

Some Comments on Exotic Floral Elements as Haired from Epic Ramayana

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Abstract: The great Indian epic Ramayana is replete with references with Sanskrit plant names. These have been correlated with equivalent Latin botanical names. Their exotic status is decided after consulting relevant literature. The present author investigated 22 exotic plant species belonging to 22 genera and 21 families of angiosperms. Only two species belong to the monocotyledons, the rest others are the dicotyledonous ones. They are native to various parts of the world, whether Old or New Worlds. Maximum number of exotic species contributed is found under cultivation. Also, American taxa are found maximum in the said epic. Their pre-Columbian introduction or invasion is earmarked pertinently based on various evidences inclusive of hard data. These exotic floral elements are thought indicative of man-mediated transport even with the New World. The epic Ramayana being most popular and widely read text among secular societies besides religions ones, the varied spectrum of knowledge and information will be useful to the mankind even in modern period in several walks of life.

Keywords: Exotic Plants. Epic Ramayana.

INTRODUCTION

Ramayana is not only an epic. It is but a true life described in verses by the sage Valmiki about Lord Rama. It projects science and environment, apart from figures and facts. It is a finer example in the world which is without boundaries of nation and religion as it is heard throughout the world in all eras.

It mirrors, in fact, the intimate bond of culture uniting India with other countries [1]. Ancient Indian scriptures present the practical and utilitarian aspect of the then life [2, 3].

Sage Valmiki knew what he was well aware of flora and fauna, forests and environment, besides geography and Indian culture [1]. Epic Ramayana is written by Valmiki (Valmiki Ramayana: V.R.) and as 'Ramcharit Manas' (R.M.) by Goswami Tulsidas [3,7]. These have been narrated and studied by many from different fields of enquiries such as geographical,

social, religious, and political, besides point of view of literature and culture. Biodiversity was gleaned from the said epic earlier [1, 2]. The present author is also in love with the great epic. Ramayana and carried further observations and investigation from the standpoint of biological invasions in the then Indian subcontinent. The results and conclusion reached are being communicated in this paper. Sanskrit plant names are equated with Latin botanical names and hence their family was ascertained. Their exotic status is deciphered citing literary sources as provided against their names in Table-1.

Table-1: Exotic Plant Species in Ramayana

Sr. No.	Plant Name & Family (1)	Sanskrit Name (2)	Sarga & Sloka (3)	Locality (4)	Wild (W) / Cultivated(C) (5)	Nativity (6)
1.	<i>Albizia lebeck</i> (L.) Benth. Mimosaceae	Shirish	Krishkindha Kanda 4.1.81 V.R.	Rampa Lake	C	North Australia & Tropical Asia Kshirsagar & Patil, 2002.
2.	<i>Anacardium occidentale</i> L. Anacardiaceae	Bhallataka	2/56/7 V.R.		C	Tropical America Patil, 1995; Yadav & Sardesai, 2002

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3.	<i>Annona squamosa</i> L. Annonaceae	Sitaphalam	Bala Kanta 23-40 V.R.	Lanka	C	Tropical America Benthall, 1946; Backer & Brinck, 1963; Bailey, 1949; Voight, 1845
4.	<i>Benincasa hispida</i> (Thunb.) Cogn. Cucurbitaceae	Timisha	--	2/98/8, 31/5/15, 4/1/92 V.R.	C	Java and Japan Patil, 1995; Cooke, 1958
5.	<i>Borassus flabellifer</i> L. Arecaceae	Tala	Aranya Kanda & Kishkindha Kanda 31/05/161 4/10/53-56 2/29/3 R.M.	-- Panchavati, Udaya Mountain	C, W	Tropical Africa Reddy, 2008
6.	<i>Calotropis gigantea</i> (Linn.) R.Br.ex Ait. Asclepiadaceae	Aku, Ark	7/15K/1, 4/15/2 R.M.	--	W	Tropical Africa Reddy, 2008
7.	<i>Cassia tora</i> L. Caesalpiniaceae	--	19/6/19 & 6 to 10/37-39	Chitrakuta	W	America Backer & Brink, 1963 Reddy, 2008
8.	<i>Ceiba pentandra</i> (L.) Gaertn. Bombaceae	Kutshalmali	Kishkindha Kanda 41/40/39 V.R.	Jambu Dvip	C	Tropical America Singh & Karthikeyan, 2000; Gaikwd & Garad, 2015
9.	<i>Cicer arietinum</i> Roxb. Fabaceae	Chanak	7/9/20 V.R.	--	C	South Europe Patil, 1990
10.	<i>Clitoria ternatea</i> L. Fabaceae	Suspushpi	Kishkindha Kanda 4/1/77 V.R.	Pampa Lake	C, W	Tropical America Purseglove, 1968
11.	<i>Citrus aurantifolia</i> (Christm. & Panz.) Swingle Rutaceae	Vijapur, Nimbuka	(cf. R.L.S. Sikarwar, 2011) V.R.	Kamadgiri	C	Malesia Yadav & Sardesai, 2002; Singh & Karthikeyan, 2000.
12.	<i>Datura metel</i> L. Solanaceae	Shyam	4/30/62 V.R.	--	W	Tropical America Geetaa & Waleed, 2007. Srivastava, 1964; Reddy, 2008
13.	<i>Hibiscus rosa-sinensis</i> Linn. Malvaceae	Japa	6/106/23 V.R.	--	C	China Pal & Krishnamurthi, 1967

Sr. No.	Plant Name & Family (1)	Sanskrit Name (2)	Sarga & Sloka (3)	Locality (4)	Wild (W) / Cultivated(C) (5)	Nativity (6)
14.	<i>Jasminum officinale</i> L. Oleaceae	Venu	2/38/7 V.R.	--	--	China Yadav & Sardesai, 2002; Patil, 2003; Singh et al., 2001.
15.	<i>Lawsonia inermis</i> Linn. Lythraceae	Kurvaka, Ranjak	Kishkindha Kanda 4/1/82, 6/4/79 V.R.	Pampa Lake	C	
16.	<i>Nerium indicum</i> Mill. (Syn.N.Oleander Linn.) Apocynaceae	Karvira	Aranya Kanda 3/73/4 V.R.	Matanga Hermitage	C	China and Cochin- Chin Voight, 1845; Mediterranean Region Purselove, 1968
17.	<i>Pimenta racemosa</i> (Miller) J.W.Moore [Syn. D. dioca (L.) Merr.] Myrtaceae	Takkol	3/35/22 V.R.	--	C	Caribbean Islands Lei Zhang & Bal L. Lotoeshwar, 2012.
18.	<i>Punica granatum</i> Linn. Punicaceae	Dadim	3/60/21 V.R.	--	C	Afghanistan, Baluchistan and Persia De Candolle. 1959; South Asia Gaikwad & Garad, 2015.
19.	<i>Ricinus communis</i> Linn. Euphorbiaceae	Arandu	2/42/2 R.M.	--	C	Africa Bailey, 1949; Purselove, 1968; Yadav & Sardesai, 2002
20.	<i>Trachyspermum ammi</i> (L.) Sprague Apiaceae	Aja	2/91/67 V.R.	--	C	South Europe Yadav & Sardesai, 2002; Gaikwad & Garad, 2015.
21.	<i>Tridax procumbens</i> L. Asterceae	--	91/6/19 & 6/10/37-39 V.R.	Chitrakuta	W	Tropical Central America Reddy, 2008 Yadav & Sardesai, 2002
22.	<i>Triticum aestivum</i> Linn. Poaceae	Godhuma	3/16/16 V.R.	--	C	Fertile crescent, Middle East, Simmons, 1987

RESULTS & DISCUSSION

Sage Valmiki interwove the life of Lord Rama in 24000 couplets. The route from Ayodhya (birth place of Lord Rama) to Rameshwaram was taken by Shri Rama during his 14-years exile. He visited hermitages of sages, crossed the rivers and dense forests. He was also accompanied by his consort Sita and brother Laxmana. Period of Rama and Ramayana is debated based on linguistic guesswork, religious beliefs or hearsay. During last few decades, new scientific tools and techniques are being employed to decipher historical locations and periods. However, this is not the main subject matter of this communication. Even today, the places, rivers and historical localities are identified with certainty, although there are nomenclatural changes. Interestingly the floral elements mentioned in some localities still exist today. What was known to sage Valmiki is proved even in modern era [1, 2]. However, the said floral elements are not analysed to date for their indigenous or exotic status which will be very interesting to the naturalists, foresters, environmentalists, palaeobotanists, botanists, anthropologists and even historians. This aspect of flora in Ramanaya period is being evaluated in the following.

This study revealed as many as 22 exotic plant species which belong to 22 genera and 21 families of Angiosperms. Major share is contributed by the dicotyledonous taxa (20 species, 20 genera and 19 families), whereas the monocotyledons are represented by just two species belonging to two genera and families each. Of these, maximum species (16) are found exclusively under cultivation in the modern period for various purposes such as: edible fruits, vegetable, spices, food grains, cosmetic, useful flowers, ornamental and shade-trees. Wild exotic floral elements are only four *viz.*, *Calotropis gigantea*, *Cassia tora*, *Datura metel* and *Tridax procumbens*. Two exotic species *viz.*, *Borassus flabilliflor* and *Clitoria ternatea* are both wild and as well as cultigens. A literature survey on floristics of Indian subcontinent indicates that these four species appear as if a part of native flora being very common and abundant everywhere in the country. All of them are aggressive colonizer. Their habitat grouping in descending order is as such: herbs 06 species, shrubs 05 species and climbers 03 species. Trees, however, share major contribution by nine species to Indian flora. The nativity of these 23 total species is very varied. They belong to different parts of the world. Their analysis indicates that they belong to various parts of America (08), Africa (03), Europe (02), China (03) and others such as Malesia, Java and Japan, Middle East, Afghanistan, Baluchistan and Persia (01 each). The figures in the parenthesis indicate the number of exotic species. This analysis is clearly suggestive of maximum share by the American continent. The period of Ramayana is obviously pre-Columbian and thus even in this era the then Indians have had contacts with America for different purposes as indicated by the useful purposes stated above. This

fact of communication, whether direct or indirect, has been proved beyond doubt [23].

Nevertheless, introductions of some of these alien species in the Indian subcontinent in ancient period have proved doubtless. There are various evidences of their occurrence in this part of the world based on various facts and hard data. For example, (i) *Annona squamosa*: Its fruits are carved at Sanchi and Bharut Stupa (Madhya Pradesh) [24, 25]. They are depicted at the Ajanta caves [26] and Durga temple, Aihole (Karnataka) [27]. (ii) *Anacardium occidentale*: Flowers and fruits are depicted at Jambukeshwara temple, Tiruchirapalli (Tamil Nadu) built before 2500 years [28]. Fruits are also observed on Bharut Stupa (ca. 200 BC) [29]. (iii) *Datura metel*: Flowers are represented in the head-dress of Lord Shiva (9th – 10th Century CE), Thanjavur district (Tamil Nadu) [22]. (iv) *Cicer arietinum*: Its grains were recovered at archaeological site *viz.*, Savalda (Maharashtra) (ca.2300-200 BC.) dating 300-100 BC. and at Balu, Kunal (Haryana) and Middle Gangtic Plains [30,31,32]. It was found in Nevasa (Maharashtra) [34]. (v) *Lawsonia inermis*: Its artifacts are represented in the form of dyed hands and feet in the Ajanta paintings [36]. Carbonized seeds are reported at ancient archaeological site *viz.*, Sanghol (Punjab) [33]. Few others can be dilated on this line of research.

It can be easily briefed that even during pre-Columbian period in India, there were fewer contacts between the Indians and communities of the various regions of the world, whether New World or Old World. Majority of these ancient introductions are because of human-mediated transport intentionally for various needs and supplement for their sustenance. Apart from these, these exotic species have been appropriated in religious purposes as explained above. Ancient Indian epic Ramayana is not merely a mythological story but embodies information on scientific matters.

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