

Aegle marmelos (L.) Corr. (Rutaceae) Multifoliate Leaf Diversity: A New Addition to the World Flora from Nanded District, Marathwada Region of Maharashtra State India.

Ramesh Chillawar¹, Shivsambh Ghodke²

^{1,2}Department of Botany Yeshwant Mahavidyalaya Nanded (M.S.) India - 431602.

ABSTRACT

Aegle marmelos (L.) Corr. in Trans is commonly called as Bel or Wood Apple. It belongs to the family Rutaceae. In Ayurveda, Siddha and Unani medicines is an important traditional medicinal plant used to treat chronic disorders and in the preparation of different medicinal formulation. The whole plant has therapeutic uses. The clinical studies shows that this plant possesses anti- microbial, anti - diarrhoeal, anti - oxidant, anti – inflammatory and anticancer properties which help it play important role in the prevention and treatment of many human diseases. The present report is a preliminary general survey of rare endemic and endangered plant species from Nanded district, Marathwada region of Maharashtra state India. During the survey of *Aegle marmelos* (L.) Corr. in Trans. (Rutaceae) it was keenly observed that there will be a Trifoliate to Multifoliate (3 – 7) leaves structure which is first time summarizes and firstly reporting to the World Flora as a multifoliate leaf diversity in *Aegle marmelos* (L.) Corr in Trans. (Rutaceae).

Keywords: Medicinal plant, Unifoliate leaf, Unipinnate leaf, Multifoliate leaf diversity etc.

Introduction:

On the Earth plant plants are very successful group of living organisms. Change is the law of nature. According to this concept plants are continuously trying to adopt the changing climatic conditions for that they show great diversity in their structural forms. For perennation, vegetative propagation, and storage of food materials and for other many miscellaneous uses they show modification in their root and shoot systems. Leaves are the most important body part of the shoot system but the development pattern and structure of leaves shows great modifications in. The main function of leaves is to carry the process of photosynthesis and plays a vital role in gaseous exchange. Angiospermic plants have two different types of leaf structures i.e. – Simple leaves and Compound leaves. On the basis of their structures the compound leaves are divided into two types i.e. – Pinnately compound leaves and Palmately compound leaves. The family Rutaceae is commonly called as citrus plant family. The members of this family are distributed in the tropical and sub – tropical regions of the World. The species belongs to the family – Rutaceae are medicinally and economically very valuable most of them are cultivated or wild. In Maharashtra this family is represented by several important species which show great diversity in their leaf morphology.

The leaf morphological variations in the some members of this family Rutaceae is as: *Acronychia pedunculata* (L.) Miq. (Unifoliate leaves) *Aegle marmelos* (L.) Corr. (commonly Tri foliate and rarely Penta foliate leaves), *Atalantia ceylanica* (Arn.) Oliver (Unifoliate leaves) *Atalantia racemosa* Wight & Arn. (Unifoliate leaves), *Atalantia spinosa* (Willd.) Tanaka (Unifoliate leaves), *Choisya ternate* H.B.K. (Trifoliate leaves), *Citrus aurantifolia* (Christ.) Swingle. (Unifoliate leaves), *Citrus aurantium* L. (Unifoliate leaves), *Citrus grandis* Osbeck. (Unifoliate leaves), *Citrus limon* (L.) Burm.f. (Unifoliate leaves), *Citrus medica* L. (Unifoliate leaves), *Citrus medica* L. var. *limetta* Hook. (Unifoliate leaves), *Citrus paradise* Macf in Hook (Unifoliate leaves), *Citrus sinensis* (L.) Osbeck. (Unifoliate leaves), *Citrus reticulata* Blanco. (Unifoliate leaves) *Clausena dentate* (Willd.) Roem. (Unipinnate leaves), *Clausena indica* (Dalz.) Oliver. (Unipinnate leaves), *Clausena punctata* (Sonberat) Wight. (Unipinnate leaves), *Clausena excavate* Burm. f. (Unipinnate leaves), *Evodia lanu – ankenda* (Gaertn.) Merrill. (Trifoliate leaves), *Feronia limonia* (L.) Swingle. (Unipinnate leaves), *Glycosmis arborea* (Roxb.) DC. (Tri foliate to Penta foliate leaves), *Glycosmis mauritiana* (Lam.) Tanaka. (Tri foliate to Penta foliate leaves, rarely unifoliate), *Naringi crenulata* (Roxb.) Nicolson (Unipinnate leaves), *Luvanga sarmentosa* (Bl.) Kurz. (Trifoliate leaves), *Micromelum falcatum* (Lour.) Tanaka. (Unipinnate leaves), *Murraya paniculata* (L.) Jack. Var. *exotica* (L.) Comb. (Unipinnate leaves), *Murraya paniculata* (L.) Jack. (Unipinnate leaves), *Murraya koenigii* (L.) Spreng. (Unipinnate leaves), *Paramignya monophylla* Wight. (Unifoliate leaves), *Ravenia spectabilis* Engler in Mart. (Trifoliate leaves), *Ruta graveolens* L. (Bipinnate or Tripinnate), *Toddalia asiatica* (L.) Lamk. (Trifoliate leaves), *Triphasia trifolia* (Burm.f.) Wils. (Trifoliate leaves), *Zanthoxylum alatum* (Three to Seven foliate leaves), *Zanthoxylum rhetsa* (Roxb.) DC. (Unipinnate leaves). (Almedia M.R. 1995).

Thus, in the family Rutaceae compound leaves show great diversity i.e. the genus *Acronychia* have Unifoliate leaves, *Aegle* have commonly Tri foliate and rarely Penta foliate leaves, *Atalantia* have Unifoliate leaves, *Choisya* have Trifoliate leaves, *Citrus* have Unifoliate leaves, *Clausena* have Pinnately compound; Unipinnate, Imparipinnate leaves, *Evodia* have Trifoliate leaves), *Feronia* have Pinnately compound; Unipinnate, Imparipinnate leaves, *Glycosmis* have Tri foliate to Penta foliate leaves, , *Naringi* have Pinnately compound; Imparipinnate leaves, *Luvanga* have Trifoliate leaves, *Micromelum* have (Lour.) Tanaka. (Pinnately compound Imparipinnate leaves, *Murraya* have Pinnately compound; Imparipinnate leaves, *Paramignya* have Unifoliate leaves, *Ravenia* have Trifoliate leaves, *Ruta* have Bipinnate or Tripinnate leaves, *Toddalia* have Trifoliate leaves, *Triphasia* have Trifoliate leaves, *Zanthoxylum alatum* Roxb. have Three to Seven foliate leaves and *Zanthoxylum rhetsa* (Roxb.) DC. have Pinnately compound; Imparipinnate leaves. Almedia M.R. (1995) Ganeshalah K.N.(2012) ,Gaikwad S.P. & Garad K. U. (2015) Kamble S.Y. & Pradhan S.G. (1988) Kothari M.J. & Moorthy S. (1993) Lakshminarasimhan P. & Sharma B.D. (1991) Madhav K. Chetty (2008) Mahabale T.S. (1987) Naik V. N. (1998), Ugemuge N.R. (1986) E - Flora of India Online. [https:// efloraofindia.com](https://efloraofindia.com), The World Flora Online. <https://worldfloraonline.org>.

Material and Methods:

During the regular field visit at the study area a tree was observed. A twig was collected and identified with the help of **Flora of Marathwada and Flora of Maharashtra and Flora of Solapur District** (Almida 1995, Gaikwad & Garad 2015& Naik 1998) as *Aegle marmelos* (L.) Coor. (Rutaceae) (Photo Plate No.- 1).

Morphological Enumeration:

Aegle marmelos (Linn.) Corr. in Trans Linn, Soc.5:223, 1800; Roxb.' Pl. Cor.t.143,1800; Wight, Icon. t. 16, 1838, Graham, Cat. 24,1839; Dalz & Gibs. Bombay Fl. Brit. Ind. 1:576, 1872; Woodrow in JBNHS 11: 268, 1897; Talbot, Trees Bombay 34, 1902; Cooke, Fl. Pres. Bombay 1: 192, Ugemuge, Fl. Nagpur 89, 1986; Patel, Fl. Melghat 58, 1968; Cherian & Pataskar, BOBSI 11 :385, 1969; Kamble & Pradhan, Fl, Akola 38, 1988.

Aegle marmelos (Linn.) Correa var. *mahurensis* Zate, in Ind. J. For. 5 : 36 , 1982.

Crataeva marmelos Linn., Sp. Pl. 444 , 1753.

Belou marmelos (Linn.) Lyons, Plant Names 69, 1907. Bel.

'Covalam' Rheede, Hort. Mal. 3: 37 – 8, t. 37, 1682.



Photo Plate No.-1: *Aegle marmelos* (L.) Coor. in Trans (Rutaceae).

A small tree armed with strong straight sharp spines 1 – 2.5 cm long. Leaves 3 - 7 (trifoliate to multifoliate), petiole puberulous, 2.5 – 3.5 cm long; leaflets lanceolate or elliptic – lanceolate, 4 – 8 by 2 – 4 cm, glabrous, the lateral leaflets subsessile, the terminal leaflets long – petioluled. Flowers bisexual, greenish white, scented, buds globose; pedicels pubescent. Calyx flat, pubescent, 4 – lobed, lobes rounded, sometimes obscure, ciliolate. Petals 4, much imbricate, 1 cm long, free, oblong, coriaceous. Stamens numerous, sometimes 50 or more; filament subulate, glabrous, free or sometimes 2 or 3 of them more or less united or subfascicled; anthers linear – oblong, apiculate. Ovary 11 – celled, glabrous, ovoid – oblong, faintly ribbed, seated on an elevated disk, cells many – ovuled; ovules biseriate. Fruit 5 – 12 cm in diam. , globose; rind grey or yellowish; pulp pubescent, sweet, thick, orange colored.

Flowers April – May.

Result and Discussion:

From the above study it was clear that the members of the family Rutaceae shows great diversity in their leaf morphology. The *Aegle marmelos* (Linn.) Corr. in Trans, taxon shows remarkable phylogeny with the *Zanthoxylum alatum* Roxb.

Conclusion:

From the above study observation it is concluded that the *Aegle marmelos* (L.) Corr. (Rutaceae) Multifoliate Leaf Diversity: A New Addition to the World Flora from Nanded District, Marathwada Region of Maharashtra State India is leads to introducing new taxon i.e. – *Aegle multifoliana* to the World flora.

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