JETIR.ORG ISSN: 2349-5162 | ESTD Year : 2014 | Monthly Issue
JOURNAL OF EMERGING TECHNOLOGIES AND INNOVATIVE RESEARCH (JETIR)
An International Scholarly Open Access, Peer-reviewed, Refereed Journal

Shaligrama Nighantu In Purview of Plant Invasion In India

Patil D.A.

Post-Graduate Department of Botany
S.S.V.P.S's L.K.Dr.P.R.Ghogrey Science College, Dhule-424005
(Maharashtra)
(Former Professor & Principal)
E-mail: dapatil_10aug@yahoo.com

Abstract:

Many arts and sciences originated in India which is a proud matter for Indians. One such science, is the science of Indian medicine, the Ayurveda. It has developed over a long past since Vedic period, which is the followed subsequently by Samhita and Nighantu period. Many lexicons are authored by the ancient Indians emphasizing medicinal utilities in India. One such important lexicon is the Shaligrama Nighantu (1987 AD) authored by Shaligram Vaidya. A total of 33 exotic species are gleaned from it belonging to 33 genera and 29 families of angiosperms. Of these, the dicotyledons (28 species, 28 genera and 25 families) played a major role in bioinvasion in India. The remaining monocotyledons (05 species, 05 genera and 04 families) have relatively a little role. The cultigens (13 species) and wild ones (19 species) have fair share invading Indian territory. Likewise, herbaceous floral elements (16 species) and trees (11 species) have also fair share in invasion. These exotic taxa belong to both Old and New Worlds representing various continents, countries, islands and specific geographical regions of the world. It can be further inferred that the Nighantus, apart from information about medicinal drug sources, can be considered in other compartments of science and environment. The data so accrued is useful while extending measures for biodiversity management and conservation in India.

Key Words: Shaligram Nighantu, Exotic Plants, Bioinvasion, India.

Introduction:

Shaligram Vaidya wrote a 'Brihat Nighanturatnakar' in 1897 AD after lapse of many years. The former part is divisible into 23 classes, while the latter part contains two classes. He associated medicinal plants with constellation (Nakshatra) of the patient under treatment. His pattern or treatment of the script, however, is mainly those of Bhavprakash Nighantu written by Bhavmishra (1558 AD). The 7^{th} and 8^{th} part (class) of 'Brihat Nighanturatnakar' is then separately composed and it is called 'Shaligram Nighantu'. Obviously, it

contains medicinal plants with Sanskrit plant names. The present author after ascertaining recent botanical (Latin) names, examined then for their origin or nativity. These are being projected from the standpoint of plant invasion (bioinvasion) in the Indian landmass.

Methodology:

The script 'Shaligram Nighantu' (Ed.Sri Mathur Vaisya and Sri Shaligram Vaisya) has been scrutinized to note Sanskrit names of medicinal plants therein. They are equated with the recent botanical (Latin binomial) name of each one and also assigned to their respective families. Information regarding their status (cultivated or wild) and habit are documented. Each plant species is evaluated for their nativity (exotic status) consulting relevant taxonomic literacy sources mentioned against their names in the Table-I. The data so obtained is discussed critically from the perspective of invasion in India.

Results & Discussion:

The process of acquiring knowledge about plants and their medicinal importance was started concomitantly. During course of time, they are isolated as plant science (Botany) and medicine and now are being studied in isolation. In India, a system of medicine evolved, now called 'Ayurveda' which has great antiquity since the Vedic period. After Vedic and Samhita period, Nighantus were authored by many experts in the science of medicine in India. These Nighantus contain a treasure-trove of medicinal plants and their applications. Shaligrama Nighantu (1897 AD) is authored by Shaligram Vaidya. These medicinal plants are named in Sanskrit. These names are equated with the recent botanical binomial and referred to their respective families. They are assessed critically to reveal alien status *vis-à-vis* nativity and as such an attempt is made to limelight plant invasion (bioinvasion) in India.

Shaligram Nighantu is composed by Shaligram Vaidya, which is a segment of 'Brihat Nighantukar' (1897 AD). He associated medicinal plants with the Nakshatra (constellation by birth) of the patient to be treated. The present author scrutinized Sanskrit plant names therein and equated with the recent botanical (Latin binomial) names assigning their respective plant family. A total of 33 exotic plant species are ascertained based on the knowledge of their nativity using relevant taxonomic literature. These belong to 33 genera 29 families of angiosperms. These are either dicotyledons or monocotyledons. The former ones have major share in bioinvasion in India (29 species, 28 genera and 25 families), whereas the latter have minor role in comparison to the former (05 species, 05 genera and 04 families). All these are either cultivated (13 species) or run wild (19 species). Only a single species is both, cultivated or runs wild in nature. Habital categories, however, are varied such as: trees (11 species), shrubs (04 species), climbers (02 species) and herbs (16 species). The herbaceous taxa has a major role in bioinvasion. Although all these species are meant for medicinal purpose, they are useful for different purposes like vegetable, ornamental, edible fruits, aromatics, narcotics, dyes, oil yielders, spices and condiments, masticatory or even religious purposes in India. These have thus added in Indian economy and human sustenance. The wild taxa, however, are integrated with the native biodiversity in India.

The total 33 exotic plant species exhibited different nativities pertaining to Old as well as New Worlds comprising various continents, countries, islands, mountains and species geographical regions. These are: America (12), Africa (11), Asia (Excl. India) (06), Europe (03) and Australia (02). The other regions also contributed for bioinvasion in India e.g. China and Mediterranean region (02 each), and rest others like Arab, Brazil, Indonesia, Sino-Japanese Afghanistan, Baluchistan, Persia, Hawaii, Malaya, Mexico, Malaysia, Afro-Asian, Malaysian Archipelago, Canada, Pantropical and Caspian Sea Region, etc. contributed in single species each. The distant American continent is fairly represented in bioinvasion in India.

In a nutshell, the information obtained from the said Nighantu can be employed while extending measures of biodiversity management and conservation. It can be further reinstated that ancient Indian scriptures such as Vedas, Samhitas or Nighantus can considered in the scientific compartment other than medicine.

Acknowledgements

Authors are thankful to the authorities of S.S.V.P.Sanstha for library and laboratory facilities extended.

References:

Almeida, M.R. (2001) Flora of Maharashtra (Rubiaceae To Ehretiaceae) Vol.3A. St.Xavier College, Orient Press, Mumbai, Maharashtra, India.

Bailey, L.H. (1949) Manual of Cultivated Plants (Rev.Ed.) Macmillan, New York, USA.

Chandra Sekar K. (2012). Invasive alien plants of Indian Himalayan Region: Diversity and implication. American Journal of Plant Sciences 3:177-184.

De Candolle A. (1959) Origin of Cultivated Plants (Rev. 2nd Ed.) Hafner Publishing Co., London, UK.

Debnath, A. and B. Dehnath (2017) Diversity, invasion status and uses of alien plant species in North Eastern Hilly States of Tripura: A confluence of Indo-Barman hotspot. American Journal of Plant Sciences 8:212-235.

Gaikwad, S.P. and K.U. Garad (2015) Flora of Solapur (Maharashtra). Laxmi Book Publications, Solapur, Maharashtra, India.

Kaul, M.K. (1986). Weed Flora of Kashmir Valley. Scientific Publishers, Jodhpur, India.

Matthew, K.M. (1991). An Excursion Flora of Central Tamil Nadu, India. Oxford & IBH Publishing Co.Pvt. Ltd. New Delhi, India.

Medakkar, S.S. and P.P. Sharma (2016a) Antiquity of some exotic plants in India. The South Asian Academic Research Chronicle III (6):6-14.

Medakkar, S.S. and P.P.Sharma (2016b) Less-known uses of some exotic plants from Ahmednagar district, Maharashtra: Part-I:(A-D). Int. J.Pure App.Biosci. 4(3):182-187.

Mukhopadhyay, D.P. and R.K.Chakraverty (2008) Plant Wealth of The Raj Bhavan, Kolkata. Occasional Paper-5 From Raj Bhavan, Kolkata, March, 2008.

Naik, V.N. (1998). Flora of Marathwada. Vol.I-II. Amrut Prakashan, Aurangabad (Maharashtra), India.

Panda, S. and A.P. Das (2004) Flora of Sambalpu (Orissa). Bishen Singh Mahendra Pal Singh, Dehradun, India.

Patil, D.A. (1990) Exotic elements in the flora of Dhule district (Maharashtra). J.Econ.Tax.Bot. 14(3):721-724.

Patil, D.A. (1995). Exotic elements in the flora of Dhule district (Maharashtra-II). Biojournal 7(1-2):1-8.

Patil, D.A. (2003) Flora of Dhule And Nandurbar Districts (Maharashtra). Bishen Singh Mahendra Pal Singh, Dehradun, India.

Patil, D.A. (2017) Invasive alien species in Khandesh region (Maharashtra, India): Diversity, implications and measures. Sch.Acad.J.Biosci. 5(12):867-876.

Patil, D.A. (2019) Scientific history of some alien plants in India: Origin, implications and culture. Plantae Scientia 1(5):66-75.

Pullaiah, T. and D. Muralidhara Rao (2002) Flora of Eastern Ghats Vol.1. Hill Ranges of South East India. Regency Publications, New Delhi, India.

Rajagopal, T. and G. Panigrahi (1965) 'Aliens' naturalised in the flora of Allahabad. Proc.Nat.Acad.Sci.India Sect. B.35(4):411-422.

Reddy C. Sudhakar (2008). Catalogue of Invasive Alien Flora of India. Forestry And Ecology Division, National Remote Sensing Agency, Balanagar, Hyderabad-500037, India.

Reena, R.L. and S.P.David (2023) Impact invasive weed species in the crop lands and aquatic ponds of Kanyakumari district. Tamil Nadu, India. International Research journal of Plant Science 14(1):1-7.

Roxburgh, W. (1814) Hortus Bengalensis (A Catalogue Of The Plants In The Honourable East India Company Botanic Garden, Calcutta) Serampore, India.

Shah, N.C. (2015) Betel chewing in South And South East Asia: Part-II. The Scitech Journal 2(6):21-28.

Shetty, B.V. and V. Singh (1987) Flora of Rajasthan. Vol.I. Bot.Surv.India, Calcutta, India.

Singh, S.C. and G.N. Srivastava (2000) Exotic medicinal plants of Lucknow district (U.P.) India. In: Ethnobotany And Medicinal Plant of Indian Subcontinent (Ed. Maheshwari, J.K.) Scientific Publishers, Jodhpur, India. pp.223-235.

Singh, Th. B., Das, A.K. and P.K.Singh (2015) Study of alien and invasive flora of Valley District of Manipur and their control. International Journal For Innovative Research In Science & Technology 1(12):2349-6010.

Singh, V., Parmar, J. and P.R. Pandey (1991) Flora of Rajasthan. Vol.II. Bot.Surv.India, Calcutta, India.

Sri Mathur Vaisya and Sri Shaligram Vaisya (2011) Shaligram Nighantu. Khemraj Srikrishnadas Publication, Mumbai, Maharashtra, India.

Srivastava, S., Dvivedi A. and Shukla R.P. (2014) Invasive alien species of terrestrial vegetation of North-Eastern Uttar Pradesh. International Journal of Forestry Research. Article ID959875 pp.1-9.

Stewart, R.R. (1972) An Annonated Catalogue of The Vascular Plants of West Pakistan And Kashmir. Fakhri Press, Karachi, Pakistan.

Struwig, M. and S.J. Siebert (2013) A taxonomic revision of Boerhavia (Nyctaginaceae) in southern Africa. South Africa Journal of Botany 86:116-134.

Swamy, B.G.L.(1973) Sources for a history of plant sciences in India. I. Epigraphy. Indian journal of History of Science 8(1-2): 61-98.

Watt, G. (1908) A Dictionary of Economic Products: The Commercial Plants of India. John Murray, London, UK.

Yadav, S.R. and M.M.Sardesai (2002) Flora of Kolhapur District. Shivaji University, Kolhapur, Maharashtra, India.

Table-I: Exotic Plant Species In Bhavprakash Nighantu

Sr. No. (1)	Sanskrit Plant Name (2)	Botanical Name & Family (3)	Cultivated (C)/ Wild (W) (4)	Habit (5)	Nativity & Reference (6)
1.	Ingudi	*Balanites aegyptiaca* (L.) Delile Belgnitaceae	W	Tree	Africa & Arab: Medakkar & Sharma, 2016a.
2.	Shalmali	*Bombax ceiba* L. Bombaceae	W	Tree	(i) America & Australia: Mukhopadhay & Chakraverty, 2008. (ii) Brail To Argentina: Singh *et al.*, 2015. (iii) Africa: Gaikwad & Garad, 2015.
3.	Varuna	*Crataeva magna* (Lour.) DC. Buch.-Ham. Capparidaceae	C	Tree	Tropical Africa: Medakkar & Sharma 2016b.
4.	Agstya	*Sesbania grandiflora* (L.) Poir. Papilionaceae	C	Tree	Indonesia: Patil, 1995; Shetty & Singh, 1987.
5.	Punnaga	*Calophyllum inophyllum* L. Clusiaceae	W,C	Tree	(i) East Africa: Pulliah & Rao, 2002. (ii) Tropical Asia: Mukhopadhyay & Chakraverty, 2008.
6.	Japa	*Hibiscus rosasinensis* L. Malvaceae	C	Shrub	(i) China: Patil, 1995, 2003. (ii) Sino-Japanese: Singh & Srivastava, 2000.
7.	Shigru	*Moringa oleifera* Lam. Moringaceae	C	Tree	America: Singh & Srivastava, 2000.
8.	Dadima	*Punica granatum* L. Panicaceae	C	Tree	Afghanistan, Baluchistan & Persia: Patil, 2003; De Candolle, 1959.
9.	Matulunga	*Citrus medica* L. Rutaceae	C	Tree	China: Roxburgh, 1814.

Sr. No. (1)	Sanskrit Plant Name (2)	Botanical Name & Family (3)	Cultivated (C)/ Wild (W) (4)	Habit (5)	Nativity & Reference (6)
10.	Adityapatra, Suvarchala	*Cleome viscosa* Linn. Capparidaceae	W	Herb	(i) Tropical America: Reddy, 2008; Patil, 2007. (ii) Central America: Panda *et al.*, 2018.
11.	Aakashvalli	*Cassytha filiformis* Linn. Lauracea	W	Climber	Tropical South America: Reena & David, 2023.
12.	Aakhukarni, Dravanti	*Merremia emarginata* (Burm.*f.*) Hallier *f.* (Syn. Ipomoea reniformis Chosy) Convolvulaceae	W	Climber	(i) Tropical America and West Indies: Patil, 2003. (ii) Tropical America: Srivastava *et al.*, 2014.
13.	Bhanga	*Cannabis sativa* Linn. Cannabaceae	W	Herb	(i) Central Asia: Chandra Sekar, 2012. (ii) Caspian Sea Region & Caucasus Mountains: Watt, 1908; Patil, 2019.
14.	Bhringraj	*Eclipta prostrate* (L.) linn. Asteraceae	W	Herb	South & Tropical America: Patil, 1990; Reddy, 2008; Chandra Sekar, 2012.
15.	Chanak-Krishna	*Cicer arietinum* Linn. Papilionaceae	C	Herb	(i) Mediterranean Region: Shetty & Singh, 1987. (ii) South Europe: Patil, 1990.
16.	Chitrak	*Plumbago zeylanica* Linn. Plumbaginaceae	W	Shrub	(i) Africa: Panda *et al.*, 2018. (ii) Tropics of Asia, Africa, Australia & Hawaii: Bailey, 1949. (iii) Tropics & Subtropics: Matthew, 1991.
17.	Chivilli, Golika-Kshudra	*Portulaco quadrifida* Linn. Portulceae	W	Herb	Tropical South America: Patil, 2017; Chandra Sekar, 2012.

Sr. No. (1)	Sanskrit Plant Name (2)	Botanical Name & Family (3)	Cultivated (C)/ Wild (W) (4)	Habit (5)	Nativity & Reference (6)
18.	Eranda	*Ricinus communis* Linn. Euphorbiaceae	C	Tree	(i) Tropical Africa: Yadav & Sardesai, 2002. (ii) Africa: Bailey, 1949. (iii) North East Tropical Africa: Matthew, 1991.
19.	Gambhari	*Gmelina arborea* Roxb. Verbenaceae	C	Tree	Malaya: Medakkar & Sharma, 2016.
20.	Gokshur-Brihat	*Pedalium murex* Linn. Pedaliaceae	W	Herb	(i) Tropical America: Patil, 2017; Chandra Sekar, 2012; Reddy, 2008. (ii) Africa: Singh *et al.*, 1991.
21.	Gokshur-Khudra	*Tribulus terrestris* Linn. Zygophyllaceae	W	Herb	(i) Tropical America: Reddy, 2008; Patil, 2017. (ii) Africa & Asia (Excl. India): Kaul, 1986.
22.	Kakmachi	*Solanum nigrum* Linn. Solanaceae	W	Herb	(i) Tropical America: Patil, 2017; Debnath & Debnath, 2017. (ii) Europe & America: Almeida, 2001.
23.	Kaknasa	*Martynia annua* Linn. Mertyniaceae	W	Shrub	(i) Tropical America: Patil, 203; Reddy, 2008; Naik, 1998. (ii) Mexico & Brazil: Rejagopal & Panigrahi, 1965.
24.	Kumari	*Aloe vera* Tourn. ex Linn. Liliaceae	C	Herb	(i) North America: Patil, 2003; Naik, 1998. (ii) America: Yadav & Sardesai, 2002. (iii) Mediterranean Region: Bailey, 1949.
25.	Lasna	*Allium sativum* Linn. Liliaceae	C	Herb	(i) Europe: Naik, 1998; Bailey, 1949. (ii) Central Asia: Sharma, 2014.
26.	Mundi, Shravani	*Sphaeranthus senegalensis* DC. Asterceae	W	Herb	Africa: Kshirsagar, 2005.

Sr. No. (1)	Sanskrit Plant Name (2)	Botanical Name & Family (3)	Cultivated (C)/ Wild (W) (4)	Habit (5)	Nativity & Reference (6)
27.	Pooga	*Areca catechu* Linn. Arecaceae	C	Tree	(i) Tropical Asia: Gaikwad & Garad, 2015. (ii) Malaysia: Chaphekar *et al.*, 2007. (iii) Malaysian Archipelago: Shah, 2015.
28.	Punarnava-Shwet	*Boerhavia verticillata* Poir. Nyctaginaceae	W	Herb	(i) South Africa: Struwig & Siebert, 2013. (ii) Panda *et al.*, 2018.
29.	Rohish	*Cymbopogon martini* (Roxb.) Wats. Poaceae	W	Herb	(i) Afro-Asian: Naik, 1998. (ii) Africa: Yadav & Sardesai, 2002.
30.	Rudanti	*Cressa cretica* Linn. Convolvulaceae	W	H	Candia (City of Crete): Almeida, 2001.
31.	Sharpunkha	*Tephrosia purpurea* Pers. Papilionaceae	W	Shrub	Pantropical: Singh & Srivastava, 2000.
32.	Varahi	*Dioscorea bulbifera* Linn. Dioscoreaceae	W	Climber	Asia (Excl.India): Stewart, 1972
33.	Tulasi, Surasa	*Ocimum tenniflorum* L. (Syn.O.sanctum L.) Lamiaceae	C	Herb	Northern Coastal Belt of Mediterranean Region: Swamy, 1973.