

Malaysia's 'new' plantations

D.J. Mead

In Malaysia, plantations are usually associated with rubber trees and oil palm. The story of the acquisition of rubber from Brazil, the development of the plantations and the research behind their success is exciting. It is unfortunate that the foresters know little of this or the silviculture, for in Malaysia 1.9 million ha of *Hevea brasiliensis* are currently being managed. More recently there has been a rapid development of oil palm plantations – again a specialised form of plantation. Today Malaysia has 1.4 million ha of oil palm (*Elaeis guineensis*). Both introduced species have had a big impact on Peninsular Malaysia's landscape, at the expense of the indigenous forests, but both are important contributors to the economy.

This article focusses on the 'new' plantations that the foresters, rather than the agronomists, have begun to establish in Malaysia. They are being planted to meet the shortage of timber forecast for early next century. Yong (1985) estimates that there will be a 4.25 million m³ annual sawlog deficit in Peninsular Malaysia by 2006. In Sabah and Sarawak the indigenous forests are being currently exploited at a high rate (see table 1). However, the production may be expected to decline, partly because of growing environmental concern, and the indigenous population's pressure. In Sabah there is a strong emphasis on developing plantations for wood production.

Fast-growing Hardwoods

The Malaysian foresters have recognised the need for fast-growing plantations to offset the coming wood deficit, and to reduce pressure on the natural forests.

In 1981 it was decided that 188,000 ha of forest plantations should be established by 1995 in Peninsular Malaysia (see Johari 1987). This programme, estimated to cost \$US 200 million, and financed through the Asian Development Bank, is known as the "Compensatory Forest Plantation Programme" – the forests are expected to "compensate" for the shortfall in timber supplies. To date 29,000 ha have been planted.

In Sabah, there are three different schemes. Sabah Softwoods Sdn Bhd.

(SSSB) is a commercial company, of which 60% of the shareholding is the Sabah Foundation, a State Government institution. It began planting cutover forest in 1975, and by 1985 had 25,815 ha planted. Currently another 22,000 ha is being added to this estate at the rate of 1000 ha per year (Tang, 1988).

In 1976 the Sabah Forestry Development Authority (SAFODA) was formed to afforest waste and marginal agricultural land. At the end of 1988, 17,500 ha had been planted, although 3900 ha were lost in fires, and 900 ha have since gone to other land uses (Tang, 1988). About 25% of the surviving area is contained in the New Zealand managed Bengkoka project.

The third agency planting in Sabah is the Sabah Forest Industries Sdn. Bhd., which is a wholly owned State Government company. Sabah Forest Industries owns a pulpmill, and they have planted about 4700 ha.

These 'new' plantations all employ

fast-growing tropical hardwood species, of which the most promising are *Acacia mangium* (63%), *Paraserianthes falcataria* (10%) and *Gmelina arborea* (9%). Eucalypts, largely *E. deglupta*, and *E. camaldulensis*, and *Pinus caribaea*, although widely planted, have not been very successful and are not being currently planted.

Acacia Mangium

Acacia mangium was introduced to Sabah from Northern Queensland in 1967, and to Peninsular Malaysia about 10 years ago. The introduction to Gum Gum (near Sandakan, Sabah) was from a single tree, and seed from these trees and from limited later introductions was used in many of the initial plantations. The average diameter of the Gum Gum trees in 1988 was 39cm with the largest tree being almost 57cm in diameter. Most current plantings use various Queensland seed sources, although two provenances including one from Papua

Table 1: MALAYSIAN FOREST STATISTICS – 1987

Region and status	area ha x 10 ⁶	sawlogs m ³ x 10 ⁶	sawntimber m ³ x 10 ⁶
NATURAL FORESTS			
Peninsular Malaysia			
Permanent Forest	4.36		
Parks and Wildlife	0.54		
Stateland Forest*	1.44		
Subtotal	6.34	9.4	4.8
Sabah			
Permanent Forest	3.35		
Parks and Wildlife	0.39		
Stateland Forest	0.70		
Subtotal	4.44	12.3	0.9
Sarawak			
Permanent Forest	4.64		
Parks and Wildlife	0.25		
Stateland Forest	4.61		
Subtotal	9.50	13.7	0.4
Total Natural Forest	20.28		
PLANTATIONS			
Rubber	1.94	1.0	0.1
Oil palm	1.60	–	–
Wood plantations	0.08	–	–
Total Forest Area	23.90		
Total Land Area	32.93		

* Stateland forests have been designed for land development and often go into plantations or other agriculture. In 1977 about 37,000 ha were cleared. In addition 1600 ha of permanent forest estate was developed.

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New Guinea are now showing up in provenance trials as having superior growth and stem form.

The early growth of this species is spectacular. Typically in Peninsular Malaysia it reaches 10m height in two years; beyond age 4-5 height growth slows, and stands seldom exceed 28m tall. There is however a wide range of growth rates – in lower rainfall areas or on very degraded soils, or where the topsoil is removed or eroded during site preparation, growth rates can be only half of the above. On some of these poor sites, P fertilisation is essential.

Stem form is very variable. On less fertile sites, or where there is competition, stem form is good. But where fertility is high, as on burnt cutover jungle, multiple leaders and poor stem form are a silvicultural problem. The species can also suffer from fluting, heart rot which enters through wounds, and loose dead knots. The intrinsic properties of the wood are considered acceptable.

A. mangium is being grown for both chipwood and sawlogs. Growing chipwood on 5-7 year rotations is relatively straightforward. It has already been sought after for chipwood. However growing sawlogs, as is the aim of some growers, is more difficult. Pruning and vigorous thinning are necessary. A 15-year rotation is being contemplated by the Compensatory Forest Plantation Project. However it has still to be proven if substantial quantities of sawlogs can be produced, primarily because of lack of experience with the species.



Acacia mangium aged six years in Selangor, Peninsular Malaysia. Photo: D. Mead.

Gmelina arborea (Yemane)

G. arborea is the most site demanding of the three species, and because of this only one grower (SSSB) is using the species extensively. They plant it on deep alluvial soils and lower slopes. This company also has a tree improvement programme based on cuttings, as yemane is easily propagated this way.



Acacia mangium being cut for export pulpwood by SAFODA, Sabah. Photo: R. Miller.



Gmelina arborea stand in Sabah Softwoods – with Rob Miller. Photo: R. Miller.



Hugh Speechly in a three-year-old stand of *Paraserianthes falcata* at Kemasul Forest, Peninsular Malaysia. Photo: D. Mead.

Paraserianthes falcata (Batai)

Batai was formerly known as *Albizia falcata* and it tends to be intermediate in site requirements between the very site-tolerant *A. mangium* and the high-quality site-demanding yemane. Growth rates can again be high, but the wood density is lower than for the other two species, so it is usually not considered such a desirable species. SSSB find ready sales for the wood, however.

Looking Ahead

Will these 'new' plantations be a success? Although this is difficult to predict at this point, I believe they should help to reduce the pressure on the national forests, even if they end up largely as chipwood to make various types of panel boards. The Peninsular Malaysian pro-

ject, for example, has the potential of providing four million m³ per year of logs. They will also compensate for the losses of jobs as the industry based on the natural forest declines. However, if the wood is not used for sawlogs, the returns will be lower than the 17% to 19% suggested by Yong (1985), and Johari (1987), respectively.

There are other facets to be considered in the log supply situation in Malaysia. In Peninsular Malaysia many of the logs are being supplied through the conversion of land to other crops such as rubber and oil palm. This is expected to decline during the 1990s. However, there is a growing market for rubberwood, and some estimates suggest that this species could provide two million m³ per year of sawlogs to the

Peninsular Malaysian market during the 1990s. Research is also being undertaken to utilise the large quantities (up to seven million tonnes per year by the year 2000) of oil palm trunks for pulp and paper, and other composite products (Lim and Khoo, 1986).

References

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gramme in Peninsular Malaysia. Seminar on the future role of forest plantations in the national economy and incentives required to encourage investments in forest plantation development. Nov-Dec, 1987, Kota Kinabalu, Malaysia. 29pp.

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Malaysia. July 1984, Kota Kinabalu, Malaysia. 10pp.

New Zealanders currently associated with Malaysian plantations:

Ralph Douglas, Sabah Softwoods Sdn, Bhd

John Leith, Sabah Forestry Development Authority.

Don Mead, Forestry Dept., Peninsular Malaysia.

Rob Miller, Sabah Forestry Development Authority.

Hugh Speechly, Forestry Dept., Peninsular Malaysia.

Sri Lanka – a wood-based economy in trouble

J.R. Purey-Cust

In 1983, the World Bank commissioned a "master plan" study of the forest resources and economy of Sri Lanka. Master plans are a standard World Bank tactic and have been written for many countries. Whilst derided in some quarters as imposing external solutions on internal problems, the master plan in fact is largely descriptive, describing forest resources and the demands on them, and where necessary offering solutions. Proposed solutions are essentially stop-gap and short-term initiatives to plug immediate holes until the country in question has time to devise its own solutions. The initiative remains firmly with the nation in question.

The contract for the Sri Lanka study in the Forest Resources Development Project (FRDP) was awarded to Jaakko Poyry Oy, a Finnish forestry consulting firm, and ran from 1983 to 1987. A number of New Zealand foresters were involved.

Plantation programme

John Purey-Cust – Plantation Adviser 1986-87.

Dr Mike Wilcox – Plantation Research Adviser.

Master plan studies

Dr Sandy McGuire – on the best use of less favoured timbers.

Len Wilson – logging and timber transport.

The Plantation Adviser's position was the only residential post, the others calling for single or periodic visits of a month or so.

SRI LANKA

Sri Lanka is a small country of 6m ha (about one-fifth the size of New Zealand) with a population of 16m growing

at 1.7% per year. It has a respectably long history of civilised human occupation, with achievements concentrated in two main fields:

- As a centre of Buddhism from which the faith spread to Burma and Thailand while languishing in India, its birth place.
- The development of city states with a high level of culture, based on complex systems of irrigated rice production.

The sense of trusteeship for World Buddhism threatened by amorphous and all-embracing Hinduism lies at the root of Sri Lanka's present political troubles.

Irrigated agriculture based on communally stored water is by necessity a socially intricate and centralised system, requiring strong authority for success.

Without that strong control, the system falls apart, be the cause war or a predominant royal interest in moral uplift, learning or the bed chamber. The kingdoms thrived under strong practical kings and fell when the royal mind wandered. When they fell, so did the population, drastically, and malaria ruled.

Thus the historical population of Sri Lanka never rose above 5m, and was often much less. Now, with malaria contained, it rises steadily and by the year 2030 should top 20m.

The country has no natural assets beyond its soils, seas and people, apart from a few gems and a little hydro-electricity. There is no coal, oil, or metals, and though Sri Lanka sits on a crossroads of world trade, busy since time began, it has never been a trading nation and still is not. The bulk of the people are still rural, and apart from Colombo



Elephant loading logs. The logging and sawmilling industry is not highly developed, but pragmatic and well suited to a country where small enterprises do better than large ones. But elephants are trade unionists and won't work after noon.

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