

Para rubber (*Hevea brasiliensis*) Cultivation, Production and Trading of Para rubber Raw Materials in the Greater Mekong Sub-region (GMS)

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Abstract

The Greater Mekong Sub-region (GMS) consisted of Thailand, China, Vietnam, Laos, Myanmar and Cambodia. These countries have turned up to be the important Para rubber raw materials exporters. There has been some business transactions carried out by the Chinese traders from the mainland China, e.g., the policy on the expansion of a project viz. East West Economic Corridor (EWEC) where various Chinese traders have participated with many business engagements, particularly the investment concerning production of raw materials derive from Para rubber trees. The objective of this paper was to point out the newly established regional areas of Para rubber producers that have been relatively turned out to be the important producers of raw materials derive from Para rubber trees and some of them could become rivals in trading against the Thai traders in the near future and also some important viewpoints on cultivation of the crop when Thailand hasn't well equipped with analytical data on the improvement policy upon Para rubber production. If competitive price is happened due to rival countries then it could be the case when Thailand missed out her opportunity to share the market as a business partner in the region then Thailand may have lost her leading role as one of the biggest world exporters of Para rubber raw materials, and unable to formulate trade direction on prices of the products. It was found that within this decade Chinese traders have been involving overseas business on the establishment of Para rubber plantations, e.g., in Laos and Cambodia where they have rapidly increased land areas for Para rubber plantations. Nowadays, China is the biggest importer of Para rubber raw materials of the world due to the rapid expansion of automotive industries. In the past, Thailand, Indonesia and Malaysia used to be the world leading suppliers of Para rubber raw materials up to 6,913,200 tonnes or about 67.75% of the total production of the world during the years 2002-2008, which was lesser than a decade later, the countries in the GMS were able to produce Para rubber raw materials up to 5,844,000 tonnes or about 57.27 % of the world production, particularly Vietnam where exportation increased most rapidly when compared with other exporters. In 2005 Vietnam ranked the fourth in exporting Para rubber raw materials to China. Some important advices in cultivating the crop are recommended.

Keywords: Exportation, *Greater Mekong Sub-region* (GMS), Para rubber raw materials, cultivation, investment.

1. Introduction

Within the past decades, one could have observed that there have been some newspapers headlines concerning farmers demonstrating movements in Bangkok on the low market price indices of crops such as maize (*Zea mays* L.), cassava (*Manihot esculenta*), para rubber (*Hevea brasiliensis*) and other crops. The collective movements of farmers aim to ask for help from the Thai government and obviously the government had chosen to solve out the problems by a short term intervening such as provided price insurance for many crop yields or otherwise buying the crop yields by its own guaranteed prices. More often the government seeks assistance from private sectors as joint ventures and consequently it turned out that there had been some incorporated corruptions. In the past decades, the Thai Government used to provide only a short-term assistance in order to avoid

political movements created by growers. These events had been happening from time to time without ending due to the fact that many previous governments failed to provide any long-term policy in solving out the problems, hence most annual agricultural crop yields being produced could face many obstacles on price indices, particularly the underrated prices of many crop yields. Raw Para rubber is one of the five crop yields being exported overseas apart from rice, cassava and others. In the past, the Thai government insured standard prices for any kilogram of raw pieces of Para rubber being exported by joining the *International Para rubber Organization* (INRO) about thirty years ago and later the Thai Government declined as a member due to the un-satisfactory benefit. As a result, the Thai Government later joined with other organizations such as the *Association of Natural Rubber Producing Countries* (ANRPC); the *International Rubber Research and Development Board* (IRRDB), the *International Rubber Study Group* (IRSG) and the *International Rubber Consortium Ltd* (IRCo). These international organizations deal most with Para rubber price stability (Rubber Research Institute, 2001). The Para rubber prices became relatively high commencing from the 2003 to 2005 due to the high demand in industrial development in China and also the collective power of Para rubber counties of exporters (Indonesia and Malaysia) being initiated by the Thai government. They were able to control the dropping down of the selling prices up to 90 % (Thailand Committee on Para rubber Development and Improvement, 2002), thus the selling prices relatively increased within a range of 40-90 Baht kg⁻¹ of raw Para rubber and later the selling prices dropped below the range due to the crisis of world economy when the price of fuel oil dropped down along with the decline in automotive industries. These circumstances reflected the decline in Para rubber production in all countries of exporters then in the 2010 when world economy became livelier then Para rubber prices raised up again. The increases in prices of Para rubber raw materials were mainly due to the rapid expansion of automotive industries in China. Therefore, the countries those belong to the Greater Mekong Sub-region (GMS) or even China have been establishing Para rubber plantations for the utmost annual production in order to meet the rapid demand. Thus the investments on the establishment of Para rubber plantations have been carried out in Vietnam, Thailand, Indonesia, Malaysia and Laos within this decade hence they become the rivals on the exportation of Para rubber raw materials. Thus there is an urgent need for the Thai scientists to offer information upon current situation and viewpoints on how to cultivate the crop in order to increase the production with high outputs of Para rubber raw materials. It may be of significant value to describe some important prospects concerning this cash crop as to provide adequate information for further scientific investigations.

Statistical estimation on Para rubber raw materials and exporters

Thailand Office of Agricultural Economic estimated that Para rubber raw materials being produced in Thailand during the 2007-2020 should have increased annually up to 1.7 % where the production in 2007 reached a value of 3.24 million tonnes and then it should reach a figure of 4.16 million tonnes in 2020. This estimated amount of production should meet both world demand and supply being estimated by the world Para rubber of International Rubber Study Group (IRSG) where they estimated that the high demand for Para rubber raw materials should not be exceeded a figure of 12.853 million tonnes in 2020. However, only 8.813 million tonnes produced in 2005 thus within 15 years to come (2006-2020), the world production should be increased not exceeded 4.040 million tonnes. In 2020 the Para rubber raw materials being produced in Thailand should not be exceeded a figure of 4.149 million tones, whilst Indonesia at 3.213 million tonnes, Malaysia at 1.593 million tonnes and other countries together at 3.898 million tones. If any producer is able to produce more than its respective amount then the supply of Para rubber raw materials to the world market will be at a plentiful level and then prices should become relatively low (Saengkaew, 2008). Statistical figures recorded in 2009 on sources and production of Para rubber raw materials revealed that

Thailand Indonesia, Malaysia, Vietnam, Sri Lanka, Myanmar, India and other counties produced 1910.6, 1526.1, 486.1, 453.9, 39.9, 37.4, 6.6 and 94.4 thousand tonnes, respectively (Thai Para rubber Association, 2010).

Newly established GMS producers of Para rubber raw materials

Within this decade, the countries of the Greater Mekong Sub-region (GMS), i.e. Thailand, China, Vietnam, Myanmar, Lao and Cambodia have realized that Para rubber raw materials play its important role on national economy hence all of them started to grow the crop plants on their land areas and after a certain period of time they were able to harvest their crops. It is noticeable that these GMS countries have been harvesting their Para rubber raw materials for exportation. An evidence of the production during a period from 2004 to 2008 is shown in Table 1 (Research and Development Centre, Thai Para rubber Industry, 2009).

Table 1. The amounts of natural Para rubber raw materials of the GMS countries taken during 2004 to 2008, each figure is expressed in thousand tonnes of the products (Research and Development Centre, Thai Para rubber Industry, 2009).

Countries	Years				
	2004	2005	2006	2007	2008
Thailand	2,984	2,937	3,137	3,056	3,020
Vietnam	419	482	555	602	663
China	573	510	533	600	638
Myanmar	52	64	73	81	77
Cambodia	43	45	64	63	64
Total	4,071	4,038	4,362	4,402	4,462

It is shown that Thailand ranked the first followed by Vietnam, China, Myanmar and Cambodia. It is noticeable that Laos has no production of Para rubber raw materials. This is due to the fact that Laos, a member of the GMS countries is just started to grow Para rubber plantations in the recent years. It was disclosed by the *National Agriculture and Forestry Research Institute of Laos* (NAFRIL) that in 2006 Laos has started to grow Para rubber trees on land area of 11,778 ha and continues to expand land area for the crop most rapidly because the Laos government has given concession to investors from Vietnam, China, and Thailand aiming to extend land areas of 30,000 ha for the crop. An agreement upon the concession relating to the establishment of plantations has been established (Plate 1). One of the concessions has been taken by a public company from Thailand (Taihua Para rubber Co. Ltd.) in cooperating with the Newjibseng Holding Co. Limited of Laos together with the second largest company of Para rubber production of China. Furthermore, 40 % of the Para rubber planting areas of the country are located in the southern region and the concession was given to the Hoang Anh- Gia Lai Co. Ltd., of Vietnam. This Vietnamese company has been establishing Para rubber plantations in Laos and the company plans to construct a Para rubber factory in 2010 (Thongdeang, 2008). Para rubber plantations have been established in both Vietnam and Laos. Photographs of the plantations in Vietnam and Laos are shown in Plates 2 and 3, respectively.



Plate 1. A signing ceremony on Para rubber concession between government representative of Laos and Thaihou Co. Ltd., of Thailand held in Vientiane, Laos.



Plate 2. Three years old Para rubber trees in Quangbinh Province of Vietnam, taken in June 2010.



Plate 3. Plantations of three years old Para rubber trees along both sides of local road in Laos, the plantations have been established by the Vietnamese investors, taken in June 2010.

GMS countries of Para rubber raw materials exporters and amounts exported

It was found that the GMS countries of Para rubber raw materials include Thailand where it ranked the highest followed by Vietnam, Cambodia and Myanmar (Table 2). The majority amounts expressed in thousand tonnes of exported raw materials of each exported country and they were exported mainly to China. The total amounts ranged from 5,746 to 5,844 thousand tonnes for years 2004 and 2008, respectively.

Table 2. Annual amounts of Para rubber raw materials (each figure is expressed in thousand tonnes), those exported by countries of the GMS during a period from 2004 - 2008 (Research and Development Centre, Thai Para rubber Industry, 2009).

Countries	Years				
	2004	2005	2006	2007	2008
Thailand	2,637	2,632	2,772	2,704	2,561
Vietnam	480	538	680	682	619
Cambodia	41	41	60	53	58
Myanmar	41	48	56	62	55
Total	5,746	5,807	6,117	6,051	5,844

Importers of Para rubber raw materials

Although a large amount of Para rubber raw materials has been produced in China where the production ranks the third among the crop producers yet the amount produced in China is inadequate for their automotive industry, thus the Chinese traders have to expand Para rubber plantations both in and out of the country. It is of interest to describe previous history on

importation upon Para rubber raw materials of the countries around the globe. It was found that during a period from 2004 to 2008, China ranks the highest followed by USA, Japan, Korea, Germany, Brazil, France, Spain, Canada, Italy, Turkey, Taiwan, UK, Poland, India, Mexico, Czech Republic, South Africa, Belgium and Luxembourg together and others (Table 3).

Table 3. Showing amounts of Para rubber raw materials being imported by industrial countries around the globe during 2004 up to 2008*.

No.	Countries	Years				
		2004	2005	2006	2007	2008
1	China	1,205.9	1,329.2	1,505.6	1,547.0	1,616.7
2	America	1,156.2	1,169.7	1,011.6	1,028.5	1,052.3
3	Japan	800.7	848.6	885.9	850.0	849.2
4	Korea	352.3	370.5	364.7	378.0	359.1
5	German	270.2	182.2	295.5	330.2	242.4
6	Brazil	183.5	195.3	178.5	220.5	231.7
7	France	244.1	245.5	236.1	243.0	221.1
8	Span	194.1	192.6	194.8	203.1	184.3
9	Canada	151.8	160.1	149.7	143.7	142.5
10	Italy	158.5	158.6	161.5	159.7	142.2
11	Turkey	119.7	130.4	133.3	144.9	137.7
12	Taiwan	119.7	114.7	101.8	115.8	99.9
13	United Kingdom	99.5	96.4	80.0	103.0	86.4
14	Poland	84.1	83.9	83.1	86.9	84.5
15	India	62.7	46.3	50.0	113.1	81.3
16	Mexico	76.2	79.1	74.9	71.9	73.0
17	Czech Republic	57.5	63.6	68.9	69.6	71.1
18	Africa	67.0	65.6	62.3	65.2	62.1
19	Belgium-Luxembourg	90.2	72.3	95.7	67.4	53.1
20	others	756.2	852.9	824.3	756.1	1,304.6
	Total	6,124.0	6,440.0	6,347.0	6,497.0	7,095.2

* International Rubber Study Group, cited by Research and Development Centre, Thai Para rubber Industry (2009).

Expansion of Para rubber cultivation in the GMS

Within this decade, it is noticeable that some large upland areas along the Mekong River and many untended areas of many provinces in Northeast Thailand turned in to Para rubber plantations. Many of them have started to harvest their crop throughout the year. A similar situation is found in Cambodia and Laos. For Cambodia, Vietnamese companies, i.e. Tay Ninh Rubber Company (Tanirupo) started to establish Para rubber plantation in Tia Ninh province, whilst Phu Rieng Rubber Co. Ltd., own a Para rubber plantation at Binhphoung province in Vietnam and all of them operating business within group of the Vietnam Rubber Corporation, the biggest latex exporter of Vietnam. They invested and constructed manufacturer in Kampong Cham and Kratie City of Cambodia. They aim to establish Para rubber plantations in Cambodia up to 10,000 ha. These

Vietnamese companies have planned to establish Para rubber plantations both in Laos and Cambodia up to 500,000 ha in 2015 (Sripana, 2007). Whilst Myanmar is struggled hard to increase both Para rubber plantation and raw materials for exportation yet they are facing problems on product processing and quality control of the Para rubber raw materials, particularly the inadequate amount of outstanding varieties of the crop, hence the production has been relatively low. The Myanmar Times reported that the Ministry of Agriculture and Irrigation disclosed that Myanmar occupied 223,200 ha for Para rubber plantation and the country is expecting to increase plantation of the crop up to 600,000 ha starting from 2010 up to 2030 in order to produce Para rubber raw materials up to 227,000 tonnes annually. Nowadays, the production per unit land area is relatively low hence the exported amount is similar to those being exported by Cambodia (The Manager Daily Newspaper, 2007).

2. Discussion

Para rubber plantations have long been established in many countries, particularly the countries those located in the tropics such as Indonesia, Thailand, Malaysia, and many others. It is within this decade that some large amounts of Para rubber raw materials are urgently needed due to global industries, particularly the expansion of automotive industry in China. Thus within this decade many countries of the GMS have now started to establish Para rubber plantations in order to produce adequate amount of Para rubber raw materials for exportation. There has been a forecast that in the near future, i.e. in 2020, an approximate amount of 12.853 thousand tonnes of Para rubber raw materials are required for the expansion of automotive industry. In 2007, an amount of 3.24 thousand tonnes was produced hence there is a great opportunity for growers of Para rubber trees to increase their production against time (Research and Development Centre of Thai-Rubber Industry, 2009). Therefore, within this decade, some large amounts of investment from China and the countries of the GMS have been invested, i.e. the investments have been carried out in Laos, Vietnam, Cambodia and Thailand, particularly the areas along the Mekong River. It is noticeable that some previous Para rubber plantations have already started to collect Para rubber raw materials for exportation.

In 2008, the countries of the GMS produced Para rubber raw materials up to 5.844 thousand tonnes (57.27 % of the world market). This figure indicated that there has been a rapid increase in Para rubber raw materials in the GMS countries, yet the amount produced is relatively lower than what is needed since there are more than twenty countries around the globe demanded for the products. Thus it is a great opportunity for the countries of the GMS to increase a large number of Para rubber plantations. However, if within the near future, the GMS countries could be able to increase amounts of Para rubber raw materials more efficiently then there shall be no doubt that the exporting price could turn down due the massive increases. Therefore, the GMS countries should organize themselves more steadily in order to trade without competition on prices and otherwise they become rivals on trading of the products among themselves. Nevertheless, it was found that some growers of Para rubber crop are now facing with a problem on died back of trees due to pathogenic disease caused by mycelium of fungi (face to face personal communication with growers in Northeast Thailand). Suksri (1999) stated that a large number of crops grown within the areas of tropical rainforests could face problems concerning the spread out of bacterial and fungous diseases due to the fact that soils become deteriorated, i.e. the depletion of soil nutrients, particularly calcium, magnesium and micronutrients. Thus the soils turn to acid conditions hence favour the rapid growth of fungous and bacterial diseases. Therefore, it is recommended that growers of any kinds of crops must look after their soil conditions at a workable status, i.e. their soil pH values should be at a range between 6 to 6.5 (1:2.5 soil:water by volume). To do this, some large amount of dolomite must be added to the soils annually. Foliage sprays of micronutrients must be applied every three months. If the pH values are kept at the recommended range then there shall be no troubles due to fungous and bacterial diseases in all types of the crops even with the Para rubber

trees. Thus it is highly recommended to look after soil pH values at the recommended range. It is important that soil test at roots zones must be determined once or twice a month since the depletion of soil calcium and magnesium could be extremely rapid due to the high uptake carried out by roots. It is a safeguard to add more dolomite to roots zones steadily. High frequency in measuring soil pH around roots zone could avoid the attack of any bacterial and fungous diseases.

Furthermore, fertilizer application, particularly complete chemical fertilizers (15-15-15 NPK) must be carried out at a high frequency if manpower input is adequately available in order to avoid the losses of soil nutrients through water runoff, seepage and percolation. Compost and organic manure (cattle manure) applications are required annually at a large quantity. It could be of a high advantage to grow some legume crops within the Para rubber plantations in order to prevent soil erosion and the losses of soil nutrients through water runoff. In addition, the growth of legume crops may increase soil fertility due to roots nodules being established by nitrogen fixing bacteria and the biological yields of stems and leaves of the crop could add up more organic matters to the soil. One of the best legume crops is known as *Calopogonium caeruleum* (cf. Faculty of Agriculture, Khon Kaen University, Thailand). This legume crop is widely accepted by Para rubber plantation in the south. The crop can produce seeds in the dry season in Northeast but may not be able to produce seeds when grow in the southern region of Thailand. To protect soil surface for better soil fertility and growth of microorganisms, legume crop must be grown in all plantations of Para rubber trees.

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