

Sri Lanka coffee report 2013

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1. Introduction

1.1 About coffee

Coffee was introduced into Sri Lanka by the Arabs in 1503, and in 1658, the Dutch began cultivating this plant. It was a very thriving industry until the end of 19th century and covered most of the areas in which tea is now grown. There are approximately 60 species of coffee and only few, namely Arabica, Robusta, its hybrid 'Catimore' and Liberica (Tree coffee) are marketed as commercial products. This report refers to one of the main varieties of coffee 'Arabica' generally traded as a special quality coffee in the worldwide market and it is at times comparable to Robusta.

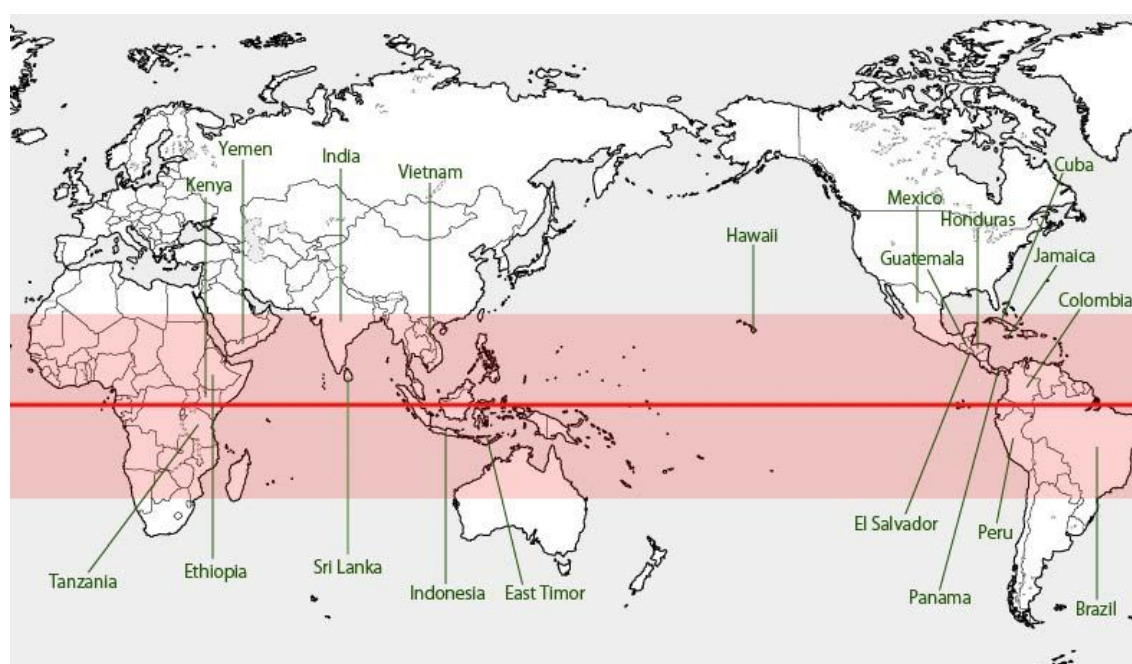
1.2 General cultivation conditions

Generally, coffee comes into production 3 years after planting. Satisfactory soil and climatic conditions are required, and it is grown in the tropical zone around the equator called the 'Coffee belt' as shown in the illustration [Fig1.2]. Under proper management, coffee can provide an annual average harvest of approximately 1,000kg/ha.

Deep, well-drained fertile loam of lateritic origin with a reasonable quantity of humus is good for Arabica cultivation, whereas Robusta is more widely adaptable to soil condition.

Strong, persistent wind, either hot, cold or alternating, is detrimental to coffee, therefore it is necessary to protect this crop by using suitable wind belts.

[Fig1.2] Coffee belt & location of major production countries



1.3 Comparison of cultivation conditions

Arabica coffee is more suited to the cooler high-elevation regions of the tropics, although it is grown under widely varying conditions of elevation from the seacoast to 1800 m towards the interiors.

Generally, 5 – 6 kg of fruit called “coffee cherry” yields 1 kg of commercial coffee beans. Further, approximately 50% of commercial coffee becomes specialty coffee.

Some coffees are restricted to specific conditions, as shown in the following table. In addition, farmers must carefully monitor the crops for leaf diseases, especially coffee leaf rust.

Robusta is a lowland species that thrives well under hot, humid conditions. It can be grown up to 900 m above sea level and is capable of wider adaptability than Arabica. Generally 4.5 – 5 kg of coffee cherries produces 1 kg of commercial coffee beans. This species is used extensively as instant coffee.

[Chart-1.3] Comparative table of Arabica and Robusta

	Arabica	Robusta
Average Temperature	18 – 24 Celsius Degree	18 – 36 Celsius Degree
Elevation	900 m – 1800 m	0 m – 900 m
Annual rainfall	1500 mm – 2750 mm	2200 mm -3000 mm
Crop / Fruit	1 kg / 5 – 6 kg	1 kg / 4.5 – 5 kg



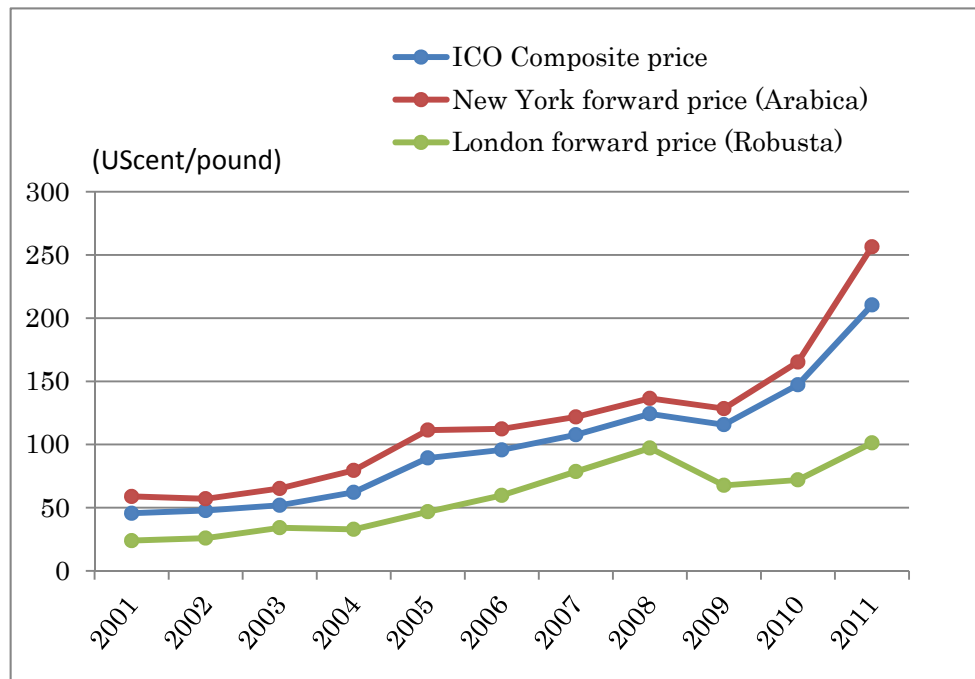
1.4 Current international market trend

1.4.1 Price fluctuations

The price fluctuations by the International Coffee Organization (ICO) statistics, from 2001 to 2011 are shown in the following graph [Chart1.4.1]. ICO composite price and Arabica forward price showed the same positive trends, they increased from 50 cents to

over 200 cents in the 10-year period. Although Robusta's forward price rose from 20 cents to 100 cents until 2008, the recent trend is different from that of Arabica. Over the 3 years, Arabica prices increased drastically; however, it is not certain whether this positive trend would continue.

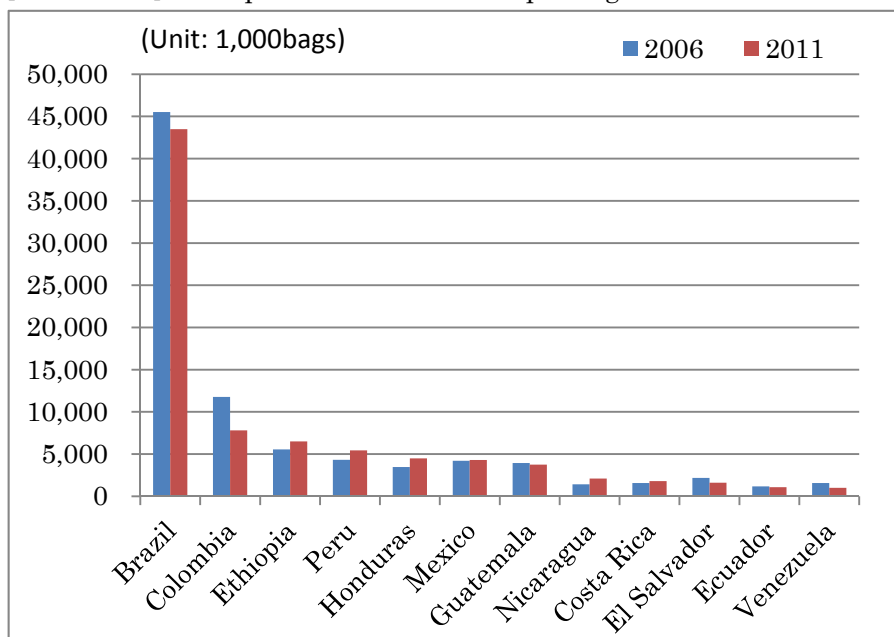
[Chart 1.4.1] Price fluctuation of coffee



1.4.2 Total production of main exporting countries

Apparently, Brazil is the largest exporter and produced over 45 million bags of coffee in 2006. Colombia is the second largest coffee producer, with approximately 12 million bags in 2006, but this decreased to approximately 8,000 bags in 2011. Africa and South America are the principal exporters of Arabica beans.

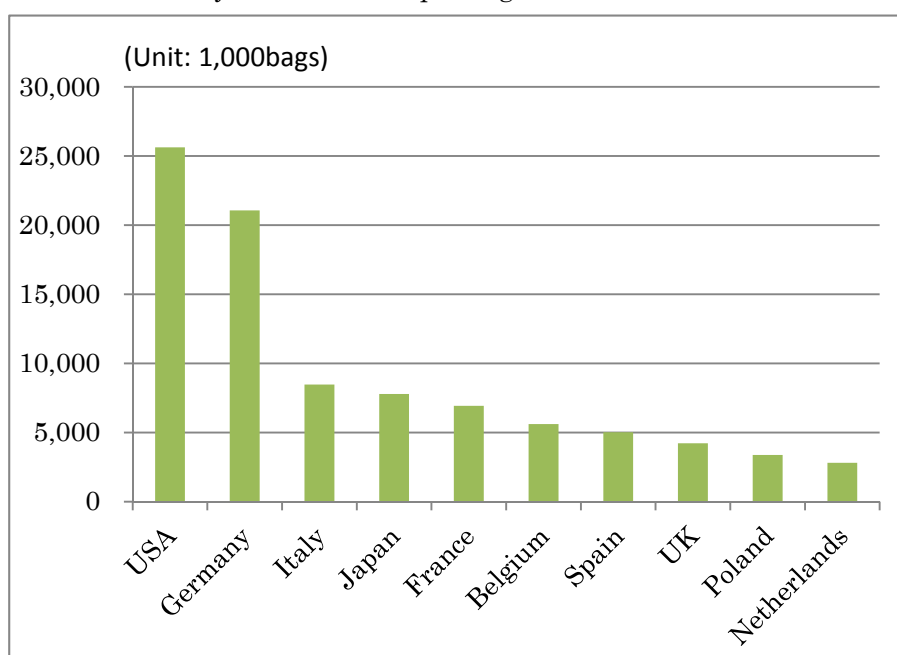
[Chart1.4.2] Total production of main exporting countries



1.4.3 Major countries importing all forms of coffee

According to the following bar-chart, the largest importers of all forms of coffee were USA and Germany. Moreover, most principal importers were from European nations. However, Japan ranked fourth as a coffee importer.

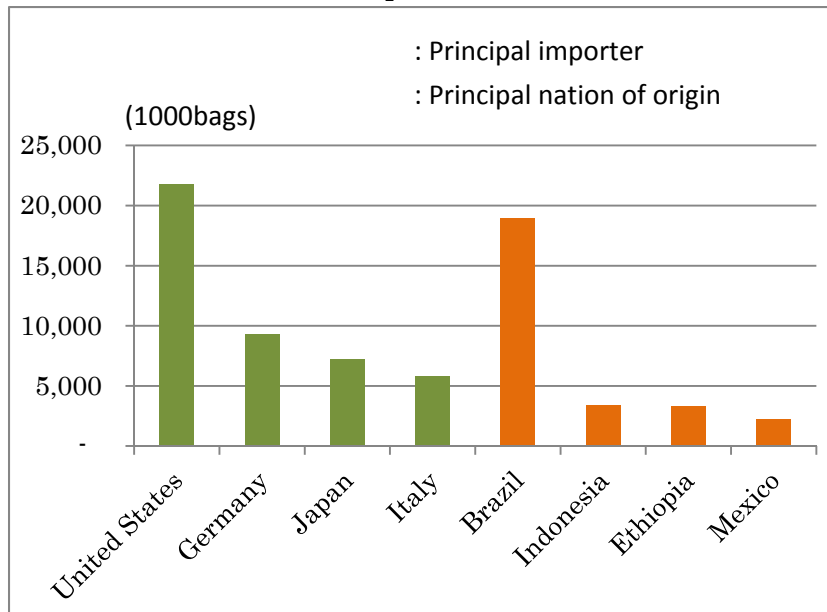
[Chart1.4.3] Major countries importing coffee



1.4.4 Consumption

The graph [Chart1.4.4] shows total consumption of coffee in each country, in 2012. Among the major importers, USA. was the largest, followed by Germany, Japan, and Italy. However, Brazil was the second largest importer in spite of being a main exporter. Overall, high-consumption nations did not appear to depend on continental issue.

[Chart1.4.4] Total consumption of coffee



2. Coffee in Sri Lanka

2.1 Historical & industrial background

Sri Lanka was once the largest exporter of coffee in the early years of this century. After coffee was introduced by the Arabs, it grew to represent 50,000 t of the entire export industry, however, coffee leaf rust, a leaf disease that was common among coffee producers during that period, spread to Sri Lankan coffee farms as well. Thereafter, the Sri Lankan farming industry shifted drastically from coffee to tea production.

After most of the original coffee trees were removed in favour of tea production because of the low selling price, Sri Lankan coffee was planted and harvested only on small farms.

[Chart2.1] Coffee history in Sri Lanka

1503	Coffee was introduced to Sri Lanka by Arabs
1658	Dutch started cultivation as a commercial product
1800	Central province cultivation is promoted by Britain, to 1,000 ha of its extent
	50,000 t of coffee were exported from Sri Lanka in this year
	Hemileia Vastriax Virus attacked in end of this year
Most coffee plantations were replaced to tea plantations	
1972	Department of Export Agriculture is established
1980	Most farmers started to remove their coffee trees from land because of reduction of selling price

2.2 Comparison of Sri Lanka with the world coffee situation

Most developed countries consuming coffee enjoy it as a luxury drink in their daily lives, whereas, in Sri Lanka, it has been traditionally regarded as a medicine for stomach aches.

In the table [Chart2.2.A] shows the coffee consumption between Scandinavia and Sri Lanka is compared. It is clear that only a small quantity of coffee was consumed in Sri Lanka.

Likewise, according to the table [Chart2.2.B], in the export market, Sri Lanka currently contributes very little to coffee, although it was once the biggest coffee exporter.

[Chart2.2.A]

Annual consumption of coffee			
	Scandinavia	Sri Lanka	Rate
	11 kg / 1 person	405 g / 1 person	3.68 %

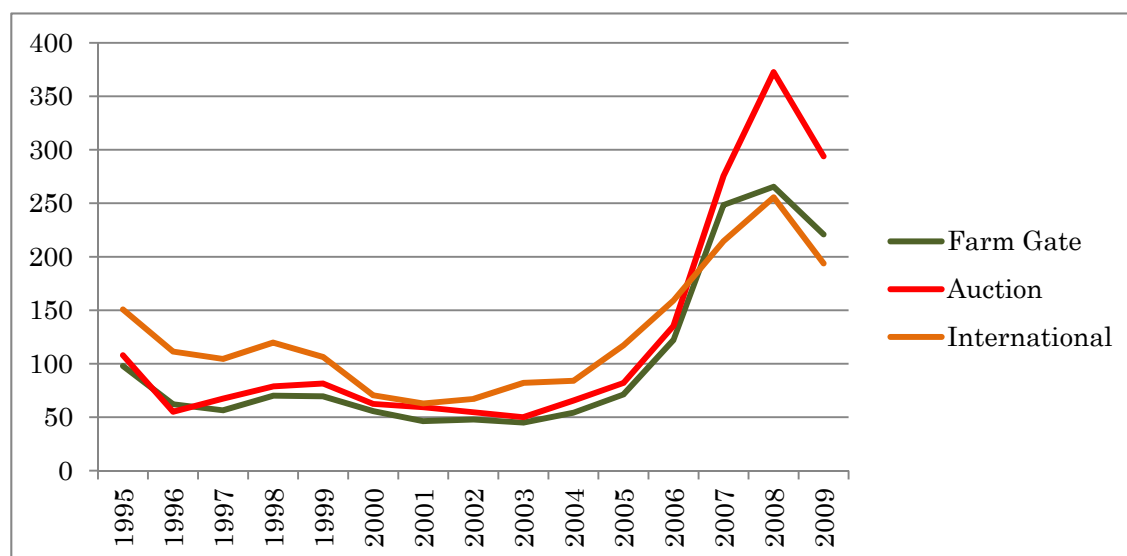
[Chart2.2.B]

Total export amount			
	World	Sri Lanka	Rate
	7.7 million tons	85.7 tons	0.001 %

2.3 Current local marketing situation

In the coffee industry, there are generally 3 approaches to marketing. The most standard marketing route is Farm Gate, where goods are sold by farmers to the local market through buyers. The second way is to sell at auction. Most company managers trade their products at auctions, which are held in Colombo, the largest city in the country. The third is the export market. As the market price of coffee fluctuated and became unstable each year, and the three market routes also followed that same trend. Between 1995 and 2004, the prices fluctuated within the low levels, but from 2004 to 2008, they eventually increased. In particular the auction prices increased from 50 Rs / kg to 350 Rs / kg during that period. The current coffee price is 200 - 300 Rs / kg.

[Chart2.3] Local price fluctuation



2.4 Price on each process stage

[Chart2.4] shows the result of a survey conducted from October to December 2012 on local prices of Arabica coffee in Sri Lanka from cherry to beverage. This figure shows that the Arabica coffee cherry usually trades as high as 50 Rs / kg. It is processed either in a factory or by a farmer into the parchment coffee bean. Some farmers sell their products at this stage (at 350 Rs / kg) and many producers sell the dried coffee beans, which are at the pre-stage of roasting, for export or to the local market. The price depends on the buyers, and is between 500 and 700 Rs / kg.

[Chart2.4] Price on each process stage

Product	Price	Note
Coffee cherry (Arabica)	50 Rs / kg	Rojasongama village
Coffee cherry (Others *1)	35 – 40 Rs / kg	Matale estate
Parchment coffee (Arabica)	350 Rs / kg	Hantana estate
Processed coffee bean (Arabica)	500 – 700 Rs / kg	Rojasongama village
Packed coffee powder (Arabica)	2300 Rs / kg	Hansa coffee (*2)
Coffee in café (Americano)		
Local beans (Arabica)	120 Rs / cup	Hansa coffee café (*2)
Import beans (Arabica)	320 Rs / cup	Beans are imported from Italy

*1 Robusta, Catimora and Liberica

*2 Hansa coffee has its factory in Nuwara Eliya and a café in Colombo. It serves and sells speciality coffee made in Sri Lanka.

2.5 New Café trend in Colombo

During this 10 years period, several café chains began to be established in Colombo. The new culture from developed countries easily attracted city-living wealthy people and the younger generation in particular. [Table2.5] presents the price list of coffee related beverages at 4 major coffee café chains in Colombo and 1 in Kandy.

[Table2.5] Price List of coffee beverages (Unit : Rs)

	Colombo #1	Colombo #2	Colombo #3	Colombo #4	Kandy #1
Café Latte	300	470	370	320	280
Café Mocha	300	450	400	470	
Americano	300	380	270	320	
Espresso	350	320	250	280	250
Cappuccino			350	360	280

2.6 Major export destination of coffee from Sri Lanka

Table [Chart2.6] shows the countries that import coffee beans from Sri Lanka during 2003 - 2009. The major countries of that trade coffee vary nearly every year, but it appears that European countries have been the main destinations.

[Chart2.6] Major export destination

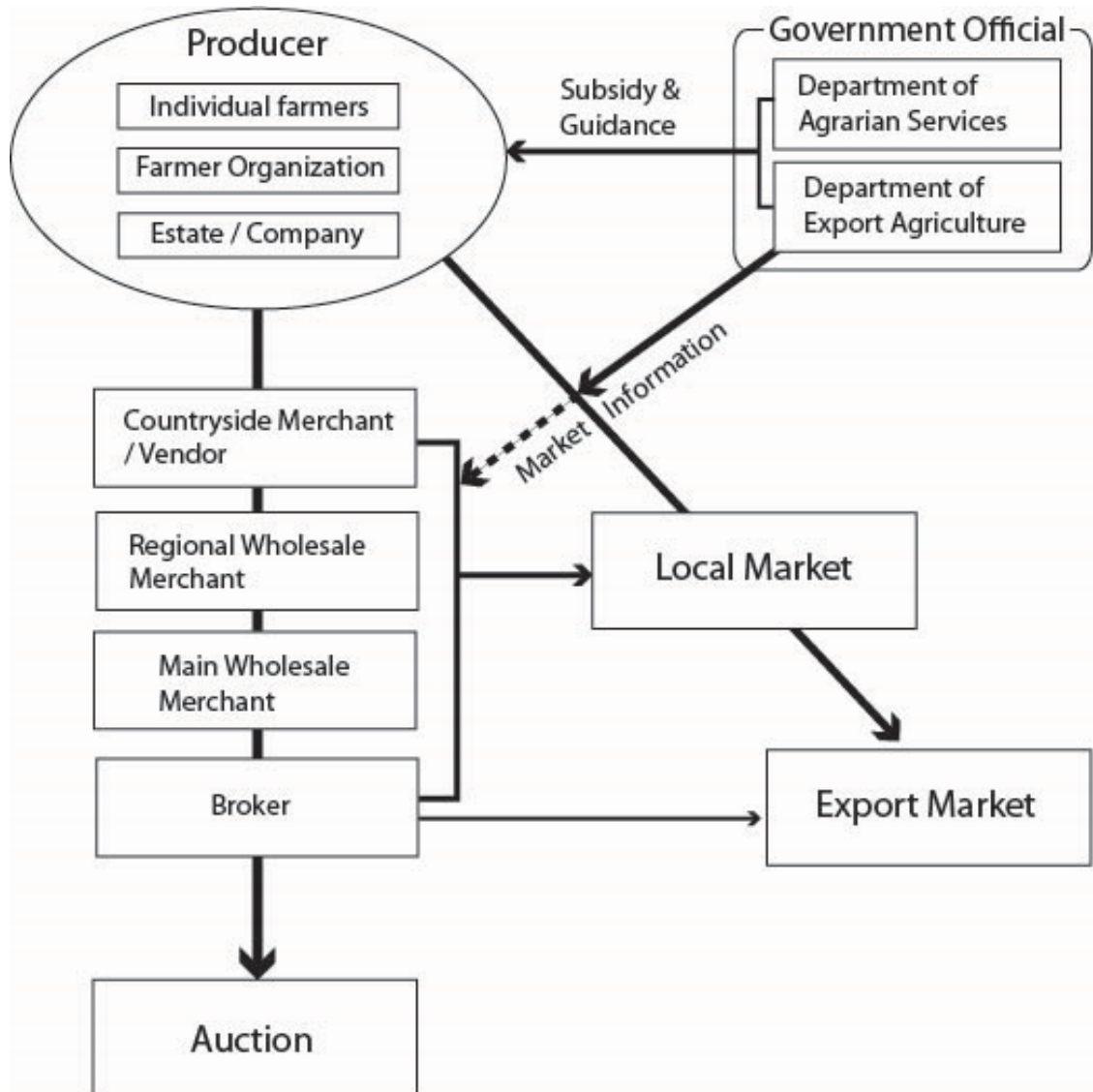
Country	2003 (Mt.)	2004 (Mt.)	2005 (Mt.)	2006 (Mt.)	2007 (Mt.)	2008 (Mt.)	2009* (Mt.)
Algeria	-	-	-	-	18	-	-
Belgium	-	36	-	-	-	-	-
Singapore	-	-	0.01	0.04	0.1	0.01	0.0
Germany fe.Rep.	54.4	36.3	90.7	0.07	1	0.49	26
India	-	-	-	42	-	12	-
Austria	0.6	-	-	-	-	-	-
Rumaniya	90	-	-	-	-	-	-
Labanon	-	-	0.01	0.02	-	0.04	0.0
U.K	1.9	1.2	0.6	1	4.4	0.76	0.3
U.S.A	23.8	12	0.03	1.6	0.6	0.39	0.7
Italy	-	-	-	18.08	0.4	-	0.1
Netherlands	-	-	0.08	0.04	-	0.07	0.2
Portugal	-	-	-	-	26.0	12.5	0.0
Australia	-	0.3	0.5	0.5	1.6	1.46	2.2
France	-	2.9	0.9	0.5	1.2	52.72	27.2
Switzerland	0.7	0.4	0.4	0.23	0.7	0.83	0.6
Other Countries	42.5	4.5	36.27	40.99	6.8	4.43	2.8
Total	213.9	93.6	129.5	105.07	60.8	85.7	60.1

2.7 Industrial situation / interrelationship

The interrelationship of coffee business is showed as [Chart2.7]. Generally, producers sell their products to market or auction through several buyers. Some farmers and estate companies are able to sell directly.

Governmental support is provided by 2 departments. The Department of Agrarian Services has their village offices in every grass-root level area. The officer can give village producers agricultural knowledge and subsidy directly. On the other hand, The Department of Export Agriculture (DEA) arranges their officers in each division, and their support is focused on export crops such as spices and tea. DEA collects market information of export crops and distributes it by means of newspaper or by officers.

[Chart2.7] Interrelationship



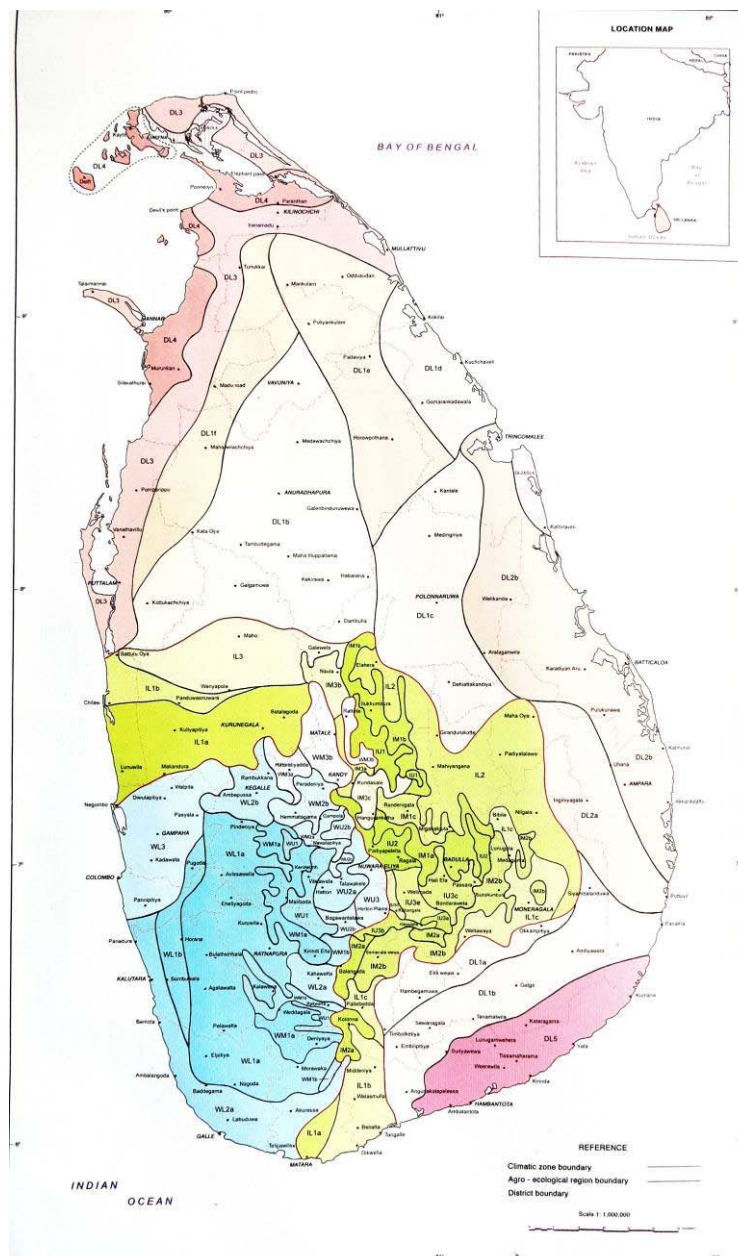
3. Investigation Data

3.1 Sri Lanka agro ecological map

Sri Lanka, which is generally classified as having a tropical monsoon climate, has diverse ecological conditions. There are roughly 3 types of zones: wet, dry, and intermediate. [Fig3.1] shows each distribution, as blue, red, and green respectively.

In the wet zone, tea, rubber, paddy and other export agricultural crops such as spices are harvested. The dry zone is suitable for upland crops, such as sugar cane, paddy, and coconut. In the intermediate zone, the main crop depends on the elevation or surroundings, but generally, vegetables, tea and export agricultural crops including coffee are grown there.

[Fig3.1]



3.2 Sri Lanka elevation map

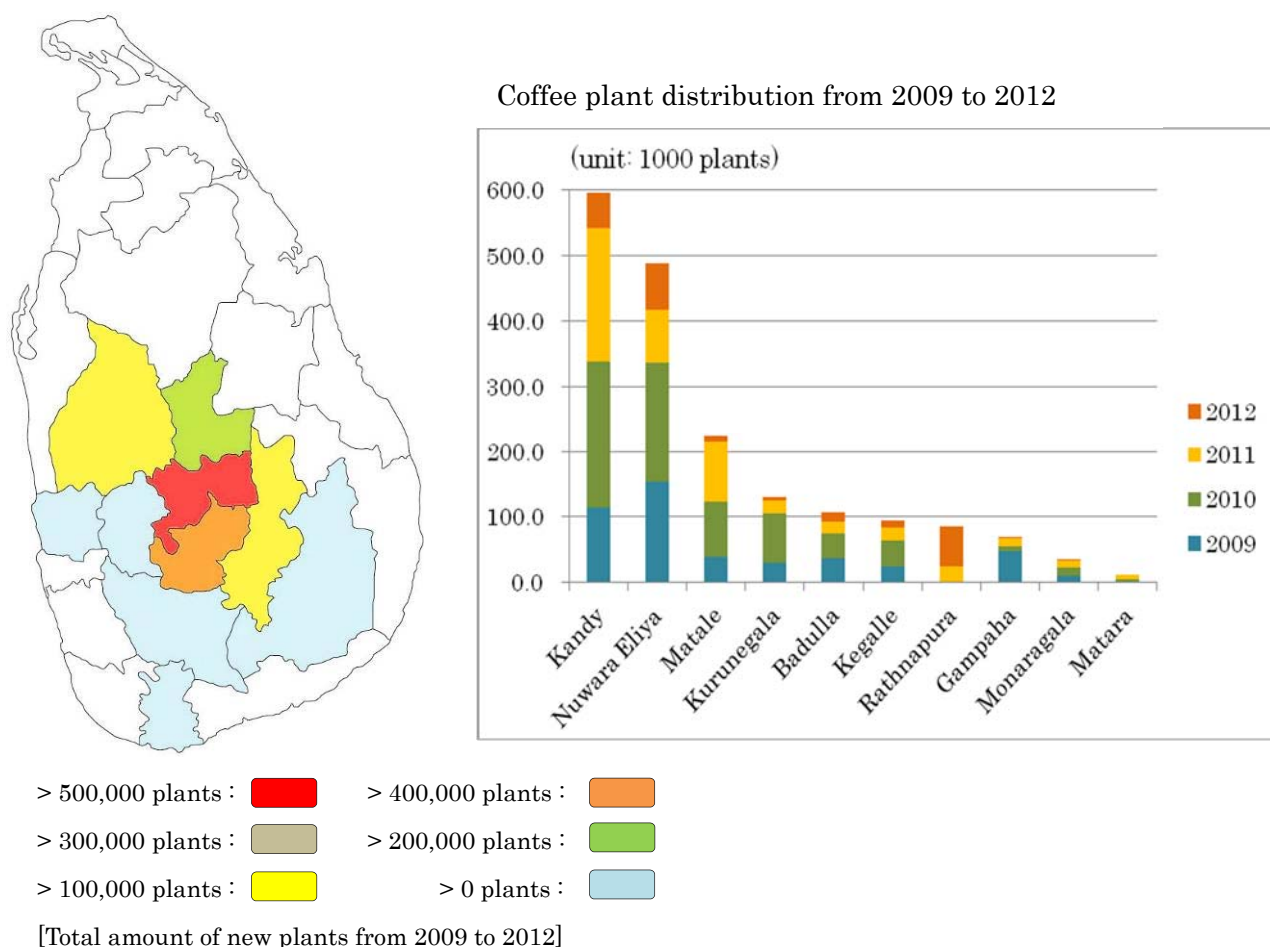


3.3 Coffee plant distribution

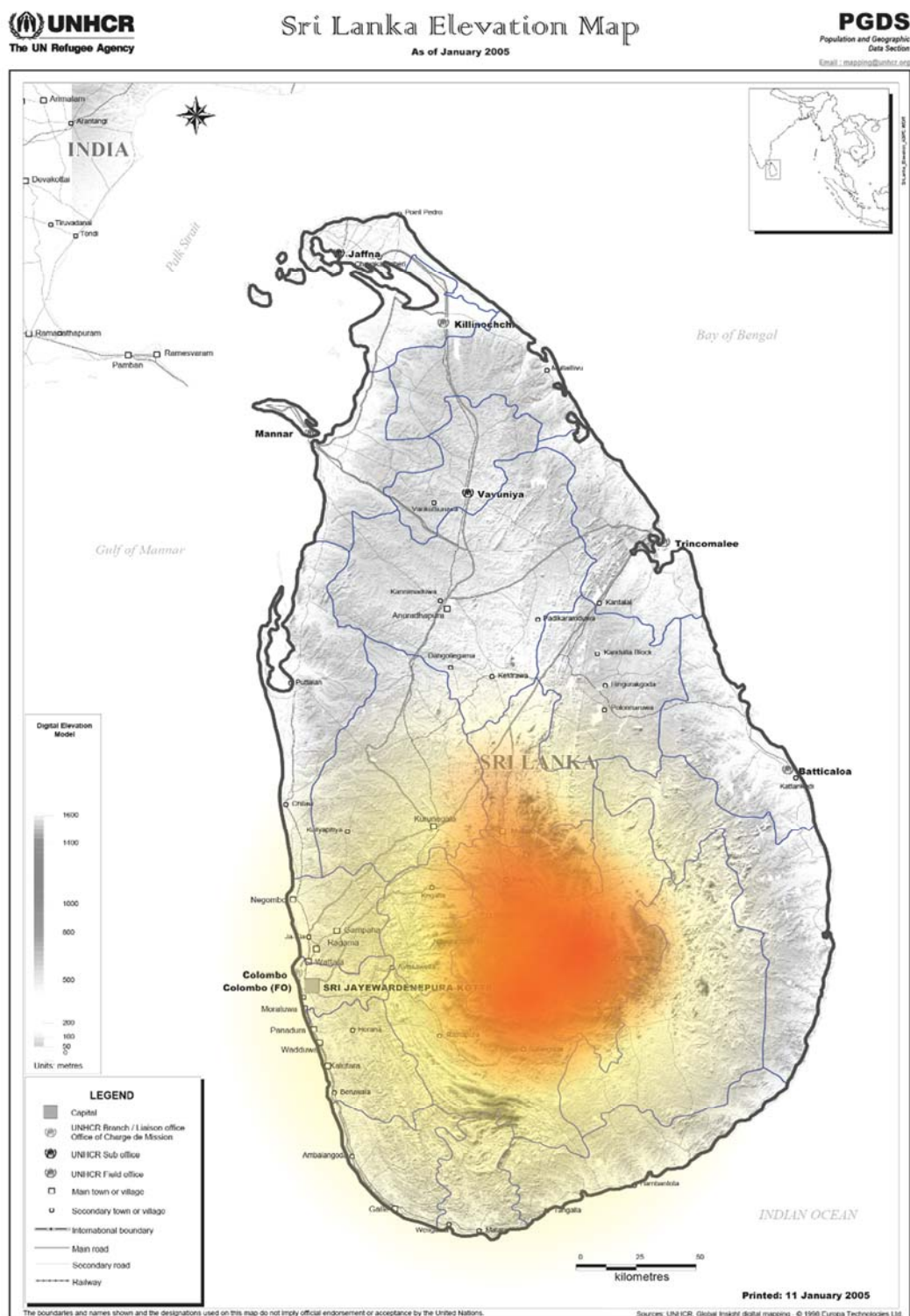
The Department of Export Agriculture, which is authorised by the Sri Lankan government, distributed coffee plants to several districts under its new crop-planting project. From 2009 to 2012, 596.3 ha of new coffee trees were planted. In general, a coffee plant should be planted in an area of 1.8 m x 1.8 m=3.24 m², therefore, the estimated number of the newly planted coffee in 596.3 ha would equal 1,840,000 plants after 4 years. However, generally says only 10 percent of all coffee trees can survive and bear fruit.

According to the data, new plants were distributed to mainly the district of Kandy and Nuwara Eliya, which have the most suitable conditions for harvesting coffee. Between 2010 and 2011, more than 350 ha of coffee were planted, but 2012, only 70 ha were planted in the entire province. Although these data do not indicate the species were planted (Arabica or Robusta), it is assumed that coffee distributed to Kandy and Nuwara Eliya was mainly Arabica.

[Chart3.3] Coffee plant distribution



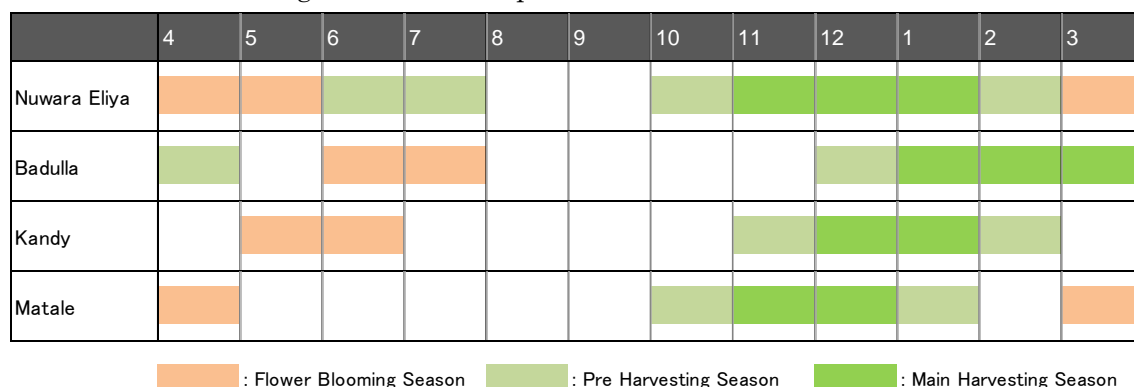
3.4 Coffee distribution map



3.5 Survey result

For the survey, 5 places in 4 districts were designated as the project sites: Kandy, Matale, Nuwara Eliya, and Badulla. Generally, the Arabica coffee should be grown at high elevation (300 feet) and dry zone. They have various, different features of condition, such as harvesting season, climate, soil condition, elevation, surroundings, and organization.

[Chart3.5] Harvesting season on the spot



.Rawanagoda (Nuwara Eliya)



.Rojasongama (Nuwara Eliya)



.Hantana (Kandy)



.Haptale (Badulla)




.Matale (Matale)




.Coffee Nursery (Badulla)


3.5.1. Rawanagoda

Rawanagoda Village / Kotumale / Nuwara Eliya district			
Note	Rawanagoda village is located in Kotumale division, close proximity to the Kotumale dam. It is one of the most suitable region to produce spices in this country. JICA grass-root support project for coffee farmers was implemented from 2006 to 2008. A coffee factory with dry machine was established, and coffee farmers' group named 'Dehemi association' was organized at that time		
Governmental support			
	From DEA	Planting materials, Technical advice, Subsidy, Special project for establishing a coffee processing center.	
	From Agrarian Service	Basic advise, coordinating service	
Geographical information			
	Major Soil Groups	Red yellow podzolic soils	
	Climatic Zone	Up country wet zone	
	Elevation	800 m - 1000 m	
	Humidity	50 - 80 % (Sunny day)	
	Average Temperature	Approximately 24 - 27 Celsius degree	
	Annual Rainfall	2400 mm	
Coffee labor's condition			
	Labor type	Farmer's organization, company labors	
	Note	In this area, a farmer's organization of coffee collects coffee cherries. Processing and marketing are managed by a local agro business person.	
Production			
	Amount of this season	3 t (including 500 kg of export quality product)	
	Processing method	Natural washed method with drier	
Tree			
	Proportion of nursery tree	Approximately 50%	
	Note	Most trees are grown with many other varieties of crops. Most trees and lands are suited for organic products	


3.5.2.Rojasongama

Rojasongama Village / Kotumale / Nuwara Eliya district			
Note	Rojasongama is located in Kotumale division, Nuwara Eliya district, surrounded in mountain and forest. It has one of the best harvesting condition for export crops such as spices and tea. Many varieties of high growned crops are produced, some crops are sold as hi-quality and organic products. Some of international certified crops, for example organic and fair-trade are also produced well from this village.		
Governmental support			
	From DEA	Planting materials, Technical advice, Subsidy	
	From Agrarian Service	Basic advise, coordinating service	
Geographical information			
	Major Soil Groups	Red yellow podzolic soils	
	Climatic Zone	Up country wet zone	
	Elevation	800 m - 1000 m	
	Humidity	50 - 80 % (Sunny day)	
	Average Temperature	Approximately 24 - 27 Celsius degree	
	Annual Rainfall	2400 mm	
Coffee labor's condition			
	Labor type	Individual farmers, family labors	
	Note	There is a practical farmer leader who collecting coffee cherries from village small farmers. A major local coffee company from Nuwara Eliya also collects cherry.	
Production			
	Estimated amount of this season	5 t (including 2 t of export quality product)	
	Processing method	Natural washed method	
Tree			
	Proportion of nursery tree	Approximately 50 %	
	Note	Most trees are grown with many other varieties of crops. Most trees and lands are suited for organic products	


3.5.3.Hantana

Ingrugolla Estate / Hantana / Kandy district			
Note	Hantana is located in Kandy district, it takes 1h climbing from Kandy central town. There are vast tea estates and spice farms in this area. Production of all crops are managed by each estate company, and the Ingrugolla estate started to produce coffee recently under supervision of DEA in addition to their present varieties of crops. This estate sold their coffee as parchment beans in this season.		
Governmental support			
	From DEA	Planting materials, Supervision, Certify	
	From Agrarian Service	Basic support	
Geographical information			
	Major Soil Groups	Immature brown roam, Reddish brown latosolic & Low Humic gley soils	
	Climatic Zone	Mid country intermediate zone	
	Elevation	800 m - 1000 m	
	Humidity	50 - 80 % (Sunny day)	
	Average Temperature	Approximately 24 - 28 Celsius degree	
	Annual Rainfall	1400 mm	
Coffee labor's condition			
	Labor type	Private company	
	Note	1 manager and 6 labors (2 males and 4 females)	
Production			
	Estimated amount of this season	1 t (including 500 kg of export quality product)	
	Processing method	Natural washed method	
Tree			
	Proportion of nursery tree	100 %	
	Note	All trees were planted within 4 years by support of Department of Export Agriculture. Soil and harvesting condition are well-managed by an estate manager.	

3.5.4.Haputale

Punagara Estate /Haputale / Badulla district			
Note	Punagara Estate is located in Haputale, Badulla district. It is one of the highest place, approximately 1200 m above sea level, surrounded forests and estates. A dense fog appears in the rainy season because of high humidity and low temperature. Various export crops such as tea and spices are harvested by small farmers and estate companies in this area. This estate sells crops including coffee to market though the auction in Colombo.		
Governmental support			
	From DEA	Planting materials, Supervision, Certify	
	From Agrarian Service	Basic support	
Geographical information			
	Major Soil Groups	Red yellow podzolic & mountain regosol soils	
	Climatic Zone	Up country intermediate zone	
	Elevation	1200 m - 1500 m	
	Humidity	60 - 80 % (Sunny day)	
	Average Temperature	Approximately 18 - 25 Celsius degree	
	Annual Rainfall	1,700 mm	
Coffee labor's condition			
	Labor type	Private company	
	Note	The estate company manager manages all crops including coffee properly.	
Production of coffee			
	Estimated amount of this season	1 t	
	Processing method	Natural washed method	
Tree			
	Proportion of nursery tree	Approximately 100%	
	Note	All coffee plants are from their contracted nursery certificated and supervised by DEA	

3.5.5.Matale

Lipakelle plantations / Matale / Matale district			
Note	Lipakelle plantation is located in Matale district, Matale is relatively flat and lower country than Kandy. This estate is in the forest hill near the Matale town. Mixed home garden crops and some of export crops are produced by company or individually. This estate sells crops to mainly local market. When they collect coffee cherry all coffee varieties are mixed for local buyers.		
Governmental support			
	From DEA	Planting materials, Supervision, Certify	
	From Agrarian Service	Basic support	
Geographical information			
	Major Soil Groups	Reddish brown latosolic, immature brown loam & Low humic gley soils.	
	Climatic Zone	Up country intermediate zone	
	Elevation	500 m - 700 m	
	Humidity	50 - 60 % (Sunny day)	
	Average Temperature	Approximately 25 - 28 Celsius degree	
	Annual Rainfall	1,400 mm	
Coffee labor's condition			
	Labor type	Private company	
	Note	1 director and 6 labors (3 males and 3 females) One experienced labor manages tea and coffee trees properly.	
Production of coffee			
	Estimated amount of this season	1 t (No coffee was exported in this season)	
	Processing method	Natural washed method	
Tree			
	Proportion of nursery tree	Approximately 80%	
	Note	All major varieties (Arabica, Robusta, Catimore, Tree-coffee) of coffee trees are grown here.	

4. Basic processing method

The quality of the product is an important factor in exporting market. It is possible to obtain good-quality coffee by harvesting only mature red cherries and by using proper methods of processing and diseases control.

1. Harvesting



The coffee cherries should be harvested in repeated rounds, so that only ripe fruits are harvested.



Only red and yellow cherries should be harvested, however coffee cherries grow in a cluster. Some half-ripe, green cherries can be accidentally harvested.



Farmers must be diligent to harvest only mature cherries.

Harvesting becomes difficult under bright sunlight or heavy rain.

2. Removing immature cherries



Collected coffee cherries are put in a water tank, and immature cherries, which float on water, are removed.



Immature cherries usually give an inferior product; therefore they should be processed separately.

3. Removing the 'pericarp'



Only the seed called the coffee bean can be used for brewing coffee; therefore, removing the pericarp of the cherry is the first stage in processing.

It can usually be done by using a pulper machine, or traditionally, a millstone.



After removing the pericarp of the cherry, a coffee parchment bean with mucilage appears.

There are 2 methods for the next stage in the process: the dry and the wet methods. Among Sri Lankan coffee farmers generally, the wet method is adopted.

4. Fermentation process (Wet method)

Beans are covered with a mat or polythene and allowed to ferment. Arabica, fermentation takes approximately 24 - 48 h, depending on the temperature in the locality.

5. Washing process (Wet method)

The mucilage surrounding a parchment bean should be thoroughly removed by washing. Excess water is drained off and the beans are moved to the drying yard.

6. Drying process (natural sun drying or by using drier)



Beans are spread to a thickness of 2.5 cm on coir mats for 2 days to allow the uniform evaporation of water. In places having low temperatures, the mucilage may persist even after 72 h.



Usually evaporation accomplished by natural sun drying, but in some factories, a drying machine is used instead.



Some factories hand-sort the coffee beans in this stage. Only white, mature parchment beans are picked chosen; others are separated and used for low-quality products.



Processed parchment beans should be stored in non-humid, cool, shaded areas until moving on to the next process.

7. Removing 'parchment'



After parchment beans are dried, the parchment skins are threshed by machine, such as a rice mill.



Well-dried beans usually require threshing one or two times.



All skins are removed and only the coffee beans and silver skins are left. Well-dried parchment beans would be a good-looking product without the silver skin.



Skins are removed by shaking on a sieve.

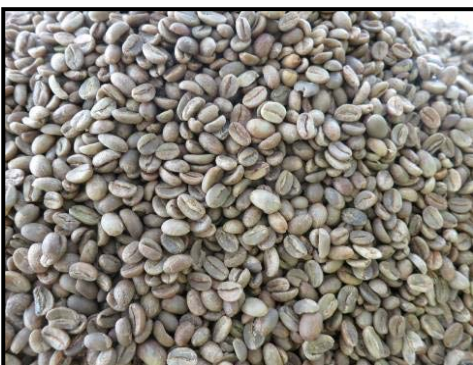
8. Grading & Sorting



The beans are then put through a mesh-sieve, and the small beans are screened out as second quality. High-quality coffee beans should be stored in dry place.



Processed beans are piled onto a flat table and are sorted using hand. Labourers carefully distinguish the quality beans from defective ones, such as beans that are round shape, broken, worm-eaten, or discoloured.



5. Results

In the season of 2012 – 2013, we produced and exported fresh coffee beans from the designated areas by using the method mentioned above. Further, at 2013 July, We opened up our new café in Sri Lanka which serves the domestic hi-quality coffee.

This chapter shows the practical results about the amount of production, the qualities and how did it evaluated by customers in our café actually.

5.1 Total production amount in this season

The production amount is as showed in [Table5.1]. Compared with last season, total amount tripled. It was because we started trading with new areas, especially Rojasongama which has skilled labours and vast work-space, some farmers became our main partner on this time. On the contrary, production amount of Rawanagoda decreased to half. This is because new company started to carry out coffee production for its first experience.

The total amount of this season was almost 3 t. Many coffee trees were planted within this decade so that it must have the potential of raising amount in early future.

[Table5.1] Production amount of export quality fresh beans

Place	Last season	This season
1.Rawanagoda	1,000kg	500kg
2.Rojasongama	-	2,000kg
3.Hantana	-	500kg
Total	1,000kg	3,000kg

5.2 Overview of processing

Basic processing method is as mentioned above, and in this season we advised especially about 2 points for improvement; Storage and hand sorting.

5.2.1 Storage fresh coffee beans

It was constant rain and humidity in this season in our production sites. Humidity can cause problems such as mould so that we had to remove products to other suitable storage places. Producers located the places in Matale and east of Kandy. Storage place should be non-humid, airy and cool. Coffee beans are stored in hemp bags.

5.2.2 Hand sorting

Hand sort is the most important process because most part of quality of fresh coffee beans is depend on how less defective beans are contained. On the Brazil scale, if there is less than 11 numbers of defective beans in 300 g of sample, the coffee classified to 2nd grade (practically 1st class). Following to the scale, I implemented sample check in hand sorting process. In case that the defectives are more than 20 numbers, I subjected producers to do 2nd hand sorting.

Check method;

1. Take 300 g of sample coffee beans from hemp bags. In this time 8 bags are checked.
2. Spread sample beans on the table with white sheet.
3. Check one by one and separate defectives from good beans such as mould beans, insect damage, strange shape and so on.
4. Count the number of defective beans in each bag.

[Table5.2] Result of Hand sort

	Average number of defective beans	Estimated weight (g)	Proportion (%)
After 1st sort	41	5.1	1.7
After 2nd sort	15	1.9	0.6

2013. Feb.15 at Puliyadda village (East side of Kandy)

As a result, although there were still many defective beans after first hand sort, after second sort, the number decreased less than half. It is nearly first class beans on the Brazil scale. Worker could concentrate well on sorting job in second sort process because that was done easier and faster than first sort.



Storage fresh coffee beans



Hand sorting

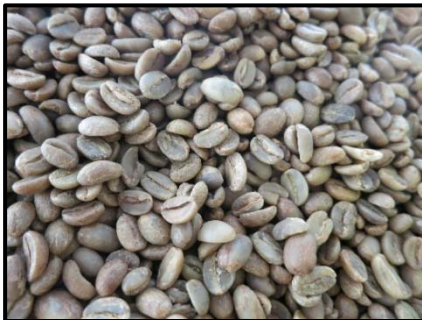


Sample check

5.3 Overview of other steps to brew coffee

After fresh beans are completely processed, before brewing coffee there are two more steps; Roasting and grinding. Generally taste of coffee comes and differs from 3 points, one is the quality of fresh beans, and others are roasting and how to brew.

Those steps are done in consuming countries right before brewing, because beans start to get inferior if once roasted and grinded. Since we opened new café to serve domestic coffee in Sri Lanka, we established roasting factory at Pujapitiya village (It's located in the north of Kandy town) and did trial.



: Fresh coffee beans



: Roasting



: Grinding to powder



: Brewing and serving

5.3.1 Result of roasting trial

We implemented roasting trial by using defective beans from Jun to July in 2013. In the trial, we aimed to confirm proper temperature and timing for the best roasting.

There are several roasting level and we tried to roast beans at “Full-city roast” which is match with most coffee beverages including espresso. As a result, we confirmed our roasting method as following.

[Table5.3.1] Temperature and estimate timing for “Full city roast”.

	Inside temperature (Celsius degree)	Reference time (Minutes)
Set fire and start machine	Room temp	0
Put coffee beans in	180	20
[Inside temperature falls down to around 90 Celsius degree]		
Get coffee beans out	192	34
Cease fire and cool machine	201	35

5.3.2 Overview of roasting process

Proper temperature and timing can be changed day by day, depends on surrounding condition. Therefore it often requires professional skill and experience. But for our café managed by local people, we had to make a roasting manual with fixed temperature as easier and visible way. By this fixed temperature, our local staff himself managed to roast coffee at almost stable level of “full city roast”.

Furthermore, the roasting machine should be used continuously otherwise it can be damaged by small insects, dust and humidity. Minimum quantity for using machine is 5 kg (maximum 10 kg), therefore at least 5 kg of beans should be consumed smoothly within 10 days – 2 weeks repeatedly.

5.3.3 Brewing process

Roasted beans should be stored for 3 – 5 days in cool place. After that beans are grinded to appropriate size, and brewed to coffee. Grind size and ways of brewing depend on which varieties of coffee you will serve. For example, espresso coffee is brewed by the machine from very small grinded coffee powder. If you use the French press pot or hand brewing, beans should be grinded to medium size.

5.4 Commercial overview

5.4.1 Local market

The buying prices from all villages were same in this season. Coffee cherries were Rs.50 / kg, low quality beans including defectives were Rs.350 / kg, and export quality fresh beans were Rs.675 / kg.

12 kg of cherries come to 2 kg of fresh beans, and it includes 1 kg of export quality beans. 12 kg of cherries cost Rs.600, then processors' earnings will be Rs.75 / kg, including transportation, labor cost of hand-sorting and so on.

Labour cost for hand sorting is generally Rs.300 / day. Speed of sorting is different each other, but skilled labour normally sort 5 kg of beans per day. If labours manage to sort 5 kg / day, 1 t of beans would be sorted 200 working days (if there are 5 labours in a factory, it comes 40 days.), in that case the sorting cost would be Rs.60,000 / t.

In conclusion processors' profit by 1 t would be Rs.150,000 including other expense like transportation, water and electricity fee. In addition, processors can sell rejected defective beans to local market, then 1 t of beans come to Rs.350,000.

5.4.2 Export market

By Jun of 2013, we have exported 2 t of coffee from Rojasongama, Rawanagoda and Hantana. All of the coffee has highly approved in Japanese market as well as other specialty coffees in the world. Especially the Hantana coffee has excellent quality so that the seller separated brands.

In this season selling price of the fresh coffee beans was Rs.700 / kg. Rs.675 is to producers, and Remaining Rs.25 is operating cost of the local export company.

5.4.3 Café as new local market

The café opened July 2013, in Kandy. Before opening, pre-opening was held on 4 days in Jun – July 2013. The price of standard coffee was Rs.300 per cup at that time.

In that pre-opening term, totally almost 100 customers came and enjoyed hi-quality Sri Lankan coffee. All customer seemed to be satisfied with its taste, some people commented it was excellent. Most customers paid Rs.50 – 150 as tips in addition to Rs.300. Therefore it assumed that proper price of a cup of coffee should be around Rs.400 including all cost such as VAT and service charge.

Other cafes in Colombo and Kandy serve coffee beverages in Rs.280 – Rs.470, therefore Rs.400 of the willingness to pay is understandable. Hansa café which serve their domestic coffee set price around Rs.200, it is much less than the proper price.

5.5 Contribution to village people

From village to customer, many people are related with coffee business, For instance, cherry collector in a forest, labour of hand sorting, manager of processing and staffs in a café. The number and profit of new employees in this season are shown below.

Village farmers can earn Rs.50 / kg from collecting coffee cherries in addition to other crops. All coffee farmers harvest not only coffee but also many other crops like tea and spices. Harvesting season of coffee is seasonal, generally 6 months in a year. So contribution to farmers would be in specified term.

A producer of coffee newly employed 6 hand sort labours. They are all house wives and use their free time to selecting beans. Rs.300 is paid per day.

Producers assumed to earn Rs.150,000 / t from hi-quality, Rs.350,000 / t from low-quality beans. 3 t of hi-quality beans from 3 villages are produced in this season. Then producers can earn totally Rs.450,000 per village by hi-quality beans.

Opening staffs of the café are 10 people except directors. They are all locals and live in village around Kandy. Monthly salary of the service staffs starts from Rs.15,000, and managers' salary are Rs.25,000 - Rs.30,000.

Overall, in the investigation term from Oct 2012 to July 2013, an estimate economic impact around hi-quality coffee is almost Rs.3 million.

6. Discussion

6.1 Analyzing each organization types

In the investigation areas, labour form can be divided to 3 types; individual farmer, farmers' organization and private company (Estate).

6.1.1 Individual farmer

This is the most general form of coffee production in Sri Lanka. Farmers sell product to local vendor by themselves. Village people themselves can be a vendor, buyer or producer. For example, in the Rojasongama case, there is a skilled farmer leader and he collects and processes coffee from cherry to bean, then he is a producer and a vendor as well.

The strong point of this type is that farmers know each other well and they can share information quickly. In addition, farmers have flexibility to their own idea.

The weak point is that individually a farmer does not have enough skill and fund. Buyer from out of the village can easily exploit them because farmers tend to need urgent income in a short term, rather than long term trade and stable income.

If they have a good leader who has marketing strategy and relationship in and out of the village, individual farmers can work like one well-organized association.

6.1.2 Farmer's organization

Rowanagoda has farmer's organization of coffee called "Dehemi association". It was established in 2006, the project term by JICA.

The strong points of organization form are, at first, they can do all procedure from harvesting to marketing by themselves. Secondary, it is possible to fund capital by collecting small money from farmers. In addition, governmental support is also easy to access them.

There is no middlemen therefore it is the best way to maximize benefit for villagers. International certification systems such as fair trade often require establishment of farmer's organization.

The weak point is that it is difficult to sustain organization. The gaps of motivation, diligence and skill among farmers often cause a collapse of group.

There should be a strong leader and diligent core members such as accountant, otherwise organization doesn't work effectively.

6.1.3 Private company (Estate)

Estate owned by company is separated area from outer village, so the environment is managed in any time by the labours and manager. In this season, coffee beans from

Hantana, Inrugolla Estate is highly approved by a Japanese buyer despite of their first time to export coffee.

Strong point of Estate form is its managing system. Estate is closed area so they can manage not only crops itself but surroundings. Labours' work is also supervised by a skilled manager. Consequently, hi-quality crops are harvested.

Further, estate companies have strong connection with every market. And vision of harvesting crops is long term because an estate has several products and capital.

Weak point is that estate is completely closed area, hence the goodness of their business is not affect to village and forest. And estate is a private company so it may be difficult to receive governmental or NGOs support.

6.2 Accomplishments and problems

Our accomplishments of this seasons are roughly two things, exported hi-quality coffee beans from Sri Lankan village and opened up café as new domestic market.

6.2.1 Making export quality coffee

The quality of exported beans was competitive, so it has to be keep at present level. Some methods managed by fixed number such as hand-sorting and roasting are favorably accepted by local people, it makes easy to understand how its quality exactly is, for local people who don't know the taste of specialty coffee.

However, the production amount is still very little for export. This fact indicates that coffee doesn't have much impact among farmers and producers yet.

Unless the demand is increased, farmers may start to increase harvesting tea or spices instead of coffee as history showed.

In addition the process should be more efficient, and making hi-quality should be more profitable to producers. Otherwise producers lose their incentives to make it.

At present, the biggest motivation for producers to make hi-quality coffee comes from their enterprising idea. Their main concern is continuous and profitable trade with faith, through long term.

6.2.2 Café as new domestic market

I strongly believe that the domestic café has good impact and many possibilities in and out of the country. Through pre-open days I surely confirmed that café in Kandy has strong demand especially to foreigners, and the café can work as a platform to intersect with all related people such as farmers, producers, middlemen and customers.

Foreigners coming to Kandy are many but there are few place to have coffee despite they like it. On the other hand, there is no coffee culture among farmers who harvest coffee, hence it is impossible for them to understand how worthy. The café in the center of Kandy town can meet both demands.

Whether the business go well or not, which can be tell after 2 years period. In case the business would succeed, it is required to establish social business model, how to contribute to villages and forest of coffee.

6.3 Improvement and action for following season

6.3.1 To increase the amount

Increasing production amount is the most important issue. According to the data from DEA, many nursery trees were planted within 3 years, it means there are potentially large amount of new coffee trees here. Hence next task will how to establish the system for collecting coffee intensively from villages. Targeting area will be the forest around Kandy and Nuwara Eliya district.

Collecting cherries will be mainly done through a farmer leader or a farmer's organization, and business relationship with new areas should be made before harvesting season starts. If farmers are individuals or farmers organization, instruction about managing trees and processing method should be provided beforehand.

If it is new area, the first step will be to find a skilled farmer who have responsible to the business. Agrarian Service officers can give any information about village farmers in the area and coordinate meetings.

6.3.2 To improve the process

If collecting amount increases, the process has to be more efficiently and faster. Especially hand sorting process takes long time, so some part of the process would rather be replaced to machines. Likewise other process stage may need to be automatic. However, any machines are much expensive thus they are not suitable for the capacity of Sri Lankan coffee farmers. Practically low cost supporting machines would be effective, and such kind of facilities may better to be concentrated to certain processing center to handle large amount. Processing center should be located in dry-zone area near Kandy and Nuwara Eliya. Kurunegala, Matale and Dumbulla would be suitable for that.

6.4 Limitations of support

Support from government or NGOs is essential to boost coffee production in villages, but there are some limitations.

At first, divisional officer of the DEA is transferred every few years, it makes harder to sustain long term project. We have to make villagers independent, strengthen their self-governance within the project term.

Furthermore, JICA or NGOs cannot support to private sector like estate companies, so it is hard for them to access estates and buyers in villages.

In any cases, the project which depends on big support from government or NGOs is not sustainable. Individual farmers or farmer's organization must be independent, surrounding people should not be short term supporters but long term business partners.

Secondary, compared with tea, coffee is simply less profitable and harder to process in Sri Lanka. It's because coffee is seasonal crop and there is no processing factories, and on the contrary tea is harvested all the year and there are processing factories everywhere. The varieties of crops and diversity of market must help farmer's business without exploitation, but it depends on farmers after all.

6.5 Importance of Sri Lankan coffee

Sri Lanka is located in the middle of coffee belt. Coffee in South Asian countries are generally regarded as second or third class, however, the environment is really suitable to harvest coffee. Historical background of coffee is also unique. In my opinion, totally Sri Lankan coffee has a big potential in both commercial and social aspects.

In the international market, nowadays Arabica price is increasing. In the local, café business has been launched and attracted wealthy and younger groups. Moreover, many crops are harvested traditionally in a way of organic which meets great demand in the recent international trend. Although specialty coffee in this country is not still approved well, there would be many advantages to produce hi-quality coffee not only for export but also for domestic market.

I hope the revival of coffee in the forest, and that contributes to local people income generation, independence and continuous relationship between local and global world.