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PRODUCTION, USE AND TRADE OF GAHARU IN PENINSULAR MALAYSIA

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Abstract

Gaharu, known as agarwood, aloeswood, eaglewood, oudh (Arabic), chen-xiang (Chinese) and jinkoh (Japanese), is the resin-impregnated deposits formed in some trees of the family Thymelaeaceae. The fragrant gaharu products are used by Muslims, Christians, Buddhists and Hindus. They are highly demanded in international market. The best grade of gaharu wood is sold as high as RM16,000 in Kuala Lumpur in October 2007.

On the production side, there are about 4,100 gaharu harvesters in Peninsular Malaysia in 2007. Local harvesters, comprising Orang Asli, Malay and Thai descendants, practise responsible harvesting. However, since 1980s, with the encroachment of foreign harvesters (especially the Thai), the resources are depleting in our natural forests.

Gaharu wood produced is sold to local traders. These local traders then sell the high grade gaharu to other middlemen or export them to Singapore and Middle East. The low grade wood is processed into oil in Kelantan and Terengganu before it is marketed. In some cases, the Arab traders come personally to purchase the wood and oil directly from the local middlemen.

There is practically little use of gaharu by the Malaysian population. Processed oil of 12-ml is packed in small bottle and sold at about RM300, which is regarded expensive by many Malaysians. The use of gaharu products lies in the international market.

While production of gaharu provides income to local harvesters and traders, it may not be a long term source of income as resources are depleting. There is international demand for gaharu products. It is recommended that the planting of gaharu-producing trees and the processing of gaharu products be encouraged and supported by government research and development. The industry is a potential income-generating activity for the country.

Keywords: Gaharu harvesting, trade, Peninsular Malaysia

INTRODUCTION

Certain plant species from the natural forests contain essential products and oils that are used for domestic and industrial purposes. One of these essential products popularly demanded by the international market is gaharu, also known as agarwood, aloeswood, eaglewood, oudh (Arabic), chen-xiang (Chinese) and jinkoh (Japanese). Basically, gaharu is the resin-impregnated deposits formed in some trees of the family Thymelaeaceae. Not all wood is impregnated with the resin. It is generally known that the formation of gaharu or the fragrant oleoresins that permeate the heartwood is produced as a response to wounding and fungal infection. When the resin-impregnated wood is burned, it releases an aroma, which helps to relax the mind and calm emotions. Hence, gaharu is used in the production of unique incense, perfume, skin care products, traditional medicine and religious rituals in Islamic, Christian, Buddhist and Hindu society, particularly in Asia. The Arab Muslims, for instance, use the gaharu oil to enhance the ambience of wedding ceremonies or banquets (Crompton 2005).

The main attraction for gaharu harvesting is its high prices. Grade "A" gaharu fetched about RM1,000 per kilogramme in 1985 and this has increased to RM10,000 per kilogramme in 2007 at the local level. However, the same Grade A gaharu fetches as high as RM16,000 in metropolitan Kuala Lumpur and RM25,000 in Dubai in 2007. When gaharu chips are processed into oil, the gaharu oil was sold at USD30,000 per kg (*Nanyang Siang Pau* 15 August 2005). The reason for the general price increase of various grades of gaharu is the increasing international demand on the one hand and decreasing gaharu supply on the other.

The declining resources is related to the fact that gaharu harvested from the trees of the family Thymelaeaceae is not certain. As a result, in some cases trees are chopped to find if they contain gaharu. Such practice threatens the survival of tree species producing gaharu. Consequently, as a means to ensure species survival and to regulate international trade of gaharu, in 2004 all 25 species of *Aquilaria* and 7 species of *Gyrinops* were listed in Appendix II of the Convention on International trade in Endangered Species of Wild Fauna and Flora (CITES). This listing means that all CITES member countries importing and exporting (including re-exporting) of gaharu are required to issue CITES documents for the shipments concerned. The export permits would only be issued once the exporting government has confirmed that the gaharu to be exported was harvested legally and in a manner not detrimental to the survival of the species.

GAHARU-PRODUCING SPECIES

Historical record showed that gaharu was harvested and traded in Peninsular Malaysia before 684 CE (Nik Hassan Shuhaimi 1998). The harvesting of tree species for gaharu persists until today. Tree species containing gaharu are found in the natural forests. Species in the family Thymelaeaceae in Malaysia reported to produce gaharu are shown in Table 1.

Table 1: Gaharu producing species in the family Thymelaeaceae

Genus	Species	Local name	Distribution
Aetoxylon	*A. sympetalum*		Sarawak
Aquilaria	*A. malaccensis*	Karas, kekaras chandan, engkaras	Peninsular Malaysia, Sabah & Sarawak
	A. microcarpa	Engkaras	Sabah & Sarawak
	A. hirta	Chandan buluh	Peninsular Malaysia
	A. rostrata	-	Peninsular Malaysia
	A. beccariana	Gaharu, tanduk	Peninsular Malaysia, Sabah & Sarawak
Gonystylus	*G. bancanus*	Ramin, bidaru, lunak Melitan, melawis	Peninsular Malaysia, Sabah & Sarawak
	G. macrophyllus	Gaharu melintan	Peninsular Malaysia, Sabah & Sarawak
Enkleia	*E. malaccensis*	-	Peninsular Malaysia, Sabah & Sarawak
Wikstroemia	*W. polyantha*	Chandan pelanduk	Peninsular Malaysia, Sabah & Sarawak
	W. tenuiramis	-	Sabah & Sarawak

Source: Chang *et al.* 2002

THE PRODUCTION

Harvesting Areas

Even though there is a long history of harvesting gaharu in Malaysia, its use and trading has been limited. It was only until the 1980s, when there was an increase in international demand for gaharu that more harvesting activities took place in various parts of the country. Currently, the five states known to produce gaharu are Kedah, Perak, Kelantan, Terengganu and Pahang (Table 2).

Table 2: Main gaharu producing areas and number of harvesters in Peninsular Malaysia

State	Gaharu-producing areas	Ethnic involvement	Estimated number of harvesters (2000)	Estimated number of harvesters (June 2007)
Peninsular				
Kedah	Baling, Jernang	Orang Asli, Malays, Thai descendants	500	200
Perak	Belum, Temengor, Lasah	Orang Asli	2000	1500
Kelantan	Lojing, Gua Musang	Orang Asli	700	500
Terengganu	Ulu Dungun, Ulu Terengganu, Taman Negara	Malays, Orang Asli	150	100
Pahang	Within and fringes of Taman Negara, Kuala Lipis, Krau Wildlife Reserve, Jengka, Endau-Rompin State Park	Orang Asli, Malays	2,500	1,800
Malaysia			5,850	4,100

Field observation and communications with key informants.

The Harvesters

In Peninsular Malaysia, gaharu harvesters comprise the Orang Asli, Malays and Thai descendants (Table 2).

The number of gaharu harvesters fluctuates from time to time. During the durian and petai fruiting season, villagers may temporarily stop harvesting gaharu and focus on collecting durian and petai for sale. When the price of rubber is high, villagers also opt for rubber tapping rather than harvesting gaharu.

The number of gaharu harvesters is also affected by the availability of resources. Over the years, the karas trees available are reducing in numbers. Moreover, the encroachment of foreigners into Malaysian border searching for gaharu since 1980s (Thai) and in 2000s (Cambodians) has also resulted in lesser gaharu available for the locals.

In addition, with all 25 species of *Aquilaria* and 7 species of *Gyrinops* listed in CITES Appendix II,, the State Forestry Departments in Malaysia have taken steps to curb or control local harvesting and trading activities. In 2006, for example, gaharu kept by three middlemen in Hulu Perak was confiscated by the authorities. Villagers were advised not to harvest gaharu without permit issued by the Forestry Departments.

Following these developments, the number of gaharu harvesters declined from an estimated figure of 5,850 in 2000 to 4,100 in 2007 (Table 2). It is expected that the number will further decline in the future.

Harvesting Trips

The harvesting trip varies from place to place. Some villagers make daily trip in search for gaharu. In this case, the harvesters go into the forest by foot, by motorcycle, by boat

or rented car and then by foot to the targeted area at about 7 a.m. and comes home at about 6 p.m. In other cases, villagers spend more than a day (usually a week or two) in the forests carrying with them food supplied by the middlemen.

Gaharu harvesting is never done by an individual but in a group of two or more persons. The purpose is for members to take care of each other during the harvesting trips. Gaharu harvesting involves mainly the males.

Since local harvesters depend on gaharu as a source of cash income, they generally practise discriminate harvesting to ensure that sustainable income is generated. Under normal circumstances, the traditional harvesters of gaharu will not fell a tree unless they are certain of the presence of gaharu in the tree. It is common to find karas trees with slash marks but left alone.

The Yield

The gaharu yield shows two main characteristics. Firstly, there are different grades of gaharu harvested (Table 3). While in the 1980s and 1990s, high grades gaharu (grade A & B) were easily available, these grades are difficult to get these days. The better the grade, the higher is the price sold.

Secondly, the amount of gaharu harvested has also declined. In the 1990s, harvesters were almost certain that they would get some gaharu when going into the forest. By 2007, the gaharu yield is very uncertain. Those making daily trip may not obtain anything while others spending more days in the forests usually can expect some yield.

Table 3: Grades and prices of gaharu wood at local levels, 1985-2007

		Terengganu 1985	**Terengganu 1999-2000**	**Hulu Perak 2002-2007**	**Central Pahang August 2007**
Grade	Characteristics	Price (RM/kg)	Price (RM/kg)	Price (RM/kg)	Price (RM/kg)
A	Dark, dense, concentrated and heavy	1,000	3,200-4,000	3,000-7,000	10,000
B	Purple dark, less dense, small holes	250	1,800-2,500	1,500-4,000	5,000-7,000
C1	Yellow dark stripes	150	400-800	500-1,500	2,000
C2	Dark yellow	-	40-80	50-200	150
D	Gaharu remains	-	8-30	4-50	-

Simple Processing After Harvesting

Normally, after harvesting, the woods are processed by the harvesters and their family members. The white portion of the wood is removed to ensure that the wood is categorized as a better grade and hence higher prices. Simple tool such as knife and chisel are used in the processing.

USE OF GAHARU PRODUCTS

Gaharu products are produced in three main forms, namely woodchips, sawdust and oil. Good grade gaharu (i.e. A, B and C) are sold in the marketing chain with minimal processing.

The low grade gaharu (i.e. grade D) is used to process oil through distillation. The wood is ground finely, soaked in water, placed in boiler and further processed to get the oil. In this distillation process, the final product is the gaharu oil and the gaharu sawdust as a by-product.

In the past there was small scale harvesting and trading of gaharu. Traditionally, gaharu was used in various folk remedies for the treatment of weakness, stomach pains, chest pains, body pains, rheumatism, fever, women diseases and dropsy (Gimlett 1930; Burkill 1966). Malay elders related the use of gaharu to preserve the corpse in the early 20^{th} century.

Now, there is practically no domestic use of the gaharu products, either in the form of high grade woods, oil or saw dust. All these products are exported.

THE TRADE

The gaharu trade takes place at local level and follows the marketing channel as shown below, involving local trade and international trade.

The domestic Trade

Harvesters → local/non-local middlemen → export

At the local level, the trading of gaharu is done in the forest, in the village, at the jetty, and in the nearby town.

The amount of income received depends on the grades and quantity of gaharu harvested. This income level varies from month to month, depending on the amount of gaharu harvested, its grade and the price. By 2007, much of the gaharu harvested belongs to grade C and D. In some cases, the harvesters and the middlemen have established a good socio-economic relationship. The middleman provides advances such as food, drinks, tobacco and lighter to the local harvesters. In turn, the harvesters have to sell the gaharu to the same middleman.

Since the mid-1990s, the trading of gaharu has not been as lucrative as the past as indicated by the declining number of middleman in the state of Kelantan (Table 4).

Table 4: The number of gaharu middlemen in Kelantan

Year	2001	2002	2003	2004	2005	2006	2007
Number of middleman	30	30	28	26	24	22	20

Source: a main middleman in Kelantan.

How much is gaharu traded, in terms of quantity, grade and price, in a locality is difficult to ascertain. The following trading of gaharu by a middleman in one of the states in Peninsular Malaysia may provide some indication and the direction of gaharu trade. In general, the quantity of all grades gaharu traded has declined (Table 5).

Table 5: Quantity of gaharu trade by a middleman

Grade of gaharu wood	Quantity purchased from villagers	
	2001	2007
A	60 kg	24 kg
B	96 kg	36 kg
C	120 kg	84 kg
D	48,000 kg	24,000 kg

Source: Field research.

On the other hand, declining supply and increasing demand has resulted in a rise of gaharu price for all grades of gaharu (Table 6).

Table 6: Prices of gaharu offered by a middleman to harvesters (RM/kg)

Grade	2001	2002	2003	2004	2005	2006	2007
A	4,000	6,000	7,000	8,000	9,000	10,000	12,000
B	500	600	700	800	900	1,000	1,200
C	100	110	110	120	130	140	150
D	3	3	3	3	4	4	4

Source: Field research.

If we were to combine the data in Tables 4 & 5, we may estimate the monetary value of gaharu trade conducted by this middleman has declined slightly from RM444,000 (2001) to RM439,800 (2007). However, this does not mean that all middlemen have the same volume of trade.

This middleman claimed that his share of the market in the state amounted to 50%. It means that from one state in Peninsular Malaysia, the monetary value of gaharu woods purchased from the harvesters is estimated to be about RM1 million in 2007.

The International Trade

In terms of quantity, the main product exported is gaharu woodchips, followed by oil and sawdust. The export of gaharu products (Table 7) between 2002 and 2006 showed the following characteristics.

1. In terms of quantity of products exported, the major product exported is woodchips.
2. There is an increase in all gaharu products exported, i.e., wood chips and blocks from 124,884 kg to 254,003 kg (an increase of 1203%), sawdust from 19,800 kg to 30,985 kg (a rise of 57%).
3. The export of oil is a recent phenomenon, commencing 2005 where 11 litres were exported. However, by 2006, oil export has increased to 170 litres. This indicates

that rather than mere production of raw materials, local value-added processing is now taking place for export purposes.

Table 7: Export of gaharu products from Peninsular Malaysia and Sabah

	Product	2002	2003	2004	2005	2006
1.	Woodchips and blocks (kg)	124,842	337,670	194,541	239,184	254,003
2.	Sawdust (kg)	-	19,800	27,000	21,000	30,985
3.	Oil (litre)	-	-	-	11	170

Source: Azmi & Zahari (2007) and personal communication with Mr Azmi Yahya of Malaysian Timber Industry Board (MTIB) on 1 October 2007.

Where are the destinations of gaharu product exports? Information from MTIB Azmi & Zahari (Table 8) showed that

Singapore is the major destination of gaharu chips and blocks exported. Of the total wood exported, it accounts for 92% in 2002 and 63% in 2006.

Gaharu sawdust is exported to four countries, namely Vietnam, Singapore, Taiwan and Thailand. The sawdust is used in the manufacturing of incenses for religious uses. In 2006, Vietnam was the biggest importer of gaharu sawdust from Malaysia, accounting for 24,885 kg or 80% of the gaharu sawdust exported.

In 2005, 11 litres of gaharu oil was exported to Saudi Arabia. By 2006, the amount increased to 181 litres. The export destinations are UAE 62%, Singapore 28%, Saudi Arabia 10%. France imported a small amount of oil (1 litre) in 2006 and thus accounted for less than 1% of total gaharu oil exported. Our field research showed that in 2007, processed oil of 12-ml is packed in small bottle and sold at about RM300 by a trader in Kelantan to another trader in Singapore.

Table 8: Export data on gaharu product (chips and block) by destination, 2002-2006

No.	**Destination**	**2002**	**2003**	**2004**	**2005**	**2006**	**Total**
1.	Singapore	114,942	333,720	165,320	167,497	160,777	942,255
2.	Taiwan	9,900			26,480	32,960	69,340
3.	UIE			19,019	16,007	29,876	64,902
4.	Vietnam			5,660	8,850	13,215	27,725
5.	Saudi Arabia			342	9,794	16,486	26,622
6.	India			4,200	9,707		13,907
7.	Thailand		3,750		392	632	4,774
8.	Pakistan				400		400
9.	Cambodia		200				200
10.	Kuwait					57	57
11.	Lao PDR				48		48
12.	Morocco				10		10
	Total	**124,842**	**337,670**	**194,541**	**239,184**	**254,003**	**1,150,241**

Source: Azmi & Zahari (2007)

Unlike gaharu chips and blocks, gaharu sawdust is exported to four countries, namely Vietnam, Singapore, Taiwan and Thailand. The sawdust is used in the manufacturing of incenses for religious uses. In 2006, Vietnam was the biggest importer of gaharu sawdust from Malaysia, accounting for 24,885 kg (Table 9) or 80% of the gaharu sawdust exported.

Table 9: Export data on gaharu dusts by destination, 2003-2006

No.	Destination	2003	2004	2005	2006
1.	Vietnam		22,000		24,885
2.	Singapore	15,000	5,000	21,000	
3.	Taiwan				6,100
4.	Thailand	4,800			
	Total	19,800	27,000	21,000	30,985

Source: Azmi & Zahari (2007)

CONCLUSION

Harvesting of gaharu was important to a minority of the Malaysian rural population both in terms of employment creation and income generation in the 1990s and early 2000s. Its importance has declined in the last few years. The resources are generally declining.

The gaharu products are not used locally. The outputs (chips, blocks, sawdust and oil processed) are for export markets. Even though the number of harvesters was observed to decline between 2000 and 2006, the exports of various gaharu products had increased.

Our field observations showed that gaharu harvesting does not ensure long term employment and income generation. It is difficult to find high grade gaharu these days. Much of the gaharu harvested belongs to grade C and D. This brings the issue of sustainability of gaharu-producing trees in the natural forests. There is a high international demand for gaharu products but in the meantime there is a decreasing supply of gaharu.

The trade figures showed Malaysia has great potential in terms of developing the gaharu industry to ensure income generation. The truth is whether resources in the natural forests are sustainable. If harvesters' and local traders' perception is true, then gaharu from the natural forest may not last long. Where can we find gaharu in the future? The answer appears to lie in planting gaharu-producing trees, both within the natural forests and on private land. If the planting of gaharu-producing trees succeeded, they could turn out to be income generators for the investors and traders. In the last two years, villagers have indicated keen interests to plant gaharu-producing trees. Support from the government in many ways, from planting, maintenance to inducing the formation of gaharu in the trees is important to the planters. Equally important are forestry research, development and promotion activities in the development of gaharu industry from planting to high-value processing to marketing of gaharu related products in Malaysia.

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