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Species for Bonsai
Material

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Foreword

Bonsai is a dwarfed tree growing in a tray or a pot. “Bon” means tray or pot in Japanese; “sai” means to plant; therefore bonsai means literally planted in a tray. It is an art of dwarfing trees or plants and developing them into an aesthetically appearing shape by growing pruning and training them in a container according to a prescribed technique.

Bonsai are not special plants but rather ordinary plants grown in a special way. A bonsai “tree” can be made of almost any woody plant material, including trees, shrubs or vines. Species with small leaves and are tolerant to heavy pruning are considered desirable as bonsai material.

Bonsai-making is an interesting hobby or even a profession. For plant propagators/gardeners it may be an additional source of income aside from the personal satisfaction they experience. For in this issue of RISE, we are providing you important information on the species popularly used as bonsai material.



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1. Bantigi

Common name: Bantigi

Local names: Ngirad (Ilocos Norte); kulasi (Rizal); bantigi (Tayabas, Cebu); legad (Palawan, Zamboanga, Sulu)

Scientific name: *Pemphis acidula* Forster

Family: Lythraceae

Description

An evergreen shrub or small tree up to 10 m tall or more; bole is often short and crooked, up to 20 (-40) cm in diameter; bark surface becomes deeply fissured with age and flakes into long strips, light grey to dark grey-brown. Wood is hard, twigs are angular. Leaves are simple, opposite, fleshy, silky haired. Flowers with axillary petals are white, and clawed. Fruits are in capsule. Seed has thick marginal wings.

Distribution

Pemphis is a monotypic genus occurring along the shores of East Africa and Madagascar to Sri Lanka, India, Burma (Myanmar), Indo-China, China, the Ryukyu Island, Taiwan, Thailand, throughout the Malesian region, northern Australia and the Pacific east to Fiji, Tonga and Pitcairn Island. Indigenous to Indo-Malaya and Polynesia.

Uses

P. acidula is planted as ornamental and bonsai. In the Philippines, living plants are harvested together with the rocky substrate and are exported to Taiwan where it is used in rock gardens. In Indonesia, it is planted as cover crop in forest plantations.

The wood is used as house posts, fence posts, tool handles, walking sticks, kris handles and sheaths, novelties, domestic implements, turnery, anchor, boat nails and pestles.

The leaves can be eaten raw as salad.

Habitat

P. acidula occurs in areas disturbed by man. The trees are scattered in lowland forests, open mangrove vegetation, along seashores and monsoon forests. It is uncommon but may be locally gregarious.

Environmental requirements

In the Philippines, *P. acidula* usually grows in coralline rocks and on limestone boulders.

Propagation: Through seeds.

2. Batulinao, Ebony

Common name: Batulinao, Ebony

Scientific name: *Diospyros ferrea* (Willd.) Bakh.

Family: Ebenaceae

Description

A small-sized tree seldom reaching a diameter of 40 cm; stem is seldom straight, fluted, short, attaining a height of 5 m; leaves are elliptic or obovate, often notched at the tip. Inflorescence is axillary, with 1-3 white or pale yellow flowers. Fruits turn from red orange to purple when mature.

Distribution

D. ferrea grows in most areas of Western Visayas or Region VII. It is naturally growing in the provinces of Eastern Samar particularly in Borongan, Guian and Catarman. The species was also sighted occurring in Inopacan, Leyte.

Uses

D. ferrea is planted as ornamental and as bonsai.

The wood is used in the manufacture of furniture, cabinet, inlaying eaves, tool handles, fingerboards and key of guitars and violins, drawing instrument, shuttles, bobbins, spindles and novelty products.

Habitat

The trees grows along rocky seashores and back of mangrove swamps and in some areas extending inland on dry slopes.

Phenology

In Guian, Eastern Samar, flowering starts in April, seed collection is from July to August.

Propagation: Propagation is through seed.

Seed germination

Soak seeds in tap water for 12 hours before sowing. Sow in any of the following media: (1) sand, (2) ordinary garden soil, and (3) 1:1 mixture of sand and ordinary garden soil.

3. Kalios

Common name: Kalios

Local names: Aludig (Ilk.); ampas (Pampanga); bagtak (P. Bis); balangiking (Ibn.); buntatai (P. Bis.); kagasaka (Lbn.); kakadli (Tag.); kalios (Tag.); kallos (Ibn.); lampataki (Tagn.)

Scientific name: *Streblus asper* Lour.

Family: Moraceae

Description

An evergreen shrub, small to medium-sized tree up to 15 to 30 m tall. Bole is often irregular, fluted, with many branches, without distinct buttresses. Bark surface is smooth, gray; inner bark is yellowish or whitish, with latex. Crown is compact, and dense. Leaves are simple, oblong-ovate, arranged spirally. Leaf surface is rough, dark, shiny green. Male flowers are in small, short-peduncled heads, up to 7 cm in diameter, greenish yellow to white.

Female flowers are in pairs and green, enclosing the fruit. Fruit is ovoid, 8-10 mm long, and pale yellow. Pericarp is soft and fleshy. Seed is ovoid, 5 - 6 mm long.

Distribution

Indigenous in India, China, Malaya and the Philippines.

Uses

The tree is grown as bonsai and ornamental. In Indonesia, it has been grown as cover crop in forest plantations.

The wood of *S. asper* is good for construction.

The rough leaves are utilized for cleaning cooking utensils and as substitute for sandpaper, while the old leaves are used to polish ivory. In India and Indo-China, young leaves are fed to cattle.

In Malaysia, leaf extract is used to make milk coagulate with a texture similar to that of yoghurt. Leaves can be eaten raw as salad.

S. asper is a well known medicinal plant. Its bark is traded as medicine to treat leprosy, piles, diarrhea, dysentery and elephantiasis. Bark decoction is used for disinfecting wounds; in India it is used to reduce fever. It is also used internally for the skin disease called "culebra". The bark is chewed as an antidote in snake poisoning. The bark of *S. asper* contains glucosides with anti-cancer, antimalarial and cardiac activity. In Thailand, the bark is also used to manufacture paper, while in Indo-China, it is used for rope and rough clothing.

In India, the latex is put on sore heels and chapped hands, and on granular swellings. The Annamites apply the latex on their temples for neuralgia or as sedative.

Ripe fruits of *S. asper* can be eaten raw or boiled.

Roots decoction are used in epilepsy, inflammatory swellings and applied to boils. In powder form, being given for dysentery, and a poultice applied ulcers.

Seeds are beneficial in epistaxes, piles and diarrhea.

The juice is used as astringent and antiseptic.

Habitat

The tree is common in open and lowland forests, in thickets and open vegetation and in monsoon and limestone forest; it also occurs in areas disturbed by man. In the Philippines, it is common in regions subjected to a long dry season.

Environmental requirements: Elevation is from low to medium altitudes.

Propagation

Propagation is through seeds and cuttings. Cuttings transplanted in Carranglan show considerable degree of tolerance to open and drought conditions. It has the ability to coppice.

Dispersal

The seeds of *S. asper* are dispersed by white ants which drag them into their nests, where they often germinate.

4. Kamuning

Common name: Kamuning

Local names: Orange jasmine (Jessamine); Mock orange, Chinese box, China box, Satin wood, Cosmetic bark tree, chalcas or Murraya.

Scientific name: *Murraya paniculata* (L.) Jack

Family: Rutaceae

Description

A. Philippine dwarf kamuning (Murraya "Ibarra Santos").

A dwarf mutant developed at the Philippine Nuclear Research Institute (PNRI) by the late geneticist and plant breeder Ibarra Santos (1933-2000). A compact or bushy shrub that looks like a miniature tree or bonsai as it grows up to 3.0 ft only. Leaves are just like the native plants. Stem is smooth and light yellow brown in color. It produces clusters of small scented white flowers in short, axillary inflorescence called cyme that appear in

several flushes almost year round. Fruits look like miniature lime that turn vivid orange to deep red when ripe. It is 0.5 inch small, fleshy and ovoid in shape.

B. Native kamuning

An evergreen shrub or small tree that grows rather slowly with age to a height of 5-13 ft with symmetrical or round canopy that spreads to 7-15 ft wide. Flowers are white and are clusters like orange blossoms with a jasmine fragrance. Leaves glossy, pointed light to dark green. The stems turn whitish as the plant grows older. Fruit is orange or scarlet in color like tiny citrus.

Distribution

The species is native to China, India to Malay Peninsula and Southeast Asia and to Australia and Polynesia. Native plants can be found in most parts of the Philippines. At present, it is being cultivated in commercial quantities among plant growers.

Uses

M. paniculata is one of the commonly used shrubs or small trees in tropical gardens and very popular in landscaping. The Chinese use it as bonsai material for so many years. The tree is planted in butterfly houses as it attracts insects. It is planted as hedge or screening plants, as specimen in perfume garden. It can be clipped into shapes (topiary) can be grown as a container or pot plant for use in indoor or outdoor, ideal plant for terrarium and dish garden. The tree tolerates worst conditions so it is also used in parking lot islands.

The leaves can be harvested and used as long lasting cut foliage with or without water, and maybe pruned repeatedly.

The bark is used in cosmetics.

Habitat: *M. paniculata* grows in lowland hill rainforest.

Environmental requirements

Elevation is up 600 m above sea level. *M. paniculata* grows in rocky or limestone soil.

Phenology

Murraya paniculata is a night flowering tree. Flower production of the native species tends to be seasonal. The plant does not bloom during the dry season or when not watered regularly. Flowering is most profuse during the rainy season or when there is plenty or irrigation water. According to Mr. Fernando B. Aurigue (2004) *Murraya* is the most precocious flowering plant he ever encountered.

A two-week old seedling with just the pair of cotyledonary among decaying leaves produce a normal flower. Even seedlings from mutant plants may produce flowers and fruits immediately after germination when they are only 0.59 inch tall.

Propagation

Asexual methods of propagating desirable clones of the species are by marcotting and cutting. The dwarf mutant is propagated only by seeds. Seeds are sown immediately (without air drying) after extracting from newly harvested fruits. A fruit may contain one to three seeds that take at least 12 days to germinate.

Desirable clones of the species can be propagated by marcotting and by cutting. Harvest the fruit when color turns from red orange to deep red. Fruit may contain one to three seeds.

Seed extraction/processing

1. Soak the seeds in water for 3 days to soften the fruit part or the pericarp. Macerate the soften pericarp by hand to remove the pulp thoroughly in running water to clean the seeds.
2. Air dry the seeds for a few hours before sowing.

Seed gemination

Sow the seeds by spreading them evenly in a polyethylene bag containing equal combination of either of the following:

Sand + coconut coirdust
Burnt ricehull + sawdust

Cover the seeds with 1 m layer of the medium and place in a shaded area.

Water the seeds only when the surface of the medium appears dry.

Kamuning seeds usually germinate 2-8 weeks after sowing.

Transplanting

Transplant the seedlings one week after germination or when the first pair of leaves emerges.

Transplant individually in a 2 1/2 x 2 1/2 x 5 plastic bag containing equal combination of any of the following media.

Garden soil + coirdust
Sand + coirdust
Burnt ricehull + sawdust

Keep the newly transplant plants in shade at least one month. Kamuning seedlings grow best under partial shade; direct sunlight causes yellowing and scorching of the leaves.

Apply complete fertilizer (14-14-14) two weeks after germination at 1 tbsp/4 l of water. Repeat every other week . Urea (46-0-0) at 1 tbsp/4 l of water should also be applied once a month.

Water the plant daily during the dry season and minimally during the rainy season.

Propagation by stem cuttings

Secure healthy and woody 13-21 cm long stem cuttings with mature leaves. Remove 5-8 cm of the terminal stem to allow faster rooting.

Place the newly harvested cuttings in polyethylene bags (PEB) and sprinkle with water to prevent drying. Seal the bags with rubber bands.

The “kulob” method

Kamuning stem cuttings root faster in the kulob method wherein the whole system is enclosed with a polyethylene plastic bag. This method helps to maintain the humidity needed to initiate rooting. For extensive rooting, use appropriate media and rooting hormones. The steps involved in this method are as follows:

- a. Prepare rooting medium composed of an equal combination of sand and coirdust. Drench with 1 tbsp fungicide dissolved in 4 l of water.
- b. Dip cuttings either in “quick root powder” or in 50 ppm Alpha Napthalene Acetic Acid (ANAA) or Hormex for 30 minutes.
- c. Stick the cuttings 4 cm deep in a 6 x 6 x 11 plastic bag containing the medium. Use bigger pots if more cuttings will be planted. A maximum of 5-6 cuttings can be planted in a 6 x 6 x 11 plastic pot.
- d. Enclose the whole system with a polyethylene plastic bag and seal with rubber bands.
- e. Place the kulob plants under the shade.

Transplanting

After 6-8 weeks, roots are already established. Transplant rooted cuttings according to the following steps:

- a. Transplant individually in a 5 x 8 in plastic bag containing either an equal mixture of sand and coirdust or soil and coirdust.
- b. Acclimatize transplanted plants under partial shade for one week before exposing them in full sunlight. Well-established kamuning plants can tolerate both partial shade and full sunlight conditions.

After one week, apply complete fertilizer (14-14-14) at 2 tbsp per 4 l of water. Repeat every other week. Urea (46-0-0) at 2 tbsp dissolved in 4 l of water is recommended once a month. Slow-release fertilizer (17-17-17) could also be applied once every three months. Plants directly planted to the soil need not be fertilized too often.

Water the plants daily during the dry season and minimally during the rainy season.

References

- Aurigue, Fernando B. 2004. *Murraya* "Ibarra Santos". The Philippine Dwarf "Kamuning" Agriculture Vol. VIII No. 9 Sept. p. 62.
- Bautista, Eugenia and R. Arbiol. 1998. Batulinao: A valuable forest resources in Eastern Visayas needing protection and perpetuation. *Canopy International*. Vol, 24 No. 3 pp. 4 and 11.
- <http://www.mcarboretum.org/Horticulture/bonsai/FAQs.htm>
- Madulid, Domingo A. 1995. A pictorial encyclopedia of Philippine ornamental plants 2nd ed.: bookmark. Makati City. pp. 237-238, 261-262.
- Nguyen, BA. 1998. *Streblus* Lour. In: Sosef, M.S.M, Hong, L.T. & Prawirohatmodjo, S. (Editors): *Plant Resources of South East Asia No. 5 (3) Timber trees: Lesser-known Timbers*. Backhuys Publishers Leiden. pp. 57-539.
- Purnobasuki, H. and B. Irawan. 1998. *Pemphis*, J.R. Forster & J.G. Forster. In: Sosef, M.S.M., Hong, L.T. & Prawirohatmodjo, S. (Editors): *Plant Resources of Southeast Asia No. 5(3). Timber trees: Lesser-known Timbers*. Backhuys Published, Leiden pp. 435-436.
- Quisumbing, Eduardo.1978. *Medicinal Plants of the Philippines*, Katha Publishing Co., Inc. p. 242.
- Siar, Simeona V., C. Jalotjot Jr. (IPB) 2000. Mass propagation of kamuning Agriculture Vol. IV No. 11. Nov. p. 26.
- Tue Ha Van. 1998. *Murraya* J. Konig ex. L. In: Sosef, M.S.M., Hong, L.T. & Pravirohatmodjo, S. (Editors): *Plant Resources of Southeast Asia No. 5(3). Timber trees: Lesser-known Timbers* Backhuys Published Leiden pp. 389.391.