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RESEARCH ARTICLE

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Specialty rattans of the ASEAN

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Abstract This paper describes the uses and agricultural practices for 11 selected taxa of rattan in the ASEAN countries with special emphasis on specialty use for food and condiments, ornamentals and dyes. The listed species are *Calamus discolor*, *Calamus manillensis*, *Calamus ornatus* var. *philippinensis*, *Calamus paspalanthus*, *Calamus siamensis*, *Calamus tenuis*, *Calamus tetradactylus*, *Calamus viminalis*, *Daemonorops didymophylla*, *Daemonorops draco* and *Korthalsia laciniosa*.

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INTRODUCTION

Rattans are known the world over for their versatility, durability, workability in the furniture and handicraft industries. Rattan products have captured the world market and are a highly sought after product in Europe and the Americas. Rattan is one of the Non-Timber Forest Products that have since long contributed to the dollar income of many producer countries in Asia.

Many indigenous populations are highly dependent on rattans for subsistence (Baja-Lapis 1998) and have evolved a lifestyle and ethnic identity closely associated with rattans. Moreover, finished products particularly in basketry show the uniqueness of the countries' artistry and finesse.

The main plant part that is used in the industry is the elongated stem known as the cane. Canes come in many sizes ranging from less than 1 cm to more than 4 cm in diameter and a length of sometimes more than 50 meter. While the canes basically fill the need of the furniture industry, other plant parts are useful for many other basic needs and constitute a diverse material for various end products. In the pharmaceutical and cosmetics industry, the potential of rattans as provider of raw materials for medicine, natural colouring and dyes is being harnessed.

During the recent regional meeting on rattans held in Beijing, China, organized by the Chinese Forestry Academy in collaboration with the International Network on Bamboo and Rattan (INBAR) and co-sponsored by the International Center for Bamboo and Rattan China, the question was raised what other benefits could be derived from rattans aside from the cane for the furniture industry. This triggered my interest in the other uses and the value of rattans in the ASEAN countries, as several species have other parts of social and economic importance.

For more detailed treatment, I selected 11 specialty rattan species occurring in the 7 countries belonging to the ASEAN: Brunei Darussalam, Indonesia, Lao PDR, Malaysia, Philippines, Thailand and Vietnam. The information presented here was collected during fieldwork for the ASEAN-wide ITTO (International Tropical Timber Organization) Rattan project, supplemented with data from literature (Dransfield 1979, 1992, 1997, Madulid 1985, Tomboc et al. 1993, Evans et al. 2001, Christensen 2002, Xaydala 2003, Subansenee 2007). The species are listed under the countries where the basic information was collected, however, any specific use is usually not restricted to a single political unit. Photos of some of the rattan species and their products are shown in Plate 1 and 2. A summary of taxa that presents the rattan species is given, with local names, plant parts used and uses, in Table 1.

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Brunei Darussalam

Calamus paspalanthus Becc.

Distribution — Brunei, Indonesia and Malaysia.

Common names — Wi singkau (Iban), wae jaging (Peninsular Malaysia).

Parts used — Seeds, seedlings, young shoots, fruits.

Preparation and use — Seeds are edible though sour, seedlings are ornamental and decorative because of its reddish brown hairy rachis, ripe fruit edible and used as pickle. Exudates from burnt cane is used to blacken and strengthen teeth.

Agricultural practice — Fruits and seeds are collected from the wild.

Indonesia

Daemonorops draco Blume

Distribution — Sumatra, Kalimantan.

Common names — Locally known as Jernang.

Parts used — Cane, leaf sheaths, fruit.

Preparation and use — The cane may be used for handicraft. The leaf sheath and fruit scales yield an orange to red colouring that is known as dragon's blood and is used as dye for textile, baskets, varnishes, toothpastes, tinctures, and plasters for dyeing horns to imitate tortoiseshells. It is also used as a varnish for violins and in photoengraving.

Formerly it was also valued as medicine in Europe because of its astringent properties. Dragon's blood is used externally as a wash to further healing and stop bleeding. Internally, it is used to alleviate chest pains, post-partum bleeding, internal traumas, and menstrual irregularities. Dragon's blood is brittle, feebly sweetish or almost tasteless and odourless.

Extraction of the resin can be dry or wet. Dry extraction is done by sun-drying the collected fruits and then crushing them. The resulting resin is screened and flushed with hot water to form a batter. The resin is turned into granules, sticks and powder. The best dragon blood comes in cylinder form of 30–35 cm in length and 2–2.5 cm in thickness and when dissolved in alcohol the residue content is below 9 %. For wet-extraction, the crushed fruits are boiled in water, but the dyes extracted in this way are of inferior quality.

Agricultural practice — Harvesting is done by climbing a tree near it and hand picking the fruits. Old fruits contain more resin. A clump of *Daemonorops draco* produces around 50 kg of dragon blood fruits.

Dragon's blood is also produced from *D. draconcellus* Becc., *D. mattanensis* Becc., *D. micranthus* Becc., *D. motleyi* Becc., *D. rubra* (Reinw. ex Blume) Mart., and *D. sabut* Becc.

Dragon's blood from *D. draco* was traded via China to Europe as early as 1800 and is now known as 'plum flower brands' and sold in 500 g packs for a price of USD 498 per 18 ounces (prices 2007, see www.ShamanShop.net).

Malaysia

Daemonorops didymophylla Becc.

Common name — Wi jerenang (Iban).

Distribution — Sarawak, Peninsular Malaysia, Sabah.

Parts used — Canes, fruits, fruit scales, young shoots.

Preparation and use — Cane fibre is for making baskets and mats. The fruit scales are source of red dyes; the fruit and young shoots are edible (Christensen 2002).

Agricultural practices — There is no known account of the species being raised artificially.

Lao PDR

Calamus tenuis Roxb.

Common names — Wai nyair (Lao PDR), Wai numpueng (Thailand).

Distribution — Cambodia, Lao, Thailand, Vietnam, Indonesia.

Parts used — Canes, young shoots.

Preparation and use — Small slender canes are used for basketry. Young shoots are harvested as source of food. The local people in Lao PDR consider shoots of rattan a delicacy. More than half of the native species are edible. Apart from *Calamus tenuis,* also *C. viminali*s and *C. siamensis* are widely eaten. Locally, one shoot costs 2500 kip or 25 cents in USD (2007 rates, Khamphone 2003). At present, there are 200 hectares of plantation for edible shoots.

Agricultural practice — Seedlings are raised in nursery and planted at the onset of the rainy season. When planted, it can be mixed with other crops like peanut. In an experimental trial of *Calamus tenuis*, better survival and growth performance was attained at somewhat higher altitudes under tree canopies. When fertilized with green manure or without any fertilizer, shoot length growth and production of new shoots was better than when biofertilizers were applied. High moisture area is preferred by the species. Regular flooding of planted areas increases shoot production (Baja-Lapis & Servaz-Audije 2004).

Calamus viminalis Willd.

Common names — Wai ton, Wai na, Wai khom, Wai namhang, Wai keethao, Wai nang, Wai tiudeet, Wainamleuang, Rebou, Blong chang, Katengparua (Lao PDR), Wai dong (Thailand).

Distribution — Lao PDR, Northeast Thailand, Indonesia, Malaysia.

Parts used — Cane, young shoots.

Preparation and use — Cane is used for handicrafts of moderate quality. Young shoots are used as vegetable, fruits are eaten when ripe. When edible shoots are gathered, the tips about a meter long are cut and sold in bundles. Leaf sheaths may be removed and the edible portions must be cooked immediately, but with leaf sheaths left in place, the shoots can remain fresh for a week.

Agricultural practices — Seedlings are raised in nurseries for the establishment of plantations.

Philippines

Calamus manillensis (Mart.) H.Wendl.

Common name — lituko (Ifugao).

Distribution — Northern Luzon: Nueva Vizcaya, Cordilleras: Ifugao and mountain provinces, Mindoro Island and Northern Mindanao: Misamis Oriental.

Parts used — Fruit and scales.

Preparation and use — The fruit is edible, used as condiment, processed into wine, vinegar and sour flavourings. The pulp or the sarcotesta is extracted and cooked with sugar to make candies. Whole fruits are also pickled in vinegar, sometimes in brine.

The fruit scales are collected, flattened, dried and used for creative effects and accents for bamboo vases, pencil holders and ash trays.

Table 1 Summary of taxa.

Taxon	Local Name	Parts used	Uses
Calamus discolor	Kumaboi	germinants, seedlings	ornamental, handicraft
Calamus manillensis	Lituko	fruit, fruit scales	food, ornamental
Calamus ornatus var. *philippinensis*	Limuran, Kalape	cane, fruit	fibre, food
Calamus paspalanthus	Wi singkau (Iban), Wae jaging (Peninsular Malaysia)	seeds, seedlings, young shoots, fruits	food, ornamental, cosmetic dye
Calamus siamensis	Wai dong	cane, young shoots	fibre, food
Calamus tenuis	Wai nyair (Lao PDR), Wai numpueng (Thailand)	canes, young shoot	fibre, vegetable
Calamus tetradactylus	Maay neeps, Maay tawts, Maay ruootj gaf	whole plant, cane	fencing, fibre
Calamus trispermus	Giwi, Likuto	cane, fruit	fibre, food
Calamus viminalis	Wai ton, Wai na, Wai khom, Wai namhang, Wai keethao, Wai nang, Wai tiudeet, Wainamleuang, Rebou, Blong chang, Katengparua (Lao PDR), Wai dong (Thailand)	cane, young shoot	fibre, food
Daemonorops didymophylla	Wi jerenang (Iban)	young shoots, canes, fruits, fruit scales	fibre, dyes, food
Daemonorops draco	Jernang	cane, leafsheaths, fruit	fibre, varnish, tincture, toothpaste, dye
Korthalsia laciniosa	Danan, Tambuanga, Planung, Miling -piling	seedlings	ornamental

Plate 1 a. Fruiting *Daemonorops* draco; b. plum flower brand of dragon's blood, a product from China; c. edible shoots with and without leafsheaths in Lao PDR; d. seedlings raised for outplanting in Lao PDR; e. edible fruits of *Calamus viminalis*; f. nursery raised seedlings in Lao PDR; g. edible shoot plantation in Lao PDR; h. cut shoots of rattan with leafsheaths; i. edible fruits of *Calamus manillensis*.

Agricultural practice — Formerly, the fruits were mainly eaten by the local inhabitants of Northern Luzon, especially the children. But the snake skinned fruit with strong sour to sweet taste caught the curiosity of lowlanders and now the fruits are brought to city markets during the height of the fruiting season, which runs from November to January. Currently, a kilo of fruit costs USD 1.25 (rates 2007).

In particular, the town of Lagawe in Ifugao has harnessed the commercial potential of lituko and most residents plant them in backyards solely for fruit production. It has been reported that three generations engaged in selling the fruits that brought livelihood and income to the locals.

The seedlings are used for planting. The Ifugaos bury the seeds and pile dried leaves on top and quickly burn the dried leaves. The heat enhances the early seed germination. Other inhabitants bury seeds near cave entrances and wait for the seeds to germinate. Seedlings are pricked and planted near trees in the backyards.

Calamus trispermus Becc.

Common names — Giwi (Ifugao), Likuto (Tagalog).
Distribution — Luzon: Rizal Province.
Parts used — Canes, fruit.
Preparation and use — The canes are used for furniture and basketry works. Fruits are very sour even when ripe. The fruits even when green are collected and are an essential ingredient in local meat (offal and blood) dish. The sour fruit is also added to boiled fish with vegetables. When ripe, it is fermented into a vinegar-like sauce for dried fish.

Agricultural practice — Fruits are collected from the wild and taken to local markets during the fruiting season which runs from November to January. There is no account yet of the species being cultivated.

Calamus ornatus Blume var. ***philippinensis*** Becc.

Common names — Limuran, Kalape.
Distribution — Luzon-Cagayan, Camarines, Quezon, Laguna, Rizal , Bulacan, Mindoro Island, Palawan Island, Mindanao-Basilan, Davao, Surigao del Sur.
Parts used — Canes, fruits.
Preparation and use — Canes are used for furniture. Fruits are juicy and because of the sour taste are used to make vinegar.
Agricultural practice — Limuran is not cultivated for fruit but planted widely and commercially for the production of cane. The Philippine government considers it as a reforestation species. Fruits are collected from the wild and taken to local markets during the fruiting season which runs from November to January.

Calamus discolor Mart.

Common name — Kumaboi.
Distribution — Laguna, Quezon, Catanduanes, Mindoro Island, Palawan Island.
Parts used — Germinants and seedlings.
Preparation and use — When grown to a height of about 60 cm, kumaboi is an excellent ornamental plant. Seedlings are used as indoor plants. The newly growing germinants are

Plate 2 a. Native boy and ladies selling rattan fruits in the Philippines; b. newly harvested *Calamus manillensis* fruits; c. bamboo vase with rattan fruit scales as ornaments; d. pickled fruits of *Calamus manillensis* sold in market; e. dried fruits of *Calamus ornatus* Blume var. *philippinensis* Becc.; f. young *Korthalsia* species as ornamental plant in the Philippines; g. rattan plants used as peripheral fence of farms in Vietnam.

planted in dish gardens. Small leaves are dried, pressed and used to make greeting cards.

Agricultural practice — Seeds are germinated in seedboxes with soil mixtures of sand and humus. Seeds are spread over the soil mixtures and then covered with a layer of soil. As it is a prolific seeder, thousands of seedlings are found on the forest floor and are collected for ornamental purposes. Seedlings are potted and grown in nursery.

Korthalsia laciniosa (Griff.) Mart.

Common name — Danan, Tambuanga, Planung, Milingpiling.

Distribution — Luzon-Quezon, Camarines Norte, Catanduanes, Visayas-Leyte, Panay; Mindanao-Agusan.

Parts used — Seedlings.

Preparation and use — Young *Korthalsia* seedlings are used as indoor plants and ornamental garden plants. The leaves are used in flower arrangements.

Agricultural practice — Wild-collected or cultivated seedlings are raised in earthen pots in nurseries to heights of 60 to 100 cm.

Thailand

Calamus siamensis Becc.

Common name — Wai dong, Wai num.

Distribution — Laos, Thailand (northern provinces).

Parts used — Canes, young shoots.

Preparation and use — Slender canes are used for handicraft and tying purposes. The young shoots are edible.

Agricultural practice — Edible shoots are collected from the wild. The species is also cultivated in plantations as an agricultural crop. Planting spacing is 0.5–1 × 2.5 m. Fertilizer is applied when seedlings are 1 month old.

When the shoots are four or five months old, they can be harvested. Then, on an average, new shoots are harvested every month. The number of shoots that can be harvested each year increase to more than 10 shoots after 6 years. After each cutting, humus should be applied to encourage growth of new shoots. With irrigation, shoots are produced year round, otherwise shoot production is limited to the rainy season.

Vietnam

Calamus tetradactylus Hance

Common names — Maay neeps, maay tawts, maay ruootj gaf.

Distribution — Vietnam: Ha Tuyen, Quang Ninh, Thai Binh, Hai Phong, Ha Noi, Nam Ha, Ninh Binh, Thua Tien Hue, Dong Nai.

Parts used — Whole plants, canes.

Preparation and use — Whole plants are used as peripheral fence of the farm, on account of its spiny stem that keeps out stray animals and fowl. The slender canes are split and woven into fine baskets and trays, or used as rope for farm implements.

Agricultural practice — Seeds are collected from ripe fruits, cleaned and sown on seed beds. The beds are covered with rice hay and regularly watered. When seedlings are c. 10 cm high and have 3 leaves, they are individually potted in plastic bags with soil with humus. It takes 9 months to one year in the nursery before seedlings can be planted in the field.

CONCLUDING REMARKS

While rattan has proven to be an excellent non-timber forest product valued for its cane that has placed many Asian countries in the world market as producers and exporters of various finished rattan products, other potential uses of this important natural resource offer more and widening opportunities in the industrial trade.

Rattan cabbage of large species and varieties are a source of alternative vegetable and offer a good food source. Also, the edible shoots from slender and small species are produced as agricultural crop and currently cultivated in farms. In some ASEAN countries, particularly in Thailand, farmers preserve shoots in bottles and exported them to various countries with a population of Indochinese migrants.

Rattan fruits can be eaten and processed into condiments and confections. The fruit scales and leaf sheaths are sources of dyes and medicinal elements. The dried fruits and slender canes can be an elegant accent in flower arrangements. The thorns on the leaf sheaths and the presence of the whiplike extension of the climbing organs make the rattans an effective peripheral fence in farming households and forest allocations.

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REFERENCES

Baja-Lapis AC. 1998. Dependence of selected indigenous people on non-wood forest products and their sustainable practices: case study. ERDB-DENR, College, Laguna, the Philippines.

Baja-Lapis AC, Servaz-Audije BN. 2004. Checklist of Southeast Asian climbing palms. A compilation, ARCBC. College, Laguna, the Philippines.

Christensen H. 2002. Ethnobotany of the Iban and the Kelabit. A joint publication of the Forest Department Sarawak, Malaysia; Nep Com, Denmark and the University of Aarhus, Denmark.

Dransfield J. 1979. A manual of the rattan of the Malay Peninsula. Malayan Forest Records No. 29, Forest Department, Ministry of the Primary Industries, Kuching, Malaysia.

Dransfield J. 1992. The rattans of Sarawak. Royal Botanic Gardens Kew, and Sarawak Forest Department, Kuching, Malaysia.

Dransfield J. 1997. The rattans of Brunei Darussalam. Forestry Department Brunei Darussalam and the Royal Botanic Gardens, Kew. Kew.

Evans TD, Sengdala K, Viengkham OV, Thammavong B. 2001. A field guide to the rattans in Lao PDR. Royal Botanic Gardens, Kew.

Khamphone S. 2003. Edible rattan shoot production in three districts of Vientiane Municipality. Final report. Forestry Research Center Vientiane, Lao PDR.

Madulid DA. 1985. Philippine rattans with edible fruits. Rattan Information Center Bulletin 4: 2–4.

Subansenee W. 2007. Major non wood forest products of Thailand. FAO Corporate Document Repository. http: //www.forest.go.th/RATTAN-ITTO/html/wai-num.htm. Consulted in 2007.

Tomboc C, Lapis AB, Santos Jr G. 1993. Indigenous peoples dependence on rattan. FORSPA Publication No. 5, Bangkok, Thailand.

Xaydala K. 2003. Field guide book of edible forest products in Sangthong District Vientiane Lao PDR. Faculty of Forestry National University of Laos. Vientiane Laos.

Websites

http: //www.shamanshop.net