

## Golden Research Thoughts

<sup>1</sup>R. Kottaimuthu and <sup>2</sup>N. Vasudevan

<sup>1</sup>Research Scholar, Department of Botany, Saraswathi Narayanan College, Madurai, Tamil Nadu, India.

<sup>2</sup>Associate Professor, Department of Botany, Saraswathi Narayanan College, Madurai, Tamil Nadu, India.

### ABSTRACT:-

The genus *Indigofera* L. is a large pantropical genus in Fabaceae, belongs to the tribe Indigoferae with 750 species. It is represented by about 60 species and 10 varieties in India. No comprehensive account on the *Indigofera* of Dindigul district is available. During the systematic studies on the legumes of Dindigul district for Ph.D dissertation of the first author, intensive explorations in various hill ranges of Dindigul district and survey of specimens at various herbaria revealed that the district is blessed with 29 species including six endemic taxa. Among the hill ranges of Dindigul district, Palani hills harbors 23 species, followed by Sirumalai hills with 16 species, Karandamalai 12 species, Ottanchatram jungles 10 species, Alagar hills 8 species, Pannamalai 8 species and Ayalur hills 6 species. *Indigofera coerulea*, *I. glabra* and *I. uniflora* forms new distributional record to Dindigul District. Among the 29 species, *Indigofera arnotii*, *I. barberi*, *I. glabra*, *I. marginulata*, *I. ultima* and *I. uniflora* are facing serious threat of extinction. The present article provides updated nomenclature, detailed description and phytogeography of the taxon in Dindigul district, Tamil Nadu.



### R. Kottaimuthu

Research Scholar, Department of Botany,  
Saraswathi Narayanan College,  
Madurai, Tamil Nadu,  
India.

### KEYWORDS:

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## THE GENUS *INDIGOFERA* L. (FABACEAE) IN DINDIGUL DISTRICT, TAMILNADU, INDIA.



**INTRODUCTION**

*Indigofera* L. is a large pantropical genus in Fabaceae, belongs to the tribe *Galegeae* with 750 species (Schire, 1995). The majority of taxa occur in Africa (c. 520) with other centres of diversity in Arabia to South East Asia, Mexico to subtropical North and South America, Australia and Madagascar (Al-Ghamdi, 2011). In India, the genus is represented by 60 species and 10 varieties (Sanjappa 1992 & 2001) of these Tamil Nadu harbours about 35 species and 5 varieties (Vajravelu, 1983).

Dindigul hills have attracted several botanists in the past. Wight & Arnott (1836) has mentioned several species of *Indigofera* including a new species *Indigofera marginulata* from Dindigul hills in Prodrum Peninsulae Indiae Orientalis. Baker (1886) has reported 40 species of *Indigofera* in Hooker's Flora of British India, of these three species are reported from Dindigul hills and Pulney hills. Gamble (1918) has reported 31 species in Flora of Presidency of Madras, of these four species are reported from Dindigul hills and Pulney hills. Subramanyam & Henry (1959) has recorded 5 species from Alagar hills, Karandamalai and Natham hills. Sriganesan (1983) has reported two species from Alagar hills. Ravikumar (1993) has reported *Indigofera parviflora* from Karandamalai. Pallithanam (2001) has reported nine species from Sirumalai hills. Kottaimuthu (2007) has recorded eight species from Karandamalai. Recently Kottaimuthu & Vasudevan (2012) has recorded 5 species from Sirumalai hills.

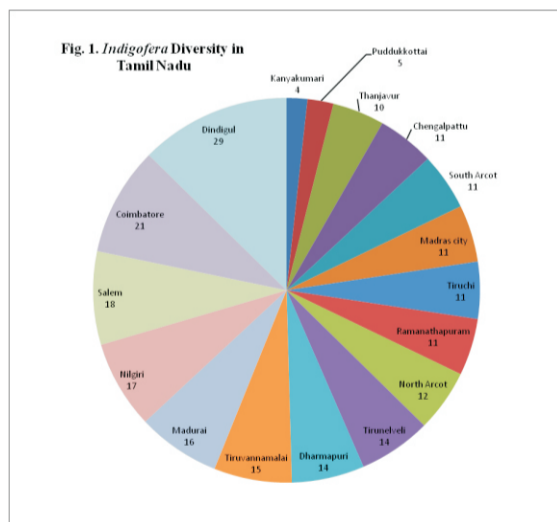
**MATERIALS AND METHODS**

The present list of the species of *Indigofera* is entirely based on intensive botanical explorations, perusal of available literature and screening of herbarium specimens available in Madras herbarium (MH) and virtual herbarium viz., Royal Botanic Garden, Kew, Edinburgh Herbarium, and Herbaria of French Institute of Pondichery (HIFP). For all the personal collections, herbarium specimens were prepared following standard procedures. Initially identification was done by using relevant literature (Gamble, 1918; Baker, 1876; De Kort & Thijsse, 1984; Matthew, 1983 & 1999; Sanjappa, 1995) later it was confirmed by comparing the specimens with previously authenticated specimens available at Madras Herbarium. Endemism and distribution of species were treated according to Sanjappa (1992 & 2001)

**RESULTS AND DISCUSSION**

The present investigation reveals that the district of Dindigul harbors 29 species and 2 varieties (Table 1), which is about 90% of the total *Indigofera* species reported from Tamil Nadu (Vajravelu, 1983). Among the districts of Tamil Nadu, the maximum number of *Indigofera* species has been recorded from Dindigul (Fig.1). Pudukkottai, Kanyakumari and Thanjavur district has about 10 or less than 10 species.

Among these 29 species of *Indigofera* reported in the present investigation, *I. barberi*, *I. marginulata*, *I. uniflora* and *I. ultima* are endemic and endangered species and are found only in particular vegetation. Moreover, scanning of literature revealed that the following four species viz., *Indigofera coerulea*, *I. glabra*, *I. oblongifolia* and *I. uniflora* were hitherto not reported from Dindigul district (Murugan et al., 2012; Nagaraj, 2013; Shanmugam et al., 2010; Sanjappa, 1995; Sankar et al., 2009) and forms new distributional record to Dindigul District. Among the hill ranges, Palani hills harbors 23 species, followed by Sirumalai hills with 16 species, Karandamalai 12 species, Ottanchatram jungles 10 species, Alagar hills 8 species, Pannamalai 8 species and Ayalur hills 6 species.



**Table 1. *Indigofera* Diversity in Dindigul District.**

Name of the Species	Phenology	Distribution
<i>Indigofera arnotii</i> (Kuntze) Peter G. Wilson	January-March	Peninsular India and Srilanka.
<i>Indigofera aspalathoides</i> Vahl ex DC.	December-March	Peninsular India and Srilanka.
<i>Indigofera astragalina</i> DC.	November-February	India, Australia, China, Pakistan, SE Asia, S. Africa and tropical Africa.
<i>Indigofera barberi</i> Gamble	September-December	South India - Endemic
<i>Indigofera cassioides</i> Rottl. ex. DC.	December-February	India, Srilanka, Pakistan, Nepal, Burma, China, Thailand and Laos.
<i>Indigofera coerulea</i> Roxb.	November-December	India, Srilanka, Pakistan, Ethiopia, Somaliland, Sudan and West Asia.
<i>Indigofera colutea</i> (Burm. f.) Merr.	December-February	India, Africa, Arabia.
<i>Indigofera cordifolia</i> Heyne ex Roth	February-March	India, Pakistan, Afghanistan, Oman, Cape Verde Islands, Mauritiana, Niger, Sudan, Eritrea, Ethiopia, Indonesia and Australia.
<i>Indigofera glabra</i> L.	November-January	India, Srilanka, Burma and Vietnam.
<i>Indigofera glandulosa</i> Wendl.	December-February	India, Indonesia, Malesia, Timor and Australia.
<i>Indigofera hirsuta</i> L.	January-February	India, Srilanka, Burma, Vietnam, Singapore, Taiwan, Australia, Africa, Madagascar and Trop. America.
<i>Indigofera linifolia</i> (L.f.) Retz.	January-February	India, Pakistan, Bangladesh, Ethiopia, Eritrea, Sudan, Srilanka, Nepal, Bhutan, China, Myanmar, Taiwan, Malesia, Indo-China, New Guinea, Australia and West Asia.
<i>Indigofera linnaei</i> Ali	December-February	India, Pakistan, Srilanka, Nepal, Bangladesh, Burma, Thailand, Indonesia and Australia.
<i>Indigofera longeracemosa</i> Boiv. ex Baill.	December-February	India, Kenya, Madagascar and Zanzibar.
<i>Indigofera marginulata</i> Graham ex Wight & Arn.	December-February	India (Tamil Nadu) - Endemic.
<i>Indigofera mysorensis</i> Rottl. ex DC.	November-January	South India - Endemic
<i>Indigofera nummularifolia</i> (L.) Livera ex Alston	December-February	Peninsular India, Srilanka, Thailand, Cambodia, tropical Africa and Madagascar.
<i>Indigofera oblongifolia</i> Forssk.	December-February	India, Pakistan and tropical Africa
<i>Indigofera parviflora</i> Heyne ex Wight & Arn.	November-December	India, Srilanka, Australia and Africa
<i>Indigofera pedicellata</i> Wight & Arn.,	December-February	India (Kerala & Tamil Nadu) and Taiwan
<i>Indigofera prostrata</i> Willd.	December-February	Peninsular India - Endemic.
<i>Indigofera spicata</i> Forssk.	December-February	Peninsular India, Srilanka, Burma, Malesia, Madagascar and Africa.
<i>Indigofera tinctoria</i> L.	December-February	Pantropical.
<i>Indigofera trifoliata</i> L.	December-February	India, Srilanka, Pakistan, Nepal, China, Bhutan, Bangladesh, Burma, Thailand, Malesia and Australia.
<i>Indigofera trita</i> L. f. var. <i>trita</i>	December-February	India, Srilanka, Pakistan, Bangladesh, Burma, Malesia and Australia.

<i>Indigofera trita</i> L. f. var. <i>scabra</i> (Roth) Ali	December-February	Peninsular India, Tropical & S. Africa, tropical America, Madagascar, Srilanka, Thailand, Laos and New Guinea.
<i>Indigofera ultima</i> (Kuntze) Peter G. Wilson	December-February	India (Karnataka, Kerala & Tamil Nadu)-Endemic.
<i>Indigofera uniflora</i> Buch.-Ham. ex Roxb.	December-February	India (Karnataka, Kerala & Tamil Nadu)-Endemic.
<i>Indigofera wightii</i> Graham ex Wight & Arn.	December-February	Peninsular India, Srilanka, Burma, Thailand and Vietnam.
<i>Indigofera zollingeriana</i> Miq.	January-April	India, China, Thailand, Laos, Vietnam, Malesia and Taiwan.

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#### REFERENCES

1. Al-Ghamdi, A. A. 2011. Seed morphology of some species of *Indigofera* (Fabaceae) from Saudi Arabia (Identification of Species and Systematic significance). *Ame. J. Pl. Sci.* 2: 484-495.
2. Baker, J. G. 1876-78. Leguminosae. In: Hooker, J. D. (Ed.), *Flora of British India*. 2: 56-306. Reeve & Co. London.
3. Gamble, J. S. 1915-1925. *Flora of Presidency of Madras*. Adlard & Son. Ltd., London.
4. Karuppusamy, S., K. M. Rajasekaran & S. Karmegam 2001. Endemic flora of Sirumalai hills, (Eastern Ghats) South India. *J. Econ. Tax. Bot.* 25(2): 367-373.
5. Kort, I. de & G. Thijssse, 1984. A revision of the genus *Indigofera* (Leguminosae. Papilionoideae) in Southeast Asia. *Blumea* 30: 89-151.
6. Kottaimuthu, R. 2007. Systematic studies on the Dicotyledonous plants of Karandamalai, Dindigul district, Tamil Nadu. M. Phil Thesis, Periyar University, Salem.
7. Kottaimuthu, R. & N. Vasudevan. 2012. Additions to the Legumes of Sirumalai hills, Tamil Nadu, India. *Scientia Acta Xaveriana* 1(Special Issue): 167-171.
8. Matthew, K. M. 1983. *The Flora of Tamil Nadu Carnatic*. Volumes 1-3. The Rapinat Herbarium, Tiruchirapalli.
9. Matthew, K. M. 1999. *Flora of the Palni hills, South India*. Volumes 1-3. The Rapinat Herbarium, Tiruchirapalli.
10. Murugan, P., R. Kumuthakalavalli and R. Kottaimuthu 2012. Survey on documentation of wild legumes from selected areas of Dindigul district, Tamil Nadu. *Scientia Acta Xaveriana* 1(Special Issue): 195-197.
11. Nagaraj, R. 2013. Angiospermic flora of Dicotyledons in Chinna Kasampatti range (Eastern Ghats), Dindigul district, Tamil Nadu. *International Journal of Current Research* 5(7): 1684-1687.
12. Narasimhan, D. 1991. Systematic studies on the Flora of Chengalpattu District, Tamil Nadu, India. Ph. D. Thesis, Madras university, Chennai.
13. Pallithanam, J. P. 2001. *A Pocket Flora of the Sirumalai Hills, South India*. The Rapinat Herbarium, Tiruchirapalli.
14. Ragupathy, S. 1991. Studies on the flora of Thanjavur District and their endomycorrhizal profile. Ph.D. Thesis, Madras University, Chennai.
15. Ramamurthy, K. 1982. Floristic studies on the Vascular Plants of South Arcot District, Tamil Nadu. Ph. D Thesis, Madras University, Chennai.
16. Ravikumar, K. 1993. Systematic studies on the Dicotyledonous Plants of Madurai District. Ph. D. Thesis, Bharathiar University.
17. Sanjappa, M. 1992. *Legumes of India*. Mahendra Pal Singh, Dehra Dun.
18. Sanjappa, M. 1995. Leguminosae- Papilionoideae: Tribe Indigoferae. *Fas. Fl. Ind.* 21. Botanical Survey of India, Calcutta.
19. Sanjappa, M. 2001. Leguminosae. In: N.P. Singh and D. K. Singh (Eds.), *Floristic Diversity and*

- Conservation Strategies in India. Vol. IV: Angiosperms (Selected Groups), Economic and Ethnobotany. Botanical Survey of India, Kolkatta.
20. Sankar, R. V., R. Kottaimuthu and K. Ravikumar 2009. Addition to the flora of Sirumalai hills, Eastern Ghats, India. *J. Threat. Taxa* 379-381.
21. Schrire, B. D. 1995. Evolution of the Tribe Indigoferae (Leguminosae-Papilionoideae). In: M. D. Crisp and J. J. Doyle (Eds.), *Advances in Legume Systematics*, Royal Botanic Gardens, Kew, pp. 161-244.
22. Sriganesan, T. 1984. *Flora of Alagar Hills*. Volumes 1 & 2. Ph. D. Thesis, Madurai Kamaraj University.
23. Subramanyam, K. & A. N. Henry. 1959. A contribution to the Flora of Alagar Hills, Karandamalais and Surrounding regions in Madurai District, Madras State. *J. Indian bot. Soc.* 38: 492-527.
24. Vijaya Sankar, R. 2006. Floristic and Ethnobotanical inventories of Tiruvannamalai District, Tamil Nadu. Ph. D. Thesis, Manonmaniam Sundaranar University, Tirunelveli.
25. Viswanathan, M. B. 1989. *Flora of North Arcot District, Tamil Nadu, India*. Ph. D. Thesis, Bharathiar University, Coimbatore.
26. Wight, R. & G. A. Arnott. 1839. *Prodromus florum Peninsulae Indiae Orientalis*. Parburry, Allen & Co., London.
27. Wilson, P. G. 2001. Some name changes in Indigofera (Fabaceae). *Taxon* 50(2): 491-493.