RESEARCH REPORT

AN ANALYSIS OF MARKETING MARGINS AND MARKETING EFFICIENCY: MARKETING CHANNELS OF POTATO AND RED ONION IN SRI LANKA

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FOREWORD

The study of marketing margins, costs and pricing efficiency is important in determining the mark up earnings to different levels of marketing. The knowledge of marketing margin and pricing efficiency determines to a large extent marketing efficiency and integration. In order to facilitate the agricultural development process, analysis of marketing margins and pricing efficiency of foodstuffs is considered very pertinent and, it is expected that favorable pricing efficiency will stimulate more production of the products concerned.

Rapid changes in potato and onion production and marketing system in Sri Lanka in the recent past can be identified. One way of identifying these changes is price analysis because these changes should be reflected in prices. An efficient marketing system minimizes costs and maximizes benefits to all sections of society. Producers, consumers and traders are concerned about the size of the marketing margins, changes in marketing margins and the incidence of changes in margins. If the marketing system is functioning efficiently price distortion should be minimal and producers as well as consumers should benefit. According to the above situation, in Sri Lanka, marketing operations of other field crops have a crucial role due to seasonality of produce in deciding the profit of the farmer on one hand and the level of availability to consumer on the other. High market margins are a grave problem in this scenario. Therefore, a study of the marketing system for other field crops (potato and red onion) is necessary to understand the complexities involved and identify bottlenecks with a view to providing efficient services in the transfer of farm products and inputs from producers to consumers. Hence this study is focused on analyzing the marketing margin and price spread to understand the real situation in efficiency of potato and onion marketing system in Sri Lanka.

I congratulate the research team for successfully undertaking this study and hope the findings and recommendations would be useful for the policymakers and other stakeholders in the agri-food supply chain.

Haputhanthri Dharmasena
Director

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EXECUTIVE SUMMARY

Performance of the marketing system of any commodity depends on the organization of its marketing channels. In particular, the number of players involved and the degree of coordination and information shared within the channel determine the marketing costs and margins. A marketing margin is defined as the difference in the value of physical quantities at various levels of the marketing process. In order to calculate marketing efficiency, the knowledge of marketing costs and marketing margins for various marketing operations is essential.

The overall objective of the study was to evaluate the marketing margins of potato and red onion and to suggest measures to improve the marketing system. This study was basically carried out using primary data collected in a comprehensive questionnaire through a field survey. Primary data was collected through personal interviews with key informants including farmers and market intermediaries of different marketing channels and also by using well structured interview schedules. The analysis estimates the costs of all inputs, subtracting these costs from returns and then gives profits at each level of the system. Data was explained and statistically analyzed using appropriate statistical techniques of descriptive methods.

The study found that for potato, the net price received by farmers in the consumer price is 70 percent and 52 percent respectively in channels A and B which supply potato from Nuwara Eliya to Colombo. Wholesalers' and retailers' net margins were 11 percent and 20 percent respectively in channel A, while that of channel B, it was 13 percent and 24 percent respectively. Transport agent channel was more efficient and a low cost channel compared to the others at the farm level in Nuwara Eliya. Analysis of price margins shows that farmers in Nuwara Eliya were highly benefited from transport agent channel than from intermediate channel. Regarding the Welimada potatoes, wholesalers' net margins were 7 percent and 14 percent in channel C and D of the Welimada farmers and retailers' net margins were 25 percent and 22 percent respectively in channel C and channel D. Retailer's net margin is higher due to wastage (4 percent) at that level. Wholesaler's net margin is high for NE potato compared to Welimada potato as prices are not based on the commission.

For red onion, the net price received by farmers in the consumer price is 67 percent and 59 percent respectively in channel E and F which supply red onion from Puttalam to Colombo, whereas it was 66 percent and 53 percent respectively in channel G and channel H which supply red onion from Jaffna to Colombo. Analysis of price margins shows that Puttalam farmers were highly benefited than Jaffna farmers due to good quality. Wholesalers' and retailers' net margins were 5 percent and 28 percent in channel E supply red onion from Puttalam whereas wholesalers' and retailers' net margins were 6 percent and 23 percent in channel F. For red onion supplies from Jaffna, the wholesalers' and retailers' net margins were 10 percent and 24 percent in channel G, whereas it was 12 percent and 21 percent respectively in channel H. Retailer's net margin is higher due to wastage (6 percent) at that level.

Marketing efficiency is calculated by using consumer price and total marketing costs. According to those results, for Nuwara Eliya potato, the Marketing Efficiency (ME) is higher in channel A (ME=9.12) which supplies potato through transport agents, whereas it was low for channel B (ME=7.32) which supplies through collectors. For Welimada potato, the marketing efficiency is higher in channel D (ME=8.15), compared to channel C (ME=6) which supplies potato through the collectors of Bandarawela Wholesale Market which involves less transaction costs.

For Puttalam red onion, the marketing efficiency is higher in Channel E (ME=4.18) which supplies red onion through the Dedicated Economic Centre (DEC), whereas it was low for Channel F (ME=3.5) which supplies directly. For Jaffna red onion, the marketing efficiency is higher in Channel G (ME=3.78), compared to Channel H (ME=3.2) which supplies red onion through Dambulla DEC which incurs a less transaction cost.

The high percentage of margin to farmer-consumer price difference was indicative of large inefficiencies and relatively poor marketing efficiency. Hence, there is a great need to improve the marketing of potatoes and red onions. The direct participation of farmers should be increased. Traders and farmers need to be organized in a better way to serve and protect their interests, rather than the current structures which are mostly serving few market participants. Market infrastructure should be improved through storage facilities, cold storages, loading and weighing facilities. Improvement in the road network, cold-chain facilities are also of paramount importance. Market integration and efficiency can also be improved by making up-to-date market information available to all participants through various means, including a good market information system. Encouragement of proper transport and packing systems may reduce the high transaction costs and high wastage and it is very important to reduce high transaction costs of all sectors.

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TGMM	-	Total Gross Marketing Margin
GMM	-	Gross Market Margin
MM	-	Market Margin
NMM	-	Net Market Margin
NE	-	Nuwara Eliya
DEC	-	Dedicated Economic Center
NDEC	-	Norochcholai Dedicated Economic Center
KDEC	-	Keppetipola Dedicated Economic Center
ME	-	Marketing Efficiency

CHAPTER ONE

Introduction

1.1 Background of the Study

As a link between producer and consumer, marketing plays a very important role, not only in stimulating production and consumption but also in accelerating the rate of economic growth. Its dynamic functions are thus of primary importance in promoting economic activities and it has been described as the most important factor in the development of the agricultural crop sector.

Marketing of commodities typically involves many intermediaries: assemblers, wholesalers, retailers and the ultimate end users (i.e. consumers). The performance of the marketing system of any commodity depends on the organization of its marketing channels. In particular, the number of players involved and the degree of coordination and information shared within the channel will determine the marketing costs and margins.

A marketing margin is defined as the difference in the value of physical quantities at various levels of the marketing process. It represents the difference between farm gate and wholesale prices, or between wholesale and retail prices. The total marketing margins constitute price diffusion. Marketing margin includes marketing costs and the profits. Marketing Costs are the actual expenses required in bringing goods and services from the producer to the consumers. Marketing cost normally includes;

(I) Handling charges at local points
(ii) Assembling charges
(iii) Transport and storage costs
(iv) Handling charges of wholesaler's and retailer's for moving the products from producers to consumers
(v) Expenses on secondary services such as financing, risk taking and market intelligence
(vi) Profit margins taken out by different agencies.

The study of marketing margins, costs and pricing efficiency is important in determining the mark up at different levels of marketing. The knowledge of marketing margin and pricing efficiency determines marketing efficiency and integration to a large extent. In order to facilitate the agricultural development process, analysis of marketing margins and pricing efficiency of foodstuffs is considered very pertinent and it is expected that favorable pricing efficiency will stimulate the production of the products concerned. According to the above

situation in Sri Lanka, the marketing operations of other field crops have a crucial role to play. When seasonality of produce decides the profit of the farmer, the level of availability to consumer is also vital. Marketing costs and high market margins are a huge problem in this scenario. Therefore, a study of the marketing system for other field crops (potato and red onion) is necessary to understand the complexities involved in and to identify bottlenecks with a view to providing efficient services in the transfer of farm products and inputs from producers to consumers. An efficient marketing system minimizes costs and generates maximum benefits to all sections of society. Producers, consumers and traders are concerned about the size of the marketing margins, changes in marketing margins and the incidence of changes in margins.

1.2 Research Problem

Agricultural marketing is an important discipline in agricultural economics. Marketing of vegetables is particularly important as up to 90-98% of the produce is sold, except root and tuber crops such as potato, and, manioc and beans of which a significant portion is saved for seeds (Singh, 1992). When considering the importance of marketing operations of other field crops such as potato and red onion, seasonality of produce with the two paradoxical aspects —the profits of the farmer and level of availability to consumer — depend on high market margins and high marketing costs which are a grave concern. Marketing cost includes collection, transportation, processing and distribution of farm produce to consumer. To reduce high transaction costs and high marketing margins, various methods are used all over the world such as direct marketing system and contract farming.

In this scenario, market margin and marketing efficiency is essential to measure the market performance. In order to calculate marketing efficiency the knowledge of marketing costs and marketing margins for various marketing operations is essential.

As a product moves closer to the ultimate consumer, the price per selling unit increases in order to provide margins to the various intermediaries and functionaries and to those who provide auxiliary services as well. Therefore, to protect the interests of producers and consumers, it is essential to integrate the role of intermediaries. Thus, the marketing margin is a good yardstick for measuring marketing efficiency and essential in the formulation of an appropriate market policy (Thakur, 1992). In this context, the importance of regulations and continuous study of marketing margins in the case of potato and red onion will be very important as the general assumption is that the high cost of marketing is caused by excessive waste, inefficiencies and high profits of the agencies which are involved throughout the marketing channel.

Study of marketing costs and margins serves in the evaluation of the marketing performance for both input and output markets and across the entire market or value chain. Yet, in Sri Lanka, it has been extremely difficult to answer the questions

such as whether farmers, suppliers, traders and other middle-men receive a fair share of the amount paid by the consumers. In addition, it could be even more difficult to judge whether each actor is satisfied with the type of product/services provided by other market participants, thus raises the question of market margin analysis.

The importance of all marketing costs and margins is quite evident in agribusiness planning and strategy design. This study may provide a concrete theoretical foundation on their usefulness as evaluation techniques could help researchers in generating sensible alternative measures that answer the most important questions in relation to performance and efficiency criteria in Sri Lanka's agricultural markets for potato and red onion.

Despite many marketing studies, only a few have focused on agricultural markets' efficiency, performance, and market development. Consequently, there is limited information on marketing costs and margins, and price spreads of agricultural commodities in Sri Lanka. Therefore, this study aims to fill these gaps by reducing high marketing costs and form a basis for agricultural markets and links further between knowledge on marketing margins, pricing efficiency and market development to other spheres that contribute, at large, to agricultural development and economic growth.

This study is an attempt to estimate marketing efficiency of potato and red onion marketing in Sri Lanka. Evidence of whether the markets are efficient or not, and if efficient, to which extent it occurs, is therefore vital for both economists and policymakers to initiate appropriate programmes/projects aiming at food security and formulating favorable agricultural policies.

1.3 Objectives

The overall objective of the study is to evaluate the efficiency of potato and red onion marketing and to suggest measures to improve the efficiency of the system. Marketing efficiency was evaluated using marketing costs and marketing margins for various marketing operations. There is no similar study carried out empirically in the context of potato and onion marketing in Sri Lanka. The purpose of this study is, therefore, to fill the existing knowledge gap.

The specific objectives are as follows;

- To identify the existing marketing channels for potato and red onion and understand the operation of those marketing channels
- To calculate gross marketing margins of potato and red onion
- To calculate the net marketing margins and cost of intermediaries at various stages of marketing channel for each crop
- To measure the marketing efficiency for each crop in different marketing channels

- To suggest policy guidelines for improving potato and red onion marketing

1.4 Organization of the Report

This report contains six chapters and the Chapter one provides a general introduction outlining the importance and relevance of the study. Chapter 2 provides the background information on production and marketing of potato and red onion sector in Sri Lanka in order to gain a proper understanding of the sector before analyzing the marketing margin. Accordingly, data and information related to the extent cultivated and production, consumption, marketing, price and imports were examined in Chapter Two. Chapter 3 presents a comprehensive literature review of the marketing margin. Chapter 4 explains the methodology adopted for the investigation viz., the study area, sources of data, the sampling method, and methodology adopted in data collection and analytical techniques applied. Chapter 5 presents the results and discussion. A complete set of results obtained and a link between the result of analysis and observed phenomena are clearly elaborated in a way to support the objectives of the study. Chapter 6 summarizes the major findings and the findings of this study and put into policy perspective.

CHAPTER TWO

Overview of Production and Marketing of Potato and Red Onion Sectors in Sri Lanka

2.1 Introduction

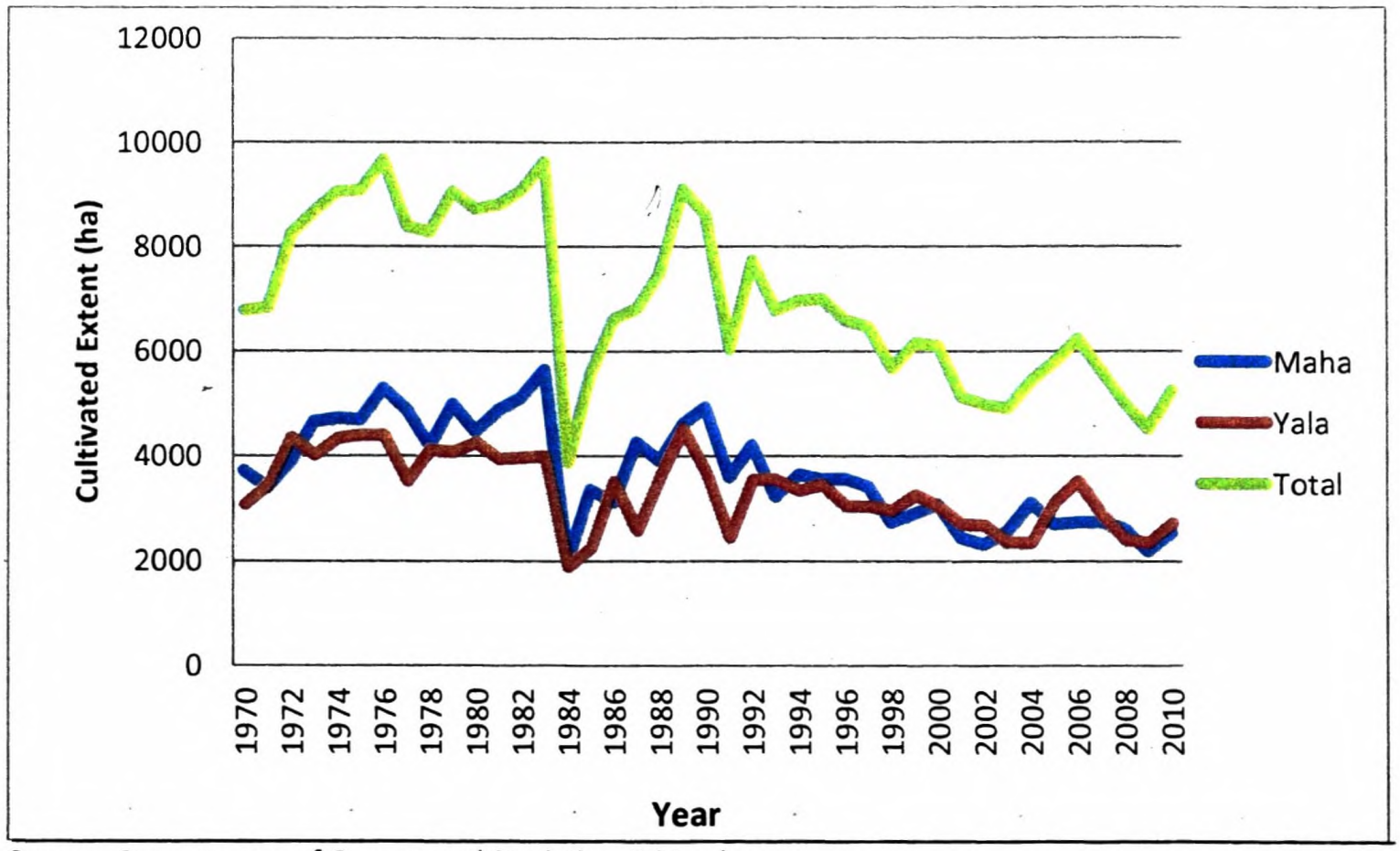
This chapter reviews the background information of potato and red onion sectors in Sri Lanka in order to gain a proper understanding of the sector before analyzing the marketing margins. Accordingly, data and information related to the extent and production, marketing and price behavior are examined. The agricultural sector in Sri Lanka is divided into two as plantation and non-plantation sectors. Other field crop sector plays the most important role in the non-plantation crop sector next to rice. Other field crop sector, especially potato and red onion trade is more important providing a large number of direct and indirect employment opportunities both in producer and marketing sectors. Therefore, this chapter provides a comprehensive overview on the potato and red onion sector in Sri Lanka with special reference to production and marketing.

2.2 Background of Production – Red Onion

Red onion *(Allium ascalonicum L.)* is a high value cash crop of the dry and intermediate zone and plays a vital role in the Sri Lankan diet. It has a year round demand in Sri Lanka as a condiment and consumed as a vegetable and herbal crop. It originated in Asia and the smell and taste are the main features of this crop. Red onion cultivation is best adapted to the dry zone in Sri Lanka and it can be grown from sea level to an elevation of 2000m. It is a seasonal crop, but in some areas such as Kalpitiya and Jaffna it can be grown year round to meet the market demand. Red onion is cultivated in both *maha* and *yala* seasons and *maha* season mainly depends on rain water while *yala* cultivation takes place mainly in the dry zone under irrigation. It is cultivated as a mono crop and *Sinnan* and *Vedalan* are the main varieties grown in Sri Lanka. Red onion cultivation was mainly concentrated in the Jaffna Peninsula before 1990 due to its better suitability for the cultivation and in the recent past the cultivation mainly takes place in the Kalpitiya belt in the Puttalam district.

According to the data, the Jaffna Peninsula was the major red onion growing area during 1970 and 1980 representing 40 percent of the total cultivated extent. At the early stage of introduction, red onion cultivation got very well rooted in the districts of the Northern and Eastern provinces as well as in Puttalam. Gradually, it was expanded to other districts such as Ratnapura, Moneragala, Hambantota, Badulla, and Anuradhapura. As a result of the conflict in the Northern and Eastern areas, Kalpitiya Belt in the Puttalam district became the main producing area and it has

represented 40 percent of the total cultivated extent of red onion in 2011, followed by Jaffna (23 percent) and other districts (37 percent). An increasing trend of cultivated extent of red onion in Puttalam was observed during the period of 1970 - 2011 with some highs and falls in between.



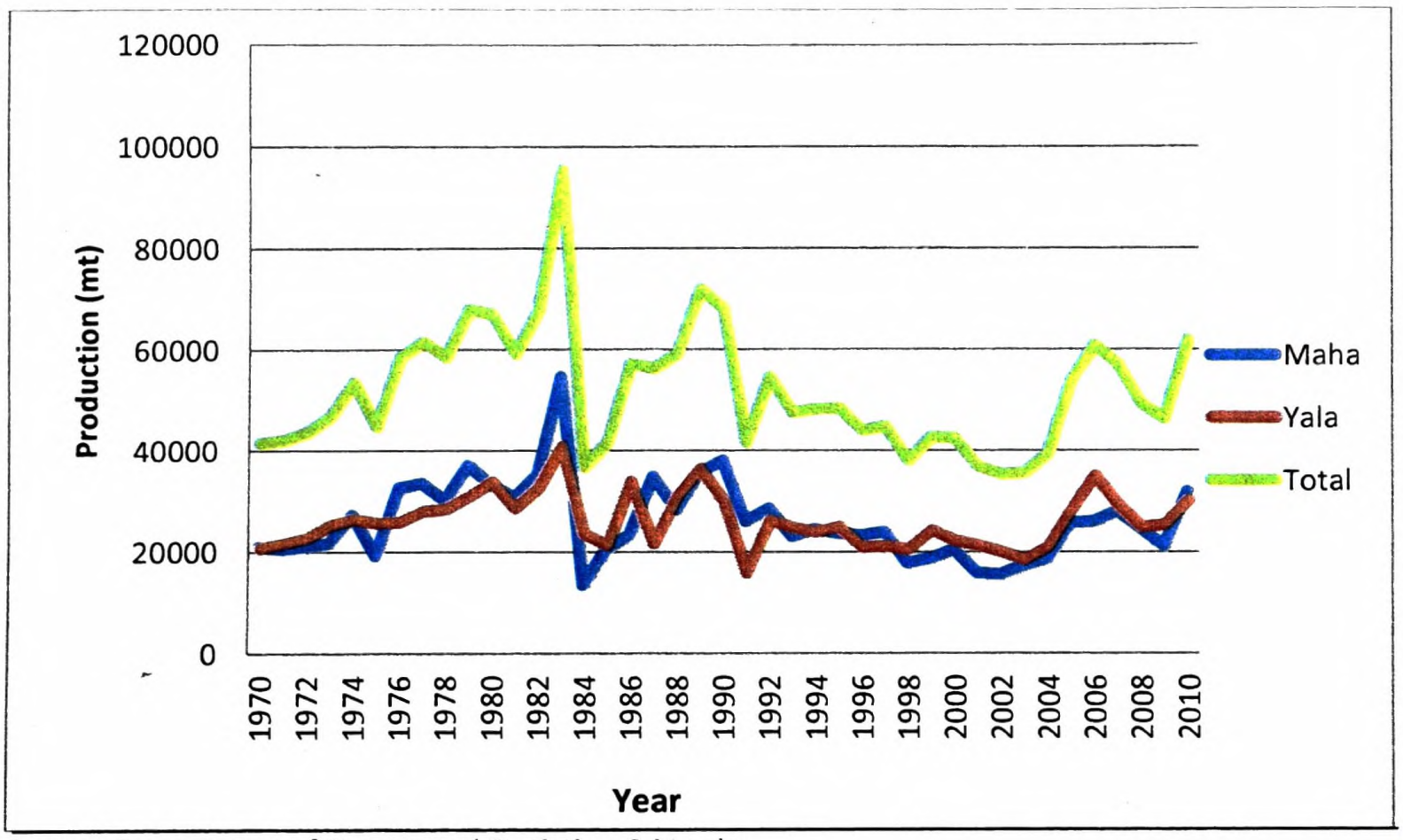
Source: Department of Census and Statistics- Sri Lanka

Figure 2.1: Cultivated Extent of Red Onion (1970-2010)

2.2.1 Trends in Onion Production

According to the Figure 2.2, the production of red onion gradually increased during the period of 1970-1983. Then the production sharply dropped in 1984 as a result of the civil conflict. Again the production has shown an upward trend until 1989 and dropped continuously until 2004. The total production of red onion in 2010 was 61,811 mt and it has increased by 34 percent compared to the previous year.

As explained earlier, the production of red onion is limited only to a few districts in Sri Lanka such as Puttalam, Jaffna, Vavunia, Trincomalee and Moneragala. In the year 1970, the contribution to the total production from Jaffna district was 76 percent and it dropped to 22 percent in 2010. This vacuum was filled by increasing production in the Puttalam district with 46 percent share in 2010 against 6 percent in 1970.

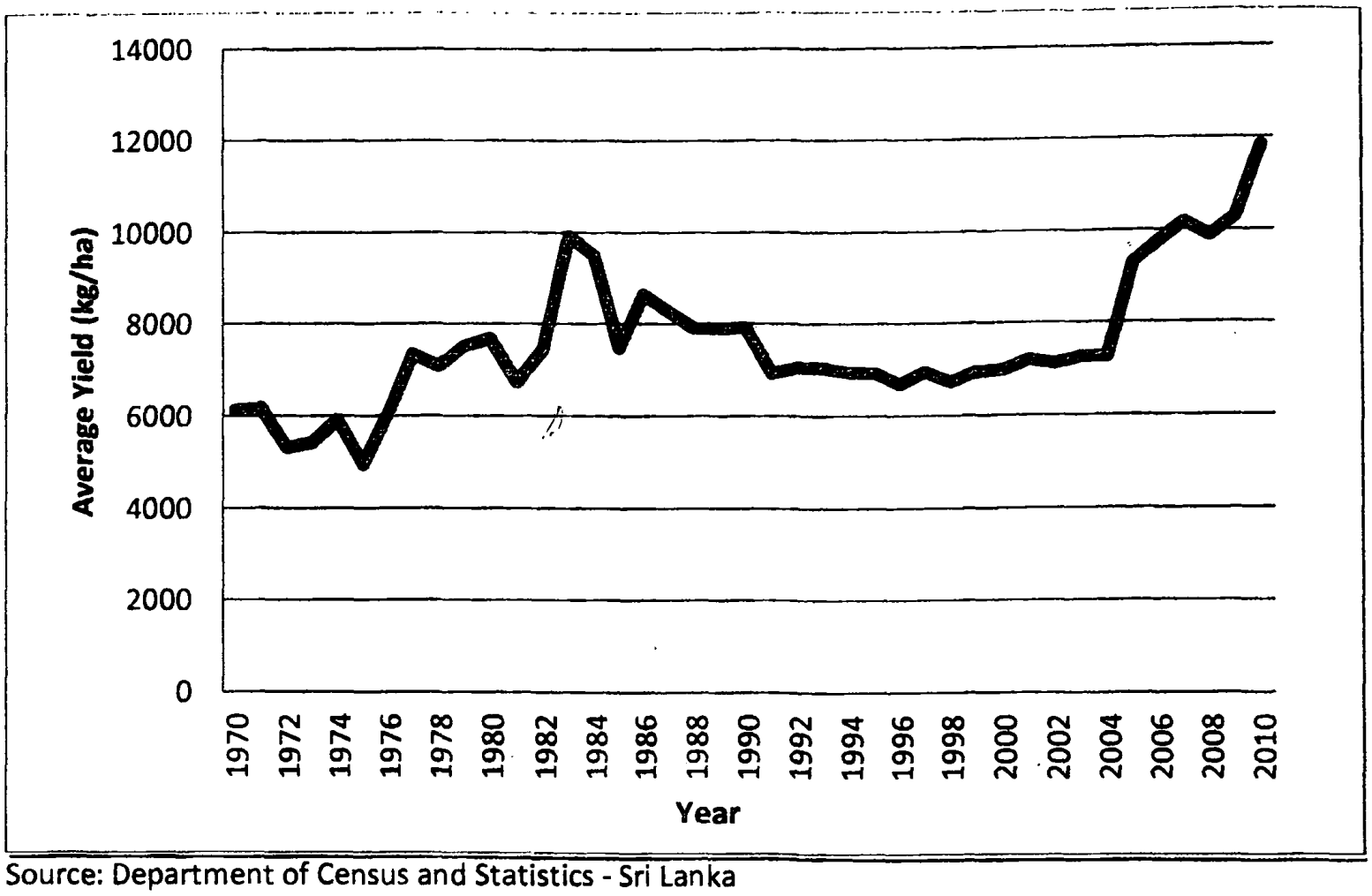


Source: Department of Census and Statistics- Sri Lanka

Figure 2.2: Production of Red Onion (1970-2010)

2.2.2 Average Yield of Red Onion

The Figure 2.3 illustrates the average yield of red onion over the period of 1970 to 2010. According to that, the average yield has increased continuously during the period of 1975-1983. It was stable during the period of 1990-2004. A growing trend of average yield is visible in the recent past after 2004. Introduction of high yielding varieties and expansion of cultivation in Kalpitiya belt are the reasons for the increased average yield. The highest level of average yields of 11.82mt/ha was recorded in the year 2010.

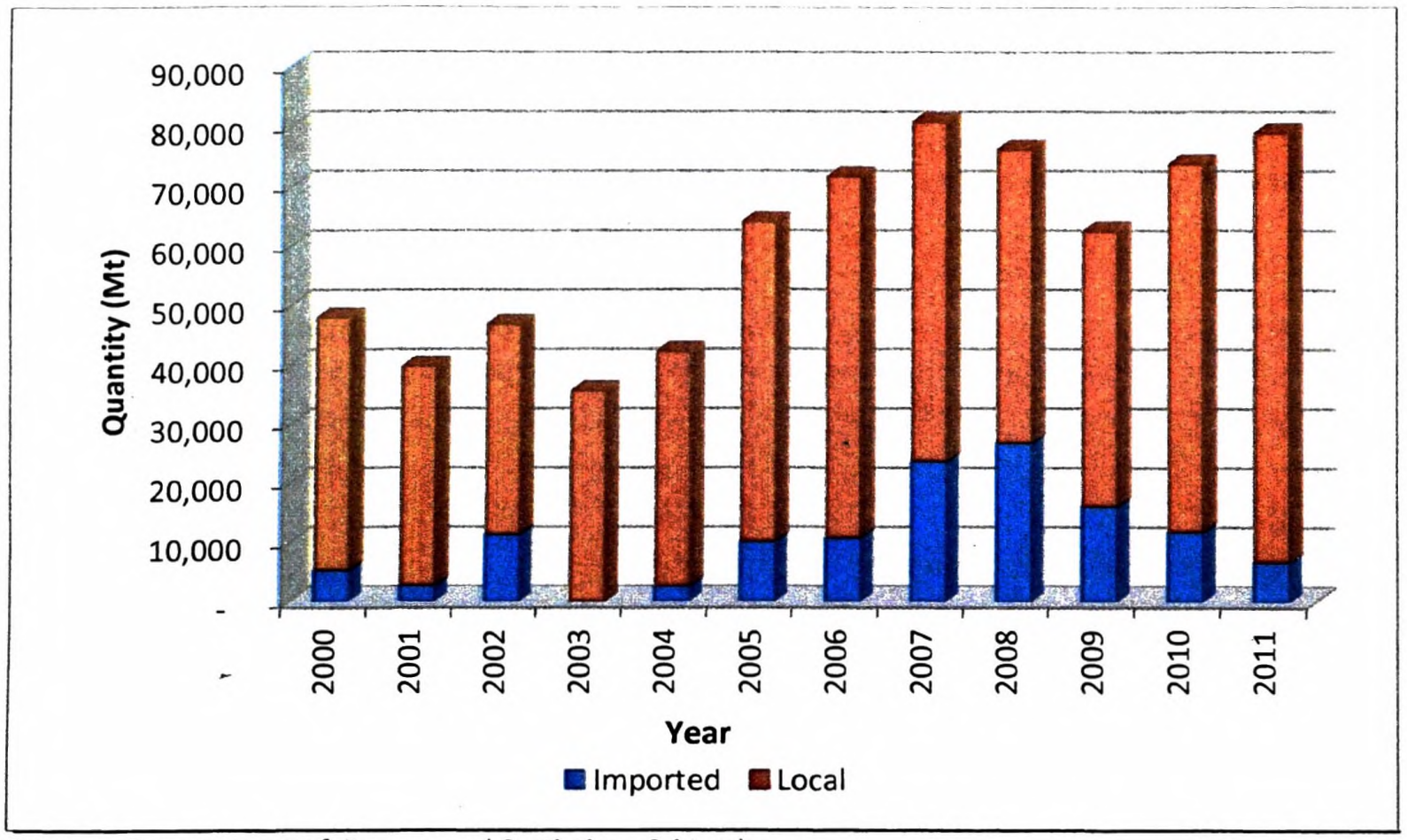


Source: Department of Census and Statistics - Sri Lanka

Figure 2.3: Average Yield of Red Onion

2.2.3 Production, Import and Total Supply of Red Onion

The total supply of red onion consists of local production and imports. The total supply of red onion in the year 2011 was 78,931mt and out of that 90 percent was produced locally and the rest was imported. Red onion is mainly imported from India and during the year 2011 a quantity of 6,807mt was imported. According to the data, during the period of 1986-1994 the imports were zero or negligible. In the recent past the quantity of imported red onion has been declining gradually due to the expansion of big onion cultivation in large scale at lower prices.



Source: Department of Census and Statistics - Sri Lanka
Department of Customs – Sri Lanka

Figure 2.4: Total Availability of Red Onion in Sri Lanka (Mt)

With regard to production, the Jaffna district led by contributing more than 50 percent to the national production of red onion before 1984. After that, the contribution to the national production of red onion has dropped gradually in Jaffna. In 2007, only 27 percent of the total production was supplied from the Jaffna district. Meanwhile, the production of red onion from the Puttalam district has increased from 1990 and a significant increase was recorded after the year 2003. About 11,667mt of red onion production was recorded in 2004 from Puttalam and it has increased to 23,218mt in 2007. The Puttalam district was a pioneering place contributing between 30 – 47 percent of the total production of red onion during the period of 2004 – 2007.

Sri Lanka has been importing red onion for a longtime as the country was not able to produce it sufficiently. In the recent years the share of local production accounts for a significant percentage of total supply of red onion in Sri Lanka. The share of local production has exceeded 90 percent of the country's requirement before 1993 and after that this share has dropped slightly. In the year 2007, the share of local production has dropped to 56 percent from 84 percent of the country as requirement in 2006. Similarly, the share of imported quantity has increased from 16 percent to 44 percent during those two years. However, market supply mainly consists of local production of red onion even now.

During the last ten year period, the quantity of imported red onion has increased after the year 2004 and red onion stocks were mainly imported from India. The

quantity of imports was in a very low level before the year 1970 and the quantities have been fluctuating after the year 1970. However, in some years imports were negligible or completely stopped. Since 1979, under the liberalized economic policies, imports have been made regularly but in fluctuating quantities. From the year 1987, imports have declined significantly and in some years no imports have been taken place. In the period 1987-1995, not more than 2,815mt was imported in a year. Expansion of red onion as well as big onion cultivation throughout the country and commencement of importing big onion in large scale, which is cheaper than the imported red onion, have been the reasons for this situation.

2.3 Background of Production – Potato

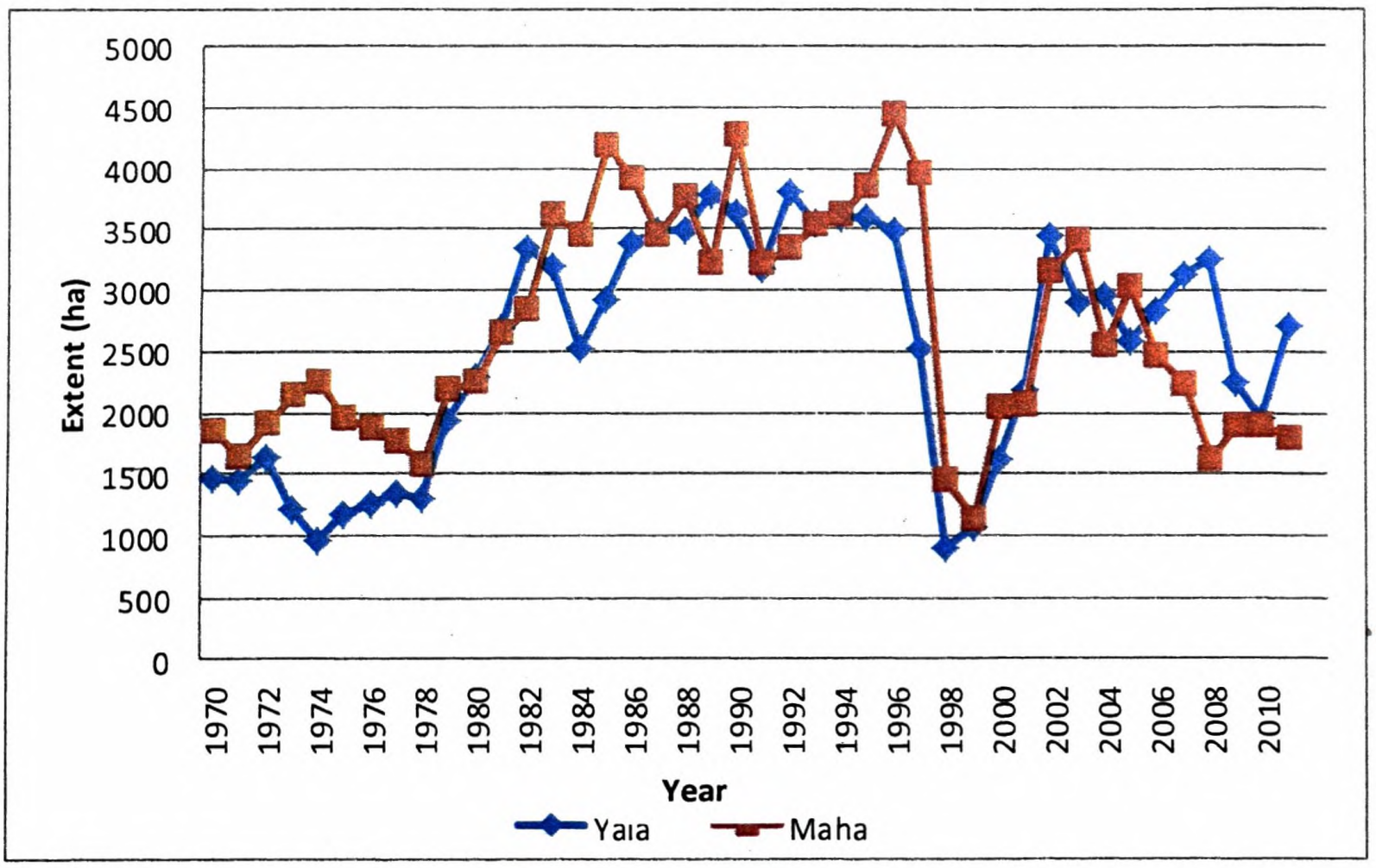
Potato (*Solanum tuberosum*) of the Solanacea family was originated in Andes highlands in South America and this crop was introduced to Sri Lanka by Samuel Bekar in 1805. Due to imports from India, potato cultivation has faced strong competition and because of this, government's import policies have highly affected the cultivation. Though the potato cultivation exhibits high yielding and high productivity, harmful effects such as soil erosion and environment pollution are also at a high level.

Potato cultivation is a highly attractive cash crop of the farmers in the upcountry farming system. In the Nuwara Eliya district, potato cultivation is mainly practiced as a cash crop by growers, while in the Badulla district potato cultivation is the living of small scale farmers.

Potato has been one of the leading cash crops grown in Sri Lanka and the annual production is 76,000mt. The land utilization of the potato cultivation is nearly 4500ha. Further, potato has high income generating capability and during the last decade it was found that thousands of farmers became rich. Study on the review and analysis of the major characteristics, recent developments and changes of the potato production and marketing in Sri Lanka will be important for formulation and implementation of the policies and making decisions to uplift the dying potato cultivation in Sri Lanka.

Potato, conventionally grown through seed tubers, is an important crop in Sri Lanka for its high consumer preference and for high net profit. However, potato demands a high investment of about Rs.350,000 per acre during the cropping period in which seed material alone accounts for about 58 percent of the cost of production. At present potato is extensively cultivated in the district of Nuwara Eliya in two major seasons, '*Yala*' (Feb. - July) and '*Maha*' (Aug. - Dec.). It is also widely grown in the Badulla District in paddy fields and highlands during '*Yala*' and '*Maha*' seasons respectively. Jaffna is the other district where potato is grown in a lesser extent. Potato is the most popular crop of upcountry farmers due to its high net return.

According to that, during the five years period of 2006 to 2010, cultivation in Badulla district was an extent of 3.597ha (76.6 percent) and nearly 1.099ha in other areas. Accordingly, the whole extent under cultivation was 4.696ha by 2011.



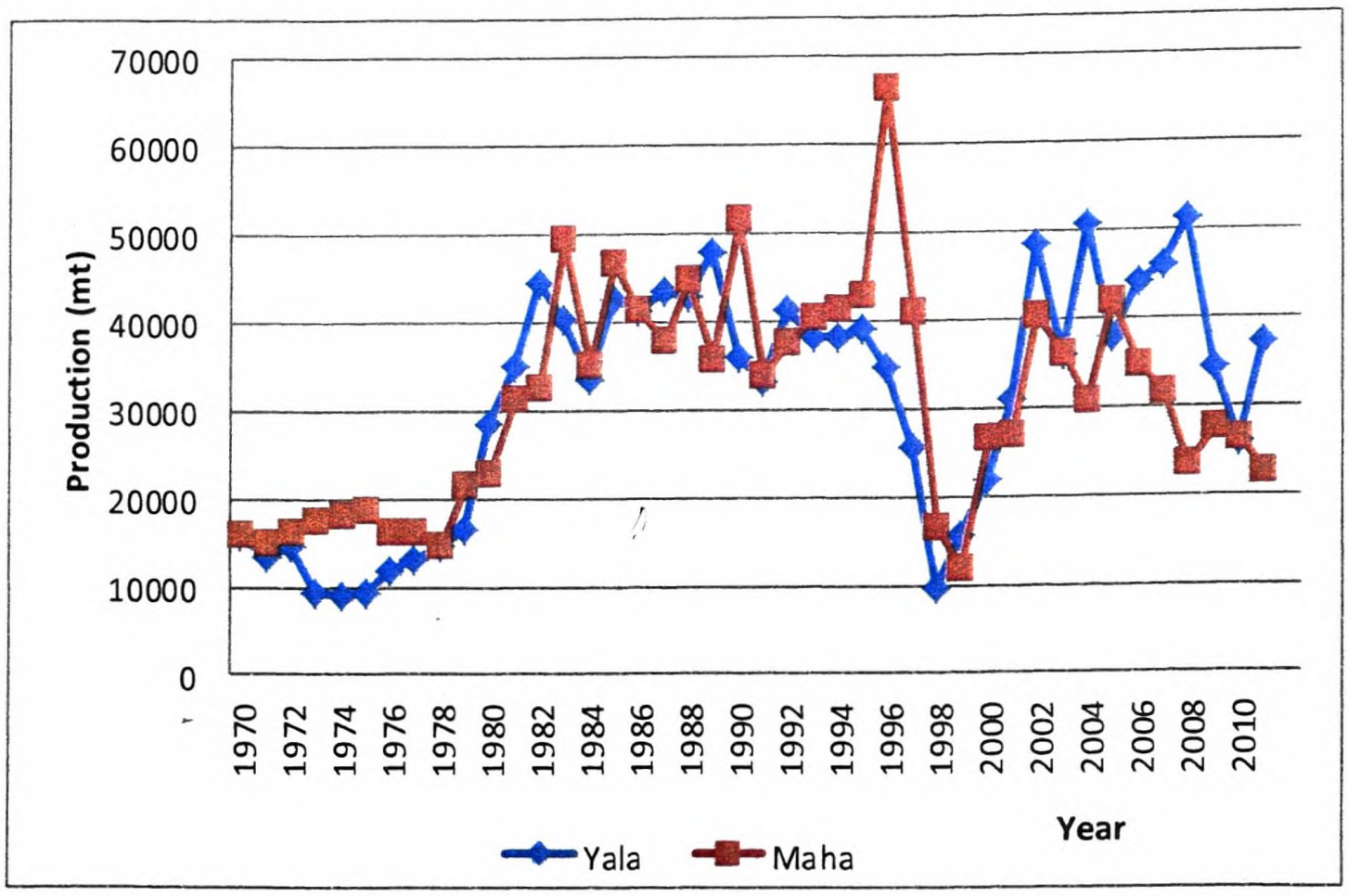
Source: Department of Census and Statistics - Sri Lanka

Figure 2.5: Cultivated Extent of Potato (1970-2011)

2.3.1 Trends in Potato Production

During the last decade, the production of potato crop followed a volatile and declining trend in the late 1990s. The period of 1980s to early 1990, potato production significantly increased. After 1996, however, the domestic production of this crop began to decline as restrictions on imports were liberalized. A dramatic decline in area under this crop primarily contributed to the production decline.

Potato production has decreased from 88,709mt in 2002 to 60,848mt in 2010. Until 1996, potato remained a highly protected crop. However, in recent years, the cost of production, estimated at around Rs.42.00 – 55.00 per kg, has remained extremely high and the poor yield has eroded the profitability of this crop (Rs.39.00/kg for Badulla and Rs.51.00/kg for Nuwara Eliya).



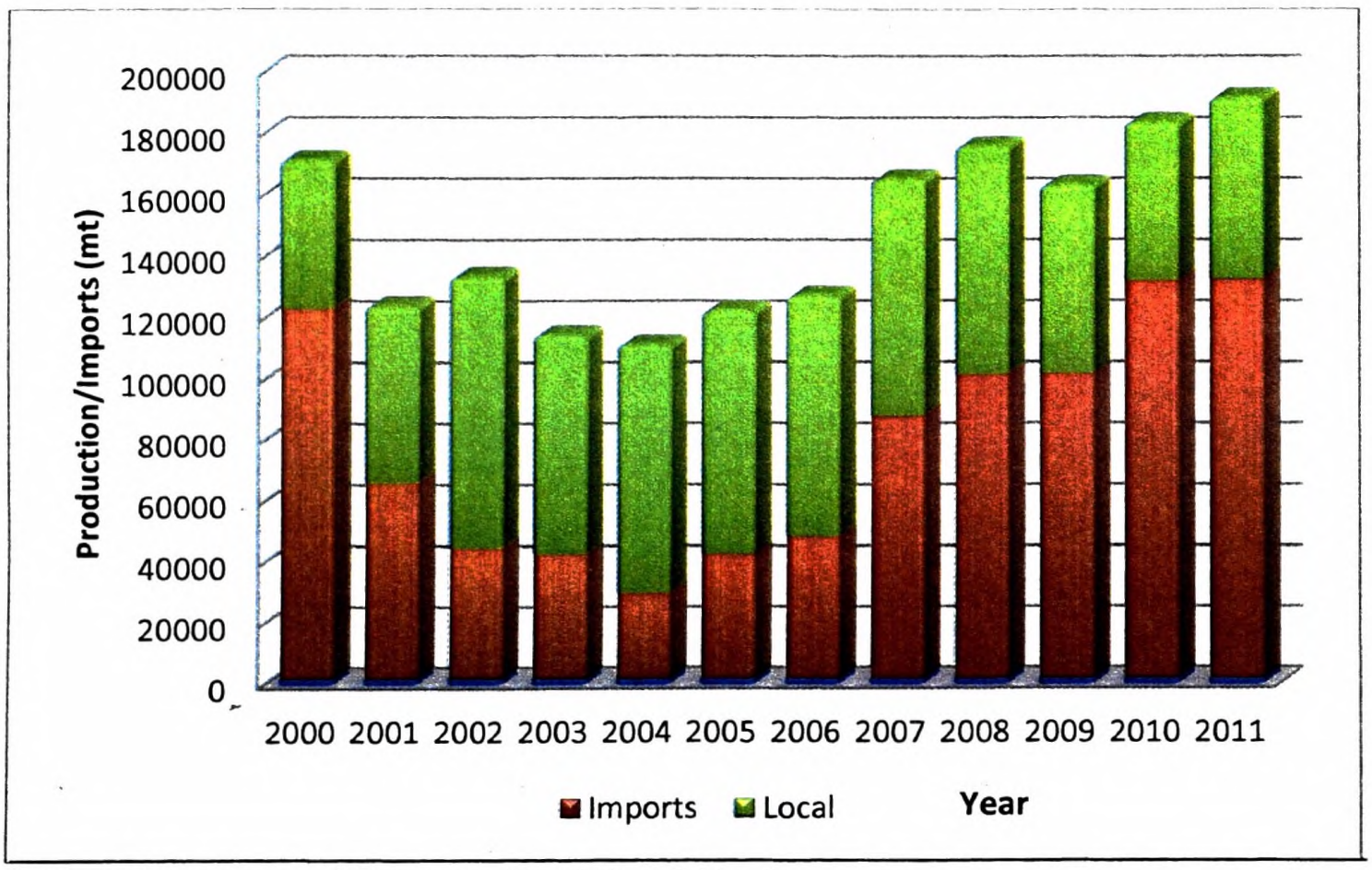
Source: Department of Census and Statistics - Sri Lanka

Figure 2.6: Production of Potato

2.3.2 Production, Import and Total Supply of Potato

Import of potatoes is the major problem for the farmers, while it is the major solution for the consumers. The quantity of imports, during the last 30 years had increased considerably. However, imports have rapidly increased during the last ten years from 1997 to 2012. This was mainly due to the removal of import restrictions on potatoes, under the liberalization of agricultural markets. Further, the value of the imports and unit prices of potatoes (CIF) significantly increased, while, the rising trend of quantities, CIF prices and total values has continued in the past few years. Therefore, an increasing trend of all these import variables causes difficulties to the local potato production and the marketing system.

Potato imports in 2011 were 130,000mt, which accounted for 70 percent of the local requirement. More than 80 percent of total imports are from India, China and Pakistan.



Source: Department of Census and Statistics - Sri Lanka
Department of Customs – Sri Lanka

Figure 2.7: Total Availability of Potato

2.4 Marketing Systems and Practices of Potato and Red Onion in Sri Lanka

Assembling is the first step in the marketing of farm products. It involves collection of small surpluses from a number of small farms scattered over large areas and bulking the same for subsequent distribution in volume. The agencies engaged in the assembling of both crops are as follows:

a. Producers
b. Village Merchants
c. Itinerant Merchants
d. Wholesale Merchants
e. Commission Agents
f. Co-operative Societies

The major assembling markets are located in the cities of Nuwara Eliya, Badulla, Welimada and other few rural and urban centers of Kandapola, Ragala, Maturata, Keppetipola, Walapane and Mandaramnuwara for potato and Jaffna and Puttalam for red onion. These key assembling markets in major producing areas send their collections to terminal wholesale markets of Colombo, Dambulla, Norochcholai and Kandy while sending some stocks to other small regional markets.

After setting aside a portion for their requirement of seed, the farmers sell the balance of the harvest immediately to private dealers. Most farmers prefer to sell

their produce to the private dealers in nearby economic centers. The prices of both crops fluctuate widely throughout the year. Marketing costs are the actual expenses required for bringing both crops from farm-gate to the consumers. It includes the following:

1. Handling charges at local points
2. Assembling charges
3. Transportation costs
4. Handling charges by wholesalers and retailer
5. Expenses on secondary services such as financing, risk taking and market Intelligence
6. Profit margins claimed by different agencies.

The marketing margins of potato are the difference between the actual price paid by the consumer and the price received by the farmer for an equivalent quantity and quality of potato.

2.4.1 Organization of the Marketing Systems

There are a large number of participants engaged in both potato and red onion trade by performing various activities such as assembling, sorting, packing, transporting and selling.

2.4.1.1 Market Participants

a.) Resident collectors/Assembly agents

Assembly agents collect potato and red onion from farmers at farm-gates, roadsides and their collecting centers and sell stocks to the demand side wholesalers and to the markets in Dambulla, Kandy and Colombo.

b.) Trucker-buyers/Demand side wholesalers

Traders who come from lorries and purchase the products through the assembly agents/resident collectors or direct from the producers could be either retailers or wholesalers

c.) Commission Agents

These are wholesale traders at major wholesale markets, who buy potato and red onion from the farmers or assembly agents on a commission basis. They usually retain a 10 percent margin as their sales commission.

d.) Retailers

Retail traders are those who sell potato and red onion at stalls, general grocery shops and on roadsides.

2.4.2 Marketing Channels of Potato and Red Onion

Marketing channel is a chain of middlemen involved in the process of selling of different commodities at different stages. The Figures 2.8, 2.9 and 2.10 show the different types of marketing channels indicating how potato and red onion move from the producer to the end consumer. The bulk of the marketing is carried out by the commission agents and large scale traders of the private sector. The chain of intermediaries begins with the village level collecting agents and the most usual marketing channel is the farmer-assembler-wholesaler-retailer-consumer system. However, the flow follows different channels depending on the distance of the market to the producing area involving more intermediaries.

In a country like Sri Lanka where food production is in the hands of small producers, a large number of intermediaries are involved in food supply and distribution activities. Over 90 percent of the food supply and distribution is handled by the private sector and as a result, transaction costs are high with high market margins.

2.4.2.1 Marketing Channels of Red Onion

Nearly 70 percent of the red onion production in Sri Lanka comes from Puttalam and Jaffna districts. These productions have to be distributed to the deficit areas efficiently and effectively. Hence marketing of red onion is very important. Marketing of red onion is totally handled by the private sector and Norochcholai, Vavuniya, Dambulla and Colombo are the very important points in the marketing system. Marketing channels of red onion is more similar to the vegetable marketing channels and in most cases red onion is transported with vegetables.

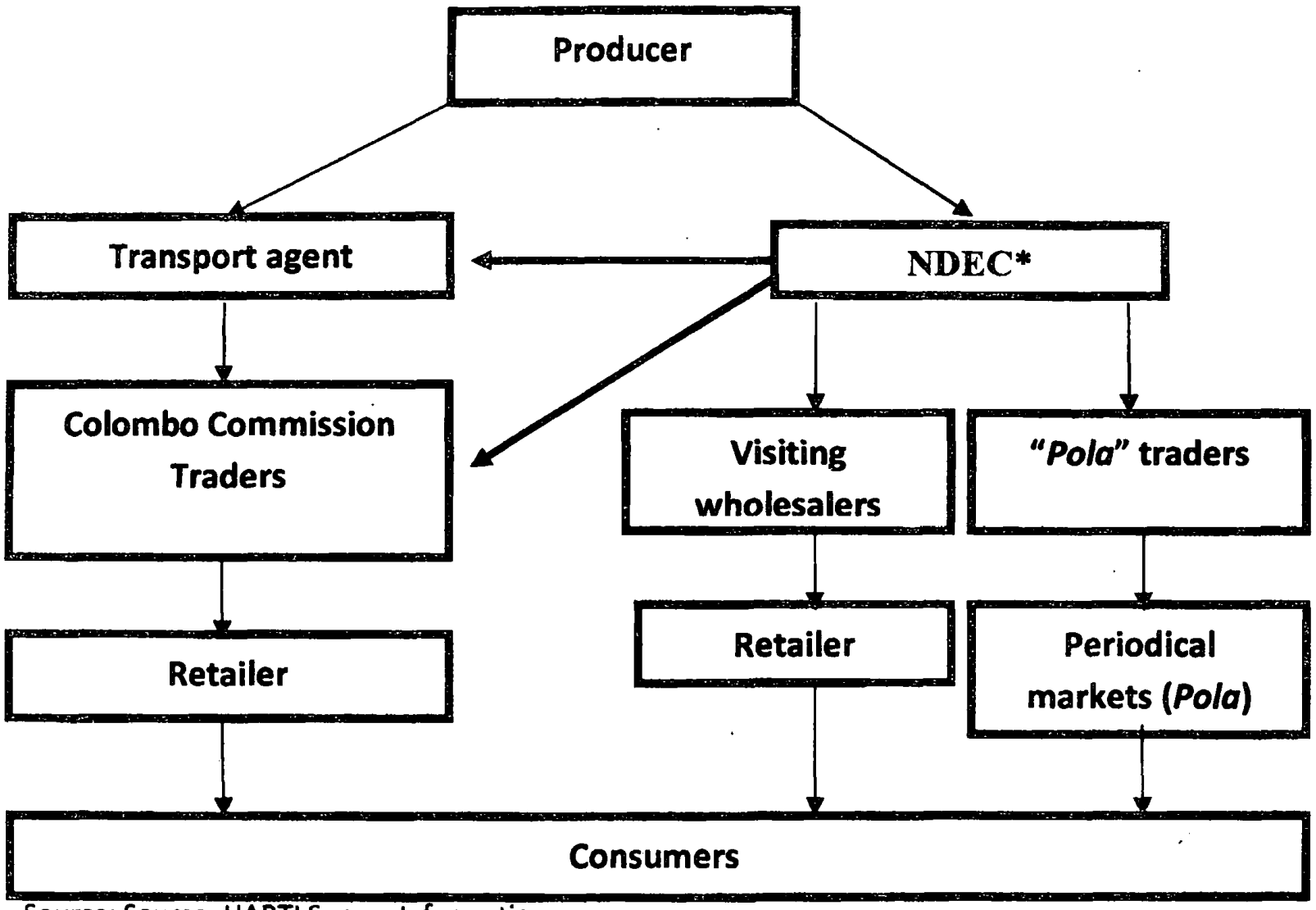
Norochcholai Dedicated Economic Centre (NDEC) is the focal point of marketing of red onion in Sri Lanka. Farmers from faraway areas, even from Kalpitiya area come to the Norochcholai market to buy inputs such as seed, fertilizer and agro chemicals and to sell their production. Farmers directly bring their produce to the NDEC and traders sell produce to wholesalers on behalf of the farmers. Traders at NDEC change a commission for their service provided and transaction takes place in front of farmers. This is the most important and common marketing channel of red onion in Sri Lanka and farmers benefit from this channel than from any other channels.

The other channel comprises resident collectors such as farmers and boutique keepers of the same area where red onion is cultivated. Residential collectors collect red onion at the farm-gate or at their collecting centers and dispatch the produce most often to the Dambulla DEC or the Colombo Commission Market.

Those who come to collect red onion from outside the cultivating areas are called outside collectors. They normally obtain the service of an agent of the area to facilitate their task in the harvesting period.

Sri Lanka has not achieved self–sufficiency in red onion yet, but the prevailing demand is year round. Local production is available only within a limited period because of the perishable state. It is very difficult to store the excess production for a long period. However, the domestic marketing channels of red onion are the same as for other exotic vegetables. Norochcholai and Vavuniya are the major markets for red onion buyers. The terminal market in Norochcholai provides a main buying point for supplies from Kalpitiya areas.

The Figure 2.8 explains the major marketing channel of red onion production in Kalpitiya belt in Puttlam district.



Source: Source: HARTI Survey Information
*Norachcholai Dedicated Economic Centre

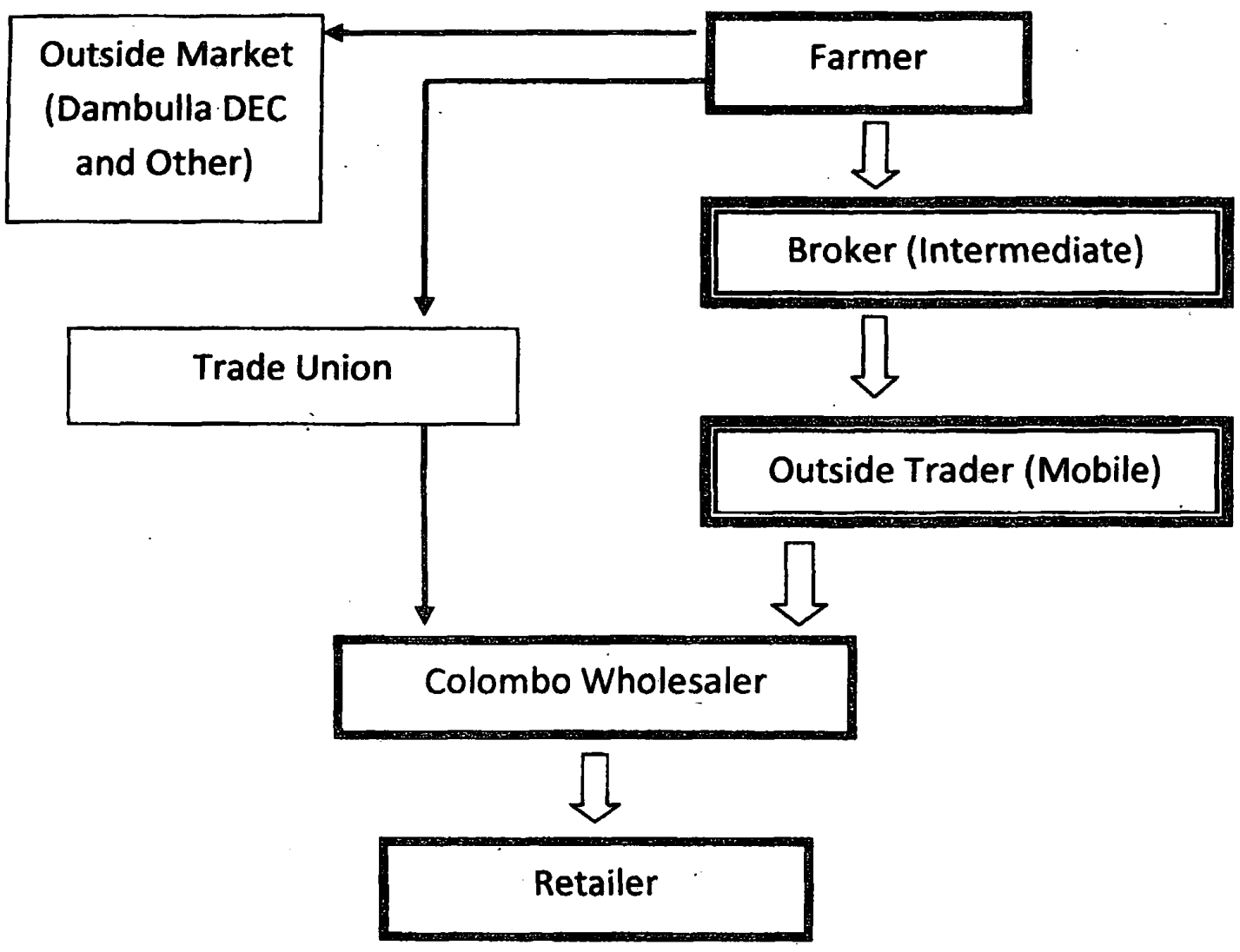
Figure 2.8: Major Marketing Channels of Red Onion Production in Kalpitiya Belt

According to the figure 2.8, two major marketing channels for red onion produced in the Kalpitiya belt can be identified. In the first channel, producer meets transport agents to transport their production to the main wholesale market established in Colombo. Producers who use this channel have personal contact with commission agents in Colombo market and transport agent is used as the facilitator to link both sides. The second channel is run via Norochcholai Economic Center. Red onion producers in the Kalpitiya belt directly supply their production to the economic center and two major types of traders visit the economic center. One visiting group is the wholesalers from nearby towns such as Negombo, Chillaw, Kalutara,

Matugama and Kegalle. The other traders can be categorized as *"pola"* traders who visited from nearby areas such as Anamaduwa, Marawila, Kuliyapitiya and Puttalam.

2.4.2.2 Marketing Channels of Potato

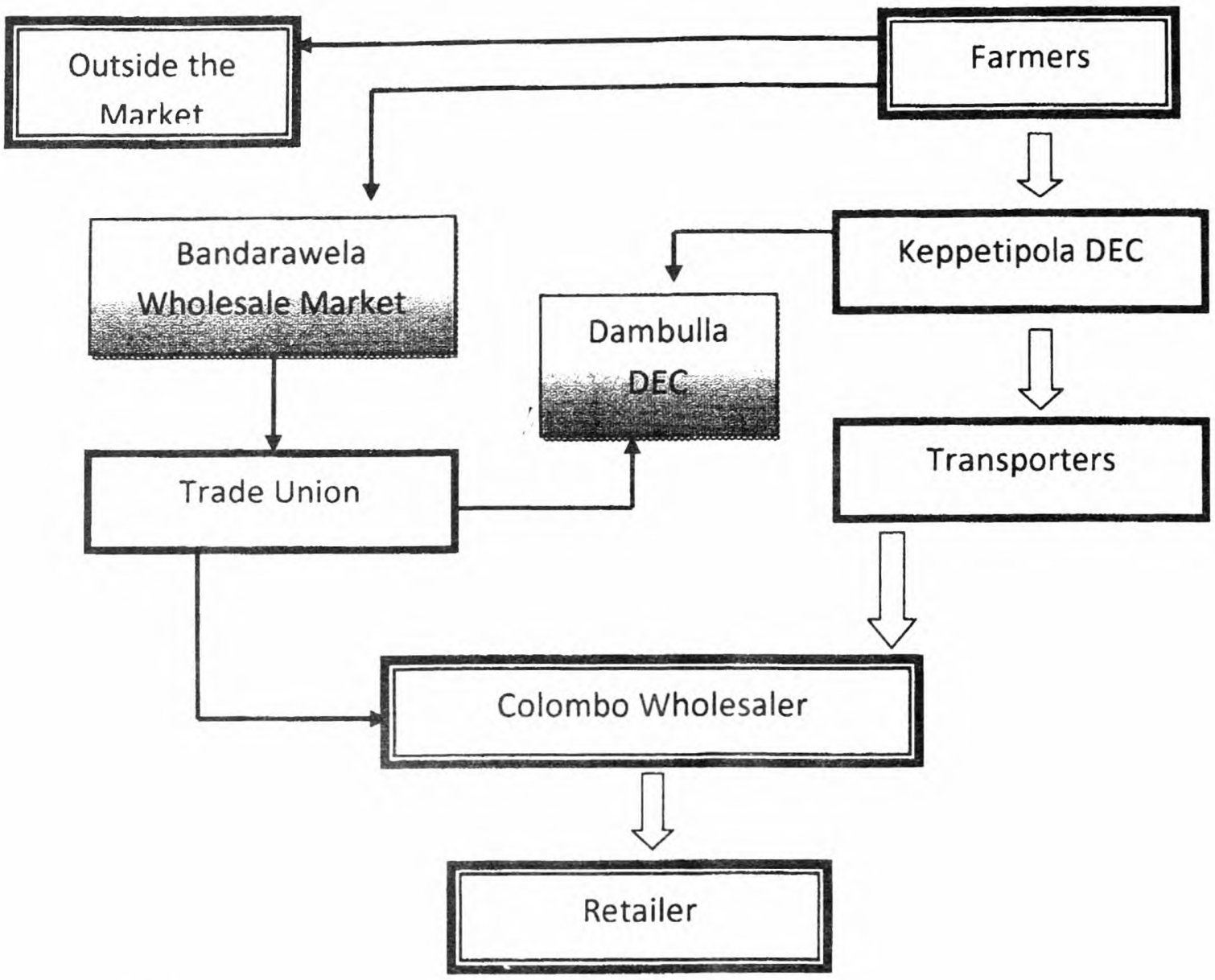
In the Nuwara Eliya district, there are two types of major marketing channels which supply potatoes to Colombo. About 30 percent of the production moves through the transporter's union to Colombo wholesale market. Another 40 percent of the production supplies through the collectors to the Colombo wholesale market. Rest of the production moves to the outside markets such as Dambulla DEC.



Source: HARTI Survey Information

Figure 2.9: Marketing Channels of Potato Supplies from Nuwara Eliya

In the Badulla district, there are two major marketing channels which supply potatoes to Colombo. About 30 percent of the producers supply their production to Keppetipola DEC and from that potatoes are supplied to Colombo wholesale market through transporters. Another 30 percent of the production is supplied to Bandarawela wholesale market. From there, potatoes are moved to Dambulla DEC and Colombo wholesale market.



Source: HARTI Survey Information

Figure 2.10: Marketing Channels of Potato Supplies from Badulla

2.4.3 Performance of the Marketing Systems

2.4.3.1 Market Share and Price Behavior of Red Onion and Potato

During the period of 2000-2011, the producer's share of Nuwara Eliya potato ranged between 58 – 70 percent. Wholesalers charge 10% as a service charge. As a result of the farmer protection programme, tariff rate was increased during the harvesting season. Therefore, farmers were able to earn a higher income. Retailers' gross margin was about 24 percent and wholesalers' gross margin was about 15 percent in 2011.

Table 2.1: Producer's Share and Price Margin of Local Potato

Year	Farm-gate Price	Wholesale Price	Retail Price	Price Margin			3/1	2/1
	1	2	3	Farmer 1/3*100	Wholesaler (2-1)/3*100	Retailer (3-2)/3*100		
2000	47.76	53.76	68.63	69.59	8.74	21.67	1.44	1.13
2001	46.99	54.99	70.72	66.44	11.31	22.25	1.51	1.17
2002	34.79	48.18	60.32	57.67	22.21	20.12	1.73	1.39
2003	35.54	50.82	54.32	65.43	28.13	6.43	1.53	1.43
2004	37.35	55.81	59.12	63.18	31.22	5.60	1.58	1.49
2005	46.30	56.13	69.62	66.51	14.12	19.38	1.50	1.21
2006	53.33	61.23	79.60	66.99	9.93	23.08	1.49	1.15
2007	67.23	74.74	95.67	70.27	7.85	21.88	1.42	1.11
2008	89.00	90.83	126.20	70.52	1.45	28.03	1.42	1.02
2009	71.52	75.89	113.71	62.90	3.84	33.26	1.59	1.06
2010	75.17	94.14	122.68	61.27	15.46	23.27	1.63	1.25
2011	105.79	132.39	173.36	61.03	15.35	23.63	1.64	1.25

Source: Marketing Food Policy and Agribusiness Division/HARTI

Producer price, Wholesale price, and Retail price are the key issues in the system of production and marketing of both crops. Price of red onion is mainly determined by the local supply of red onion, relative prices of the big onion and quantity of imports. Producer prices of red onion have increased during the last two decades.

Table 2.2: Producer's Share and Price Margin of Local Red Onion

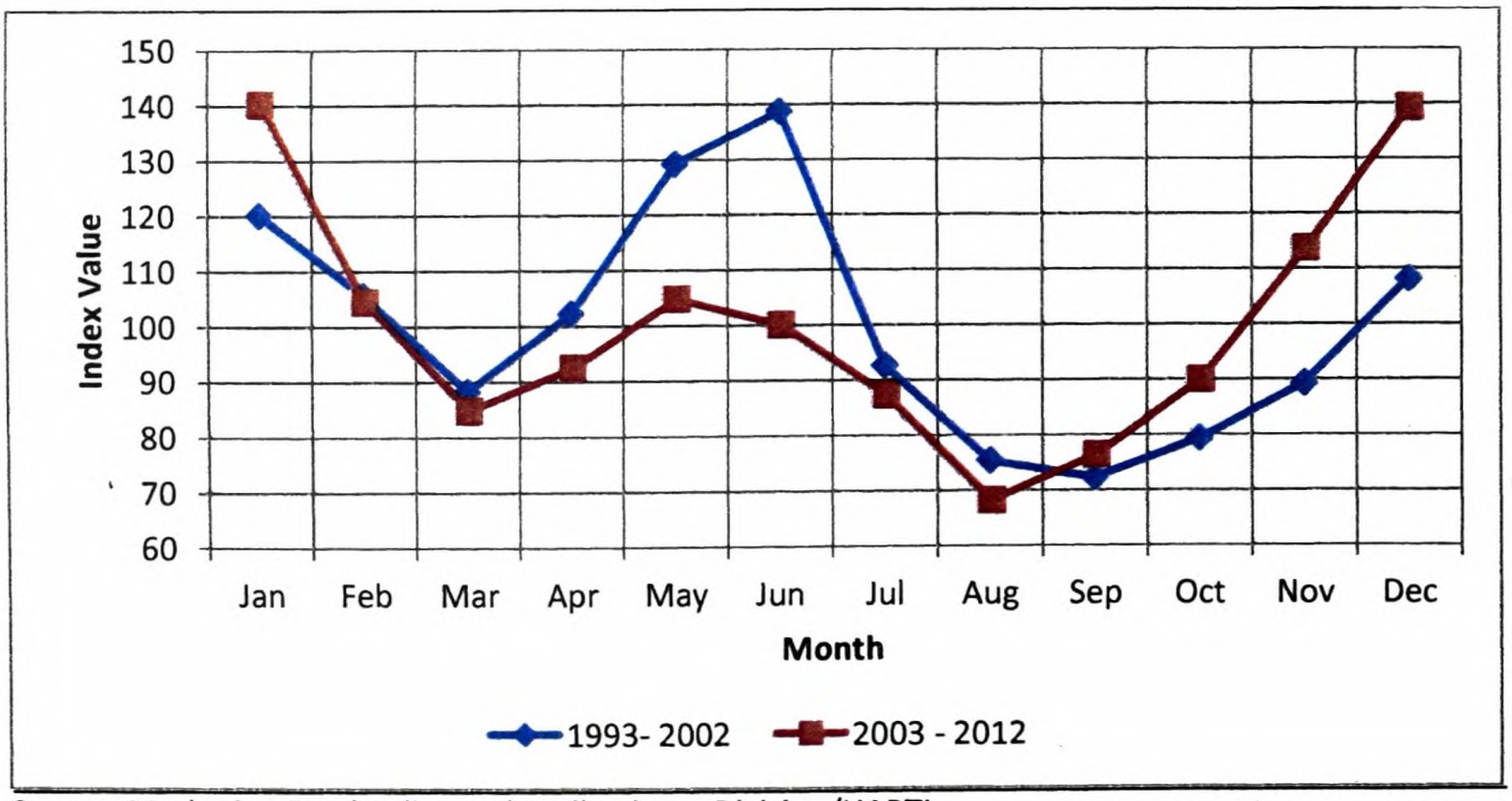
Year	Farm-gate Price	Wholesale Price	Retail Price	Price Margin			3/1	2/1
	1	2	3	Farmer 1/3*100	Wholesaler (2-1)/3*100	Retailer (3-2)/3*100		
2000	33.18	35.97	48.30	68.70	5.77	25.52	1.46	1.08
2001	49.56	54.59	66.94	74.04	7.51	18.45	1.35	1.10
2002	46.90	51.83	62.88	74.58	7.85	17.58	1.34	1.11
2003	46.99	52.90	63.66	73.81	9.29	16.90	1.35	1.13
2004	49.92	55.43	68.17	73.23	8.09	18.68	1.37	1.11
2005	54.02	61.27	73.69	73.30	9.84	16.85	1.36	1.13
2006	52.98	60.48	74.92	70.72	10.01	19.28	1.41	1.14
2007	56.22	66.11	81.31	69.14	12.16	18.70	1.45	1.18
2008	56.39	66.63	84.35	66.85	12.14	21.01	1.50	1.18
2009	71.67	81.76	104.15	68.81	9.69	21.50	1.45	1.14
2010	71.53	84.22	108.18	66.12	11.73	22.15	1.51	1.18
2011	83.70	95.80	123.00	68.05	9.84	22.12	1.47	1.14

Source: Marketing Food Policy and Agribusiness Division/HARTI

2.4.3.2 Seasonal Price Variation

Seasonal Price Variation of Red Onion

According to the seasonal price index over the last 20 years (1993-2002, 2003-2013), retail market prices of red onion have dropped to the minimum during the months of March, August, and September, which are the main harvesting periods. Meanwhile, the prices were at a maximum in June and December with the end of season for local production. The seasonal price behavior shows a high seasonality in monthly average retail prices and where price index is below 100 it shows an excess supply than market demand. When the price index is above 100, it shows that the supply is inadequate to meet the market demand. Fluctuation of prices affects the certainty of the farmer income. Shortage in supply causes problems for consumers as well as surplus supply causes problems to farmers as they could not get better prices. The following chart shows the seasonal price index of red onion.



Source: Marketing Food Policy and Agribusiness Division/HARTI

Figure 2.11: Seasonal Price Index of Red Onion

Price difference between producer and retail levels refers to price spread or gross marketing margin. Price spread between producer and consumer is often higher at harvest times. The share of marketing margin in the consumer rupee has increased and farmers' share of the consumer price has increased slightly during the last decade.

The gross marketing margin between producer prices and wholesale prices was lower than that of the margins between wholesale and retail levels. It shows that the gross marketing margin between wholesale and retail prices have increased significantly during the 2011.

Seasonal Price Variation of Potato

According to the seasonal price index, the main price peak is observed during the months of June to August and again another peak is recorded during the months of November and December. Meanwhile, the prices reach the minimum during the months of September to October and February to May due to peak producing seasons found in both Badulla and Nuwara Eliya districts.

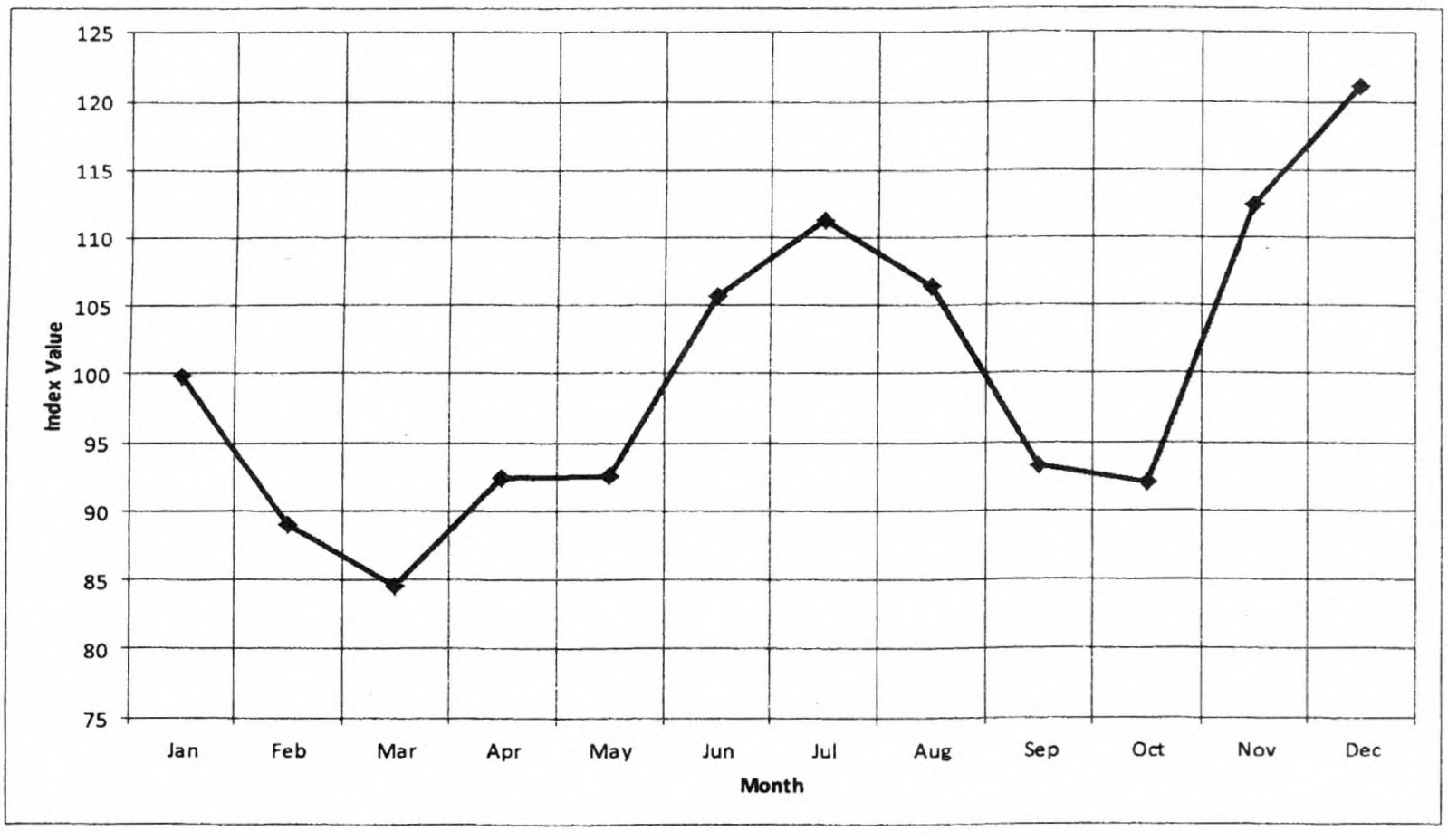


Figure 2.12: Seasonal Price Index of Potato

CHAPTER THREE

Review of Literature

3.1 Introduction

This chapter reviews the theoretical framework and methodological issues related to the marketing margin in comparison with research findings with empirical evidence that already exist. It provides the researchers a clear insight to carry out the research work and enables to arrive at important conclusions.

- Explaining the choice of contracts between different market participants
- Analyzing the type of institutional innovation needed to integrate small farmers and the poor in the new agricultural economy
- Understanding the role of the government and the private sector in supporting the development of these institutions.

3.2 Analysis of Market Performance

Market performance refers to the impact of structure and conduct on prices, costs, and volume of output. Investigation of market efficiency is one approach to evaluate the degree of market performance.

Marketing efficiency has the following two major components: (i) effectiveness with which a marketing service would be performed and (ii) the effect on the costs and the method of performing the service on production and consumption. These are highly important because the satisfaction of the consumer at the lowest possible cost must go hand-in-hand with maintenance of a high volume of farm output (Ramakumar, 2001).

3.2.1 Marketing Efficiency and Marketing Margin

3.2.1.1 Marketing Efficiency

"Marketing Efficiency" as we use the term here refers to the extent to which marketing costs are at the minimum, or the degree to which marketing costs can be reduced. Two additional strains of economics literature are relevant here. The "efficient markets" literature of finance defines markets as efficient when there is an absence of arbitrage opportunities – when there is no possibility of earning profit by buying the commodity in one market and selling the commodity in a second market. In this context, market efficiency requires that private transactions costs be minimized – failure to minimize total private transaction costs would create the opportunity to make profit by a firm or a group of firms that minimized costs. The

minimization of private transaction costs does not necessarily imply that total (or social) transaction costs are minimized.

The second strain of literature that is relevant is the production economics literature on efficiency. This literature explicitly recognizes the possibility that firms do not always perform at optimal levels. The concept of this literature also applies to marketing firms including those processing firms, and those providing marketing services such as storage, transportation, and information. The relevant literature implies that the real world may be characterized by the existence of persistent arbitrage opportunities (the failure to minimize private transaction costs) and that the size of these inefficiencies is related to the degree and intensity of competition and experience.

3.2.1.2 Marketing Margin

Marketing margin is defined as the difference in the value of physical quantities at various levels of the marketing process. It represents the difference between the farm-gate and wholesale prices, or between wholesale and retail prices. The total marketing margins constitute price diffusion. The marketing margin includes the marketing costs plus brokers' profits. The marketing costs are the actual expenditure borne by the producer or the broker plus the recurrent costs, if any, during the commodity's movement from producers to consumers.

In the commodity subsystem approach, the institutional analysis is based on the identification of the marketing channels. This approach includes the analysis of marketing costs and margins (Mendoza and Rosegant, 1995). A marketing margin can be defined as a difference between the price paid by consumers and that obtained by producers; or as the price of a collection of marketing services that is the outcome of the demand for and supply of such services (Tomek and Robinson; cited in Carambas, 2005). It measures the share of the final selling price that is captured by a particular agent in the marketing chain (Mendoza and Rosegant, 1995). It, in its simplest form, can be defined as the difference between prices paid for a commodity (e.g. bread) by consumers at the retail level, and prices received by farmers when they sell their commodity (e.g. wheat) to assemblers or other first handlers. Measured in this form, the margins reflect the amount of services added to a commodity once it leaves the farm and sits on a shelf in a retail outlet in a form that is acceptable, useful, and appealing to consumers (Goetz and Weber, 1986).

Marketing margin is most commonly used to refer to the difference between producer and consumer prices of an equivalent quantity and quality of a commodity. However, it may also describe price differences between other points in the marketing chain, for example, between producer and wholesale, wholesale and retail prices (Scarborough and Kydd; cited in Anyaegbunam and Nto, 2011).

The size of marketing margins is largely dependent upon a combination of the quality and quantity of marketing services, and the efficiency with which they are undertaken and priced. The quality and quantity of marketing services depend on supply and demand of marketing services and/or the degree of competition in the market place. The costs of service provision depend on both exogenous and endogenous factors and the efficiency is determined by the extent of competition between marketing enterprises at each stage. According to Trotter (1992), the benchmarks to which results of marketing margin to be compared with are, the assumption of the margin to be equivalent to transfer cost as well as the constancy of margin per unit of product.

Large gross margins may not express high profit but rather increased qualities and quantities of service; low labor, capital and management productivity. Conversely, small gross margins may co-exist with inefficient use of resource; poor coordination and consumer satisfaction; and disproportionate profit elements. Thus, higher marketing margins resulting from increased services, including better coordination, may leave producers and consumers better off, and low margins may be due to low productivity. Therefore, in using market margin analysis to assess the economic performance of markets, it is always preferable to deconstruct them into their cost and return elements (Scarborough and Kydd; cited in Anyaegbunam and Nto, 2011). However, the challenges of data availability on costs make the deconstruction impossible though marketing margins are still good indicators of market performance.

Notwithstanding the considerable variation between markets, if a high proportion of sale price is attributed to purchase cost, it indicates that traders add relatively little value, in terms of transport, storage, or transportation of a commodity in question. Traders undertake only spatial arbitrage and not temporal or form arbitrage (Eleni, 2001). So the computation and use of margins need critical attention.

The scope for government interventions in markets is determined by the efficiency and costs of performing the basic marketing functions. In addition to a concern for lowering the real costs of marketing, governments need to focus on the efficiency with which marketing services are provided. If high costs exist, government investments can lower them. In market economies, inefficiency means excess profits, and excess profits mean monopolistic intermediaries or collusion in price formation. If serious inefficiency exists, government policies might improve competitiveness or provide direct competitive standards (Timmer *et al,* 1983).

All these reviewed literatures advise not to depend exclusively on marketing margin for decision making but to support with other tools. Hence, in this study four parameters are included to judge an overall market performance.

When there are several participants in the marketing chain, the margin is calculated by finding the price variations at different segments and then comparing them with

the final price to the consumer. Consumer price is the base or common denominator for all marketing margins (Mendoza and Rosegant, 1995). The relative size of various market participants' gross margins can indicate where, in the marketing chain, value is added and/or profits are made.

The total marketing margin is given by the following formula

$$TGMM = \frac{\text{Consumer price} - \text{Farmer's price}}{\text{Consumer price}} \times 100$$

Where TGMM – Total Gross Marketing Margin

Producer's participation or producers' gross margin is the proportion of the price paid by the end consumer that belongs to the farmer as a producer.

$$GMM_P = \frac{\text{Consumer price} - \text{Marketing Gross Margin}}{\text{Consumer price}} \times 100$$

Where GMM_P - Producers' Gross Margin (farmers' portion)

$$NMM = \frac{\text{Gross margin} - \text{Marketing costs}}{\text{Consumer price}} \times 100$$

Where NMM – Net Marketing Margin

$$PS = \frac{P_x}{P_r} = 1 - \frac{MM}{P_r}$$

Where PS = Producer's share

P_x = Producer's price

P_r = Retail price

MM = Marketing margin

Studies have found that estimating marketing margin quite accurately through price surveys at all levels in the distribution channel during one week under normal conditions is normally recommended. In the case of perishable products, estimating the margin depends largely on primary data collection in the form of surveys carried out over time intervals in which relevant market cycle occurs. Recording prices at different levels of the marketing chain during a two-to-three-week period is sufficient to calculate quite accurately the relevant marketing margin and transaction cost (Mendoza and Rosegant, 1995).

Limitations are apparent in using marketing margin. These are; the failure to allow for the temporal realities of storage or the spatial implications of in terms of market transfers. They are often calculated by noting price differences between different levels of the market in the same town and at the same market. They are static in

nature. The other weakness raised is the inability to account for differences in the perishable nature of the product and in the number of services necessary (actually rendered).

In using marketing margins one has to be careful as suggested by Saccomandi (1998) because the interpretations are largely incorrect as each agricultural marketing system has its own historical and social context, which is reflected in the means used to organize the marketing, processing and distribution of food products. Since this also depends on various factors, there could be identical margins for different economic situations and different margins for homogenous economic situations, without offering the possibility of expressing any judgment on the comparative efficiency of one or the other. The greater or lesser importance of these margins is an index of equity in the performance of agricultural marketing activities, meaning that higher margins would correspond to low returns and monopolistic exploitation of agricultural producer, and vice versa. This interpretation is also incorrect, since monopolistic exploitation depends on the market power of various components of an agri-marketing system. Such power cannot be evaluated through margins but requires a deeper analysis of the existence of workable competition in various phases.

Marketing margins are the differences in prices at two different points in the marketing chain. A commonly reported marketing margin is the farm-to-retail spread, which measures the difference between the retail price and the farm level price for a commodity. Marketing margins are a typical way of measuring marketing costs. There are two difficulties with this measure. First, in periods when firms in the marketing chain earn negative economic profits, the marketing margin will not fully reflect actual costs. Second, marketing margins do not reflect all transaction costs. The marketing margin reflects transaction costs paid by firms in the marketing chain, but does to reflect costs incurred by consumers, farmers, government agencies or those external to the marketing chain. This can create analytical difficulties, because it is possible to shift costs from one category to another. For example, if an externality becomes internalized through a tax, that cost moves from the "external cost" category (not measured by marketing margins) to "marketing cost" category (included in marketing margins). Transactions costs face the individual trader in two forms, (1) inputs of his own resources, including time, (2) margins between the buying and the selling price he finds for the same commodity in the market.

3.2.2 Marketing Cost

All marketing activities generate costs. These costs vary widely across agricultural commodities, depending on the extent of processing or the distance between production areas and consumption centers.

Definition:
Costs are incurred between the moment an agricultural product leaves the farm and the moment it is purchased by the end users or consumers.

The costs incurred and the profits earned by market intermediaries' account for the difference between prices at different stages of the supply chain. This is illustrated in Figure 3.1 below.

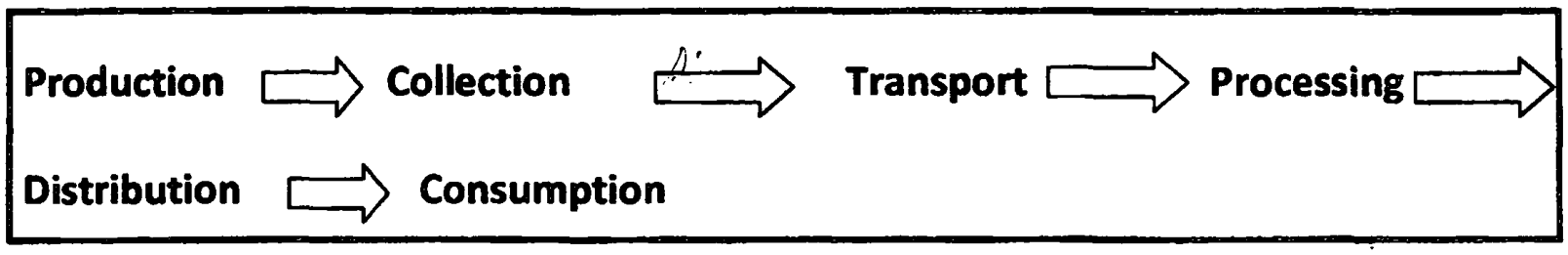


Figure 3.1: Prices along the Supply Chain

3.2.3 Marketing Chain

The analysis of marketing channels intends to provide a systematic knowledge of the flow of the goods and services from their origin (producer) to their final destination (consumer). This knowledge is acquired by studying the "participants" in the process, i.e., those who perform physical marketing functions in order to obtain economic benefits. In carrying out these functions, marketing agents achieve both personal and social goals. They earn a (personal) financial reward by performing an activity desired by society. They add value to production and in so doing help satisfy consumers' needs. The price the consumer pays for the goods (the physical commodity) and services (e.g., transportation, bulk-breaking, grading) rendered compensates the marketing agent for his efforts. This price also serves as a signal to all the actors in the marketing channels, i.e., producers, rural assemblers, transporters, wholesalers and retailers (Scott, 1995).

Agricultural commodities are produced by a large number of farmers and consumed by a large number of households. With the exception of foodstuffs consumed on-farm or sold locally, they are bought and sold a number of times between the farm-gate and the final consumer. While moving between these two points, the commodity is loaded, off-loaded, transported, stored, cleaned, graded and processed. The conduit that runs from a farmer down to a final user, through which the commodity passes and which embodies these transactions and activities is conventionally referred to as a "marketing and processing chain", a "supply chain", or a "value chain" (FAO, 2005).

A marketing chain is used to describe the numerous links that connect all actors and transactions involved in the movement of agricultural products from the farm to the consumer (Lunndy, *et al.* 2004). It is the path one could follow from their source of original production to ultimate destination for final use. Functions conducted in a marketing chain have three things in common; they use scarce resources, they can

perform better through specialization, and they can be shifted among channel members (FAO, 2005).

According to Hobbs, *et al.* (2000), the term supply chain refers to the entire vertical chain of activities: from production on the farm, through processing, distribution, and retailing to the consumer. In other words, it is the entire spectrum, from gate to plate, regardless of how it is organized or how it functions.

Kotler (2003) defined supply chain as a longer channel stretching from raw materials to final products that are carried to final buyers. He puts it as a value-delivery network. He also separated supply chain from demand chain in that the latter starts from thinking first the target market and moving backwards from that point, as a backward orientation.

Marketing channel is a sequence of enterprises and markets by which a produce is moved from producer to consumer (FAO, 1986). In passing, it should be noted that many marketing channels might exist, as there are separate sources and/or destinations for each item.

To find out how many traders operate in the marketing system, and at what point a commodity changes hands, it is helpful to sketch its flow through the marketing chain. The competitiveness of a market and the structure of the marketing chain are obviously related. If at some point in the chain only a single buyer or seller exists, then non-competitive behavior is likely. Alternatively, the presence of many active buyers and sellers all along the chain carries a strong presumption of competitive behavior and efficient market performance. Estimating volumes and percentages of commodity transformations, at each link in the chain provides an overview of the marketing systems (Timmer, *et al.* 1983).

Market chain analysis, therefore, identifies and describes all points in the chain (producers, traders, transporters, processors, consumers), prices in and out at each point, functions performed at each point /who does what/, market demand /rising, constant, declining, approximate total demand in the channel/, market constraints and opportunities for the products.

3.3 Studies Conducted on Analysis of Market Margin

Devaraja (1998) conducted a study in India on channels and price spread in potato marketing. The study identified 3 supply chains, first chain included commission agent and retailer for the movement of produce from producer and consumer in the nearby market of Hassan. The second chain included commission agent and retailer for the movement of produce from producer and consumer but a distant market of Bangalore and the third chain included a commission agent and a cart vendor from producer to consumer. The price spread analysis revealed that producers got the net price of 48.57, 51.15 and 52.32 per cent of the consumer's rupee in first, second and

third supply chain respectively. In third chain representing distant market of Bangalore, the consumer's rupee was the highest. Hence selling of produce at the distant market was found to be more profitable to the farmers. The study also revealed that the producer's net price could be increased by taking suitable measures by government such as (a) providing cold storage facilities to producers (b) the present system of commission charges being collected from producers should be stopped (c) providing support price facilities to producers when there is heavy price fluctuations in peak seasons (d) efficient and cheap means of transportation by the market committee (e) fluctuations in the market prices of potatoes may be eliminated by regulating and streamlining the supply by establishing potato processing plants in the production centres of manufacturing of processed potato products.

Pandey, *et al.* (2003) estimated the price spread and producers and market intermediaries' share in the consumer price in the channel: Producer – commission agent – retailer – consumer in potato marketing at Shimla, India. For that study samples of 25 potato growers, 10 commission agents and 25 retailers were selected purposively. The result showed that the producer realized around 73 per cent share in the consumer's price. The retailer and commission agent earned profit of about 3.5 and 8.0 per cent of the consumer's rupee. The price spread and marketing efficiency was found to be about 27 per cent and 3 respectively.

The study by Gardner (1975) provided a basic framework for analyzing marketing cost and margins. It defined the major sources of variation in the retail-farm price spread, i.e., shifts in the retail food demand, in the farm product supply, or in the supply of marketing services. Similarly, Heien (1977) came up with an analysis of farm-retail margin (in percentage difference) that related margin with farm output and the ratio of retail price and marketing costs. Using the Cobb-Douglas production function, his analysis showed that an increase in the marketing costs and in the level of farm output reduces the percentage marketing margin.

Adiyoga, *et al.* (1997) in a study on potato marketing in North Sumatra in Indonesia, found that price variability is higher at the farm-gate level than at the wholesale and retail levels and marketing costs are highest at the retail level, but retailers also earn the highest profit margin.

Oladapo, *et al.* (2007) in a study with marketing cost and margins of pineapple in Nigeria found that transport represents the largest share of the marketing cost (nearly 55%) and the second highest cost component was storage cost.

Hugar (1996) in his study on marketing of vegetables in Belgaum city found that marketing costs incurred by producer – sellers for cabbage, brinjal and tomato were Rs.7.73, Rs.8.62 and Rs.8.17 per quintal respectively in the supply chain of producer to consumer with the involvement of wholesalers and retailers. But, in the supply chain of producer to consumer with involvement of cooperative society and retailers

the marketing costs were Rs.6.65, Rs.7.40 and Rs.9.00 per quintal of cabbage, brinjal and tomato respectively. The cost incurred by producer seller in the cooperative supply chain was lower as compared to traditional supply chain. This was mainly due to lower rate of commission charged by cooperative society as compared to wholesaler or commission agents. This suggested that there was a relatively more efficient performance of cooperative supply chain over traditional supply chain.

Vedini (1997) conducted a study on costs and margins of Jasmine flower marketing. The study was conducted in Mysore city. It was interesting to note that all the sample farmers sold their produce at their nearest markets in Mysore district. It was significant to note that the traders cum commission agents are playing a very crucial role in Jasmine flower marketing than in the direct sale to consumer. The study results explicitly indicate that Jasmine flower trade is a profitable venture with a price spread of nearly 49 per cent among all the intermediaries. The net return per kilo of flower was the highest in case of retailers due to creation of form utility. The constraints call for orderly marketing by establishing co-operatives for flower marketing.

Gupta and Rathore (1999) conducted a study on disposal patterns and constraints in vegetable marketing in Raipur district of Madhya Pradesh in 1995-96. The study followed two supply chains; one was producer to consumer with the involvement of wholesaler and retailer and the other one was directly from producer to consumer. They compared the pricing in both supply chains and found that the, price in direct sale from producer to consumer was higher than the price in sale of produce from producer to consumer with the involvement of wholesaler and retailer for all the crops they covered i.e., tomato, brinjal and chillie. The maximum difference between the two prices was observed in the case of tomato where producers received 6 to 59 per cent higher price in supply chain where wholesalers and retailers involved followed by brinjal in which this difference varied from 24 to 35 per cent in both prices. The minimum difference i.e., 11 to 18 per cent between two prices was observed in case of chillies. The various marketing costs incurred by wholesalers and retailers along with 8 per cent commission charged by commission agent was the main reason for lower price realization by farmers in supply chain of direct sale of produce from producers to consumers. On the marketing cost incurred by vegetable producers in different marketing operations includes charges taken by commission agent as commission constituted more than 60 per cent to 46.63 per cent while transportation cost constituted 22 to 39 per cent of the total marketing cost. The efficient use of means of transportation and distance covered by farmers may influence the transportation cost, expenditure incurred by farmers on packaging shared about 8 to 9 per cent of the total marketing cost. The farmers spent almost an equal amount on these two operations. They generally used gunny bags to pack the vegetables such as brinjal, chillie and cauliflower, while bamboo baskets were used by them for tomato.

Maria and Von Oppen (2002) conducted a study to know the efficiency of vegetable market in Northern Thailand and it indicated that wholesale markets present outside the cities have a strong influence on price determination for retailers.

Jaffar and Namasivyam (2005) conducted a study on marketing cost of banana in Theni district of Tamil Nadu in India. For the study, banana growers of the district were selected and also the different functionaries which the farmers followed. The study concluded that cutting, loading and unloading, commission, and transportation were the marketing costs of the banana growers, which amounted to Rs.805, Rs.760 and Rs.734 in the case of small, medium and large growers, respectively. The pre-harvest contractors incurred a marketing cost of Rs.775 per ton. Transport cost dominated other costs. The marketing cost, excluding interest on working capital was less to the pre-harvest contractors than to the growers. Commission agents had to pay Rs.116.67 per ton towards the marketing cost. The wholesalers incurred a marketing cost of Rs.417.09 per acre. More than 60 per cent of the marketing cost of the retailers was due to wastage. The total marketing cost of retailers turned out to be Rs.336.67 per ton.

Shilpha (2008) conducted a study on supply chain management analysis of tomato from the farm to modern retail outlet. The study was conducted in Bangalore. In studying the price difference the customer price was very high in traditional supply chain (Rs.12.00) and low (Rs.8.75) in modern supply chain. The net price received by producer was very low (Rs.4.20) in traditional supply chain and high (Rs.5.05) in modern supply chain. Hence they concluded that modern retail outlet management improved transparency, involvement of all levels of management, while maintaining a higher price to tomato growers and lesser price to consumers and less spoilage of tomatoes than traditional system of marketing.

Murthy, *et al.* (2007) conducted a study on "marketing losses and their impact on marketing margins: A case study of Banana in Karnataka". To estimate the post harvest losses at field level, transit and wholesale marketing level and retail marketing level were selected for the study and they found out that the margin of the retailers after taking into account the physical loss during retailing has been found to be negative (loss), which otherwise, was positive (profit) in the conventional estimation. Similarly, the producers' net share and wholesalers' margins also decreased substantially. It has been shown that marketing efficiency is inversely proportional to the marketing losses. The cooperative marketing has been found to be a more efficient system both in terms of operations and price. Marketing costs have been identified as the major constraint in the wholesale marketing channel and bringing down the costs, particularly the commission charges as demonstrated in the cooperative channel, will help reducing the price-spread and increasing the producers' margin. The need for specialized transport vehicles for perishable commodities has been highlighted.

CHAPTER FOUR

Methodology

4.1 Introduction

In this chapter, a comprehensive view of the methodology adopted for the investigation viz., the study area, source of data and analytical techniques applied is presented. Under the methodology, we discuss the study area, selection of districts, market, crops, nature and the source of data, the data collection and the method used. The first part of the chapter describes the data collection and analysis for measuring marketing margin. Under this section it was discussed how to achieve first and second objectives by using appropriate statistical techniques of descriptive methods. The basis of selection of crops, districts, market, nature and source of data and the study area of potato and red onion are discussed secondly.

4.2 Collection of Data

This study basically was carried out using primary data collected from a field survey. A sample survey and key informant interviews were conducted to collect primary data required for the study. A questionnaire survey was administered to collect primary data from three categories of sample farm households using three different structured questionnaires.

Primary data were collected in a comprehensive questionnaire survey through personal interviews with key informants including farmers and market intermediaries (collectors, traders, wholesalers and retailers) of different marketing channels using well structured interview schedules. The second objective is mainly based on primary data. It included patterns of disposal of produce and marketing costs incurred (all direct and indirect cost). Similarly data on volume of business, sale and purchasing price, marketing costs incurred and problems related to buying and selling of potato and red onion were collected from selected intermediaries.

4.2.1 Sample Size

Two hundred and forty market participants were selected for potato and red onion as given in the following table. Study population was the potato and onion farming households in major producing areas in the Nuwara Eliya, Badulla, Puttalam, Jaffna and the major market participants. The selection of the sample for the questionnaire survey followed a number of stages. Then the size of the final sample is 240 potato and onion farming households and other major market participants.

Table 4.1: Summary of the Sample

Market Participants	Potato		Red onion		Total
	Nuwara Eliya	Badulla	Puttalam	Jaffna	
Farmers	15	15	15	15	60
Collectors	15	15	15	15	60
Wholesalers	15	15	15	15	60
Retailers	15	15	15	15	60
Total Sample	**60**	**60**	**60**	**60**	**240**

4.2.2 Selection of Districts

In this study, Nuwara Eliya, Badulla, Puttalam and Jaffna districts were purposively selected for analysis, which represent two major growing areas of potato and two major growing areas of red onion respectively. These districts were purposively selected due to following reasons; the total potato production coming to the market from these two districts. Regarding red onion; Jaffna and Puttalam districts were chosen because the highest production was recorded in the intermediate zone in the country.

4.2.3 Selection of Markets

Based on the importance of both the potato and red onion wholesale markets in the country, Colombo, Dambulla, Keppetipola, Bandarawela, Puttalam and Jaffna were selected for the analysis. Dambulla, Keppetipola, Bandarawela, Jaffna and Puttalam markets are located in major production areas and Colombo and Gampaha are in major consuming areas in the country. At the same time, Colombo is the oldest and the biggest market in the country. There are about 69 commission agents in the market. Producers and collectors supply potato and red onion to sell on a commission basis (5% - 10%). Dambulla market, the second largest wholesale market, is located 180 km away from Colombo. The number of traders in the market is approximately 170. There are about 144 outlets in this market and most of the traders in the market sell potato and red onion. Puttalam Norachcholai market has around 40 wholesalers for red onion. Bandarawela in the Badulla district is one of the major potato markets in the country. This market serves the central part of the country. There are about 80 traders in the market. Keppetipola market is smaller than other markets with around 50 traders and it is located in the Badulla district.

4.3 Analysis of Data

Data were explained and statistically analyzed using appropriate statistical techniques of descriptive methods. The methods of analysis and analytical techniques used in the present study are given in the forthcoming sections. In case

of the marketing margin *(major objective)* and other analysis, *(specific objectives)* different analytical techniques were used under a different scenario.

4.3.1 Analysis of Market Margin

Data collected for the realization of objective (II) was analyzed using descriptive statistics method while marketing margin analysis was done to realize the objective (I). Marketing margin which was a dependent variable in the analysis of variance was computed by using the marketing margin model.

Marketing margins were calculated using the "concurrent method". The prices at consecutive levels of the marketing channels were compared in same point in time. Data included representative costs and returns from the main participants in transportation, handling and storage. Analysis estimates the costs of all inputs, subtracting these costs from returns then gives profits at each level of the system.

Hence, a marketing margin was specified as follows;

$$M_t = P^{l}_{t} - P_t^{(l-1)}$$

Where,

M_t= Marketing margin between level (L) and its preceding level (L-1)

P^{l}_{t}= Price at market level (L),

$P_t^{(l-1)}$= Price at market level (L-1)

Gross marketing margins will be calculated using secondary price data over the years and months to find the seasonal variation.

1. The farmer's share of the retail price is paid by the end consumer

$$\text{Producer's Share} = \frac{\text{Producer Price } (P_{PP})}{\text{Retail Price } (P_{RP})} \times 100\%$$

2. The gross marketing margin or farm-retail price spread

$$\text{Wholesaler's Gross Margin} = \frac{P_{WP} - P_{PP}}{P_{RP}} \times 100\%$$

$$\text{Retailer's Gross Margin} = \frac{P_{RP} - P_{WP}}{P_{RP}} \times 100\%$$

P_{WP} = Wholesale Price

P_{PP} = Producer Price

P_{RP} = Retail Price

Net marketing margins of potato and red onion for different marketing channels were calculated in both rural and urban markets

3. Net Marketing Margins = Marketing Margin – Marketing Costs
4. Marketing Efficiency will be measured using Shepherd formula

$$\text{Marketing Efficiency} = \frac{\text{Price paid by the consumer}}{\text{Total Marketing Cost + Margin}}$$

CHAPTER FIVE

Results and Discussion

5.1 Introduction

This chapter discusses the results of the analysis in two perspectives. First part of the chapter discusses the results of the first specific objective which is the analysis of the efficient marketing channels of different crops in different areas. The second part of the chapter is dedicated to discuss the least cost marketing channel and cost items in farmer level to consumer level.

5.2 Marketing Channels of Potato and Red Onion

Marketing channel is a chain of middlemen involved in the process of selling different potato and onion at different stages. Most of the figures in this chapter show the different types of marketing channels indicating that how potato and onion move from the producer to the end consumer. The bulk of the marketing is carried out by the commission agents and large scale traders of the private sector. The chain of intermediaries begins with the village level collecting agents and the most usual marketing channel is the farmer-assembler-wholesaler-retailer-consumer systems. However, it flows through different channels depending on the distance of the market to the producing area involving more intermediaries.

Marketing channels for potato and red onion are very similar to those of many other agricultural commodities. There were several types of market participants such as collectors, wholesalers, retailers, exporters, processors and institutional buyers. Majority of the farmers sell their produce to collectors at field level.

The existing potato and red onion marketing channels in Sri Lanka which show how potato and onion move from producer to end consumer are discussed in this chapter. However, each marketing channel was not same all the time and it does not mean all channels were available for all farmers everywhere. The marketing costs and margins are different from channel to channel. The marketing channels were very few in the areas where road conditions *(Nuwara Eliya, Badulla, Puttalam and Jaffna)* are poor and the production is limited. The major part of both crops is moving through traditional supply chains and also passes via the Dedicated Economic Centers and the Colombo Manning Market. The supply chain of intermediaries begins with the village level collecting agents and the most usual marketing channel was the farmer- assembler- wholesaler- retailer- consumer system. Normally farmers sell their potato and onion to vegetable collectors or send them to commission agents at the wholesale markets through transporting agents.

5.2.1 Marketing Channel of Potato in Nuwara Eliya District

In the study, two major marketing channels of potato were identified in the Nuwara Eliya district.

A - Transport Agent Channel

The marketing channel "A" supplies potato from Nuwara Eliya area to Colombo suburb retail markets. About 30 percent of the producers used this channel which supplied potatoes to Colombo wholesale market through the Transporters' Union.

Farmer → Transporters' Union → Colombo Wholesale Market
Ja-Ela Retail Market → Consumer

B – Intermediaries' Channel

The marketing channel "B" supplies potato from Nuwara Eliya area to Colombo suburbs retail markets. About 40 percent of the producers used this channel which supplied potatoes to Colombo Wholesale Market through collectors.

Farmer → Collector → Colombo Wholesale Market → Ja-Ela Retail Market → Consumer

5.2.2 Marketing Channel of Potato in Badulla District

In Badulla district, there were two major marketing channels which supplied potatoes to Colombo.

C – Intermediaries' Channel

The marketing channel "C" supplies potato from Keppetipola area to Colombo suburbs retail markets. About 30 percent of the producers used this channel which supplied potatoes to Colombo through Keppetipola Dedicated Economic Center.

Farmer → KDEC Collector → Colombo Wholesale Market → Kiribathgoda Retail Market → Consumer

D – Transport Agent Channel

The marketing channel "D" supplies potato from Bandarawela area to Colombo suburb retail markets. About 30 percent of the producers used this channel which supplied potatoes to Colombo through collectors of Bandarawela wholesale market.

Farmer → Wholesale Market Collector – Bandarawela → Colombo Wholesale Market → Kiribathgoda Retail Market → Consumer

5.2.3 Marketing Channel of Red Onion in Puttalam District

E - Intermediaries Channel

The marketing channel "E" supplies red onion from Norachcholai area to Colombo suburb retail markets. About 30 percent of the producers used this channel which supplied red onion to Colombo through Norachcholai Dedicated Economic Center.

Farmer → NDEC Collector → Colombo Wholesale Market → Ja -Ela Retail Market → Consumer

F – Transport Agent Channel

The marketing channel "F" supplies red onion from Norochcholei area to Colombo suburb retail markets. About 40 percent of the producers used this channel which supplied red onion to Colombo through Transporters' union.

Farmer → Transporters' Union → Colombo Wholesale Market → Ja-Ela Retail Market → Consumer

5.2.4 Marketing Channel of Red Onion in Jaffna District

G – Intermediaries' Channel

The marketing channel "G" supplies red onion from Jaffna area to Colombo suburb retail markets and 30 percent of the producers used this channel which supplied red onion to Colombo through collectors.

Farmer → Collectors → Colombo Wholesale Market → Maharagama Retail Market → Consumer

H - Transport Agent Channel

The marketing channel "H" supplies red onion from Jaffna area to Colombo suburb retail markets (supermarkets included) and 60 percent of the producers used this channel which supplied red onion to wholesalers in Anuradhapura through the collectors.

Farmer → Collector → Wholesale or Retailer → Anuradhapura Retail Market → Consumer

According to above situation we can identify three major systems for both crops as follows;

1. Potato and red onion marketing through Economic Centers with commission system
2. Regional periodical markets *(pala)* system
3. Supermarket system

One can identify supermarket supply chain as the modern marketing channel. Traditional marketing channels for both potato and onion differ substantially from the supermarket supply chains. The traditional distribution system for fresh potato and red onion in Sri Lanka is mainly through "wet- markets" that still control more than 50 percent of the potato and red onion sales. There are large numbers of participants involved in the conventional marketing channels for potato and red onion and they perform various activities such as assembling, sorting, packing, transporting and selling.

5.3 Marketing Margin and Marketing Efficiency

The study of marketing margin, cost and pricing efficiency is important in determining the mark up at different levels of marketing. The knowledge of marketing margin and pricing efficiency determines marketing efficiency and integration to a large extent. In order to facilitate the agricultural development process, analysis of marketing margins and pricing efficiency of foodstuffs is considered very pertinent and, it is expected that favorable pricing efficiency will stimulate more of the products concerned to be produced.

Increased efficiency is in the best interest of farmers, traders, processors, wholesalers, retailers, consumers and society as a whole. The efficiency of a marketing system is measured in terms of the level and/or costs to the system of the inputs, to achieve a given level and/or quality of output. Such inputs are generally in the form of land, finance, time, manpower and materials. Typical outputs include the movement of a given amount of product to markets at specific distances, the supply of a particular level of service to target market segments and the supply of products at a target price. Hence resources are the costs and utilities are the benefits that

comprise the marketing efficiency ratio. Efficient marketing optimizes the ratio between inputs and outputs.

5.3.1 Analysis of Marketing Margin and Marketing Efficiency for Potato

Analyzing the market price of potato, the net price received by farmers in the consumer price is 70 percent and 52 percent respectively in channel A and B which supply potato from Nuwara Eliya to Colombo. Wholesalers' and retailers' net margins were 11 percent and 20 percent respectively in channel A, while that of channel B, they were 13 percent and 24 percent respectively. Transport agent channel was more efficient and low cost channel compared to the others at the farmer level in Nuwara Eliya. Analysis of price margins shows that farmers in Nuwara Eliya were highly benefited with transport agent channel than intermediate channel. Regarding the Welimada potatoes, wholesalers' net margins were 7 percent and 14 percent in channel C and channel D of the Welimada farmers and retailers' net margins were 25 percent and 22 percent respectively in channel C and channel D of the Welimada farmers. Retailer's net margin is higher due to wastage (4 percent) at that level. Wholesaler's net margin is high for NE potato compared to Welimada potato as prices are not based on the commission.

Table 5.1: Gross and Net Market Margins for Potato in Nuwara Eliya and Badulla

Market Participant	Net Margin %		Gross Margin %	
	Channel A	Channel B	Channel A	Channel B
Farmer	69.58	52.29	75	63.57
Collector	-	10.94	-	7.86
Wholesale	10.64	13.21	7.14	8.57
Retailers	19.77	23.55	17.86	20.00
Total	100.00	100.00	100.00	100.00
	Channel C	Channel D	Channel C	Channel D
Farmer	68.46	53.16	72.2	63.57
Collector	-	11.25	-	8.86
Wholesale	6.89	14.10	3.8	9.57
Retailers	24.64	21.56	24	18.00
Total	100.00	100.00	100.00	100.00

Source: HARTI Survey Data, 2011

Marketing efficiency is calculated by using consumer price and total marketing cost as a unit. Accordingly results for Nuwara Eliya potato, the Marketing Efficiency (ME) is higher in channel A (ME=9.12) which supplies potato through transport agents, whereas it was low for channel B (ME=7.32) which supplies through collectors. For Welimada potato, the marketing efficiency is higher in channel D (ME=8.15), compared to channel C (ME=6) which supplies potato through the collectors of Bandarawela Wholesale market which involves less transaction cost.

Table 5.2: Marketing Efficiency of Potato in Selected Marketing Channels

Major Producing Area	Major Marketing Channel	Name of the Channel	Marketing Efficiency	Most Efficient Channel
Nuwara Eliya	Transport agent channel	A	9.12	A
	Intermediaries' Channel	B	7.32	
Badulla	Transport agent channel	C	6.07	D
	Intermediaries' Channel	D	8.15	

Source: HARTI Survey Data, 2011

5.3.2 Analysis of Marketing Channel and Marketing Efficiency for Red Onion

For red onion, the net prices received by farmers in the consumer price are 67 percent and 59 percent respectively in channel E and F which supply red onion from Puttalam to Colombo, whereas they were 66 percent and 53 percent respectively in channel G and channel H which supply red onion from Jaffna to Colombo. Analysis of price margins shows that Puttalam farmers were highly benefited than Jaffna farmers with good quality produced. Wholesalers' and retailers' net margins were 5 percent and 28 percent in channel E which supplies red onion from Puttalam whereas wholesalers' and retailers' net margins were 6 percent and 23 percent in channel F. For red onion supplies from Jaffna, the wholesalers' and retailers' net margins were 10 percent and 24 percent in channel G, whereas they were 12 percent and 21 percent respectively in channel H. Retailer's net margin is higher due to wastage (6 percent) at that level.

Table 5.3: Gross and Net Market margin for Red onion in Puttalam and Jaffna

Market Participant	Net margin %		Gross margin %	
	Channel E	Channel F	Channel E	Channel F
Farmer	67.46	59.48	72.2	63.54
Collector	-	12.02	-	7.98
Wholesale	4.9	5.9	3.8	8.74
Retailers	27.64	22.6	24	19.74
Total	100.00	100.00	100.00	100.00
	Channel G	Channel H	Channel G	Channel H
Farmer	66.02	52.89	74.25	62.47
Collector	-	14.26	0	11.27
Wholesale	9.75	11.98	6.01	7.74
Retailers	24.23	20.87	19.74	18.52
Total	100.00	100.00	100.00	100.00

Source: HARTI Survey Data, 2011

For Puttalam red onion, the marketing efficiency is higher in Channel E (ME=4.18) which supplies red onion through the Dedicated Economic Centre (DEC), whereas it was low for Channel F (ME=3.5) which supplies directly. For Jaffna red onion, the marketing efficiency is higher in Channel G (ME=3.78), compared to Channel H (ME=3.2) which supplies red onion through Dambulla DEC which incurs less transaction cost.

Table 5.4: Marketing Efficiency of Red Onion in Selected Marketing Channels

Major Producing Area	Major Marketing Channel	Name of the Channel	Marketing Efficiency	Most Efficient Channel
Puttalam	Transport agent channel	E	4.18	E
	Intermediaries' Channel	F	3.5	
Jaffna	Transport agent channel	G	3.78	G
	Intermediaries' Channel	H	3.2	

Source: HARTI Survey Data, 2011

5.4 Least Cost Marketing Channel and Cost Items of Potato and Red Onion

The marketing channels which supply both crops from Nuwara Eliya, Bandarawela, Puttalam and Jaffna areas to Colombo were used to analyze the market margins and costs. According to the study, two major channels from Nuwara Eliya to Colombo and two major channels from Bandarawela to Colombo for potato marketing have been identified. These marketing channels were analysed by using unit cost for all components not considering the distance to the markets. The least cost components and marketing channel were identified for both potato and red onion marketing as follows.

Both marketing channels indicate that how potato and red onion move from producer to end consumer. However, each marketing channel is not the same all the time and it does not mean all channels are available for all farmers everywhere. The marketing channels are very few in the areas where road conditions are poor and the production is limited. The study found that majority of both crops moving through intermediate channel (traditional supply chains) pass via the Dedicated Economic Centers and the Colombo Manning Market. The supply chain of intermediaries begins with the village level collecting agents and the most usual marketing channel is the farmer – assembler – wholesaler – retailer - consumer system. Also, farmers sell their potato and red onion to vegetable collectors or send them to commission agents at the wholesale markets through transporting agents' channel.

Transport agents channel is an important marketing channel moving potato and red onion from producer to consumer. This system is functioning well especially for

Nuwara Eliya potato while the intermediate channel is functioning well for Jaffna red onion. Major difference of both channels to difference with collectors. Intermediate channel has a higher number of collectors than the transport agent channel.

Analysis of all the marketing channels in the table 5.5, channel A is the least cost marketing channel of the farmer to wholesale market which the unit transport cost in considered. Channel D is the least cost marketing channel of the wholesale to retailer, considering the transport as a major component. Therefore channel A is an efficient channel in the marketing activities in the wholesale level and channel D is an efficient marketing channel in the retail level based on the unit cost in potato marketing.

Table 5.5: Major Marketing Channels and Unit Cost of Potato (Farmer – Wholesaler - Retailer Level)

Direct Cost Component	Major Marketing Channel and Unit Cost (Rs./kg)				Most Efficient Channel
	A	B	C	D	
Loading (1)	1.00	0.50	1.00	1.00	
Transport	3.50	4.70	4.50	4.50	(A)
Loading (2)	-	1.00	1.00	1.00	
Handling 01	2.00	2.50	2.00	2.00	
Commission 01 (Rs/kg)	-	-	-	2.50	
Commission 02 (Rs/kg)	0.10	0.10	0.10	0.10	
Commission 03 (Rs/kg)	5.00	4.00	10.00	5.00	
Wastage	1	1	1	1	
Unloading	0.40	0.40	0.40	0.40	
Market levy	1.50	1.50	2.50	1.50	
Total	14.5	15.7	22.5	20	
Remarks (Most efficient Channel)	1	2	5	4	1
	Wholesaler to Retailer Level				
Loading (1)	0.27	0.27	0.27	0.27	
Loading (2)	0.36	0.36	0.36	0.36	
Transport	1.37	2.00	1.75	1.00	(D)
Handling 01	2.00	2.60	2.50	2.00	
Wastage	3	3	3	3.00	
Unloading	0.30	0.30	0.20	0.20	
Market levy	2.00	2.50	1.50	2.00	
Total	9.3	11.03	9.58	8.83	
Remarks (most efficient Channel	2	4	2	1	4

Source: HARTI Survey Data, 2011

Table 5.6: Major Marketing Channels and Unit Cost of Red Onion (Farmer – Wholesaler - Retailer Level)

Direct Cost Component	Major Marketing Channels and Unit cost (Rs./kg)				Most Efficient Channel
	E	F	G	H	
Loading (1)	0.67	0.50	0.67	1.00	
Transport	2.00	1.67	4.50	4.50	(E)
Loading (2)	-	1.00	1.00	1.00	
Handling 1	2.00	2.50	2.00	3.00	
Commission 1 (Rs/kg)	-	-	-	-	
Commission 2 (Rs/kg)	0.10	0.10	0.10	0.10	
Commission 3 (Rs/kg)	3.00	4.00	3.00	5.00	
Wastage	3.5	3	3	4	
Unloading	0.20	0.20	0.25	0.40	
Market levy	1.50	1.50	2.50	2.50	
Total	12.97	14.47	13.27	23.5	
Most efficient Channel with overall	1	3	2	4	
	Wholesaler to Retailer Level				
Loading (1)	0.27	0.27	0.27	0.27	
Loading (2)	0.36	0.36	0.36	0.36	(G)
Transport	1.60	1.50	1.25	1.00	
Handling 1	2.00	2.50	2.00	2.00	
Wastage	3	3	3	3.00	
Unloading	0.20	0.20	0.25	0.20	
Market levy	1.50	1.50	1.50	2.00	
Total	8.93	9.33	8.63	8.83	
Most efficient Channel with overall	3	4	1	2	

Source: HARTI Survey Data, 2011

According to the analysis of all the marketing channels given in the table 5.6, channel B is the least cost marketing channel of the farmer to wholesale market which the unit transport cost. In addition, channel G is the least cost marketing channel of the wholesale to retailer, considering the transport as a major component. However, channel B is an efficient channel when considering all the marketing components in the wholesale level and channel C is the retail level efficient channel based on the unit cost in the onion marketing.

5.5 Issues in Potato and Red Onion Production and Marketing at Producer Level

On the basis of higher priority, respondent producers largely faced problems related to production e.g. lack of information, manpower, finance/credit, inputs, production levels, insect/pest, diseases, synchronous maturity and theft. Problems related to marketing included transportation, standardization and grading, infrastructure, unfair deductions, storage, market-related information and bargaining. There were also other, less important problems.

5.6 Issues in Potato and Onion Production and Marketing at the Stage of Marketing

Most middlemen faced problems related to uncertainty of the arrival of producers and consumers, the arrival of quantities of produce, standardization and grading, storage, information on market prices, quality of produce, varied mixture in produce and the highly perishable nature of produce.

APTER SIX

Findings, Conclusion and Policy Implications

6.1 Findings and Conclusion

The identification of the level and nature of marketing margin and marketing costs of potato and red onion are very important due to many reasons. Marketing operations of other field crops play a crucial role, due to seasonality of produce and deciding the profit of the farmer on one hand and the level of availability to consumer on the other. Transaction costs and high market margins are serious issues in this scenario. Therefore, a study of the marketing system for other field crops (potato and red onion) was necessary to understand the complexities involved and to identify bottlenecks with a view to providing efficient services in the transfer of farm products and inputs from producers to consumers. An efficient marketing system minimizes costs and maximizes benefits to all sections of society. Producers, consumers and traders are concerned about the size of the marketing margins, changes in marketing margins and the incidence of changes in margins.

Government's attempts to achieve self sufficiency in the other field crop sector. Considering the local production and imports of other field crops in Sri Lanka, the imports of potato and onion exceed the local production. Further, the prices of local varieties are higher than the imported varieties of those crops. High market margins of local crops will put more pressure on prices. Producers, consumers and traders are concerned about the size of the marketing margins, changes in marketing margins and the incidence of changes in margins. Producers want the best possible price for their surplus produce. Consumers need sufficient quantity and good quality at the lowest possible price. Further, market middlemen are interested in a marketing system which provides them with a steady and an increased income from the purchase and sale of other field crops. The government tries to provide the maximum share of the consumer's rupee to the producer; food of the required quality and lowest possible price to the consumers; and enough margin to enable middlemen to remain in the trade and not drop out, jeopardizing the whole marketing mechanism. The government wants the marketing system to bring overall benefits to all segments of society.

The study found that for potato, the net price received by farmers in the consumer price is 70 percent and 52 percent respectively in channel A and B which supply potato from Nuwara Eliya to Colombo. Wholesalers' and retailers' net margins were 11 percent and 20 percent respectively in channel A, while that of channel B, they were 13 percent and 24 percent respectively. Transport agent channel was more efficient and a low cost channel compared to the others at the farmer level in Nuwara Eliya. Analysis of marketing margins shows that farmers in Nuwara Eliya

were highly benefited with transport agent channel than intermediate channel. Regarding Welimada potatoes, wholesalers' net margins were 7 percent and 14 percent in channel C and channel D of the Welimada farmers and retailers' net margins were 25 percent and 22 percent respectively in channel C and channel D of the Welimada farmers. Retailer's net margin is higher due to wastage (4 percent) at that level. Wholesaler's net margin is high for NE potato compared to Welimada potato as prices are not based on the commission. According to these results for Nuwara Eliya potato, the Marketing Efficiency (ME) is higher in channel A (ME=9.12) which supplies potato through transport agents, whereas it was low for channel B (ME=7.32) which supplies through collectors. For Welimada potato, the marketing efficiency is higher in channel D (ME=8.15), compared to channel C (ME=6) which supplies potato through the collectors of Bandarawela Wholesale market which involves less transaction costs.

For red onion, the net price received by farmers in the consumer price is 67 percent and 59 percent respectively in channel E and F which supply red onion from Puttalam to Colombo, whereas it was 66 percent and 53 percent respectively in channel G and channel H which supply red onion from Jaffna to Colombo. Analysis of price margins shows that Puttalam farmers were highly benefited than Jaffna farmers with good quality produced. Wholesalers' and retailers' net margins were 5 percent and 28 percent in channel E which supplies red onion from Puttalam whereas wholesalers' and retailers' net margins were 6 percent and 23 percent in channel F. For red onion supplies from Jaffna, the wholesalers' and retailers' net margins were 10 percent and 24 percent in channel G, whereas they were 12 percent and 21 percent respectively in channel H. Retailer's net margin is higher due to wastage (6 percent) at that level. For Puttalam red onion, the marketing efficiency is higher in Channel E (ME=4.18) which supplies red onion through the Dedicated Economic Centre (DEC), whereas it was low for Channel F (ME=3.5) which supplies directly. For Jaffna red onion, the marketing efficiency is higher in Channel G (ME=3.78), compared to Channel H (ME=3.2) which supplies red onion through Dambulla DEC, which incurs less transaction costs.

6.2 Policy Implications

The study recommends that the number of intermediaries should be reduced to minimize the marketing cost considerably which indicates that growers should organize and link directly with supermarkets, hotels, restaurants and hospitals etc. Organizing growers will also lead to more and more contract cultivation and when the products are systematically stored that will help farmers to be in a better bargaining position. Traders and farmers need to be organized in a better way to serve and protect their interests, rather than the current structures, which are mostly serving few market participants. Improvement of market information and reduction in transport costs will improve marketing margin and pricing efficiency of the marketers. To strengthen the market information at producer level it is needed to have an efficient information dissemination system at regional level.

Encouragement of proper transport and packing systems may reduce the high transaction costs resulting in high wastage.

The high percentage of margin to farmer-consumer price difference is indicative of large inefficiencies and relatively poor marketing efficiency. Hence, there is a great need to improve the marketing of potatoes and red onions. Direct participation of farmers should be increased. Market infrastructure should be improved through the provision of storage facilities, cold storages, loading and weighing facilities. Improvement in the road network, and cold-chain facilities are also of substantial importance. Market integration and efficiency can also be improved by making up-to-date market information available to all participants through various means, including a good market information system. It will be very important to reduce high transaction costs of all sectors.

6.3 Suggestions for Further Improvement

Identification of the level and nature of marketing margin and transaction cost of potato and red onion are very important due to many reasons, especially for reducing high transaction cost. Transaction costs and high market margins are great problems in this scenario. Therefore, studying of the marketing system for other field crops is necessary to understand the complexities involved and to identify bottlenecks with a view to providing efficient services in the transfer of farm products and inputs from producers to consumers. An efficient marketing system minimizes costs and maximizes benefits to all sections of society. High market margins of local crops will put more pressure on prices. Producers, consumers and traders are concerned about the size of the marketing margins, changes in marketing margins and the incidence of changes in margins. This study covers only two important crops in Sri Lanka due to limited time and very comprehensive nature of the survey. The study does not cover all other field crops. Therefore it is suggested to extend this study to paddy and other field crops.

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Appendix 1: Cultivated Extent and Production of Red Onion (1970-2010)

Year	Extent (ha)	Production (Mt)
1970	6,773	41,507
1971	6,826	42,097
1972	8,238	43,679
1973	8,660	46,855
1974	9,044	53,521
1975	9,068	44,758
1976	9,669	58,407
1977	8,382	61,497
1978	8,272	58,426
1979	9,046	67,892
1980	8,710	66,891
1981	8,792	59,083
1982	9,068	67,543
1983	9,623	95,363
1984	3,867	36,680
1985	5,585	41,684
1986	6,615	57,147
1987	6,814	56,267
1988	7,490	59,154
1989	9,100	71,836
1990	8,600	67,957
1991	6,023	41,630
1992	7,733	54,515
1993	6,763	47,548
1994	6,960	48,228
1995	6,993	48,392
1996	6,584	43,938
1997	6,451	44,799
1998	5,661	38,048
1999	6,150	42,648
2000	6,095	42,502
2001	5,124	36,863
2002	4,968	35,334
2003	4,897	35,513
2004	5,426	39,376
2005	5,790	53,729
2006	6,228	60,754
2007	5,609	57,041
2008	4,994	49,290
2009	4,498	46,234
2010	5,228	61,811

Source: Department of Census and Statistics

Appendix 2: Cultivated Extent and Production of Potato (1970-2010)

Year	Extent (ha)	Production (Mt)
1970	3,306	31,741
1971	3,067	28,040
1972	3,539	30,844
1973	3,352	26,386
1974	3,196	26,795
1975	3,122	27,924
1976	3,113	27,876
1977	3,110	29,103
1978	2,860	29,098
1979	4,108	37,889
1980	4,537	51,121
1981	5,324	66,010
1982	6,169	76,893
1983	6,803	89,753
1984	5,959	68,254
1985	7,119	88,955
1986	7,299	82,482
1987	6,949	81,042
1988	7,247	87,535
1989	7,016	83,471
1990	7,888	87,205
1991	6,384	66,737
1992	7,135	78,562
1993	6,986	78,136
1994	7,210	79,385
1995	7,428	81,657
1996	7,925	100,755
1997	6,469	66,484
1998	2,328	25,899
1999	2,171	27,171
2000	3,642	48,409
2001	4,246	57,681
2002	6,605	88,709
2003	6,314	71,744
2004	5,495	81,274
2005	5,601	79,445
2006	5,294	78,484
2007	5,336	77,386
2008	4,869	74,814
2009	4,139	61,705
2010	3,844	51,933

Source: Department of Census and Statistics

Appendix 3: Total Availability of Red Onion in Sri Lanka (Mt) (2000-2011)

Year	Production (mt)	Imports (mt)	Total Supply (mt)
2000	42,502	5,384	47,886
2001	36,863	2,798	39,661
2002	35,334	11,430	46,764
2003	35,513	30	35,543
2004	39,453	2,693	42,146
2005	53,729	10,233	63,962
2006	60,754	10,859	71,613
2007	57,041	23,754	80,795
2008	49,290	26,890	76,180
2009	46,234	16,208	62,442
2010	61,811	11,908	73,719
2011	72,124	6,807	78,931

Source: Department of Census and Statistics, Sri Lanka
Department of Customs, Sri Lanka

Appendix 4: Total Availability of Potato in Sri Lanka (Mt) (2000-2011)

Year	Production (mt)	Imports (mt)	Total Supply (mt)
2000	48,409	121,153	169,562
2001	57,681	64,231	121,912
2002	88,709	42,739	131,448
2003	71,744	40,708	112,452
2004	81,274	28,014	109,288
2005	79,445	40,746	120,191
2006	78,484	46,556	125,040
2007	77,386	85,929	163,315
2008	74,814	99,353	174,167
2009	61,705	99,622	161,327
2010	51,933	129,879	181,812
2011	59,365	130,511	189,876

Source: Department of Census and Statistics, Sri Lanka
Department of Customs, Sri Lanka

AN ANALYSIS OF MARKETING MARGINS AND MARKETING EFFICIENCY: MARKETING CHANNELS OF POTATO AND RED ONION IN SRI LANKA

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