

USEFUL ALIEN TREES OF THE NILGIRIS

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The Nilgiri hills ($11^{\circ} 12'$ to $11^{\circ} 43'$ N and $76^{\circ} 14'$ and $77^{\circ} 1'$ E) which lie in the tropics have a varied climate owing to their altitude ranging from 700 m to 2633 m. The lower hills are tropical, the middle hills are sub-tropical while the higher hills are temperate. Because of the varied climate, mostly equable and temperate, these hills possess a congenial atmosphere for exotics. With the British occupation of the plateau, alien trees were first introduced from 1823 onwards, in and around Ootacamund in the churchyards, cemeteries, residences and as avenue trees and of course, in the Botanical Gardens at Ootacamund and Coonoor. These have now become acclimatised to the environment of these hills. Some of them form the components of the cosmopolitan flora of the Nilgiri plateau. It was the Nilgiris which played a pioneering role in the introduction, establishment and expansion of certain economically important plants like *Cinchona*, *bluegum*, *wattle* and some types of sub-tropical and temperate fruits. These varied alien trees are important to the nation as a whole and the economy of the District in particular. As such, information on these trees will be of interest to those working with the economic plants of sub-tropical and temperate zones. An integral account of some of these important species has been attempted according to their utility with special reference to their history, growth performances, cultivation practices and other noteworthy features. Since these trees have not so far received adequate attention, this paper emphasizes the need for

undertaking further research to exploit their full potentialities. In the enumeration of the species the following heads have been used :

I. Trees of industrial value. II. Trees of timber value. III. Trees of medicinal value. IV. Trees yielding spices, condiments and beverages. V. Trees of pomological value. VI. Trees of ornamental value. VII. Trees of other value.

I. TREES OF INDUSTRIAL VALUE

Acacia mearnsii De Wild. (Mimosaceae)

The black wattle. Introduced in 1840 from Australia; a medium sized tree; area covered 16,000 hectares; yield 40 tonnes of bark and 200 tonnes of wood per hectare per rotation of 10 years; money return Rs. 2000/- per hectare per year; clearfelling followed by natural regeneration adopted; bark contains 35% tannin; wood used for pulp in the manufacture of rayon and paper.

Eucalyptus globulus Labill. (Myrtaceae)

The bluegum. Introduced in 1843 from Tasmania; tall tree area covered 8000 hectares; the yield 300 to 400 cu. m per hectare per rotation of 10 years with a money return of Rs. 1000/- to Rs. 1500/- per hectare per year. Simple coppice system adopted; used for pulp in the manufacture of rayon and paper.

E. grandis (Hill) Maiden (Myrtaceae)

The rosegum. A relatively new introd

tion from Australia; tall tree; area covered 1100 hectares; requires heavy rainfall; the yield around 120 to 150 cu. m per hectare per 8 years rotation; used for pulp.

Pinus patula Schlecht. & Cham. (Pinaceae)

Pine. Introduced from Mexico; a medium sized, graceful, tree; area covered 600 hectares; frost resistant; timber soft and light, used for box making and pulp.

II. TREES OF TIMBER VALUE

Acacia melanoxylon R. Br. (Mimosaceae)

The blackwood *Acacia*. Introduced from Australia; a tall symmetrical and handsome tree attaining a height of 35 m; wood hard and durable; timber dark brown, beautifully mottled, shining and evengrained, used for cabinet work and agricultural implements.

Eucalyptus globulus Labill. (Myrtaceae)

The bluegum. Trees grown over a period of 20 to 25 years, attain a height of 40 to 50 m; provide 1 to 2.5 cu. m of wood per tree; used as timber.

III. TREES OF MEDICINAL VALUE

Cinchona officinalis L., *C. calisaya* Wedd., *C. calisaya* Wedd., var. *ledgeriana* How. and *C. succirubra* Pav. ex Klotzsch. (Rubiaceae)

Cinchona. Introduced in 1860 from Peru; medium sized trees, evergreen; 4500 Kg of bark per hectare per rotation of 10 years; quinine, an antimalarial drug, extracted from root, stem and twig bark; also used in tonics, hair lotions, flu mixtures and analgesic tablets.

Cinnamomum camphora (L.) Nees & Eberm. (Lauraceae)

The Formosan Camphor tree. Native of Japan, China and Formosa: a medium-sized

tree with aromatic leaves; camphor oil used to relieve rheumatic pains, inflammation of joints, chest pains, etc.; Camphor crystals used in cardiac disorders and also as an incense.

Erythroxylum coca Lamk. (Erythroxylaceae)

The Cocaine tree. Cocaine, a local anaesthetic drug extracted; also used as a tonic for digestive and nervous system.

Eucalyptus citriodora Hook. (Myrtaceae)

The lemon scented gum. Introduced from Queensland; a tall ornamental tree with beautiful pendulous branches; oil extracted from leaves, used in the manufacture of soaps, germicides, hair oils and disinfectants.

E. macrorrhyncha F. v. Muell. (Myrtaceae)

The rutin gum tree. A tall evergreen tree; the young leaves contain 15% rutin. Used in the treatment of capillary fragility.

Quillaja saponaria Molina (Rosaceae)

The soap bark tree. A tall evergreen tree, native to Chile in South America; the bark used for the extraction of saponin; also used as a substitute for soap.

IV. TREES YIELDING SPICES, CONDIMENTS & BEVERAGES

Laurus nobilis L. (Lauraceae)

The Bay or Laurel tree. A native of Mediterranean region and Asia Minor; a medium-sized evergreen tree; the leaves thick and highly aromatic, used in culinary and confectionery preparations. Aromatic volatile oil extracted from dried leaves, used in the preparation of pickles and flavouring of vinegar.

Myristica fragrans Houtt. (Myristicaceae)

Nutmeg and Mace. A native of Moluccas, introduced about 100 years ago; grows better

at lower hills; the average yield per tree about 10 Kg of dried nuts and 1 Kg of mace; used as culinary spice and also in medicine and confectioneries.

Syzygium aromaticum (L.) Merr. & Perry
(Myrtaceae)

The clove tree. Introduced from Moluccas; maximum yield 3 to 10 Kg of dry cloves per tree per year; used as culinary spice and for flavouring pickle, ketchups and sauces; the clove oil used as an antispasmodic and antiseptic; also used in perfumes and scented soaps.

Theobroma cacao L. (Sterculiaceae)

The Cocoa tree. Introduced from South America about 60 years ago; a medium-sized tree grown at lower elevations; Cocoa extracted from seeds, a source of non-alcoholic beverage and also used in confectionery.

V. TREES OF POMOLOGICAL VALUE

Annona cherimolia Mill. (Annonaceae)

Cherimoya. Introduced from South America; yields about 100 Kg per tree per year.

Chrysophyllum cainito L. (Sapotaceae)

Star apple. Native of tropical America; pulp soft, whitish and sweet; yields about 70 Kg per year per tree.

Cyphomandra betacea (Cav.) Sendt. (Solana-
ceae)

Tree tomato. Native of Peru; fruit smooth, egg shaped, purplish; yields about 20 Kg per tree per year.

Diospyros kaki L. f. (Ebenaceae)

Persimmon. Introduced from China; a medium-sized deciduous tree; berries in various shapes and colour; yields 25 Kg per tree per year,

Durio zibethinus L. (Bombacaceae)

Durian or Civet fruit. Introduced from Malaya; a tall tree; the fruit is like jack fruit but smaller in size, spiny with large seeds and creamy pulp; seeds edible; raw fruits used as vegetable; yields 50 durians per tree per year.

Eriobotrya japonica (Thunb.) Lindl. (Rosaceae)

Loquat. Introduced from China and Japan; a small evergreen tree; fruit small, round, orange yellow; utilised in the preparation of jellies and sauces.

Garcinia mangostana L. (Guttiferae)

Mangosteen. Introduced from Malaya; an evergreen, medium-sized tree; fruit most delicious, yields 400 mangosteens per tree per year.

Juglans regia L. (Juglandaceae)

Walnut. Introduced from South East Europe; a deciduous medium-sized tree; yields 75 Kg of nuts per tree per year; kernel used in confectionery and ice creams.

Lansium domesticum Jack. (Meliaceae)

Langsat. Introduced from Malaya; fruit oval or round with pubescent skin, straw coloured; yields 15 Kg per tree per year.

Malus sylvestris (L.) Mill. (Rosaceae)

Apple. Native of South West Asia; a small tree yielding 10 to 12 Kg of apples per tree per year depending upon the variety.

Persea americana Mill. var. *drymifolia* Blake
(Lauraceae)

Avocado or Butter fruit. Three races; Mexican, Gautemalan and West Indian; yields about 25 Kg of fruit per tree per year.

Prunus persica (L.) Batsch. (Rosaceae)

Peach. Introduced from China; yields 10 Kg of fruits per tree per year,

Prunus armeniaca L. (Rosaceae)

Apricot. Introduced from China; a small deciduous tree; fruits used in the preparation of jams and other sweet dishes.

P. salicina Lindl. (Rosaceae)

Japanese Plum. Introduced from Japan; drupes heartshaped, yellow or red; yields up to 35 Kg of fruits per tree per year.

Pyrus communis L. (Rosaceae)

Pear. Introduced from Europe; a deciduous tree; yields about 35 Kg of fruits per tree per year.

VI. TREES OF ORNAMENTAL VALUE

Agathis robusta Hook. (Araucariaceae)

Agathis. Native of Queensland; a tall evergreen tree; also greatly valued for timber.

Araucaria bidwillii Hook. (Araucariaceae)

Monkey puzzle of Bay Pine. Introduced from Australia, a huge evergreen tree with stout trunk capable of living over a period of 400 years. Several other species of *Araucaria* are also found.

Banksia marginata R. Br. (Proteaceae)

Banksia. Introduced from Australia; a medium-sized tree with brushlike dense catkins.

Callistemon citrinus (Curt.) Stapf. (Myrtaceae)

Bottle brush. Introduced from Australia; the attractive scarlet coloured inflorescence resembling bottle brush.

Camellia japonica L. (Theaceae)

Camellia or Japanese Rose. Introduced from China and Japan; an evergreen bushy tree; flowers rose like, attractive,

Castanopsis indica (Roxb.) DC. (Fagaceae)

Oaks. Native of China and Japan; a tall attractive deciduous tree. Several other *Castanopsis* species are also grown.

Chamaerops fortunei Hook. (Palmae)

China fan palm. Introduced from Japan; a tall tree with fan shaped leaves forming a crown.

Cordyline australis Hook. f. (Agavaceae)

Dracaena like. Introduced from New Zealand; leaves ornamental.

Cryptomeria japonica (L. f.) D. Don (Taxodiaceae)

Japan Cedar. Introduced from Japan and China; an evergreen, tall, fast growing tree of pyramidal shape; also greatly valued for timber.

Cupressus funebris Endl. (Cupressaceae)

Weeping Cypress. Introduced from China; a large handsome tree with 'weeping' foliage; also used for pencil making. A few other *Cupressus* species are also introduced.

Dracaena lanuginosa L. (Agavaceae)

Dracaena. Native of Canary islands; leaves sword-shaped, ornamental.

Erythrina crista-galli L. (Papilionaceae)

The Coral tree. Introduced from Brazil; a tall tree with bright red flowers.

Eucalyptus ficifolia F. v. Muell. (Myrtaceae)

Scarlet flower gum. Introduced from Australia; a tall handsome tree with bright red panicles; the trunk is 'bottlenecked' above the ground. Several other *Eucalyptus* species are also found.

Grevillea robusta A. Cunn. (Proteaceae)

Silver Oak. Native of Queensland ; a fast-growing evergreen tree with fernlike foliage ; flowers comblike, orange coloured ; cultivated in tea estates for shade.

Hymenosporum flavum F. v. Muell. (Pittosporaceae)

Introduced from Australia ; a tall evergreen tree with attractive yellow flowers.

Jacaranda mimosifolia D. Don (Bignoniaceae)

Green ebony. Native of Brazil ; a tall tree with blue flowers in heavy bunches.

Juniperus procera Hochst. (Pinaceae)

Juniper. Native of Africa ; a tall spreading tree with straight trunk and obovate crown.

Leptospermum scoparium Forst. (Myrtaceae)

Native of New Zealand ; a medium-sized graceful tree ; flowers white, attractive.

Magnolia grandiflora L. (Magnoliaceae)

Tree Lotus. Introduced from North America ; a tall evergreen tree with heavy foliage ; flowers large, white, goblet-shaped, slightly scented.

Pinus patula Schlecht. & Cham. (Pinaceae)

Jelegote Pine. Introduced from Mexico ; an ornamental Pine suitable for frosty localities.

Podocarpus macrophyllus D. Don (Podocarpaceae)

Podocarpus. Native of Japan ; an evergreen tree.

Roystonea regia O. K. Cook (Palmae)

Royal Palm or Bottle Palm. Native of West Indies ; a tall graceful palm with bottle shaped stem.

Salix babylonica L. (Salicaceae)

Napoleon's Weeping Willow. Native of Caucasus ; a medium-sized deciduous tree with pendulous ornamental foliage ; suited to swamps ; wood used for making sports goods.

Spathodea campanulata Beauv. (Bignoniaceae)

Fountain tree. Native of Africa ; an evergreen tree with orange red flowers.

Thuja orientalis L. (Pinaceae)

Chinese Arbor-Vitae. Introduced from Persia ; a low evergreen tree of pyramidal habit.

Thuja plicata D. Don (Cupressaceae)

Thuja. Native of North West America ; a beautiful tall, slender tree with green aromatic leaves.

Tristania conferta R. Br. (Myrtaceae)

Brisbane Box. Native of Queensland ; a tall handsome tree with smooth shiny pointed leaves.

VII. TREES OF OTHER VALUE

(i) *Trees for Hedges*

Callitris rhomboidea R. Br. ex Rich. and **Cupressus** spp. (Cupressaceae).

Used as effective hedges ; can be trimmed into attractive shapes and designs (topiary).

(ii) *Trees of fodder value*

Acacia melanoxylon R. Br. (Mimosaceae).

Black wood Acacia. Introduced from Australia ; can be grown near centres of livestock farming ; yields green fodder of about 100 Kg per tree per lopping ; crude protein estimated to be 11.25% ; used also as an avenue tree and greatly valued for timber.

(iii) *Trees yielding fuel wood*

Acacia mearnsii De Wild. (Mimosaceae)
and *Eucalyptus globulus* Labill. (Myrtaceae)

After the selection of wood for industrial purposes, the rejected wood of these trees is the principal source of fuel in the Nilgiris.

(iv) *Trees of academic interest*

Ginkgo biloba L. (Ginkgoaceae)

The Maiden Hair Tree. Introduced from North China; a deciduous tree, dioecious; a living fossil.

Almost all the trees mentioned above provide protective cover in the Nilgiris apart from their productive value. A mixed plantation of blue gum (*Eucalyptus globulus*) and black wattle (*Acacia mearnsii*) is ideal for establishing forest plantations. In swamps, willow trees (*Salix babylonica*) are equally found to be ideal. The blue gum trees grown along the farm boundary provides live fencing and protects the farm from wind and frost. Trees of pomological value also serve as productive cum protective species. Shade trees planted in tea and coffee estates also afford protection. The hills planted with these varied alien trees have a graceful appearance and add to the recreational value and do a great deal of good in soil conservation, mainly because of the binding effect of soil-root combination.

From the above, it can be seen that these alien trees, mostly from Australia, yield a variety of products which form the source of important raw materials for various industries and also yield a large variety of fruits. However, there is scope for research and further study on these exotics which are dwindling in some cases and a great deal is yet to be done in this field. It is hoped that this review will promote historical enquiry into the rich heritage of these hills. Though we cannot in any way under-

estimate our indigenous plant wealth, alien trees no doubt are useful in the national economy and deserve protection and development.

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