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Alien Floral Elements Integral To Worship of Goddess Durga: Appropriations, Economy And Bioinvasion

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Abstract

Every religion, caste and nation has their own set of sacred plants depending upon their faith, beliefs, expectations and wisdom. These vary regionally and religion-wise. Since the times of Harappan and Vedic period, worshipping deities have been reported. Traditionally, Hindus use several plant species in worships of their deities. Durga is one their popular goddess in whose a ten-day celebration in the month of Ashwin is observed in India, particularly in Bengal and its vicinity. The present author examined the earlier studies on worship of goddess Durga in the perspective of appropriations of plants, economy, ecology and bioinvasion hitherto unstudied. A total of 51 alien plants species pertaining to 48 genera and 33 families of angiosperms appeared hailed from continents, countries, islands and specific geographical regions of both Old and New worlds. Their role in native ecology, bioinvasion and economy is discussed in the present state of knowledge. The traditional worships are thus sources of scientific information and hence desired for studies for the welfare of humankind.

Key Words: Goddess Durga, Worship, alien Plants, Bioinvasion, Economy, Ecology.

Introduction

Mankind derived from nature aesthetic or spiritual sustenance. Obviously, plants have a principal role in religious and social ceremonies almost in every community. Plants or their parts constitute votive offerings in their specific worships of deities in temples. Faith in deities have developed since the birth of humanity on the Blue Planet. Plants are held sacred to communities the world over. In India, they feature in myths, rituals, rites, Epics, Puranas, worships and daily life.

As an abstract relationships, deities are studied with associated plant species. This trend has geared up in recent period in India. Bhatla *et al.* (1984) focused on significance of some plants traditionally worshipped

in various parts of India. Sen Gupta (1980), Sen Sarma (1995), Ghate (1998), Pawar and Patil (2010, 2012), Patil (2022, 2024) made headway revealing plants as votive offering to deities.

Hindu in India and abroad worship goddess Durga. This worship is celebrated as Durga Pooja, Dasera, Durgotsav, Sharadiya Durga pooja, etc. It is a ten-day festival in the month of Ashwin (October). The last day is celebrated as Vijaya Dashmi which is thought as auspicious day since Lord Rama killed the Ravana. This 10-day celebration brings happiness and peace of mind. Many botanicals are used or offered to goddess Durga traditionally. Present author also studied Lord Ganesha and Lord Shiva in the same perspective (Patil, *loc.cit.*). In continuation of such study, goddess Durga is studied, the results of this in-depth study are presented in this communication with particular emphasis on alien flora associated, bioinvasion and local economy.

Methodology

Information regarding botanicals as used in the worship of goddess Durga is freely borrowed from the earlier works on this line those of Pal (1970), Mitra (1922), Khanna (2000), Kabiraj (1991), Banerjee (2006) and Dalasingh (2018). The plant species mentioned in these contributions are examined for their nativities to pinpoint their alien nature consulting relevant taxonomic literature as mentioned against each species in the Table-I, apart from other necessary botanical information. The data so obtained is being interpreted from the standpoint of bioinvasion, local economy and ecology in India.

Results And Discussion

Hindu religion is the oldest and largest. A large number of plant species have gained significance in worshipping deities. These religious traditions of worships have percolated in Indian societies over several generations. Goddess Durga, one such Hindu deity, is worshipped and propitiated for mine days during autumn festival especially in Bengal, Odisha and adjacent religions in India. Hindus revere her as a symbol of divine cosmic energy. The durga worship, apart from religious and mytological importance, has ecological and agrarian roots. Plants have assumed a central role in human life, his sustenance and even spiritual life.

A large number of plants, their parts or products are employed in Durga worship. The present author is interested how alien plants in India play role in human sustenance and spiritual life. An inventory is, therefore, tendered knowing the role of exotic plant species in the worship of goddess Durga. As many as 51 exotic plant species belonging to 48 genera and 33 families of angiosperms are recorded in this revisionary study (Table-I). Of these, the dicotyledonous taxa have a major role (42 species, 39 genera and 29 families), whereas the monocotyledons have relatively minor contribution (09 species, 09 genera and 04 families). These plant taxa are trees (14), shrubs (09), climbers (06) and herbs (22). Figures in parenthesis denote number of alien species. Majority of them are found under cultivation (40 species), wild (09 species) or wild as well as cultigens (02 species) in India. Various botanicals obtained from these cultivated ones are: (i) leaves (07 species), flowers (18 species), fruits (10 species), seeds (09 species) and bark (02 species). Some other parts used are tuber and stem, and root obtained from a single alien part species. Rarely, entire plants (without roots) e.g. *Cynodon dactylon* (L.) Pers. is employed in worship of goddess Durga. On analysis based on useful plant groups, they are: (i) ornamental (garden plants) (18 species), (ii) edible fruits or nuts (09 species), (iii) food grains (seeds) (05 species), (iv) oil seeds (03 species), (v) shade or roadside trees (03 species), (vi) masticatory ones (02 species), (vii) vegetable (01 species), (viii) spice (01 species). These eight groups of plant species are sources of religious botanicals. All these botanicals are sold near temples or in vicinity of such sacred places. This help fetch some income to the local people. This resume indicates that the Indian devotees of goddess Durga employed maximum sources from already those are under cultivation in their region for various other purposes. No special efforts have been made and so that local biodiversity is not disturbed and as such even they are conserved.

Interestingly, all these are alien in nature and have been bioprospected and appropriated in view of religious traditional worship. They are hailed from various continents, countries, islands and specific geographical regions of both Old and New Worlds. The critical examination of their nativities revealed are: (i) America (17 species), (ii) Africa (07 species), (iii) Asia (Excl. India) (06 species) and (iv) Europe (05 species). Other countries contributed are China (04 species), Brazil (05 species), Mexico (07 species, Malaysia (03 species), West Indies (03 species), and Java (02 species). These are some countries or geographical regions which played a minor role by contributing a single species each e.g. Jamaica, Transvaal, Syria, Greece, Japan, Bali, East Indies, Persia, Afghanistan, Baluchistan, Argentina, Moluccas, Peru, Afro-Asian, Malay Sino-Japanese, Tropics, Subtropics and Mediterranean region. The distant continent *viz.*, America shared maximum number of species. The cultigens play dual role *viz.*, as food, medicine, miscellaneous uses and also as additional uses in worships. The devotees have exploited local biodiversity without any human interference and as such supported native economy.

Religious association of plant species in nine carnations of Durga are notable with ecology and nature conservation. These plants (botanicals) are called 'Nabapatrika' in which goddess Durga is thought to be residing. Such plant taxa are (1) *Aegle marmelos* (L.) Corr. (Rutaceae), (2) *Alocasia macrorrhiza* L. Don (Araceae), (3) *Clerodendrum inerme* (L.) Gaertn. (Verbenaceae), (4) *Colocassia esculenta* (L.) Schott. (Araceae), (5) *Curcuma longa* L. (Zingiberaceae), (6) *Musa pardisiaca* L. (Musaceae), (7) *Oryza sativa* L. (Poaceae), (8) *Punica granatum* L. (Punicceae) and (9) *Saraca asoca* (Roxb.) deWilde (Caesalpinaceae). The worship is performed on icons along with 'Mangala Ghata' (Ceremonial pots). This ritual and performance is based on nature and in fevour of ecosystem and traditional agricultural practices. Thus interrelationships exists in selecting plant species for the ritual of the said worship. *Punica granatum* is exotic (cf. Table-I), whereas *Alocasia macrorrhiza* (L.) G.Don (Araceae) is an additional exotic species to this account. It is native of Tropical Asia (cf. Gaikwad & Garad, 2015).

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Table-I: Worship of Goddess Durga: Exotic Plant Species

Sr. No. (1)	Plant Species & Family (2)	Common Name (3)	Part used & Form of Use (4)	Habit (5)	Wild (W)/ Cultivated (C) (6)	Nativity & Reference (5)
1.	<i>Crossandra influndibuliformis</i> L.) Nees. Acanthaceae	Itimola	Flowers Decoration	Shrub	С	Sri Lanka: Gaikwad & Garad, 2015.
2.	Amaranthus cruentus L. Amaranthaceae	Rajgiri	Seeds Powder	Herb	С	North & South America: Kaul, 1986.
3.	<i>Anacardium occidentale</i> L. Anacardiaceae	Lanka-amba	Seeds As such	Tree	С	America: Sorenson, 2005; John, 1891.
4.	Annona squamosa L. Annonaceae	Ata	Fruit Slices	Tree	W, C	 (i) Tropical America: Patil, 2003; Bailey, 1949. (ii) West Indies: Talbot, 1909- 1911.
5.	<i>Tabernaemontana divaricata</i> (L.) R.Br.ex Roem. & Schult. Apocynaceae	Tagar	Flowers Garland	Shrub	С	China: Almeida, 2001.
6.	<i>Cuscabella thevetia</i> (L.) Lippold Apocynaceae	Kaniara	Flowers Worship	Tree	С	(i) South America & West Indies: Patil, 2003.(ii) Mexico & West Indies: Lesley, 2020.
7.	Allamanda cathartica L. Apocynaceae	Lata-kaniar	Flowers Worship	Climber	С	(i) Brazil: Yadav & Sardesai, 2002.(ii) Tropical America: Patil, 2003.

Sr. No.	Plant Species & Family	Common Name	Part used & Form of Use	Habit	Wild (W)/ Cultivated (C)	Nativity & Reference
8.	Nerium indicum Mill. (N. oleander L.) Apocynaceae	Karvira	Flowers Garland	Shrub	C	 (i) Mediterranean Region: Purseglove, 1968. (ii) Tropical & Subtropical Asia: Yadav & Sardesai, 2002.
9.	<i>Colocasia esclenta</i> (L.) Schott. Araceae	Saru	Leaves Worship	Herb	С	(i) Brazil: Graf, 1980.(ii) Greece, Asia Minor, Syria, Brazil & Jamaica: Almeida, 2009.
10.	<i>Areca catechu</i> L. Arecaceae	Gua	Fruits Worship	Tree	С	 (i) Indonesian Archipelago: Ahuja & Ahuja, 2011. (ii) Malaysia: Chaphekar <i>et al.</i>, 2007.
11.	Polianthes tuberosa L. Agavaceae	Rajanigandha	Flowers Garland	Herb	C	Mexico: Patil, 2003; Naik, 1998.
12.	<i>Tagetes erecta</i> L. Asteraceae	Gendu	Flowers Garland	Herb	С	Mexico: Patil, 2003; Naik, 1998.
13.	<i>Tasetes patula</i> L. Asteraceae	Makamali	Flowers Garland	Herb	С	Mexico: Patil, 2003; Naik, 1998.
14.	<i>Dahlia pinnata</i> Cav. Asteraceae	Dahlia	Flower Worship	Herb	С	Mexico: Patil, 2003; Yadav & Sardesai, 2002.

Sr. No.	Plant Species & Family	Common Name	Part used & Form of Use	Habit	Wild (W)/ Cultivated (C)	Nativity & Reference
(1)	(2)	(3)	(4)	(5)	(6)	(5)
15.	<i>Gerbera jamesonii</i> Bolus ex Hook. <i>f</i> . Asteraceae	Gerbera	Flowers	Herb	С	(i) Transvaal & South America:Bose & Pandey, 1972.(ii) Transvaal: Graf, 1980.
16.	Impatiens balsamina L. Balasaminaceae	Haragauva	Flowers	Herb	С	Tropical America: Reddy, 2008.
17.	<i>Sinapis alba</i> L. Brassicaceae	Shweta-sorisa	Seeds	Herb	С	 (i) Africa & Europe: Stewart (1972). (ii) Mediterranean Area: Novak, 1966.
18.	<i>Combretum indicum</i> (L.) Dr Fillips Combretaceae	Madhumalati	Flowers Worship	Climber	C	 (i) Tropical Asia: Yadav & Sardesai, 2002. (ii) Java & Malay Peninsula: Shetty & Singh, 1987.
19.	<i>Benincasa hispida</i> (Thumb.) Cogn. Cucurbitaceae	Panikokharu	Fruits Worship	Climber	С	 (i) Java: Patil, 1995, 2003. (ii) Japan & Java: De Candolle, 1959.
20.	<i>Cyperus rotundus</i> L. Cyperaceae	Mutha	Tubers Paste	Herb	W	(i) Tropical Africa: Debnath & Debnath, 2017.(ii) Europe: Kaul, 1986.
21.	<i>Clitoria ternatea</i> L. Papilionaceae	Aparajita	Flowers Garland	Climber	W,C	Tropical America: Purseglove, 1968.

Sr. No.	Plant Species & Family	Common Name	Part used & Form of Use	Habit	Wild (W)/ Cultivated (C)	Nativity & Reference
22.	(2) Sesbania sesban (L.) Merr. Papilionaceae	(3) Jayanti	(4) Leaves Worship	(5) Tree	(6) C	(5) South America: Rajagopal & Panigrahi, 1965.
23.	<i>Cassia fistula</i> L. Caesalpiniaceae	Sunari	Leaves Worship	Tree	С	 (i) North America: Debnath & Debnath, 2017. (ii) West Indies: Singh <i>et al.</i>, 2015.
24.	<i>Caesalpinnia pulcherima</i> (L.) Sw. Caesalpiniaceae	Tarra	Flowers Worship	Shrub	С	 (i) South America: Singh <i>et al.</i>, 2000. (ii) Tropical America: Purseglove, 1968.
25.	<i>Arachis hypogaea</i> L. Papilionaeae	Chinabudam	Seeds As such	Herb	C	(i) Brazil: Shetty & Singh, 1987.(ii) South America: Patil, 2003.
26.	Aeschonomene aspera L. Papilionaceae	Sola	Stem Garland	Shrub	W	 (i) Tropical America: Sainkhedia, 2016. (ii) Tropical Africa: Kalita <i>et al.</i>, 2019.
27.	<i>Ocimum basilicum</i> L. Lamiaceae	Kapurkanti	Leaves Worship	Shrub	С	(i) Persia: Pullaiah and Rao, 2001.(ii) Afro-Asian: Patil, 2003.
28.	<i>Punica granatum</i> L. Punicaceae	Dalimba	Fruits, Leaves Worship	Tree	С	 (i) South Asia: Gaikwad & Garad, 2015. (ii) Afghanistan, Baluchistan & Persia: Patil, 2003.

Sr. No.	Plant Species & Family	Common Name	Part used & Form of Use	Habit	Wild (W)/ Cultivated (C)	Nativity & Reference
(1)	(2)	(3)	(4)	(5)	(6)	(5)
29.	Hibiscus rosa-sinensis L. Malvaceae	Mandar	Flowers Garland	Shrub	C	(i) China: Patil, 1995, 2003.(ii) Sino-Japanese: Singh & Srivastava, 2000.
30.	<i>Bombax ceiba</i> L. Bombacaeceae	Simili	Bark Paste	Tree	W	 (i) Africa: Gaikwad & Garad, 2015. (ii) Brazil To Argentina: Singh <i>et al.</i>, 2015.
31.	<i>Sida aacuta</i> Burm. <i>f</i> . Malvaceae	Bala	Bark Paste	Herb	W	Tropical America: Reddy, 2008.
32.	<i>Corchorus capsularis</i> L. Tiliaceae	Jhota	Fibre Worship	Herb	W	Pantropical: Singh & Srivastava, 2000.
33.	<i>Myristica fragrans</i> Hautt. Myristicaceae	Jaiphal	Fruits Powder	Tree	C	Moluccas: Singh et al., 2001.
34.	<i>Psidium guajava</i> L. Myrtaceae	Pijuli	Fruits Slices	Tree	С	(i) Tropical America: Patil, 2003.(ii) Mexico: Shetty & Singh, 1987.
35.	<i>Nymphaea nouchali</i> Burm. <i>f</i> . Nymphaeaceae	Nilkain	Flowers Garland	Herb	W	South-East Asia: Shetty & Singh, 1987.
36.	<i>Mirabilis jalapa</i> L. Nyctaginaceae	Rangini	Flowers Worship	Shrub	С	(i) Mexico: Lesley, 2020.(ii) South America: Bailey, 1949.(iii) Peru: Chandra Sekar, 2012.

Sr. No.	Plant Species & Family	Common Name	Part used & Form of Use	Habit	Wild (W)/ Cultivated (C)	Nativity & Reference
(1)	(2)	(3)	(4)	(5)	(6)	(5)
37.	<i>Jasminum sambac</i> (L.) Ait. Oleaceae	Malli	Flowers Worship	Shrub	С	Tropical Asia: John, 1891.
38.	<i>Sesamum orientale</i> L. (Syn.S.indicum L.) Pedaliaceae	Rashi	Seeds Worship	Herb	С	Africa: Dogra, 2011.
39.	<i>Piper betle</i> L. Piperaceae	Pan	Leaves Worship	Climber	С	(i) Malaysia: Hewson & Thopson, 1993.(ii) Bali & East Indies: Graf, 1980.
40.	<i>Cynodon dactylon</i> (L.) Pers. Poaceae	Daba	Plants As such	Herb	W	Tropical Africa: Debnath & Debnath, 2017.
41.	<i>Triticum aestivum</i> L. Poaceae	Gaham	Seeds Food	Herb	C	Fertile Crescent, Singh & Nigam, 2017.
42.	<i>Hordeum vulgare</i> L. Poaceae	Barley	Seeds Worship	Herb	C	Europe & North America: Dar <i>et al.</i> , 2002.
43.	Pennisetum americanum (L.) K. Schum. (Syn.P.glaucum R.Br.) Poaceae	Bajara	Seeds Food	Herb	С	(i) Central Tropical America: Naik, 1968.(ii) Tropical Africa: Purseglove, 1968.
44.	<i>Vetiveria zizanoides</i> (L.) Nash Poaceae	Bena	Roots Paste	Herb	W	China: Medakkar & Sharma, 2016.

Sr. No.	Plant Species & Family	Common Name	Part used & Form of Use	Habit	Wild (W)/ Cultivated (C)	Nativity & Reference
(1)	(2)	(3)	(4)	(5)	(6)	(5)
45.	Saccharum spontaneum L. Poaceae	Kasatundi	Flowers Worship	Herb	W	Tropical West Asia: Reddy, 2008.
46.	Fagopyrum esculentum Moench. Polygonaceae	Kuta	Seeds Worship	Herb	С	Central Asia: Novak, 1966.
47.	<i>Ziziphus jujuba</i> Mill. Rhamnaceae	Barakoli	Leaves Leaves	Tree	С	Subtroics & Warm Temperate Zone: Martin <i>et al.</i> , 1987.
48.	<i>Citrus sinensis</i> (L.) obeck Rutaceae	Kamala	Fruits Slices	Tree	С	China: Singh, 2000.
49.	<i>Citrus maxima</i> Merr. Rutaceae	Batapi	Fruits Worship	Tree	c	Malaysia: Debnath & Debnath, 2017.
50.	<i>Vitis vinifera</i> L. Vitaceae	Angura	Fruits Worship	Climber	C	 (i) South-East Europe To West Indies: Singh <i>et al.</i>, 2000. (ii) West Indies: Gaikwad & Garad, 2015.
51.	Pyrus communis L. Rosaceae	Naspati	Fruits Slices	Tree	С	Europe: Singh, 2015.