Marketing of Vegetable Through Supermarkets Implication of Procurement Practices for Farmers

Ruvini Vidanapathirana
Duminda Priyadarshana
Roshini Rambukwella

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Hector Kobbekaduwa Agrarian Research and Training Institute
114, Wijerama Mawatha
Colombo 7
Sri Lanka

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FOREWORD

In Sri Lanka, the supermarket sector is growing at a faster rate and is firmly established now. Supermarkets not only change the way we shop, but also radically change food supply chains and producer-retailer relations through new procurement practices. In the long run, supermarkets will increasingly influence the structure and implementation of agri-food system throughout the country. It creates new opportunities for farmers who are able to supply what supermarkets demand. This study attempts to examine the organization and functioning of vegetable supply chain systems of supermarkets and their implications on farmers compared to conventional marketing channels.

The expansion of supermarket chains is altering the traditional structure of marketing channels and creating new challenges and opportunities for participating agents. In this study, the procurement and distribution of vegetables by the major supermarkets in Sri Lanka was examined and it was found that there are pros and cons associated with the development of supermarkets. The emergence of the particular supermarket channel deems to be beneficial to farmers as they provide assured market and reduce price risk. There are also no middlemen and illegal deductions. The vertical relationship between farmers and supermarkets has been helpful to improve quality of products, reduce transaction cost and information asymmetries. It has also been helpful to reduce price risk at farm level and ensure a higher price for farmers compared to conventional channels and are able to reduce price margins between retailers and producers to a lower level, compared to conventional channels. The study found that most of the farmers select supermarkets due to this reason. It also found that the farmers had built-up trust dealing with supermarkets. However, the farmers face disadvantages in dealing with supermarkets due to low volume of procurement and high quality standards demanded by them resulting in rejection of vegetables at the selling point. The study found that majority of supermarket farmers sold less than 50 percent of their total production to supermarkets due to low amount of purchase, compared to conventional channels. Farmers are willing to supply to the supermarkets in future too and hence, there is a scope for possible improvements.

I congratulate the team of researchers for successfully undertaking this study and I hope the findings and suggestions of the study would be useful to policy makers and practitioners in the agri-food supply chains.

Lalith Kantha Jayasekara
Director

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Ruvini Vidanapathirana
Duminda Priyadarshana
Roshini Rambukwella

EXECUTIVE SUMMARY

In Sri Lanka, the supermarket sector is growing at a faster rate and is firmly established now. Supermarkets not only change the way we shop, but also radically change the food supply chains and producer-retailer relations through new procurement practices. In the long run, the supermarkets will increasingly influence the structure and implementation of agri-food system throughout the country. It creates new opportunities for farmers who are able to supply what supermarkets demand. Hence, it is important for the government to be aware of these changes, opportunities and challenges facing farmers as they can enhance small producer livelihood. Therefore, this study attempts to examine the organization and functioning of vegetable supply chains systems of supermarkets and their implications on farmers, compared to conventional marketing channels.

Two surveys were conducted interviewing supermarket-channel farmers (100) and conventional-channel farmers (100) in each study location, namely; Nuwara Eliya, Bandarawela and Thambuththegama. A one-way analysis of variance was used to compare the retail prices of vegetables at different supermarkets and to compare them with the prices at conventional channels. Further, the prices received by supermarket-channel farmers and conventional channel farmers were analyzed.

Study has revealed that the leading supermarkets (with a large number of outlets) have vegetable collecting centres at major producing areas to procure their requirement of vegetables. In addition, they procure vegetables from the independent procurement agencies. Collecting centers procure vegetables directly from farmers or the farmer associations, while independent procurement agencies procure directly from the farmers or collectors. Other supermarket chains use preferred supplier system to procure their vegetable requirement. It was revealed that there were no agreements between he supermarkets and the farmers in supplying vegetables. Ninety five percent of the farmers were not given any guidelines by supermarkets for the cultivation of crops and at the selling point they consider the physical attributes of vegetables with respect to quality. Majority of supermarket farmers sell 20 to 50 percent of their total production to supermarkets, whereas the conventional farmers sell more than 75 percent of their produce to a selected marketing channel. About 71 percent of the supermarket-channel farmers have selected supermarkets to sell vegetables due to higher producer price paid, whereas 75 percent of conventional-channel farmers selected their channel as it was easy to sell their products to conventional channels. A notable proportion (69 percent) of the farmers had not received any benefits from the supermarkets, other than receiving higher producer prices. This study has also found that the farmers do not cultivate vegetables according to standards or advises given by the supermarkets. However, at the point of selling, the supermarkets grade and sort out vegetables according to the standards and those which are not up to the standards are rejected.

It was observed that the farmers face problems in supplying vegetables to supermarkets. As supermarkets order a limited amount of vegetables at a time, they have to find out other sources to sell the rest of their produce. The amount of purchase by supermarkets is low when the production is high and the farmers have to bear the transport cost when selling to the supermarkets.

To cater to the demand of changed urban consumption needs, the supermarkets have integrated with farmers. This vertical relationship between the farmers and supermarkets has been helpful to improve the quality of products, reduce transaction costs and information asymmetries. It has also been helpful to reduce price risk at farm level and ensure a higher price for the farmers compared to conventional channels and has been able to reduce price margins between retailers and producers to a lower level, compared to conventional channels. Hence, it was found that the prices of most of the vegetables are lower in supermarkets, in contrast to conventional markets ($P<0.05$).

This study recommends that, the supermarkets or their suppliers should guide farmers on what to produce, when to produce and when to harvest with better provision of agricultural inputs and extension services. Farmers should be organized as groups to facilitate supermarkets by operating collecting centers that create a win-win situation to both parties where the farmers can obtain higher prices while the supermarkets can reduce their transaction cost. Government should be able to develop programs that will help the farmers to upgrade their pre and post harvest practices in order to meet the requirements of these new markets and need to investigate possible tripartite arrangements between banks, supermarkets and input companies to assist the farmers.

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LIST OF ABRREVIATIONS AND ACRONYMS

AFMA	-	Association of Agricultural and Food Marketing Agencies of Asia and the Pacific
AGCO	-	Agricultural Co-op Society
FAMA	-	Federal Agricultural Marketing Authority, Malaysia
FAO	-	Food and Agricultural Organization of the UN
FFV	-	Fresh Fruits and Vegetables
CDC	-	Central Distribution Center
DC	-	Distribution Center
DEC	-	Dedicated Economic Center
FDI	-	Foreign Direct Investments
HVAP	-	High Value Agricultural Products

CHAPTER ONE

Introduction

1.1 Rationale for the Study

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 of which a significant portion is saved for seeds (Singh and Sikka, 1992). The marketing operations of vegetables have a crucial role, due to seasonality of produce which decide the profits of the farmer on one hand and level of availability to consumer on the other hand. High market margins are a great problem in this scenario. Marketing cost includes collection, transportation, processing and distribution of farm produce to consumer. To reduce marketing margins, various methods are used all over the world such as direct marketing system and contract farming. With rapid economic growth, increasing urbanization, and accelerated integration into the world market, there has been a surge in the number of supermarkets and hypermarkets in many developing countries of Latin America and Asia (Reardon and Berdegue, 2001). Supermarkets are an emerging force in South Asia, particularly in urban India since mid-1990's (Pingali, 2004). There has been a rapid growth in the role of supermarkets in almost all parts of the world (Shepherd, 2005). Supermarkets not only change the way we shop, but also radically change the food supply chains and producer-retailer relations through new procurement practices. In Asia, the changes to supply arrangements wrought by supermarkets are not as advanced as in other regions, but procurement practices appear to be heading in the same direction as in other regions (Reardon, *et al*, 2004). Supermarket supply chains distinguish themselves from traditional market channels through specialized logistic facilities and focus on value-added activities.

Supermarket chains are significantly increasing their scope of services well beyond traditional food distribution, food services that capitalize on the growth of food away from home as well as non-food services that combine one-stop shopping convenience and time-saving features (Bonanno and Lopez, 2007). In Asian countries, most of the households continue to use traditional retailers for fruits and vegetables even though they may use supermarkets for other products. The sale of produce in supermarkets is much lower than the packaged produce. There remains the perception and possibly the reality, that wet market supplies are fresher and often cheaper (Shepherd, 2005). The fresh fruit and vegetable sub-sector is important because, on the retail side, supermarkets consider it as an important and strategic marketing instrument to attract consumers and generate profit (Makoka, 2005). Modern supply chain management in the fruit and vegetable distribution sector necessarily calls for improved efficiency in the ways transactions between producers and their buyers are organized. Supermarkets are becoming increasingly stronger in fruit and vegetable retailing. They are particularly concerned with the need to secure a steady flow of quality products that meet the attributes required by their consumers and can be priced at a competitive level. To offer, at a profit, the wide and seasonably variable assortment of products that comprise fruits and

vegetables, the supermarket managers must ensure that their transactions with suppliers are closely co-ordinated. The characteristics to be co-ordinated in these transactions cover aspects such as volume, frequency, price determination, payment conditions, logistics, delivery schedules, product standards, packaging requirements and policies to deal with supplies that do not meet pre-defined specifications (Chen, *et al*, 2005).

In a country like Sri Lanka, where food production is in the hands of small producers, a large number of intermediaries are involved in supply and distribution activities. The structure of the traditional vegetable supply chains is such that there are a large number of intermediaries (i.e. vegetable collectors, transporting agents, commission agents, etc) between the producer and the consumer (Rupasena, *et al*. 2001). Development economists, policy makers and practitioners traditionally view supermarkets as rich person's place to shop (Thomas, *et al*, 2003). But, today, the trend has changed and the supermarkets are no longer niche players for rich consumers in the capital cities of the countries in the world. In Sri Lanka, as elsewhere, the supermarkets have broken the traditional purchasing trend and the industry is set for explosive growth resulting from;

- Rapid urbanization.
- Per capita income growth and growth of the middle class.
- Increasing employment of women.
- "Westernization" of lifestyles, particularly among younger people.
- Growing use of credit cards.
- Changes in family structure (a growing proportion of nuclear families and even, one-person households, as opposed to extended families).

The supermarket concept was initiated in Sri Lanka with the departmental stores, namely Cargills and Millers, which were established during the British Colonial period. In practice, the supermarkets were initially started in Sri Lanka in 1980's. This particular sector began to expand after the year 2000. Today, the supermarket sector is at the growing stage of its Industry Life Cycle (Wanninayake and Dissanayake, 2006). Two major supermarket chains such as Cargills Food City and Keells Super dominate the industry. At present, Cargills (Ceylon) Limited operates more than 139 outlets in 22 districts and Keells Super operates more than 67 outlets. In addition to the above major supermarket chains, there are 33 outlets operated by other supermarket chains such as Laugfs Sun Up, Arpico Supercentres, Go-getter, etc. Arpico Supercenters and Cargills Big City are the hypermarkets that function at present in Sri Lanka. Out of the consumers shopping from supermarkets in the country, only about 33% procure their vegetables from the supermarket outlets, while others prefer to procure their vegetables from traditional retail outlets (Wickramarachchi, 2004).

The growth of supermarkets and other retail outlets has been mirrored by an increase in demand for high value agricultural products (HVAPs) such as fruits and vegetables, poultry and fish. High value markets are attractive to the farmers because the net benefit of selling to supermarkets relative to selling to traditional

markets tends to be much higher in niche/quality products ("non-commodities") compared to bulk, mass commodities (Reardon, 2005; Singh, 2005). It should be noted that supermarkets have come to stay. In the long run, they will increasingly influence the structure and operation of agri-food system throughout the country. They will also determine, to a large extent, the conditions and the potential for small farms and firms to sell agri-food products to this dynamic portion of the food economy. These are the very markets that the poor need to supply in order to escape from poverty (Weatherspoon and Reardon, 2003). The implications of the rise of supermarkets for the farmers come from the methods of procurement and logistics used and the quality standards applied. The smallholder farmers who do manage to enter these more lucrative markets may find it difficult to stay in it as they experience many problems (Shepherd, 2005).

Supply chains developed by the supermarkets are well co-ordinated chains: a very different approach to marketing of fresh fruits and vegetables as compared with the fragmented supply chains in the traditional market. In a country like Sri Lanka where majority of the population is dependent on agriculture, these new markets have a profound impact on the agricultural economy because of the impact on the major stakeholders – farmers, traders and wholesalers in the traditional market. The supermarket sector is growing fast in the country and is in the process of creating new business opportunities for the farmers who are able to supply what supermarkets demand. It is, therefore, important for the Government of Sri Lanka to be aware of these changes, specially of the opportunities and challenges facing the farmers as it can enhance small producer livelihood. With this kind of information, Government would be able to put in place programs that will help farmers to upgrade their pre and post harvest practices in order to meet the requirements of these new markets, and do so in win-win ways that will make this inevitable transformation most advantageous for the farmers, consumers, and retailers.

1.2 Main Objectives of the Study

1. To examine the organization and functioning of supermarket supply chain systems with a particular focus on procurement practices of vegetables and identify their limitations.
2. To identify the problems and constraints of farmers in supplying vegetables to supermarkets.
3. To understand the farmers' views in supplying vegetables to supermarkets as against the conventional marketing channels.
4. To study the variations of retail prices of vegetables at different supermarkets and conventional retail markets.

1.3 Study Locations and Sample Selection

Study sites were selected from areas where the collecting centers of supermarkets were located. Only Cargills Ceylon Ltd. and Keells Super have collecting centers in major producing areas to procure vegetables from the farmers. Cargills has six collecting centers at Hanguranketha, Nuwara Eliya, Bandarawela, Thanamanwila,

Thambuththegama and Norochchole. Up-country vegetables are obtained from collecting centers at Nuwara Eliya, Bandarawela and Hanguranketha, while the low-country vegetables are procured from collecting centers at Thanamanwila, Thambuththegama and Norochchole. Keells Super procures up-country vegetables from independent procurement agencies named "AGCO" (Agriculture Co-op Society Ltd.) and Sinhala-Tamil Women's Society at Nuwara Eliya, while the low-country vegetables are procured from the collecting center at Thambuththegama. Hence, to understand the procurement system of up-country vegetables, the collecting centers of Cargills at Nuwara Eliya and Bandarawela and the collecting center of Keells Super at Nuwara Eliya were selected. With regard to low-country vegetables, the collecting centers of Cargills and Keells Super at Thambuththegama were selected as study locations.

1.4 Data Collection Method and Sampling Procedure

Three inter-related data collection mechanisms have been used to elicit necessary information for the study. Firstly, the existing literature on traditional vegetable supply chains in Sri Lanka and studies conducted to understand the structure and performance of the supermarket supply chain systems in Asia were reviewed. Secondly, an explorative survey was conducted with the key officers of leading supermarkets and collecting centers to understand the present performance, procurement practices and limitations of supermarket supply chain system. Thirdly, a structured questionnaire was administered to understand the interaction between supermarkets and farmers.

Objective 1:

Four leading supermarkets in Sri Lanka i.e. Cargills, Keells Super, Laugfs Sun Up and Arpico Supercenters were selected to study the organization and functioning of supermarket supply chain systems and their limitations in marketing of vegetables. The key officers of the relevant supermarkets were interviewed to understand their procurement and distribution system. Further, information was collected by interviewing key officers at the collecting centers of Nuwara Eliya, Bandarawela and Thambuththegama which are the collecting centers of Cargills and Nuwara Eliya and Thambuththegama collecting centers of Keells Super.

Objectives 2 and 3:

Two structured questionnaires were administered for "supermarket-channel farmers" and "conventional-channel farmers". The "supermarket-channel farmers" are farmers who are listed as direct suppliers of fresh fruits and vegetables to the two leading supermarket chains. The "conventional-channel farmers" are farmers who sell to traditional marketing channels. Two structured questionnaires were administered on samples from those sectors. From each location of vegetables collecting centers of Cargills at Nuwara Eliya, Bandarawela and Thambuththegama and from the collecting centers of Keells Super at Nuwara Eliya and Thambuththegama, twenty farmers were selected and altogether hundred farmers

who supply vegetables to supermarkets were interviewed. At the same time hundred farmers who supply vegetables to conventional marketing systems were selected from the same locations. Altogether, two hundred farmers (100 supermarket-channel and 100 conventional-channel farmers) were interviewed. The supermarket-channel sample was chosen randomly from the prefered-supplier lists provided by the collecting centers of leading two supermarket chains.

Objective 4:

Retail prices of selected vegetables were collected from the Cargills, Keells Super, Laugfs Sun Up and Arpico Supercenter in Colombo district and the prices from the retail markets at Borella, Wellawatta, Nugegoda and Battaramulla were collected to analyze the variation of retail prices of vegetables in different supermarkets and conventional retail outlets. Prices of supermarkets and conventional markets located in the same area were collected on the same day. Further, the prices received by supermarket-channel farmers and conventional-channel farmers at Nuwara Eliya and Thambuththegama were collected.

1.5 Analysis of Data

Data were explained and statistically analyzed using appropriate statistical techniques.

CHAPTER TWO

Literature Review

2.1 Diffusion of Modern Retail System in Developing Regions and Countries

The transformation of the agri-food industry, which includes processing, wholesale, and retail trade has taken place in two stages over the past 50 years in developing countries. The first stage, "pre-liberalization/pre-globalization," was from 1950's to early 1980s. It involved public sector governed food system transformation. The second stage, "liberalization/globalization," started in the early 1980s and continues at present. Globalization, trade liberalization and the lowering of barriers to trade have generally led to an increased inflow of foreign investments and the establishment of mult-inationals in developing countries. Liberalization of food processing and retail trade FDI (Foreign Direct Investments) spurred massive FDI and competitive domestic investments. While governments continued to build wholesale markets, the main new developments were private sector investment in processing and retail. The latter spurred a "supermarket revolution" and the spread of fast-food chains. The transformation was induced by socio-economic factors such as income increases and urbanization, and policy changes such as market liberalization and privatization. By the liberalization of food industry, the foreign direct investment (FDI) was usually anticipated or followed by competitive domestic investment. Super-imposed on those two stages are three "broad phases" of agri-food industry transformation, depending on the region: (1) transformation of wholesaling, mainly from the 1960s to early 1990s; (2) processing, mainly from the 1970s to 1990s; (3) retailing, mainly from the 1990s to 2000s. There have been two sets of literature, before and after the "take-off" of retail transformation in the early 1990s, which included the "supermarket revolution" and also the rapid spread of fast food chains in developing countries (Reardon and Gualti, 2008).

2.1.1 Diffusion of Modern Retail System according to Geography

Supermarkets were first established in the United States during the 1930s as no-frills retail stores offering low prices. In the 1940s and '50s they became the major food marketing channel in the U.S. The 1950s also saw them spread through much of Europe. Their growth is part of a trend in developed countries toward reducing cost and simplifying marketing. In the 1960s, supermarkets began appearing in developing countries in the Middle East, Asia and Latin America. Though the supermarkets have existed for half a century in several developing countries, the phenomenon was limited mainly to large cities, upper-class or rich consumer segments, and domestic capital chains. In contrast, a supermarket revolution in developing countries took off in the early-to-mid 1990s (Reardon and Gulati, 2008).

The first wave of supermarket diffusion occurred in richer countries in Latin America. The second wave followed in East and South-East Asia and Central Europe, and the

third in small or poorer countries of Latin America, Asia and Southern and Eastern Africa. The fourth wave is beginning to affect South Asia and Western Africa. In Latin America, supermarkets were originally niche retail markets that had a market share ranging from 10 to 20 percentof national food retail sales in 1990. By 2000, the share had risen to 50 to 60 percentof national food retail sales in this region. Ranked by market share, Brazil topped the list, followed by Argentina, Chile, Costa Rica, Colombia and Mexico. Supermarkets began to spread in the East and South-East Asia five to seven years after the spread in Latin America, but registered more rapid growth. The average share in the South-East Asian countries of Indonesia, Malaysia and Thailand was 33 per cent, but it was 63 percentin the East Asian countries of the Republic of Korea and Taiwan. The second-wave countries are Mexico and much of Southeast Asia, Central America and South-central Europe. In those areas, the share went from about 5-10 percent in 1990 to 30-50 percent by the early 2000s. In the third-wave countries, the supermarket revolution started in the late 1990s or early 2000s, reaching about 5-20 percent of national food retail today. These countries include parts of eastern and southern Africa, some countries in Central and South America, East Asia (China and Vietnam), Russia and India (Reardon and Gulati, 2008).

Table 2.1: Three Waves of Supermarket Diffusion

Period	Countries/Regions	Growth in Supermarkets' Average Share in Retail Sales
First wave started in early 1990s	Much of South America, East Asia (outside China), and South Africa	From 10 percent around 1990 to about 50-60 percent by the mid-2000s
Second wave started in mid to late 1990s	Mexico, Central America, and much of Southeast Asia	From 5-10 percent in 1990 to 30-50 percent by the mid 2000s
Third wave started in late 1990s and early 2000s	China, India and Vietnam	Reached about 5-20 percent by mid 2000s

Source: www.ifpri.org

2.1.2 Diffusion of Supermarkets according to Demography

There were and are waves of diffusion of supermarkets over space within a country and across consumer segments. Supermarkets tend to start in large cities, and then expend in to intermediate cities and towns, and then to small towns in rural areas. The business strategy is the same as in other countries. The richest and largest market is entered first due to highest profit per capital invested. Competition and saturation of the initial base drives investment by a given chain into a series of subsequent markets. While the gross return declines, there are cost savings due to economics of scale and procurement system change discussed below. There are similar waves of diffusion over socio-economic groups cum consumer segments. Obeying the same business logic as in spatial diffusion, supermarkets focus first on upper income consumer segments (national and expatriate), and then move into the

middle class, and finally into the markets of the urban poor. As modern retail spreads, there tends to be format diversification to facilitate the spatial and consumer segment differentiation. For example, to penetrate the markets of inner cities and small towns where space is limited and product assortment can be narrower, chains use discount stores, convenience and neighborhood stores, and small supermarkets (Reardon, 2007).

2.1.3 Diffusion of Supermarkets according to Food Categories

The penetration by supermarkets of food retailing has occurred in the following waves of food categories:

- The first wave of product penetration is in processed foods (canned, dry, and packaged items such as rice, noodles and edible oils). This is a result of the economics of scale in procurement as well as direct relations with processed-food manufacturers.
- The second wave is in semi processed foods (with extensive or minimal processing such as dairy products) and minimal processing and packaging (chicken, pork, beef, and fruit).
- The third wave, by far the slowest and the longest in starting in developing countries, is in to the vegetable market (Particularly for leafy vegetables and bulk vegetables).

(Source: Reardon and Gulati, 2008).

2.2 "Supermarket Revolution" in Asia

While the growth of wholesale markets and the growth and consolidation of the food processing industry have been very important trends in Asian food markets in the 1980s and into the 1990s, the most striking recent market structure change that has occurred in south-east Asia in the early/mid 1990s, China in the mid/late 1990s, has been the emergence of a "supermarket revolution" (Reardon and Timmer, 2007), which is currently spreading to south Asia, notably India. In general there has been a trend for supermarkets, which until recently occupied only a small niche in capital cities and served only the rich and upper middle class, to spread well beyond cities in order to penetrate into the mass food markets (Gulati and Reardon, 2007). There had been a rapid growth in the importance of supermarkets as fresh produce retailers in many countries in Asia and this growth is almost certain to continue. At the same time, the traditional retail outlets, such as small shops, wet markets and roadside stalls remained for the time being the dominant supplier of fresh fruit and vegetable in most, if not all, countries of the region. About 80-90 percent of urban shoppers use wet markets to buy fresh fruits and vegetables (ACNielsen, 2003).

In Asia, the first supermarkets emerged in the 1990s and it is reported that Malaysia is the most advanced country in terms of supermarket development (Shepherd, 2004). Available data suggest that supermarkets and hypermarkets accounted for 35 percent vegetable sales in 2002 in Malaysia. In Thailand 30 percent of vegetables were sold through supermarkets and hypermarkets in the Bangkok area, but a

smaller percentage in the context of the country as a whole. In the Philippines, 15 percent of vegetables are said to be sold through supermarkets in Metro Manila but a smaller percentage in the country as a whole (Digal and Concepcion, 2004). In Republic of Korea, there has been a rapid growth in hypermarkets since 1993 but, even so, such stores still account for only 11 percent of fresh produce sales.

The supermarket sector in China is the fastest-growing in the world. It started in 1991 and by 2003 had 55 billion dollars of sales and 30 percent of urban food retail growing by 30 to 40 percent an year (Zhang, *et al*, 2004). Over the period 2003 - 2005, while Hong Kong and Taiwan maintained their higher levels of supermarket and convenience store penetration, both China and Korea exhibited a strong upward trend. In South-East and South Asia, except for Singapore (with the highest penetration and a gradual increase), India, Indonesia, Malaysia and Vietnam exhibited a strong rising trend (ACNielsen, 2006).

The supermarket growth is driven by urbanization and per capita income levels. Therefore, the countries with low rates of urbanization and low income levels are likely to witness only slow growth. In Bangladesh, for example, the few supermarkets in Dhaka and Chittagong cater primarily to expatriates and the urban elite. This is unlikely to change rapidly in the context of lack of purchasing power and non availability of suitable transport for the bulk of the population (Chen, *et al*, 2005).

2.3 Determinants of the Diffusion of Supermarkets in Developing Countries

The determinants of the diffusion of supermarkets in developing regions can be conceptualized as a system of demand by consumers for supermarket services and the supply of supermarket services. On the demand side, several forces drive the observed increase in demand for supermarket services (Reardon, *et al*. 2003; Chen, *et al*. 2005). These include:

- Income Growth with Increasing Urbanization

  Except in Japan, real per capita income growth occurred in many Asian countries during the 1990s, along with the rapid rise of the middle class. This is the main factor behind the growing demand for processed foods. The rapid increase in the number of people owning refrigerators induced a shift from daily shopping in traditional retail outlets to weekly shopping in modern self-service stores. Growing access to cars and public transport reinforced this trend.

- Changing consumer preferences

  Consumers are changing. The entry of women into the workforce outside the home has increased the opportunity cost of women's time and their incentives to seek one-stop, fast, convenient and value-for-money grocery shopping. Because of the increased problems with food safety, the consumers have placed greater importance on this issue. Quality and safety standards are perceived as being better in modern stores. The importance of food safety and quality standards and their incorporation into marketing strategies are growing in both international and domestic markets. There are also rising concerns about food

wholesomeness. Supermarkets tend to have superior product shelf life through the availability of cold storage and refrigeration.

- Changing consumer eating habits

With more women working and families traveling greater distances between home and work, there is a definite increase in the demand for processed foods and easy-to-prepare meals that are found in modern supermarkets.

- Increased infrastructure development

The development of supermarket chains in Asia has been partially spurred by infrastructure development, such as highways, retail technology and logistics. Logistics technology and inventory management for retail procurement were revolutionarised in the 1990s. This was led by global chains and is diffusing into developing regions of Asia through knowledge transfer and imitation and innovation by domestic supermarket chains. The development enabled chain stores to build their own distribution centres and to accommodate a high volume of direct shipments from producers under central inventory control. Importantly, stores should be able to forecast daily sales with a considerable degree of accuracy, thus reducing wastage levels.

- Low margins and high competition

Multi-national chains arrived in Asia with many years of experience and development in the very competitive environments of their respective countries. Their extensive experience include modern technologies and know how regarding supply chain management, procurement arrangements, stock optimization, quality standards control, cold storage maintenance, product handling, shelf-life preservation and consumer services. The competition forced local firms to enhance their services and efficiency, generating a chain reaction of improved services and modernization throughout the grocery sector. Competition among retailers is fierce. Asian agri-food distribution companies are aiming to lift competitiveness, and the phrase "drive costs out of the system" has been used widely in the retail industry. Supermarket chains are constantly seeking substantial savings through efficiency gains, economies of scale and co-ordinated cost reductions.

- Demographic, cultural and social changes

The percentage of young people in the population of Asia is increasing. The westernization of lifestyles is also increasing, particularly among younger people. Changes in family structure in Asia are being witnessed, with a growing number of nuclear families and one-person households, as opposed to extended families. Finally, there has been an upward trend in the use of credit cards, which are rarely accepted by corner shops or traditional wet markets in developing countries. All of these factors have contributed to the attractiveness of supermarkets to consumers.

The supply of supermarket services was driven by several forces, only a subset of which overlap with the drivers of initial supermarket diffusion in Europe and the

United States. Firstly, foreign direct investment (FDI) was a crucial factor. The development of supermarkets was very slow before (roughly) 1990, as only domestic/local capital was involved. In the 1990s and after, FDI was crucial to take-off of supermarkets. A second crucial supply-side factor was the revolution in the past decade in retail procurement logistics technology and inventory management. New practices included efficient consumer response (ECR), an inventory management practice that minimizes inventories on-hand, and use of internet and computers for inventory control and supplier-retailer co-ordination.

2.4 Structure and Operations of the Supermarket Supply Chain Systems in the Developing Countries

2.4.1 Procurement and Distribution Practices of Supermarkets in Asia

The procurement practices, or collection of practices, establish, in turn, a general framework for the development of commercial relationships between supermarkets and their suppliers, including farmers (Chen, *et al*, 2005).

Vegetables procurement requires high frequency, constant delivery and stable quality. Delivery arrangements between growers and supermarkets are usually based on easily observable output characteristics (i.e. volume, size, colour) but also include detailed specifications for product handling and delivery (i.e. input applications, packaging, etc). In the latter case, buyers try to enforce management decisions of growers to reduce their uncertainties regarding desired product attributes (quality, safety and freshness) (Ruben, *et al*, 2007). Quality control is of a specific nature in the case of fresh vegetables. The buyers regularly face problems in monitoring the freshness, safety and shelf-life of the produce. In order to guarantee reliable supply, the retailers search for sustainable partnerships with producers that reduce such information and screening costs and reinforce mutual trust amongst chain agents (Hueth, *et al,* 1999; Ruben, *et al,* 2007).

In many countries around the world, there has been a marked tendency to shift from procurement by individual supermarkets, which may involve purchasing from wholesale markets, to a centralized distribution centre in a country. This is done in order to reduce co-ordination costs, generate economies of scale by buying larger volumes and working with fewer wholesalers and suppliers per unit merchandized, and to have tighter control over product quality and freshness (Chen, *et al*, 2005).

Firstly, supermarkets in Asia establish closed supply chains parallel and separate from traditional wholesale markets. This has begun in Asia with the use of specialized and dedicated wholesalers, which enforce standards on behalf of supermarkets, guaranteeing a certain level of quality. These wholesalers also sometimes contract production, rather than relying on wet markets or collectors. Secondly, the supply chains become increasingly centralized through 'distribution centers' which procure for dozens of stores, an occurrence not yet common in Asia (Chen, *et al*, 2005). Thirdly, the supermarkets adopt standards such as guaranteeing a safe water supply, providing toilets and hand washing facilities for workers, packing

houses with cement floors and stringent book keeping procedures (Tallontire and Vorley, 2005).

Driven to close the gap between their supplies and their needs, supermarket chains in developing regions have been shifting over the past few years away from the old procurement model based on sourcing products from the traditional wholesalers and the wholesale markets, toward the use of four key pillars of a new kind of procurement systems (Reardon, *et al*, 2004):

- ***Centralized Procurement through Distribution Centers (DCs)***

  As the number of stores in a given supermarket chain grows, there is a tendency to shift from a per-store procurement system, to a distribution center serving several stores in a given zone, district, country, or region. In many countries around the world, there has been a marked tendency to shift from procurement by individual supermarkets, which may involve purchasing from wholesale markets, to a centralized system involving a central buying office for fresh fruits and vegetables, with several distribution centres in a country. This is done in order to reduce co-ordination costs, generate economies of scale by buying larger volumes and working with fewer wholesalers and suppliers per unit merchandized and to have tighter control over the product quality and freshness. Centralization increases efficiency of procurement by reducing co-ordination and other transaction costs, although it may increase transport costs by extra movement of the actual products. It is also important to realize that the distance over which fresh produce can be transported is much less than it is for packaged foods, and therefore it will take a little longer for distribution centres to play a significant role in the marketing of fresh produce in Asia (Reardon, *et al*, 2003; Chen, *et al*, 2005).

- ***Specialized/dedicated wholesalers, sometimes acting as sole suppliers***

  Many smaller chains in Asia continue to use individual store purchasing systems. Most other chains continue to purchase through traditional wholesalers and others are gradually shifting from those traditional wholesalers to "specialized/dedicated wholesalers" that are specialized in a few products and dedicated to supplying one supermarket chain. The specialist wholesalers are usually more responsive to the quality, safety, and consistency requirements of supermarkets than the traditional wholesalers who aggregate produce from many producers and may not be able to supply the quantities required. These specialized wholesalers cut transaction and search costs and enforce private standards and contracts on behalf of the supermarkets.

- ***Preferred supplier systems***

  In many countries, the leading chains are promoting "preferred supplier" system in order to select producers or wholesalers capable of meeting the quality and safety standards. Such linkages permit more rapid movement of produce from

farm to store, enabling supermarkets, in theory, to sell much fresher produce. To achieve this, supermarkets often require that their suppliers adopt practices and make investments that simplify movement of produce along the supply chain.

Specialized suppliers are developing and adapting to help modern supermarkets do business with small-scale producers and traditional market channels. These suppliers assume responsibility for collecting production, packaging, assuring steady supply and, in some cases, meeting traceability objectives. Specialized suppliers are also held accountable for product quality, consistency and food safety-factors that strongly influence a supermarket's business reputation.

- ***High quality and increasingly safe products through private standards imposed on suppliers***

The rise of private standards for quality and safety of food products, and the increasing importance of the enforcement of otherwise-virtually-not-enforced public standards, is a crucial aspect of the imposition of product requirements in the procurement systems. In general, these standards function as instruments of coordination of supply chains by standardizing product requirements over suppliers, who may cover many regions or countries. Standards specify and harmonize the product and delivery attributes, thereby enhancing efficiency and lowering transaction costs.

In general, the super markets purchase larger volumes and have created new systems of procurement i.e. they deal directly with individual growers, or specialized wholesalers and specialized suppliers. Most of the time, they work with multiple channels of suppliers. They insist both on a lower price and higher quality from the suppliers which mean that only efficient and large growers will be able to work with them in the long run. Relatively few chains in Asia have adopted centralized buying – a global practice among supermarket chains, in part because they presently operate insufficient stores to make a distribution centre viable. Where they have done so, the facilities may just be simple warehouses and far from conditions stipulated in the state-of-the-art. Both Food World in India and Saigon Co-op in Vietnam have such centres, but neither presently uses cold chains.

Many chains in Asia continue to purchase through wholesalers, in preference to establishing distribution centre. Some chains are not prepared to buy from suppliers who are unable to supply all stores in the chain. Others, however, are gradually shifting from those traditional wholesalers to “specialized/dedicated wholesalers” that are specialized in a few products and dedicated to supplying one supermarket chain. In many countries, the leading chains are promoting “preferred supplier” systems. This is done in order to select producers or wholesalers capable of meeting the quality and safety standards of the supermarkets which, on the basis of experiences in other regions, are likely to become stricter as consumers become more affluent. Such linkages permit more rapid movement of produce from farm to store, enabling supermarkets to sell much fresher produce. To achieve this, supermarkets often require their suppliers to adopt practices and make investments

that simplify movement of produce along the supply chain. Insistence on these "Good Commercial Practices" can eventually be expected to become widespread in Asia.

In supermarket jargon, fruits and vegetables are considered by many stores to be a "destination category" i.e. a category of products that chains consider attract people to their stores as against other competitors. Destination categories are thought to be important when consumer loyalty to an individual chain is considered to be weak. It is easier to create an individual identity for product groups such as fruits and vegetables, fish or meat than for household goods. However, in order to do this, the stores need to be assured of a reliable supply of consistent quality. In many countries, supermarket managers have little individual freedom to buy produce directly from suppliers. Chains seek to offer a consistent product range over all their stores, because purchases at each store are time-consuming and involve complex paperwork. It is far better for a store to receive dependable deliveries from a few wholesalers or from a centralized distribution than buying from farmers or wholesale markets on a daily basis (Shepherd, 2005).

Supermarkets in Asia use a wide variety of fresh fruit and vegetables procurement practices. At present, the following broad types of channels can be seen:

- ***Direct purchase from farmers at individual supermarkets***

  Eg: Foodland in Thailand
  Foodland in Thailand has eight stores and does not have a distribution center or a cold chain for fresh produce. Each store does its own sorting and packaging, relying on multiple sources, including 20 small-scale farmers, two private companies and two wholesale markets. Quality control standards include size, damage level and freshness. Problems in purchasing directly from farmers include: delivery trucks not refrigerated; poor or no packaging of produce and inadequate volumes.

- ***Direct purchases from farmers at distribution centres***

  Eg: Foodworld in India
  Foodworld chain in India has developed supply relationships with 100 small-scale farmers. The chain does not have contractual relationships. Prices are set on a daily basis with reference to the prevailing wholesale market price and the method of calculation is fully transparent. There is no cold chain so losses are high, although significantly less than in the traditional supply chain.

- ***Purchase from wholesalers***

  Supermarkets have specialized wholesalers in the market who deliver to supermarket chains. Specialized wholesalers source their products from farmers and farmers' groups, usually on the basis of a verbal contract.

- ***Purchase through independent procurement companies***

These companies provide seed and fertilizer, as well as planting technology to farmers. In return, the company promises to buy produce from the farmers at prices that are sufficiently higher than those offered by the open market. The rationale of this approach is to prevent the farmers from selling their produce to other traders.

- ***Purchase through government-sponsored distribution centres***

Eg: FAMA (Federal Agricultural Marketing Authority)
Farmers produce according to strict cropping schedules designed to ensure consistent supply. While supermarkets make no commitments regarding the quantities they will take, their sales monitoring systems generally enable them to forecast their daily requirements with considerable precision. Farmers are encouraged to follow good agricultural practices (GAPs).

- ***Purchase through informal farmers' groups, farmers' associations or co-operatives***

The companies do not sign contracts directly with farmers but through a village vegetable co-operative formed by the village committee and the leading vegetable farmers in a village. The company provides fertilizer to farmers in advance and the farmers pay for the fertilizer when they sell their vegetables. The company also sends technical people to provide plant technology advice. The company select producers based on the following criteria: soil structure; quality of irrigation water; surrounding environment; education and capability of farmers and capability of the village's leadership.

- ***Purchase through individual large-scale farmers, who often sub-contract to small-scale farmers***

- ***Multiple channels***

- ***Leasing space in supermarkets to traders, farmers and co-operatives on a commission basis***

- ***Integrated chain***

2.4.2 Farm-supermarket Linkages in Asian Supermarket Supply Chains

FAO/AFMA/FAMA regional workshop on the growth of supermarkets as retailers of fresh produce, held in Kuala Lumpur, Malaysia (2004) reviewed several ways in which farmers are linked to supermarkets. These included the farmer-support

activities of FAMA in Malaysia and the "MALAYSIA'S BEST" program with accredited farmers; an Indonesian wholesaler providing dedicated supplies to one supermarket chain; the support and buying arrangement provided for small Indian farmers by one supermarket company; co-operative, marketing arrangements in Korea and contract farming arrangements and other procurement methods of agri-business and supermarkets in Bangladesh, Malaysia and Vietnam. It was felt that no one model for farmer-supermarket linkages could be recommended, with the best practice depending on the particular environment. The support of FAO to help countries develop suitable models for small farmers supplying to supermarkets was requested. Participants took note of contract farming arrangements in Malaysia between farmers' organizations and supermarkets for the production and supply of chilies, groundnuts and asparagus and contract farming arrangements for an agri-business concern in Bangladesh. However, it was noted that there were difficulties associated with contract farming in the region, due partly to failures of both farmers and companies to honour contracts. Future relationship between the farmers and supermarkets needed to be flexible but had to be based on a sustainable vision of partnership. They need to recognize that the major concern of farmers was to avoid risk. Constant communication was necessary between the farmer and buyer, to ensure that farmers would meet their supply obligations and not make sales on the open market when prices were higher. Supermarkets also had to be prepared to accept agreed quantities of produce from farmers at contracted prices. Several approaches to price setting were reviewed. Whatever system is adopted, it must be transparent. Difficulties farmers faced in making consistent supply commitments due to social and religious obligations were also highlighted. In the case of Malaysia, the government had urged the supermarkets to pay within seven days. While accepting that delayed payment was consistent with industry practice, the participants nevertheless felt that supermarkets needed to recognize the particular circumstances faced by cash-flow constrained farmers and, where possible, should consider adjusting their payments for farmers and wholesalers. Considerable investment was required by farmers in order to successfully supply supermarkets. Unsecured sources of credit for farmers were limited and urged supermarkets to work creatively with banks and input suppliers in order to address this problem, by arranging direct re-payment to those lending to farmers or by providing guarantees of minimum quantities to be purchased (http://www.fao.org/ag/ags/subjects/en/agmarket/supermark.html).

2.5 Implication of Supermarket Development for Horticultural Farmers in Asia

Supermarket expansion has brought a new approach to the food retail business and created a number of barriers as well as opportunities for various participants in the agri-food system, especially for fresh fruit and vegetables farmers and processors. The growth of supermarkets is good news for big farmers and efficient, well-organized farmers. For others it can be troublesome (Hughe, 2000). Experience suggests that the increasing demand for high-value fresh produce can provide new opportunities for enhanced small producer livelihoods. However, the standards (including food safety and quality requirements) and supply reliability demanded by

supermarkets raise challenges for small producers (Weatherspoon and Reardon, 2003).

2.5.1 Positive Impacts on Farmers in Supplying Vegetables to Supermarkets

Based on FAO/AFMA/FAMA regional workshop on the growth of supermarkets as retailers of fresh produce, held in Kuala Lumpur, Malaysia in 2004, Shepherd, 2005 reported that Foodworld, in India, has agreed to purchase everything its farmers produce and the farmers are provided with a package of Good Agricultural Practices. Foodworld negotiates with seed and fertilizer companies on behalf of the farmers for loans and also ensures that the correct varieties are supplied. Farmers receive loans from these companies. At present, Foodworld plays no role in loan re-payment although it would cease buying from farmers who fail to pay back their loans. Company has assigned a technical team to work directly with farmers. Technical support to farmers is more effective than the government extension because Foodworld buys everything farmers produce. The company has also negotiated discounts for farmers with input suppliers and input suppliers also provide extension. Further, it was revealed that FAMA in Malaysia which is under the Ministry of Agriculture and agro based industry facilitates links between producers and supermarkets and invests in training for the contract farmers, technology and infrastructure support, logistics and collection centers and perhaps most importantly, risks management and financial facilitation. Further, FAMA assists the farmers to get better prices for their produce in many ways. The contract farming program is directly supervised by FAMA and the farmers were guided on the types of product and the time to produce. FAMA uses its extension program to educate farmers on the proper use of chemical pesticides and the rules governing it.

There is evidence to suggest that producers and suppliers are eager to supply supermarkets, both domestically and in industrialized countries. In the Hortico case, for example, there is a "waiting list" of small producers wishing to be adopted (Weatherspoon and Reardon, 2003). Supermarkets are generally considered reliable with respect to their terms of payment, although normally there is a period of time between delivery and payment, which contrasts with the norms of traditional markets. Furthermore, supermarkets and/or their suppliers provide producers with assistance and inputs to meet their requirements often within the context of weak public infrastructure. For example, Hortico provides inputs in reweighed quantities on credit, funded in part by a revolving fund established by an overseas donor. It applies to all pesticides and Hortico extension officers give advice on production practices and identify where problems are emerging. If the value of the delivered produce is less than the input costs, the producer is given an interest-free loan for an agreed payback period (Weatherspoon and Reardon, 2003).

Taian Asia in Japan provides fertilizer to the farmers in advance and the farmers pay for the fertilizer when they sell their vegetables to Taian. The company also sends technical people to provide plant technology advice (Chen, *et al*, 2005). Taian has 25 farmer co-ops that are certified as organic crop producers. Taian establishes farmer schools to train farmers on organic crop cultivation.

2.5.2 Negative Impact on Farmers in Supplying Vegetables to Supermarkets

Boselie, *et al* (2003) conducted five case studies of the supply chains for fresh horticultural produce sold in African and Asian supermarkets. They found that the producers are inspected (Alice-South Africa, Homegrown-Kenya, Hortico-Zimbabawe) or are required to join certification schemes (TOPS and Thai Fresh United, Thailand). Further, they faced challenges in managing their labour force because of the need to deliver desired quantities at short notice. Furthermore, thesupermarket suppliers have less access to consumer information in comparison with local markets with implications for their bargaining position. Supermarket customers generally live in distant urban centers so only large commercial farmers have good direct knowledge of the final consumer and what they demand. They also found that, in some cases, supermarkets (Hortico-Zimbabwe) are generally considered reliable with respect to their terms of payment, although normally there is a period of time between delivery and payment, which contrast with the norms of traditional markets. In many cases, the small producers are required to change long standing production practices in order to supply supermarkets. This was observed with Thai Fresh United where producers have been required to grow to precise quality standards and to implement specific production practices.

Rottger (2004); Santacoloma and Riveros (2005), did some case studies and they found that the lack of or inadequate access to production or post-harvest technology, the lack of or limited market information and intelligence on the prices and alternative buyers and their limited negotiating or bargaining skills were constraints to initiating linkages. Furthermore, the case studies indicated that linkage development is obstructed by the difficulties small farmers face to meet stringent food safety requirements and inflexible delivery schedules required by processors and supermarkets, as well as by the lack of institutional support.

Chen, *et al,* (2005) identified some problems faced by small-scale farmers in supplying supermarkets in Asia. Stores insisted on delivery at an early hour of the morning and many farmers faced problems in complying with this. Farmers wishing to supply supermarkets must accept the fact that traditional religious or social obligations, which in the past led to the suspension of most on-farm operations for a couple of weeks, cannot now stand in the way of a commitment to supply supermarkets 365 days of the year. They must accept the fact that a percentage of their produce will be found by the buyers to be of unacceptable quality and that they will have to make arrangements to dispose of it through other channels at lower prices, or even to throw it away. The study further found that according to the farmers in Thailand, the prices offered were not high enough to cover the costs. Furthermore, the farmers' cash flow problems are exacerbated by the fact that chains can delay payment up to 90 days. Shepherd also found that the difficulties the farmers experience in supplying supermarkets in Asia are reflected in the fairly sharp declines in the numbers involved, as companies de-list suppliers who do not come up to expectations. In Malaysia, for example, one chain had 200 vegetable suppliers in 2001 and by 2003 this number had fallen to just 30 "preferred suppliers".

According to the nine farm household surveys which were conducted in Guatemala (tomatoes), Indonesia (tomatoes and potatoes) and Nicaragua (tomatoes); Kenya (Kale); Guatemala (lettuce); Mexico (guava and strawberries) and China (tomatoes and cucumbers), Reardon and Berdegue (2007), summarized the key points with respect to the impact of supermarkets on the farmers, particularly those marketing fresh produce. First, in all regions, the small farmers are not excluded from being supermarket sources on the basis of the size of their landholdings or land tenure, except when those factors affect the farmers' capacity to implement certain technologies that have an impact on the quality, productivity, costs, or the ability to plant or harvest at the necessary times during the year. Second, the farmers' other assets appear to play a much bigger role in their participation as sources than does land. In particular, those included have more education, more access to transport and roads, greater prior holdings of irrigation infrastructure and other physical assets, depending on the product, such as wells, cold chains, greenhouses and good-quality irrigation water. Third, in rare instances when small farmers sell direct to the supermarkets, they have a very good rural producers' organization. Further, it has been found that the farmers in the supermarket channel tend to earn substantially more (10-200%) in net terms.

In many cases, the small producers are required to change long-standing production practices in order to supply supermarkets. This is observed, for example, with Thai Fresh United where producers have been requested to grow precise quality standards and to implement specific production practices. In certain cases, these practices are incompatible with day-to-day realities of small-scale production and in others there is resistance from producers that fail to see the relevance or need for "overly strict" procedures (Wearhespoon, 2003).

Makoka, (2005) in a case study with the farmers in Malawi, found that the farmers' ability to access the supermarket channel is a big challenge. Supermarket procurement practices, including quality and safety standards, packing and packaging, cost, volume and consistency are an important challenge for the farmers and supply chains in the region. Reardon and Berdegue in 2002 observed similar conditions. There are significant barriers to entry for the farmers who seek to market their produce to supermarkets throughout the Southern and eastern Africa. First, the farmers need a lot of investment to ensure consistent compliance with quality standards. Second, there is need for infrastructure to comply with service and logistical requirements, such as delivery trucks, computer and Internet access for product orders. Third, there are certification and documentation costs that would have to be incurred to ensure strict adherence to food quality and safety standards. These barriers will become more pronounced as supermarkets spread within the country.

Gaiha and Thapa in 2007 found that many of the supply chain requirements impose prohibitive costs on smallholders, and this result in their exclusion. For example, Homegrown requires that all its suppliers have toilet and washing facilities, a pesticide store, spraying equipment and pesticide-waste disposal facilities. For

smallholders with no access to credit, fulfillment of such requirements is impractical. Further, they found that smallholders are often at a disadvantage because of their illiteracy and limited business skills in negotiating with supermarket suppliers. In specific contexts, the weak public extension services and input markets, along with limited access to credit, force smallholders to use outdated techniques.

CHAPTER THREE

Organization and Functioning of the Supermarket Supply Chain Systems in Sri Lanka

3.1 Growth of Supermarket Industry and Major Supermarket Supply Chain Systems in Sri Lanka

Retailing as an industry has been growing by leaps and bounds, over the past decade. Different types of retailers such as supermarket chains, clothing and textile outlets/chains and food chains have emerged during the recent past. A supermarket also called a grocery store is a self-service store offering a wide variety of food and households merchandise, organized into departments. It is larger in size and has a wider selection than a traditional grocery store and is smaller than a hypermarket or superstore. The supermarket typically sells meat, fresh produce, dairy products and baked goods, canned and packaged items and pet supplies. Most supermarkets also sell a variety of other household products that are consumed regularly, such as alcohol, household cleaning products, medicine and clothes. Some sell a much wider range of non-food products. There are several major supermarket chains operating in Sri Lanka. The private supermarket chains in the country are on a rapid expansion driven to urban and rural areas. It was only about three years ago the supermarkets in Sri Lanka widely expanded all over areas outside the Colombo city limits. This was driven by the factors like the emergence of a new social circle of wealthy people in outstation areas, the newly acquainted life styles of people requiring them to seek such services.

The supermarkets were initially started in Sri Lanka in 1980's. However, they expanded rapidly in terms of retail outlets after 2000.

Table 3.1: Major Supermarkets and Hypermarkets in Sri Lanka (2010)

Supermarkets	No. of Outlets in the Country	No. of Outlets in the Colombo District	Hypermarkets	No. of Outlets in the Country	No. of Outlets in the Colombo District
Cargills	139	53	Cargills Bigcity	01	01
Keells Super	62	39	Arpico Supercenters	10	06
Laugfs Sun Up	28	24			

Figure 3.1: Distribution of Supermarket Outlets (Cargills) in Sri Lanka (2010)

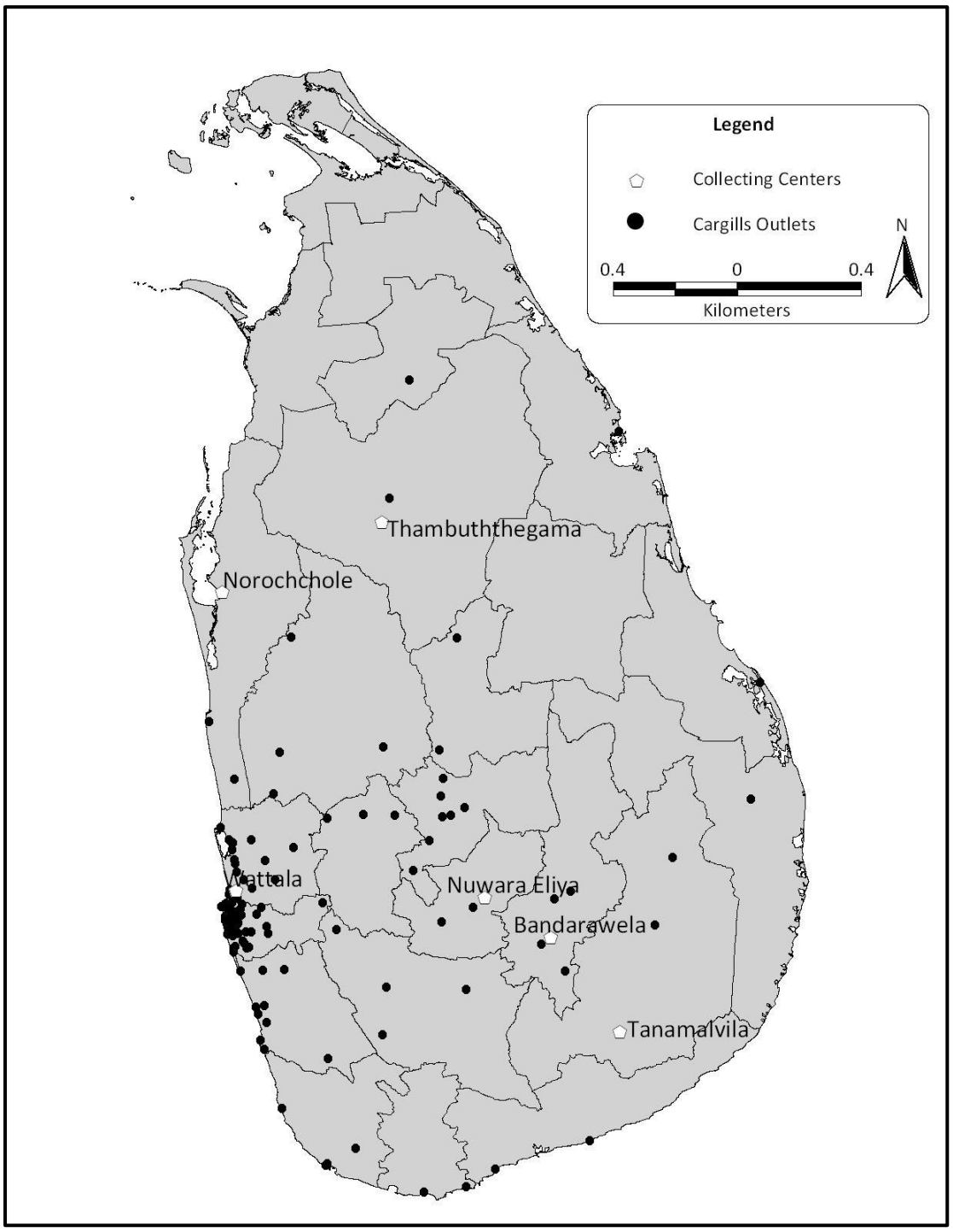


Figure 3.2: Distribution of Supermarket Outlets (Keells Super, Laugfs Sunup and Arpico) in Sri Lanka (2010)

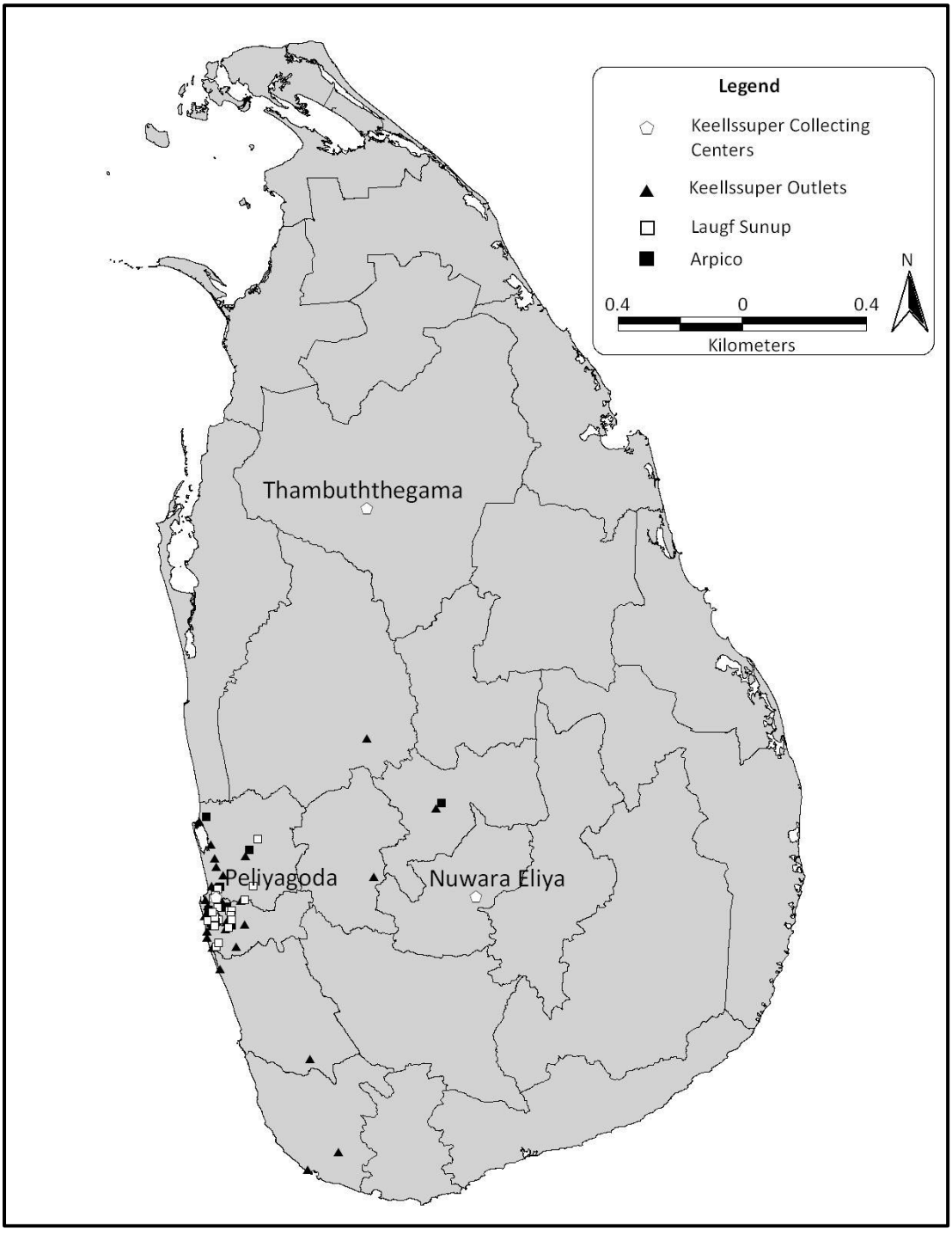
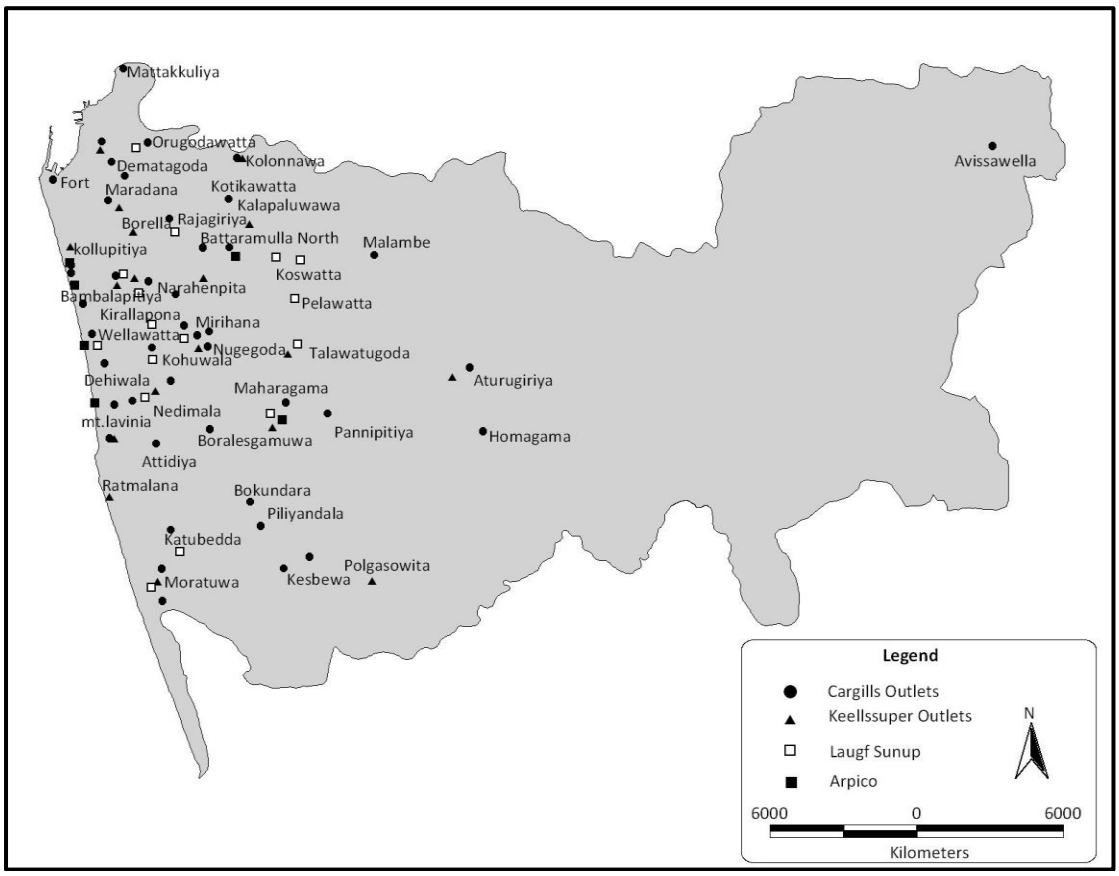


Figure 3.3: Distribution of Supermarket Outlets in the Colombo District (2010)



Two major company's supermarket chains such as Cargills Food City and Keells Super dominate the industry. In addition to the above major supermarket chains, there are 33 outlets operated by other supermarket chains such as Laugfs Sunup, Arpico Supercentres, Go-getter, etc. Arpico Supercenters and Cargills Big City are the hypermarkets functions at present in Sri Lanka. Majority of the supermarket outlets are located in the Colombo district (table 3.1 and figure 3.2).

3.1.1 Cargills Ceylon Ltd.

For most of its history, Cargills catered to the needs of a few wealthy customers in urban Colombo, Kandy, Nuwara Eliya and Bandarawela. The company was modest in size. In 1983, the company decided to introduce the average Sri Lankan to the concept of a supermarket. However, it reached a very few consumers. Then the company started on developing infrastructure to purchase farm products directly from farmers at a high enough price to improve their quality of living in 1999 by creating a pilot collection center. Ten years later there were six such centers in the country. Sri Lankans know Cargills as a major supermarket chain that purchases its raw foodstuffs locally. Roughly half of its farmers grow vegetables and the rest produce fruits, rice and milk. A very small number supply fish. Cargills also is a food-product processor and manufacturer, with its own lines of meats, dairy products, jams, cordials, sauces and beverages. Cargills Ceylon Ltd. operates six regional collection centers at Nuwara Eliya, Bandarawela, Hanguranketha,

Thambuththegama, Thanamanwila and Norochchole. In 2010, there were 139 retail outlets located in 22 districts. In 2002, there were only 33 outlets and by 2009 the number had increased up to 139 outlets. Cargills hope to open 25 new Food City supermarkets in 2011, on top of the existing 139. About 6 outlets are earmarked for the Northern Province. Cargills has developed what is globally recognized as one of the most effective and sustainable models of backward integration new markets and opportunities to over 10,000 rural farmers.

The Cargills has a distribution center at Wattala. From collecting centres at major producing areas, the vegetables are funneled to the distribution center for delivery to retail outlets. Collecting centers of Cargills obtain vegetables seven days per week. After the vegetables have been collected from the farmers, the products are cleaned, graded and packaged at the collecting centers. Cargills supermarket chain use their own cooling trucks for the distribution of vegetables from collecting centers to the distribution center in Colombo and then to the retail outlets. Trucks leave from the collecting center between 12.30pm and 3pm and reach Colombo between 6pm and 12pm. Cleaning and grading are not taken place at the distribution center. Vegetables are de-allotted and transported to the retail outlets in Colombo and Gampaha areas in cooling trucks. Most of the outlets received the required amount of vegetables they need in the morning of the following day of delivery.

3.1.2 Keells Super

Keells Super (Jaykay Marketing Services Pvt. Ltd.) has been in operation since 1991. The company opened its very first outlet in Liberty Plaza. However, the expansion really started off in the year 2004. Thereafter, Keells supermarket chain has progressively grown into a highly successful chain of 62 outlets which function under the brand name Keells Super in addition to 3 franchise operations under the brand name of Super K. The company's vegetable and fresh products are directly obtained from the farm gate which includes two collection centres in Nuwara Eliya and Thambuththegama. After collection, the products are processed and packaged and later sent to the Peliyagoda Central Distribution Centre (CDC). On the same day, they are then distributed in relevant quantities to the required outlets which ultimately distribute to the customers.

3.1.3 Laugfs Sunup

Luagfs Sunup is operating since February, 2001. They have a Central Distribution Centre at Madiwela. The vegetable procurement and distribution is handled by the preferred suppliers. The company has two such suppliers in Nuwara Eliya for the supply of up-country vegetables. Low-country vegetables are procured by the supplier of the company from the Dambulla Dedicated Economic Centre. Earlier the vegetables were procured from the Colombo wholesale market. Vegetable suppliers send vegetables directly to retail outlets and only 10 percent of the produce is distributed through the CDC. Vegetables are transported through trucks of the preferred suppliers from Nuwara Eliya. The company sends its trucks to collect vegetables from Dambulla. Vegetables are transported in plastic crates.

3.1.4 Arpico Supercentre

Arpico has started marketing of fresh products through their Supercenters. In 2010, there were 10 outlets, 6 in Colombo and others in Gampaha, Kiribathgoda, Negombo and Kandy. Arpico procure its vegetable requirement through preferred suppliers separately for up-country and low country vegetables. They are responsible for supplying quality products according to the demand of Arpico. Suppliers have to make arrangements to collect vegetables from farmers, do grading, cleaning, sorting and packing. For the transportation of vegetables they use their own plastic crates and up-country vegetables are transported in freezer trucks whereas low-country vegetables are transported in normal trucks. The amount of rejected vegetables is sold through other marketing channels.

3.2 Procurement Practices and Distribution Systems of Vegetables by Supermarkets

Supermarkets not only change the way we shop, but also radically change food supply chains and producer-retailer relations through new procurement practices. Supermarkets have increasingly become stronger players in fruit and vegetable retailing. They are particularly concerned with the need to secure a steady flow of quality products which meet the attributes required by their demanding consumers and could be priced at a competitive level (Chen, *et al*, 2005). Recognizing the importance of selling fresh food in order to attract customers, the modern supply chains have made significant progress in improving their supply and display of fresh products. The logistics of fresh products supply are much more complicated than for dry goods and thus take supermarket chain much longer to organize.

In Asia, the changes to supply arrangements wrought by supermarkets are not as advanced as in other regions, but procurement practices appear to be heading in the same direction as in other regions (Reardon, *et al,* 2005). The procurement practice or collection practice, establishes in turn a general framework for the development of commercial relationship between supermarkets and their suppliers, including the farmers. Once urban consumers begin to appreciate quality, freshness and safety as important attributes for the selection of vegetables, the supermarkets look for a selective group of producers who are able to guarantee the delivery of these products (Zhang, 2001; Cadilhon, *et al*, 2003). The implications of the rise of supermarkets for the farmers do not come from the type of store but from the methods of procurement used and the quality standards applied. Modern supply chain management in the fruit and vegetable distribution sector necessarily calls for improved efficiency in transactions between producers and their buyers.

Most of the supermarkets in Sri Lanka use a combination of various procurement schemes. Cargills, Keells Super and Luagfs Sunup have distribution centers (DC) in Colombo. The retail outlets prepare their orders for the following day based on the day's sale. At the end of the day, all outlets report to their distribution center about their vegetable demands (quantities and varieties) for the following day. After DCs

summary and integration of these demand numbers, they inform their suppliers or collecting centres about what they have to supply.

The leading supermarkets (with a large number of outlets) have vegetable collecting centres at major producing areas to procure their vegetable requirements. In addition, they procure vegetables from independent procurement agencies. Collecting centers procure vegetables directly from the farmers or farmer associations, while independent procurement agencies procure directly from farmers or collectors. The vegetable requirements of the supermarket are conveyed to these regional vegetable collecting centres or to independent procurement agencies and accordingly vegetable orders are issued to the farmers and the vegetable collectors. The means of communication between the supermarkets and the suppliers are mainly telephone and mobile phones when making the order. Supermarket employees working at the collecting centres inspect the vegetables and sorting and grading are done. At the same time, the value added activities such as cutting and trimming are done. The supermarkets do not adhere to quality standards stipulated by formal certificates. The quality parameters actually adopted are mostly related to the physical attributes of the produce such as size, colour, texture and non-existence of pest and disease attacks. The product that does not meet the standard is not paid and disposed of. What is held back from delivery by the supplier is typically sold in secondary markets such as traditional wholesalers (Dedicated Economic Centers), other markets and street fairs. Similar observations were made by Balsevich, *et al,* (2003), through case studies of supermarkets from a range of Latin American countries; including Brazil, Costa Rica, Guatemala and Nicaragua. Further, they had observed that growers who export make a three-way selection, with the best (that meeting export standards of safety if those are above those of the supermarkets) exported, the second tier sold to supermarkets and the bottom tier sold to secondary local markets. The selected vegetables are loaded into standard crates belonging to the supermarkets. From each collecting centre and independent procurement agencies, the vegetables are transported to the distribution centers in freezer trucks or by trucks with no freezing facilities. At the distribution centers, the workers sort out the bulk vegetables, clean them and package them. From the distribution center, vegetables are dispatched to individual outlets in Colombo and suburbs either in freezer trucks or non-freezer trucks. For other outlets, the vegetables are dispatched directly on the way to Colombo from collecting centers.

Other supermarket chains use preferred supplier system to procure their vegetable requirement. Supermarkets choose their preferred suppliers carefully because lapses in quality, even if it originates from a link elsewhere in the food supply chain, tend to be associated with the supermarkets itself. The vegetable requirement of the supermarkets is conveyed to those preferred suppliers and they have to collect vegetables from farmers. The supplier is usually responsible for screening his/her own product before delivering it to distribution centers or outlets. These suppliers assume responsibility for collecting production from the farmers or collectors, packaging, assuring steady supply and in some cases, meeting traceability objectives. They are also held accountable for product quality and consistency factors that

strongly influence a supermarket's business reputation. Preferred suppliers use their own trucks (freezer or non-freezer) to transport vegetables from major producing areas. Some suppliers send vegetables directly to outlets, while others supply to a distribution center in Colombo. At each outlet or at the distribution center, the vegetables are graded and sorted. Suppliers have to make arrangements to sell the unacceptable products to other markets.

Figure 3.4: Procurement and Distribution of Vegetables by Leading Supermarkets in Sri Lanka

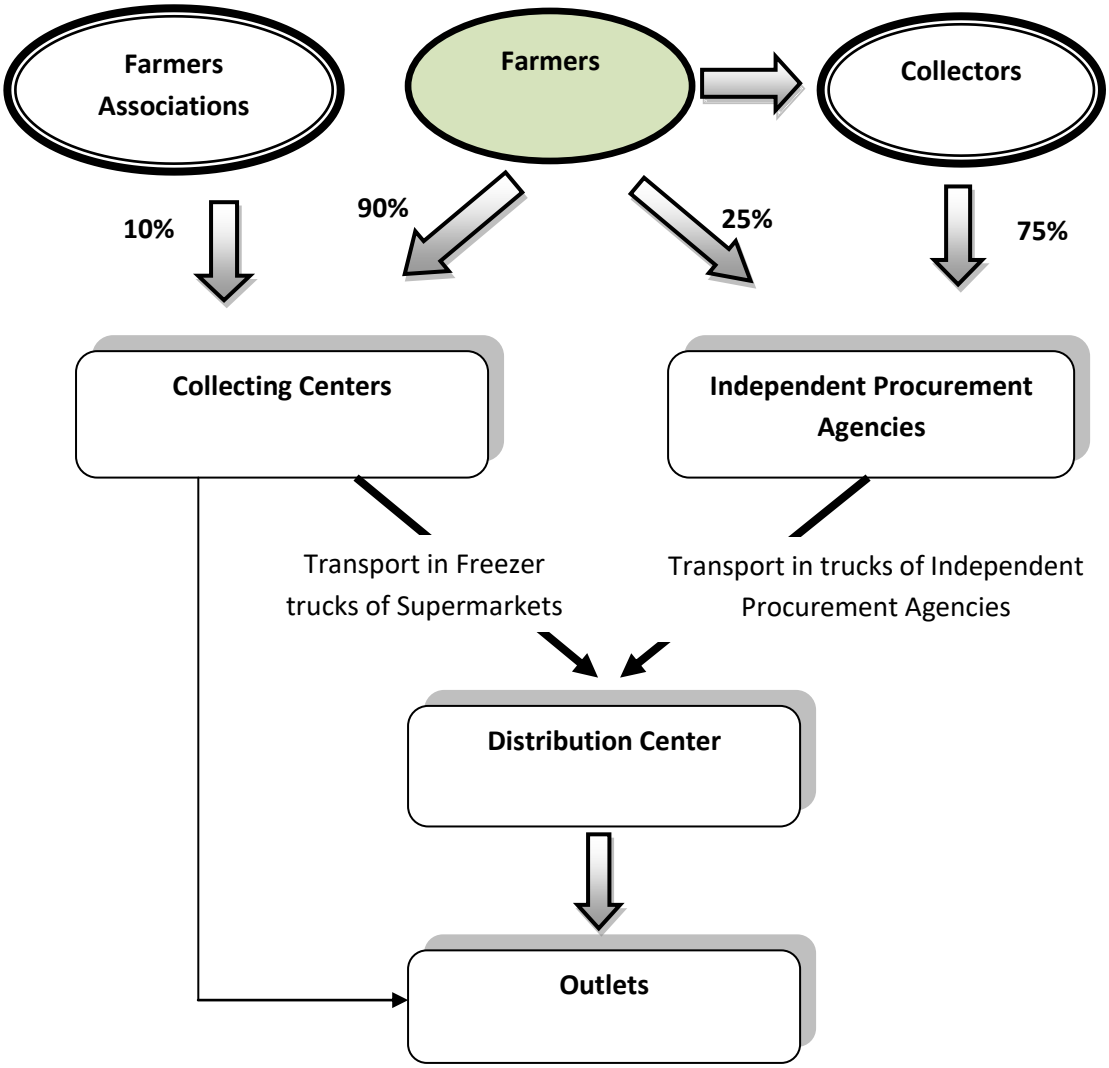
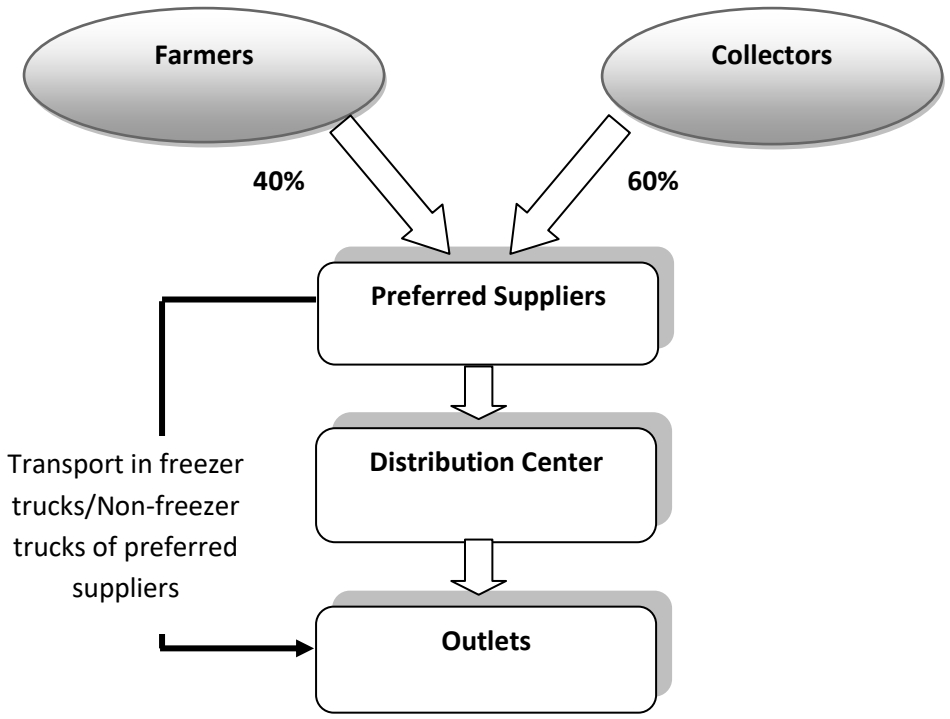


Figure 3.5: Procurement and Distribution of Vegetables by Other Supermarkets



Companies follow three tire quality maintenance systems such as quality grading at the collecting centers, quality care to maintain the quality during transit and quality maintainance at the retail outlets. Supermarket chains in Sri Lanka improve the consistency of timing and quality of delivered product by streamlining the supply chain. These arrangements include long term delivery contracts based on quality, quantity, prices, use of standardized crates and if required refrigerated transport (by Cargills supermarket) and value added activities such as cutting, trimming, grading and packing.

Direct purchase from farmers permits more rapid movement of produce from farm to collecting retail outlets, enabling supermarkets, to sell fresh produce. It was observed that time gaps between collecting from farmers field to sending to outlets is less than 24 hrs.

Box 01:

Procurement of Vegetables by Cargills in Nuwara Eliya, Bandarawela and Thambuththegama Areas

Collecting center of Cargills at Nuwara Eliya procure vegetables from a Farmers' Association at Katumana village. There are 52 members in this association consisting of vegetable growers and local vegetable traders. The collecting centre is located 4km away from the town of Nuwara Eliya. The leader of the farmers's association plays an active role in contacting supermarkets and delivering products. With this arrangement supermarkets can react quickly to market demands and deliver fresh vegetable products to consumers. Farmers are happy about their guaranteed market access. Officers of collecting center communicate with the leader of the farmer's organization about the requirement of vegetables each day. The latter is responsible to contact farmers on supplying vegetables and for each 1kg of vegetables he gets cents 50 as a commission. Cargills provide transport facilities for those farmers and do not use cooling trucks to transport vegetables from the field to the collecting center as it is closely located. In addition, the collecting center of Cargills at Nuwara Eliya procure beans, carrot and tomato like vegetables from Welimada area and they have a field officer assigned to that area who is responsible to contact farmers who are expected to supply vegetables to Nuwara Eliya collecting center by lorries. Farmers do all harvesting and packing of vegetables. Assistants attached to the collecting center do sorting and grading of products and arrange them in plastic crates. However, the produce is not weighed at the farmers' field and the farmers have to travel to collecting centers with the vegetable load. In order to assure the correct weight of product, the officers of the collecting center use their scales to weigh vegetables and payment is done within two to three days. There are three officers and seven assistants attached to the collecting center. Altogether, seven employees work daily in procurement and delivering vegetables at the collecting center. After cleaning, sorting, grading and packing of vegetables at the collecting center, the vegetables are transported to the distribution center at Wattala in freezer trucks.

In Bandarawela, Cargills mostly collect beans, tomato, chinese cabbage, ice berg and bell pepper from the farmers. Bell pepper and tomato like vegetables which are cultivated in green houses were supplied mostly to supermarkets as they are of superior quality and the farmers can obtain higher prices for them by selling to supermarkets. The collecting centre of Cargills at Bandarawela, contacts farmers to meet their vegetable requirement for each day. Farmers have to use their own transport mechanism to transport vegetables to collecting center at Bandarawela as supermarket does not provide transport facilities. Vegetables are graded, cleaned and packed at the collecting center in the presence of farmers. As supermarkets demand vegetables like chinese cabbage, brocolli, ice berge and bell pepper, the farmers in Bandarawela cultivate only selected types of vegetables.

In Thambuththegama, Cargills purchase vegetables five days a week. Collecting center contact farmers depending on the requirements of the head office in Colombo. Farmers supply vegetables in the morning and they have to make arrangements to transport them to the collecting centers. Sorting, grading and packing are carried out at the collecting centers by the assistants attached to the collecting centers. Farmers have to wait until those activities are over and the rejected vegetables are returned to them. They have to make arrangements to sell such items to another market. Farmers receive cash after 2 - 3 days of selling.

Box 02:
Procurement of Vegetables by Keells Super in Nuwara Eliya and Thambuththegama

There are about 66 farmers who supply vegetables and fruits to Thambuththegama collecting centre of Keells. In Thambuththegama, Keells Super purchase vegetables three days a week on Monday, Wednesday and Friday. Once the vegetable order is received from the head office in Colombo on the previous day, the officer in-charge of the collecting center contact the farmers and they supply their vegetables in the morning of the following day in their own vehicles or using hired vehicles. Keells Super does the payment through the Hatton National Bank. Farmers have to obtain money from the Bank later.

In Nuwara Eliya district, the procurement of vegetables is done by the independent procurement agencies named as Agricultural Co-op Society Ltd. (AGCO) and Sinhala and Tamil Women's Society. These agencies procure vegetables either from the farmers or collectors on Monday, Wednesday and Friday. Vegetable requirements for the supermarket are conveyed to these agencies. After the vegetables are received at these independent agencies, they are cleaned, washed, graded and sorted and finally packed in standard plastic crates. Vegetables are transported in non-freezer trucks belonging to independent procurement agencies to the distribution center at Peliyagoda. Vegetables which are not up to the standard of supermarkets are rejected at the distribution center and rejection rate is around 10% - 12%.

3.3 Comparison of Supermarket Supply Chain Systems with Conventional Marketing Channels in Sri Lanka

Traditional marketing channels for vegetable sector differ substantially from the supermarket supply chains. The traditional distribution system for fresh vegetables in Sri Lanka is mainly through, the so- called “wet- markets” that still control more than 90 percent of the vegetable sales. There are large numbers of participants involved in the conventional marketing channels for vegetables and they perform various activities such as assembling, sorting, packing, transporting and selling. The various traditional vegetable supply chains in Sri Lanka are illustrated in figure 3.5. However, each marketing channel is not the same all the time and it does not mean all channels are available for all the farmers everywhere. The marketing channels are very few in the areas where road conditions are poor and the production is limited

(Rupasena, *et al*, 1999). Majority of the vegetables moving through 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. Normally the farmers sell their vegetables to vegetable collectors or send them to commission agents at the wholesale markets through transporting agents. Most of the farmers in main producing areas bring their vegetables directly to the Dedicated Economic Centers. The commission agents tend to quote a price to the farmers which are lower than the price for which the vegetables were actually sold at the wholesale market. Thus, the commission agents are known to take undue advantage of the farmers. This situation is especially observable in the Colombo wholesale market (Perera, *et al*, 2004).

Though the emergence of supermarkets is significant in Sri Lanka, the quantity of vegetables moving along these supermarket supply chains is comparatively insignificant compared to traditional chains. Specially, in relation to fresh vegetable retailing, the supermarket share in Sri Lanka is far behind that of the other product categories. Only about 5 percent of the vegetable production moves along the supermarket channels. Supermarkets are currently growing fast in urban and sub-urban areas in Sri Lanka. Supermarkets are rapidly moving to direct procurement arrangements either themselves working directly with the farmers or farmer groups or working through independent procurement agencies and they have developed new procurement systems. They deal directly with the farmers or with specialized suppliers. Traditional channels are unable to supply the quality vegetables required by the supermarkets.

Marketing channel is a product movement route through several intermediaries. It indicates how products move from the producer to the end consumer. In Sri Lanka where food production is in the hands of small producers, a large number of middlemen are involved in food supply and distribution activities. The supermarkets in Sri Lanka have paved the way for the emergence of vertical relationships between the supermarkets and farmers, and have influenced the value chain in FFVs. In contrast to the traditional value chain, the modern value chain that has been emerging in the Sri Lanka food sector contains a fewer participants, involves a high degree of co-ordination and ensures a high level of integration among different activities.

Supermarkets provide a one-stop shopping experience and are more equipped to meet the needs of higher income urban consumers than traditional food retail outlets. They provide under one roof a broad variety of fresh, processed and semi and fully prepared foods as well as other merchandise and services. The supply chains supporting supermarkets are also more efficient than traditional suppliers and are better able to facilitate the physical flow of food products into cities, reducing traffic congestion and adding less stress to transportation infrastructure.

Supermarket supply chains distinguish themselves from traditional market channels through specialized logistic facilities and a focus on value-added activities. They have

collecting centers and distribution centers. Besides acting as a center of collection, the produce is washed, graded, sorted and packaged. More than in traditional markets, the producers and suppliers must cope up with high standardization of both product specifications and modes of transportation. However, the information costs and risks are often lower as supermarkets generally communicate about quality grades and standards with which suppliers must comply.

Supermarket-channel farmers face challenges in managing their labour force because of the need to deliver desired quantities at short notice. Furthermore, the supermarket suppliers have less access to consumer information in comparison with local markets with implications for their bargaining position; supermarket customers generally live in distant urban centers so only large commercial farmers have good direct knowledge of the final consumers and what they demand.

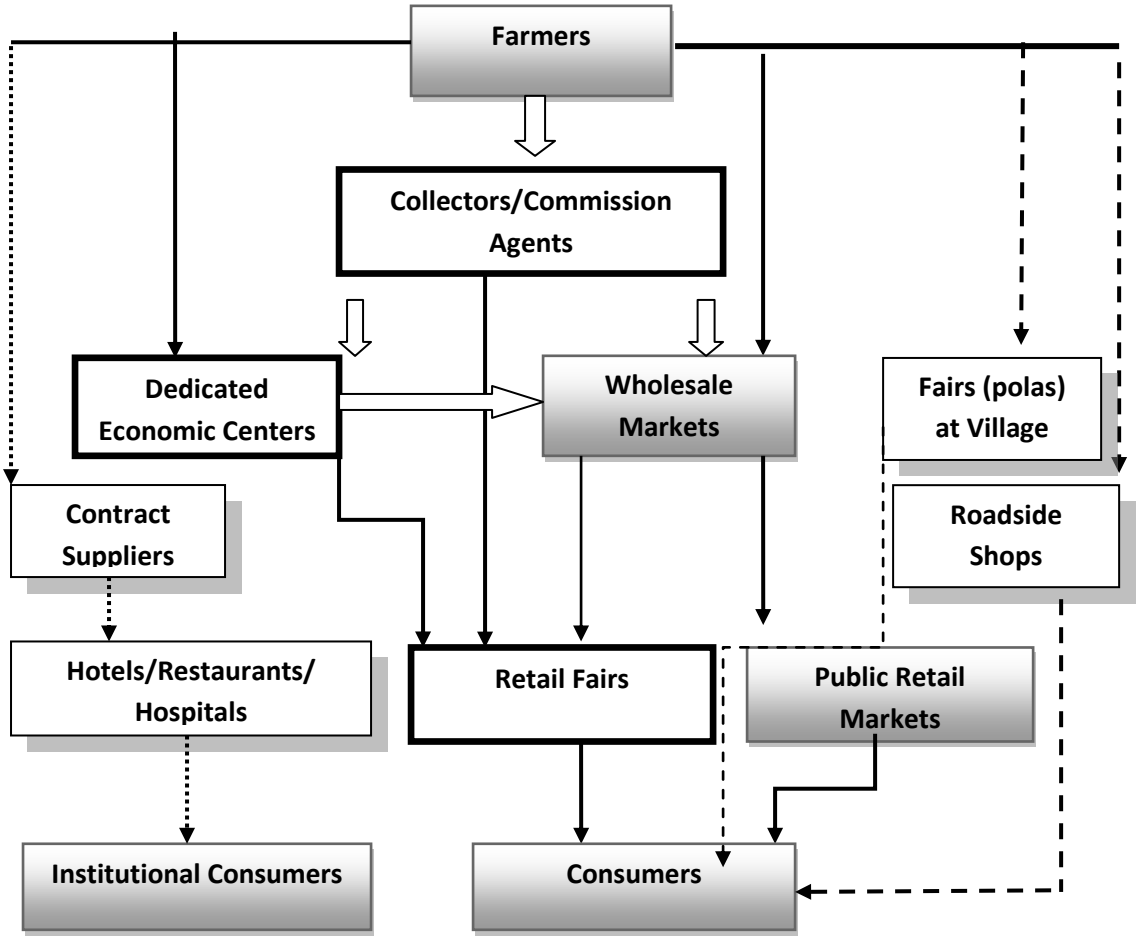
In conventional vegetable supply chains there is no attention to the quality of the produce by any participants in the chain. In the traditional vegetable supply chains, the quality signals are not being passed down to the farmers. Farmers are paid by the weight and they are not given a premium price for quality. Thus, their main focus is to increase the weight. This has in turn led to some farmers engaging in certain malpractices such as putting stones and inferior quality vegetables in the middle of the sacks of vegetables (Hettige and Senanayake, 1992; Rupasena, *et al,* 2001; Perera, *et al,* 2004). The supermarket does not adhere to quality standards stipulated by formal certificates. They use quality parameters which are mostly related to the physical attributes of the produce such as size, colour, texture and non-existence of pest and disease attacks.

Fresh foods are highly perishable by nature and must be handled with utmost care if their quality is to be maintained from producer to consumer. This poses a challenge to existing supply chains, where quality of produce reaching urban market is generally inconsistent and frequently poses high post harvest losses. To keep the quality of vegetables, the supermarkets normally use plastic crates and freezer trucks to transport the vegetables. Further, in the supermarket supply chains there are only one or two intermediaries present between the producer and the consumer. In conventional marketing channels, the transporting agents packed vegetables tightly in the polysac bags or in net bags and they overload those sacks into transporting vehicles resulting in high wastage of vegetables (Hettige and Senanayake, 1992; Kodithuwakku, 2000; Rupaseana, *et al*, 2001). In addition, due to lack of quality consciousness and accountability in the traditional supply chain, the post harvest losses are very high (30 percent – 40 percent). Finally the costs of such losses have to be borne by the consumer. However, the major supermarket channels are able to reduce post harvest losses up to 3 percent – 5 percent level.

As the quality consciousness is prevalent throughout the supermarket vegetable supply chains, the farmers pay more attention to quality of their produce as the vegetables which are not up to the standards required by the supermarkets are rejected at the collecting centres. The conventional farmers do not consider the quality of their produce that much when compared to supermarket-channel farmers.

There is a higher degree of transparency in the transaction at the farmer level with respect to the supermarket vegetable supply chain compared to traditional vegetable supply chain as the farmers bring vegetables to collecting centres by themselves and grading, sorting, cleaning, etc. are done in the presence of farmers at the collecting center (Perera, *et al.* 2004).

Figure 3.6: Traditional Vegetables Supply Chains in Sri Lanka



3.4 Limitations of Supermarkets in Supplying Vegetables

One of the problems faced is the inconsistency of the quality of vegetables supplied. Apart from the problems with quality standards, the unstable supply, low turnover and high operational costs represent major limitations.

Problems faced by a company include the level of commitment of the farmers, seasonality of production and price volatility and the occasional inability of supermarkets to fully absorb the supply.

From the perspective of companies, the non-conformity to quality standards, inability to supply the volume requirements and the delayed deliveries were considered as the main constraints to initiate linkages with small farmers.

CHAPTER FOUR

Supply of Vegetables to Supermarkets by Farmers and Their Implications

4.1 Introduction

Experiences of Reardon and Berdegue (2002) and Weatherspoon and Reardon (2003), suggest that the increasing demand for high-value fresh produce can provide new opportunities for enhanced small producer livelihoods. However, the standards and supply reliability demanded by supermarkets raise challenges for small producers. There is an increasing evidence that the small producers can participate in supply chains of supermarkets in a manner that enhances their livelihood. From the farmers' perspective, the lack of or inadequate access to production or post-harvest technology; the lack of or limited market information and intelligence on the prices and alternative buyers and their limited negotiating or bargaining skills were considered as constraints to initiating linkages with supermarkets. Furthermore, that linkage development is obstructed by the difficulties the small farmers face to meet stringent quality requirements and inflexible delivery schedules required by processors and supermarkets, as well as by the lack of institutional support (Chen, *et al,* 2005).

4.2 Socio-Economic Features of Supermarket-channel Farmers and Conventional-channel Farmers

The tables 4.1, 4.2 and 4.3 and the figures 4.1 and 4.2 explain the details of the socio-economic features of the farmer sample, which comprises of 200 farmers, including 100 supermarket-channel farmers and 100 conventional-channel farmers. As given in the table 4.1, there is no significant difference between the ages of the farmers who supply vegetables to supermarkets and conventional channel farmers in Nuwara Eliya and Bandarawela. However, in Thambuththegama area about 66 percent of supermarket farmers represent the age category of 20-40 years, whereas it was only 44 percent for conventional channel farmers. Majority (56 percent) of the conventional farmers in Thambuththegama represent the age category of 40-60 years. This implies that there is a trend among young farmers to engage in the supermarket channels in Thambuththegma area.

Table 4.1: Age of the Sample

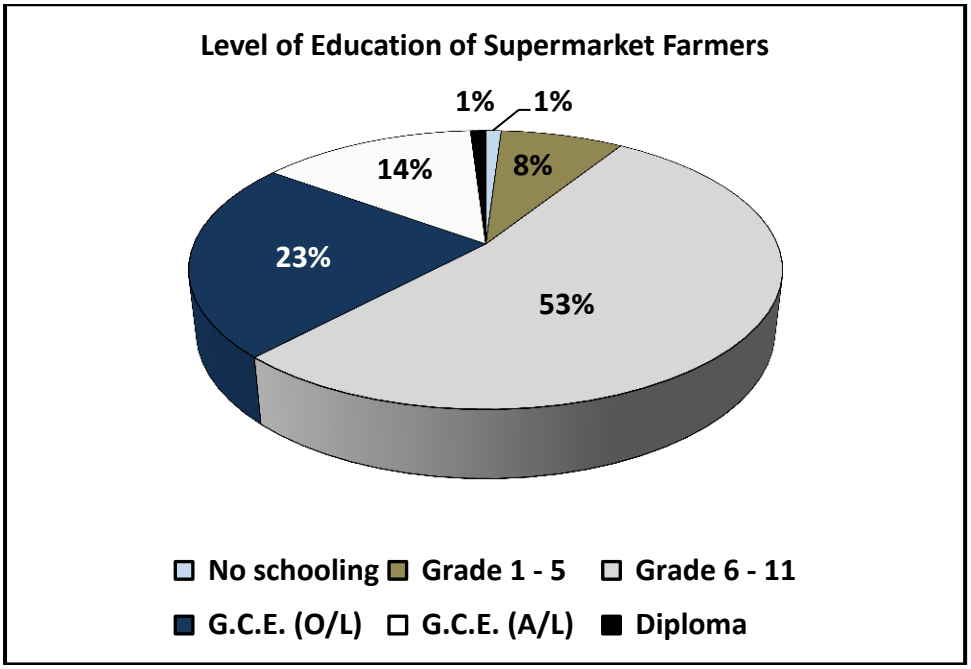
Age	*Nuwara Eliya (%)*		*Bandarawela (%)*		*Thambuththegama (%)*	
	Supermarket	**Con.**	**Supermarket**	**Con.**	**Supermarket**	**Con.**
20-30	15	8	15	15	28	18
30-40	18	15	40	35	38	26
40-50	25	32	20	40	23	26
50-60	42	45	25	10	11	30
Total	**100**	**100**	**100**	**100**	**100**	**100**

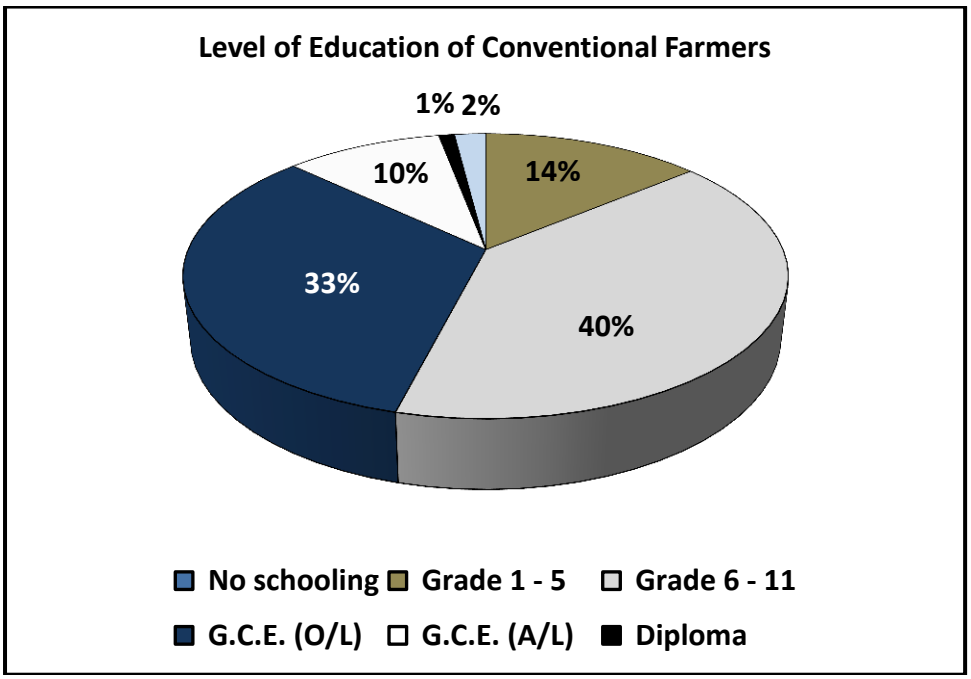
Source: HARTI Survey Data, 2009

Figure 4.1 represents the education level of the sample farmers. Majority of the supermarket-farmers (about 53 percent) and conventional-farmers (about 40 percent) had received education up to grade 6-11. It was further observed that 23 percent of the supermarket-farmers and 33 percent of the conventional-farmers had followed G.C.E. (O/L). This reveals that there is no difference among both categories of farmers with respect to the level of education.

Makoka, D. (2005) in a study with supermarket-farmers in Malawi, has stated that a reasonably good level of education is important for supermarket-farmers as it has a direct bearing on their ability to negotiate contracts and deal with all paper works that are involved when signing contracts with the respective supermarkets. The supermarket managers also prefer relatively more educated local suppliers because they are quicker to understand all the requirements of the contracts and the need to be consistent in the supply of products. Further, he has found that the majority of supermarket suppliers had at least secondary education. Neven and Reardon (2006) in a study of farmers in Kenya found that supermarket-channel farmers were more educated on average with a secondary education whereas only primary education has been achieved by traditional-channel farmers. However, in our study it was found that there were no written contracts between the supermarkets and the farmers in Sri Lanka and hence there was no relationship between the levels of education of the farmers involved in the supermarkets.

Figure 4.1: Level of Education





Source: HARTI Survey Data, 2009

Average monthly income of the sample in the study areas is given in table 4.2. More than 70 percent of both supermarket and conventional farmers in Nuwara Eliya were in the monthly income range of Rs.20,000/= – Rs.50,000/= and there was no significant difference of the income range between the supermarket and the conventional farmers. In Nuwara Eliya district, the commercial level farmers are higher than that of other two areas and most of them supply their vegetables to

conventional market. About 75 percent of the supermarket farmers in Bandarawela and 63 percent of supermarket farmers in Thambuththegama were in the income range of Rs.20,000/= - Rs.50,000/=. Only 30 percent and 47 percent of conventional farmers in the respective areas were in the income range Rs.20,000/= – Rs.50,000/=. This implies that the average monthly income range of the supermarket-channel farmers were higher than that of the income range of conventional-channel farmers in Bandarawela and Thambuththegama areas. Therefore, the participation in the supermarket channels had a positive impact on farmers' income. In a case study in South African countries, Emonger and Kirston (2009), found that the farmers who supplied vegetables to supermarkets had a significantly higher income than those who supplied to conventional markets.

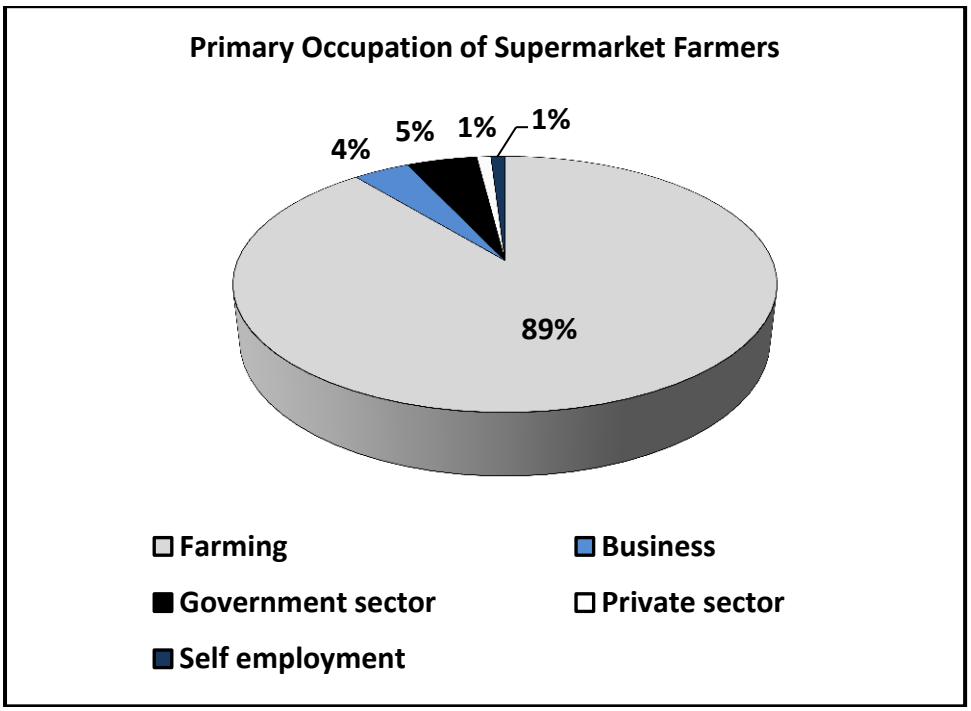
Table 4.2: Monthly Income of the Supermarket-channel and Conventional-channel Farmers in Study Areas

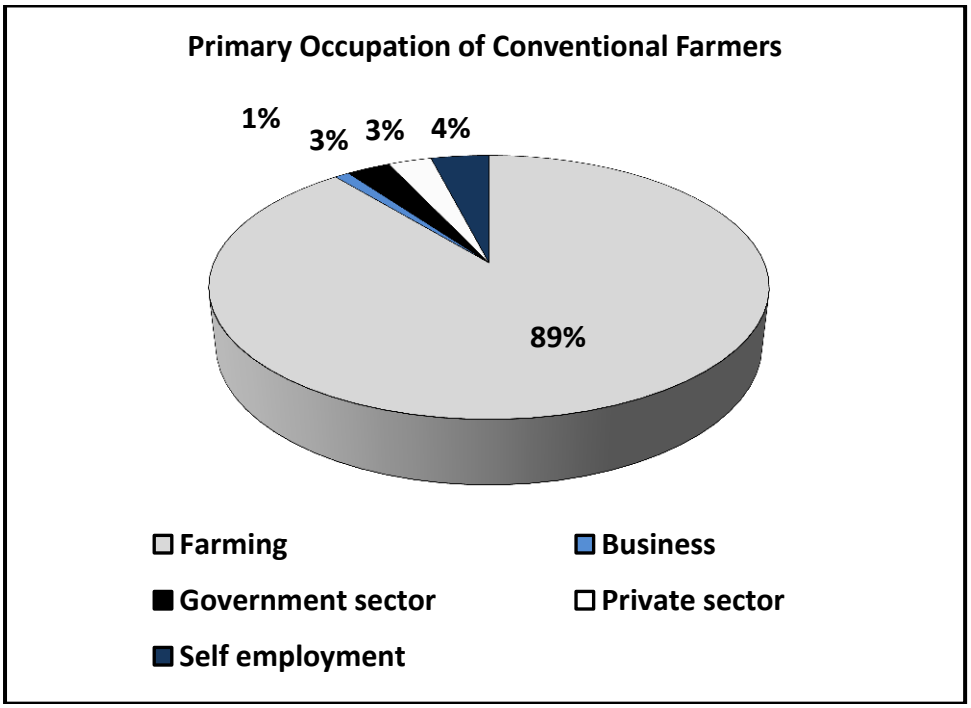
Monthly Income (Rs.)	Nuwara Eliya (%)		Bandarawela (%)		Thambuththegama (%)	
	Supermarket	Con.	Supermarket	Con.	Supermarket	Con.
1. 5,000 - 10,000	3	0	5	10	0	3
2. 10,000 - 15,000	8	3	0	30	12	22
3. 15,000 - 20,000	15	17	20	30	25	28
4. 20,000 - 50,000	74	80	75	30	63	47
Total	**100**	**100**	**100**	**100**	**100**	**100**

Source: HARTI Survey Data, 2009

As given in the figure 4.2, about 89 percent of both supermarket and conventional-channel farmers pursue farming as their mainstay in all the areas and rest of the farmers are engaged in Government sector employment, business, private sector employment and self employment as their main livelihood.

Figure 4.2: Primary Occupation of Supermarket and Conventional-channel Farmers





Source: HARTI Survey Data, 2009

Table 4.3 illustrates data on the cultivated extents of vegetables in 2008/09 *maha* season by the sample farmers. Higher percentages of both supermarket and conventional channel farmers have cultivated around 20 to 50 perches. It shows that most of the sample farmers engaged in vegetable cultivation are small scale farmers. However, Neven and Reardon (2006), in a study in Kenya found that supermarket-

channel farms are on an average much larger, in overall farm size than conventional farms.

Table 4.3: Cultivated Extents of Vegetables in 2008/09 *maha S*eason

Range of Cultivated Extent (perches)	Nuwara Eliya (%)		Bandarawela (%)		Thambuththegama (%)	
	Supermarkets	Con.	Supermarkets	Con.	Supermarkets	Con.
< 20	25	16	31	6	0	5
20 - 50	53	43	25	54	39	57
50 - 100	12	20	25	33	39	29
100 - 200	5	14	13	7	15	6
≥ 200	5	7	6	0	7	3

Source: HARTI Survey Data, 2009

4.3 Supply of Vegetables

4.3.1 Reasons for Selecting Supermarkets and Other Conventional Chains

As given in the table 4.4, while 71 percent of the supermarket-channel farmers reported that the higher price is the key reason for selling to supermarkets, 17 percent reported that the convenience of selling to supermarkets is the key attraction. Majority of the traditional-channel farmers (75 percent) reported that convenience of selling to traditional channels is the major reason for selecting their marketing channels and that low transaction costs and low market risks. Also, with the establishment of Economic centers in the concerned area, most of the farmers started selling their vegetables to them as it was easy to transact with DECs. In traditional marketing systems, the farmers often receive loans from the traders during the production period on the understanding that they will sell to those traders at the harvesting time. Further, 15 percent of the conventional farmers reported that they had selected their marketing channel as there was no other ways of selling. Table 4.4 clearly shows that most of the farmers selected the supermarket channel, expecting a higher producer price than offered by the traditional channels.

Table 4.4: Reasons for Selecting Supermarkets and Other Conventional Channels

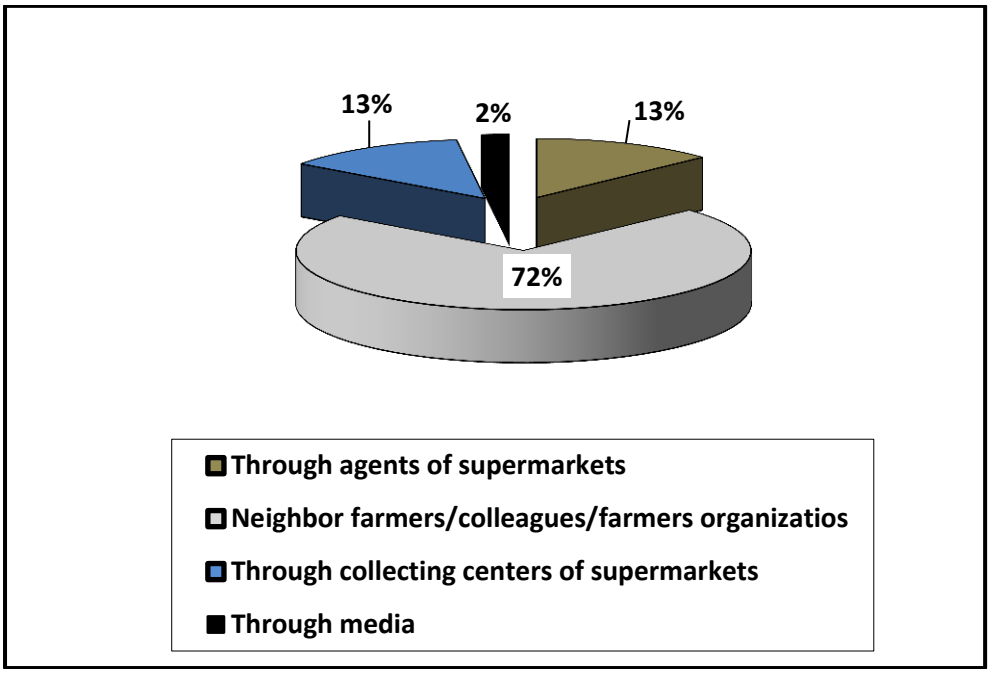
Reasons	Percentage of Farmers	
	Supermarket-channel	Conventional-channel
1. High producer price	71	2
2. Easy way of selling	17	75
3. Credibility	5	5
4. Convenience to obtain inputs on credit basis	5	3
5. Receive money quickly	2	0
6. No other way of selling	0	15
Total	**100**	**100**

Source: HARTI Survey Data, 2009

4.3.2 Awareness of the Procurement Procedure of Vegetables by Supermarkets

As supermarkets have become popular and spread in the country, the farmers are aware of the possibility of having links with the supermarkets and this study has investigated how they became aware of the procedure of procurement of vegetables by supermarkets.

Figure 4.3: Awareness of the Procedure of Supermarket Procurements



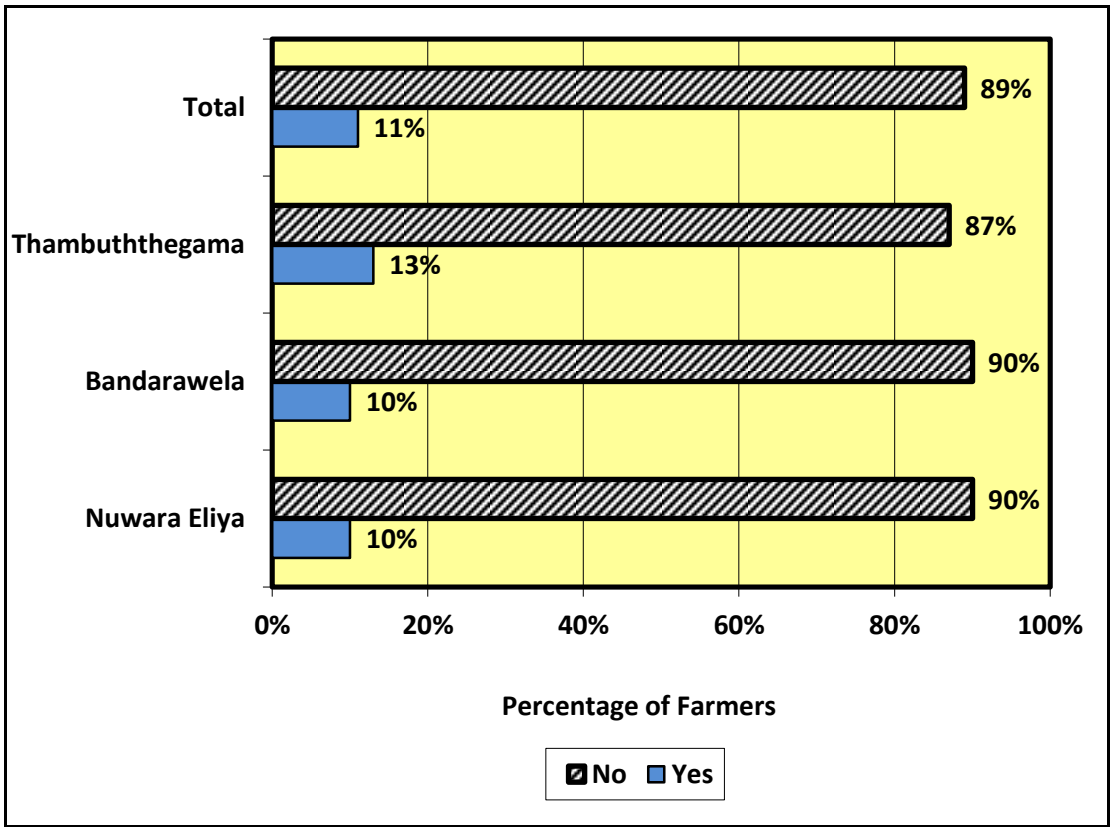
Source: HARTI Survey Data, 2009

The figure 4.3 reveals that the majority (72 percent) of the surveyed farmers came to know about the procurement of vegetables through neighbour farmers/ colleagues/farmer organizations, while the lowest percentage (2 percent) of the farmers, gained knowledge about it from the media.

4.3.3 Agreements with the Supermarkets

There are no agreements between the supermarkets and the farmers in the study locations such as Nuwara Eliya, Bandarawela and Thambuththegama. According to the figure 4.4, more than 87 percent of the supermarket-channel farmers in all the study areas revealed that they have not changed supermarkets from time to time and only a small percentage of farmers have changed supermarkets from time to time. It shows the merits of maintaining trust or "good will" between sellers and buyers. The farmers, who have changed supermarkets from time to time, gave four reasons for changing. About 37 percent of the farmers reported that it was mainly due to low prices paid by a particular supermarket. Further, they pointed out malpractices of officers at the collecting centers and purchase of small quantity of vegetables contributed to the change. Details are tabulated in the table 4.5.

Figure 4.4: Farmers' Responses on Change of Supermarkets from time to time



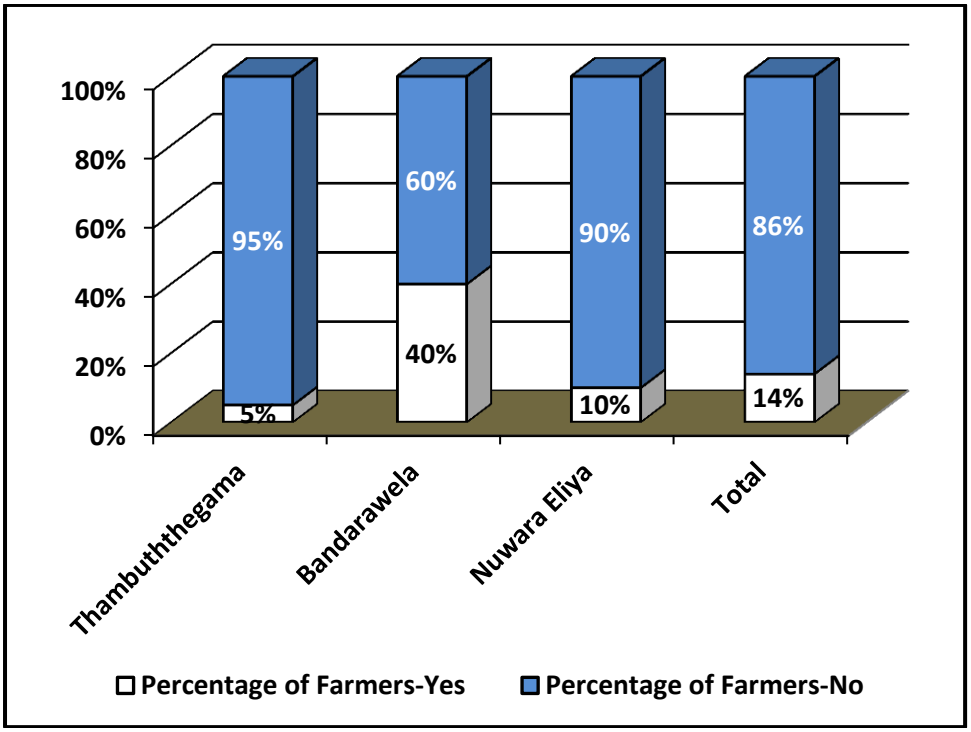
Source: HARTI Survey Data, 2009

Table 4.5: Reasons for Changing Supermarkets from Time to Time

Reasons	Percentage of Farmers
1. Comparatively receiving low price	37
2. Malpractices of officers	25
3. Purchasing of small quantity	25
4. Sometimes supermarkets procure from other sources	13
Total	**100**

Source: HARTI Survey Data, 2009

Figure 4.5: Percentage of Farmers who Supply Only to Supermarkets



Source: HARTI Survey Data, 2009

As indicated in the figure 4.5, in the total sample, there were only 14 percent of farmers who supply vegetables only to supermarkets. Majority of the sample farmers sell their produce to other marketing channels in addition to supermarkets. As supermarkets do not purchase all their produce, the farmers have to find other ways to sell the rest of their produce. As shown in table 4.6, about 51 percent of the farmers sold their vegetables to the Dedicated Economic Center in the area and 22 percent of the farmers sold their vegetables to the mobile collector, in addition to supermarkets.

Table 4.6: Other Ways of Selling

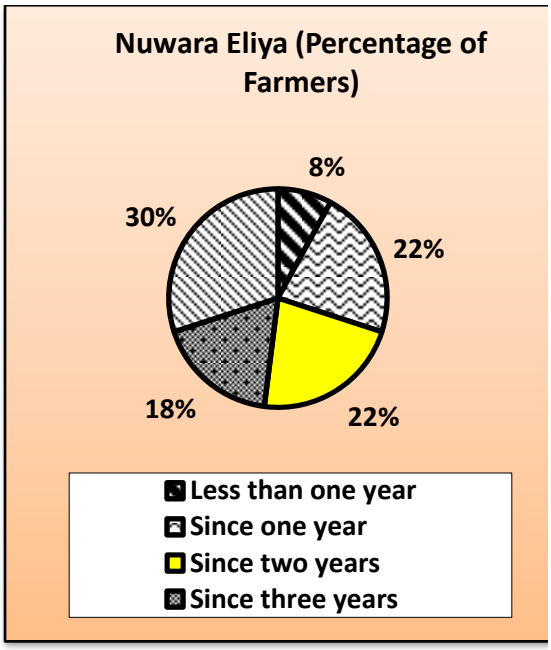
Other Ways of Selling	Percentage of Farmers
1. Dedicated Economic Center in the Area	51
2. Mobile Collectors	22
3. Nearest wholesale center	12
4. Village selling center	5
5. Weekly *pola*	3
6. Exporters	3
7. Co-operatives/farmer companies/ farmer organizations	2
8. Roadside traders	1
9. Selling by himself	1
Total	**100**

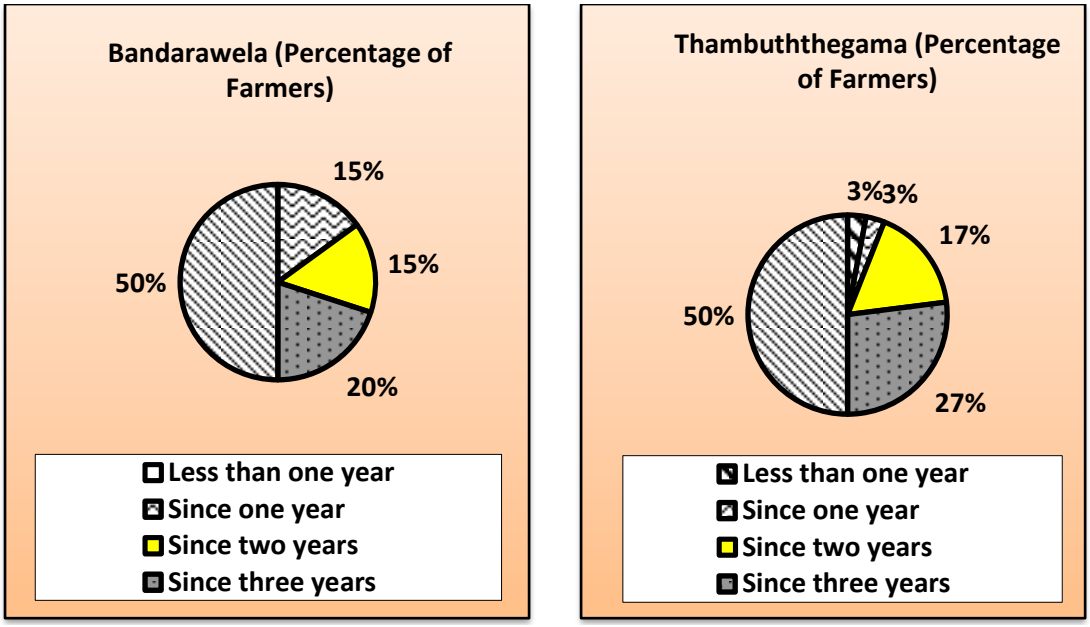
Source: HARTI Survey Data, 2009

4.3.4 Period of Supplying Vegetables to Supermarkets

A notable proportion of the farmers in all the study areas as given in the figure 4.6, have supplied vegetables to supermarkets for more than 3 years. This shows that the farmers built up trust dealing with supermarkets.

Figure 4.6: Period of Supplying Vegetables to Supermarkets

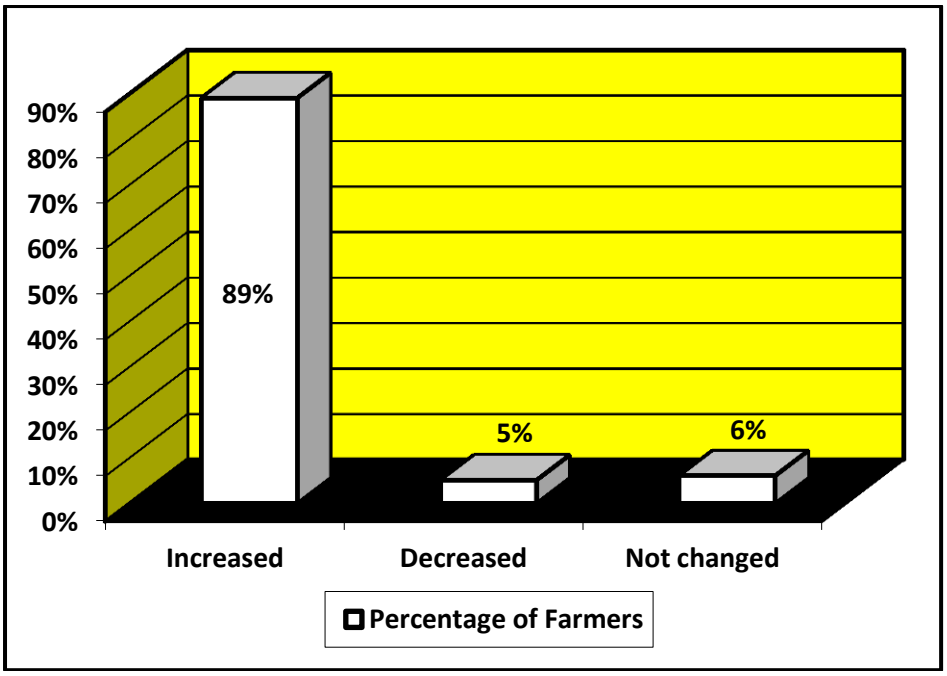




Source: HARTI Survey Data, 2009

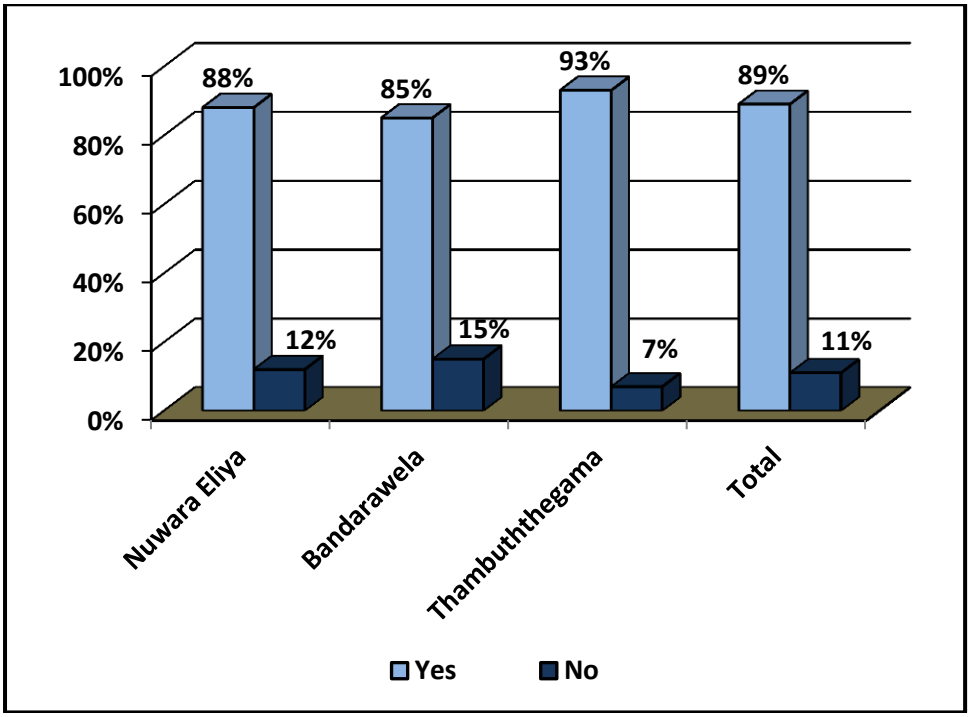
The number of farmers who supply vegetables to supermarkets has increased over a period of time. As shown in the figure 4.7, 89 percent of the farmers reported this increase. Further, as indicated in the figure 4.8, the majority of the sample farmers in Nuwara Eliya (88 percent), Bandarawela (85 percent) and Thambuththegama (93 percent) had supplied vegetables to supermarkets, continuously. This shows that the farmers had built-up trust dealing with supermarkets.

Figure 4.7: Farmers Progress in Supplying Vegetables to Supermarkets



Source: HARTI Survey Data, 2009

Figure 4.8: Percentage of Farmers who Supply Vegetables to Supermarkets Continuously



Source: HARTI Survey Data, 2009

4.3.5 Harvesting and Selling of Vegetables

The table 4.7 reveals, the ways of selling vegetables to supermarket-channel and conventional-channels. In Bandarawela and Thambuththegama areas, almost all the supermarket-channel farmers sell their vegetables to collecting centers. However, in Nuwara Eliya, the agents of collecting center of one particular supermarket chain go to farmers' field to collect vegetables. It was recorded as 35 percent. In Nuwara Eliya, with regard to conventional-channel farmers, the collectors visit farmers' field to collect vegetables and sell them to the Dedicated Economic Center. The study revealed that 98 percent of the conventional channel farmers in Nuwara Eliya sell their vegetables to collectors at the field in Nuwara Eliya. In Thambuththegama, all the conventional channel farmers sell their produce to the Dedicated Economic Center. In Bandarawela, about 60 percent of the conventional-channel farmers sell vegetables to the wholesale market and 40 percent of the farmers sell to collectors at the field.

Table 4.7: Ways of Selling Vegetables to Supermarkets

Ways of Selling	Nuwara Eliya (%)		Bandarawela (%)		Thambuththegama (%)	
	Super.	Con.	Super.	Con.	Super.	Con.
1. To supermarkets agents/collector at the field	35	98	5	40	0	0
2. To collecting centers of supermarkets/ relevant purchasing centers	65	2	95	60	100	100
Total	**100**	**100**	**100**	**100**	**100**	**100**

Source: HARTI Survey Data, 2009

Table 4.8 indicates the stage of harvesting and stage of selling by all the sample farmers within the geographical areas under consideration. In Nuwara Eliya district, 100 percent of both supermarket and conventional farmers harvest their crops in the morning of the day of selling. Also, 100 percent of both supermarket and conventional farmers sell their vegetables in the morning of the harvesting day itself. Majority of both supermarket and conventional farmers in Bandarawela also harvest their crops in the morning of the day of selling while a small percentage of farmers harvested their crops in the evening of the day prior to selling. However, the situation of conventional farmers of Thambuththegama has some differences when compared with other areas. About 80 percent of conventional farmers in Thambuththegama, harvest their crops in the evening at the day prior to selling and sell their vegetables in the following morning. However, the stage of harvesting and selling vary according to the type of vegetables. Farmers tend to harvest more perishable types of vegetables in the morning of the day of selling. Study clearly indicates that the majority of the supermarket farmers consider the quality and the freshness of the vegetables. Hence, they always try to sell their vegetables soon after harvesting.

Table 4.8: Stages of Harvesting and Selling

Stage of Harvesting and Selling	Nuwara Eliya (%)		Bandarawela (%)		Thambuththegama (%)	
	Super.	Con.	Super.	Con.	Super.	Con.
1. Stage of Harvesting						
a) Day of Selling (Morning)	100	100	90	80	70	20
b) Day prior to selling (Evening)	-	-	10	20	30	80
Total	**100**	**100**	**100**	**100**	**100**	**100**
2. Stage of Selling						
a) Day of harvesting (Morning)	100	100	70	70	50	20
b) Day of harvesting (Evening)	-	-	20	10	20	-
c) Day after harvesting (Morning)	-	-	10	20	30	80
Total	**100**	**100**	**100**	**100**	**100**	**100**

Source: HARTI Survey Data, 2009

Table 4.9 illustrates that the majority of supermarket-channel farmers (60 percent) sold 20 to 50 percent of their production to supermarkets and the balance quantity was sold to other marketing channels. Possibility of sale of more than 75 percent of their production was very low among the supermarket channel farmers as the quantity purchased by the supermarket was very limited compared to the conventional channels. However, 98 percent of the conventional channel farmers sold more than 75 percent of their production to their marketing channel.

Table 4.9: Quantity of Selling as a Percentage of Production

Quantity of Selling as a Percentage of Production	Percentage of Farmers	
	Supermarket	Conventional
<10	05	-
10-20	15	-
20-50	60	-
50-75	15	02
>75	05	98
Total	**100**	**100**

Source: HARTI Survey Data, 2010

Collecting centers of supermarkets were established to purchase fruits and vegetables directly from vegetable growers. Both in Nuwara Eliya and Thambuththegama, there are two collecting centers of supermarket 'A' and 'B', as

well as one collecting center of supermarket 'A' in Bandarawela. The following table indicates that more than 75 percent of the farmers in all the study locations bring their vegetables to the collecting centers from a distance of less than 10km. It means that most of the sample farmers can transport their vegetables easily and quickly to the collecting centers and they also can minimize the losses of vegetables when transporting. If producers are scattered and infrastructure is weak, the collection costs tend to be high. Monitoring and traceability requirements add substantially to these costs. Staff of each collecting centers face problems in facilitating negotiations with a wide body of small producers and effective day-to-day control of the supply chain. Hence, the supermarkets tend to procure from farmers close to the collecting centers of supermarket. In Nuwara Eliya district, one supermarket chain has selected one village named "Katumana" as it was easy for negotiations and monitoring the supply chain. Further, if farmers live further away from the collecting centers, they have to bear the transport cost and find their own way of transport. Therefore, they found it difficult and costly to bring their produce to the collecting centers.

However, Boselie, *et al*, (2003), in case studies with the experiences of Hortico (Zimbabwe), Thai Fresh United (Thailand), Homegrown (Kenya), TOPS (Thailand) and Alice (South Africa) have reported that a geographically dispersed base of small producers can be an effective risk-spreading strategy for supermarket suppliers and/or can afford greater flexibility in the procurement of relatively small quantities of products that meet specific and exacting standards. For example, Homegrown in Kenya, obtain their requirement from small producers in a number of areas in order to manage the risk of not fulfilling a supermarket order due to crop failure because of inclement weather or pest infestation.

Table 4.10: Distance to the Collecting Centers of Supermarkets

Distance	Nuwara Eliya (%)	Bandarawela (%)	Thambuththegama (%)
1. less than 5km	55	30	63
2. less than 10km	26	45	30
3. less than 15km	3	0	7
4. less than 25km	6	0	0
5. less than 50km	6	25	0
6. 50km or above	4	0	0
Total	**100**	**100**	**100**

Source: HARTI Survey Data, 2010

4.3.6 Method of Transport

The following table indicates the method of transport used by supermarket-channel farmers and the conventional-channel farmers. In Nuwara Eliya district, as the collecting center of one supermarket channel sends their lorries to farmers' field, there is no transport cost for those farmers. Other supermarket-farmers in the district mostly used hired vehicles to transport vegetables to collecting centers and majority of them (50 percent) have used hired lorries. About 78 percent of supermarket farmers in Bandarawela used hired vehicles to transport vegetables to

supermarkets and most of them (44 percent) have used three wheelers as the quantity of vegetables transported was low and the distance to the collecting center was less than 10km. All the sample farmers in both Nuwara Eliya and Bandarawela have used hired vehicles. However, the situation was different in Thambuththegama where 84 percent of supermarket-farmers used their own vehicles vi3 used two wheel tractors, three wheelers and motor cycles. Also, 54 percent of conventional-farmers in Thambuththegma have used their own vehicles which consisted mostly two-wheel tractors.

Table 4.11: Method of Transport Used by Supermarket-channel Farmers and Conventional-channel Farmers

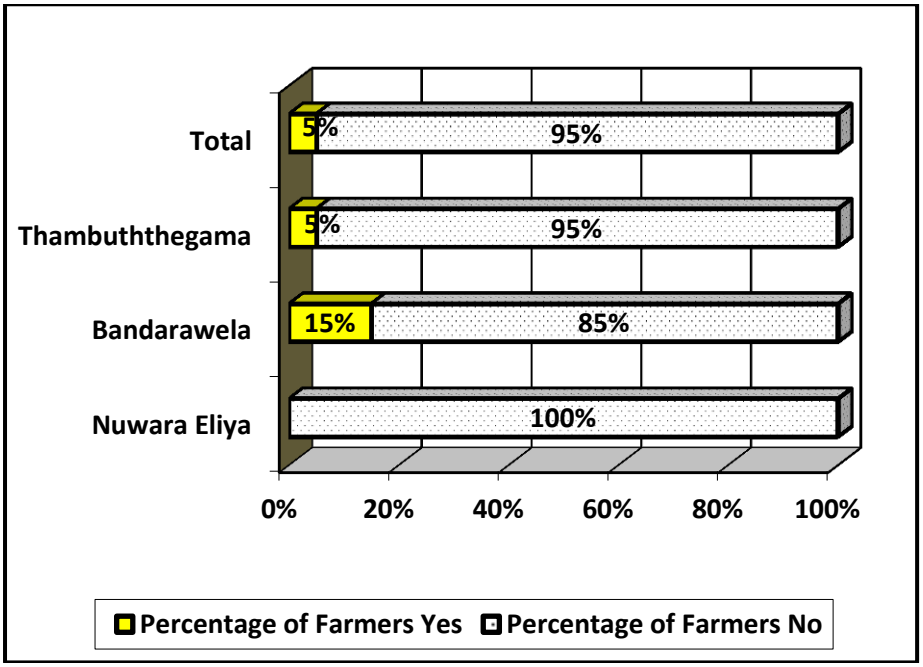
	Supermarket (%)			Conventional (%)	
Area	**Own**	**Provided by Supermarket**	**Hired**	**Own**	**Hired**
Nuwara Eliya	8	50	42	0	100
Bandarawela	22	0	78	0	100
Thambuththegama	84	0	16	54	46

Source: HARTI Survey Data, 2010

4.4 Problems and Constraints of Vegetable Farmers in Supplying Vegetables to Supermarkets

According to responses of farmers in the study areas, 95 percent of them had not received any advices on cultivating vegetables according to the requirement of the supermarkets. Only 5 percent of the total sample reported that they received advices for cultivation purposes. Among them, the majority of the farmers (80 percent), got advices from the supermarkets on cultivation and rest of the farmers reported that they got advices for making compost manure.

Figure 4.9: Percentage of Farmers who Received Advices/Standards from the Supermarkets to Cultivate Vegetables



Source: HARTI Survey Data, 2009

Boselie, *et al*, (2003) has reported that in many cases small producers are required to change long-standing production practices in order to supply vegetables to supermarkets. For example, the Thai Fresh United supermarket chain in Thailand, has requested farmers to grow to precise quality standards and to implement specific production practices. In Kenya, Homegrown supermarket chain requires all its suppliers to have toilet and washing facilities, a pesticide store, spraying equipment and waste pesticide disposal facilities. The producers also had to comply with a written code of practice that specifies the nature of equipment, production practices, record keeping, use of child labour, etc. Further, the producers are inspected or are required to join certification schemes (eg. Tops supermarket chain and Thai Fresh United supermarket chain in Thailand).

In Indonesia, to ensure desired quality, the supermarket chains usually monitor both on-farm and off-farm activities by controlling fertilizer applications, quality of seeds, harvesting and post-harvesting handling techniques.

Gaiha and Thapa in 2007, in a study of small producers in Asian countries who supply vegetables to supermarkets have revealed that, there are stringent mechanisms for control and compliance. Also, Shepherd (2005) reported that the farmers who supply vegetables to FAMA in Malaysia, produce according to strict cropping schedules designed to ensure consistent supply and the farmers are encouraged to follow Good Agricultural Practices.

However, in Sri Lanka the contract farming for vegetables is not practiced by the supermarkets compared to the supermarkets with other countries described above.

Contract farming for some of the vegetables are practiced in collaboration with the international and national investors for export.

4.4.1 Marketing of Vegetables

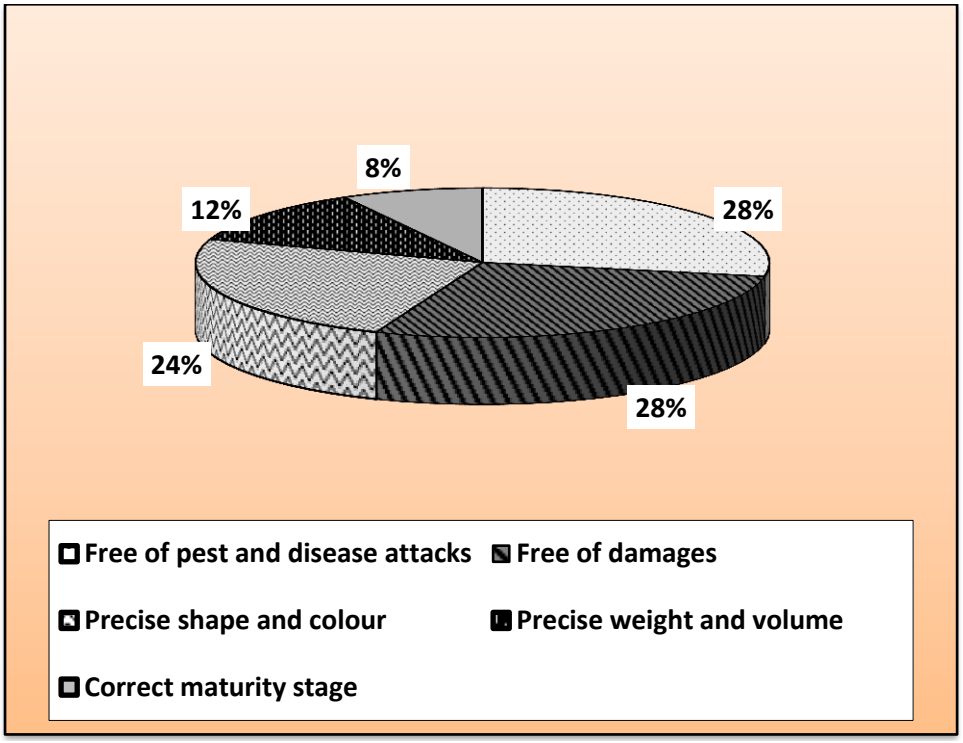
4.4.1.1 Standards Used by Supermarkets in Purchasing Vegetables from Farmers

In the Nuwara Eliya district, mostly supermarket agents visit farmers' fields to collect vegetables. However, in Bandarawela and Thambuththegama, the farmers themselves had to supply vegetables to the collecting centers of supermarkets. When selling vegetables, as supermarkets expect certain standards, the farmers have to sell according to those standards demanded by them. About 97 percent of the sample farmers reported that supermarkets follow certain standards when procuring and selling vegetables at field level or at their collecting centers. Since quality is the most important attribute for supermarkets, sorting and grading are done by classifying the products according to specific requirements (standards). Product standards are specified, refer almost exclusively to appearance. There are no standards whatsoever related to sanitary condition, chemical residues or traceability. Even the appearance standards are particularly difficult to meet. The supermarkets have adopted a policy of buying reasonably good quality vegetables, but well within the limits of what is already offered in the overall market. Hence, they have had little or no impact at all in terms of stimulating technical change at the farm level.

According to farmers, the standards which were to follow by them were: Vegetables should be free of pest and diseases attacks, free of damages, have precise shape and colour, precise weight and volume and should be at correct maturity stage. According to the figure 4.10, the vegetables which are free of pest and disease attacks and free of damages were the most basic and key standards demanded by the supermarkets. Precise shape and colour were also considered considerably.

In addition to the above criteria, the supermarkets in other countries look for taste and odour as well when sorting and grading vegetables.

Figure 4.10: Standards Used by Supermarkets when Purchasing Vegetables



Source: HARTI Survey Data, 2009

4.4.1.2 Type of Packaging Materials

The types of packaging materials vary depending on the type of vegetables and method of transport. Also, it varies according to the type of marketing channels. According to Appendix 01, all the supermarket and conventional channel farmers used plastic crates to transport cauliflower, broccoli, red cabbage, zukini and Chinese cabbage as they are highly perishable susceptible to post harvest damages easily, but expensive types of vegetables. Most of the conventional farmers in all the study areas used net bags as packaging material for other types of up country and low country vegetables, except for tomato for which they used wooden boxes. With regard to supermarkets, from the collecting centers to the distribution center in Colombo and to other retail outlets, the vegetables are transported in plastic crates. As leading supermarket chains use large trucks to transport vegetables and fruits from major producing areas, they have enough space in those trucks to arrange plastic crates. However, as most of the time the farmers have to transport vegetables to collecting centers by themselves, the type of packaging material used by them was different. Majority of the farmers in Nuwara Eliya and Bandarawela used net bags to transport up country vegetables such as beans, carrot, leeks, beetroot and cabbage.

When considering the low country vegetables, except for luffa and cucumber, the majority of supermarket-farmers used either net bags or polysac bags as packaging material as most of them were using two-wheel tractors, three wheelers and motor

bikes to transport vegetables to the collecting centers in Thambuththegama area. To avoid damages to ridges of luffa, they use plastic crates. None of the conventional-channel farmers used plastic crates in Thambuththegama area.

4.4.1.3 Rejection of Vegetables by Supermarkets

Normally supermarkets reject vegetables which are not up to their required standards. As given in the table 4.12, there were five major reasons for rejection which were highlighted by the farmers. The major causes for the rejection of vegetables were damages due to pest and disease attacks and physical damages. When the amount of rejection is high, the farmers have to select other ways of selling the rejected products. As the majority of the farmers do not sell their total production to supermarkets, they used to sell the rejected vegetables mixed with their rest of the produce. If the amount of rejection is low, they do not sell them in another channel but throw away or sometimes leave them at the collecting center itself.

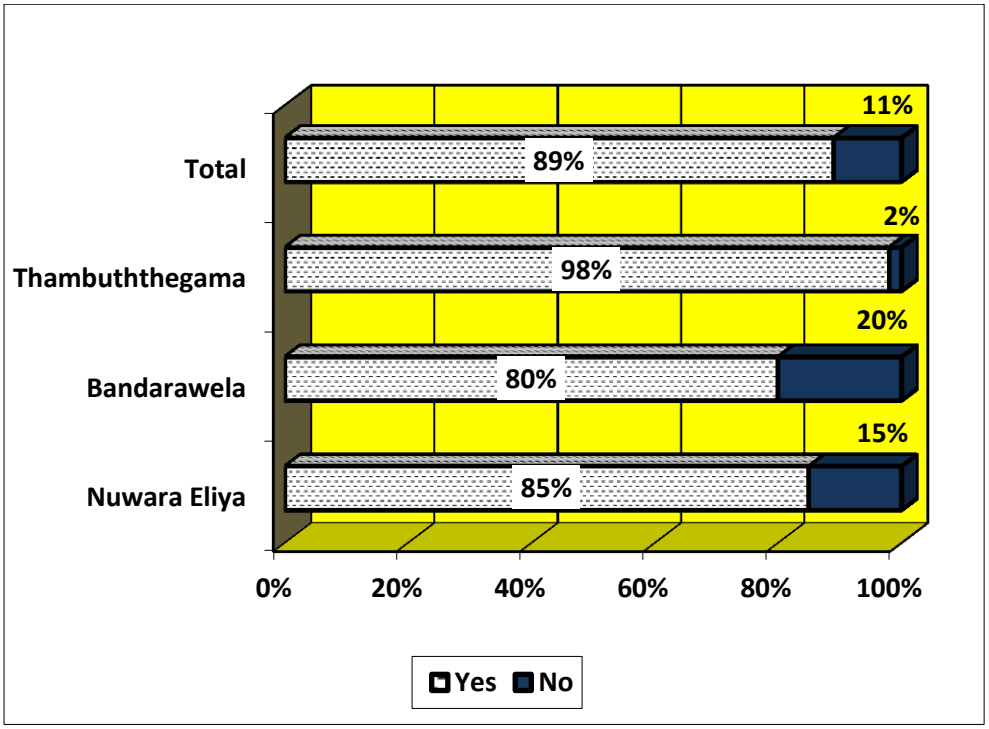
Table 4.12: Reasons for Rejecting Vegetables

Reasons	Total Percentage of Farmers
1. Damages due to pest and disease attacks	31
2. Physical damages (cracked/crushed)	28
3. Change of shape and colour	24
4. Vegetables which are not up to the standard weight and volume	12
5. Vegetables which are over matured	5
Total	**100**

Source: HARTI Survey Data, 2009

Figure 4.12 shows that, the amount of rejected vegetables has shown a decreasing trend over time. The majority of farmers in all the areas reported that the amount of vegetables rejected by the supermarkets has shown a decreasing trend over time. This trend was highest in the Thambuththegama area, compared to other two areas. This implies that farmers sorted out vegetables at the field before sending to supermarkets as they knew the required quality demanded by the supermarkets.

Figure 4.11: Percentage of Supermarket-farmers who Reported that Rejection of Vegetables has Shown a Decreasing Trend



Source: HARTI Survey Data, 2009

4.4.2 Method of Payment

Supermarkets are generally considered reliable with respect to their terms of payment, although there is a time interval between delivery and payment, which contrasts with the norms of traditional markets (Boselie, *et al*, 2003).

This study found that in Nuwara Eliya district, the majority of both supermarket and conventional channel farmers sell their vegetables on the basis of obtaining cash later. However, this situation is totally different in Bandarawela. About 95 percent of supermarket farmers and 76 percent of conventional farmers sell their vegetables on spot cash. In Thambuththegama, all the supermarket farmers sell on the basis of obtaining cash later; while 97 percent of the conventional farmers sell their vegetables on spot cash as most of the farmers sell their vegetables to the Dedicated Economic Center.

Table 4.13: Ways of Obtaining Cash by Supermarket-channel and Conventional-channel Farmers

Method of selling	Nuwara Eliya (%)		Bandarawela (%)		Thambuththegama (%)	
	Super.	Con.	Super.	Con.	Super.	Con.
1.Obtaining cash at the time of selling	28	32	95	76	0	97
2.Obtaining cash later	72	68	5	24	100	3
Total	**100**	**100**	**100**	**100**	**100**	**100**

Source: HARTI Survey Data, 2009

When considering the means and methods of payments, it was noted that majority of supermarket-farmers (70 percent) in all the study areas were paid by officers of the supermarkets. However, in Thambuththegama, the method of payment by supermarket A is totally different from the supermarket B. Farmers supplying vegetables to one supermarket-channel received their cash from an officer of the supermarket collecting centers and the farmers supplying vegetables to the other supermarket-channel received their cash from banks. This result is shown in the table 4.14.

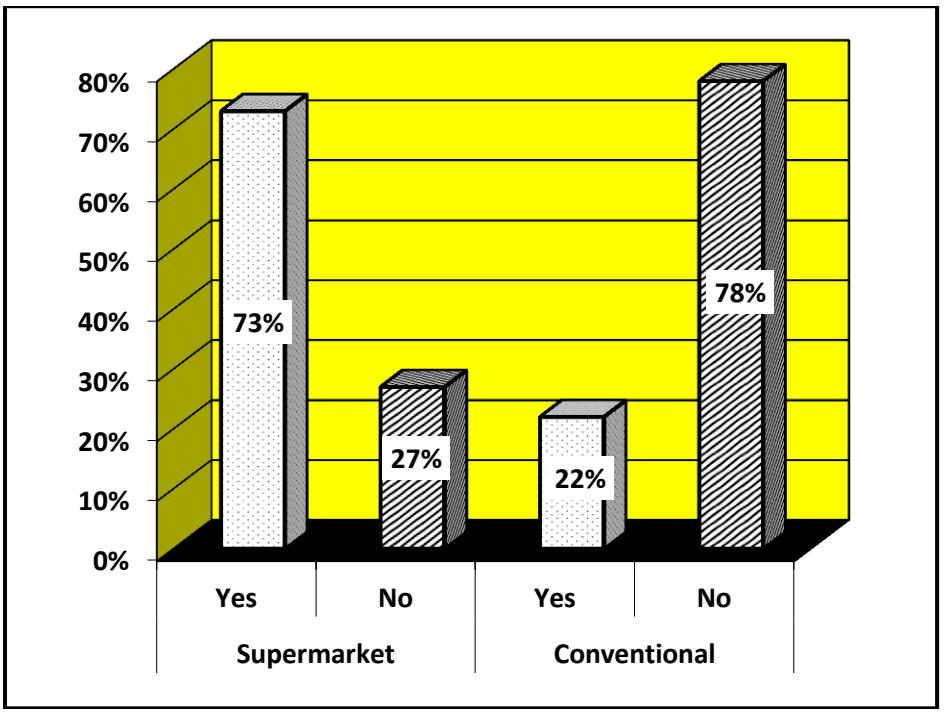
Table 4.14: The Ways of Payment by Supermarkets

The Way of Payment	Nuwara Eliya (%)	Bandarawela (%)	Thambuththegama (%)	Total (%)
1. By an officer of the supermarkets	75	100	50	70
2. By banks	25	0	50	30
Total	**100**	**100**	**100**	**100**

Source: HARTI Survey Data, 2009

Figure 4.13 indicates the satisfaction of the farmers about the amount of money they received. Majority of the supermarket farmers (73 percent) were satisfied with the amount of money they received, while a total of 27 percent farmers were dissatisfied. However, in the conventional channel, the majority of farmers (78 percent) in all the areas were dissatisfied with the amount of money they received. Supermarket channel farmers, who were dissatisfied, opined that the amount of money was not sufficient when compared to the quality of vegetables. Most of the farmers were dissatisfied with the amount of money they received in the conventional channel and they opined that they did not receive reasonable price compared to the high cost of production.

Figure 4.12: Farmers' Satisfaction with the Amount of Money they Received



Source: HARTI Survey Data, 2009

4.4.3 Time Taken to Receive Cash

Supermarkets are generally considered reliable with respect to their terms of payment, although there is a period of time between delivery and payment, which contrast with the norms of traditional markets. The majority of the conventional channel farmers (78 percent) revealed that they received their sales money within two days, while 44 percent of the supermarket channel farmers also reported that they got their money within two days. As a whole, 93 percent of conventional channel farmers and 85 percent of supermarket channel farmers received their money within five days of selling. If supermarkets delay payment, the farmers' cash flow problems are exacerbated. Table 4.15 illustrates the above results.

Table 4.15: Time Taken to Receive Cash

Time (Days)	Supermarket farmers (%)	Conventional farmers (%)
1. less than 2 days	44	78
2. less than 5 days	41	15
3. less than 10 days	06	5
4. less than 15 days	05	1
5. 15 days or more	04	1
Total	**100**	**100**

Source: HARTI Survey Data, 2009

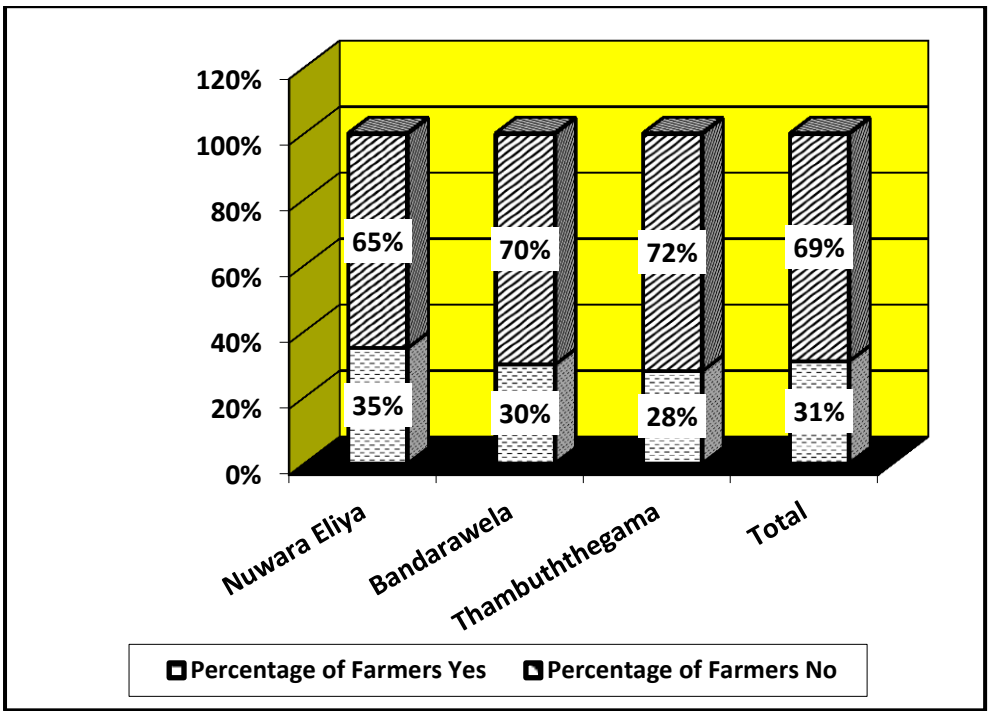
4.4.4 Gains for Farmers

Boselie, *et al*, (2003), in case studies with the experiences of Hortico supermarket chain (Zimbabwe), Thai Fresh United supermarket chain (Thailand), Homegrown supermarket chain (Kenya), TOPS supermarket chain (Thailand) and Alice supermarket chain (South Africa) have found that, the supply chains provide the producers with assistance and inputs to meet their requirements often within the context of weak public infrastructure. For example, Hortico provides inputs in re-weighed quantities on credit, which is funded in part by a revolving fund established by an overseas donor. Hortico (Zimbabwe) and Homegrown (Kenya) provide extension advice and inspect crops to identify emerging problems through their own field staff and public sector extension services. The Alice (South Africa) has a partnership between universities and research institutes in the United States and South Africa that aims to assess the supply potential of small producers and the demands of supermarkets with a view to establishing sustainable supply arrangements. Hortico extension officers give advice on production practices and identify instances where problems are emerging. If the value of the delivered produce is less than the input costs, the producer is given an interest-free loan for an agreed payback period (Boselie, *et al*, 2003 and Weatherspoon and Reardon, 2003).

In Indonesia, it was reported that the vendors supply quality seeds, technology and other inputs necessary to attain supermarkets' requirements. They train farmers to achieve the required standards. Some of them also link the farmers to financial institutions and ensure credit availability to farmers. The vendor sets harvesting schedule with the farmers and procures vegetables according to grading and standards agreed upon between the vendor and the farmer.

The present study on Sri Lankan situation reveals that, a notable proportion (69 percent) of the farmers did not receive any benefits from the supermarkets other than receiving higher producer prices (figure 4.13). About 31 percent of supermarket channel farmers reported that they received some benefits from the supermarkets.

Figure 4.13: Percentage of Farmers who Received Benefits from Supermarkets



Source: HARTI Survey Data, 2009

Among the supermarket channel farmers who received benefits from the supermarkets, 39 percent reported that they received consultation/advices from supermarkets and 21 percent revealed that they received training programs on post harvest handling. In addition, 18 percent of the sample farmers stated that it is an advantage for them when the agents of supermarkets visit their fields to collect vegetables as they can minimize their transport cost.

Table 4.16: Benefits Received by Farmers

Benefits	Total Percentage of Farmers
1. Consultation/advices	39
2. Training programs on post harvest handling	21
3. Supermarkets visit farmers' fields to collect vegetables	18
4. Facilitate crop loans through banks	8
5. Supermarket agents inspect farmers' field	6
Total	**100**

Source: HARTI Survey Data, 2009

4.4.5 Problems Faced by Farmers when Selling Vegetables to Supermarkets

It transpired in the study that the farmers had to face problems when selling vegetables to supermarkets and theses are indicated in the table 4.17. Majority of the supermarket farmers (58 percent) highlighted that as supermarkets order a limited amount of vegetables at a time, they have to find out other source of selling for the rest of their produce. About 18 percent of the farmers pointed out that the amount of purchase is not enough when the production is high. Other major problems given by the farmers were the cost of transport, rejection of vegetables by supermarkets with slight disorders at the collecting centers, excessive time taken for grading and sorting.

Table 4.17: Problems Faced by Farmers when Selling Vegetables to Supermarkets

Problems	Percentage of Farmers
1. Order a limited amount of vegetables at a time	58
2. Farmers have to bear the transport cost	12
3. Supermarkets reject vegetables with slight disorders	9
4. Time taken to grading and sorting is high	7
5. Not received any benefits	7
6. High cost of production	5
7. Vegetables are not weighed at the field level	2
Total	**100**

Source: HARTI Survey Data, 2009

CHAPTER FIVE

Analysis of Vegetable Prices of Supermarkets and Conventional Markets

5.1 Introduction

Farmers who produce FFVs face various risks; the two most important ones are the price risk and the production risk. Prices of FFVs may vary from year to year. There are often no government-initiated price stabilization efforts and therefore, the producers of such products are subject to higher price risks compared to producers of staple crops. Aside from the price risks, the producers of FFVs are subject to production risks, particularly to yield risks due to variations in inputs, weather and other idiosyncratic factors.

Supermarkets set the prices on a daily basis depending on the prevailing wholesale market prices. Supermarkets tend to charge consumers lower prices and offer more diverse products and higher quality than traditional retailers. These competitive advantages allow them to spread quickly, as well as winning consumer market share. Only recently, mainly in the first wave, and second wave the country's supermarket prices for fresh fruits and vegetables have been lower than the traditional retailers.

5.2 Comparison of Retail Prices of Vegetables between Supermarkets in Colombo District

Prices of all the types of vegetables are significantly different among four supermarkets ($p < 0.001$). According to the results given in the table 5.1, the prices of carrot, leeks, beetroot, snake gourd, drumstick, luffa, long beans and cauliflower are completely different among four supermarkets. For most of the varieties, the lowest price was observed in supermarket A.

Table 5.1: Prices of Vegetables Recorded in Different Types of Supermarkets in Colombo District

Vegetables	Sup. A	Sup. B	Sup. C	Sup. D	Sig.
Carrot	76.60[a]	83.40[b]	88.27[c]	95.25[d]	<0.001
Beans	81.60[a]	82.60[a]	89.73[b]	90.90[b]	<0.001
Leeks	36.60[a]	42.30[c]	39.80[b]	52.90[d]	<0.001
Beetroot	58.00[a]	89.20[d]	85.73[c]	78.95[b]	<0.001
Knolkhol	53.60[a]	84.80[c]	86.27[c]	69.40[b]	<0.001
Radish	34.40[a]	56.20[c]	57.40[c]	49.60[b]	<0.001
Cabbage	55.00[a]	71.00[c]	67.00[b]	72.40[c]	<0.001
Tomato	68.40[a]	90.10[c]	84.87[b]	68.05[a]	<0.001
Ladies finger	41.80[b]	43.40[b]	45.40[c]	38.81[a]	<0.001
Brinjal	62.40[a]	73.80[b]	75.93[b]	74.90[b]	<0.001
Capsicum	70.00[a]	85.40[b]	83.40[b]	87.80[c]	<0.001
Pumpkin	21.00[a]	21.00[a]	22.07[b]	23.85[c]	<0.001
Cucumber	21.20[a]	29.50[c]	24.00[b]	31.70[c]	<0.001
Bitter gourd	80.00[b]	91.70[c]	88.00[c]	58.95[a]	<0.001
Snake gourd	27.80[a]	48.20[d]	41.60[c]	37.80[b]	<0.001
Drumstick	39.40[a]	81.40[d]	76.73[c]	44.12[b]	<0.001
Luffa	59.00[b]	57.90[a]	58.80[b]	60.70[c]	<0.001
Long beans	55.00[a]	88.75[d]	81.14[c]	67.55[b]	<0.001
Ash plantain	62.20[a]	66.20[b]	69.27[c]	68.85[c]	<0.001
Cauliflower	260.80[a]	398.30[c]	350.67[b]	394.06[c]	<0.001
Red Cabbage	246.60[a]	453.30[c]	377.60[b]	396.94[b]	<0.001
Bell pepper (Red)	518.60[a]	908.20[c]	625.00[c]	572.00[b]	<0.001
Lettuce	98.40[a]	154.40[c]	123.00[b]	104.10[ab]	<0.001
Salad cucumber	146.33[b]	158.00[c]	138.00[a]	147.75[b]	<0.001

Source: Analysed using one way ANOVA, based on the prices of different Supermarkets (September, 2009)

5.3 Comparison of Retail Prices of Vegetables in Supermarkets with Other Conventional Markets in Colombo District

Table 5.2 compares the retail prices of vegetables in conventional markets versus supermarkets in Colombo district. Prices of different outlets of each supermarket are more or less similar whereas the prices at different conventional retail markets are different. Part of the difference in the prices between supermarkets and traditional outlets is explained by differences in product quality as the quality of product sold in supermarkets being superior to that offered in traditional markets.

Considering the mean values of the retail prices given in the table 5.2, in Borella and Nugegoda, the prices of leeks, cabbage, ladies finger, brinjal, pumpkin, cucumber, snake gourd, luffa and ash plantain are significantly lower in supermarkets than those of retail markets ($P < 0.05$). Prices of other types of vegetables are not significantly different. In Wellawatta, except for tomato, the prices of all the other

types of vegetables are significantly lower in supermarkets when compared to conventional markets ($P < 0.05$). Retailers of Wellawatta purchase high quality vegetables from Pettah retail market and fresh vegetables are received at the market early in the morning. Also, it was observed that the quality of vegetables is higher compared to other retail markets in Colombo district. Compared to retail market, the quality of vegetables at most of the surrounding supermarkets was low in Wellawatta. The consumers are used to purchase more fresh vegetables from retail markets though the prices are higher than the supermarkets. In Battaramulla, the prices of beans, beetroot, knokhol, ladies fingers, capsicum, long beans and cauliflower are significantly lower in retail market, compared to supermarkets as most of the retailers have direct supply of vegetables from the major producing areas, whereas the retailers of Nugegoda and Borella purchase from Colombo Manning market.

Balserich (2003), in a study of supermarkets in Paraguay has observed that the prices of most of the FFV products were at least 15 percent cheaper in supermarkets as compared to their smaller competitors. The FFV price competition among supermarkets and against small stores drives the prices down by benefiting even more consumers. Supermarket chains have not suffered losses and have improved their procurement systems driving their product and transaction cost down. Supermarket usually offers product at low prices by reducing their profit margins. To maintain a profit, the supermarkets attempt to make up for the lower margins by a higher overall volume of sales and with the sale of higher margin items.

Supermarkets do not expect the vegetable sections to be profitable. The main purpose of this operation is to attract more consumers to purchase other profitable products. In other countries, the supermarkets consider that consumers are more sensitive to vegetable prices than to other prices. Therefore, they have special prices everyday for a few selected vegetables. Some supermarkets even have different vegetables on sale for special prices at different hours throughout the day. Consumers react to this marketing strategy and are willing to queue up for a long time to purchase at special prices (Zhang, *et al*, 2006).

Table 5.2: Comparison of Retail Prices (Rs/kg) Recorded in Supermarkets vs. Conventional Markets in Colombo District

Vegetable	Type of Market	Borella		Wellawatta		Nugegoda		Battaramulla	
		Mean	**Sig.**	**Mean**	**Sig.**	**Mean**	**Sig.**	**Mean**	**Sig.**
Beans	**Super.**	86.35	0.004	86.45	**< 0.001**	84.33	0.150	86.35	**< 0.001**
	Retail	78.00		102.00		94.00		64.80	
Carrot	Super**.**	85.80	0.005	86.00	**< 0.001**	85.13	0.192	85.80	0.002
	Retail	80.00		107.00		92.00		76.00	
Leeks	**Super.**	**42.73**	**<0.001**	**42.73**	**< 0.001**	44.63	**< 0.001**	42.73	0.120
	Retail	70.00		77.00		70.00		53.80	
Beetroot	**Super.**	78.05	0.271	78.15	**< 0.001**	74.93	0.040	78.05	**< 0.001**
	Retail	82.00		107.00		86.00		57.00	
Knolkhol	**Super.**	73.55	0.172	73.45	**< 0.001**	69.27	0.568	73.55	**< 0.001**
	Retail	80.00		103.00		72.50		56.22	
Raddish	**Super.**	49.60	0.002	49.45	**< 0.001**	46.13	0.162	49.60	0.361
	Retail	68.89		80.00		53.33		54.00	
Cabbage	**Super.**	66.25	**<0.001**	66.25	**< 0.001**	66.53	**< 0.001**	66.25	0.414
	Retail	82.00		88.00		80.00		69.00	
Tomato	**Super.**	77.88	0.356	77.78	0.189	75.57	0.506	77.88	0.004
	Retail	74.00		84.00		78.00		64.00	
Ladies finger	**Super.**	42.63	**<0.001**	42.32	**<0.001**	41.57	**< 0.001**	42.63	**< 0.001**
	Retail	80.00		84.00		74.00		58.00	
Brinjal	**Super.**	71.80	**<0.001**	71.90	**<0.001**	70.07	**< 0.001**	71.80	0.472
	Retail	80.00		104.00		84.00		69.50	
Capsicum	**Super.**	81.85	0.258	81.25	**<0.001**	81.07	0.089	81.85	**< 0.001**
	Retail	86.00		105.00		92.00		61.00	

Source: HARTI Survey Data (September, 2009)

Table 5.2 (*contd.*): Comparison of Retail Prices (Rs/kg) Recorded in Supermarkets vs. Conventional Markets in the Colombo District

Vegetable	Type of Market	Borella		Wellawatta		Nugegoda		Battaramulla	
		Mean	Sig.	Mean	Sig	Mean	Sig.	Mean	Sig.
Pumpkin	**Super.**	21.85	**<0.001**	22.35	**<0.001**	21.80	**<0.001**	21.85	0.001
	Retail	49.00		60.00		40.00		33.60	
Cucumber	**Super.**	27.03	**<0.001**	27.03	**<0.001**	25.77	**<0.001**	27.03	0.001
	Retail	54.00		63.00		50.00		35.40	
Bitter gourd	**Super.**	81.03	0.014	81.03	**<0.001**	75.17	0.022	78.23	0.012
	Retail	96.00		114.00		94.00		62.00	
Snake gourd	**Super.**	38.90	**<0.001**	38.90	**<0.001**	37.73	**<0.001**	38.90	0.001
	Retail	58.00		79.00		66.00		52.00	
Drumstick	**Super.**	61.53	0.045	60.37	**<0.001**	55.47	0.030	61.53	0.134
	Retail	76.00		102.00		72.00		53.00	
Luffa	**Super.**	59.13	**<0.001**	59.13	**<0.001**	59.10	**<0.001**	59.13	0.604
	Retail	80.00		82.00		82.22		61.00	
Long beans	**Super.**	72.63	0.781	71.11	**<0.001**	69.07	0.152	72.63	**<0.001**
	Retail	74.00		102.00		76.00		57.00	
Ash plantain	**Super.**	66.90	**<0.001**	66.50	**<0.001**	65.20	**<0.001**	66.90	0.362
	Retail	80.00		84.00		80.00		64.44	
Cauliflower	**Super.**	347.24	0.001	350.61	**<0.001**	352.30	0.464	347.24	0.001
	Retail	260.00		250.00		310.00		250.00	
Lettuce	**Super.**	120.45	**<0.001**	120.45	**<0.001**	117.07	0.017	120.45	0.279
	Retail	266.67		185.00		162.50		138.75	

Source: HARTI Survey Data (September, 2009)

5.4 Comparison of Prices Paid to Farmers by Supermarkets and Other Conventional Markets in the Study Area

Table 5.3 illustrates the prices received by the farmers in conventional and supermarket chains for the same categories of vegetables. As illustrated in table 5.3, the prices received by the farmers linked to the supermarkets chains A and B for each of the vegetables is much higher than the prices received for the same vegetables by the farmers linked to the traditional value chain in Thambuththegama. On average, the conventional farmers receive a price that is 31 percent less than the prices received by their modern counterparts (supermarket B) in Thabuththegama, whereas the conventional farmers in Nuwara Eliya received a price of nearly 20 percent less than the price received by supermarket-channel farmers. However, the conventional farmers receive a price that is 48 percent less than the price received by their modern counterparts (supermarket A) in Thambuththegama.

Table 5.3: Absolute Prices (Rs/kg) Received by Conventional-channel and Supermarket-channel Farmers in Thambuththegama

Vegetable	Conventional	Supermarket A	C/S*100 %	Supermarket B	C/S*100 %
Tomato	34.00	42.40	68.5	49.67	80.19
Ladies finger	15.60	25.00	61.6	25.33	62.40
Brinjal	31.90	41.60	68.8	46.33	76.68
Pumpkin	6.70	9.60	55.8	12.00	69.79
Cucumber	5.60	10.00	46.7	12.00	56.00
Bitter Gourd	25.50	42.00	38.6	66.00	60.71
Drumstick	12.60	20.00	23.6	53.33	63.00
Luffa	23.60	35.80	63.8	37.00	65.92
Long Beans	24.60	33.50	67.4	36.50	73.43
Ash Plantain	31.40	38.00	69.8	45.00	82.63
Average			**51.60**		**69.08**

Source: HARTI Survey Data, 2009 (September)

Table 5.4: Absolute Prices (Rs/kg) Received by Conventional-channel and Supermarket-channel Farmers in Nuwara Eliya

Vegetable	Conventional	Supermarket A	C/S*100%
Carrot	40.80	47.80	85.36
Leeks	15.27	21.00	72.70
Beetroot	30.67	34.20	89.67
Radish	9.07	13.80	65.70
Cabbage	30.53	34.40	88.76
Average			**80.44**

Source: HARTI Survey Data, 2009 (September)

It was observed that the price offered to the farmers by the supermarkets is higher than that offered by conventional vegetable supply chains in Nuwara Eliya and Thambuththegama areas. The supermarket purchases only vegetables of superior quality and they have to compete with conventional vegetable supply chains. Therefore, it is essential that the price offered by the supermarket be higher than the price offered by the conventional supply chains in order to stimulate the farmers to sell their harvest to the supermarket.

5.5 Price Margins of Supermarkets and Conventional Channels

The marketing operations of vegetables 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 hand. High market margins are a great problem in this scenario. Marketing cost include those associated with assembly, transportation, processing and distribution of farm food to consumer. To reduce marketing margins various methods are used all over the world such as direct marketing systems, contract farming, etc. Therefore, the price margin analysis was done in order to find out whether those supermarkets which practice direct marketing is able to reduce their market margins, compared to conventional marketing channels.

Farm-retail price spread was calculated using the following formula.

$$\text{Gross Farm-Retail Margin} = \frac{P_{RP} - P_{PP}}{P_{PP}} \text{ X } 100\%$$

P_{RP} = Retail Price
P_{PP} = Producer Price

Price margins of low country vegetables for supermarket A and supermarket B in Thambuththegama was calculated using the prices received by farmers attached to both supermarket-channels and the retail prices of the same varieties recorded at supermarkets outlets of the respective supermarket-channel. As given in the table 5.5, the gross price margins for conventional channels those supply low country vegetables to Colombo is significantly high, compared to supermarket channels. This difference is mainly due to direct purchase of vegetables from farmers. They pay higher prices to farmers at farm level and able to minimize post harvest losses significantly.

Table 5.5: Gross Price Margins for Selected Low Country Vegetables for Supermarkets and Conventional Markets

Vegetable	Sup. A (%)	Sup. B (%)	Conventional (%)
Tomato	61.64	75.46	101.89
Ladies finger	72.00	80.24	416.96
Brinjal	46.48	63.36	142.51
Pumpkin	124.17	77.78	564.84
Cucumber	115.00	-	751.98
Bitter Gourd	86.67	54.03	259.35
Snake Gourd	117.98	-	298.73
Drumstick	91.67	52.44	490.19
Luffa	65.17	56.76	223.19
Long Beans	68.03	-	161.62
Ash Plantain	64.91	42.22	154.03

Source: Margins for supermarket-channel was estimated from Producer Prices received by Supermarket Farmers in Thambuththegama and Retail Prices recorded

CHAPER SIX

Findings, Conclusion and Recommendations

6.1 Findings

The expansion of supermarket chains is altering the traditional structure of marketing channels and creating new challenges and opportunities for participating agents. There are pros and cons associated with the development of supermarkets. Positive impacts include modernized food retailing, innovation and consumer satisfaction. On the negative side the local and small-scale retailers have suffered, the number of suppliers has been shrinking and there is a potential adverse distribution effect.

The leading supermarkets (with a large number of outlets) have vegetable collecting centres at major producing areas to procure their vegetable requirements. In addition, they procure vegetables from independent procurement agencies. Collecting centers procure vegetables directly from farmers or farmer associations, while independent procurement agencies procure directly from farmers or collectors. At the collecting centres, the vegetables are inspected and sorting and grading are done. At the same time, the value added activities such as cutting and trimming are done. Other supermarket chains use preferred supplier system to procure their vegetable requirement. These suppliers assume responsibility for collecting production from farmers or collectors, packaging, assuring steady supply and in some cases, meeting traceability objectives. They are also held accountable for product quality and consistency factors that strongly influence a supermarket's business reputation. Direct purchase from the farmers, permits more rapid movement of produce from farm to collecting retail outlets, enabling supermarkets, in theory, to sell fresh produce. It was observed that time gaps between the farmers field to outlets is less than 24 hrs.

Study found that farmers who supplied vegetables to supermarkets had a slightly higher income than who supplied to conventional markets. Therefore, the participation in the supermarket channels had a positive impact on the farmers' income and thereby enhances their livelihood.

Study clearly shows that most of the farmers selected the supermarket channel, expecting a higher producer price compared to that of traditional channels. About 71 percent of supermarket-channel farmers selected supermarkets due to high producer prices paid by them, whereas 75 percent of conventional-farmers selected their marketing channels as it was a convenient way of selling their products.

Though there are certain agreements between the supermarkets and the farmers in supplying vegetables in several other countries, this study has found that there was no such agreement between the supermarkets and the farmers in Sri Lanka.

More than 87 percent of the supermarket-channel farmers in all the study areas revealed that they had not changed supermarkets from time to time. A notable proportion of the farmers in all the study areas had been supplying vegetables to supermarkets for more than 3 years. The number of farmers who supply vegetables to supermarkets has increased over a period. Also, the farmers had been supplying vegetables to supermarkets, continuously. This shows that the farmers had built-up trust dealing with supermarkets.

Majority of supermarket farmers sold less than 50 percent of their total production to supermarkets as their amount of purchase was limited compared to conventional channels. Most of the supermarket farmers had to find other ways of selling while selling a limited quantity to supermarkets.

More than 75 percent of the farmers in all the study locations brought their vegetables to the collecting centers from a distance of less than 10km. Thus, most of the sample farmers could transport their vegetables easily and quickly to the collecting centers and they could minimize the damage to vegetables when transporting. If producers are scattered and infrastructure is weak, the collection costs tend to be high. Monitoring and traceability requirements add substantially to these costs. Hence, the supermarkets tend to procure from the farmers close to collecting centers.

Experiences in other countries indicate that, in many cases the small producers are required to change long-standing production practices in order to supply to supermarkets. Producers have been required to grow to precise quality standards and to implement specific production practices. However, this study reveals that the farmers do not cultivate vegetables according to standards or advises given by the supermarkets. But, at the point of selling, the supermarkets do grading and sorting of vegetables according to their standards and those which are not up to the standards are rejected.

Majority of the supermarket farmers are satisfied with the prices they received, whereas most of the conventional-farmers were not satisfied with the prices they received. This shows that supermarkets are reliable with respect to their terms of payment.

In many other countries, the supermarket-farmers obtain certain benefits such as loans, inputs and extension services and assured market to their produce at high prices. However, this study found that a notable portion (69 percent) of the farmers had not received any benefits from the supermarkets other than receiving higher producer prices.

From the collecting centers of supermarkets to the distribution centers in Colombo and to other retail outlets, the vegetables are transported in plastic crates. However, as most farmers themselves have to transport vegetables to the collecting centers, the type of packaging material used by them was different. It was observed that to transport cauliflower, broccoli, red cabbage, zukini, Chinese cabbage, the

supermarket-farmers and conventional-farmers in Nuwara Eliya and Bandarawela used plastic crates as they are highly perishable and expensive types of vegetables susceptible to post harvest damages easily. However, to transport low country vegetables, the majority of supermarket-farmers used either net bags or polysac bags. Most of them were using two-wheel tractors, three wheelers and motor bikes to transport vegetables to the collecting centers in Thambuththegama area. None of the conventional-channel farmers used plastic crates in Thambuththegama area.

Local suppliers face challenges when they supply vegetables to supermarkets. Unlike supplying to the open market, the suppliers to the supermarkets have to ensure that the quality of their products is compatible with the needs of the high-income customers. This poses a challenge because the farmers have to ensure their products are of the required quality right from the nursery stage of the gardens. In the country where agricultural inputs (such as fertilizers and seeds) are expensive and agricultural extension services are weak, the farmers lack knowledge of good husbandry practices. The major problems highlighted by the farmers were that supermarkets order a limited quantity of vegetables at a time and that they have to find out other sources of selling. Besides, the volume of purchase is low when the production is high and they have to bear the transport cost.

Farmers attached to supermarket channels received a high price compared to conventional farmers. On average, the supermarket farmers in Thambuththegama and Nuwara Eliya received a price 47 percent and 26 percent respectively higher than the prices received by conventional farmers.

6.2 Conclusion

The majority of the players in the supermarket sector have realized that they have no choice but to develop ongoing sourcing relationships with the farmers or dealing with qualified intermediary to do so on their behalf. This is the only means by which they can be assured of procuring reliable supplies of uniform quality vegetables as the quality is a critical competitive factor in the success of supermarket chain. This cannot be addressed adequately through procurement from wholesalers or through *ad hoc* purchases from traders.

The expansion of supermarket chains is altering the traditional structure of marketing channels and creating new challenges and opportunities for participating agents. There are pros and cons associated with the development of supermarkets. The emergence of the particular supermarket channel deems to be beneficial to the farmers as they provide assured market and reduce price risk. There are also no middlemen and illegal deductions. However, the farmers face disadvantages in dealing with supermarkets due to low volume of procurement and high quality standards demanded by them resulting in rejection of vegetables at the selling point. Farmers are willing to supply supermarkets in future and hence, there is a scope for possible improvements.

To cater to the demand of changed urban consumption needs, the supermarkets have been integrating with the farmers. This vertical relationship between the farmers and the supermarkets has been helpful to improve the quality of products, reduce transaction cost and information asymmetries. It has also been helpful to reduce the price risk at farm level and ensure a higher price for the farmers compared to conventional channels and are able to reduce price margins between retailers and producers to a lower level, compared to conventional channels.

6.3 Recommendations

- Supermarkets or their suppliers should guide the farmers on what to produce, when to produce and when to harvest and they have a role to play in facilitating agricultural inputs, extension services, training, etc. Both the public and private sectors have a role to play in promoting the participation of small producers in supermarkets supply chains in a manner that is sustainable. Supermarkets and/or their suppliers need to work closely with groups of producers in order to communicate clearly their requirements. Further, they have a role to play in facilitating compliance through programs which will enhance the capacity and self-reliance of producers. Public authorities must provide a policy environment that promotes mutually beneficial partnerships between supermarkets and small producers and a legal framework that protects the economic interests of the parties. They also have a role in the development of infrastructure, from road networks to extension services and rural credit institutions, which meet the needs of small producers operating within the supermarket supply chains, particularly whilst the private sector capacity develops.

- Farmers should be organized as groups to facilitate supermarkets by operating collecting centers that creates win-win situation to both parties where they can obtain higher prices while the supermarkets can reduce their transaction cost.

- Government should be able to develop programmes that will help the farmers to upgrade their pre and post harvest practices in order to meet the requirements of these new markets and need to investigate possible tripartite arrangements between banks, supermarkets and input companies to assist farmers. Supermarket expansion can only be seen as an opportunity for small farmers if they are able to participate in the supply chain. Farmers need to have the resources and training to be able to actively participate in the rapidly transforming domestic food market. In particular, the government can work in partnership with the private sector, non-governmental organizations and international development organizations to provide assistance to the small farmers. The assistance can take the form of helping to organize co-peratives and effective associations in order to be able to meet the scale and volume needed to supply to a supermarket. Credit schemes need to be introduced for the farmers to obtain the technology that is required to meet the stringent quality and safety standards demanded by the supermarkets. The third form of assistance could be in the form of knowledge dissemination to place the farmers in a stronger position.

- The demand for safe vegetables in future will grow up considerably compared to the present. In other countries, the supermarkets use safety standards for vegetables and they educate the farmers on the proper use of chemical pesticides and rules governing them. In Sri Lanka, pesticides are heavily used in cultivation of vegetables and therefore if supermarkets use standards, the consumer demand will be increased for supermarket vegetables as the people are more health conscious. Therefore, the direction for local farmers to gather together in an organization to produce safe and clean vegetables to supply the supermarkets is essential.

REFERENCES

Abeysekera, T. and Abeysekera, S. (2006), "*Alternative Supply Chain Management Practices and the Performance of Marketing Channels in Fresh Fruit and Vegetable (FFV) Marketing in Sri Lanka*" in http://www.fao.org/Ag/ags/subjects/en/agmarket/chiangmai/abeysekera.pdf.

Balsevich, F, *et al*, (2003), "*Supermarkets and Produce Quality and Safety Standards in Latin America*", *American Journal of Agricultural Economics*, Vol. 85 No. 5, 2003.

Balsevich, F. (2003), "*Paraguayan Supermarket Development and Its Implications for the Produce Industry*" in http://ageconsearch.umn.edu/bitstream/11193/1/pb03ba01.pdf.

Boselie, D., Henson, S. and Weatherspoon, D. (2003), "*Supermarket Procurement Practices in Developing Countries: Redefining the roles of the public and private sectors*", *American Journal of Agricultural Economics*, Vol. 85 No. 5, 2003.

Bonanno, A. and Lopez, R.A. (2007), "*Competition Effects of Supermarket Services*", Food Marketing Policy Center, Department of Agricultural and Resource Economics, University of Connecticut, USA in http://ageconsearch.umn.edu/bitstream/9833/1/sp07bo02.pdf.

Brown, O. and Sander, C. (2007), "*Supermarket Buying Power: Global Supply Chains and Smallholder Farmers*", International Institute for Sustainable Development, Canada, in http://www.tradeknowledgenetwork.net/pdf/tkn_supermarket.pdf.

Chen, K., Shepherd, A.W. and Silva, C.D. (2005), "*Changes in Food Retailing in Asia; Implications of Supermarket Procurement Practices for Farmers and Traditional Marketing Systems*", Agricultural Management, Marketing and Finance Service Division, FAO. (http://www.fao.org/ag/ags/subjects/en/agmarket/docs/agsf8.pdf.)

Chengappa, P.G. (2007), "*Food Retail Chain and Supermarket Evolution in India*", in http://www.ncap.res.in/contract.../3.%20P.G.%20Chengappa.pdf.

Emonger, R. and Kirston, J. (2009), "*The Impact of South African Supermarkets on Agricultural Development in the SADC: A Case Study in Zambia, Nambia and Bostwana*", in Agrekon, Vol 48, No 1, March, 2009 (http://ageconsearch.umn.edu/.../2/5.%20Emongor%20&%20Kirsten.pdf.)

FAO/AFMA/FAMA, (2005), Report on the FAO/AFMA/FAMA regional workshop on the growth of supermarkets as retailers of fresh produce, AFMA, Bangkok (http://www.fao.org/ag/ags/subjects/en/agmarket/supermark.html)

FAO/AFMA/FAMA Regional Workshop on the Growth of Supermarkets as retailers of Fresh Produce, held in Kuala Lumpur, Malaysia, 4-7 Oct. 2004.

Gaiha, R. and Thapa, G. (2007), "*Supermarkets, smallholders and livelihood prospects in selected Asian countries*", in an Occasional paper published by the International Fund for Agricultural Development (http://www.ifad.org/operations/projects/regions/pi/paper/4.pdf.)

Gulati, A. and Reardon, T. (2007), "*Asian Food Market Transformation: Policy Challenges to Promote competitiveness with Inclusiveness*", presented in Agricultural and Rural Development for Reducing Poverty and Hunger in Asia: In Pursuit of Inclusive and Sustainable Growth, organized by IFPRI and ADB, Manila, Philippines, August 9-10, 2007 (http://conferences.ifpri.org/2020chinaconference/pdf/manilad_Gulati.pdf.)

Makoka, D. (2005), "*The Emergence of Supermarkets in Malawi: Implications for Agrifood Markets and the Small Farmers*", in http:// www.regoverningmarkets.org/.../the_emergence_of_supermarkets_in_malawi_implications_for_agrifood_markets_and_the_small

Minten, B., Randrianarison, L. and Swinnen, J.F.M. (2005), "*Supermarkets, International Trade and Farmers in Developing Countries: Evidence from Madagascar*", in a working paper published by Strategies and Analysis for Growth and Access (SAGA) in United States (http://www.cfnpp.cornell.edu/images/wp191.pdf.)

Minten, B. (2007), "*The Food Retail Revolution in Poor Countries: Is it coming or is it over? Evidence from Madagasca*", in a Discussion paper published by International Food Policy Research Institute (http://www.ifpri.org › Discussion Papers › IFPRI Discussion Paper.)

Neven, D. and Reardon, T. (2006), "*Kenyan Supermarkets and Horticultural Farm Sector Development*", in a paper prepared for presentation at the International Association of Agricultural Economists Conference, Gold Coast, Australia, August 12-18, 2006 (http:// ideas.repec.org/p/ags/iaae06/25759.html)

Perera, M., Kodithuwakku, S.S. and Weerahewa, J. (2004), "*Analysis of Vegetable Supply Chains of Supermarkets in Sri Lanka*", *Sri Lanka Journal of Agricultural Economics*, Vol. 6 No. 1, 2004.

Pingali, P. (2004), "*Westernization of Asian Diets and the Transformation of Food Systems: Implications for Research and Policy*" in a ESA Working paper No. 04-17, September, 2004, Agricultural and Development Economics Division, FAO, US (http://www.abengoa.com/corp/export/sites/abengoa_corp/.../1_P_Pingali.pdf.)

Reardon, T. (2007), "*The Supermarket Revolution in Emerging Markets: Implications for the Produce Industry"*, in a brief prepared for the Produce Marketing Association, December, 2007 (www.pma.com/system/files/TomReardon-EmergingMarketsBrief.pdf.)

Reardon, T. and Berdegue, J.A. (2001), "*The Rapid Rise of Supermarkets in Latin America: Challenges and Opportunities for Development*", *Development Policy Review*, Vol. 20, No. 04: 371-388, 2002.

Reardon, T., Timmer, C.P. and Berdegue, J.A. (2004). "*The Rapid Rise of Supermarkets in Developing Countries: Induced Organizational, Institutional, and Technological Change in Agrifood Systems*". e JADE: Electronic Journal of Agricultural and Development Economics, Vol. 1, No. 2, 2004, pp. 168-183 (ftp://ftp.fao.org/docrep/fao/007/ae226e/ae226e00.pdf.)

Reardon, T., Timmer, C.P., Barrett, C.B. and Berdgue, J. (2003), "*The Rise of Supermarkets in Africa, Asia and Latin America*", *American Journal of Agricultural Economics*, Vol. 85 No. 5, 2003.

Reardon, T. and Gulati, A. (2008), "*The Rise of Supermarkets and their Development Implications: International Experience Relevant for India*", in a discussion paper, published by International Food Policy Research Institute, 2008 (https://ageconsearch.umn.edu/bitstream/42479/2/ifpridp00752.pdf.)

Ruben, R., Boselie, D. and Lu, H. (2007), "*Vegetable Procurement by Asian Supermarkets: a Transaction Cost Approach*", in an international Journal of Supply Chain Management, Vol. 12, No. 1, 60-68, 2007 (http://www.emeraldinsight.com/journals.htm?articleid=1589277&show=pdf.)

Rupasena, *et al*, (1999), "*Vegetable Production and Marketing in the Nuwara Eliya District*", Hector Kobbekaduwa Agrarian Research and Training Institute, Colombo, Sri Lanka.

Shepherd, A.W. (2005), "*The Implications of Supermarket Development for Horticultural Farmers and Traditional Marketing Systems in Asia*", in http://www.fao.org/ag/ags/subjects/en/agmarket/docs/asia_sups.pdf

Wanninayake, W.M.C.B. and Dissanayake, D.M.R. (2006), "*The Impact of In-store Environment on Consumer Store Choice Decision in Sri Lankan Supermarkets*" in a proceeding of an International Symposium on "The Issues and Challenges of the 21st Century", held on 4-8, July, 2006, University of Sabaragamuwa, Sri Lanka.

Weatherspoon, D. D. and Reardon, T. (2003), "The Rise of Supermarkets in Africa: Implications of Agri-food Systems and Rural Poor", Development Policy Review, 3 (21), May, 2003 (https://www.msu.edu/.../DPR_Weatherspoon-Reardon-Rise_African_Supermarkets.pdf.)

Wickramarachchi, V. D. (2004), "*Profiling and Assessment of Supermarket Customers*", in an Undergraduate Report, Department of Agricultural Economics and Business Management, Faculty of Agriculture, University of Peradeniya.

Zhang, X., Fu, X. and Yang, J. (2006), "The Vegetable Supply Chain of Supermarkets in Sichuan, China" in http://www.actahort.org/members/showpdf?booknrarnr=699_60

Cargills Ceylong Limited (http://www.cargillsceylon.com)

http://www.keellssuper.com

LIST OF APPENDICES

Appendix 0I: Type of Packaging Materials According to the Type of Vegetables and Locations

A

Type of Vegetable	Packaging Material	Nuwara Eliya (% of Farmers)		Bandarawela (% of Farmers)	
		Supermarket	Conventional	Supermarket	Conventional
Beans	Net bags	75	100	93	93
	Plastic Crates	25	0	0	0
	Polysacs	0	0	7	7
		100	**100**	**100**	**100**
Carrot	Net bags	59	97	67	100
	Plastic Crates	35	0	0	0
	Polysacs	6	3	33	0
		100	**100**	**100**	**100**
Leeks	Net bags	67	63		
	Plastic Crates	17	0		
	Polysacs	16	36		
		100	**100**		
Beetroot	Net bags	22	83		
	Plastic Crates	78	0		
	Polysacs	0	17		
		100	**100**		
Cabbage	Net bags	100	83		
	Plastic Crates	0	0		
	Polysacs	0	17		
		100	**100**		
Cauliflower	Plastic Crates	100	100	100	100
Broccoli	Plastic Crates	100	100	100	100
Red cabbage	Plastic Crates	100	100	100	100
Zukini	Plastic Crates	100	100	100	100
Chinese cabbage	Plastic Crates	100	100	100	100

Source: HARTI Survey Data, 2009

B

Type of Vegetable	Packaging Material	Nuwara Eliya		Bandarawela		Thambuththegama	
		Sup.	Con.	Sup.	Con.	Sup.	Con.
Tomato	Wooden boxes	75	100	70	100	33	75
	Plastic Crates	25	0	30	0	67	25
		100	**100**	**100**	**100**	**100**	**100**
Capsicum	Net bags	75	100	50	100	0	100
	Plastic Crates	25	0	50	0	0	0
		100	**100**	**100**	**100**	**100**	**100**

Source: HARTI Survey Data, 2009

C

Type of Vegetable	Packaging Material	Thambuththegama (% of Farmers)	
		Supermarket	Conventional
Okra	Net bags	22	55
	Polysacs	61	45
	Plastic crates	17	0
		100	**100**
Brinjal	Net bags	45	100
	Polysacs	30	0
	Plastic crates	25	0
		100	**100**
Pumpkin	Lay in the tractor	60	0
	Net bags	20	100
	Polysacs	20	0
		100	**100**
Cucumber	Lay in the tractor	34	0
	Net bags	13	75
	Polysacs	13	13
	Plastic crates	40	13
		100	**100**
Bitter gourd	Net bags	100	0
	Plastic crates	0	0
	Polysacs	0	100
		100	**100**
Luffa	Net bags	25	100
	Plastic crates	75	0
		100	**100**
Long beans	Net bags	40	100
	Polysacs	60	0
		100	**100**

Source: HARTI Survey Data, 2009

Appendix 02: List of Supermarket Outlets in Sri Lanka

A. Supermarket Outlets of Cargills

1. Airport – Katunayake (Gampaha)
2. Athurugiriya (Colombo)
3. Awissawella (Colombo)
4. Attidiya (Colombo)
5. Aluthgama (Kalutara)
6. Anuradhapura
7. Anniwatte (Kandy)
8. Ampara
9. Ambalangoda (Galle)
10. Akurana (Kandy)
11. Alexandra Place (Colombo)
12. Badulla
13. Balangoda (Rathnapura)
14. Bandarawela (Badulla)
15. Batticaloa
16. Katubedda (Colombo)
17. Battaramulla (Colombo)
18. Borelesgamuwa (Colombo)
19. Bandaragama (Kalutara)
20. Beruwela (Kalutara)
21. Bokundara (Kalutara)
22. Bambalapitiya (Colombo)
23. Chilaw (Gampaha)
24. Colpetty (Colombo)
25. Dambulla (Matale)
26. Delgoda (Colombo)
27. Dickwella (Matara)
28. Dematagoda (Colombo)
29. Dehiwala (Colombo)
30. Delkanda (Colombo)
31. Dickman's Road (Colombo)
32. Darga Town (Kalutara)
33. Diyathalawa (Exp)
34. Eheliyagoda (Rathnapura)
35. Embilipitiya (Rathnapura)
36. Fort (Colombo)
37. Galle
38. Gampola (Kandy)
39. Grandpass (Colombo)
40. Gampaha
41. Hambantota
42. Hatton (Nuwara Eliya)
43. Homagama (Colombo)
44. Horana (Kalutara)
45. Havelock Road (Colombo)
46. Ja-Ela 1 (Gampaha)
47. Ja-Ela 2 (Gampaha)
48. Katukurunda (Kalutara)
49. Kalutara
50. Kaluthara North (Kalutara)
51. Kandana (Gampaha)
52. Kandy
53. Karagampitiya (Colombo)
54. Karapitiya (Galle)
55. Katugasthota (Kandy)
56. Kadawatha – 1 (Gampaha)
57. Kadawatha – 2 (Gampaha)
58. Kaduwela (Colombo)
59. Kesbewa (Colombo)
60. Kegalle
61. Kotahena (Colombo)
62. Kohuwala – 1 (Colombo)
63. Kohuwala – 2 (Colombo)
64. Kolonnawa (Colombo)
65. Kochchikade (Colombo)
66. Koswatta (Colombo)
67. Kottawa (Colombo)
68. Kelaniya (Gampaha)
69. Kiribathgoda (Gampaha)
70. Kuliyapitiya (Kurunegala)
71. Kundasale (Kandy)
72. Kurunegala 1
73. Kurunegala 2
74. Kandy
75. Kayunayake (Gampaha)
76. Kotikawatte (Colombo)
77. Malambe 1 (Colombo)
78. Malambe 2 (Colombo)
79. Majestic City – Bambalapitiya (Colombo)
80. Maharagama (Colombo)
81. Maradana (Colombo)
82. Mattakkuliya (Colombo)
83. Matale
84. Matara
85. Mawanella (Kandy)
86. Mirihana (Colombo)
87. Mt. Lavinia (Colombo)
88. Moratuwa (Colombo)
89. Minuwangoda (Gampaha)
90. Meerigama (Gampaha)
91. Moneragala
92. Mount Lavinia STC (Colombo)
93. Maligawatta (Colombo)
94. Maradana (Colombo)

95. Matara-mini (Exp)
96. Nugegoda (Colombo)
97. Nawala (Colombo)
98. Nawalapitiya (Kandy)
99. Negombo 1 (Gampaha)
100. Negombo 2 (Gampaha)
101. Nittambuwa (Gampaha)
102. Nuwara Eliya
103. Narahenpita (Colombo)
104. Pannipitiya (Colombo)
105. Park Road (Colombo)
106. Panadura 1 (Kalutara)
107. Panadura 2 (Kalutara)
108. Pannala (Kurunegala)
109. Pelawatta (Colombo)
110. Peliyagoda (Gampaha)
111. Pepiliyana (Colombo)
112. Piliyandala (Colombo)
113. Pilimthalawa (Kandy)
114. Pitakotte (Colombo)
115. Panadura (Exp)
116. Peliyagoda (North) (Gampaha)
117. Peliyagoda (South) (Gampaha)
118. Rajagiriya 1 (Colombo)
119. Rajagiriya 2 (Colombo)
120. Ragama (Gmapaha)
121. Rathnapura
122. Rawathawatte (Colombo)
123. Rathmalana (Colombo)
124. Seeduwa (Gampaha)
125. Sentra – Rathmalana (Colombo)
126. Sentra – Maharagama (Colombo)
127. Sentra – Nugegoda (Colombo)
128. Staples Street (Colombo)
129. Tangalle (Hambanthota)
130. Thimbirigasyaya (Colombo)
131. Trincomalee
132. Trincomalee
133. Vavuniya
134. Warakapola (Gampaha)
135. Wattala (Gampaha)
136. Welisara (Gampaha)
137. Wellawatta (Colombo)
138. Wijerama (Colombo)
139. Weliweriya (Gampaha)
140. Wennappuwa(Gampaha)

B. Supermarket Outlets of Keells Super

1. Athurugiriya (Colombo)
2. Attidiya (Colombo)
3. Borella (Colombo)
4. Biyagama (Gampaha)
5. Thalawathugoda (Colombo)
6. Crescat – Colpetty (Colombo)
7. Ethul Kotte (Colombo)
8. Gampaha
9. Galle
10. Hendala (Gampaha)
11. Hokandara (Colombo)
12. Ja-Ela (Gampaha)
13. Kadawatha (Gampaha)
14. Kandana (Gampaha)
15. Kalapaluwawa (Colombo)
16. Kohuwala (Colombo)
17. Kolonnawa (Colombo)
18. Kiribathgoda (Gampaha)
19. Kandy
20. Kandy II
21. Kotahena (Colombo)
22. Kottawa (Colombo)
23. Kurunegala
24. Kotikawatte (Colombo)
25. Liberty Plaza – Colpetty (Colombo)
26. Mahabage (Gampaha)
27. Malambe (Colombo)
28. Marine Drive (Colombo)
29. Moratuwa (Colombo)
30. Mt. Lavinia (Colombo)
31. Maharagama (Colombo)
32. Nawala (Colombo)
33. Narahenpita (Colombo)
34. Negombo (Gampaha)
35. Nugegoda (Colombo)
36. Panadura (Kalutara)
37. Pannipitiya (Colombo)
38. Pelawatta (Colombo)
39. Peliyagoda (Gampaha)
40. Pepiliyana (Colombo)
41. Polgasowita (Colombo)
42. Ragama (Gampaha)
43. Rajagiriya (Colombo)
44. Ratmalana (Colombo)
45. Seeduwa (Gampaha)
46. St. Thilakarathne Mw (Colombo)
47. Templers Road (Colombo)
48. Union Place (Colombo)
49. Wattala (Gampaha)
50. Wijerama (Colombo)

C. Supermarket Outlets of Laugfs Sunup

1. Havelock Town (Colombo)
2. Wellawatta (Colombo)
3. Rajagiriya (Colombo)
4. Borelesgamuwa (Colombo)
5. Kohuwela (Colombo)
6. Baudhaloka Mawatha (Colombo)
7. Orugodawatta (Colombo)
8. Kottawa (Colombo)
9. Jubilee Post (Colombo)
10. Maharagama (Colombo)
11. Thalawathugoda (Colombo)
12. Thalangama (Colombo)
13. Wattala (Gampaha)
14. Moratuwa (Colombo)
15. Dehiwala (Colombo)
16. Kirulapone (Colombo)
17. Pitakotte (Colombo)
18. Kiribathgoda (Gampaha)
19. Pelawatta (Colombo)
20. Narahenpita (Colombo)
21. Katubedda (Colombo)
22. Biyagama (Gampaha)
23. Koswatta (Colombo)
24. Marawila (Gampaha)
25. Delgoda (Gampaha)
26. Nedimala (Colombo)

D. Supermarket Outlets of Arpico Supercenters

1. Dehiwala (Colombo)
2. Battaramulla (Colombo)
3. Hyde Park Corner (Colombo)
4. Wellawatta (Colombo)
5. Kiribathgoda (Colombo)
6. Colombo 06 (Colombo)
7. Nawinna (Colombo)
8. Gampaha
9. Kandy
10. Negombo (Gampaha)