

**Reducing Harvesting Pressure on the  
*Aquilaria malaccensis*  
(Thymelaeaceae)  
Natural Populations in  
Peninsular Malaysia through the  
Establishment of Arboreta**



**INSTITUT PENYELIDIKAN PERHUTANAN MALAYSIA**  
***Forest Research Institute Malaysia***

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## Executing Agency

- Ministry of Natural Resources and Environment, Malaysia (MNRE)

## Implementing Agency

- Forest Research Institute Malaysia (FRIM)

## Project Leader

- Mr. Lau Kah Hoo

## Focal Point

- Mr. Lau Kah Hoo

## BACKGROUND

FRIM had carried out 3 related research studies on *Aquilaria malaccensis* between 2007 and 2015:

- i. *In vitro* Technology for Mass Propagation and Phytochemical Analysis of *Aquilaria malaccensis* and *Aquilaria hirta*
- ii. Conservation studies and development of DNA microsatellite markers on *Aquilaria malaccensis* in Peninsular Malaysia
- iii. Reproductive and genetic studies towards the conservation and management of *Aquilaria malaccensis* in Peninsular Malaysia

An important output from the last project was the ‘**Conservation Action Plan for the Threatened Agarwood Species *Aquilaria malaccensis* (Thymelaeaceae) in Peninsular Malaysia**’.

Action 4.1.2 of the Plan mentioned the need to designate and establish suitable areas in relevant states as agarwood **arboretum** to support gene banks.

Definition of an **arboretum**:

“an institution which develops and administers collections of trees and shrubs, arranged in aesthetic harmony with the surrounding landscape, and which conducts programme based upon these collections for the purposes of public service, education, and research” (Richmond 1971).

### **Project Goal:**

Conservation of a threatened agarwood species, *Aquilaria malaccensis*, in Malaysia

### **Project Objective:**

To reduce harvesting pressure on natural populations of *A. malaccensis* through establishment of arboreta

### **Justification:**

Forest managers and operators could promote them as seed sources and to test planting regimes.

Research and experimental plots for researchers.

Tree breeding programmes.

A network of institutions will provide an excellent platform for various agencies to co-operate in contributing towards the sustainability of *A. malaccensis* in Peninsular Malaysia.

Contribute to Non-Detriment Finding (NDF) for the species.

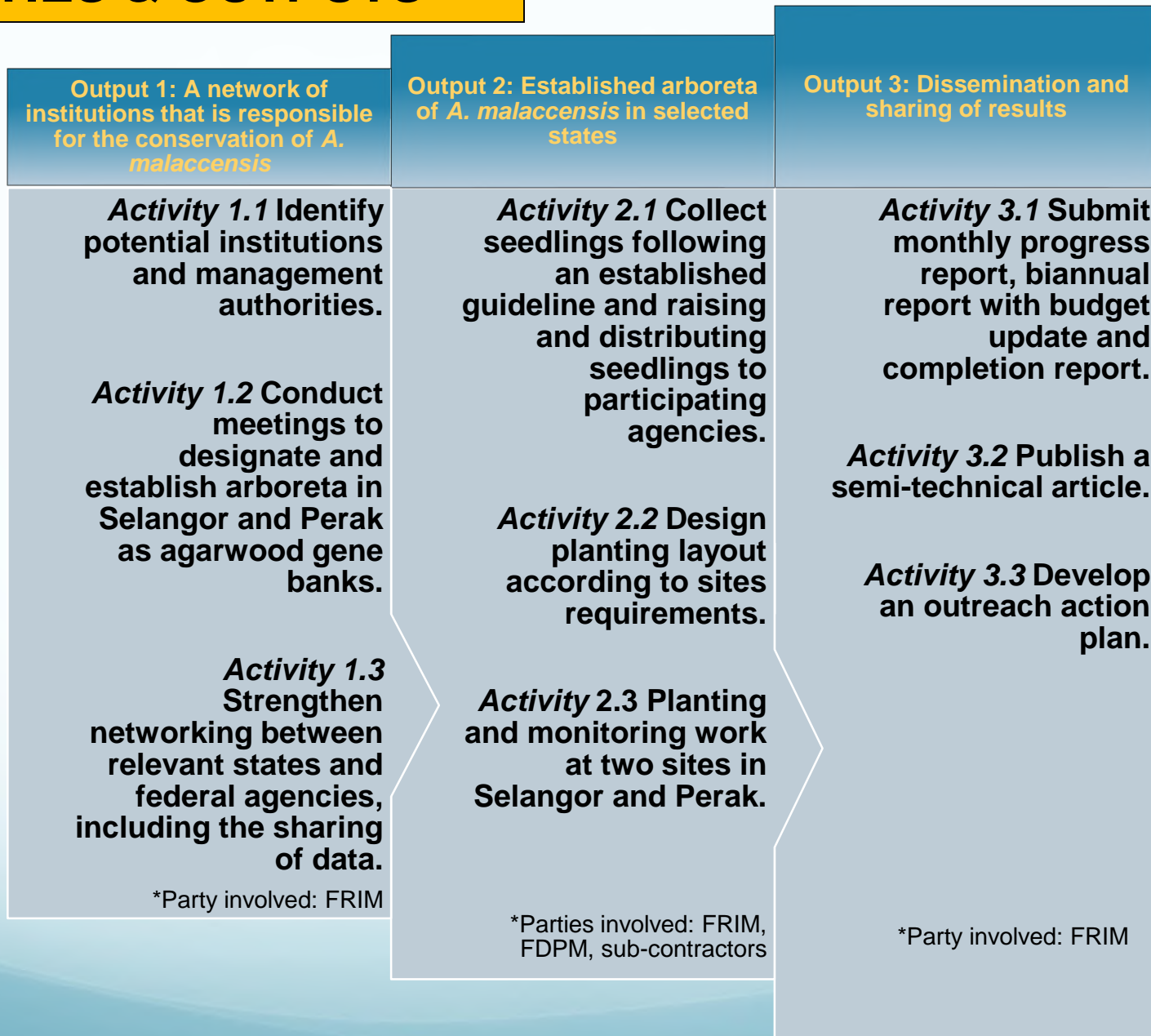
## INTENDED SITUATION

The establishment of arboreta is expected to **lessen harvesting pressure** on natural populations in the long term when sufficient research and development on trees that are able to provide planting materials which produce high quality agarwood yield become readily available. Hence, these repositories act as **seed provenances** to reduce dependency on natural populations and subsequently contribute to **healthy regeneration** in the long term.

## TARGET BENEFICIARIES

- i. Forestry Department Peninsular Malaysia
- ii. State Forestry Departments
- iii. Ministry of Natural Resources and Environment
- iv. Malaysian Timber Industry Board

# ACTIVITIES & OUTPUTS



OUTPUTS/ACTIVITIES	RESPONSIBLE PARTY	SCHEDULE (in months)																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
<b>Output 1:</b>																									
A network of institutions that is responsible for the conservation of <i>A. malaccensis</i> .																									
Activity 1.1	FRIM																								
Identify potential institutions and management authorities.		■	■	■																					
Activity 1.2																									
Conduct meetings to designate and establish arboreta in Selangor and Perak as agarwood gene banks.	FRIM				■		■		■		■		■												
Activity 1.3	FRIM																								
Strengthen networking between relevant states and federal agencies, including the sharing of data.														■									■		
<b>Output 2:</b>																									
Established arboreta of <i>A. malaccensis</i> in selected states.																									
Activity 2.1	FRIM																								
Collect seedlings following an established guideline and raising and distributing seedlings to participating agencies.					■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Activity 2.2	FRIM																								
Design planting layout according to sites requirements.												■						■							
Activity 2.3	FRIM, FDPM														■						■				
Planting and monitoring work at two sites in Selangor and Perak.																									
<b>Output 3:</b>																									
Dissemination and sharing of results.																									
Activity 3.1	FRIM	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■
Submit monthly progress report, biannual report with budget update and completion report.																									
Activity 3.2	FRIM																								■
Publish a semi-technical article.																									
Activity 3.3	FRIM																								
Develop an outreach action plan.																							■	■	■

## SUSTAINABILITY

- ✓ The arboreta are expected to be managed by FRIM and state forestry departments through government in-kind and external funds in coming years. They will serve:
  - i. as repositories and research plots for *A. malaccensis* in Peninsular Malaysia;
  - ii. as providers of seeds and other forms of planting stock for the plantation industry;
  - iii. as teaching and display areas to forestry students and researchers alike.
  
- ✓ It is also foreseen that the size and number of arboretum could be expanded in the future.
  
- ✓ It is anticipated that institutions in the network will meet and discuss relevant matters pertaining to conservation of *A. malaccensis* at regular meetings.

## MONITORING, REPORTING & EVALUATION

- i. Monthly Progress Report
- ii. Biannual Progress Report
- iii. Project Completion Report



# RISKS & CHALLENGES

Low availability of seedlings arising from the absence of reproductively matured trees and the lack of flowering events during the project duration

## Mitigation

More sites need to be visited to increase chances of finding fruiting trees

Adult trees are still thriving in the populations studied in the past project as seedlings have to be collected from these populations

## Mitigation

Focus on fruiting trees from relatively safe populations

# ***THANK YOU***

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