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Evaluation of morphological and nutritional value of jamun (*Syzygium cumini* L.). Germplasm

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Abstract

The present study was conducted to evaluate five advanced germplasm of jamun for morphological and nutritional value during 2015-16 at the students Student's Instructional Farm of Narendra Deva University Agriculture and Technology, Kumarganj Ayodhya (U.P.) India. A significant variation was detected for all traits suggested that there was considerable variability among germplasm. The colour of jamun germplasm was recorded dark purple, reddish black to purple the fruit shape was recorded round to oblong The fruit size was recorded in length 2.58 to 2.85 and breadth 1.86 to 2.25 cm Specific gravity was found in range of 1.21 to 1.26. Maximum specific gravity was found in NJ12 (1.26) the nutritional content such as Total moisture content was found in the range of 15.17 to 16.36%. Maximum total moisture content was found in the germplasm NJ12 (16.17%). Total Sugar content was found in range of 5.16 to 5.58 per cent. Maximum total sugar was found in NJ12 (5.58%) On the basis of overall germplasm were found superior NJ12, NJ6, NJ11, NJ7 and NJ13 utilized in further research work.

Keywords: Evaluation, morphologica, nutritional, jamun, germplasm

Introduction

Syzygium cumini L. is an evergreen tree to a height of 25 m, with grayish white young stems and lower bark coarse and discolored. Jamun trees start flowering from March to April. The flowers of Jamun are fragrant and small, about 5 mm in diameter. The fruits develop by May or June and look a lot like large berries. (Swami *et al.*, 2012) [5].

The tree is known to be native in India, Bangladesh, Nepal, Sri Lanka, Indonesia, and Malaysia (Ayyanar and Babu, 2012) [1] and has been naturalized throughout Southeast Asia and the Pacific Islands (Dacanay, 2007) [2]. In the Philippines, it is found throughout the country and is one of the most popular fruits (Ramos and Bandiola, 2017) [8]. The tree is also grown in Myanmar, Thailand, Nepal, Australia, Kenya, Zambia, Zimbabwe, Madagascar, Colombia, Cuba, Mexico, Brazil, and some parts of the United States of America particularly Florida and Hawaii (Sharma *et al.*, 2012; Faria *et al.*, 2011; and Swami *et al.*, 2012) [3, 4, 5]. In southern Asia, the tree is of significant importance in Hinduism. It is planted commonly near Hindu temples because it is considered sacred to Lord Krishna (Ayyanar and Babu, 2012) [1].

The jamun fruit is a berry which is big sized, oblong in shape and deep purple or bluish black in colour. Its pulp is purple pink and fruit is juicy and sweet (Achrekar *et al.*, 1991) [6]. The berry measuring 2.2-4.5 cm length and 1.5-3 cm in diameter. The seed weights 1-3 gms and an average sized fruit is said to contain 68-86 mg of pulp. The tree fruits once in a year and berries are sweetish sour to taste. The flavour of the fruit is astringent (Baliga *et al.*, 2011) [7]. The medicinal properties of powdered seeds and stem bark of *Syzygium cumini* (L.) have been reported in the treatment of diabetes. Previous studies have demonstrated that *Syzygium cumini* (L.) essential oil has antioxidant, antibacterial and antifungal activity. Jamun fruit seeds and

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pulp have been testified to assist various tenacities in diabetic patients, such as depressing blood glucose levels and adjoining diabetic complications including neuropathy and cataracts and jamun fruit lessens the sugar in the blood and hence play important role in the control of diabetes. Keeping in view of above facts the present research work was conducted entitled evaluation of morphological and nutritional parameters of jamun germplasm.

Materials and methods

The present research work was carried out during season 2015-16. Five germplasm of jamun namely NJ6, NJ7, NJ11, NJ12 and NJ13 were collected from main experimental station of horticulture Narendra Deva University of agriculture kumarganj ayodhya. The morphological parameter namely fruit colour, fruit shape, fruit size and specific gravity was recorded in above germplasm and stored in desiccator for further biochemical analysis. The shape and colour of jamun fruit was recorded by visual observation the jamun fruit size in length and breadth of healthy fruits was measured using vernier calliper and expressed as length × breadth (cm). Specific gravity was calculated by dividing fruit weight by fruit volume. Moisture content was analyzed by the method described by (Ranganna, 1986). Total sugar was determined by the method of given by Dubois *et al.* (1950) The crude

protein was determined by using micro Kjeldahl method as described in AOAC (2000).

Results and discussion

The fruit colour of various germplasm of jamun was found as NJ6, NJ7 were dark purple NJ11 reddish black NJ12 blackish while NJ13 purple in colour. Shahnawaz and Ahmed Sheikh (2011) identify colour of Jamun fruit as they were reported that the colour of different jamun germplasm varied reddish purple to blackish purple in colour. The fruit shape was found NJ6, NJ12 and NJ13 oblong while NJ7 and NJ11 round in shape. The result were witnessed similar by Gajera *et al.* (2017) [15]. The fruit size of jamun germplasm was measured length between 2.58 to 2.85cm and breadth 1.86 to 2.25cm). Agrawal *et al.* (2017) supported above results, similar results were reported by Srimathi *et al.* (2001) in jamun for the characters of fruit length 2.10cm and fruit breadth 1.30cm. Singh and Kaur (2016) closely favours the results and found maximum fruit length (3.58cm) was in genotype GD-6 and minimum fruit length in (2.10cm) was noted in the genotype GD-17, maximum fruit breadth (2.75cm) was in genotype GD-6. The specific gravity of jamun fruit was analyzed between 1.21 to 1.26 Shahnawaz and Sheikh (2011) highly supported the results which was found to 1.25 in V1 and 1.26 in V2.

Table 1: Variation of morphological characters in jamun germplasm

Name of germplasm	Fruit colour	Fruit shape	Fruit length	Fruit breadth	Specific gravity
NJ6	Dark purple	Oblong	2.63	2.21	1.24
NJ7	Dark purple	Round	2.58	1.86	1.23
NJ11	Reddish black	Round	2.65	1.91	1.22
NJ12	Blackish	Oblong	2.85	2.25	1.26
NJ13	Purple	Oblong	2.75	1.99	1.21
CD at 5%			0.010	0.031	0.021

Table 2: Variation of biochemical characters of jamun germplasm

Name of germplasm	Moisture content		Total sugar content		Crude protein	
	Jamun Seed	Jamun Fruit	Jamun Seed	Jamun Fruit	Jamun Seed	Jamun Fruit
NJ6	16.17	82.24	5.25	7.72	1.89	2.13
NJ7	15.88	81.57	5.19	7.23	1.80	1.95
NJ11	16.06	80.41	5.48	7.54	1.53	2.39
NJ12	16.17	82.34	5.58	7.82	1.35	2.12
NJ13	15.36	81.19	5.16	7.20	1.45	2.07
CD at 5%	0.163	0.445	0.215	0.119	0.127	0.101

The moisture content in seed of different jamun germplasm was recorded 15.36% (NJ13)-16.17% (NJ12 & NJ6) whereas, in jamun fruit was recorded in range of 80.41% (NJ11)-82.34 (NJ12) In analysis of some jamun cultivars and moisture content found in range of 75.1 to 82.5% as observed by Deepika and Kumar (2017). Suradkar (2017) [10] also support the above result and found 81.35% moisture content in jamun fruit. Sehwaq and Das (2016) [12] indicated similar results as above that moisture content in jamun seed 15.11% and in jamun fruit 83.04%.

The total sugar content in jamun seed was recorded in range of 5.16% (NJ13)-5.58% (NJ12) whereas, in jamun fruit was recorded in range of 7.20% (NJ13)-7.82% (NJ12). Ghosh *et al.* (2017) [14] closely supported the results as was analysed in jamun seed and fruit found i.e. 5.54% and 7.88% of total sugar content. The crude protein content in jamun seed was recorded 1.35% (NJ12) to 1.89% (NJ6) whereas, in jamun fruit was recorded in range of 1.95% (NJ7) to 2.39% (NJ11)

Raza *et al.* (2015) [9] duly supported the above result and found crude protein in jamun seed 1.97% and in jamun fruit 2.15%.

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