STUDIES ON GROWTH, DEVELOPMENT AND ESTABLISHMENT OF DIFFERENT BAEL (*AEGLE MARMELOS L.*) VARIETIES UNDER PRAYAGRAJ AGRO CLIMATIC CONDITIONS

Abstract

The objective of the experiment was to work out the "Studies on Growth, development and establishment of different variety of Bael (*Aegle marmelos L*) for establishment under Prayagraj agro-climatic Condition. So, a field experiment was conducted during session 2022-2023 at, Department of Horticulture,Sam Higginbottom University Agriculture, Technology and Sciences, (SHUATS), Prayagraj (U.P). The experiment was conducted in Randomized Block Design with 7 Variety (treatment) replicated thrice. The treatments were V_1 Narendra Bael-5, V_2 Narendra Bael-6,V_3 Narendra Bael-7,V_4 Narendra Bael-9,V_5 Narendra Bael-1 ,V_6 Narendra Bael-11, V_7 Narendra Bael-8 .V_6 was found to be superior in the term of Survival Percentage (94.66%) Plant height (61.30 cm),Number of leaves plant $^{-1}$(54.33), Number of branches plant^{-1}(6.66), Stem diameter (5.36 cm), Plant spread (41.46cm) (E-W) and (43.40 cm) (N-S), Chlorophyll content (50.70) The research conduct

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1:The first sentence is improper. Rephrase.
2: Misuse of caps, punctuation marks are as highlighted in yellow.

Bael (*Aegle marmelos L.*) is important underutilized indigenous fruit crop of India, belongs to family Rutaceae. It is a subtropical and deciduous tree, which is very hardy and can thrive well under diverse agro-climatic conditions. The tree generally reaches a height of 6 to 8 metres with trifoliate, aromatic leaves, while the terminal leaflet is 5.7 cm long and 2.8 cm broad with a long petiole. Moreover, two lateral leaflets are 4.1 cm long and 2.2 cm wide, almost sessile (**Allen, 1969**).

Bael (*Aegle marmelos L.*) is an underutilized fruit indigenous to India. It belongs to the citrus family Rutaceae, and it is also known as Bengal quince, bilva, Indian quince, golden apple, holy fruit, bel, belwa, sriphal, stone apple and maredoin India. It was introduced to Europe from India in 1759. Its medicinal properties have been described in the ancient treatise like Charaka Samhita,Upvana Vinod and Yajur Veda, and it has also been portrayed in the paintings of Ajanta Caves **Singh *et al.* (2000).**

Aegle marmelosL.(Bael) is an indigenous tree fruit species in the Indian subcontinent and Southeast Asia. Bael is a perennial crop in India, Sri Lanka, Pakistan, Bangladesh, Myanmar, Thailand, Vietnam, the Philippines, Cambodia, Malaysia, Java, and other southeastern Asian countries **Roy *et al.* (1979) and Asghar *et al.* (2016).** Bael is a sacred tree in India. The gardens of many Indian Hindu temples have bael trees **Singhal *et al.* (2011).** The ripe fruit, which contains a delicious pulp, is the most valuable part of the bael tree Seth (2003). People mainly consume bael as fresh fruit. However, the value-added products of bael, such as drinks, traditional sweets, jam, and pudding, are available in the market Morton (1987),

People prefer bael primarily because of its rich taste and ability to cure constipation**Dutta *et al.* (2014)**. Bael fruit is an expensive commodity in supermarkets and street fruit stalls. All parts of the bael tree possess medicinal values **Baliga *et al.*(2011)**. Thus, bael is famous as a valuable crop with immense medicinal and nutritional potentials **Kumar and Nath (2010).** There are many reports available on the medicinal and industrial values of bael in India **Mukherjee *et al.*(2007), Kintzios (2006), Raja *et al.* (2008), Kamalakkannan *et al.* (2003) and Kenghe *et al.*(2009).***Aegle marmelos L.* grows well in the dry forests of hilly and plain areas. It can adapt a wide range of habitat and can be cultivated worldwide. This tree is mentioned in the prehistoric writings dating back to 800 B.C. The Chinese Buddhist pilgrim, Hiuen Tsiang also noticed the presence of this tree during his visit to India in 1629 A.D. Sharma *et al.*(2014). The fruits of bael are rich in vitamins, minerals, anti-oxidants and with importance in medicinal remedices for rural folks.

Material and Method

The experiment entitled "STUDIES ON GROWTH, DEVELOPMENT AND ESTABLISHMENT OF DIFFERENT BAEL (*AEGLE MARMELOS L.*) VARIETIES UNDER PRAYAGRAJ AGRO CLIMATIC CONDITIONS" was carried out the Department of Horticulture, Naini Agriculture Institute, Sam Higginbottom University of Agriculture Technology and Sciences, Prayagraj 2022-2023. The method employed during the course of investigation and materials utilized have greater significance in the research program. "The details of materials used and technique employed in carying out the investigation described under the following heads.

The experiment was carried out at the Floriculture research farm, Department of Horticulture, SHUATS, Prayagraj is situated in the agro-climatic zone (Sub-tropical belt) of Uttar Pradesh state. Geographically, Allahabad is located at of $25^0$48' North latitude, 81^0 5' East longitudes and at an altitude of 98 meters above mean sea level (MSL).

The maximum temperature of the location reaches up to 46°C-48^0C and seldom falls as low as 4°C-5^0C. There relative humidity ranged between 20 to 94 per cent.

Results and Discussion

Influence of different planting on their survival and growth parameters of different cultivar of Berare given into table 1.

Table 1: Effect of planting on growth parameters in different varieties of bael.

varieties symbol	Variety	Plant height(cm)	Stem diameter	No. of leaves	No. of branches	Plant spread(cm)		Chlorophyll content	Survival(%)
						E-W	N-S		
V_1	Narendra Bael-5	53.77	4.36	46.33	6.5	35.23	35.23	55.54	77.66
V_2	Narendra Bael-6	55.80	5.4	52.66	6.6	40.36	40.36	56.54	82.66
V_3	Narendra Bael-7	53.75	4.61	48.43	6.4	38.66	38.66	64.42	81.66
V_4	Narendra Bael-9	46.30	3.53	38.26	6.43	34.38	34.38	60.28	77.66
V_5	Narendra Bael-17	51.47	3.26	43.43	5.43	34.43	34.43	53.36	75
V_6	Narendra Bael-11	61.30	5.36	54.53	6.66	43.4	43.4	50.7	94.66
V_7	Narendra Bael-8	48.13	3.5	35.46	5.6	30.81	30.81	68.33	75
F.test		S	S	S	S	S	S	S	S
S.E (d) (±)		0.40	1.98	0.16	0.20	0.21	0.21	0.15	2.27
CD(5%)		0.88	4.21	0.36	0.44	0.46	0.46	0.34	4.95

The results obtained have been summarized below :-

Plant height

At 120 DAP, The maximum plant hight 61.30 cm was found in V_6(Narendra Bael-11) and the minimum was recorded in V_4(Narendra Bael-9) with 46.30 cm.

Stem diameter

At 120 DAP, The maximum Stem diameter (cm) (5.4) was found in V_2 Narendra Bael-6 varieties and the minimum Stem diameter (cm) (3.26) was recorded with V_5Narendra Bael-17.

No. of leaves

At 120 DAP, The maximum number of leaves plant^{-1} (54.53) was found in V_6 Narendra Bael -11 varieties and the minimum number of leaves plant^{-1} (35.46) was recorded with V_7Narendra Bael-8.

No. of branch

At 120 DAP, The maximum Number of branches plant^{-1} (6.66) was found in V_6 Narendra Bael-11 varieties and the minimum Number of branches plant^{-1} (5.43) was recorded with V_5Narendra Bael-17.

Plant spread(E-W)

At 120 DAP, The maximum Plant spread (cm) (E-W) (41.46) was found in V_6 Narendra Bael-11 varieties and the minimum Plant spread (cm) (E-W) (28.73) was recorded with V_7Narendra Bael-8.

Plant spread(N-S)

At 180 DAP, The maximum Plant spread (cm) (N-S) (43.4) was found in V_6 Narendra Bael-11 varieties and the minimum Plant spread (cm) (N-S) (30.81) was recorded with V_7Narendra Bael-8.

Chlorophyll content

At 120 DAP, The maximum chlorophyll content (SPAD) (68.33) was found in V_7Narendra Bael-8 varieties and the minimum chlorophyll content (SPAD) (50.7) was recorded with V_6Narendra Bael-11.

Survival percentage

At 120 DAP, The maximum survival plant (94.66%) was found in V_6 Narendra Bael-11 varieties and the minimum survival per plant (75%) was recorded with V_7 Narendra Bael-8.

Conclusion

From the present investigation it may be concluded that Bael (*Aegle marmelos L.*) V_6 Narendra Bael-11 resulted in highest survival percentage and vegetative growth parameters like plant height (cm), number of leaves plant^{-1}, number of branches plant^{-1}, stem diameter (cm), plant spread (cm) (e-w), plant spread (cm) (n-s) and chlorophyll content (spad). All the varieties were significantly superior in their survival percentage and vegetative growth

parameters over V_7 Narendra Bael-8 . Since this is based on one season trail therefore, further evaluation trails are needed to substantiates the findings.

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