



NFI – is used to inventorize availability or of *Aquilaria* spp.

FOREST INVENTORY IN PENINSULAR MALAYSIA

First National Forest Inventory (NFI – 1) : 1971 – 1972
FDPM, FAO & UNDP

Second National Forest Inventory (NFI – 2) : 1981 – 1982
FDPM

Third National Forest Inventory (NFI – 3) : 1991 -1993
FDPM & FAO

Fourth National Forest Inventory (NFI – 4) : 2002-2004
FDPM & GTZ



FOREST RESOURCES IN PENINSULAR MALAYSIA



NFI – 4 INVENTORY DESIGN

The NFI – 4 inventory design is described as a stratified satellite based on randomly distributed permanent sample units.

The sampling design consists of permanent sample units (satellites) of square shape with one sample plot in each corner.

Each sample plot consists of a sample circle for small size trees and a point sample Layout of the sampling unit.

Each sample unit consists of 4 sample plots and 3 sample strips.

Each sample plot is a combination of a fixed sample circle of 4 m in radius and a point reference. The distance between the sample plot is 100 m. The total sample area is 0.12 hectare.

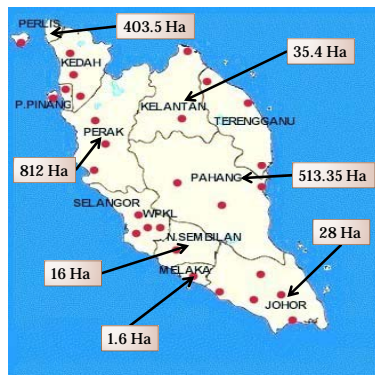
Within the sample circle trees is inventorised according to dbh classes

Artificially Propagated Agarwood in Malaysia

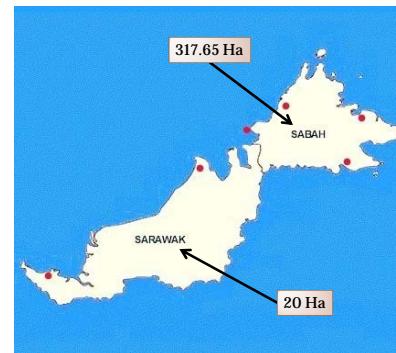
Statistics on farm crops in Malaysia (*A. malaccensis*, *A. sinensis*, *A. crassna*)

No.	State	Ha	Date Established
1.	Pahang	513.35	1995-2003
2.	Perlis	403.5	2005&2008
3.	Perak	812	2006&2010
4.	Johor	28	2007
5.	Kelantan	65.4	2005,2007&2008
6.	Melaka	1.6	2007
7.	Negeri Sembilan	16	2008
8.	Sabah	317.65	2004&2005
9.	Sarawak	20	2007&2010
	Total	2177.5	

MAP of MALAYSIA



MAP of MALAYSIA

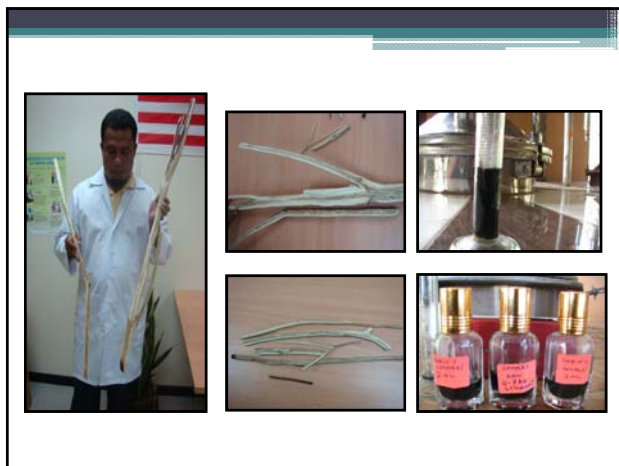


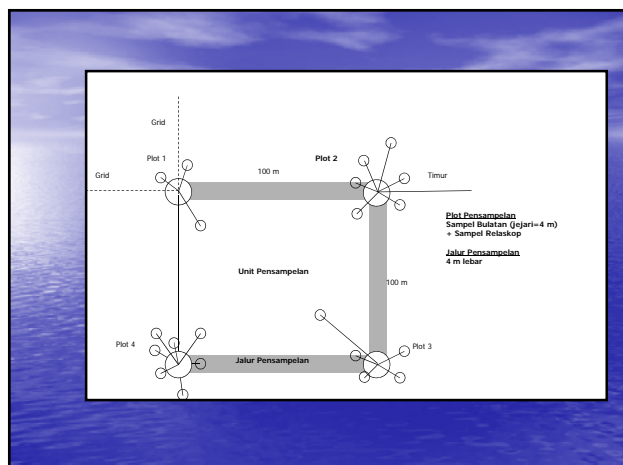
Plantation



Plantation







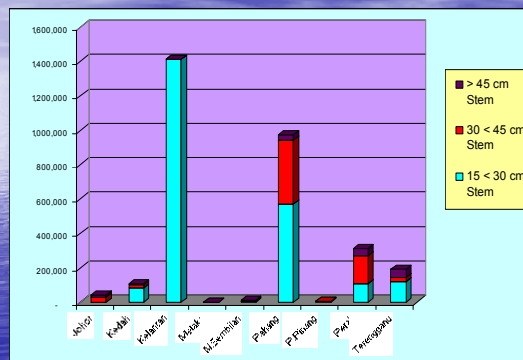
STRATA OF NFI

Strata	Description
11	Virgin forest good to superior
12	Virgin forest poor to moderate
20	Logged 1991 to 2003
21	Logged 1981 to 1990
22	Logged 1971 to 1980
23	Logged <= 1970
31	Peat Swamp Production Forest Virgin Forest
32	Peat Swamp Production Forest Logged-over Forest
40	State Land Forest Dry Inland Forest
41	State Land Forest Peat Swamp Forest
50	Protection Forest

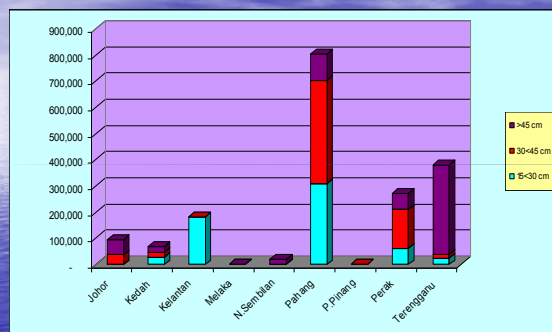
RESULTS OF THE ABUNDANCE OF *AQUILARIA SPP*

State	15 < 30 cm		30 < 45 cm		> 45 cm		Total	
	Stem	Volume (m³)	Stem	Volume (m³)	Stem	Volume (m³)	Stem	Volume (m³)
Johor	-	-	29,920	37,281	14,673	59,424	44,593	96,705
Kedah	83,869	26,502	16,282	20,624	10,855	22,795	111,006	69,921
Kelantan	1,413,067	181,084	-	-	-	-	1,413,067	181,084
Melaka	2,037	1,513	-	-	218	1,002	2,255	2,515
N.Sembilan	4,464	496	-	-	8,846	19,857	13,310	20,353
Pahang	570,169	310,030	377,034	392,636	25,261	101,045	972,464	803,711
P.Pinang	5,674	2,459	-	-	-	-	5,674	2,459
Perak	108,919	60,602	160,457	149,194	41,568	60,966	310,944	270,762
Terengganu	122,873	23,566	18,853	15,711	50,437	342,650	192,163	381,927
Total	2,311,072	606,252	602,946	615,446	151,859	607,739	3,065,476	1,829,437

STEM OF *AQUILARIA SPP*



VOLUME OF *AQUILARIA SPP*

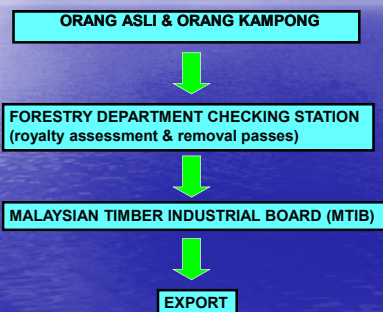


RESULTS

- The overall results showed that there are 3.06 million stems of size 15 cm dbh and above with estimated volume of 1.83 million m³.
- The results also showed that the percentage of trees greater than 15 cm dbh but less than 45 cm dbh is estimated to be about 95% of the total number of trees and about 66.8% of the total volume.
- In terms of stems, Kelantan shows the highest while in terms of volume, Pahang has the highest of volume
- From the inventory the annual coupe is determined

PREVIOUS PRACTICE OF GAHARU COLLECTION

HARVESTING



HARVESTING OF AGARWOOD

- ▶ The wood-chips, powder or oil of *Aquilaria malaccensis* are classified as a minor forest produce in accordance to National Forestry Act 1984.
- ▶ The taking of such products would require a minor licence (Form 3) as stipulated in section 28 of the said Act.

- ▶ Licence is also subjected to other additional conditions as follow :

- ♦ to supply 3,000 *Aquilaria* seedlings per year to the State Forestry Department ;
- ♦ *Aquilaria* tree with the diameter size of less than 20cm is not allowed to be harvested ;
- ♦ *Aquilaria* tree which bears flowers and fruits is not allowed to be harvested ; and
- ♦ To submit a shuttle return to the State Forestry Department on a monthly basis in respect of the amount of gaharu harvested.

Licence to trade *Aquilaria spp.*

- ▶ All gaharu traders are only allowed to purchase *Aquilaria* products from the contractors/ licensee registered with the State Forestry Department ;
- ▶ A trader is required to maintain a log book showing the amount of gaharu purchased from the contractor and sold to the manufacturer.
- ▶ A trader is required to submit a shuttle return to the State Forestry Department on a monthly basis in respect of the amount of gaharu purchased and sold ;
- ▶ To obtain a CITES permit from MTIB for export purpose ;

Licence to process *Aquilaria spp.*

- ▶ A manufacturer has to apply for a valid licence from the State Forestry Department ;
- ▶ A manufacturer is required to maintain a log book showing amount of gaharu purchased and processed ;
- ▶ A trader is required to submit a shuttle return to the State Forestry Department on the monthly basis in respect of the amount of gaharu purchased and the sale of gaharu oil ; and
- ▶ To obtain a CITES permit from MTIB for export purpose