Studies on Flowering Characteristics and Floral Morphology of Some Jamun Genotypes (*Syzygiumcuminii*Skeels) under Semi-arid Lateritic Belt of West Bengal

ABSTRACT

A study was conducted to find out the variability of flowering behaviour and floral morphology of randomly selected 10 jamun genotypes (*Syzygiumcuminii*Skeels) from 3 diferent districts namely Bankura, Purulia and PaschimBardhamanunder semi-arid lateritic belt of West Bengal during the year 2022. Significant variation has been observed among the genotypes for the flowering behaviour as well as morphological characters of flowers. Month of panicle emergence among the selected genotypes ranged from 1st week of March to last week of March. Time taken for bud development was observed 21 (days from panicle emergence) from three accessions like JA 9 was shortest among 10 jamun accessions studied. Longest time for bud development was observed in JA 4 (38 days).Duration of flowering was highest of 39 days in genotype JA 6 followed by 35 days in JA 10and 34 days in JA 4. The length of panicle was recorded longest from JA 1 (13.08 cm) and shortest in JA 2 (6.73 cm). Highest flower length was measured from JA 2 (26.39 mm) and lowest from JA 8 (8.31). Maximum number of branchlets per panicle was recorded from accessions like JA 1 (15.02) and it was least in JA 8 (7.39). Maximum number of flowers per branchlets was observed from JA 7 (12.07) followed by JA 4 (11.09). Number of stamens per flower varied between 58.04 and67.07. The total number of sepals was 5 in all the accessions. The flower colour of all accessions was light yellow except JA 3(pale green).

Keywords: *Jamun, flowering, genotypes*

INTRODUCTION:

Among the lesser known important fruit crops Jamun (*Syzygiumcuminii* Skeels) is one of the evergreen, multipurpose tree. This is one tall growing, hardy tree among the minor fruit crops under the family Myrtaceae. Jamun is considered to be native of India and its diversity can be

found in India, Bangladesh, Sri Lanka, Thiland, Malaysia, Indonesia, Vietnum, Pakistan etc. Due to presence of various nutraceutical components like anthocyanins, phenolic compounds and antioxidants in abundance, jamun is known for possessing immense nutritional importance. Medicinal value particularly anticancerous property and anti-diabetic property present injamun, it is also a major conern due to which the crop has been recognized a mediciallly important fruit rather a table fruit. The fruits are good source of iron, minerals, sugars and proteins. The fermented or fresh jamun juice is reported to have various medicinal values as stomachic, carminative and diuretic, apart from having cooling and digestive properties (Thaper, 1958). The pulp and juice of the fruit is commonly used in controlling diarrhoea. Seeds of contain jambosin (an alkaloid) and a glycoside, jambolin or antimellin. These secondary metabolites of the seedscan reduce or stop conversion of starch into sugars in human body.

A considerablewide navigation in the diversity of jamungenotypes with respect to their growing habits, flowering behavior, fruiting and fruit quality parameters can be observed in Western dry tract of West Bengal as a huge population of this crop can be find as wild plant.The crop improvement programme of this crop is also lacking behind due to the long pre-bearingperiod and very few superior genotypes as identified by the scientists. Some studies have been made byvarious group of scientists to identify superior germplasm of jamun in different parts of India (Bajpai and Ravishankar, 2012; Devi *et al*., 2002; Misra and Bajpai, 1984). Studies on variation in flowering behaviour, floral morphology and fruit set etc. are very indispensible part to start any crop improvement programme. Jamun exhibits a wide variation in 3 diferent districts namely Bankura, Purulia and PaschimBurdwan under semi-arid lateritic belt of West Bengal with respect to floweringbehaviour,morphology of flower, fruit set and fruit drop, the present study has been undertaken to evaluate some jamun genotypes of the mentioned locality with respect to their flowering and bearing habits under semi-arid lateritic belt of West Bengal.

MATERIAL AND METHODS:

To find out the degree of variation in flowering behavior, floral morphology present study has been carried out after selecting 10 jamun genotypes (germplasm) randomly from different parts

of 3 diferent districts namely Bankura, Purulia and PaschimBardhaman under semi-arid lateritic belt of West Bengalduring the year 2022. The GPS locations of all the jamun plants were recorded using handheld GPS (Garmin GPS 12H). The plans were visited frequently starting from January'2022 to April' 2022 to observe different flowering parameters, panicle characters along with the flower morphologyof selected jamun genotypes. Observations ontime of panicle emergence, time taken in bud development (days), flushing time, duration of flowering (days), length of panicle (cm), length of flowers (mm), number of branchlets/panicle, number of flowers /branchlets, number of stamens, number of sepals and flower colour have been taken during flowering season of all the jamun genotypes. All the numerical observations were subjected to simple mean analysis to compare all the jamun genotypes with respect to their flowering behavior and floral morphology using SPSS(George, 2011).

Table 1: Locations of Randomly Selected 10Jamun Accessions from Various Blocks of Purulia, West Bardhaman and Bankura, West Bengal:

Sl. No.	Jamun Accessions	Location			GPS location	
		Village	Block	District	Latitude (°)	Longitude (°)
1	JA 1	Bishnupur	Kanksha	W. Bardhaman	23.616	87.409
2	JA 2	Jamdaha	Kanksha	W. Bardhaman	23.648	87.402
3	JA 3	Kataberia	Faridpur-Durgapur	W. Bardhaman	23.609	87.372
4	JA 4	Panchgachia	Barabani	W. Bardhaman	23.732	86.957
5	JA 5	Lagam	Jhalda II	Purulia	23.358	86.021
6	JA 6	Burda	Bagmundi	Purulia	23.236	85.983
7	JA 7	Puryara	Barabazar	Purulia	23.156	86.984
8	JA 8	Dhulai	Sonamukhi	Bankura	23.356	87.415
9	JA 9	Kakatia	Patrasayer	Bankura	23.204	87.455
10	JA 10	Bankisole	Patrasayer	Bankura	23.201	87.453

RESULTS AND DISCUSSION

The results regarding flowering parametersrecorded, showed significant difference among different genotypes studied.The findings of present investigation summarized in table number 2.

Month of panicle emergence among the selected genotypes ranged from 1st week of March to last week of March (Table 2). It was recorded earliest from genotypes like JA 1, JA 2 and JA 4 much late in JA 10 (March end).Similar observations onflower initiation was reported by Mishra and Bajpai (1984);Bajpaiet al. (2012) and Solomon et al. (2014).

Time taken for bud development was observed 21 (days from panicle emergence) from three accessions like JA 9 was shortest among 10jamun accessions studied. Longest time for bud development was observed in JA 4 (38 days).Tarai and Kundu (2008) studied the flowering behavior of jamun and other minor fruits in the new alluvial zone of West Bengal and got similar results.

It is evident from the Table2 that peak period of flowering was earliest in genotype JA 1 (April 1st week) and in maximum genotypes it was in April mid (2nd and 3rd week).Tarai*et al.* (2006) reported that the flowering of jamun was started at the last week of March and ends at the last week of April which takes four week duration of flowering.

Duration of flowering was highest of 39 days in genotype JA 6 followed by 35 days in JA 10and 34 days in JA 4. It was recorded shortestfromJA 7 (24 days). The corresponding observation was recorded for 43 days in jamun by Misra and Bajpai (1984);Bajpai*et al.* (2012); Devi *et al.* (2016).

The length of panicle was recorded longest from JA 1 (13.08 cm) followed by JA 5 (11.27 cm) and shortest from JA 2 (6.73 cm). Highest flower length was measured from JA 2 (26.39 mm) and lowest from JA 8 (8.31). Maximum number of branchlets per panicle was recorded from accessions like JA 1 (15.02) and it was least in JA 8 (7.39). Whereas, Singh *et al.* (2012) reported highest panicle length (15.5 cm) and minimum panicle length (15.12 cm) among sixteen genotypes were studied.

Maximum number of flowers per branchlets was observed from JA 7 (12.07) followed by JA 4 (11.09) and it was lower in JA 5 (7.08) and JA 8 (7.89). Number of stamens per flower varied between 58.04-67.07.The flowers with highest numbers of stamens was observed from JA 8 and minimum from JA 2. The total number of sepals were 5 in all the accessions. The flower colour

of all accessions was light yellow except JA 3(pale green).Similar result was observed by Alam*et al*. (2020)studied 12 jamungermplasm from Nadia district of West Bengal.

Comment [A1]: Must be documented!

CONCLUSION

From the findings of the present experiment, the following conclusion can be made:

Month of panicle emergence among the selected genotypes ranged from 1st week of March (JA 1, JA 2 and JA 4) to last week of March (JA 10). Time taken for bud development was observed 21 days (JA 9) to 38 days (JA 4) from panicle emergence. Duration of flowering was highest of 39 days in genotype JA 6 shortest in JA 7 (24 days). The length of panicle was recorded longest from JA 1 (13.08 cm) and shortest from JA 2 (6.73 cm). Highest flower length was measured from JA 2 (26.39 mm) and lowest from JA 8 (8.31). Maximum number of flowers per branchlets was observed from JA 7 (12.07). Number of stamens per flower varied between 58.04 and 67.07. The total numbers of sepals were 5 in all the accessions. The flower colour of most of all the accessions was light yellow.

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Table 2:Flowering Behaviour of Randomly Selected 12 Jamun Accessions From Various Blocks of Bankura

Sl. No.	Jamun Genotypes	Time of Panicle Emergence	Time taken in bud development (Days)	Flushing Time	Duration of Flowering (Days)	Length of panicle (cm)	Length of flowers (mm)	No. of Branchlets/ panicle	No. of Flowers /Branchlets	No. of stamens	No. of sepals	Flower Colour
1	JA1	March 1st week	31	April 1st week	28	13.08	22.17	15.02	10.05	62.37	5	Light yellow
2	JA2	March 1st week	37	April mid	31	6.74	26.39	11.46	9.32	58.04	5	Light yellow
3	JA3	March 3rd week	27	April 4th week	25	9.12	15.34	7.94	8.47	65.21	5	Pale green
4	JA4	March 1st week	38	April mid	34	11.27	21.48	14.34	11.09	59.47	5	Light yellow
5	JA5	March 3rd week	32	April 4th week	27	12.91	19.36	9.73	9.81	66.91	5	Light yellow
6	JA6	March 2nd week	29	April 3rd week	39	8.09	14.87	14.28	7.08	63.07	5	Light yellow
7	JA7	March 3rd week	23	April 2nd week	24	7.51	25.48	10.49	12.07	59.17	5	Light yellow
8	JA8	March 3rd week	30	April 4th week	29	9.61	8.31	7.39	7.89	67.07	5	Light yellow
9	JA9	March 3rd week	21	April 2nd week	31	10.73	14.27	8.07	8.01	62.74	5	Light yellow
10	JA10	March last week	35	May 1st week	35	7.16	11.49	11.48	9.47	64.47	5	Light yellow
	Mean		30.3		30.3	9.62	17.91	11.02	9.32	62.85	5	