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Agarwood Trade

The trees, *Aquilaria malaccensis* whose wood is also known as agarwood, aloewood, eaglewood or gaharu are found in India, Bhutan, Mynamar, Malaysia, Indonesia and the Philippines. The highly prized wood is used primarily in medicine, perfume and as incense. Trees above 20 years old when infected by the fungi, *Phialophora parasitica* respond in the production of a fragrant resin that permeates the heartwood, but there is no external sign. Such wood is much sought after leading to the indiscriminate felling of the trees and splitting them open in search for the resin.

Due to extensive commercial demand, the population of agarwood has declined to a point where they are threatened. Agarwood is listed in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) with effect from February 1995. This requires all CITES member countries to issue CITES documents for the import, export and re-export of the agarwood. This include blocks, chips, powder and oil. For other *Aquilaria* species such as *A. filaria*, which is a non CITES species, a letter of certification of the species is required from the country of origin.

Traders who fail to comply with the regulations will have their consignment re-exported back to country of origin or risk confiscation by AVA.



Fig. 1: Agarwood tree growing in India



Fig. 2: Agarwood chips and blocks

Please use the following HS, Product and Unit codes when making declarations in the TradeNet system for trading in agarwood.

Product Description: *Aquilaria malaccensis* (Chips, powder, blocks)
 HS Code : 12119095
 Product Code : APC2AMA
 Unit Code: KGM

Product Description: *Aquilaria filaria* (Chips, powder, blocks)
 HS Code : 12119099
 Product Code : APC0MISC
 Unit Code: KGM

Hispid Beetle Infestation On Palms

Palms are popular in Singapore to lend to a tropical garden city image. However, the palm fronds are highly susceptible to attacks by many chewing insects, notably beetles.

In recent years, the palm leaf beetles or hispid beetles have been a growing concern as pests to palms,

in particular *Brontispa longissima*, although *Plesispa reichi* is also widespread here. The beetles attack plants of the palm family, Palmae e.g. coconut and ornamental palms. The flattened bodies of the larva and adults are squeezed between the unopened fronds where they scrape off large areas of the leaf surfaces causing the underlying cells to die. It is the larvae that cause the more extensive damage. The feeding creates narrow, linear chew marks along the leaf veins. By the time the damage symptoms are seen, the beetles would have moved to the newer frond, as the younger leaves are preferred. Once the fronds open, the beetles move away to the next 'tight spot' that offer them maximum protection.

Hispid infestation is easily recognised when palm fronds develop a sun-scorched appearance, turn brown and shrivel up. Broken leaf surfaces and the presence of insect frass distinguish hispid beetle attacks from other pathogenic or environmental causes. Fungal infection to the infested leaves debilitate the palms further leading to the ragged appearance.

Hispid attacks on older palms are rarely fatal. However, young palms (less than a year old) are especially vulnerable and may not survive if severely attacked.

The adult *Brontispa* beetle (Fig. 3) is about 9-10 mm long and 2.5 mm across with short legs. The wing covers are dark brown to black with a brown thorax piece after the head. The *Plesispa spp.* is similar but is shorter of about 8 mm long. Wings are black with an orange yellow thorax. The larvae are pale cream with a pair of hook-like mandibles for feeding. Each body segment carries a short spine at the sides.



Fig. 3: *Brontispa longissima* adult and larva.

Females lay eggs in the grooves created by the feeding on the frond surfaces. The eggs hatch in a few days developing into larvae. The larvae feed voraciously for the next 5 weeks and then pupate to adults and may live for up to three months. Each mating pair can produce about 100 eggs. While adults have wings and are able to fly, they seldom do so during the day. Most may fly at twilight, but usually not for long distances.

Damage is confirmed by the presence of the hispids in unopened fronds. When damage is light, check the leaflets individually to remove the pests by hand. Remove the infested fronds as a sanitary measure to prevent these harbouring the beetles and disease infection. In severe infestation, an insecticide, imidacloprid (Confidor™) with 2 litres of the dilution at 2ml/L can be drenched around the root zone of each palm. Each application is good for 6 months.

Palms lend a relaxed feel to a landscape. Keeping these palms free from pests and diseases will provide years of rewarding shade under the gently swaying palm fronds!

DNA Fingerprinting for Plant Identification

DNA fingerprinting is the use of molecular sequencing methods to reveal patterns (fingerprints)

reflecting the genetic composition of the plant DNA. The advantages of DNA fingerprints are :

- It is stable and detectable in all tissues at all stages of plant growth
- It allows for early screening of genotypic expression
- It is unique and highly specific to the cultivar for its identification.
- It can be used to assess the lineage of the hybrids

Several DNA fingerprinting techniques have been developed of which the Amplified Fragment Length Polymorphism (AFLP) Technique is popularly used for plant variety identification. In conjunction with fluorescent detection and computerised data processing, AFLP provides accurate results for the purpose.

Due to its high discriminatory power and speed in deriving results, DNA fingerprinting technology has been used effectively to resolve proprietary ownership disputes. The use of DNA fingerprint for plant variety protection is still at an early stage and is being considered as a tool in establishing distinctness, uniformity and stability (DUS) of a new variety for granting of Plant Breeder's Rights.



Fig. 4 : A selected line of *Dendrobium* AVA

The plant variety protection system under the International Convention for the Protection of New Varieties of Plants (UPOV Convention) will be implemented in mid 2004 when Singapore becomes a signatory to the

Convention. In line with this, AVA's corporate flower, *Dendrobium* AVA has been DNA fingerprinted to document its unique genetic identity and to establish AVA's proprietary rights in the cultivar.

Organic Plant Protection In Insect Control

Insecticides are chemicals most commonly used in the killing and control of insects when a pest infestation occurred in plants. However, the trend now is to use organic compounds or bio-pesticides especially in home gardens or in organic farms. These are considered to be safer with less no chemical residues left when applied on edible crops and are deemed as environmentally friendly.

Here are some tips and plant alternatives to garden chemicals that may be prepared from everyday materials. Also note that while these organic compounds may reduce the pest populations to below damaging levels, they are usually not potent to have eradication effect.

The following can be used to reduce scale insects, aphids, spider mites, mealybugs and whiteflies.

Soap/Oil Spray

Mix 1 teaspoon of mild detergent (dish washing liquid) with 4.5 tablespoons of cooking oil (corn or soybean oil) to 950 ml of water. Shake and mix thoroughly and apply to infestations in the morning or evening.

Garlic Spray

Combine about 1/2 cup of oil with about 12 crushed cloves of garlic. Allow to stand for 48 hours. Strain. Use 1 teaspoon of this in a litre of water for spraying. ✚

We will provide more organic plant protection tips in the next issue of plant bulletin.



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The aim of this bulletin is to disseminate horticulture and plant health information to plant growers, exporters and importers in Singapore. If you have any suggestions, comments or enquiries, please contact us at :

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