



Plant invasion and vernacularisation of their names in Maharashtra (India)

Patil DA

Professor and Principal, Department of Botany, S.S.V.P. Sanstha's L.K. Dr. P.R. Ghogrey Science College, Maharashtra, India

Abstract

Plant invasion is both, natural and man-mediated. Man is a necessity taxonomist by birth. Whenever, some objects, living or non-living, come in his contacts, he appropriates and bioprospects them variously. As a consequence of his wisdom and instinct, he coins names for better communication. The exotic plant species are products of plant invasion in certain new areas. The man endeavours to name them based on some striking plant features. The names of exotic species thus got vernacularised with time. The present author selected 43 exotic pertaining to 42 genera and 26 angiospermic families as occurring in the state of Maharashtra. These names are in Marathi, being a state language. These vernacular names have been analysed etymologically. As many as 17 bases or criteria are divulged for coining the vernacular names in this region. Plant invasion is a long-drawn process and plant species get associated with mankind and his bioculture. Notably, few species invaded during pre-Columbian period in India. Conclusive ancient evidence lend support to such a view.

Keywords: exotic plants, vernacular names, marathi, maharashtra

Introduction

Migration of plants and animals including mankind is a natural phenomenon. Plants are dispersed naturally and also by biotic interference caused due to man-engineered activities. Mankind knows geographical or political boundaries, but the plants are unaware of them. However, they also had adapted some morphological features that aid them in natural dispersal. Man is an intelligent animal. He draws information from his surroundings and utilities to his advantage whenever needed. He is thus a necessity taxonomist. His life necessities force him to select plants or even animals and carry them to his abode or destination. This activity started especially when man attempted at sedentary life and agricultural venture. Increase in human population and even his ever-increasing necessities exerted pressure on bioresources. Sometimes, in his long past, he felt needy to have foreign bioresources to add or supplement his routine sustenance. He, therefore, brought in exotic plant species. However, some exotic species have invaded certain geographical areas or countries by their own natural dispersal and adaptations. Initially, these exotic plant species were nameless wherein they reached. In such circumstances, the native people endeavoured to vernacularise names for them. Some special features of plants, utilities or biological phenomena stuck to their mind. The native people employed them to coin new names of their choice. However, socio-religious thinking of the natives is also integrated in such naming. The present author studied some exotic plant species as occurring in Maharashtra (India) to divulge various bases of vernacular plant names. Marathi is the state language of Maharashtra. These Marathi names are presented in this communication highlighting plant invasion in the state and vernacularisation of plant names alongwith their bases.

Methodology

State, district and regional floras which contain biodiversity elements are consulted particularly those of Cooke (1958)

[4], Sharma *et al.* (1996), Singh *et al.* (2000, 2001) [27, 28], Patil (2003) [13], etc. Exotic species were brought to light by comparing available literature. The borrowed sources of vernacular names (V.N.) and their exotic status is mentioned against each species included. The bases of vernacular names of these exotic taxa are pinpointed as well as plant invasion in this part of India.

Systematic Enumeration

1. Names based after biological phenomena

- Catharanthus roseus* (L.) G. Don (Apocynaceae) V.N.: Sadaphuli (Singh *et al.* 2001; Patil, 2003). (Sada: all seasons or periods; phuli: flowers). It bears flowers throughout a year. Native: West Indies: Patil, 2003; Tropical America: Singh *et al.* 1991.
- Cestrum diurnum* L. (Solanaceae) V.N.: Din-Ka-Raja (Patil, 2003) (Din-day time) It emits fragrance during day time. Native: West Indies (Patil, 2003; Singh *et al.*, 2001).
- Cestrum nocturnum* L. (Solanaceae) V.N.: Rat-Rani (Patil, 2003) The flowers emit fragrance at night. Native: West Indies: Patil, 2003; Singh *et al.*, 2001.
- Mimosa pudica* Linn. (Mimosaceae) V.N.: Lajalu (Cooke, 1958; Patil, 2003). (Lajalu-shyness) Leaflets and entire leaves close and droop down when touched. This is thought shyness of the species. Native: Brazil (Chandra Sekar, 2012; Shetty & Singh, 1987).
- Quisqualis indica* Linn. (Combretaceae) V.N.: Barmasi (Cooke, 1958) Bar-twelve; mas-month. It flowers in all twelve months of a year. Native: Tropical Asia: Yadav & Sardesai, 2002; Java & Malay Peninsula: Shetty & Singh, 1987.

2. Names based after method of reproduction

- Kalanchoe pinnata* (Linn.) Pers. (Crassulaceae) V.N.: Panphuti (Singh *et al.*, 2000; Patil, 2003) (Pan-leaf; phuti-bearing plantlets) The plants reproduce vegetatively by producing plantlets on leaf margin. Native: Tropical Africa: Singh *et al.*, 2000.

3. Names after resemblance

- a. *Ceiba pentandra* (L.) Gaertn. (Bombacaceae) V.N.: Pandhari-savar, Safed-savar (Singh *et al.* 2000). (Pandhari or Safed-white; Savar-*Bombax ceiba* L.) This tree is similar to *B.ceiba* which is called Savar. However, the former has white flowers and the latter bears red flowers. Native: Tropical America: Singh *et al.*, 2000.
- b. *Malaviscus arboreus* Cav. var. *pendiluflorus* (Mocino & Sesse ex DC.) Schery (Malvaceae) V.N.: Mirchi-Jasawand (Singh *et al.*, 2000; Patil, 2003). (Mirchi-chilli; Jaswand-*Hibiscus rosa-sinensis* L.) These species is similar to Jaswand, but the flowers remain unopened and scarlet like red chilli. Native: Tropical America (Singh *et al.*, 2000).
- c. *Melia azedarach* L. (Meliaceae) V.N.: Bakan-Nimb, Bakam-Neem, Nimbara (Singh *et al.*, 2000; Cooke, 1958; Patil, 2003). The foliage, flowers and fruits, besides habit, all simulate a Neem tree (*Azadirachta indica* A.Juss.) Native: Asia (Excl. India): Ara *et al.*, 1995.
- d. *Typha angustifolia* L. (Typhaceae) V.N.: Jungli-Bajri; Pan-kanis; Ram-Bajara (Sharma *et al.*, 1996; Cooke, 1958). (Jungli-wild; Bajra-*Pennisetum americanum* (L.) K. Schum.; Pan-water; Kanis-Cob) The spike inflorescence resembles a cob of Bajra crop. The plant is wild and grows in aquatic places. Native: Tropical America: Reddy, 2008; Europe & North America: Kak, 1990.

4. Names after plant parts causing injury or annoyance

- a. *Martynia annua* L. (Martyniaceae) V.N.: Wichavi, Vinchucha-zad; Wagh-Nakya; Wagnaki (Patil, 2003; Singh *et al.*, 2001) (Winchu or Winchu: Scorpion; wagh: tiger, nakya: nails; zad: plant) The fruits are pronged like a sting of scorpion or nails of a tiger. Native: Tropical America: Reddy, 2008; Mexico & Brazil: Singh *et al.*, 1991.
- b. *Xanthium indicum* Koenig (Asteraceae) (syn. *X.strumarium* L.) V.N.: Kutri (Patil, 2003). (Kutri-female dog) Involucre of fruiting heads being studded with hooked spines, adhere to the clothes of passersby or animals. Native: Tropical South America: Reddy, 2008; Naik, 1998.

5. Names based after nativity

- a. *Lagerstroemia indica* Linn. (Lythraceae) V.N.: Chinai-Mendhi (Cooke, 1958). (Chinai-belonging to China) It is introduced from China in gardens as ornamental. Native: China: Patil, 1995, 2003; Gaikwad & Garad, 2015.
- b. *Pithecellobium dulce* (Roxb.) Bth. (Mimosaceae) V.N.: Vilayati-Chinch. (Vilayti-foreign; Chinch: *Tamarindus indica* L.) The fruits somewhat similar to the fruits of Tamarind, but this tree species is not indigenous (i.e. foreign one). Native: Tropical America: Purseglove, 1968; Mexico & Central America: Patil, 2003.
- c. *Portulaca pilosa* L. subsp. *grandiflora* (Hook.) Geesink. (Portulacaceae) V.N.: Chin-Gulab (Patil, 2003) (Chin-native of China; Gulab-flowers resembling roses). The flowers have many petals like the roses and the plant species is thought native of China. Native: Tropical America: Yadav & Sardesai, 2002; Brazil: Patil, 2003.

- d. *Trihasia trifolia* (Burm.f.) P.Wils. (Rutaceae) V.N.: Chini-Limbu (Singh *et al.*, 2000) [(Chini-native of China; Limbu-fruits resembling to one of *Citrus aurantifolia* (Christem. & Panz) Swingle]. Native: China: Singh *et al.*, 2000.
- e. *Psidium guajava* L. var. *pomifera* Duthie (Myrtaceae) V.N.: Peru (Singh, 2001; Patil, 2003). (Peru-a south American Country) The native country viz., Peru (South America) finds place in this name. Native: Tropical America: Singh *et al.*, 2001; Mexico: Shetty & Singh. 1987.

6. Names based on growth

- a. *Cuscuta reflexa* Roxb. (Cuscutaceae) V.N.: Akashwel (Cooke, 1958). (Akash-sky; Wel-climber). Indefinite growth of the species is denoted in the name. Native: Mediterranean Region: Singh *et al.*, 2001.
- b. *Cuscuta chinensis* Lamk. (Cuscutaceae) V.N.: Amarwel (Patil, 2003) (Amar-eternal; Wel-climber). Being a parasitic in nature, it grows extensively. Native: Mediterranean Region: Singh *et al.*, 2001.

7. Names after miscellaneous property

- a. *Vaccaria pyramidata* Medik. (Caryophyllaceae) (syn. *Saponaria vaccaria* L.) V.N.: Sabani (Cooke, 1958; Singh *et al.*, 2000) Plants produce a lather soap like when agitated in water. Native: Europe & Asia: Bailey, 1949.

8. Names after miscellaneous uses

- a. *Cymbopogon citratus* (DC.) Stapf (Poaceae) V.N.: Gavaticaha (Gavat-grass; Chaha-tea) The leaves are added in tea while boiling. It add fragrance to the tea. Native: Malaysia & Ceylon (Sri Lakna): Purseglove, 1968.
- b. *Maurraya koenigii* (L.) Spreng (Rutaceae) V.N.: Kadhi-Nim, Kadhi-patta (Cooke, 1958; Patil, 2003). (Kadhi-curry; Nim-*Azadirachta indica* A. Juss., Patta-leaves). The leaves resemble to the leaves of a Nim tree. They are used while preparing curry and other preparations. Native: Tropical Africa: Martin *et al.*, 1987.

9. Names based after animal features

- a. *Merremia emarginata* (Burm.f.) Hall. f. (Convolvulaceae) [syn. *M.gangetica* (L.) Cufod] V.N.: Undirkani (Cooke, 1958; Patil, 2003). (Undir-rat; Kan-ear-pinnae) The leaves are shaped like the ear-pinnae of a rat. Native: Tropical America: Medakkar & Sharma, 2016; Afro-Asian: Naik, 1998.

10. Names based after plant features

- a. *Psophocarpus tetragonolobus* (L.) DC. (Papilionaceae) V.N.: Chaudhari (Cooke, 1958). (Chau; Four; dhar-angle) The fruits are four-angled. Native: South Africa: Yadav & Sardesai, 2002.

11. Names based on habitat

- a. *Ludwigia octovalvis* (Jacq.) Raven (Onagraceae) V.N.: Panlawang (Singh *et al.*, 2001) [Pan-water; Lawang-clove (*Eugenia caryophyllus* (Spreng) Bullock *et* Harrison)]. The plants inhabit aquatic or marshy places. Its fruits appear similar to a clove. Native: Tropical Africa: Reddy, 2008.

- b. *Tridax procumbens* L. (Asteraceae) V.N.: Dagadi pala (Dagad-stone, rock; pala-leaves) A leafy plant that grows generally in rocky soil. Native: Tropical Central America; Reddy, 2008; South America: Patil, 1990.

12. Names after odour, smell or fragrance

- a. *Lantana comara* L. var. *aculeata* (L.) Moldenke (Verbenaceae) V.N.: Ghaneri (Singh *et al.*, 2001). The plants when bruised; emit bad odour. Native: Tropical America: Reddy, 2008; Naik, 1998.

13. Names based on miscellaneous comparison

- a. *Leonotis nepetifolia* (Lamiaceae) V.N.: Dipmal (Cooke, 1958; Singh *et al.*, 2001) (Dip-lamp; mal-rosary) The bright red flowers arranged in whorls on the nodes appear as a rosary of lamps. Native: Tropical Africa: Reddy, 2008; Chandra Sekar, 2012.
- b. *Sonchus oleraceus* L. (Asteraceae) V.N.: Mhatara (Singh *et al.*, 2001; Cooke, 1958) (Mhatara-old man) Fruiting heads are white as an old man, hence the name. Native: Mediterranean Region: Reddy, 2008; Eurasia & Africa: Naik, 1998.

14. Names denoting deities

- a. *Annona reticulata* L. (Annonaceae) V.N.: Ramphal (Singh *et al.*, 2000; Patil, 2003). (Ram: Lord Rama, a god of Hindus; phal-fruit). The fruit is named after Lord Rama. Native: Tropical America: Yadav & Sardesai, 2002; West Indies: Shetty & Singh, 1987.
- b. *Annona squamosa* L. (Annonaceae) V.N.: Sitaphal (Singh *et al.*, 2000; Patil, 2003). (Sita: Sita is Lord Rama's wife; phal-fruit). The fruit is named after Sita. Native: Tropical America: Patil, 2003; Tropical America & West Indies: Shetty & Singh, 1987.
- c. *Epiphyllum macropterum* Britton & Rose (Cactaceae) V.N.: Brahma-Kamal (Singh, *et al.*, 2001). (Brahma: Brahma is one of the trinity gods *viz.*, Brahma, Vishnu & Mahesh; Kamal-lotus). The name is coined after the Lord Brahma and compared with the lotus flower. Native: Mexico, Central America (Singh *et al.*, 2001).
- d. *Ipomoea quamoclit* L. (Convolvulaceae) V.N.: Ganesh-pushpa (Patil, 2003; Singh *et al.*, 2001; Cooke, 1958). (Ganesh-Lord Ganesh, a god of Hindus; pushpa-flower). Red colour is thought sacred for Lord Ganesh and hence offered to him religiously by Hindus. Native: Mexico: Singh *et al.*, 2001; Patil, 2003.
- e. *Passiflora edulis* Sims. (Passifloraceae) V.N.: Krishna-Kamal (Patil, 2003). (Krishna-Lord Krishna, a god of Hindus; Kamal-resembles a flower of lotus). Flower is blue, being colour of Lord Krishna similar. Native: Brazil: Bailey, 1949; South America: Stewart, 1972.

15. Names based after Shape

- a. *Clitoria ternatea* L. var. *ternatea* (Papilionaceae) V.N.: Gokarn (Singh *et al.*, 2000; Patil, 2003) (Go-cow; karn-ear-pinna). The flowers are shaped like pinnae of cow's ears. Native: Tropical America: Purseglove, 1968.
- b. *Parkia biglandulosa* Wight & Arn. (Mimosaceae) V.N.: Chenduphal; Chendu-phool (Singh *et al.*, 2000; Patil, 2003; Cooke, 1958). (Chendu-ball; phal-fruit; phool-flower). The flowers or fruits are collectively roundish like a ball. Native: Africa: Patil, 2003; Yadav & Sardesai, 2002.

16. Names based after sages

- a. *Adansonia digitata* L. (Bombacaceae) V.N.: Gorakh-chinch (Singh *et al.*, 2000; Patil, 2003; Cooke, 1958) (Gorakh-a sage in India; Chinch-*Tamarindus indica* L.) It is said that sage Gorakhnath used to teach his disciples under this tree. Fruits are sour and seeds are black as Tamarind (Patil, 2020). Native: Tropical Africa: Patil, 1995, 2003; Yadav & Sardesai, 2002.
- b. *Sesbania grandiflora* L.) Poir. (Papilionaceae) V.N.: Agasta (Cooke, 1958) Agasta was an Indian Sage (Rishi). His name is associated with this tree. Native: Indonesia: Patil, 1995; Shetty & Singh, 1987.

17. Names based after colour

- a. *Artabotrys hexapetalus* (L.f.) Bhandari (Annonaceae) (syn. *A. odoratissimus* R.Br.) V.N.: Hirva-chafa (Hirva-green; Chafa-*Plumeria alba* L.) A scandent shrub bears green flowers and compared with the flowers of Chafa. Native: Tropical Asia: Gaikwad & Garad, 2015.
- b. *Bixa orellana* Linn. (Bixaceae) V.N. Kisri, Shendri (Cooke, 1958) (Kisri-saffron; Shendi-vermilion-red) Seeds are embedded in red pulp. Native: Tropical America: Purseglove, 1968; Singh *et al.*, 2000.
- c. *Cascabella thevetia* (L.) Lippold (Apocynaceae) (syn. *Thevetia peruviana* (Pers.) Merr.) V.N.: Piwala-kaner (Patil, 2003; Singh *et al.*, 2001). (Piwala-yellow; Kanher-*Nerium indicum* Mill.) This species is compared with Kanher plant but is bears yellow flowers instead of rosy flowers. Native: South America & West Indies: Patil, 2003; Tropical America: Singh *et al.*, 1991.
- d. *Datura metel* L. (Solanaceae) V.N.: Kala-Dhotra (Singh *et al.*, 2001). (Kala-black, dark; Dhotra: *Datura innoxia* Mill.) Another species *viz.*, *D. innoxia* bears white flowers, but this species (*D. metel*) have dark purple coloured flowers, and even the stem and branches are so coloured. Native: Tropical America: Chandra Sekar, 2012; Srivastava, 1964.

18. A names based after taste

- a. *Hibiscus sabdariffa* L. (Malvaceae) V.N.: Khat-Ambadi; Lal-Ambadi (Patil, 2003; Singh *et al.*, 2000; Cooke, 1958). (Khat-sour; Ambadi: *H. cannabinus* L.; Lal-red) Red calyces are used in cuisine as souring agent. Native: Africa & Asia, Singh *et al.*, 2000; Patil, 1995.
- b. *Oxalis corniculata* L. (Oxalidaceae) V.N.: Ambushi, Ambuti (Singh *et al.*, 2000; Patil, 2003; Cooke, 1958). (Ambat-sour) The leaves if chewed, they taste sour. Native: Europe: Reddy, 2008; North America: Bailey, 1949; Asia (Excl. India) & Europe: Kaul, 1986.
- c. *Rumex vesicanus* L. (Polygonaceae) V.N.: Ambad-Chuka (Patil, 2003) (Ambad-indicative of sour taste) The leaves are sour and used as vegetable. Native: South Europe, America and South-East Asia: Naik, 1958.
- d. *Spondias pinnata* (L.f.) Kurz (Anacardiaceae) V.N.: Ambada (Amba-indicative of sour taste) (Patil, 2003; Singh *et al.*, 2000; Cooke, 1958). Young leaves are sour. Fruits also resemble mango in taste and structure. Native: Tropical Asia: Martin *et al.*, 1987.

Results and Discussion

Plants are undoubtedly an integral part of human life. Since the time immemorial, man initiated categorising plants into poisonous or non-poisonous, edible or non-edible, etc. When these categories were enriched tremendously, man again felt necessary to minor categories and individual recognition for them. He thus started naming plants for his convenience in communication with his fellow men. We generally think that vernacular names of plants do not constitute a method. However, this is not the final truth. They coin a name of their choice and language. Some features, properties or biology of plants strike to them which, in turn, become part of naming plant. Man has unique capacity of discrimination amongst the objects in his surrounding. He employs his wisdom or even instinct. Ultimately the objects, whether plants or animals are named by him. The wave of scientific or botanical nomenclature distanced the mankind to some extent from his natural thinking. The vernacular names are/were neglected for some various reasons. This trend has some impact on the studies about vernacular plant names. People started forgetting the glory and beauty embedded in such names. The present author and his associates paid attention to reveal the bases of vernacular plant names (Patil, 1998; Patil & Patil, 2000; Pawar & Patil, 2000) [17, 19, 20]. The present communication is an extension of such study but precisely selected exotic plant species and their vernacular names. It is thought interesting because the exotic species are brought from unrelated areas and human societies. At this backdrop, the native people wherein the exotic species have reached, need coining of names for better communication. They are then named differently depending upon the circumstances prevailing in the new areas and new human societies. The native people who use them or are associated with them employ their own bases or criteria. The present author investigated first the exotic plant species in the state of Maharashtra (India). They are analysed etymologically, the results are being presented in the following.

Presently, 43 exotic plant species flourishing in the state of Maharashtra (India) are investigated etymologically. They belong to 42 genera and 26 families of angiosperms. Of these, majority of them (29 species) are found under cultivation for various purposes. Few others (13 species) have well naturalised and are integral part of Indian biodiversity. *Annona squamosa* although is being cultivated extensively, it also runs wild on waste place as an escape from cultivation. An in-depth etymological scrutiny of their vernacular names, as many as 17 bases of coining them are limelighted. They are based on: biological phenomena, method of reproduction resemblance with other plant species, injuries or annoyance caused by them to human society, country of origin (nativity), extensive growth, miscellaneous property and uses, special features of plants and animals, after names of sages and deities, miscellaneous comparison, habitat, taste, shape, colour, smell/odour/fragrance, etc. They have also integrated with bioculture of India. They are names after the names of sages and gods. Some exotic species are an integral part of Indian bioculture e.g. (i) *Annona squamosa* is mentioned in the great epic Ramayana (Singh & Nigam, 2017) [26]. It is also depicted on Bharut and Sanchi stupa in 1-3 century BC. (Pokharia & Saraswat, 1998-1999; Gupta, 1996) [21, 7]. Its presence is noted in the hands of goddess Durga at Aihole temple (10th Century CE). The flowers *Datura metel* are

offered to Lord Mahadeva (Shankara) and also depicted in his headdress on stone sculpture (10-11 Century) viz, temple at Uma Maheshwara, Nalambas, Hemavati, Anantpur district (A.P.), India (Geeta & Waleed, 2007) [6]. This indicates that some exotic species invaded even during pre-Columbian period.

Acknowledgements

I am thankful to the authority of S.S.V.P. Sanstha, Dhule, for library facilities.

References

1. Ara S, Naqshi AR, Baba MY. Indigenous and exotic trees and shrubs of Kashmir valley. *Ind J Forest*, 1995;8:233-272.
2. Bailey LH. *Manual of Cultivated Plants* (Rev. Ed.) Macmillan, New York, USA, 1949.
3. Chandra Sekar K. Invasive alien plants of Indian Himalayan region: Diversity and implication. *American Journal of Plant Sciences*, 2012;3:177-184.
4. Cook T. *The Flora of the Presidency of Bombay*. (Repr. Ed.), 1958, 1-3
5. Gaikwad SP, Garad KU. *Flora of Solapur District*. Laxmi Book Publications, Solapur, Maharashtra, India, 2015.
6. Geeta R, Gharaibeh Waleed. Historical evidence for a pre-Columbian presence of *Datura* in the Old World and implications for a first millennium transfer from the New World *J Biosci*, 2007;32(7):1227-1244.
7. Gupta SM. *Plants In Indian Temple Art*, B.R. Publishing Corporation, Delhi, India, 1996.
8. Kak AM. Aquatic and wetland vegetation of Kashmir Himalaya. *J Econ Tax Bot*, 1990;14:1-14.
9. Kaul MK. *Weed Flora of Kashmir Valley*. Scientific Publishers, Jodhpur, India, 1986.
10. Martin FW, Campbell CW, Ruberte RM. *Perennial Edible Fruits of the Tropics: An Inventory*. U.S. Department of Agriculture. *Agriculture Handbook*. p.illus, 1987, (642), 222.
11. Medakkar SS, Sharma PP. Some exotic plants in human consumption from Ahmednagar district, Maharashtra. *International Journal of Current Research*, 2016;8(7):35433-35436.
12. Naik VN. *Flora of Maharashtra*. Amrut Prakashan, Augrangabad (M.S.) India, 1998, 1-2.
13. Patil DA. *Flora of Dhule and Nandurbar Districts (Maharashtra)*. Bishen Singh Mahendra Pal Singh, Dehradun, India, 2003.
14. Patil DA, Tayade SK. Sanskrit common plant names in philological and ethnobotanical context. *IJESPR*, 2014;4(1):16-19.
15. Patil DA. Exotic elements in the flora of Dhule district (Maharashtra). *J Econ Tax Bot*, 1990;14(3):721-724.
16. Patil DA. Exotic elements in the flora of Dhule district (Maharashtra-II). *Biojournal*, 1995;7(1-2):1-8.
17. Patil DA. Vernacular plant names: Their origin and utility in Dhule District (Maharashtra). *Ethnobotany*, 1998;10:130-132.
18. Patil DA. *Indian Plantlore: Beliefs, Myths & Legends*. Lambert Academic Publishing Beau Bassin, Mauritius, 2020.
19. Patil MV, Patil DA. Bases and utility of vernacular plant names in Nasik District (Maharashtra). *J Swamy Bot Cl*, 2000;17:83-85.

20. Pawar Shubhangi, Patil DA. The origin and utility of vernacular plant names in Khandesh region of Maharashtra. *J Swamy Bot Cl*,2000:17:43-47.
21. Pokharia AK, Saraswat KS. Plant economy during Kushana period (100-300 AD) at ancient Sanghol, Punjab. *Pragdhara*,1998-1999:6(9):75-121 + plates.
22. Purseglove JW. *Tropical Crops-Dicotyledons*. 2 Vols. Longmans, London, UK, 1968.
23. Reddy C Sudhakar. *Catalogue of Invasive Alien Flora of India*. Forestry and Ecology Division, National Remote Sensing Agency, Balanagar, Hyderabad, 500037, India, 2008.
24. Sharma BD, Karthikeyan S, Singh NP. *Flora of Maharashtra State: Monocotyledones*. Bot Surv India, Calcutta, India, 1996.
25. Shetty BV, Singh V. *Flora of Rajasthan*. Bot Surv India, Calcutta, India, 1987, 1.
26. Singh AK, Nigam SN. Ancient alien crop introductions integral to Indian agriculture. An overview. *Proc Indian Natn Sci Acad*,2017:83(3):549-568.
27. Singh NP, Karthikeyan S, Lakshminarasimhan P, Prasanna PV. *Flora of Maharashtra State: Dicotyledons*. Bot Surv. India, Calcutta, India, 2000, 1.
28. Singh NP, Lakshminarasimhan P, Karthikeyan S, Prasanna PV. *Flora of Maharashtra State: Dicotyledons*. Bot Surv. India, Calcutta, India, 2001, 2.
29. Singh V, Parmar PJ, Pandey RP. *Flora of Rajasthan*. Bot Surv India, Calcutta, India, 1991, 2.
30. Srivastava JG. Some tropical American and African weeds that have invaded the state of Bihar, *J Indian Bot Soc*,1964:43:102-112.
31. Stewart RR. *An Annotated Catalogue of the Vascular Plants of West Pakistan and Kashmir*. Fakhri Press, Karachi, Pakistan, 1972.
32. Yadav SR, Sardesai MM. *Flora of Kolhapur District*. Shivaji University, Kolhpur, Maharashtra, India, 2002.