

# **SOYBEAN VALUE-CHAIN**

## **Unraveling issues and mapping pathways to greater efficiency**

**N.P.G. Samantha**

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## **FOREWORD**

The rise, so to speak, of soybean, in Sri Lanka roughly coincides with concerted campaigns against coconut based on 'scientific' evidence that pointed to health concerns. That 'science' aggressively promoted has largely been debunked over the years. This of course is not to say that soybean is a poorer or useless substitute. Hardly! Soybean is an important element in the crop complement. It is however a crop with certain unique features with respect to its value chain which have been considered closely in this study.

It is not, for example, just another OFC or a crop to which lessons related to rice can be applied. The systems of production are different. Soybean shares with other crops certain difficulties such as the lack of high quality seeds but the requirements in other areas such as technological support and marketing channels need to be crop-specific interventions.

The insights are certainly useful in strategizing the development of Soybean in Sri Lanka. The recommendations are certainly worth the consideration of policy-makers who would now be more informed of the distinctions associated with the crop.

**Malinda Seneviratne**  
**Director/CEO**

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**N.P.G. Samantha**

## EXECUTIVE SUMMARY

Soybean is enriched in micro and macro nutrients that are essential for the human body. Hence, soybeans are recommended as a remedy to overcome nutrition deficiencies particularly for low income countries. The objective of this study is to analyze the activities along the soybean Value Chain in Sri Lanka. Soybean can be grown in dry and intermediate zone of Sri Lanka, yet it is limited to Anuradhapura and Mahaweli System H. *Yala* is considered as the the main cultivation season of soybean cultivation. Focus group discussions were administrated to collect information from farmers in Mahaweli System H. Key informant discussions were used to collect information from collectors and traders. Marketing of soybean is different in comparison to other OFC and rice in Sri Lanka. , Hence, most of the farmers tend to cultivate soybean on contract farming. Few dominated marketing channels were identified within the production of local soybean. Farmers are facing some difficulties related to soybean cultivation such as lack of good quality seed, agrochemicals, low level of technological support in planting and harvesting and water shortage during the *yala* season. Cost of soy bean production can be reduced substantially by introducing machineries in land preparation and planting. Punctual delivery of quality inputs such as seed and fertilizer is essential to expand the local production. Variety of soy food and production at the rural level in Sri Lanka is comparatively low compared to the other regional countries. The possibility and the opportunity of expansion of soy food is high. Hence, it is better to initiate awareness programmes leading to expand the soy food consumption.

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## **LIST OF ABBREVIATIONS**

DOA	-	Department of Agriculture
FAO	-	Food and Agriculture Organization
FG	-	Focus Group
FGD	-	Focus Group Discussions
OFCs	-	Other Field Crops
UNDP	-	United Nations Development Programme
WHO	-	World Health Organization

# CHAPTER ONE

## Introduction

### 1.1 Background of the Study

The concept of Value Chain Development was first introduced by Michael Porter (1985) in his well-known book 'Competitive Advantage'. Since then the concept has been enriched with a considerable amount of knowledge and methodologies related to the Value Chain. Based on the knowledge developed, Fearne & Hughes (1999) defined Value Chains as interactive systems with products, money and information flowing through them, all reliant on relationships. Effective flow of information along the Value Chain and the use of information have been identified as a key factor for the development of the Value Chain. In order to develop a successful Value Chain, all stakeholders should understand the whole value chain rather than narrowly focusing on their role. Understanding the key role of each stakeholder and mapping are vital in developing the Value Chain. Hence, this study is an attempt to look into the soybean Value Chain of Sri Lanka and understand the key role played by the stakeholders along the Value Chain.

Local demand for food is growing continuously as a result of population growth and dietary changes. As a developing nation, Sri Lanka faces issues associated with Food Security followed by growing population, substantial postharvest losses and regular adverse weather shocks. Soybean is identified as an important crop to mitigate the malnutrition of the nation. However, the extent cultivated and production of soybean in Sri Lanka has drastically dropped in the recent years.

Owing to the dent in local production, imports of soybean as well as soy oil have increased significantly in the previous decade. The imported quantity of soybean in 2010 was 710mt and it has been increased up to 6,418mt in 2018. In line with the increase of imported quantity of soybean, the import bill has also been increased from Rs.94.55 million in 2010 to Rs.446.99 million in 2018.

At the beginning of all the cropping seasons, the Department Of Agriculture, (DOA) sets targets in extent for all most all the seasonal crops growing in Sri Lanka . *Yala* is the major cultivation season of soybean in the low lands under supplementary irrigation conditions. The DOA targeted an extent of 6,512ha for soya bean in *Yala* 2019 and was successful in achieving only

29% of the targeted extent. Soya bean was among the OFCs that recorded the lowest cultivation progress in *Yala* 2019. However, all the OFCs been failed to achieve targets in *yala* 2019 due to adverse weather conditions.

Again in *Yala* 2020, the DOA targeted an extent of 8,606ha for soybean cultivation and implemented various programmes in order to achieve the target. However, at the end of the *Yala* 2020 season, only 62% of the targeted extent was achieved. Furthermore, soybean recorded the lowest achievement from the targeted extent among the other OFCs. The achievement rate of the most of the OFCs had exceeded the targeted extent in *Yala* 2020 season. The lower rate of achievement in extent from the target of soybean implies the deviation of farmers from soybean cultivation. The said context calls out for an examination to determine reasons for the reluctance of farmers to incline towards soybean cultivation.

According to the Department of Animal Production and Health of Sri Lanka, soybean is used as a main ingredient in animal food processing industry. Due to the insufficiency of local production, all most all the industry requirement is fulfilled through importation of soybeans. In 2019, a quantity of 208,312 Mt of soybean was imported for the purpose of feeding animals used in animal husbandry. (DAPH, 2019).

The Thriposha programme, delivered by the Ministry of Health, provides triple-nutrients (energy, protein and micronutrients) as a ready-to-eat food for pregnant and lactating mothers and for children from 6 to 59 months of age. In the Thriposha programme, soybean is the main source of protein, constituting 30 percent of total product ingredient. Given the widespread distribution of Triposha in Sri Lanka, the total requirement of soya bean production for the programme is approximately 500 Mt per month (FAO, 2019)

On the other hand, National Policy Framework of the present government, 'Vistas of prosperity and splendor', also has given priority for the expansion of soybean cultivation and production in Sri Lanka . In line with the government policy framework, cabinet of ministers approved guaranteed price for soybean (Rs.125.00/kg) along with 14 main OFC crops in *Yala* 2020 in order to strengthen the income of local farmers as well as to encourage farmers to engage in soybean cultivation.

Accordingly, the government has given priority for soybean cultivation and production in Sri Lanka and implemented various programmes in order to achieve cultivation targets. However, cultivation targets were not achieved

in previous major soybean cultivation seasons, owing to various issues associated with the soybean Value Chain in Sri Lanka.

## **1.2 Objectives**

The overall objective of this study is to conduct a comprehensive Value Chain Analysis for soybean to understand the market opportunities along the Value Chain.

The specific objectives of the study are,

1. To examine the existing practices of supply chain of soybean and its value added products
2. To analyze the constraints and opportunities of key value chain actors to improve productivity and competitiveness of the soybean value chain

## **1.3 Structure of the Report**

The report is presented in five sections viz. Introduction, Literature Review, Method, Results and Discussion and Concluding Remarks.



## CHAPTER TWO

### Literature Review

In the Sri Lankan context, very few studies were conducted in relation to marketing issues of soybean. Abeyrathne & Chithrapala (2013) highlighted the biotic, abiotic and social constraints of soybean production and marketing in Sri Lanka. Due to the scattered cultivation and comparatively very small extent cultivated, the impact of biotic constraints to soybean production is relatively small in Sri Lanka. Drought and high temperature are stated as abiotic constraints. Lack of organized marketing channels, non-availability of quality seed, low consumer preferences, lack of value addition and lack of high yielding varieties are found as social constraints in soybean production and marketing in Sri Lanka.

Karunatilake (2003) conducted a SWOT analysis for soybean development in Sri Lanka. Less technical problems, suitability for highland farming and direct involvement of the private sector in purchasing and providing other facilities were identified as the strengths for soybean development of the country. Lack of processing facilities, limitations in using raw soybean as a human food as well as in the feed industry and poor keeping quality were the weaknesses of the soybean industry. Furthermore, he has found wider adaptability, past experience of growing on a commercial scale and availability of land for irrigated farming in major and minor irrigation schemes as the opportunities for the development of soybean in the country. Expansion of the human food industry, free imports or the facilitation of seed importation and increasing demand for pulses other than soybean were identified as the threats for the expansion of the soybean industry in Sri Lanka .

Taking into account the global context, it was observed that studies on Value Chain Analysis for soybean were conducted frequently in developing countries owing to high rates of malnutrition. James, Kinansua, & Abambire (2017) assessed the soybean Value Chain and its contribution to household Food Security in the Sissala East District of the Upper West Region of Ghana. A case study approach was adopted within the research design and found some challenges of soybean Value Chain such as untimely delivery of inputs, exploitation of farmers in the chain and high production cost. The study highlighted the need of strengthening collaboration between district assemblies, development partners, farmers and other relevant Value Chain actors.

Hambisa & Geda (2019) used Value Chain Mapping and SWOT analysis to conduct Value Chain Analysis for soybean in Ethiopia and found that low access to improved inputs, collateral problem to get credit, poor storage facilities, low price of produce, and low negotiation (bargaining) power of producers as the major constraints. Improving extension services, sharing of experience among soybean farmers, increasing land allocation and market information dissemination were suggested as policy implications to improve productivity and profitability of soybean farming in the region and Ethiopia at large. Furthermore, Tinsley (2009) conducted a complete Value Chain Analysis for soybean in Kenya and Malawi and highlighted some sort of issues common for developing countries.

## CHAPTER THREE

### Material and Methods

Prior to the explanation of the method of study, setting a definition for the term 'Value Chain' and differentiating Value Chain from often interchangeably used term, 'Suppl Chain' are of paramount importance. A Supply Chain is a network of product-related business enterprises through which products move from the point of production to consumption, including pre-production and post-consumption activities. In Supply Chains, production is focused on efficient logistics using upstream and downstream businesses aimed mostly at pushing products to market. Supply Chains are mostly concerned with costs and the time it takes to deliver the product for sale. The main objective of Supply Chain management is to maximize profits by reducing the number of links in the chain and keeping issues such as bottlenecks in supply, costs incurred, and time to market to a minimum. A Supply Chain has three key parts: supplying raw materials to manufacturing units; manufacturing raw materials into semi-finished or finished products; and distribution to ensure products reach consumers (Bjorndal, Child, & Lem, 2014).

A Value Chain can be seen as a step further in evolution, as it moves beyond just bringing the product to market and aims at providing a more mutually beneficial environment for all stakeholders. Like Supply Chains, the main objective of Value Chain management is to maximize net revenue. However, the method in which Value Chains seek to maximize net revenue is inherently different. As the name suggests, Value Chains add incremental value to the product in the nodes of a chain either by value addition or value creation. This value is then realized from higher prices and/or the development of new (niche) or expanded markets (Bjorndal, Child, & Lem, 2014). It is vital to note that forming a good Supply Chain is needed to developing a Value Chain, as without a supply of products, adding value would never be able to occur.

A Value Chain encompasses the full range of activities and services required to bring a product or service from its production to its end use (Kaplinsky & Morris, 2000). Value Chains include process actors like input suppliers, producers, processors, traders and consumers. At one end are the producers – the farmers who grow the crops and raise the animals. At the other end are consumers, who eat, drink and wear the final products. In the middle are hundreds and thousands of individuals and firms, each performing one small step in the chain: transporting, processing, storing,



selling, buying, packaging, checking, monitoring, making decisions, etc. It also includes a range of services needed in the Value Chain including technical support (extension), business enabling and financial services, innovation and communication, information brokering, etc.). The Value Chain actors and service providers interact in different ways starting from local to national and international levels (Emana & Nigussie, 2011). Figure 3.1 shows the Value Chain functions.



Source: Emana & Nigussie, 2011

**Figure 3.1: Value Chain Functions**

### Value Chain Study Approaches

Based on the research question, an appropriate Value-Chain Analysis approach is selected (Kaplinsky & Morris, 2001). Accordingly, four aspects of Value-Chain Analysis have been applied in agriculture:

- I. **Value Chain Mapping:** a Value-Chain Analysis systematically maps the actors participating in the production, distribution, processing, marketing and consumption of a particular product (or products). This mapping assesses the characteristics of actors, profit and cost structures, and flows of goods throughout the chain, employment characteristics, and the destination and volumes of domestic and foreign sales.

- II. ***Identifying the distribution of benefits of actors in the chain:*** Through the analysis of margins and profits within the chain, one can determine who benefits from participation in the chain and which actors could benefit from increased support or organization. This is particularly important in the context of developing countries (and agriculture in particular), given concerns that the poor in particular are vulnerable to the process of globalization.
- III. ***Examining the role of upgrading within the chain:*** Upgrading can involve improvements in the quality and product design that enable producers to gain higher-value or through diversification in the product lines served. An analysis of the upgrading process includes an assessment of the profitability of actors within the chain as well as information on constraints that are currently present. Governance issues play a key role in defining how such upgrading occurs. In addition, the structure of regulations, entry barriers, trade restrictions, and standards can further shape and influence the environment in which upgrading can take place. Possible forms of upgrading include: process upgrading, product upgrading and function upgrading.
- IV. ***Role of governance in the Value-Chain:*** Governance in a Value-Chain refers to the structure of relationships and coordination mechanisms that exist between actors in the Value-Chain. Governance is important from a policy perspective by identifying the institutional arrangements that may need to be targeted to improve capabilities in the Value-Chain, remedy distributional distortions, and increase value-added in the sector.

Production, processing, and distribution of agricultural products are increasingly being organized into Value Chains, where flows of inputs, products, financial and information resources take place among farmers, processors, retailers and other economic actors. Value Chains do not evolve in a deterministic process, but adapt and respond to local conditions, the policy and institutional environment, market power, and consumer preferences, among other things. Some of these factors shaping Value Chain evolution may not be optimal from a social welfare standpoint. The aim of Value Chain analysis, therefore, is to analyze the organization and behavior of all the participants in the Value Chain, to diagnose the constraints and problems that they face, and to identify public actions that may enhance the performance of the Value Chain and contribute to national policy objectives (Kirimi, et al., 2011).

Therefore, the methodology of the study specifically involves:

- Identifying the outline of the chain and the position of the various economic agents within it—all who contribute to production, transformation and marketing of a specific product;
- Identifying the roles and functions of these agents, including those who perform multiple roles;
- Grouping agents into categories which are homogeneous from the point of view of economic, technical and/or socio-economic analysis;
- Showing interactions among agents;
- Quantifying the flows corresponding to the activities of the actors both in physical and monetary terms;
- Mapping key policies and institutions along the Value Chain that influence the functioning of the chain; and
- Establishing key drivers, trends, and issues affecting the Value Chain and its actors.

### **Area Selection**

According to the crop forecast of the Department of Agriculture, 90% out of total production of soybean of the country is produced in System H of Mahaweli irrigation scheme and Anuradhapura district. Hence, System H was selected for farmer survey, focus group discussions with farmers and key informant interviews with all the stakeholders.

### **Data**

Both primary and secondary data were used for the study. Primary data were collected using focus group discussions, and key informant interviews with all the stakeholders along the soybean Value Chain of the country. Secondary data such as soybean production, consumption, and price information were collected from the Department of Agriculture, Department of Census and Statistics, Central Bank of Sri Lanka as well as Food and Agriculture Organization of the United Nations.

### **Sampling of Farmers and Data Collection Methods**

Within each area of analysis, villages were identified and focus group discussions were conducted with farmers using a semi-structured survey instrument. Farmer surveys were conducted in a focus group format in order to better understand soybean production and marketing issues within

a given region, rather than the experiences of only a few individuals. Anuradhapura and Mahaweli H are identified as the major soybean producing areas of Sri Lanka . Three Mahaweli block areas were selected based on the production information of the last five years.

FG technique is advantageous for this kind of study because it is a qualitative research technique that focuses on a specific issue with a predetermined group of people, participating in an interactive discussion. According Henink (2014) FG technique is an interactive discussion carried out by six to eight selected participants, led by a trained moderator focusing on a specific set of issues. It aims to gain a broad range of views on the research topic over a 60-90 minute period and to create an environment where participants feel comfortable to express their views.

Since FGD is a carefully planned data collection procedure designed for obtaining participants' perceptions in a well-defined area of interest in a non-threatening environment, participants were purposively selected with common characteristics related to the objective of the study. According to Hui Shung and Lydia, (2005) in this selection process and the sample size, the focus groups do not constitute a random sample and not intended to be representative of the general population as the results will not be suitable for making inferences or predictions. Based on this argument, six FGDs were conducted in three locations in the System H of Mahaweli viz. Meegalawa, Eppawala and Nochchiyagama with purposively selected participants from each locations. The number of participants in each FG varied from 5 to 8, selected with the help of Agriculture Officers in each location. Since the group setting was more important in FGDs, selection of participants were closely monitored to ensure accurate results.

FGDs were conducted in common locations where all the participants have easy access. Discussions were audiotaped with the consent of participants. In addition, notes were taken by a trained enumerator. A moderator facilitated the group discussions each lasting about an hour. A semi-structured questionnaire was developed by the research team as a guide for FGDs to ensure the consistency of questions asked across groups allowing a certain margin of enquiring flexibility. All the participants were given equal opportunity to present their views on the research topics enabling them to highlight the issues of importance to them.

For the rest of the actors along with the soybean Value Chain, at least five key informant interviews were held for each category depending on the available number.

## **Data Analysis**

The data gathered were analyzed by following the thematic analysis approach to investigate each issue in-depth to verify relationships between various issues identified since this approach was presumed to be more suitable to identify the magnitude of the issues in soybean Value Chain.

## CHAPTER FOUR

### Results and Discussion

#### 4.1 Overview of the Soybean

Soybean (*Glycine max*) belongs to the legume family and it is considered as the most valuable bean in the world providing vegetable proteins for millions of people. Being among the cheapest source of protein, soybean is a staple in the diets of people and animals in various parts of the world. Though the origin of soybean is obscure, it has been grown as a commercial crop primarily in temperate ecologies for thousands of years, first in Northern Asia and in more recent years in North America and countries of the Southern Cone of Latin America (FAO, 2004). Soybean cultivation is thriving in temperate zones, but there is a remarkable potential role for soybean in various cropping systems of the tropics and subtropics. Especially in areas with limited number of farmers and low mechanization. Food and Agriculture Organization (FAO) of the United Nation has classified soybean as an oil crop due to its special characteristics.

Soybean is categorized into high value and profitable crop based on its economic viability which is determined by the commercial utilization of its sub-products; meal and oil. Those two sub products account for two third and one third of its economic value respectively. According to FAO, soymeal accounts for over 60% of world output of vegetable and animal meals and occupies a prominent position among protein feedstuff used in the production of feed concentrates, while soybean oil is the single most important vegetable oil, accounting for 20% of global vegetable oil production (FAO, 2004). The advent of palm oil diminished the prominence of soy oil over other vegetable oils produced in the world. Plentiful and dependable supplies, competitive price and neutral flavour of soybean oil particularly promote its widespread use as an edible oil. Furthermore, the rapid increase in the demand for compound feed has also contributed for increasing of soybean and soybean oil production.

People in many Far Eastern countries (China, Japan, Indonesia, Korea, India, Thailand, Vietnam) as well as some pockets in Africa (Nigeria and Uganda) used to consume soy-based foods made out of whole fresh bean as a long tradition. Tofu, miso, tempeh and soy sauce are some of the famous traditional foods that derived either directly from the whole fresh bean or after processing of the bean into soymilk. At present, the soybean industry has been developed by expanding its production range to (i) fresh beans and

sprouts, (ii) dairy substitutes such as soy milk, cheese etc., (iii) grain products such as soy bread, pasta and flour, (iv) meat substitutes, and (v) soy spreads and pastes.

Nutrient composition of soybean includes protein, fat, carbohydrates, dietary fibers, minerals and phytoestrogens which are essential elements for a healthy life. Nutritional values of whole soybean (per 100g) includes protein 36.5g, carbohydrates 30.2g, fat 19.9g, moisture 8.5g and ash 4.9g. In addition, soy oil is also used as an ingredient in the industrial sector. Based on the nutrient and economic benefits of soybean, many governments in developed as well as in developing countries along with international organizations and non-government organizations took various steps to develop soybean Value Chain in the previous decade.

## **4.2 History of Soybean in Sri Lanka**

Sri Lanka has a shorter history and tradition of cultivation and consumption of soybean and soy food compared to the other Asian countries. However, some evidence proved that it has been growing in up-country area of Sri Lanka since ancient times (Shurleff & Aoyagi, 2004). The attention towards the development of soybean growing and production increased in the country because of the findings of the study conducted by FAO in collaboration with World Health Organization (WHO) in 1957. The aim of the study was to determine the problems associated with food production, nutritional and calorie deficiencies of the people in the Sri Lanka. The study discovered that the majority of the Sri Lankan population suffered from nutrition deficiencies and proposed to find out low cost sources of protein and calories to overcome the issue. In line with the recommendations of the study, FAO initiated the Freedom from Hunger Campaign (FHC) in Sri Lanka in 1960s, which focused promotion of soybean cultivation in the country as a low cost source of nutrient along with the other objectives of the programme. Since then various development programmes were implemented to promote soybean cultivation and soy food in order to mitigate nutritional deficiencies of the country.

One of the most important milestones of soybean history of the country is the initiation of soybean varietal and agronomic trials at the Mahailuppallama Agricultural Research Station in 1967 on a limited scale. During the 1970s and 1980s, the Government of Sri Lanka longed several soybean promotion programmes with the assistance of FAO and UNDP. One such example is the implementation of Sri Lanka soybean development programme with the financial assistance of UNDP during the period from 01

May 1975 to 01 September 1977 (phase 1). The programme included the development activities related to the soybean cultivation and food production such as manpower development, expert consultants in soybean breeding, insect control, weed control, soil and water management, agricultural machinery, plant pathology, and rhizobium microbiology.

Another most important landmark in the process of the contribution of soybean to overcome nutrient deficiency of the country, was the government decision to start using locally produced soy flour for the Thripasha programme in 1976. Establishment of Soybean Food Research Center in 1979 and soy food processing plant at Anuradhapura in 1980 were also remarkable turning points of soy food industry in Sri Lanka. During 1980s, the Government was the main buyer of locally produced soybean for the Thripasha programme.

In the early seventies, the government-owned Oil and Fat Corporation utilized local soybean for oil extraction and produced soymeal for the animal feed industry. In the late seventies, however, as per the government's privatization policy, this state owned corporation was handed over to the private sector for poultry development but not for feed production. Due to economic and other reasons the soybean processing factory which was established in dry zone was closed down in the late eighties (Karunatilake, 2003).

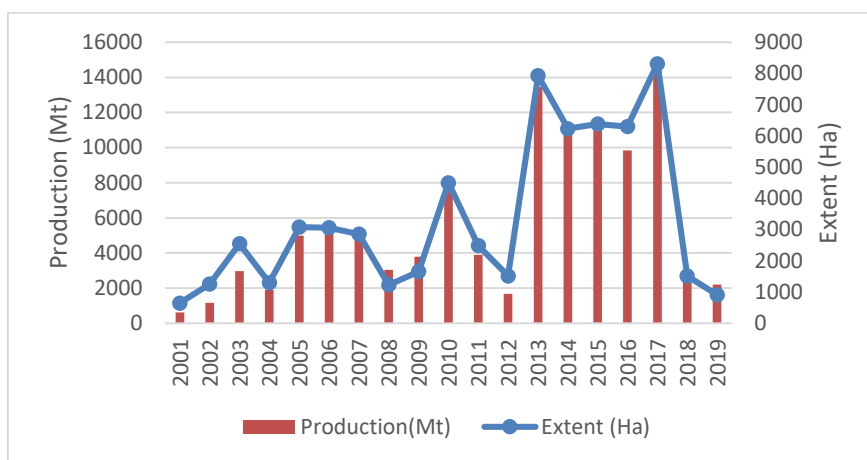
At the end of the 1970's, private sector companies entered in to soy food processing industry in Sri Lanka and today, all most all the industry activities are in the hands of the private sector. Today, the consumption of soy food has been expanded to new product ranges produced locally as well as imported as a result of numerous promotion programme of soy food as well as the changes of socio-economic environment of Sri Lanka .

According to Karunatilake (2003) a few cottage level small-scale food manufacturers use locally produced soybean to produce tofu, Tempe, milk, ice cream and other snacks. Two medium-scale companies consume a major portion (more than 60 per cent) of locally produced soybean seed in their human food industry. It is reported that the annual growth rate of the human food industry, which consumes soybean, is about 1-2 per cent. Therefore, locally produced soybean cannot be utilized for the animal feed industry in the near future due to following reasons. - Very slow growth rate of cultivated extent. - Lack of oil extraction facilities in the country. - No proper marketing network in the producing areas. - Very high demand from the food industry.



### 4.3 Local Production of Soybean

Soybean is recommended to be cultivated in Dry and Intermediate zones of Sri Lanka, yet it is limited to Anuradhapura district (Including System H of Mahaweli irrigation scheme) and some areas of Kurunegala, Matale and Nuwara Eliya districts. *Yala* is the main cultivation season of soybean mostly under supplementary irrigation conditions in paddy fields while it is cultivated in up lands during *Maha* season under rain-fed conditions. The demand for the whole grain of this crop is quite different from other pulses grown in Sri Lanka, hence, majority of farmers tend to cultivate soybean on forward sales agreements with soy food manufacturing companies.



Source: Department of Census and Statistics

**Figure 4.1: Extent and Production of Soybean (2000-2019)**

Figure 1 demonstrates the trend of extent and production of soybean during the period from 2001 to 2019. Out of the whole reference period, the extent cultivated as well as the production of soybean have shown an improvement during the period from 2013 to 2017. In 2018 the total cultivated extent of soybean was 1,511ha and it had recorded a sharp decline from 8,313ha to 1,511ha in 2017.

### 4.4 Value Chain Analysis for Soybean

This section focuses in identifying Value Chain actors of soybean and their function in adding values in the flow from the farm to the end consumer. This analysis is limited to mapping and identifying key function of each actors of the Value Chain. Economic analysis for soybean Value Chain has to be conducted

in the next step in order to fully understand the economic benefit along the Value Chain.

#### 4.4.1 Value Chain Actors

In the Sri Lankan context, soybean marketing system is different in comparison to other OFCs like green gram or cowpea. There is a strong vertical relationship among the Value Chain actors although they act independently in horizontal level in most cases.

**Table 4.1: Main Activities of Key Actors of Soybean Value Chain of Sri Lanka**

<i>Key Actor</i>	<i>Main activity</i>
<i>Farmer</i>	Production, harvesting, drying and transport to traders
<i>Collectors</i>	Assemble from farmers, transport
<i>Traders</i>	Procure soybean directly from farmers, store, transport and sell to processors
<i>Food processors</i>	Facilitate contact farming, directly purchase soybean from traders, store, processing and sell

#### Farmers

Farmers are the primary producers of soybean. The success of the entire Value Chain depends on the quality product at the farm level. Three types of farmers can be identified in the Mahaweli system. They are, independent farmers, contact farmers and out growers. Selling soybean in open market is difficult compared to OFC or rice in Sri Lanka. There is no direct demand for soybean from consumers as whole grain in Sri Lanka. It has to be produced prior to consumption. Hence, farmers tend to be bound by the contract with processing companies in order to reduce marketing risk at the point of harvesting. Therefore, very few independent farmers can be identified in the area due to the high marketing risk.

Contract farming is the most popular way of growing soybean in the district of Anuradhapura. All the inputs such as seed, fertilizer and agrochemicals are provided by the processing companies. The only remaining activities for the farmers are land preparation, establish the crop and harvesting. All the

cost related to input supply is deducted at the time of purchase of soybean by the processing companies. Contract price is set at the initial stage which was agreed upon by both parties. Out grower farming is taken place in the government seed producing programme. Seeds are provided by the Department of Agriculture and harvest is purchased following seed testing procedure. If rejected in the testing process, farmer has to sell the harvest in open market.

Farmers are facing some difficulties in soybean farming such as lack of getting good quality seed in open market, lack of technical support in harvesting and planting level, high cost of labour due to the lack of suitable machineries, water shortage during the *Yala* season and lack of agrochemicals.

### **Collectors**

Collectors play a limited role in soybean Value Chain because most of the farmers do contact farming with food processing companies. However, during the harvesting period dependent collectors visit farm gate and try to buy soybean from farmers offering higher price than Contract Farming agreements. In the previous *yala* season, open market price was higher than the contracted farming price due to low production as well as the government restriction on imports. Collectors had offered a higher price for farmers at farmgate for the product with high moisture content just after harvesting.

### **Traders**

Two type of distinct traders can be identified in soybean Value Chain. The first type functions in major producing areas and they purchase soybean from farmers as well as collectors. The other type of traders operate in large scale with high storage capacity. They function as contact suppliers for processing companies as well as the Thripasha programme.

### **Food Manufactures**

Thripasha programme is the main food processing activity related to local soybean production. Similar product to Thripasha such as Samapasha, Sripasha, Lakpasha are produced using local soybean production. Apart from that, few companies purchase local soybean to produce soy oil. Soy ice-cream and tofu are also produced in small scale in Sri Lanka. Companies like CIC and Pussalla purchase low quality local soybean to produce animal





## CHAPTER FIVE

### Conclusion and Recommendations

Soybean is enriched in micro and macro nutrients that are essential for human body. Hence, it is recommended for low income counties to overcome nutrition deficiencies. The objective of this study was to analyze the activities along the soybean Value Chain of Sri Lanka. Soybean is grown in the dry and intermediate zone of the country, but it is limited to Anuradhapura and Mahaweli System H. *Yala* is the main cultivation season of soybean. A focus group discussion was conducted to collect information from farmers in Mahaweli System H. Key informant discussions were used to collect information from collectors and traders. Marketing of soybean is different from other OFC and rice in the country, hence, most of the farmers tend to cultivate soybean through contact farming. Few dominated marketing channels were identified for local soybean. Farmers are facing some difficulties in soybean cultivation such as lack of good quality seeds, agrochemicals, low level of technological support in planting and harvesting and water shortage during the *Yala* season. Cost of soy bean production can be reduced substantially by introducing machineries in land preparation and planting. Providing quality inputs such as seed and fertilizer at correct time is essential to expand the local production. Variety of soy food and production at rural level in Sri Lanka is comparatively low compared to the other regional counties. The possibility and the opportunity of expansion of soy food is high. Hence, it is better to initiate awareness programme leading to expand the consumption of soy products.

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