Original Research Article

Nameeta- A newly developed*Hibiscusrosa-sinensis* L. cultivar from AJC Bose Indian Botanic Garden, West Bengal,India

Abstract

Our world is endowed with captivating scenic beauty and manifested by rich diversity. One of the notable plant species that contributes to biodiversity is the hibiscus. Hibiscus is a genus of numerous species of herbs, shrubs, and trees in the mallow family (Malvaceae) that are native to warm temperate and tropical regions. Several are cultivated as ornamentals for their showy flowers and a number are useful as fiber plants. Ancient Indian classical literature showed that it was not limited to offering to Gods but was an integral part of social, religious and traditional culture in herbal medicine. Present article will provide a maximum information about the newly developed significant cultivar 'Nameeta', who is the Joint Secretary of Ministry of Environment, Forest and Climate change.Detailed breeding process of the new cultivar is discussed and photographs are provided to facilitate to identification.

Keywords: Cultivar, Nameeta, *Hibiscus*,Mothers touch Singur, Durga,West Bengal, India.

1. INTRODUCTION

The *Hibiscus rosa-sinensis* L. is well-known by various names, such as China rose, Chinese hibiscus or Rose of China, Rose mallow, Hawaiian hibiscus or Blacking plant, Shoe flower, etc. It thrives in hot and warm climates, earning it the title "Queen of Tropics" [1], etc.It is native to China, Hawaiian Islands, Mauritius, Madagascar in Africa, and Fiji.The Hibiscus flower holds various symbolic meanings across different cultures in the world. *Hibiscus rosa-sinensis* L. is the national flower of Malaysia July 28, 1960[2]. Hibiscus flower is a symbol of sought freedom [3]. The red of the petals symbolizes the courage, life, and rapid growth of the Malaysian people, and the five petals represent the five Rukun Negara of Malaysia. The flower can be found imprinted on the notes and coins of the Malaysian ringgit. it serves as a national symbol in Haiti [4].

The new cultivar has been named after Ms. Nameeta Prasad, Joint Secretary, Ministry of Environment, Forest and Climate Change, in recognition of her significant contributions to the development and conservation of floral and faunal diversity through the Botanical Survey of India and Zoological Survey of India, respectively. It has been developed from the cross breeding of *Hibiscus rosa-sinensis* L. cultiars 'Mohers touch Singur' (Female parent) and

Hibiscus rosa- sinensis L. 'Durga' (Male parent). The new cultivar registration was accepted by the International Hibiscus Society on 08.05.2024.The new cultivar characterised by upright, fast growing shrubs with big size gorgeous flowers made up with velvety brown ring with vibrant reddish eye zone.

The genus *Hibiscus* L. comprises about 432 species [5] and more than 24,000 registered cultivars [6] in the world and is naturally distributed in tropical, subtropical, and warm-temperate regions of the world. In India, the *Hibiscus* is represented by 27 taxa belonging to 23 species, one subspecies and three varieties [7] and more than 389 registered cultivars [6].

Hibiscus rosa-sinensis L. has been designated as a denomination class. A cultivar epithet may not be repeated in that species, it may be used once in the remainder of the genus which forms a second denomination class. A denomination class under the provisions of this Code is a single genus or hybrid genus unless a special denomination class has been determined by the ISHS Special Commission for Cultivar Registration. Such as International Hibiscus Society, INC. ICRA: *Hibiscus rosa-sinensis* L. and its hybrids (2013) which published in article 6 (International Code of Nomenclature for Cultivated Plants – Ninth Edition) [8].

Hibiscus cultivars are genetically polyploid and they have two complete sets of chromosomes. A side effect of polyploidy condition, the phenotype character of the offspring may be quite different from the parent, or indeed any ancestor, essentially allowing possibly random expression of all or any of the characteristics of all the generations that they have gone before [9].

2. MATERIALS AND METHODS

2.1. Parents selection

The prime aim of authors to develop new cultivar of *Hibiscus* through selection, hybridization, to increase the number of flowers per plant, ability to bloom size & colour, rapid bush development, flowers availability throughout the year, increase propagation rate, disease and stress resistance power etc and the overall aspects of the ideal plant, standardization of techniques for mass propagation for farmers of the country to improve their individual economy of the country.

To conduct the hybridization, breeder has been selected tonative Indian parent cultivars 'Mothers touch Singur' as a Female parent and Durga as a Male parent for their morphological characters. Before cross pollination, breeder cross checked that, how genetic traits of parent plants has come into play and how they tend to pass genes to progeny

[10,11,12,13,14]. To track the lineage of Hibiscus cultivars, authors have been consulted cultivar genealogy tree of International Hibiscus Society database. Based on the genealogy of Hibiscus.

2.2 Hybridization

During winter in 2022, the designated female parents will be identified one day before pollination, while the flower will be at the full balloon stage the petals & pollen will be removed to expose the stigma and this will be covered with a piece of packet to avoid pollen contamination. The detailed methodology of [10,11,12,13,14] will be followed.

3. RESULTS AND DISCUSSION

The newly developed hybrid is allied to its parents but it clearly differentiated by its cordate leaf shape, brownish red flower. Detailed comparison with its parents is given in table 1.

The newly developed hybrid *Hibiscus rosa-sinensis* L. cv. Nameetaattainedfirst flowers at 25/11/2023. The fully developed cultivars branches were collected for grafting, budding for clonal propagation and multiplications. The propagated saplings were used to check/stabilise the characters. High quality, bush development, propagation, disease resistance power, ability to bloom and bloom size has been observed in the newly developed cultivars.

Table 1. Morphological comparison of Nameeta with its parents

SL. No	Characters	Pod parent (Mothers touch Singur)	Pollen parent (Durga)	New cultivar (Nameeta)
1	Stem	Upright to spreading	Spreading	Upright
2	Leaf	Elliptic	Broadly ovate	Cordate
3	Flower size (Diameter)	15-15.5 cm	16-17 cm	15-16 cm
4	Flowering pattern	Horizontal	Upright	Upright
5	Flower colour	Brownish yellow	Deep brown	Brownish red
6	Colour of eye zone	Red with white	Blackish red	Blackish red
7	Flower bud	Yellowish brown	Pale yellow	Creamy
8	Propagation	Cutting, grafting, budding and seeds	Grafting, budding and	Cutting, grafting and

			seeds	budding

Crossing of ‘Nameeta’ cultivar

Pod Parent–

Mothers touch Singur

Origin: India

Pollen Parent –

Durga

Origin: India

Nameeta

Date of Registration in International Hibiscus Society: 8.5.2024

(Hybridizer: Deep Chakraborty)

Figure.1. The *Hibiscus rosa-sinensis* L. Cultivar ‘Nameeta’ and it’s female parent ‘Mothers touch Singur’ and male parent ‘Durga’.

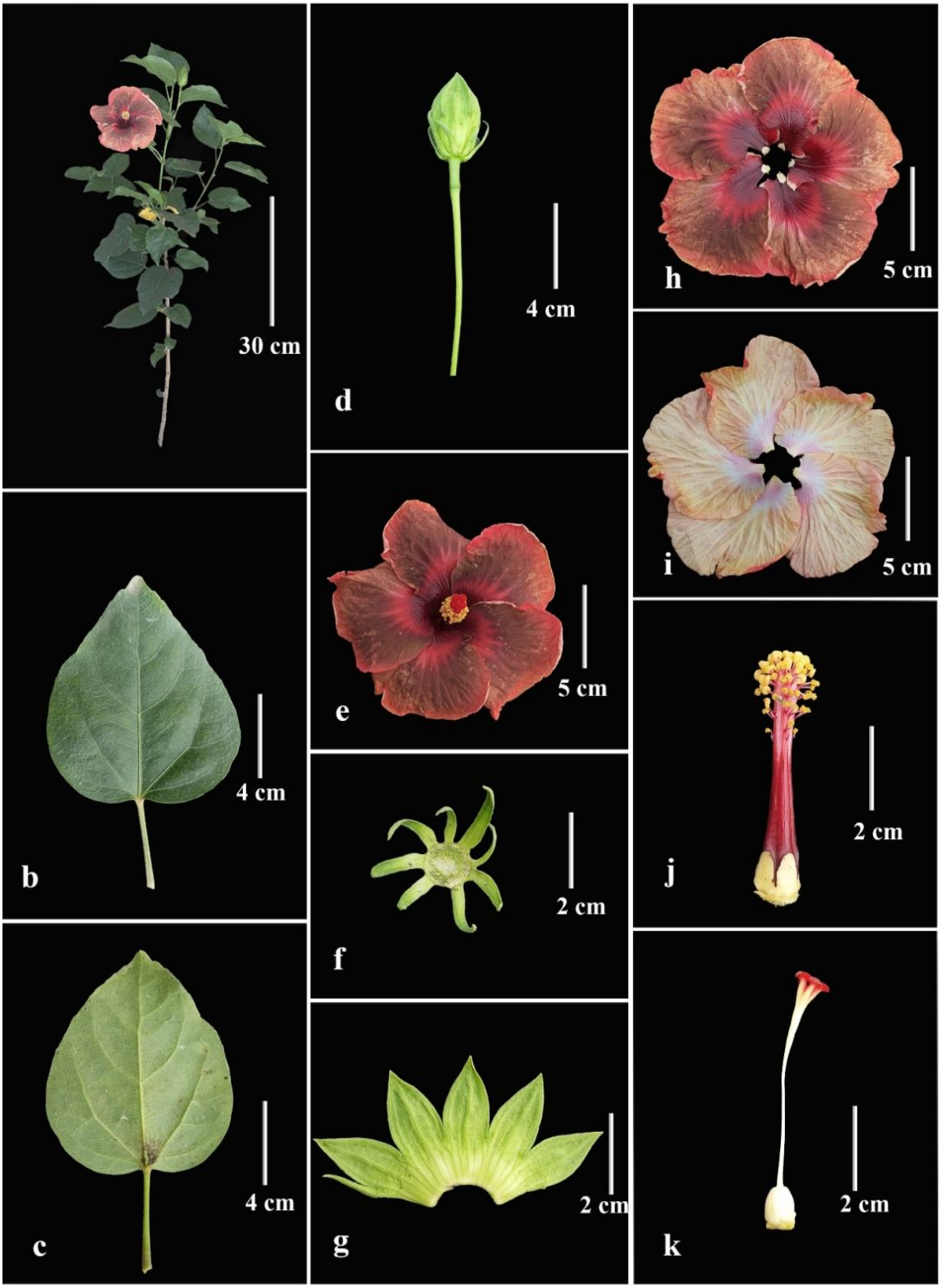

Figure 2. **Nameeta**: a. Habit; b,c. Leaves; d. Flower bud; e. A flower; f. Epicalyx; g. Calyx; h. Corolla (upper surface); i. The same from lower surface; j. Staminal column with pistil; k. Pistil.

Taxonomy of *Hibiscus rosa-sinensis* L. "Nameeta"

Shrubs, up to 100 cm long; branches upright, green; inter nodal portion 3.5-4 cm long. Leaves simple, petiolate; petiole 4-4.2 cm long and 0.3-0.4 cm wide; blades ovate, 9-10 × 8-8.2 cm, rounded to cordate at base, entire to undulate along margin up to the middle and entire- crenate above the half, acute to acuminate at apex, green above, light green below, 6-7 nerved from the base. Stipules linear, 0.5-0.7 × 0.1 cm. Inflorescence axillary, solitary; peduncle 9-9.4 × 0.2-0.3 cm; pedicel 1.5-1.7 × 0.3-0.4 cm; flower bud brownish yellow, 3.5-4 × 1.6-1.8 cm. Flowers brown, 15-16 cm in diameter. Epicalyx 2-3 cm in diameter, linear to lanceolate, 8-9lobed; each lobe 1-1.5 × 0.1-0.2 cm. Sepals united below the half, 3-4 × 5.5-6.5 cm, tube 1-1.3 × 1-1.1 cm, 5- lobed; lobes ovate-lanceolate, 2-2.5×1-1.5 cm, acute to acuminate at apex. Petals 7.6-8 × 8-8.5 cm, polypetalous, 5; obovate, cuneate to unequal at base, entire to undulate along margin, rounded at apex, upper surface reddish brown with and red centred, lower surface light orange with yellow; veins prominently raised beneath, creamy yellow. Staminal column velvety red, 5-5.1 × 0.3-0.5 cm; naked zone 3-3.2 cm long; anther zone 1.8-2 × 1.2-1.3 cm; anthers 0.1 × 0.1-0.2 cm, kidney shaped, yellow; filaments 0.2 - 0.4 cm long. Pistil 6-6.2 cm long; ovary cylindrical, 1-1.1 × 0.7 cm; style 4-4.3 cm long, linear; stigma red, 0.9-1 × 0.7-1 cm, 5-lobed, lobes 0.1-0.2 × 0.3-0.4 cm, unequal, densely hairy.

Flowering: Round the year. Usually, flowers open early in the morning and close after one day of its opening in summer and two days in winter.

Propagation: Cutting, grafting and budding.

4. Conclusion

This local breeding work will lead to the development of new hibiscus cultivar 'Nameeta' which will be have a very good propagation rate through cutting, budding and grafting, disease and stress resistance power, number of flowering rate in proper maintainwhich gain much ornamental potential, cultural significance and also useful in pot culture and landscaping. It will address the current demand of the country/region and further it has a wide scope for future research. Further, no longer need to introduce foreign (America, Australia, California, Hawaii, Taiwan, Thailand, Russia etc) cultivars. The present work also will help to the local farmers to enhance their economy.

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