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## Mango: History origin and distribution

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### Abstract

Mango is native to India and is one of the most important fruit crops world-wide. Its botanical name is *Mangifera indica* L. and is the most important species of the genus *Mangifera*, which produces the most delicious fruit called the mango. The genus *Mangifera* contains about 49 species, of which 8 are of doubtful status and 41 are valid species. Morphologically the genus could be separated under two sections based on the character of the flower disc: the first, with 34 species, has flowers with well developed swollen disc, and the second, with 7 species, has obsolete or pedicellate disc. The cultivation of mango in India is as old as 4,000 to 6000 years. Hsüan-tsang appears to be the first person to bring the mango to the notice of people outside India. Historical records and palaeo- botanical evidences provide ample proof about its origin in the Indo-Burma-Malay region. It moved to China by the 7<sup>th</sup> Century; to East Africa around the 10<sup>th</sup> Century AD; to the Philippines in the beginning of the 15<sup>th</sup> Century. It spread from South and Southeast Asia over the tropical and subtropical areas of the world from the end of the 15<sup>th</sup> Century onward. It reached Africa during the 16<sup>th</sup> Century; Brazil in the 1700s; Mexico early in the 19<sup>th</sup> Century; Jamaica in 1782; Hawaii in 1809 and America during the second half of the 19<sup>th</sup> Century. Afterward it began popping up all over the world. Today, many of the popular varieties of mango grown around the world are derived from the mango produced in Florida (USA). Geographic spread of mango was essentially completed in the last half of the 19<sup>th</sup> Century with its introduction to such far flung places as Florida, Hawaii, Fiji, Queensland and Natal. The Portuguese are said to introduce vegetative propagation methods in India for the first time to clone superior mono-embryonic trees in the 15<sup>th</sup> Century. The most important mango cultivars of India (Alphonso, Dashehari, Langra etc.), are selections made at the time of Akbar (1542–1605 AD) and have been propagated by vegetative method for several hundred years. Though, a tropical fruit, it is now cultivated under subtropical conditions in 89 countries of the world. The major mango growing countries are India, Pakistan, Bangladesh, Myanmar, Sri Lanka, Florida and Hawaii of USA, Australia, Brazil, Thailand, the Philippines, Malaysia, Vietnam, Indonesia, Fiji Islands, Egypt, Israel, South Africa, Sudan, Somalia, Kenya, Uganda, Tanzania, Niger, Nigeria, Zaire, Madagascar, Mauritius, Venezuela, Mexico, West Indies Islands, Cambodia, etc.

**Keywords:** Mango, *Mangifera indica* L., history, origin, distribution

### 1. Introduction

Mango is the most important fruit crop in India. Since ages, mango tree has been described as Kalpavriksha (wish granting tree). It is known as the *king of fruits* and is the choicest fruit in India and abroad. Its long period of domestication in India is well evidenced from its mention in ancient scriptures. Mango is a part and parcel of cultural heritage of India. Today the mango tree and its fruit remain important Indian religious and cultural symbols. The mango is intimately associated with the history of agriculture and civilization in India. Ayurvedic and some ancient texts recognize ripe mango as aphrodisiac and enhancer of vitality and stamina. Since the Ancient time it has a great cultural, socio-economic and religious significance in India.

It is known in India from ancient times, as is evident from its reference in the early Sanskrit texts as Aamra, choot and rasaal. The mango trees play sacred role in India. It is a symbol of love and people believe that the mango tree can fulfill our wishes. In the Hindu culture hanging fresh mango leaves outside the front door during Ponggol (Hindu New Year) and Deepawali is considered a blessing to the house. The mango leaves are used at weddings to ensure the couple to bear plenty of children (though it is only the birth of the male child that is celebrated – again by hanging mango leaves outside the house). Hindus may also brush their teeth with mango twigs on holy days (be sure to rinse well and spit if you try this at home as it is toxic). Many Southeast Asian kings and nobles had their own mango orchards; with private cultivars being sources of great pride and social standing, hence, began the custom of sending gifts of the choicest mango.

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## 2. History

Its prominence in Hindu mythology and religious observance leaves no doubt about its antiquity. The cultivation of mango in India is as old as 4,000 years reported by de Candolle (1883) on the basis of writings by subsequent botanists to 6000 years (Hill, 1952). In Ramayana (by Valmiki), mango fruit and trees are described at many places. Economic importance of mango in ancient times is suggested by one of the Sanskrit names, *am*, as an alternative meaning of provisions of victuals. There are frequent discoveries of mango in archaeology- the most outstanding being the one in sculpture on the Stupa of Bharhut dating back to ~110 BC.

In the travel notes of the Buddhist pilgrims (Fahien and Sung-yün) a mango orchard is mentioned as having been presented by Amradharika to Lord Buddha to enable him to use it as a place of repose. Alexander the Great had spotted a pleasant mango garden in the Indus Valley in 327 BC during one of his invasions. This important fruit also finds mention in the notes of the early foreign travelers to India, e.g., Xuanzang (Hsüan-tsang) (632-645 AD), ibn-Haukul (902-968 AD), ibn-Batuta (1325-1339 AD by Singh, 1960 ; 1333-1342 AD by Madan Gopal, 1997) and Ludovici de Varthema (1503-1508 AD). Apparently, Hsüan-tsang was the first person to bring the mango to the notice of people outside India.

Mughal emperor Babar recognized the mango as the choicest fruit of India. His descendants cultivated mango by evolving grafting techniques and growing technologies and making huge collection of varieties. Akbar, the Mughal emperor (1556 – 1605 AD) got planted near Darbhanga the Lakh Bagh, an orchard of 1,00,000 mango trees. This big planting made at a time, when large orchards of fruit trees were almost unknown, eloquently proves the importance of the mango and the esteem in which it has long been held in India. Charles Maries, who visited the orchard 300 years later found some of those trees still in vigorous conditions. Relics of such orchards are still found in different parts of India. The origin of the most of the improved cultivated varieties of India today can be traced to those early days. They have since been preserved under cultivation (for over 400 years) by the process of vegetative propagation.

The Ain-e-Akbari, an encyclopedia written during the empire of Akbar contains a lengthy account of the mango, giving information about the quality and varietal characteristics of the fruit from which it appears that a fairly good knowledge about mango culture and the characters of different



**Fig 1:** Mango- plant

varieties was gathered by the people of India during the 16<sup>th</sup> Century or even earlier. However, research with specified objectives started with the turn of the 19<sup>th</sup> Century. Mango

has been a source of attraction to the people including the media person (Om Prakash and Khan, 2005). It has been associated with the work of Indian literature legends, e.g., Kalidas, Mirza Galib, Amir Khusrau (1330 AD), Buddhist monks, Kautilya, Vatsyayana, Valmiki, Tulsidas, Vyasa, and Amar Sinha, Abul Fazal (1590 AD) etc. Its identity is preserved in the sculptures of Stupa of Bharhut-Sanchi (150 BC), Kushan-Mathura (1<sup>st</sup> -3<sup>rd</sup> Century AD), Ellora caves (750-850 AD), Khajuraho (1000 AD), Koyleshwara temple at Halebid in Mysore (13<sup>th</sup> Century AD), Temple of Kanchi, etc. (Srivastava, 1998).

Mango has been attached with Lord Shiva, which is evident from his name- Amra-Tarkeshwara. In his Sanskrit literature Panini, the author of Sanskrit grammar, has used its name in a number of contexts. Mango leaves are used in making festoons for the doorways to solemnize religious functions and offering sacred water to deity. Inflorescence (manjari or baur in Hindi) is offered to Lord Shiva and Goddess Saraawari, Intoxicating fragrance of mango flowers has been considered as one of the five arrows of cupid (God of love). Wood is considered sacred for igniting fire for performing hawan and yajya (Yajna). The saga of this luscious fruit has been immortalized by the Persian poet and Saint Amir Khusrau (1253 – 1325 AD).

It is known in India from ancient times, as is evident from its reference in the early Sanskrit texts as *Aamra*, *choot*, *rasaal* and *saurabha*. The mango trees play sacred role in India. It is a symbol of love and people believe that the mango tree can fulfill our wishes. In the Hindu culture hanging fresh mango leaves outside the front door during Ponggol (Hindu New Year) and Deepawali is considered a blessing to the house. The mango leaves are used at weddings to ensure the couple to bear plenty of children (though it is only the birth of the male child that is celebrated – again by hanging mango leaves outside the house). Hindus may also brush their teeth with mango twigs on holy days (be sure to rinse well and spit if you try this at home as it is toxic). Many Southeast Asian kings and nobles had their own mango orchards; with private cultivars being sources of great pride and social standing, hence, began the custom of sending gifts of the choicest mango. The royal families used mango as the best gift to arouse the diplomatic sentiments and develop the sustained friendship. Some quotable instances include the gifts of mango offered by Daulat Khan Kodhi, Governor of Lahore to Babar in Persia, Aurangzeb to Shahj Abbas of Persia, Pt. Jawaharlal Nehru to Nikita Khrushchev of USSR (Russia), Sri Lal Bahadur Shastri to Alaxi Kosygen of Russia, Mrs. Indira Gandhi to Leonid Brezhnev of Russia and Morarji Desai to Jimmy Carter of USA, Shah of Iran, the king of Belgium and Queen of England.

## 3. Origin

The mango originated, in the foothills of the Himalayas of the southern Asia (eastern India, Burma, and the Andaman Islands) bordering the Bay of Bengal, dating back to 4000 BC, where it still grows wild in the hills of Assam and adjacent areas. The earliest mention of mango tree is found in ancient Sanskrit scriptures dating back to ~ 4000 BC. *Mangifera indica*, means ‘the great fruit bearer’. Historical records and palaeo- botanical evidences provide ample proof about its origin in the Indo-Burma-Malay region. On the basis of presence of maximum number of allied species growing in Malaysia, some workers are lead to believe that Malaysian region is the original home of mango. But Vavilov (1926) supported that mango is originated in

Indo-Burma region. Mukherjee (1949b) concluded that occurrence of wild form of *Mangifera indica* and its allied species and presence of numerous cultivated and wild varieties in India were some of the major reasons in favour of mango having originated in Indo-Burma region.

The mango is a member of the Anacardiaceae family which includes poison ivy, cashews, and pistachios. It is also known as manga, mangga, mangot, mangou, and mangue in other parts of the world. The mango comes in over 50 varieties, ranging in color from greenish, yellowish, to reddish, often tinged with purple, pink, orange-yellow, or red. Buddhist monks are believed to have taken the mango on voyages to Malaya and eastern Asia during the 4<sup>th</sup> and 5<sup>th</sup> Centuries BC. The mango is considered to be a sacred fruit in the region because it is said that the Lord Buddha himself meditated under a mango tree as a result of which he found tranquility and repose in a mango orchard. According to Fa-Hien and Sung-Yun the Lord Buddha was presented with a mango orchard by Amradarika in 500 BC as a place for meditation. The peripatetic Buddhist monks were the first to spill the beans and initiate the trade of the mango fruit some 400-500 centuries BC. A mango tree is found in the friezes on the Stupa of Bharut which dates back about 100 BC. The soldiers of Alexandra the Great had gone across orchard in Indus Valley. It is speculated that the traders and monks from India introduced superior selections of mango into South-east Asia. The mango is referred in the travelogues of ancient travelers, namely, Hüan Tsang (632-645 AD), ibn Haukul (902-968 AD), and Ibn Batuta (1325-1345 AD). The Chinese traveler Hüan Tsang, during his visit to India (632 - 645 AD) brought the mango to China. According to a German born botanist, Georg Eberhard Rumphius, in his *Het Amboinsche kruidboek* or *Herbarium Amboinense* (1741), the mango was introduced into certain islands of the Indonesia archipelago within recent times; however, the mango was in cultivation in Java as early as early as 900-1100 AD, when the temple at Borobudur was built and faced with carvings of the Lord Buddha in contemplation under a mango tree.

According to de Candolle (1883) it is impossible to doubt that the mango is a native of the south of Asia or of the Malay Archipelago. Several investigations have been carried out on more scientific lines on the origin of the cultivated plants. Vavilov's (1926) work on the genetic variation in the staple crop plants of the world and the location of the centres of those variations is the most outstanding, from which he suggested the 'Indo-Burma' region as the centre of origin of the mango. This problem has been further investigated and conclusions have been derived by an analysis of the phytogeographical data phylogenetic taxonomy of all the species included within the genus *Mangifera*. A brief classification Table-1 for the mango is given below. The genus of mango was described by Linnaeus (1754) in *Genera Plantarum*. The genus *Mangifera* of the family Anacardiaceae and the order Sapindales is restricted to the tropical Asia. The highest concentration of the species is found in the western part of Malaysia (Malay Peninsula, Sumatra, Java, and Borneo). The primary centre of origin of the genus *Mangifera* is considered in the region of Myanmar (Burma)-Siam-Indochina or Malay Archipelago and the secondary centre in the Sunda island (Java, Sumatra, Borneo)-the Philippines and Celebes- Banda-Timor group (Mukherjee, 1985). *Mangifera gebede*, a wetland species, is widely distributed from Burma (Myanmar) through Malaysia to New Guinea. Out of the two groups of other species occurring in Malaysia, one group is adapted to monsoon climate of Myanmar, India, Thailand,

Indonesia and the lesser Sunda islands of Indonesia and the larger part of the ever wet tropical rain forest, stretching from India including Andaman island, east-ward as far as Micronesia. From Malaysia, *Mangifera* species moved eastward with one species to the Pacific area, and westward with nine species to India including Andaman islands and 3 species to Sri Lanka. *Mangifera merrillii* and *M. monandra* are endemic to the Philippines. *Mangifera altissima* perhaps occurs in the Celebes (Kostermans and Bompard, 1993).

The two-sub-genera may have originated from two different ancestors. However, there is no way to find out the ancestry of the germs and the species of *Mangifera* (Kostermans and Bompard, 1993). *Mangifera* species are identified by vegetative characters like tree growth habit, bark, leaf, flower, fruit and stone characteristics. However, based on morphological characters, the precise identification of *Mangifera* species becomes complicated due to variation resulting in nature from cross pollination.

**Table 1:** Brief classification of mango

Kingdom	Plantae – Plants
Subkingdom	Tracheobionta – Vascular plants
Superdivision	Spermatophyta – Seed plants
Division	Magnoliophyta – Flowering plants
Class	Magnoliopsida – Dicotyledons
Subclass	Rosidae
Order	Sapindales
Family	Anacardiaceae – Sumac family
Genus	<i>Mangifera</i> L. – mango
Species	<i>Mangifera indica</i> L. – mango



**Fig 2:** Mango-first inflorescence

### 3.1 *Mangifera indica* L.

The first valid description of *Mangifera indica* L. was produced by Linnaeus (1753) in *Species Plantarum*. *Mangifera indica* L., *Mangifera sylvatica* Roxb., *Mangifera khasiana*, *Mangifera andamanica* and *Mangifera camptosperma* have been reported to be found in India. *Mangifera indica* L. is the most important species of the genus, which produces the most delicious fruit called the mango. *Mangifera indica* L. has enormous variability at the levels of wild types and cultivars and is closely related to *Mangifera longipes* Griff and *Mangifera sylvatica* Roxb.

*Mangifera indica* L. has originated from Indo-Burma (Myanmar) region (de Condolle, 1904; Popenoe, 1920; Vavilov, 1926). This was supported by Mukherjee (1949, 1951) on the basis of evidences like occurrence of wild forms in several parts of the region, a fossil leaf impression similar to *Mangifera indica* discovered from India, the description of mango in early Sanskrit literature, the depiction of mango

fruit in stone carvings of Sanchi, Ajanta, etc. and its association with many Hindu rituals. Description of mango in India by early foreign travelers also attests its origin in the region (Popenoe, 1920). In Sri Lanka, a large diversity in terms of intraspecific variation exists in *Mangifera zeylanica*, locally known as Etamba even in the same climatic zone (Weeraratne *et al.*, 2005). *Mangifera* species possess genes for valuable characters like resistance to biotic and abiotic stresses but hardly any effort has been made to characterize and generate basic information regarding their cross-ability with the cultivated species for proper exploitation of this valuable species wealth. Therefore, screening of this wealth needs to be carried out against insect, pest and disease resistance and conserved in-situ and ex-situ. However, one of the main problems encountered in the conservation of species has been their precise climatic requirements. Acclimatization of these species in the changed climatic condition becomes difficult leading to their mortality. Hence, species need to be conserved either at the place of their origin or the place with similar climatic conditions.

The number of species of the genus *Mangifera* has been recognized differently by different scientists. The genus contains about 49 species, of which 8 are of doubtful status and 41 are valid species. These are distributed throughout Malaysia from India and Ceylon in the West to the Philippines and the New Guinea in the East; the Himalayas, Yunnan (China) and Indochina in the North to the arc of islands comprising the Sunda (Sumatra, Java, etc.) and the Sulu Archipelago in the Indian Ocean in the South. Morphological studies have shown that the genus can be separated under two sections based on the character of the flower disc. The first with 34 species has flowers with well-developed swollen disc, where as the second with 7 species has obsolete or pedicellate disc.

Mukherjee (1949) recognized 41 species and found 8 species as incertae sedis (species which cannot be placed properly), of which 39 species were later considered as valid species (Mukherjee, 1985). Kostermans and Bompard (1993), ascribing Mukherjee's (1949) partial monography of *Mangifera*, described 69 species of *Mangifera*, of which 12 species were found as incertae sedis, thus, only 57 species were recognized clearly by them. The keys for the identification of *Mangifera* species are available in the classic work of Kostermans and Bompard (1993).

The cultivated mango is probably a natural hybrid between *Mangifera indica* and *Mangifera sylvatica* that occurred in South-Eastern Asia to India. The word *mango* comes from the Portuguese *manga*, which is probably derived from the Malayalam (*manga*). It has a long list of names in different languages. The name *Mangifera* was given first time by Botinus in 1658, where he referred to this as *arbor Mangifera* (the tree producing mango). Linnaeus also referred it as *Mangifera arbor* in 1747 prior to changing the name to its present form *Mangifera indica*.

#### 4. Distribution

Gradually, the mango moved from its centre of origin in Indo-Burma (Myanmar) region to all the mango cultivating countries. The mango seeds traveled with humans from Asia to the Middle East, East Africa and South America beginning around 300-400 AD. In beginning, it moved to the south-east Asia and the Malay Archipelago and by the 7<sup>th</sup> Century, it reached China. The Persians are said to have carried it to East Africa around the 10<sup>th</sup> Century AD. Muslim missionaries took mango to the Mindanao and the Sulu of the Philippines in the

beginning of the 15<sup>th</sup> Century. During the end of the 15<sup>th</sup> Century and beginning of the 16<sup>th</sup> Century, the mango entered into the Philippines from India through Spanish. The mango spread from South and Southeast Asia over the tropical and subtropical areas of the world as a result of the Portuguese and Spanish voyages from the end of the 15<sup>th</sup> Century onward. Mango was carried to Africa during the 16<sup>th</sup> Century and later found their way abroad through Portuguese ships to Brazil in the 1700s. Portuguese brought mango from Goa to South Africa and from South Africa to Brazil in the beginning of the 18<sup>th</sup> Century. From Africa the Portuguese brought it to the West Indies also, however, it was commonly grown in the East Indies before the earliest visits of the Portuguese. The mango was taken to Santo Domingo of Barbados in the West Indies in the middle of the 18<sup>th</sup> Century (Singh, 1990) and from Bourbon to Santo Domingo in 1782 (Srivastava, 1998). In 1742, the mango was successfully introduced to Barbados from Rio de Janeiro by the traders from Portugal. Early in the 19<sup>th</sup> Century it reached Mexico from the Philippines and the West Indies. The mango reached Jamaica from Barbados in 1782 and Hawaii from Mexico in 1809. Afterward it began popping up all over the world.

In the 16<sup>th</sup> Century, a special technique employing grafting was developed for propagating the mango. During the 17<sup>th</sup> Century, the Portuguese planted mango in coastal areas of both East and West Africa; but acceptance by the Africans was slow and spread into the interior was erratic. Mango trees were present in a few interior market towns in West Africa, when European explorers arrived in the late 19<sup>th</sup> Century, but most of the spread came later. The earliest known successful introduction of mango to the New World was to Bahia in Brazil about 1700 with plantings elsewhere along the Brazilian coast soon after. In Brazil the mango is produced in the state of Minas and Gerais, Ceará, Paraíba, Goiás, Pernambuco, and Maranhão. Mango growing began with the earliest settlers in North Queensland, Australia, with seeds brought casually from India, Ceylon, the East Indies and the Philippines. In 1875, 40 varieties from India were set out in a single plantation. Over the years, selections have been made for commercial production and culture has extended to subtropical Western Australia. There is no record of the introduction of the mango into South Africa but a plantation was set out in Durban around 1860.



Fig 3: Mango- large tree

Soon other direct introductions to the West Indies were made from the Indian Ocean. During 1750-1800 AD the British and French colonial botanical gardens played leading role in mango introduction. The above period witnessed fast introduction of mango across the Pacific from the Philippines

to Mexico. Mango was not grown around Manila until over a century after the trade with Mexico began, nor were they grown in Mexico until late in the 18<sup>th</sup> Century when Mexico acquired, under the name of mango of Manila, the unusual apomictic variety grown in the Philippines and Guam.

The mango was introduced in Tropical America in the 17<sup>th</sup> and 18<sup>th</sup> Centuries by Spanish. In the mid 18<sup>th</sup> Century the mango was introduced into Lisbon (Portugal). With the first permanent plantation the mango reached Florida from India in 1861 as cv. Mulgoa. In 1882 this cultivar was subsequently introduced in Florida from India. From Bombay (now Mumbai, India) the mango was introduced into Egypt in 1825 from where it was introduced into Israel in 1929 and thereafter, the commercial varieties were introduced in Israel from South Africa, Indonesia, Florida (USA) and India. The mango was introduced into the Canary Islands in the 19<sup>th</sup> Century. The mango was introduced into the Palestine in the beginning of the 20<sup>th</sup> Century but could not survive. It was again introduced there in 1929 from Egypt followed by its introduction from Java, South Africa and Florida. It was introduced to the southern part of Italy in 1905.

Seeds were imported into America from the West Indies, India and Cuba during the second half of the 19<sup>th</sup> Century. The mango cultivars arrived in Florida in the 1830's and in California in the 1880's. Today, many of the popular varieties of mango grown around the world were derived from the mango produced in Florida. The U.S. Department of Agriculture (USDA) made 528 introductions from India, the Philippines, the West Indies and other sources during 1899 - 1937. Meanwhile, a reverse flow of varieties was going on and improved mango cultivars developed in Florida have been of great value in upgrading the mango industry in tropical America and elsewhere. The great expansion of mango growing over tropical Central and South America took place during 1800 -1850 mainly by casualty planted and volunteer seedling trees often yielding poor quality fruit. Geographic spread of mango was essentially completed in the last half of the 19<sup>th</sup> century with its introduction to such far flung places as Florida, Hawaii, Fiji, Queensland and Natal.

The growing interest in mango production is evident from dozens of International conferences / symposia / seminars held in different countries from time to time. The first International *Symposium on Mango and Mango Culture*, under the auspices of the International Society for Horticultural Science, was held in New Delhi, India, in 1969 with a view to assembling a collection of germplasm from around the world and encouraging cooperative research on rootstocks and bearing behavior, hybridization, disease, storage and transport problems, and other areas of study.

It has been suggested that the Portuguese, who established trading outposts along the west coast of India in the 15<sup>th</sup> century, introduced vegetative propagation methods in India and these were used for the first time to clone superior monoembryonic trees. The most important mango cultivars of India like, Alphonso, Dashehari, Langra etc., are selections that were made at the time of Akbar (1542–1605 AD) and therefore, have been propagated vegetative for several hundred years.

Mango, a tropical fruit, is now largely cultivated under subtropical conditions. In other words, it is considered as a pan-tropical fruit. Presently, the mango is being cultivated commercially or in the backyard or as a mixed plantation in 89 countries of the world. The major mango growing countries are India, Pakistan, Bangladesh, Myanmar, Sri Lanka, Florida and Hawaii of USA, Australia, Brazil,

Thailand, the Philippines, Malaysia, Vietnam, Indonesia, Fiji Islands, Egypt, Israel, South Africa, Sudan, Somalia, Kenya, Uganda, Tanzania, Niger, Nigeria, Zaire, Madagascar, Mauritius, Venezuela, Mexico, West Indies Islands, Cambodia, etc.



Fig 4: Mango- fruited trees in orchard

#### References

1. Candolle, A. de; *Origine des Plantes Cultivées* Germer Bailliére and Cie, Paris, 1883, 159-161 (English translation 1884. Origin of Cultivated Plants, London),
2. Candolle, A. de; *Origin of Cultivated Plants* 2<sup>nd</sup> ed, Kegan Paul, London, 1904.
3. Hill, A.F; *Economic Botany*. edn 2 Mc Graw-Hill & Kogakusha, 1952.
4. Kostermans, A.J.G.H., Bompard, J.M. ; *The Mangoes: Their Botany, Nomenclature: Horticulture and Utilization*. International Board for Plant Genetic Resources, Rome and the Linnean Society of London, Academic Press, Harcourt Brace and Company, Publishers, London, 1993, 232.
5. Linnaeus, C. ; *Species Plantarum*. 1753; 1:200.
6. Linnaeus, C. ; *Genera Plantarum*. 1754; 1:93.
7. Madan Gopal (Ed.). *Ibn Batuta ki Bharat Yatra Ya Chaudahaveen Shatabdi Ka Bharat* (Hindi), National Book Trust, New Delhi, 1997, 288.
8. Mukherjee SK. A monograph of the genus *Mangifera* L. *Lloydia*. 1949; 12(2):73-136.
9. Mukherjee, S,K; *The Origin of Mango*. *Indian Journal of Genetics and Plant Breeding*. 1951; 11(1):49-56.
10. Mukherjee, S,K; *Systematic and Biogeographic Studies of Crop Genepools, Mangifera* L. Vol. I; International Board for Plant Genetic Resources, Rome (Italy), 1985, 86.
11. Om Prakash, Khan, R.M. *A Tryst with Mango*. APH Publishing Corporation, Darya Ganj, New Delhi, 2005, 347.
12. Popenoe. W; *Manual of Tropical and Subtropical Fruits*. Mc Millan, New York, pp.79-160 (Facsimile of the 1920 Edn. Publ. 1974 Hafner Press New York, 1920).
13. Singh, R.N; *The Mango-Botany. Cultivation and Utilisation*. Leonard Hill (Books) Ltd. London. World Crop Book Series, 1960, 438.
14. Singh, R.N; *Mango*, Indian Council of Agricultural Research, New Delhi, 1990, 134.
15. Srivastava, R.P; *Mango Cultivation*. International Book Distributing Company, Lucknow, Uttar Pradesh (India), 1998, 633.
16. Vavilov, N.I; *The Origin, Variation, Immunity and Breeding of Cultivated Plants Chronica Botanica*. 1926; 13(6):1949-1950.

17. Weeraratne, W.A.P.G. Samarajeewa, P.K., Nilanthi, R.M.R Genetic Diversity of Itamba in Sri Lanka. Tropical Agriculture Research and Extension. 2005; 8:107-112.