity costs
- Unreliable supply of green leaf with sharp seasonal fluctuations
- Limited product space for processed tea to tap into a wider market of blended tea. Indeed, over 95% of Uganda's tea goes to the auction market with limited value addition.

4.4.7 Case Study: Tea Production in West Nile

This sub-section details the tea value chain in west Nile which is the latest adopter of tea. The first tea estate in the sub-region was established in Zeu sub-county in the early 1960`s. However, it didn't thrive like other tea estates in other parts of Uganda and was abandoned after about a decade of tea production. Tea production efforts were revamped in 2014/15 when the government allocated resources to kick start tea growing in the region so as to create employment opportunities and boost income. There are currently two districts where is produced in west Nile: Nebbi and Zobo.

A. TEA Production in Nebbi District.

There are two sub-counties growing tea in Nebbi district: Ndew and Erussi. This is so because the two sub-counties are located in a high-altitude area which provides a conducive environment for tea growing. In Ndhew, the parishes with tea farmers include Abar West and Abar East, among others. These farmers are small holders who grow tea individually. In Erussi, there is only one parish with

tea farmers, that is, Abongu. In Abongu, farmers formed a group of about 42 and as a group they own 50 acres of land dedicated to tea growing. However, the study team found no standing tea plantations in either individual gardens or group plantation but only less than 10 tea plants were identified surviving in Abongu subcounty. This is due to harsh climatic conditions that led to drying out of tea, and poor farming practices by tea growers.

This crop was introduced to farmers without any prior training on best practices. For-example, one of the FGD members said:

"*last year in December we went for a tour in Bushenyi and Kanungu but we saw differences in the way gardens are prepared, for example; a)we have been digging small holes(only to cover the stem) compared to the holes they showed us during the tour, b)We also learnt that when you dig a hole it takes about four weeks before actual planting but here we have been planting in a fresh hole (you plant on the same day you dig the hole), c) In addition they are careful when planting, they plant very few cuttings per day but to us here we were working towards finishing and we could plant as many cuttings as we can every day, d)We could also use the same soil (mixed red and black) we have dug in a hole for planting but we leant that you either use separate soil or the one you have dug and it must be black soil, e) the depth of the hole is supposed to be one and half inches and here we have been planting in half an inch".*

The picture shows Tea plantlets surviving in Errussi Sub-county.

The high failure rate of planted tea has demoralized farmers and many are considering abandoning tea for other profitable cash crops.

Seedling Multiplication

When tea growing was just revived in 2014, Giant seedling company was contracted and it had its base in Nebbi sub-county but in 2016 they shifted to Zombo and by the time of this study there were no nursery bed in the district. However, Giant Seedling Company had sent one of its staff to start preparing 2 acres of land in Pacaka parish-Errussi sub-county to establish a nursery bed to be used in supplying tea cuttings to farmers in 2019 season.

The employee of Giant Seed Company reported that the cuttings are brought from Bushenyi and Kanungu and the main variety multiplied is 303/577. According to him, the nursery established on 2 acres of land will produce 2 million seedlings which they intend to supply through NAADS to tea farmers in Erussi and Ndhew sub counties next year.

The reason he gave for establishing the nursery at this location is to mitigate seedling damages during transportation to farmers due to bad roads and also to ensure on time delivery of seedlings to farmers.

Information from Nebbi District Production Office

The DPO of Nebbi district acknowledged tea as one of the 8 prioritised crops in the 5 Year District Development Plan. He also stressed the role of the Alur Kingdom as that of mobilization purely though they had expected to take the leading role in seedling distribution. The potential areas for tea production identified are Ndhew, Erussi, Atego and Nebbi sub counties though actual tea planting is being done in 2 Sub-counties, that is, Ndhew and Erussi.

Seedling Distribution and Survival rates in Nebbi District

Table 18: Tea seedlings supplied by OWC and their survival rates in the garden.

Year	Season	Quantity received	Q'ty surviving	Number of beneficiaries		TOTAL
				M	F	
2016	A	0	0	0	0	0
2016	B	676,141 Plantlets	0	74	12	86
2017	A	242,736 Plantlets	0	45	21	66

Source*: *New extension worker reports

The challenges faced in Nebbi include;

- Lack of knowledge on tea growing as extension providers lack specialized knowledge for tea sub-sector.
- The prolonged drought from 2015-2017 affected the tea farmers since a lot had been spent in embracing tea growing only for the crop to dry.
- Delivery of the tea seedlings late by the supplier, that is, at the end of the rainy season which negatively affects the survival rates of the crop since a long drought is experienced after.
- Low morale among the farmers that were mobilized for this project due to the failure rates.
- District focus is more on coffee growing than tea growing in these areas.
- Land disputes concerns over community land.

Possible solutions

- Intensive training should be provided to extension workers before the next lot of seedlings.
- Organize capacity building for farmers interested in tea production, that is, study tours and trainings so that they learn how to practically manage the tea crop.
- Timely delivery of seedlings by the supplier specifically in the month of March when the area receives high rainfall over long periods.

- The call of order given to the seedling supplier by NAADS should also be given early and time given to supply to farmers should be increased to give the supplier ample time to deliver the seedlings without rushing within just two weeks period as it has been.

B. TEA Production in Zombo District.

Sub counties identified to have potential for tea production in Zombo district are Nyapiya, Zeu, Akaa, Alangi, Athuma and Jangokoro. So far, the sub counties with some success in tea production are Zeu, Akaa and Alangi.

Table 19: Tea seedlings planted in Zombo Since 2015

Year	Season	Numbers Planted
2015	Season A	6,657,308
2016	Season A	1,550,000
	Season B	4,360,000

Source: Tea development strategy 2016.

In Zombo tea is grown in blocks, Different farmers come together and work in groups on one plantation. On this plantation there are individual plots averaging two acres.

Table 20: Tea acreage and survival rates in selected sub-counties in Zombo district

Sub-county	**Parish**	**Year**	**Size planted**	**Size surviving (2018)**
Zeu	Kigezi	2016/17-2018	25	23
	Papoga	2015/16		2
		2017/18	147	138
	Omoyo	2015/16	100	0
Akaa	Abanga	2015/16 &2016/17		21
		2016/17	150	75
Alangi		2016	120	0
		2017	40	0
		2018	7	7

Source: Extension workers and Observation

Seedling Multiplication in Zombo.

In Zombo, there are two categories of seedling multipliers: Giant Seeds Limited who was contracted by NAADS to supply seedlings in the region; and individual seedling multipliers who set up nurseries targeting the expansion in tea production in the district following the government intervention to promote tea production in the region. The individual farmers are however not registered at the district.

There is also no working relationship between individual seedling multipliers with the only authorized supplier (Giant Seeds Company). Many of individual seed gardens have outgrown and need to be pruned. In Zombo there are multiple individual seedling multipliers and very few of them are known to the district.

The tea varieties supplied by Giant seeds Company in Zombo include 303/577 and 6/8 because they perform better in this area. The company sources cuttings from Bushenyi and does the multiplication at the various nurseries established in different tea growing sub-counties. The company also provides farmers with support in terms of tractors for ploughing large tracts of land, herbicides for areas that are inaccessible by machinery, some financial assistance and advice on best practices.

The challenges faced by Giant Seeds Company;

- Call of order is made towards the onset of dry season hence high many seedlings dry out after planting.
- Farmers cannot afford to buy seedlings during the wet season.
- Distance between Bushenyi and Zombo is long hence cuttings get tired and fail to germinate.
- It is an expensive venture that has forced the company to keep borrowing to finance the venture.
- Changes in interest rates coupled with delayed payments for seedlings supplied to NAADS pose financial challenges.
- Cuttings tend to be expensive during the dry seasons.

5.0 CONCLUSIONS AND POLICY RECOMMENDATIONS

5.1 Conclusions

This study conducted a tea value chain analysis with the objective of establishing the status, organizational structure, and profitability of tea enterprise at the different segments of the value chain. The study also aimed at ascertaining the challenges and opportunities along the value chain so as to provide key recommendations to improve the tea sub-sector in Uganda.

The results show that both the farmers and estates have limited knowledge of the tea clones/varieties they grow. Indeed, more than 50% of the farmers reported that they were growing a traditional/ local variety whose name they did not know. The recommended improved clones by NAADS such as 31/8, 6/8, and 303/577 clones are used by the less than 20% of the farmers each. The limited use of improved seeds has key implications on production and productivity of crops. The results also show that there is limited use of other productivity enhancing technologies such as fertilizers. However, majority of the farmers used herbicides because it significantly reduces weeding costs given that tea is grown on large chunks of land.

A large percentage of communities reported that there are organizations supporting tea production and these were mainly NAADS, local government, and Private organizations such as Kigezi Highland Tea Co. LTD, Kayonza tea factory, Kinkizi Development Company, Igara TEA COMPANY, Kyamuhunga Tea Company, Alur Kingdom, and the Uganda Tea Growers association, among others. The forms of support provided to farmers vary across the supporting organisations. The local government mainly provided trainings, NAADS provides seedlings and trains farmers, whereas the private organizations train farmers, links them to the market, and provides agro-inputs.

Group marketing is limited among farmers because 97% of farmers reported that they sell individually. Famers and estates sell directly to processors. However, while farmers sell at the farm and collection centers, the estates deliver to processors place, and a significant number of estates also process what they produce. There is limited tea grading; 83% of tea communities reported that they do not grade tea when marketing. The results also show that there are price variations across tea growing regions. The price was higher is south western regions at 519 Ugx per Kilogram, followed by western region (469 Ugx/Kg) and Central region at 358 Ugx/kg of tea. It was reported that in central region, processing plants are owned by large estate owners who largely process their produced tea are offer a small price to smallholders.

Access to finance for production is limited and mainly from informal credit sources such as village savings and loan associations (VSLAs). Commercial banks and SACCOs are used by very few farmers. The reasons for the limited use of

formal credit sources were collateral requirements, and long loan application processes.

The study also found that there were many nursery operators that were not operating under any contractual arrangements. These mainly produced individually and sold either directly to farmers, or to other contracted seedling multipliers. The results also showed that were gaps between produced and sold inputs largely explained by lack of prior contractual arrangements. Seedling multipliers use productivity enhancing technologies, and unlike farmers, they receive credit from formal credit sources such as commercial banks and SACCOs.

The study also found that tea processors are also engaged in production and trading. In some regions such as western and south western Uganda, there is over capacity utilization of the processing plants, where as in central the study found that the processing plants' capacities are underutilized. Over/under capacity utilization is explained by the level of production in the particular sub-region. The large proportion of processed tea is sold in the auction market.

The tea value chain is male dominated. There were more males employed at production, trading, and processing levels of the tea value chain compared to females. Fe males were more employed at seedling multiplication level by nursery operators. However, most of them were employed on a part time.

There are variations in the profitability of tea business across the segments of the value chain. The study found that when farmers were making losses if only one acre of tea was considered, suggesting that the break-even point for tea tradition was above one acre. The very small profits at production level were observed in the central region. However, estates made profits even when one acre was considered, and this might be explained by the high level of technology application by the estates compared to smallholders. The other segments of the value chain made positive profits. The study found that seedling multiplication and processing were more profitable compared to trading, and production.

5.2 Recommendations

This sub-section presents a summary of recommendations from the study. Overall, the recommendations are guided by the need to address the challenges observed along the various segments of the tea value chain and the need to leverage the existing opportunities.

i) To enhance production and productivity, there is a need to support R&D institutions such as Rwebitaba Zardi to multiply and extend the right clones that are yield enhancing. NAADS should also enhance the distribution of improved clones, and train farmers on different tea clones so as to enhance adoption.

ii) The Government, through UDC, should support the construction of tea factories in sub-regions where there is over capacity utilization such as western and south western Uganda especially in Kyenjojo. Further,, the Government should expedite the plans to open the processing lines in west Nile to provide market to tea farmers in Zombo and Nebbi.
iii) Enhance credit access by stallholder farmers by capitalizing micro-finance institutions because farmers have limited access to commercial banks.
iv) There is need to improve tea extension and probably have a focused tea extension system to cover areas with high impact on tea productivity and quality. These areas include;
    a) Knowledge on clones being planted and what is appropriate for a particular planting area.
    b) Appropriate inputs to enhance production and productivity.
    c) Household level grading of tea before marketing to enhance quality.
    d) Seedling multipliers achieve minimum requirements of quality seedlings
    e) Post-harvest handling to reduce quantity and quality losses
    c) There should be a deliberate effort to help small holder farmers to cooperate and form farmer groups and/or cooperatives. This will help in; reducing the costs of inputs to smaller holder farmers and will help the buy in bulk and facilitate group marketing to reduce on middlemen and increase on the farm gate profitability.
v) There is need to regulate, register and certify seed multipliers to ensure standards and ultimately quality of tea produced. Seedling producers need support in: knowledge of the different clones; technologies and inputs of seedling production; access to finance; and marketing of their products.
vi) There is therefore need to invest more in processing especially in the west and southwestern regions that are operating beyond the installed capacity.

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