

Management and Silviculture of Natural (Wild) Agarwood



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Introduction

- Vulnerable (IUCN Red List); Appendix II CITES
- Agarwood, aloeswood, eaglewood, Gaharu, oud, oodh, agar, agallocha, jinko
- What is Agarwood ?
 - products in the form of solid lump with color ranging from blackish brown to black, has fragrant smell occurring in the wood and roots of the host plants which have undergone physical and chemical change due to infection by a kind of fungi
 - A trade name of resinous product from the infected trees of Thymelaeaceae family (*Aquilaria*, *Gyrinops*, *Aetoxylon*, *Claoxylon*, *Encelia*, *Gonystylus*, *Wikstroemia* → *Aquilaria* and *Gyrinops* are the two most important agarwood-producing genera).



Natural Habitat and Distribution

- Naturally occur → range states of agarwood → Bangladesh, Bhutan, Cambodia, China, India, Indonesia, Lao PDR, Malaysia, Myanmar, Philippines, Thailand, Vietnam and Papua New Guinea
 - Exporting from the wild → Indonesia, Malaysia, PNG and Lao PDR
- Phytogeographically
 - Genus *Aquilaria* distributed from India (Bengal and Assam) to New Guinea through Burma (Tennasserim), Indo-China (Cambodia, Annam, and Cochinchina), China (Hongkong and Hainan), Malaysia, Singapore, Indonesia and the Philippines
 - Genus *Gyrinops* distributed in Ceylon, Lesser Sunda Island, Celebes, Moluccas, and PNG

Natural Habitat and Distribution

- slight differences in reports on the number of species
 - TRAFFIC-CITES-CoP13 Prop.49 (2004) → 24 species of genus *Aquilaria* and 7 species of genus *Gyrinops*
 - Ding Hou (1960 in Gunn et al., 2004) → 12 species of genus *Aquilaria* and 8 species of genus *Gyrinops*.



Natural Habitat and Distribution

- The natural habitat of Agarwood trees are the evergreen tropical rain forests of South-East Asia
 - Typically understorey species
 - Primary forest and secondary forest
 - In lowland and on hillsides → Typically grows between altitudes of 200 – 850 m asl
- Could :
 - Reach 40-50 cm in dbh → in Tasik Betung Village, Riau reach 1m in dbh and 35m high
 - Have several seedling and sapling near adult tree, esp in a distance 20 m
 - Grow in river bank, on ridged and slope on well drained soil, peat swamp forest



Management of Wild Agarwood

- Rationale → sustainable utilization/harvesting
 - avoid utilization incompatible with their survival → Article II para 2 (a)
 - Effective control → Article II
 - not be detrimental to the survival of that species → Article IV para 2 (a)
 - shall monitor both the export permits and the actual exports → Article IV para 3
- NDF → CoP 16 Inf. 11
 - Guideline to conduct sustainable use, not pushing parties into difficulties
 - Must acceptable and applicable
 - Making NDF → Make use of the agarwood NDF guidance



Management of Wild Agarwood

- Survey, Inventory, Monitoring
 - Done by most of range states
 - Basic activity → availability, population size and trends, growth analysis
 - standing stock (trees, poles, saplings, seedlings)
- Database
 - Population & its distribution
 - Standing stock
- Setting number allow to harvest



Wild trees of *A. sinensis* in China

Management of Wild Agarwood

- Harvesting
 - Mostly by local people → as a matter of livelihood
 - Traditional wisdom combined with scientific knowledge
 - classified as a minor forest produce (Malaysia), non timber-forest products (Indonesia)
 - Registered traders and harvesters
- Harvest Monitoring
 - Harvest → check and monitor by MA
 - Registered harvesters and traders



Ensuring Sustainability via Quota setting (The basis on which NDF is made – Indonesia experience)

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    graph TD
      A[Population surveys by specialist/professional researcher group coordinated by SA, in collaboration with FORDA, Universities/academics, CSO/NGO's] --> B[Draft of Harvest Quota prepared by SA (LIPI)]
      B --> C[Discussion (FGD) : Academics, Expert, CITES MA, NGO's]
      C --> D[Quota recommendation submitted to CITES MA by CITES SA]
      D --> E[CITES MA invite stakeholders (Provincial BKSDA, NGO's, Other related stakeholders to discuss the SA quota recommendation)]
      E --> F[Actual Export Report by ASGARIN/Trader Association (and certified/registered exporter companies)]
      F --> G[Collectors and field harvesters]
      G --> H[Population monitoring at harvest location & report to CITES MA by BKSDA (at provincial level)]
      H --> I[Quota Determination by CITES MA]
      I --> A
      
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Conclusions

the future of agarwood is dependent upon conservation and sustainable production management strategies



