



# Edible Canarium Nuts and Fruit

Bruce French



*Helping the hungry feed themselves*

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**Scientific name:** *Canarium acutifolium* (DC.) Merr.

**Common name:**

**Other names:**

**Other scientific names or synonyms:** *Canarium lineistipulata* K. Sch. & Laut.; *Canarium longiflorum* Zipp. ex Miq.; *Canarium nigrum* Roxb.; *Canarium rostratum* Zipp.; *Dammara nigra* Rumph.; *Marignia acutifolia* DC.; *Pimela acutifolia* Bl.; *Pimela laxiflora* Bl.; *Santiria lineistipula* K. Schum. & Lauterb.;

**Description:** A tree that grows to 20 m high and occasionally to 40 m high. The trunk can be 20-90 cm across. It can have buttresses up to 3 m high. The small branches are 1.5 cm thick. The leafy structures (stipules) at the base of the leaf stalk are like threads and 1.5-3.5 cm long. The leaves have 3-5 leaflets. These are oval and 12-30 cm long by 4-11 cm wide. They are papery. The base of the leaflet is slightly oblique but rounded and the tip is long and slender. There are between 11 and 20 pairs of veins that curve near the edge of the leaf. The flower clusters are a shaped like a pyramid and in the axils of leaves. The male clusters are up to 50 cm long and the female clusters 40 cm long. There are many small flowers 4 mm long. The fruit clusters are rigid and have many fruit. The fruit are oval and round in cross section. They are 12-15 mm long by 8-10 mm wide. There is one seed inside. Three different varieties occur based on the number of stamens and number of veins in the leaflets.



**Countries where it grows:** Asia, Australia, Indonesia, Pacific, Papua New Guinea, PNG, SE Asia, Vanuatu,

**Conditions it needs:** A tropical plant. It grows in rainforest and more open forest near river banks. It suits wet clayey soil. It grows from sea level up to 200 m and occasionally up to 700 m altitude.

**How to grow it:**

**Production:** Trees flower in July to September.

**How it is used:** The seeds or nuts are eaten.



**Scientific name:** *Canarium album* (Loureiro) DC.

**Common name:** **Chinese white olive**

**Other names:** Wu Lam, Paak-laam, Tram trang, Olive nut, Larm yin, Ganlan, Maizhahang, Ximo, Ca-na, Cay ca-na, Ch'ing-kuo, Samo cheen, Tram chim, Tonkin canarium,

**Other scientific names or synonyms:** *Canarium album* Leenh.; *Canarium tonkinense* Engl.; *Hearnia balansae* C. DC.; *Pimela alba* Lour.;

**Description:** A large tree. It grows 25-30 m high. The trunk is straight and branches high up. The trunk can be 1.5 m across. The bark is white and has cracks along it. The crown of the tree is small and rounded. The leaves have about 8 pairs of leaflets with a leaflet at the end. The leaflets are 6-15 cm long by 2.5-6 cm wide. They have shiny white scales underneath. The base of the leaflets is unequal. The flower clusters have branches without a flower at the end. They flowers are small and 0.2-0.3 cm long and yellowish white. The fruit is oval and 3.4-4 cm long by 2-2.5 cm wide. They are yellowish green when mature. Young seedling trees have leaves that vary a lot in shape. Young leaves are simple with deep lobes. The flowers are white or yellow and in clusters around a stalk produced in the axils of leaves. The fruit is angled and has 3 cells. They are 3-4 cm long and 1.2-2 cm wide. They are dull yellow when ripe.



The flower clusters have branches without a flower at the end. They flowers are small and 0.2-0.3 cm long and yellowish white. The fruit is oval and 3.4-4 cm long by 2-2.5 cm wide. They are yellowish green when mature. Young seedling trees have leaves that vary a lot in shape. Young leaves are simple with deep lobes. The flowers are white or yellow and in clusters around a stalk produced in the axils of leaves. The fruit is angled and has 3 cells. They are 3-4 cm long and 1.2-2 cm wide. They are dull yellow when ripe.

**Countries where it grows:** Asia, China, Indochina, Indonesia, Laos, Pacific, Philippines, SE Asia, Taiwan, Thailand, Vietnam,

**Conditions it needs:** It is a subtropical and tropical plant. It grows in forest in north Vietnam below 500 m altitude. It needs light to grow. In Yunnan, China it grows between 600-1300 m altitude. It grows in deep humid and fertile soil. It can grow under light shade.



**How to grow it:** Plants can be grown by seeds.

**Production:** Trees are fast growing. They flower in January and February and fruit in June and July. In southern China fruit are available in June to August.

**How it is used:** The fruit are eaten like olives. The fruit are soaked in tubs of salt water, then dried. They are also preserved as a condiment. They are also used for wines and drinks. The fruit are edible when mature. They are also pickled.

The seed contains an edible oil. The oil should not be too hot as seeds burn easily. The seed kernels are eaten.

It is a cultivated crop. Fruit are sold in markets. It is a priority under-utilised crop for China.



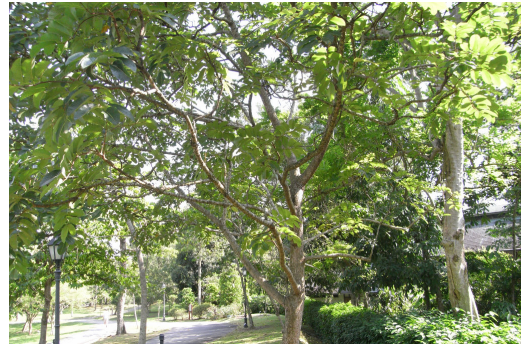
**Scientific name:** *Canarium australasicum* (Bailey) Leenh.

**Common name:** **Mango barked Carrot wood**

**Other names:** Mango-bark, Carrot Wood, Brown Cudgerie,

**Other scientific names or synonyms:** *Bursera australasica* F. M. Bailey; *Canarium baileyanum* Leenh.; *Protium australasicum* Sprague;

**Description:** A medium to tall tree. It grows up to 20-30 m high and spreads 10-15 m across. The bark is grey and is marked both by lumps and depressions. The inner bark has a mango like smell. The young shoots are smooth without hairs. The leaves are divided into 3-7 leaflets. The leaflets are 7-15 cm long by 3-5 cm wide. They are oval and bright green and shiny on both surfaces. The flower clusters are borne near the ends of branches. The flowers are 0.5 cm across. They are deep red. The fruit is 1-1.5 cm long and has a hard stone. The fruit is blue or purple.



**Countries where it grows:** Australia

**Conditions it needs:** A tropical plant. It grows in tropical and subtropical regions. It grows in northern Australia along the Queensland coast. It grows between 10-1300 m altitude. It suits hardiness zones 10-12.

**How to grow it:** Plants are grown from seed. Seed should be sown while fresh. Germination can be improved by filing the seed coat. It is probable they can be grown by aerial-layering.

**Production:** Trees flower in November and December.

**How it is used:** The kernel of the nut is eaten.



**Scientific name:** *Canarium australianum* var. *glabrum* F.Muell., Leenh.

**Common name:** **Melville Island White Beech**

**Other names:** Marirra, Styptic Tree,

**Other scientific names or synonyms:**

**Description:** A deciduous tree. It loses its leaves in the dry season. It grows to 12-25 m high and spreads to 3 m wide. The stems are erect and branching. They branches have leaf scars on them. The bark is smooth and slightly scaly. It is cream-grey. The leaves are compound and alternate. The whole leaf is 30 cm long. There are 4-7 pairs of oval leaflets and a leaflet at the end. These are 7-16 cm long by 4-7 cm wide. Leaves are dark green and smooth on top and paler and sometimes slightly hairy underneath. The veins are distinct. The edges of the leaves are finely toothed on younger leaves. The leaf stalk is 5-15 cm long. Trees are separately male and female. The flowers are like tubes and occur in clusters in the axils of leaves near the ends of branches. The flowers are small and creamy white and 0.3-0.7 cm long. The flower cluster may be 25 cm long. Male clusters are larger and more open than female clusters. The fruit are oval fleshy fruit with a hard stone inside. They are 2.5 cm long by 1.5 cm wide. They are blue-black when ripe. Inside there is a hard brown one seeded nut. The seed is 1.5 cm long.

**Countries where it grows:** Australia, Pacific, Papua New Guinea, PNG,

**Conditions it needs:** A tropical plant. It grows on light to medium, well-drained soils. It prefers an open sunny position. It is drought and frost tender. It is most common in open forest and near the sea on sand dunes.

**How to grow it:** Plants are grown from seed. Seeds do not all germinate at the same time. This can be improved by filing to break the hard seed coat. Trees can be propagated by aerial layering. Grafting may also be possible.

**Production:** Young trees grow rapidly. In Australia trees flower September to December and fruit April to October. Flowering and fruiting time varies with location.

**How it is used:** The seeds are eaten.  
The ripe fruit is eaten after cooking (roasting).  
The seeds are eaten especially by children.



**Scientific name:** *Canarium bengalense* Roxburgh

**Common name:** **Bengal canarium, Square canarium**

**Other names:** Tram ba canh, Nerebi, Dhuna, Narockpa, Marockpa,

**Other scientific names or synonyms:**

**Description:** A large tree that loses its leaves during the year. It grows 10-20 m high and has a trunk 45-55 cm across. The trunk is straight and branches after 10 m height. The bark is grey and not cracked but can split. The young branches are green and wrinkled along their length. The leaves are made up of 8 or 9 pairs of leaflets with one at the end. The leaves are 25-37 cm long and the leaflets are 7-9 cm long by 3-3.5 cm wide. They are dark green on the upper surface and paler underneath. The base of the leaflets is rounded while the tip is pointed. There are 10-11 pairs of veins. The flower clusters occur near the ends of branches. These are 15-17 cm long. The fruit is 3 cm long by 1.5 cm across and triangular in cross section. It is green with the middle layer 2.5-3 mm thick. The seed is hard.

**Countries where it grows:** Asia, Bangladesh, Burma, Himalayas, India, Indochina, Laos, Myanmar, Northeastern India, SE Asia, Sikkim, Vietnam,

**Conditions it needs:** A tropical plant. It grows on humus rich soils. It occurs below 300 m altitude in Vietnam. It needs plenty of sunlight. It is native of the eastern Himalayan region. In Sikkim it grows below 500 m above sea level.

**How to grow it:**

**Production:** Trees grow quickly. Plants flower in June and fruit in July to December.

**How it is used:** The fruit can be eaten.



**Scientific name:** *Canarium decumanum* (Rumph.) Gaertn.

**Common name:**

**Other names:** Jelamu, Jilapat, Kedungdong, Kerari, Pamotodon,

**Other scientific names or synonyms:** *Canariopsis decumana* Bl. ex Miq.; *Pimela decumana* Bl.;

**Description:** A large tree with very large buttresses. These can be 8 m high and 5 m across. The tree grows to 30-60 m high. The trunk can be 1-2 m across. The small branches are 1-1.5 cm across and angular. These leave large leaf scars. At the base of the leaf stalk there are small stipules that look like small simple leaves without teeth around the edge. The leaves are arranged in spirals. They are made up of 4-6 pairs of leaflets. The leaves are 35-45 cm long and the leaflets are oval and between 5-30 cm long by 3-10 cm wide. The leaflets are stiff and papery. The base of the leaflets is rounded. The tip of the leaf tapers to a point. The flower clusters occur in the axils of leaves. The male flower clusters are 4-19 cm long with many flowers, while the female flower clusters are 5-7 cm long and with few flowers. The fruiting cluster has few fruits and there is not one flower at the end of the cluster. The fruit are somewhat triangular in cross section and 7-8 cm long by 4-6 cm wide. There can be 1 to 3 seeds inside the fruit.

**Countries where it grows:** Asia, Indonesia, Malaysia, Pacific, Papua New Guinea, PNG, Philippines, SE Asia,

**Conditions it needs:** A tropical plant. It grows in primary forests at low altitudes. It grows up to 100 m above sea level.

**How to grow it:**

**Production:** Plants flower from April to May and fruit June to November.

**How it is used:** The seeds or kernels are eaten.



**Scientific name:** *Canarium denticulatum* Blume

**Common name:**

**Other names:** Pininasan, Kenaren, Rave wulan, Sajeng, Adal, Aijing, Alab-alab, Bangkulat, Jelapal gunung, Indalus, Kambayan, Kayamuk, Kedongdong, Kelamoh, Kuningam, Madamsat, Lembuakat, Pinayasan, Selada, Talangsai,

**Other scientific names or synonyms:**

**Description:** A tree. It grows 20-30 m high. The young branches are densely brown and hairy. The leaves are up to 50 cm long. The leaflets are 20-40 cm long. The leafy structures at the base of the leaf stalk (stipules) are deeply lobed and usually unequal sided. They are 1-2 cm by 0.8-1.3 cm. The flowers have a smell. Female flowers are 5-7 mm long. The fruit is oval and rounded at the ends. It is 1.3-2.5 cm long by 1-1.5 cm wide. The fleshy layer is thin. The wall of the stony shell is thick.

**Countries where it grows:** Andaman islands, Asia, Burma, Indonesia, Malaysia, Philippines, SE Asia, Thailand,

**Conditions it needs:** A tropical plant. It grows from sea level up to 1,400 m along river banks.

**How to grow it:**

**Production:**

**How it is used:** The nuts are eaten.



**Scientific name:** *Canarium harveyi* Seemann

**Common name:** **Ngali**

**Other names:** 'Ai, Ai, Kaunicina, Kaunigai, Nangai, Nangae, Angai, Gamagamba, Nyinga, Nolepo,

**Other scientific names or synonyms:** *Canarium mafoa* Christopherson;

**Description:** A small or medium sized tree that can be 3-21 m high. The small branches are angular. They are 5-8 mm thick. The youngest parts are brown and hairy. The leaves have 2-4 pairs of leaflets and a leaflet at the end. The leaves are 40 cm long and the leaflets 4-20 cm long by 2-8 cm wide. The leafy structure (stipule) at the base of the leaf stalk is ear shaped and falls off. Male and female flower clusters occur separately on the same tree. The male flower cluster is 10-20 cm long and with many flowers. The female flower cluster is 4-9 cm long and with 6-7 flowers. The fruiting stalk is 2-12 cm long and it has 1-4 fruit. The fruit are green at first but become purple to black at maturity. The fruit have 3 cells but they may not all have seeds. Fruit are large in the Solomon Islands and small in Fiji.



**Countries where it grows:** Fiji, New Caledonia, Niue, Pacific, Samoa, Solomon Islands, Tonga, Vanuatu,

**Conditions it needs:** A tropical plant. It grows in dense forest from sea level to 600 m altitude. It is usually in areas with an annual rainfall of 1800-4000 mm per year. The annual average temperatures are 23-28°C.

**How to grow it:** Plants are grown from seed. The seed need to be sown fresh.



**Production:** Seedlings grown quickly. They can be transplanted into the field after 3-5 months. Flowers have been recorded from February to June and fruits between April to December.



**How it is used:** Seedlings grown quickly. They can be transplanted into the field after 3-5 months. Flowers have been recorded from February to June and fruits between April to December.



**Scientific name:** *Canarium hirsutum* Willd.

**Common name:** **Kim, White dhup**

**Other names:** Kanari jaki, Ki bonteng, Mede-mede, Merdongdong, Pagsahingin, Breadlanka, Damar degun, Kambayau burng, Bakayan, Dhup, Dulit, Hagushus,

**Other scientific names or synonyms:** *Canariopsis altissima* Miq.; *Canariopsis hirsuta* Miq.; *Canariopsis hispida* Miq.; *Canarium ahernianum* Merr.; *Canarium altissimum* Blume; *Canarium bersamifolium* G. Perkins; *Canarium costulatum* Elmer; *Canarium ellipsoideum* Merr.; *Canarium greshoffii* Koord.; *Canarium hirsutum* var. *leeuwenii* Leenh.; *Canarium hirsutum* var. *majus* Hassk.; *Canarium hispidum* Blume; *Canarium leeuwenii* H. J. Lam.; *Canarium multijugum* H. J. Lam.; *Canarium multipinnatum* Llanos; *Canarium nervosum* Elmer; *Canarium oxygonum* Quisumb. & Merr. *Canarium palawense* Lauterb.; *Canarium racemosum* Merr.; *Canarium redlkoferi* G. Perkins; *Canarium riedelianum* Engl.; *Canarium robustum* Merr.; *Canarium subcordatum* Ridl.; *Canarium warburgianum* G. Perkins; *Pimela altissima* Blume;

**Description:** A tree. It grows 30 m high. The trunk is straight. It is 60 cm across. The outer bark is grayish-brown and finely cracked. The leaves have leaflets along the stalk. The leaves are arranged in spirals. There are 9-27 leaflets. The leaflet stalks have sharp edges. The leaflets taper at the tip. The flowers are in groups in the axils of leaves. The flowers are 12 mm long. The fruit are oval and 2-6 cm long by 2-4 cm wide. They can have irritating brown hairs.

**Countries where it grows:** Asia, Indonesia, Malaysia, Pacific, Papua New Guinea, PNG, Philippines, Solomon Islands, SE Asia,

**Conditions it needs:** A tropical plant. It grows in tropical forests.

**How to grow it:** It is grown from seed.

**Production:**

**How it is used:** The nuts are eaten.



**Scientific name:** *Canarium indicum* L.

**Common name:** **Galip nut, Java almond**

**Other names:** Kanari, Kenari, Keanee, Pili, Rata kekuna, Jangli badam, Kagli mara, Java badami, Ngali, Nangai, Lawele, Hinuei, Angari, Ngari, Ngoeta, Nolepo, Nyia nyinge, Okete, Sela, Voi'a, Nyia Nyinge,

**Other scientific names or synonyms:** *Canarium amboinense* Hochr.; *Canarium commune* L.; *Canarium grandistipulatum* Lauterb.; *Canarium mehenbethene* Gaertner [Illegitimate]; *Canarium moluccanum* Blume; *Canarium nungi* Gillaumin; *Canarium shortlandicum* Rechinger; *Canarium subtruncatum* Engl.; *Canarium zephyrinum* Rumph. ex Blume;

**Description:** It is a large tree often up to 40m high. The stems are often twisted or rough and 1 m across the trunk and there are usually buttresses at the base of the tree. The buttresses are tall but thin. The small branches are more or less powdery. The vascular strands are unusual as can be seen in the pith or centre mass of cells, not spaced in a continuous circle as in many trees. The leaf of a galip tree is made up of 3 to 7 pairs of leaflets. The leaves do not have hairs on them. The leaflets are



oblong and can be 7 to 28 cm long and 3 to 11 cm wide. In young trees the leaves are distinctly larger. The leaves are pointed at the tip and rounded at the base. The leaflets are stiff and glossy being dark green on top and light green underneath. At the base of a leaf where the stalk joins the branch there is a stipule and it is large and has saw like teeth around the edge. This is important for identifying species. The flowers are mostly produced at the end of the branches. A group of flowers are produced on the one stalk. The flowers are separately male and female often on separate trees. The male flowers have 6 anthers or pollen containers in a ring. In the female flower these 6 stamens are improperly developed (staminodes) around a 3-celled ovary. The fruit is slightly triangular in cross section and black when mature. The galip fruit has 3 cells (sometimes 4) but mostly only one cell is fertile so that 2 of the cells are empty, and one has a kernel. The fruit has a thin layer of pulp and a very hard inner shell. The kernel is inside the shell. Fruit can be 6 cm x 3 cm. This kernel is oily and edible.



**Countries where it grows:** Africa, Asia, Australia, Fiji, Guam, Hawaii, Indonesia, Malaysia, Niue, Pacific, Palau, Papua New Guinea, PNG, Philippines, Samoa, SE Asia, Solomon Islands, Sri Lanka, Tahiti, Timor-Leste, Tonga, USA, Vanuatu,

**Conditions it needs:** A tropical plant. The galip (*Canarium indicum*) grows in coastal areas, and is most common in the islands such as North Solomons Province, New Britain and New Ireland. It also occurs naturally in the Solomon Islands, Vanuatu and Guam. It occurs on the New Guinea mainland and Papua as well as in Maluku in Indonesia. It has been taken to some other countries to grow. Galip nuts are common in the lowland rainforest. They mostly grow from sea level up to about 450 m altitude in the equatorial tropics.

**How to grow it:** Trees are planted near houses. They are mostly grown from seed. Many of the galip nuts take several months for the seeds to start to grow. As well, the seeds normally should not be buried under the ground, but should be just near the surface of the ground. Care is needed to see that the seeds and seedlings do not dry out. As the seed grows or germinates, a well-defined cap is split off the nut. Trees grow fairly quickly. Trees can be grown by budding or grafting. Considerable varietal variation occurs.

**Production:** The main season is often April to May but trees can bear nuts 2 or 3 times a year. An average kernel weighs 3 g. Climbing the large trees is difficult and dangerous, so often nuts are harvested after they fall. Nuts are often stored inside houses after the fleshy outer layer is removed but the hard shell remains. Nuts which are removed from the shell and roasted can be stored in sealed containers for many months. The nuts are often coarsely ground and added to other foods.



**How it is used:** The kernels or the nuts are eaten raw or slightly roasted. Seeds can be dried and stored.

The nuts can be pressed for oil. The fresh oil is mixed with food.

**CAUTION** The seed coat should not be eaten as it carries some substance producing diarrhoea.



Scientific name: *Canarium kaniense* Lauterbach

Common name: **Piu, Usasi**

Other names:

Other scientific names or synonyms:

**Description:** A large tree up to 40 m high and sometimes with buttresses. The small branches are 0.5-1 cm thick. They do not have hairs. The branches have one or two round cylinders of vascular strands when cut cross-ways. (Like in a root). The leafy stalk (stipule) at the base of the leaf is oval and 1-3 cm long by 0.5-2 cm wide. The edges of this are deeply toothed and can be almost like a fringe. The leaf can have 3-5 or 6 leaflets. They do not have hairs. The leaflets are oval and 8-12 cm long by 3.5-7 cm wide. They can be papery or slightly leathery. The base of the leaflet is slightly slanting. The leaflets do not have teeth around the edge. The top of the leaf ends fairly abruptly. There are 9-15 pairs of side veins. These are slightly curved and at an angle. The flowers are near the ends of the branches. The flower clusters can be 30 cm long. They are densely covered with fine hairs. There are 5-6 fruit on a stalk. Individual fruit have very short stalks. Fruit are 5-6 cm long and 3-4 cm across. They are triangular in cross section. Normally there is only one seed inside with the other cells empty.



**Countries where it grows:** Pacific, Papua New Guinea, PNG,

**Conditions it needs:** A tropical plant. It occurs mostly on the mainland and only in PNG. Plants are mostly between 1,000 and 2,000 m altitude.

**How to grow it:** Plants normally are self-sown from seed.

**Production:** The fruit/nut production is seasonal. Flowering is in December and fruiting from January to March.

**How it is used:** The oily seeds are eaten. It is a minor wild edible nut in Papua New Guinea.



**Scientific name:** *Canarium kipella* (Blume) Miq.

**Common name:**

**Other names:**

**Other scientific names or synonyms:** *Canarium kitenga* Miq.; *Canarium pimela* Blume [Illegitimate]; *Pimela kipella* Blume; *Pimela kitnengo* Blume;

**Description:** A tree.

**Countries where it grows:** Asia, Indonesia, Pacific, Philippines, SE Asia,

**Conditions it needs:** A tropical plant. It grows in the mountains in Java.

**How to grow it:**

**Production:**

**How it is used:** The nut is recorded as eaten. It is a plant species at risk.



**Scientific name:** *Canarium lamii* Leenh.

**Common name:** **Djaato kenari**

**Other names:**

**Other scientific names or synonyms:**

**Description:** A medium sized tree that grows to 20 m high. It is 50 cm through the trunk. The small branches are 6-7 mm thick. The leaves have 3 pairs of leaflets. The leafy structures (stipules) at the base of the leaf stalk occur 1-1.5 cm from the base and are oval and stiff and tend to run down the stem. The leaflets are sword shaped and 11-18 cm long by 6-7 cm wide. The base is unequal and rounded while the tip ends bluntly. There are 10-12 veins which are somewhat curved. The fruiting branch occurs near the end of branches and has one fruit. The fruit are oval and 6 cm long by 4 cm wide. The stone is rounded triangular in cross section. There are 1 or 2 seeds inside. (It is somewhat similar to *Canarium harveyi*).

**Countries where it grows:** Asia, Indonesia, Pacific, Papua New Guinea, PNG, SE Asia,

**Conditions it needs:** A tropical plant. They occur in forests at very low altitudes.

**How to grow it:**

**Production:** It grows from seed.

**How it is used:** The nut is eaten.



**Scientific name:** *Canarium littorale* Blume

**Common name:** **Shore Kedongdong**

**Other names:** Asam, Bekatan, Damar kahingai, Jelemu, Karamu barawou, Kawangang, Kurihang, Mekos, Rupai, Sala, Seladah, Buah kawa, Kedongdon pasir, Damar kijai, Medang belanak,

**Other scientific names or synonyms:** *Canarium acutum* Engl.; *Canarium bennettii* Engl.; *Canarium flavum* Ridl.; *Canarium giganteum* Engl.; *Canarium glaucum* Blume; *Canarium littorale* var. *purpurescens* (Benn.) Leenh.; *Canarium pruinatum* Engl.; *Canarium pseudocommune* Hochr.; *Canarium pseudocommune* var. *genuinum* Hochr.; *Canarium pseudocommune* var. *subelongatum* Hochr.; *Canarium purperascens* Benn.; *Canarium rufum* Benn.; *Canarium secundum* Benn.; *Canarium serricuspe* Miq.; *Canarium serrulatum* Miq.; *Canarium subtruncatum* (non Engl.) Baker; *Canarium tomentosum* Blume; *Canarium tomentosum* var. *flavum* Blume; *Canarium tomentosum* var. *typicum* Blume;

**Description:** A tree. It grows 30 m high. The young branches have red hairs. The leaves have 3 pairs of leaflets. They are broadly oval. The young leaflets are finely hairy at least on the veins. The leafy structures (stipules) at the base of leaf stalks only occur on very young branches and then fall off. They are kidney shaped. The leaves are narrowly oval and leathery. They have wavy edges. The flowers are yellow to red. The fruit is oblong and 3.5-6.5 cm long by 1.5-3 cm wide. It is pale green and fleshy. The fruit are oval and green. The kernels are small and the shells are hard. These stones are 3 angled.

**Countries where it grows:** Asia, Brunei, Indochina, Indonesia, Laos, Malaysia, SE Asia, Singapore, Thailand,

**Conditions it needs:** A tropical plant. It occurs in lowland mixed forest normally below 800 m altitude. It can be up to 1,200 m above sea level.

**How to grow it:**

**Production:** It grows from seeds.

**How it is used:** The nuts are eaten.



**Scientific name:** *Canarium luzonicum* (Blume) A. Gray

**Common name:** **Java almond, Pili nut**

**Other names:** Elemi, Pining-liitan,

**Other scientific names or synonyms:** *Canarium carapifolium* Perk.; *Canarium commune* (non L.) F. Vill.; *Canarium oliganthum* Merr.; *Canarium polyanthum* Perk.; *Canarium triandrum* Engl.; *Pimela luzonica* Blume;

**Description:** A large tree. It can grow up to 35 m high and be 1 m through in the trunk. The leaves have 3-5 pairs of opposite leaflets and a leaflet at the end. The leaflets are long or oval and 7-25 cm long by 4-8 cm wide. The leaflets are pointed at the tip and wedge shaped at the base. At the base of the leaf stalk there is a round leafy structure called a stipule. It can be 8 mm across and softly hairy. The small branches are 4-6 mm thick. The flowers are fairly small and borne in large compound flower clusters. The flower clusters occur in the axils of leaves. The male clusters are 10-25 cm long while the female clusters are 5-18 cm long. There are many male flowers in the cluster but 3-5 female flowers in the female clusters. The fruiting stalk can be 4-10 cm long. The fruit is oval and slightly triangular in cross section. Fruit are 2-4 cm long by 1-2 cm wide.

**Countries where it grows:** Africa, Asia, Ghana, Malaysia, Pacific, Philippines, SE Asia, West Africa,

**Conditions it needs:** A tropical plant. Common in the primary forest of Luzon and also found in Marinduque, Tacao, Mindoro and Masbate in Philippines. They grow at low to medium altitudes.

**How to grow it:** Plants are grown from seeds.

**Production:** Flowering occurs mainly in August and September and fruiting in January and February.

**How it is used:** The kernels of the nuts are eaten raw or roasted.



**Scientific name:** *Canarium madagascariense* Engl.

**Common name:** **Ramy nut**

**Other names:** Mbani, Mpafu,

**Other scientific names or synonyms:** *Canarium boivinii* Engl.; *Canarium greveanum* Engl.; *Canarium harami* Bojer.; *Canarium liebertianum* Engl.; *Canarium multiflorum* Engl.;

**Description:** A large tree. It has a straight trunk. It grows 12-35 m tall. The trunk can be 2 m across. It often has buttresses. The bark is rough and grey. The leaves are 50 cm long and have an odd number of leaflets. There are 9-11 leaflets. The leaf stalk is 5 cm long. The leaflets are 15 cm long by 4 cm wide. They are oblong to heart shaped. They taper to the tip. They are hairy underneath. The flowers are white and in groups. The fruit are oval and 4 cm long. They are purple. The hard shell of the seed is often 3 sided.

**Countries where it grows:** Africa, Madagascar\*, Mozambique, Tanzania,

**Conditions it needs:** A tropical plant. It grows in the lower mountain forest. It is often on sandy soils in shallow river valleys. It grows between 5-300 m above sea level. It suits hardiness zones 10-11.

**How to grow it:** Plants can be grown from seeds. Fresh seed should be used, as seeds do not store well.

**Production:**

**How it is used:** The fruit are eaten.



**Scientific name:** *Canarium megalanthum* Merr.

**Common name:** **Kedondong keruing**

**Other names:** Baab, Kamatoa, Mantus, Meritus, Ngaling, Ngela, Rarawa damar,

**Other scientific names or synonyms:** Related to *Canarium denticulatum* and possibly the same as *Canarium karoense*.

**Description:** A large tree up to 40 m high. The trunk can be 60-70 cm across. It does not have buttresses. The small branches are 0.5-1 cm thick. They have rusty hairs. The leafy structures (stipules) on the leaf stalks are 0.5 cm from the base and deeply 3-4 lobed. The leaves have 4-5 pairs of leaflets. The leaflets are oval or long and 9-20 cm long by 4-8 cm wide. They are leathery and the base is wedge shaped while the tip tapers to a point. There are 13-19 pairs of faint slightly curved veins. The flower clusters are near the ends of branches. These are 25 cm long for female clusters and 25-30 cm long for male flower clusters. Male clusters have about 10 flowers while female clusters have few flowers. The fruit clusters are 25 cm long and with 4-5 fruit. The fruit are oval and triangular in cross section. The fruit can be 5 cm long. The seed are thin and long. They are 1.5 cm wide.

**Countries where it grows:** Asia, Brunei, Indonesia, Malaysia, SE Asia,

**Conditions it needs:** A tropical plant. It occurs in rainforests from sea level to 360 m altitude.

**How to grow it:** Plants are grown from seeds.

**Production:** Flowers have been recorded in March and August and fruit from May to July.

**How it is used:** The seeds or nuts are eaten. It is a cultivated crop in Brunei.



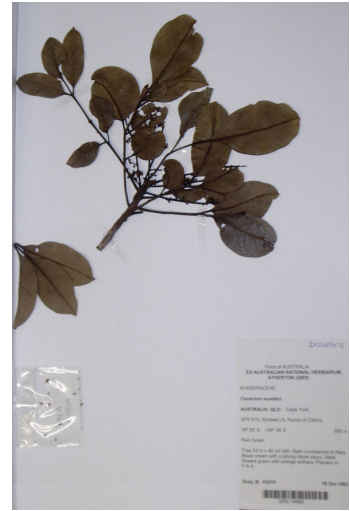
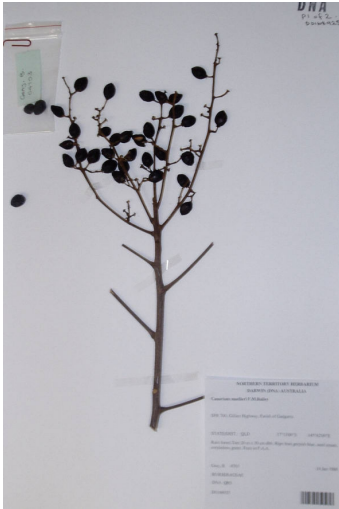
Scientific name: *Canarium muelleri* F. M. Bailey

Common name: **Queensland Elemi tree**

Other names: Scrub Turpentine,

Other scientific names or synonyms:

**Description:** A medium sized tree. It grows 10-20 m high and spreads 3-8 m across. The young shoots have rusty red hairs. The leaves are divided into 5-7 leaflets. These are 4-7.5 cm long and sword shaped. The flower clusters are slender and grow in the axils of upper leaves. The flowers are greenish and about 0.3 cm across. The fruit are about 1.5 cm long.



**Countries where it grows:** Australia

**Conditions it needs:** A tropical plant. It grows in coastal rainforests in north-east Queensland in Australia. It grows from sea level to 800 m altitude. It needs well-drained soil. It is damaged by frost or drought. It suits hardiness zones 10-12.

**How to grow it:** Plants are grown from seed.

**Production:** Trees grow quickly under good conditions.

**How it is used:** The kernel of the nut in the fruit is eaten.



Scientific name: *Canarium odontophyllum* Miq.

Common name: **Borneo olive, Sibuyan olive**

Other names: Dabai, Danau majang, Bundui-bundui, Kembayau, Dabang, Dabu, Dawai, Kambayau, Kumbayan, Kurihang, Saluan,

Other scientific names or synonyms: *Canarium beccarii* Engl.; *Canarium multifidum* H. J. Lam.; *Canarium palawanense* Elm.;

**Description:** A medium sized tree. It grows up to 35 m high and can be 50 cm across in the trunk. It has buttresses. The small branches are 1-3 cm thick and have dense rusty coloured hairs. When cut crossways there is a ring of small vascular strands around the edge of the branch, more like in a root. The small leafy structure (stipule) near the base of the leaf stalk remains on the branch. It is split along the edge into 2-4 cm long lobes. This stipule is 2-9 cm long by 1.5-3.5 cm wide. The leaves have 3-8 pairs of leaflets. These leaflets are oblong and 15-40 cm long by 5-10 cm across. They are leathery and can have hairs along the main vein. The base of the





leaflets is wedge shaped and the edges can have teeth. There are 15-28 pairs of veins that are raised underneath the leaf. The flower clusters are in the axils of leaves and near the ends of branches. The male flower stalks are 30-50 cm long with many flowers while the female are 15-20 cm long with few flowers. The flowers are hairy. The fruit clusters are 20-35 cm long with up to 40 fruit. The fruit are oval and rounded to triangular in cross section. They are 2.5-3.5 cm long by 1.7-2 cm wide. The shell is smooth with 3 ribs. There is 1 seed inside and 2 empty shells.

**Countries where it grows:** Asia, Australia, Indonesia, Malaysia, Sarawak, Pacific, Philippines, SE Asia,

**Conditions it needs:** A tropical plant. It grows in forests from sea level to 450 m altitude. It can be in swamps and along rivers.

**How to grow it:** Plants are grown from seed. When grown from seed, 70% of the trees are male.

**Production:** Flowering is from March to April and September to October and fruiting from May to November. Fruit can only be kept for 2-3 days after harvesting. The fruit are put into hot water to soften.

**How it is used:** The blue-black fruit are eaten raw. For eating fresh they are soaked in hot water for 10 minutes until softened and eaten with soy sauce or as a snack. The kernel is also eaten.

It is widely cultivated in Sarawak for its edible fruit. The fruit is high in oil content.



**Scientific name:** *Canarium oleiferum* Baillon

**Common name:** **Bois ansinthe**

**Other names:**

**Other scientific names or synonyms:** *Canariellum oleiferum* (Baill.) Engl.;

**Description:** A tree. It grows 20 m tall. The leaves have 1-3 pairs of leaflets. The fruit is fleshy and about 5 cm long. The seeds are long and oily.

**Countries where it grows:** New Caledonia, Pacific,

**Conditions it needs:** A tropical plant.

**How to grow it:** Plants grow from seeds.

**Production:**

**How it is used:** The kernel of the nut is eaten.



Scientific name: ***Canarium oleosum*** (Lamk) Engl.

Common name: **Kenari minyak**

Other names:

Other scientific names or synonyms:

**Description:** A large tree. It can be 20-30 m tall. The trunk is cylinder shaped and it can have buttresses. The bark is grey and can be rough of scaly and flaking. The leaves are spaced along the branches. They are compound and can be in spirals. The leaflets spread out like fingers on a hand. They are 6-7 cm long by 2-3 cm wide. They are dark green above and more pale underneath. The flowering shoots are in the axils of the leaves. Male and female flowers are separate on the same plant. The fruit are 12-20 mm long. They are purple. The seeds are about 1 cm long.



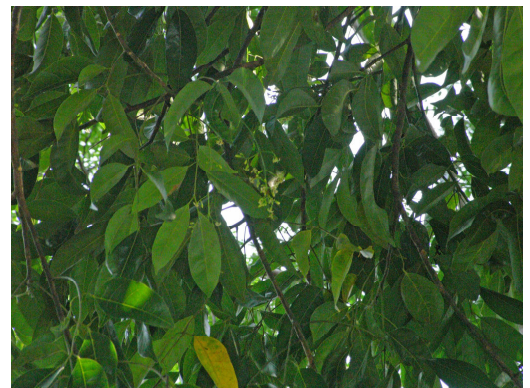
**Countries where it grows:** Asia, Indonesia (Maluku), Pacific, Papua New Guinea, PNG, Philippines, SE Asia, Singapore,

**Conditions it needs:** A tropical plant. It grows in the Sepik and other coastal and island regions in Papua New Guinea.

**How to grow it:** Plants grow from seeds.

**Production:**

**How it is used:** The kernel of the nut is eaten.



Scientific name: ***Canarium ovatum*** Engl.

Common name: **Pili nut, Philippine nut**

Other names: Noz-pili,

Other scientific names or synonyms: *Canarium melioides* Elmer; *Canarium pachyphyllum* Perkins;

**Description:** A medium sized evergreen tree. It grows up to 20 m high. The trunk can be 50 cm across. The small branches are 6-12 mm thick. The vascular bands in the branches are as separate rings like in roots. The leafy structures (stipules) are about 6 mm from the base of the leaf stalk. They are 5-20 mm long by 3-10 mm wide and triangular in shape. The leaves are alternate and with 2-4 pairs of leaflets borne oppositely. The leaflets are smooth and rounded at the base with a pointed tip. They are 4-24 cm long by 2-12 cm wide and stiff and leathery. There are 8-12 pairs of veins that are fairly straight until they curve near the leaf edge. The flower clusters occur in the axils

of leaves near the ends of branches. They are 3-12 cm long and with few flowers. The flowers are greenish and with an aroma. The fruit clusters are 3-9 cm long with one or two fruit. The fruit are oval but triangular in cross section. They are 4-6 cm long by 2-3 cm across. There is one seed inside the triangular shell.

**Countries where it grows:**

**Conditions it needs:** A tropical plant. It suits the hot humid lowland tropics. It is common in southern Luzon, Bicol regions and in primary forest at low and medium altitudes and also in Polillo, Samar, Leyte and Surigao in the Philippines. They occur from sea level up to 500 m in the Philippines. It suits hardiness zones 11-12.

**How to grow it:** Plants are grown from seed.

**Production:** Flowering occurs from May to July and fruit from October to December. A tree can produce 32 kg of nuts per year. This is about 10,000 nuts each year.

**How it is used:** The kernels of the nuts are eaten raw or roasted. They can upset the stomach when raw.

They can also be used to produce an oil that is used in cooking.

The pulp of the fruit is boiled and eaten. They are also pickled.

The young shoots are eaten in salads.

It is a popular nut. It is a cultivated food plant.



**Scientific name:** *Canarium patentinervium* Miq.

**Common name:** **Woodland kedongdong**

**Other names:** Teta toondjoo, Kaju kana, Kaju pandan, Kaju kedapak, Belasah, Keramoh, Phum phraao, Kedongdong tulang, Kedondong hutan, Kedondong kerut, Kedondong bulan, Kedondong bahu, Kerani hutan,

**Other scientific names or synonyms:** *Canarium nitidum* A. W. Bennett; *Canarium parvifolium* A. W. Benn.; *Canarium patentinervium* var. *meizocarpum* Hochr.; *Canarium patentinervium* var. *nitidum* Cretz.; *Canarium subrepandum* Miq.;

**Description:** A tree. It grows up to 40 m tall. The trunk can be 50 cm across. It can have buttresses. The leaves have 2-5 pairs of leaflets. The flowering stalks are 6-8 cm long. They can have 4 fruit. The flowers are in groups that are spreading and hairy. The fruit is fleshy and oval with a stone inside. It is 3-6 cm long by 2-3 cm wide. The fruit are green and oval. It contains 1-3 seeds.

**Countries where it grows:** Asia, Indochina, Indonesia, Malaysia, SE Asia, Singapore, Thailand,

**Conditions it needs:** A tropical plant. It grows in primary forest and up to 1150 m altitude above sea level.

**How to grow it:** Plants are grown from seeds.

**Production:** Flowering is mainly November to May.

**How it is used:** The flesh of the fruit is eaten. It is also sometimes pickled. The kernel of the nut is eaten.



**Scientific name:** *Canarium pilosum* Bennett

**Common name:** **Kedondong kerut**

**Other names:** Damar kunang, Medang serababa, Kejam panggeli, Keramah batu, Damar lilin,

**Other scientific names or synonyms:** *Canarium grandiflorum* Bennett; *Canarium hirtellum* A. W. Benn.; *Canarium motleyanum* Engl.; *Canarium pilosum* var. *hirtellum* Ridl.;

**Description:** A moderately tall tree. It grows 37 m high. The trunk is 65 cm across. It can have buttresses. The leaves have 1-6 pairs of leaflets. The flowering stalks can be 10 cm long and have 1-4 fruit. The fruit are oval and fleshy. They are 2-3 cm long by 1-1.5 cm wide and have a rounded triangle shape in cross section. The kernels of the nuts are small. The shell is very thick.

**Countries where it grows:** Asia, Brunei, Fiji, Indonesia, Malaysia, Pacific, SE Asia, Singapore, Sri Lanka,

**Conditions it needs:** A tropical plant. It grows in the forest up to 1500 m altitude above sea level.

**How to grow it:** Plants are grown from seeds.

**Production:** Flowering is September to October.

**How it is used:** The nuts are sweet and edible.



**Scientific name:** *Canarium pimela* K. D. Koenig

**Common name:** **Chinese black olive**

**Other names:** Blaam, Kanna, Ximo, Cana, Tram-den, Bui,

**Other scientific names or synonyms:** *Canarium nigrum* (Lour.) Engl. [Illegitimate]; *Canarium pimeloides* Govaerts [Illegitimae]; *Canarium tramdenum* C. D. Dai & Yakovlev; *Chirita nigrum* (Lour.) Engl.; *Lipara nigra* Lour. ex Gomes Mach.; *Pimela nigra* Lour.;

**Description:** A large tree. It grows 8-15 m tall but can grow 30 m tall. The trunk is 1.5 m across. The trunk is straight and it branches high up. The bark is brown with black sap. The leaves are unequal. The leaflets are long and oval. They are 6-12 cm long by 3-6 cm wide. They are shiny above and dark coloured underneath. There are 8-10 pairs of side veins. The leaf shape of seedlings varies. The leaves have 4-6 pairs of leaflets. The flower clusters are branched. The flowering stalks are 8-35 cm long with 1-4 fruit on long

stalks. The flowers are white. The fruit are narrowly oval and fleshy. They are 3-4 cm long by 1-2 cm wide. There are 3 unequal cells. The fruit are dark reddish blue to black when ripe. They contain 1 or 2 seeds.

**Countries where it grows:** Asia, Brunei, Cambodia, China, Indochina, Indonesia, Laos, SE Asia, Vietnam,

**Conditions it needs:** A tropical plant. It grows in dense forests. In Yunnan, China it grows between 600-1300 m altitude. They occur in northern Vietnam mostly below 500 m altitude. The tree needs plenty of light. It prefers a deep humid soil. It mostly grows on steep land.

**How to grow it:** Plants are grown from seeds.

**Production:** The tree is fast growing. Flowering occurs in April-May and fruiting in October-December.

**How it is used:** The fruit are edible. Fruit are eaten fresh or crystallised. They are sometimes pickled. The stone is removed. The seed contains an edible oil.

It is a cultivated food plant. The fruit are highly esteemed.



**Scientific name:** *Canarium polyphyllum* K. Schum.

**Common name:**

**Other names:**

**Other scientific names or synonyms:** *Canarium ledermannii* Lauterb.;

**Description:** A tree. It grows 14 m tall. The leaves have long leaf stalks. The leaves have 6-10 pairs of leaflets. The flowers are olive green. The fruit are purple.

**Countries where it grows:** Asia, Indonesia, Malaysia, Papua, Papua New Guinea, PNG, SE Asia,

**Conditions it needs:** A tropical plant.

**How to grow it:** Plants are grown from seeds.

**Production:**

**How it is used:** The fruit yields an oil that can be used for margarine.



**Scientific name:** *Canarium pseudodecumanum* Hochr.

**Common name:**

**Other names:** Jelmu, Lantu air, Tampang kijang,

**Other scientific names or synonyms:** *Canariopsis decumana* (non Bl.) Miq.; *Canarium decumanum* (non Gaertn.) Engl. in DC.;

**Description:** A large tree. It grows 40 m tall. It has buttresses 6 m high. It can have stilt roots. The trunk can be 120 cm across. The bark is white. The small branches are angular. The leaves have 4-6 pairs of leaflets. The leaves are 17-23 cm long by 7-11 cm wide. The leaflets are almost without stalks. They are sword shaped and taper to the tip. There are small teeth along the edge. The leaflets have a woolly covering underneath. The flowers are softly hairy. The fruit are large. They are 7-8 cm long by 4-6 cm wide. They are edible. The seed are eaten and used for oil.

**Countries where it grows:** Asia, Indonesia, Malaysia, SE Asia,

**Conditions it needs:** A tropical plant. It grows in lowland forests up to 280 m above sea level.

**How to grow it:** Plants are grown from seeds.

**Production:**

**How it is used:** The fruit are eaten.  
The seeds can be eaten. They are also used for oil.



**Scientific name:** *Canarium salomonense* B. L. Burtt

**Common name:** **Adoa, Gatoga**

**Other names:** Solu, Afisu, Gatoga, Tovinia, Maria, Khajogha, Arakao, Nemba, Gatoga, Adoa, Andoa,

**Other scientific names or synonyms:**

**Description:** A large tree up to 30 m high with buttresses at the base. The buttresses are branched. The bark is smooth grey and peels off in thin flakes. The small branches are round in cross section and less than 1 cm across. The wood and bark have a mild pineapple-like smell. The leaves can be 18 to 30 cm long made up of several leaflets but often without a leaflet at the end. The leaf like part (stipule) near the base of the leaf is about 1 cm from where the leaf stalk joins. It is small, ear-shaped and without the toothed edge like in *Canarium indicum*. The flowers occur on the ends of branches. The male flower clusters have more branches, more flowers and are larger (20-30 cm long) while the female flower clusters are slender, with fewer flowers and are smaller (8-20 cm long). The flowers have short soft hairs but become hairless at maturity. The male flowers are smaller (0.4-0.5 cm long) than the female (0.9-1 cm long). The flowers are pale yellow or light green. The fruit is 3-4 cm long and 1-2 cm across, slightly flattened and purplish black.

Normally only one cell of the seed is developed. There are a range of varieties that differ in size, flavour and ease of opening.

**Countries where it grows:** Pacific, Papua New Guinea, PNG, Solomon Islands, Vanuatu,

**Conditions it needs:** A tropical plant. It occurs in North Solomons Province of Papua New Guinea and in the Solomon Islands from sea level up to 500 m or more. It grows in the rainforest and is cultivated near villages.

**How to grow it:** It grows wild and is cultivated. Plants are grown from seeds.

**Production:** The nuts have a hard shell and are opened by striking on the side.

**How it is used:** The seeds are eaten  
(The resin is used for making torches.) It is a minor edible nut.



**Scientific name:** *Canarium schweinfurthii* Engl.

**Common name:** **Incense tree, African elemi, African canarium**

**Other names:** Purple canary tree, Papo canary tree, Atile, Agbabubu origbo, Nde, Mbele, Bobele, Ibele, Oyele, Shele, Owele, Tchwele, Mbele, Limbini, Kasuku, Mpafu, Empafu, Ube, Okpoko, Obele, Toeke, Mubafu, Mbani, Sigonfi,

**Other scientific names or synonyms:** *Canarium chevalieri* Guill.; *Canarium khlala* A. Chev.; *Canarium occidentale* A. Chev.;

**Description:** A tall tree. It grows 30-45 m tall. It loses its leaves during the year. The trunk is often straight and without branches for 30 m. The bark is grey and rough. It flakes off in pieces 30 cm by 10 cm. The crown of the tree is flat and with many branches. In young trees the branches are in rings at right angles to the trunk and curved upwards. The young branches have red-brown hairs. Roots above the ground can spread for 10 m. When the bark is cut the resin smells of incense. The leaves are up to 50 cm long. The leaf stalk is 5 cm long and flattened on the top surface. There are 8-12 or more pairs of leaflets and one leaflet at the end. These are 15 cm long by 4 cm wide. They are elongated and the tip is pointed. The flowers occur in dense branched flower sprays. These can be 30 cm long. The flowers have 3 petals. The flower stalks have red brown hairs. The fruit is purplish and 4 cm by 2 cm. It is soft and smooth. The shell of the seed is long and triangular shaped. It splits evenly to release 3 seeds.

**Countries where it grows:** Africa, Angola\*, Asia, Benin, Cameroon\*, Central Africa, CAR, Central African Republic, Congo, East Africa, Ethiopia\*, Gabon, Ghana, Guinea, Guinée, Guinea-Bissau, Indonesia, Ivory Coast, Liberia, Mali, Nigeria, SE Asia, Senegal, Sierra Leone, Southern Africa, Sudan, Tanzania, Togo, Uganda, West Africa, Zambia, Zimbabwe,

**Conditions it needs:** A tropical plant. It grows in the lowlands. It grows in forest and along the edges of rivers. It grows from sea level to 1,000 m above sea level. It grows in areas with rainfall of 900-1,400 mm per year.

**How to grow it:** Trees are grown from seeds. Many grow naturally. For collecting seeds, the fruit that fall and collected and the fleshy layer rotted off then the hard seed cases collected. These are put in hot water that is allowed to cool and soak for 24 hours. They are then sown directly where they are to grow. Seed can be stored for a long time.

**Production:** Plants are slow growing. Fruit production is seasonal. In Tanzania fruiting occurs between August and December. The dry inner stone can be stored to 2 years.

**How it is used:** The fruit is eaten after being lightly boiled and sprinkled with a little salt. It is also roasted.

The seeds are sometimes eaten cooked.

The seeds are a source of oil used as a substitute for shea butter.

The fruit are popular with children.



**Scientific name:** *Canarium strictum* Roxburgh

**Common name:** **Black damar**

**Other names:** Kala dammar, Dhup, Raldhup, Nalla, Rojanamu, Karapu kongiliam, Dhuna, Karinkunthirik-kam, Halemmadu, Dhup, Karuttukungiliyam, Tendalake, Doopamara, Pantappayan, Kundrikam, Thelli,

**Other scientific names or synonyms:** *Pimela stricta* Bl.;

**Description:** A large tree. It grows 40 m tall. It has buttresses. The bark is hard and has a metallic sound when hit. The bark peels off in rectangle shaped flakes. The tree crown is dense and umbrella shaped. The young leaves are bright red with rusty hairs. The mature leaves are 30-60 cm long and 5-9 cm wide. They have 3-7 pairs of leaflets and one leaflet at the end. The flowers are in clusters 20-30 cm long. The flowers are brownish yellow. The fruit are hard and egg shaped. They are 3-4 cm long. They taper at both ends.

**Countries where it grows:** Asia, Burma, China, Himalayas, India, Indochina, Myanmar, SE Asia, Thailand,

**Conditions it needs:** A tropical plant. It is native to the eastern Himalayas between 400-1,300 m altitude.

**How to grow it:** Plants are grown from seeds.

**Production:** It is fast growing.

**How it is used:** The fruit are used for pickles.





Scientific name: ***Canarium subulatum*** Guillaumin

Common name: **Ca na**

Other names: Bak luwam, Tram la do,

Other scientific names or synonyms:

**Description:** A large tree. It grows up to 30 m high and is 60-80 cm across in the trunk. The trunk is straight. The bark is split into small pieces along its length. The bark is dark grey. The small branches are rough with yellow brown hairs. The leaves are unequal and 20-30 cm long. There are 3-6 pairs of leaflets. They are oval and thin. They are 7.5-9.5 cm long by 3-4.5 cm wide. They end with a sharp point. They are rounded or wedge shaped at the base. The edges of the leaves can be wavy. There are 11-12 pairs of side veins. The leaflet stalk is 1 cm long. The leafy structure (stipule) at the base of the leaf stalk is 1 cm long and covered with fine hairs. The leaves turn red when old. The flower clusters can be in the axils of leaves or near the ends of branches. There are few flowers without flower stalks and they are 6 mm long. The fruit is large and oval. It is 3.5 cm long and 2 cm wide. It is green when young.

**Countries where it grows:** Asia, Indochina, Laos, SE Asia, Thailand, Vietnam,

**Conditions it needs:** A tropical plant. It occurs in Vietnam in evergreen forests. It needs light when young so seedlings are only found in open places.

**How to grow it:** Plants are grown from seeds.

**Production:** Trees flower in April-May and fruit is September to October.

**How it is used:** The kernels are eaten fresh and also salted.



Scientific name: ***Canarium sylvestre*** Gaertn.

Common name: **Kenari hutan**

Other names: Naasi,

Other scientific names or synonyms: *Canarium appendiculatum* Lauterb.; *Canarium branderhorstii* Lauterb.; *Canarium simplicifolium* Engl.;

**Description:** A tree about 20 m tall. It is 40 cm across the trunk. Sometimes it has buttresses. The small branches are about 1.5-2 cm thick. The leafy structures (stipules) on the leaf stalk are 0.3-1 cm from the base. They are ear shaped. The leaves have up to 3 pairs of leaflets. The leaflets are oblong and 8-21 cm long by 4-10 cm wide. They are papery. The base of the leaflet is wedge shaped. The tip is long and slender. There are 8-15 pairs of veins that are slightly curved and more so near the leaf edge. The flower clusters are in the upper axils of the leaves. They are 4-32 cm long. The fruit stalk is 6-7 cm long with few fruit. The fruit are oval and 3-6 cm long by 1.5-2.7 cm wide. They are rounded or triangular in shape. The stone is smooth with a rib on each edge. There are 1-3 seeds inside.

**Countries where it grows:** Asia, Indonesia (Papua), Malaysia, SE Asia,

**Conditions it needs:** A tropical plant.

**How to grow it:** Plants are grown from seeds.

**Production:**

**How it is used:** The kernels of the seed are eaten.



**Scientific name:** *Canarium vanikoroense* Leenhouts

**Common name:**

**Other names:**

**Other scientific names or synonyms:** *Canarium linguistipulum* Leenh.;

**Description:** A tree.

**Countries where it grows:** Fiji, Pacific, Solomon Islands, Vanuatu,

**Conditions it needs:** A tropical plant.

**How to grow it:**

**Production:**

**How it is used:** The kernels of the nuts are eaten.



**Scientific name:** *Canarium vitiense* A. Gray

**Common name:** **Kaunithina**

**Other names:**

**Other scientific names or synonyms:**

**Description:** A tree up to 25 m high. It sometimes has small buttresses. The trunk can be 30-40 cm across. The small branches are slender. On the leaf stalk there is a leafy structure called a stipule that is 3 cm from the base of the stalk. It is thread like. The leaves have 3-6 pairs of leaflets and can be softly hairy. The leaflets are oval and 12-20 cm long by 5-7 cm wide. There are 11-20 pairs of veins in the leaflets and continuing fairly straight towards the edges of the leaves. The flower clusters occur in the axils of leaves. They are 12-22 cm long. There can be up to 9 flowers. The flower buds are greenish white and the petals are white or cream. The fruiting clusters are up to 10 cm long with 1-3 fruit in a cluster. There is



a saucer like structure (calyx) around the base of the fruit. The young fruit are green or bluish. They become dark purple black at maturity. The fruit are long and slightly triangular in cross section. They are 4 cm long by 2 cm across. The stone of the fruit has 6 ribs. There are 1-2 seeds inside. The seeds are edible.

**Countries where it grows:** Asia, Australia, Fiji, Malaysia, Pacific, Papua New Guinea, PNG, Samoa, SE Asia, Solomon Islands, Tonga, Vanuatu,

**Conditions it needs:** A tropical plant. It occurs in dense or dry forest. It grows from sea level to 1,000 m altitude. In Samoa it grows from sea level to 700 m altitude. A small understory tree that grows in lowland and foothill rainforests. It is recorded from Morobe Province and New Britain as well as Malaysia. It grows up to 250 m altitude.

**How to grow it:** The tree grows wild from seeds.

**Production:** Trees flower and fruit throughout the year. The flowers are recorded in June, August and November. The fruit are recorded in March and May to September.

**How it is used:** The seeds have been recorded as edible. Its potential is not known, but it is only a minor food.



**Scientific name:** *Canarium vrieseanum* Engl.

**Common name:**

**Other names:** Gapog, Gisau, Are, Solo, Sagasa,

**Other scientific names or synonyms:** *Canarium dolichophyllum* Merr.; *Canarium sibulanense* Elm.; *Canarium tongcalingii* Elm.; *Canarium villosiflorum* Elm.; *Canarium williamsii* C.B.Robinson;

**Description:** A small tree. It grows 15-25 m high. It can be 30-45 cm across in the trunk. Buttresses, if they occur, are small. The small branches are slender and can be covered with brown hairs. The leaf structure (stipule) on the leaf stalk can be 1.5 cm from the base and shaped like ribbons. They can be 1 cm long. The leaves are divided into 3-5 pairs of leaflets that are produced opposite each other. The leaves are about 80 cm long. The leaflets are oblong and 7-30 cm long by 3-12 cm wide. The base of the leaflets is rounded and slightly unequal. The flower cluster can be 20-30 cm long and 1-3 cm wide. The flowers have 3 white petals about 7 mm long. The fruiting cluster can point upwards and have 5-10 fruit. The fruit are oval and round in cross section. They are 1.7-3.2 cm long by 0.7-2.2 cm across. The fruit maintain a velvety appearance. The shell is nearly smooth and with 6 ribs. There is one seed inside.

**Countries where it grows:** Asia, Indonesia, Pacific, Philippines, SE Asia,

**Conditions it needs:** A tropical plant. Only occurs from Mindoro and neighbouring islands in the Philippines. It grows from sea level up to 500 m altitude.

**How to grow it:** Trees are grown from seeds.

**Production:** Trees flower from July to December and fruit occur from December to February.

**How it is used:** The kernels of the nuts are eaten raw or roasted.



**Scientific name:** *Canarium vulgare* Leenhouts

**Common name:** **Pili nut, Java-almond**

**Other names:** Chinese-olive, Kenari nut-tree, Gisau,

**Other scientific names or synonyms:** *Canarium commune* auct.; Often confusion with *Canarium indicum* L.; This plant is very similar to *Canarium indicum* but considered separate. The names have often been confused.

**Description:** A tree that grows up to 45 m high. It can be 70 cm across the trunk. Buttresses can be 3 m high and 1.5 m wide. The small branches are about 0.5 cm across. (When cut across, this, like most *Canariums* has separate vascular bundles similar to that found in a root). The leafy structures (stipules) fall off early but are more on the branch than the leaf stalk. They are oblong and 1-5 cm long by 0.5-1.7 cm wide. The edges are not divided. The leaves have 4 or 5 pairs of leaflets and are without hairs. The leaflets are oblong and 5-16 cm long by 3-8 cm wide. They can be papery in texture. The base can be broadly wedge shaped. The tip tapers. There are 12-15 pairs of veins that are slightly curved. The flower clusters occur at the ends of branches. Male flower clusters can be 35 cm long with branches 20 cm long. Female flower clusters are 20 cm long with branches 10 cm long. The flowers are hairy and male flowers have almost no stalk while female flower stalks are 6-7 mm long. The fruiting stalks can be 15 cm long with about 12 fruit. The fruit are oval and slightly triangular. They are 3-5 cm long by 1.5-3 cm across. There are 1-3 seeds inside.



**Countries where it grows:** Asia, Cook Islands, Fiji, Hawaii, Indonesia, Malaysia, Pacific, Papua New Guinea, PNG, Ponape, Philippines, SE Asia, Solomon Islands, Sri Lanka, Timor-Leste, USA, Vanuatu,

**Conditions it needs:** A tropical plant. It does well on limestone soils.

**How to grow it:** Plants are grown from seeds.

**Production:**

**How it is used:** The seeds are eaten. An oily mixture made from the seeds is used as a baby food.



Scientific name: ***Canarium zeylanicum*** (Retz.) Blume

Common name: **Ceylon almond**

Other names: Kukuna, Kekuna, Pakklipal,

Other scientific names or synonyms: *Amyris elemifera* J. Koenig ex Blume [Illegitimate]; *Amyris zeylanica* Retz.; *Balsamondendrum zeylanicum* Kunth; *Canarium auriculatum* H. J. P. Winkl.; *Canarium balsamiferum* Moon; *Canarium commune* Wight & Arn.;

**Description:** A large tree. There are buttresses at the base. The bark has a scent. The leaves have 13 pairs of leaflets. The blades are clasped at the base. The fruit is 3-4 cm long. It is dark. The seeds are hard. The kernel is edible.

**Countries where it grows:** Asia, India, Sri Lanka,

**Conditions it needs:** A tropical plant.

**How to grow it:** Plants are grown from seeds.

**Production:**

**How it is used:** The seed oil is an edible oil.



Other plants that have in the past been given *Canarium* names and have edible parts have now been renamed into other genera. These include *Dacryodes buettneri*, *Dacryodes edulis*, *Dacryodes expansa*, *Dacryodes macrophylla*, *Dacryodes rostrata*, *Dacryodes rugosa*, *Haplolobus floribundus*, *Santiria laevigata*, *Santiria oblongifolia*, *Santiris tomentose*, and *Scutinanthe brunnea*. The family Burseraceae have about 540 species in 17 or 18 genera. About 153 species in this family have had edible parts of them recorded. Some of these include famous plants such as frankincense. One large group is the *Commiphora* or corkwood group in Africa. Some of these will probably be described in a later publication.

The Burseraceae are a tropical family of trees and shrubs.

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