



Appropriation of exotic plants as Sthalavrikshas and plant invasion in India

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Abstract

Plant worship is an ancient practice in India and is well rooted since pre-historic times. Sthalavrikshas are one form of worship and customarily followed in by Indian devotees. Presently, 36 exotic species pertaining to 35 genera and 25 angiospermic families are reported. They belong to both Old and New Worlds. Although the plant species are exotic, deep faith and belief are deeply interwoven with them because of myths, incidence and stories. This worship is thought that it helps to get rid-off from wrong deeds, effects, diseases, etc. It is, therefore such worships continue over generations. This practice also aid conservation of these taxa, although they are exotic one. It appeared that these alien taxa have invaded prior to the construction of temples.

Keywords: sthalavrikshas, exotic plants, plant invasion, India

Introduction

Utility of plants in different religious practices is common in nearly every society worldwide. Since the birth of humanity, mankind has derived aesthetic or spiritual sustenance from nature. India is rich in ethnic and culture diversity. The Indians have intimate association with plants and good knowledge regarding plants as resources of their ambience which form an integral part of their material as well as spiritual culture. Plants or trees have been worshipped in ancient India as manifestation of the god (Fergusson, 1971; Pande, 1964; Sen Gupta, 1965) [6, 15, 27]. The pattern of plant worship and its significance may vary from religion to religion or community to community. One such form of worship is 'Sthalavrikshas'. It refers to the plant of which 'sthalā' (Sanskrit) means place and 'vriksha' means tree. It is generally a natural tree or plant found in temple site prior to the construction of a temple. The sthala purana of each temple also had a legend linking the 'vrikshas' to the deity or the consort. Sthalavriksha is usually a single plant in the form of a tree or in some places occurring as a shrub, climber, herb or grass, Sthalavriksha worship in temples is a

common religious practice in India. If the concerned plant or tree dies, it is mostly replaced by a sapling from the same species. Several plants are venerated as such, however, status regarding their original home or nativity is not examined to date. The present author studied 'Sthalavrikshas' from the standpoint of bioinvasion in India, the results of which are projected in this review.

Methodology

The practice of plant worship is common in Indian society. There are many scripts or research contributions replete with references with plants or trees in relation to Sthalavrikshas. I consulted various research publications as mentioned in the Table-I, apart from some books, treatises, puranas, Sanskrit scripture, etc. These contained plant species either indigenous or exotic but without earmarking them for their nativity. Such plant taxa have been critically assessed for their original home by consulting relevant taxonomic literature as mentioned against each species. These are interpreted in view plant invasion in India.

Table 1: Sthalavrikshas In India

| Sr. No. | Plant Species & Family | Plant Common Name | Temple Name/ Locality | Reference | Nativity |
|---------|--|-------------------|--|--------------------------------------|--|
| (1) | (2) | (3) | (4) | (5) | (6) |
| | <i>Acacia farnesiana</i> (L.) Willd. Mimosaceae | Odaimaram | Tamil Nadu | Gunasekaran & Balasubramanian, 2012. | Tropical South America: Reddy, 2008. Australia: Chandra Sekar, 2012. |
| | <i>Acacia nilotica</i> (L.) Willd ex Del. Mimosaceae | Palkrucelai | Ellai Karupha, Madurai District Tamil Nadu | Vinoth Kumar & Aruna, 2018. | North Africa & Arab: Rajagopal & Panigrahi, 1965; Pursglove, 1968. |
| | <i>Aerva lanata</i> (Lim.) Juss. ex Schult. Amaranthaceae | Phulai | Thiruirumpuzhai, Tamil Nadu | Sundara Sobitharaj, 1994. | Madagascar: Sheikh & Dixit, 2017. Tropical America: Singh & Inam, 2015. |
| | <i>Ailanthus excelsa</i> Roxb. Simaroubaceae | Peru | Periya Kathavarayan, Madurai District, Tamil Nadu | Vinoth Kumar & Aruna, 2018. | America: Kotresh & Siddeshwari, 2020. |
| | <i>Albizia lebbek</i> (Linn.) Benth. Mimosaceae | Vaagai | Thiruvalkozhimuthur, Tamil Nadu | Sundara Sobitharaj, 1994. | Pantropical Africa & Tropical Asia: Bhandari, 1978. |

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|-----|--|---|---|---|--|
| | <i>Artabotrys hexapetalus</i> (L.f.) Bhandari Annonaceae | Manorajitham | Tamil Nadu | Gunasekaran & Balasubramanian, 2012. | Tropical Asia: Gaikwad & Garad, 2015. |
| (1) | (2) | (3) | (4) | (5) | (6) |
| | <i>Borassus flabellifer</i> L. Arecaceae | (i) Panai (ii) Panei (iii) Pannai (iv) Panai | (i) Muniyandi, Madurai District, Tamil Nadu (ii) Panangattur Eswar, Puravar Panangattur, Tamil Nadu (iii) Thirupanandai, Tamil Nadu (iv) Athirediyur, Tamil Nadu | (i) Vinoth Kumar & Aruna, 2018. (ii) Oliver King & Viji, 1997. (iii) Sundara Sobitharaj, 1994. (iv) Periasamy & Saranya, 2018. | Tropical Africa: Reddy, 2018; Chandra Sekar, 2012. |
| | <i>Calotropis gigantea</i> (L.) R.Br. Asclepiadaceae | Earuku | Thiuruerukkaathampulliyur, Tamil Nadu | Sundara Sobitharaj, 1994 | Tropical Africa: Reddy, 2008; Patil, 2017. |
| | <i>Calophyllum inophyllum</i> L. Clusiaceae | (i) Punnai (ii) Punna (iii) Punnai | (i) Ponvaratharaja Perumal Temple, Rasipuram (ii) Thiruambarthirukoil, Tamil Nadu. (iii) Thiruthanikai Muruga Perumal Temple, Chinnaparuvachi, Tamil Nadu | (i) Prabhakaran & Sabari Lakshmi, 2017. (ii) Oliver King & Viji, 1997. | East Africa: Pullaiah & Rao, 2002. Tropical Asia: Mukhopadhyay & Chakraverty, 2008. |
| | <i>Calotropis procera</i> (Ait.) R.Br. Asclepiadaceae | Velerukku | Tamil Nadu | Gunasekaran & Balasubramanian, 2012. | Tropical Africa: Reddy, 2008; Patil, 2017. |
| | <i>Carissa carandas</i> L. Apocynaceae | Kala | Tamil Nadu | Gunasekaran & Balasubramanian, 2012. | South Africa: Sainkhediya, 2016. |
| | <i>Cassia fistula</i> L. Caesalpinaceae | Sarakandrai | (i) Maligeswarar Temple, Kothapalayam (ii) Thiruvappudaiyar, Madurai District (iii) Thiruakkur, Tamil Nadu | (i) Prabhakaran & Sabari Lakshmi, 2017. (ii) Sundara Sobitharaj, 1994. | North America: Debnath, 2017. Tropical Asia: Mukhopadhyay & Chakravarty, 2018. |
| (1) | (2) | (3) | (4) | (5) | (6) |
| | <i>Citrus aurantifolia</i> (Christem. & Panz.) Swingle Rutaceae | Ilumichai | Thiruomampulliyur, Tamil Nadu | Sundara Sobitharaj, 1994. | Malaysia: Singh <i>et al.</i> , 2000. Guiana: Almeida, 1996. South China & Indochina: Pullaiah & Rao, 2002. |
| | <i>Couroupita guianensis</i> Abul. Lecythidaceae | Nagalingam | (i) Gowdhageswaran Velvikudi, Tamil Nadu. (ii) Thiruvetikudi, Tamil Nadu (iii) Sivan Temple, Kilambedi, Tamil Nadu | (i) Oliver King & Viji, 1997. (ii) Sundara Sobitharaj, 1994. (iii) Periasamy & Saranya, 2018. | Trinidad & South-East America: Singh, <i>et al.</i> , 2001. Guinea & South America: Verma, 1973. |
| | <i>Cyperus rotundus</i> L. Cyperaceae | Korai | Thirusaikadu, Tamil Nadu | Sundara Sobitharaj, 1994. | Tropical Africa: Debnath & Debnath, 2017. Europe: Kaul, 1986. |
| | <i>Datura metel</i> L. Solanaceae | Umathal | Thiuruerukathampuliyur, Tamil Nadu | Sundara Sobitharaj, 1994. | Tropical America: Chandra Sekar, 2012; Patil, 2017. |
| | <i>Dichrostachys cinerea</i> (L.) Wight & Arn. Mimosaceae | Vedatharan | Tamil Nadu | Gunasekaran & Balasubramanian, 2012. | Congo: Negi & Hajra, 2007. |
| | <i>Dodonea thumbergiana</i> Ekcl. & Zeyl. (Syn.D.viscosa Jacq.) Sapindaceae | Virali | Tamil Nadu | Gunasekaran & Balasubramanian, 2012. | Africa: Singh <i>et al.</i> , 200; Almeida, 1996. |
| (1) | (2) | (3) | (4) | (5) | (6) |
| | <i>Euphorbia nivulia</i> Buch.-Ham. Euphorbiaceae | Ilaikalli | Tamil Nadu | Gunasekaran & Balasubramanian, 2012. | Africa: Patil, 2003. Tropical America & West Indies: Titiek <i>et al.</i> , 2015. |
| | <i>Imperata cylindrica</i> (L.) Roensch. Poaceae | Dharppai Pullu | Tirunallaru, Tamil Nadu | Sundara Sobitharaj, 1994 | Tropical America: Debnath & Debnath, 2017; Reddy, 2008. Asia (Excl. India) & Europe: Kaul, 1986. Tropical Asia: Titiek <i>et al.</i> , 2015. |
| | <i>Jasminum sambac</i> (L.) Aiton Oleaceae | Malligai | Tamil Nadu | Gunasekaran & Balasubramanian, 2012. | Tropical Asia: John, 1891. |
| | <i>Manilkara hexandra</i> (Roxb.) Dubard Sapotaceae | Paala | Tamil Nadu | Gunasekaran & Balasubramanian, 2012. | South America: Sainkhedia, 2016. |

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|-----|---|--|---|--|---|
| | <i>Millingtonia hortensis</i> L.f. Bignoniaceae | Kattimalli | Ellamal & Pappamal, Madurai District, Tamil Nadu | Vinoth Kumar & Aruna, 2018. | South-Est Asia & Malaysia: Singh <i>et al.</i> , 2001. Burma: Singh <i>et al.</i> , 1991. |
| | <i>Mimosa pudica</i> L. Mimosaceae | Thottachinungi | Tamil Nadu | Gunasekaran & Balasubramanian, 2012. | Brazil: Patil, 2017. Chandra Sekar, 2012. South America: Ridley, 1930. |
| (1) | (2) | (3) | (4) | (5) | (6) |
| | <i>Moringa oleifera</i> Lam. Moringaceae | Murungai | Tamil Nadu | Gunasekaran & Balasubramanian, 2012. | America: Singh & Srivastava, 2000. |
| | <i>Murraya koenigii</i> (L.) Spreng. Rutaceae | Karuveppilai | Tamil Nadu | Gunasekaran & Balasubramanian, 2012. | Tropical Asia: Martin <i>et al.</i> , 1987. |
| | <i>Nerium indicum</i> Mill. (Syn. <i>N. oleander</i> L.) Apocynaceae | (i) Alari (ii) Arali | (i) Nedungalanadhrswamy, Tirunedungalam, Tamil Nadu. (ii) Thirukkrveeram, Tamil Nadu | (i) Oliver King & Viji, 1997. (ii) Sundara Sobitharaj, 1994. | China, Cochin China: Voight, 1845. Mediterranean Region: Singh <i>et al.</i> , 1991. |
| | <i>Phoenix sylvestris</i> (L.) Roxb. | Icham | Tamil Nadu | Gunasekaran & Balasubramanian, 2012. | West Asia: Sainkhediya, 2016. |
| | <i>Plumeria rubra</i> L. Apocynaceae | Alari | Thirunedumkalam, Tamil Nadu | Sundara Sobitharaj, 1994 | Tropical America: Panda & Das, 2004. Yadav & Sardesai, 2002. |
| | <i>Punica granatum</i> L. Punicaceae | Madulai | Tamil Nadu | Gunasekaran & Balasubramanian, 2012. | South Asia: Gaikwad & Garad, 2015. Afghanistan, Baluchistan & Persia: Shetty & Singh, 1987. |
| | <i>Ricinus communis</i> Linn. Euphorbiaceae | Amanakku | Thirukottaiyur, Tamil Nadu. | Sundara Sobitharaj, 1994 | Tropical Africa: Yadav & Sardesai, 2002. Africa: Singh <i>et al.</i> , 1991. |
| (1) | (2) | (3) | (4) | (5) | (6) |
| | <i>Tabernaemontana divaricata</i> (L.) R.Br. ex Roem. & Schult. Apocynaceae | Nanthiyavattai | (i) Seiya Muthaiya Ayyanar, Madurai District, Tamil Nadu (ii) Thiruvennyur, Chennai District, Tamil Nadu | (i) Vinoth Kumar & Aruna, 2018. (ii) Sundara Sobitharaj, 1994. | Tropical Asia: Singh <i>et al.</i> , 1991. |
| | <i>Tamarindus indica</i> L. Caesalpiniaceae | Puli | (i) Ayyanar, Madurai District, Tamil Nadu (ii) Adhinadha Alwar, Azhvar Thirunagar, Tamil Nadu (iii) Thuruengoimalai, Tamil Nadu | (i) Vinoth Kumar & Aruna, 2018. (ii) Oliver King & Viji, 1997. | Tropical America: Shetty & Singh, 1987; Patil, 1990. Africa: Pullaiah & Ramamurthy, 2001. |
| | <i>Terminalia catappa</i> L. Combretaceae | Badam | Tamil Nadu | Gunasekaran & Balasubramanian, 2012. | Tropical Asia: Singh <i>et al.</i> , 2001. Moluccas: Patil, 1995. Shetty & Singh, 1987. |
| | <i>Vitx negundo</i> L. Verbanaceae | Nochi | Tamil Nadu | Gunasekaran & Balasubramanian, 2012. | North China & Mongolia: Bailey. 1949. |
| | <i>Ziziphus mauritiana</i> Lam. Rhamnaceae | (i) Ilanthai (ii) Elanthai (iii) Illathi | (i) Thiruomampulliyur, Tamil Nadu (ii) Adikesava Perumal Temple, paariyar, Erode District, Tamil Nadu (iii) Srisangameshwar Temple, Karukapalayam, Tamil Nadu | (i) Sundara Sobitharaj, 1994 (ii) Pariasamy & Saranya, 2018. (iii) Pariasamy & Saranya, 2018. | Australia: Veerasamy & Arumgan, 2014. Tropics & Warm Subtropics: Martin <i>et al.</i> , 1987. |

Results and Discussion

Status of Sthalavrikshas

Plants have been worshipped in the form of 'Kalpvriksha' and 'Chaitya Vriksha' in India since ancient times. The former (Kalpavriksha) is thought to be a wish-fulfilling plant of life. It is mentioned so in Rigveda. It was one of the gems that emerged from the ocean during 'Samudra Manthan' (churning of the ocean) by the gods and demons, (Krishna and Amirthalinga, 2014) [12]. It is a symbol of life and prosperity, a focal point for one's spiritual quest. A Kalpa Vriksha is not a deity. It serves rather the deity and is thought of as a means to reach the gods. It is also called 'Kalpataru', 'Kalpadruma' and 'Kalpanda'. The latter (Chaitya

Vriksha) denotes a tree with dense foliage and fruits, which provides shelter for people, birds and animals (Krishna and Amirthalingam *loc. cit.*). The tree was thought protector (Chaitya as Chatra, Umbrella). The Adiparva of Mahabharata refers such tree as 'Chaitya' and was conceived worthy of worship. This earliest temple was the tree and the deity was enshrined beneath it. Still, this practice is observed in tribal areas (Khare *et al.*, 2020) [10]. The concept of Chaitya vriksha now appears changed as 'Sthalavriksha'. The latter is associated either with the temple or the deity e.g. Lord Shiva is associated the Bengal quince (*Aegle mermelos* L.). The sthala puona of each temple has a legend to linking the 'vriksha' to the deity or consort. The

Sthalavriksha, in Hindu temple, is similar to the 'Chaitya vriksha'. The former was probably derived from the latter (Krishna and Amarthalingam, *loc.cit.*)^[12].

Induction of exotic plants as 'sthalavrikshas'

Some reports on Sthalavrikshas particularly from South Indian region by Prabhakaran and Sabari Lakshmi (2017)^[20], Vinoth Kumar and Aruna (2018)^[36], Oliver King and Sundara Sobitharaj (1994)^[14], Gunasekaran and Balasubramanian (2012)^[8] have been studied to decipher exotic status of the plant taxa mentioned. As many as 36 angiospermic species belonging to 35 genera and 25 families appeared non-indigenous. They belong to continents, countries, islands or some geographical region outside Indian Territory. Majority of these (32 species, 31 genera and 22 families) are dicotyledons, whereas the monocotyledons representation is considerably lesser (04 species, 04 genera and 03 families). Majority are cultigens (29 species) except species of genera *viz.*, *Cyperus*, *Datura*, *Dichrostachys* and *Imperata*. *Vitex negundo*, however, also found as hedge plants, runs wild in nature. They appear useful for shade, edible fruits, ornamental and fragrant flowers, hedge, oil-yielder, etc. Only *Mimosa pudica* is grown in gardens as a curiosity. Of these, species of *Datura* is an offering to Lord Shiva and *Imperata* has also religious significance. It is a matter of further study on species of *Cyperus*, *Dichrostachys* and *Carrisa*. Their importance and significance is awaited.

Nativity of exotic species

The 36 exotic species belong to various continents, countries, islands, and geographical regions outside India. They belong to both Old and New Worlds. Maximum exotic species finds place as Sthalavrikshas in India as such; various parts of America (14 species), Asia (Excl. India) (12 species) and Africa (11 species). European continent is represented by a single species. Some countries or regions have lesser representation e.g. China (03), Malaysia (02) and Australia (02). The figures in parenthesis denote number of exotic species. Others have contributed just a single species each e.g. Burma, Arab, Guinea, Cochin China, Indochina, Guiana, Madagascar, Congo, Brazil, West Indies, Persia, Afghanistan, Baluchistan, Mongolia Moluccas, Mediterranean region, Tropic and Warm subtropics. These temple places are mostly ancient. It, therefore, appears that these exotic plants have been appropriated by the religious people of India. It means these plant species were well established in various parts of India prior to raising of temples.

Linkages of sthalavrikshas and deities

Development of religious thinking and ties of devotees with the exotic taxa needs some clarifications, for example

1. According to Sthala purana of the Kotishwara temple at Tirukottaiyur, a Swayambh lingam, appeared beneath the castor oil plant (*Ricinus communis* Linn.). A sage named Eranda worshipped Lord Shiva beneath this plant species and was rewarded the vision of one crore lingams. Thus the god is called 'Kotishiwara' (Koti means crore).
2. According to sthala purana of the Kumbishar, temple at Kovilvenni, the place was densely covered with this shrub [*Tabernaemontana divaricata* (L.) R. Br. ex Roem & Schult.]. Lord Venni Karambhishwara stood

under this shrub in the form of a Swayambhu lingam. Later on, King Muchukunda built a temple over this lingam and this shrub became sthalavriksha of the temple.

3. Sthala purana states that Pranavavyakrapureswarar temple at Omampuliyur in Cuddalore district (Tamil Nadu), the goddess Sivakamasundari was cursed by Lord Shiva to be born on earth to know the meaning of the 'pranava' mantra 'Om'. She undertook a penance under the Ilandhal tree (*Ziziphus mauritiana* Lam.) at Omampuliyur. Shiva appeared here as the guru Dakshinamurti and explained the meaning of Om. Lord Dakshinamurti stands in the moolasthanam between the Shiva lingam and the goddess.
4. Sthalapurana of the Swetharanyeswarar temple at Tiruvenkadu, it is believed that by tying a twine and a cradle to this trees. (*Cassia fistula* Linn.), one is blessed with children and wealth. (v) Sthala purana of the Maanikkavannar temple at Vaaloliputhur, the goddess Durga performed penance and worshipped Shiva under Vaagai tree [*Albizia lebeck* (L.) Benth.] to gain energy to fight Mahishasura. This tree is worshipped and regarded as a symbol of her victory. (vi) Sthala purana of the Aabhadhsahaayar temple at Iranpoolai in Alangudi, Tamil Nadu, the leaf of this plant [*Aerva lanata* (Linn.) Juss.] is offered to Lord Aabhadhsahaayur, a form of Shiva. (iv) The tamarind tree (*Tamarindus indica* L.) is sacred tree of Alwar Tirunasari, situated between Tirunelveli and Tiruchendur in Tamil Nadu. This tree stood in the northern prakara with seven branches. It bears flowers and young fruits, but the fruits never mature, and the leaves never close. It is, therefore, called 'uranga puli' (i.e. The tamarind tree that never sleeps) (Krishna and Amiralingam, 2014.) Thus various myths and beliefs are intimately associated with the Sthalavrikshas. Although the plants under consideration are exotic, the devotees have deep faith in them because of the deity, sage or kings associated with them. Temple myths explain incidence or stories of demons (Asuras), gods (Devas), saints (Rishis), etc. who got rid off all the deed done during previous births (Karma), sin, diseases and ill effects (Doshams) (Gunasekaran and Balasubramanian, 2012)^[8]. It is, hence, the plant taxa although not originally Indian, are worshipped. If viewed from scientific point of view, such plant taxa are conserved over a long past. It is certain that these species were established well on Indian landmass and their longer association is transformed into appropriation as 'Sthalavrikshas'.

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