Influence of different planting dates on the survival and growth parameters of different cultivar of Ber(Zizyphus mauritiana).

Abstract

The present investigation entitled "Influence of different planting dates on the survival and growth parameters of different cultivar of ber (*Zizyphus mauritiana*)" was conducted in Department of Horticulture, Sam Higginbottom University of Agriculture, Technology & Sciences Prayagraj during ferbrury 2023 to august 2023. A field experiment was conduct with 3 varieties viz. V_1 (Apple ber), V_2 (Kashmiri ber), V_3 (Miss india) with different planting dates viz. 15th february, 1stmarch, 15thmarch. The experiment was laid out in randomized block design with 3 replication and 9 treatment. The result indicated that maximum plant hight was recorded in (V_2) kashmiri (65.73cm) planted on 1st march. The miss india variety(V_3) has be planted on 15 february have highest no. of leaves (124.50), highest no. of bud break (27.67), maximum no. of branches (12.83) maximum plant spread East-West(29.50cm) North-South(31.53cm) and highest survival percentage (88.89%). Apple ber (V_1) planted on 1st march having highest leaf area (18.50cm), highest leaf area index (0.037) and highest chlorophyll content (35.10). From the present study it can be concluded that 15th february are most suitable date for transplanting and miss india (V_3) variety is shown significantly superior performance in relation to growth and survival in prayagraj agro-climatic condition.

Keyword: Ber, Varieties, Dates, Different, Planting.

Introduction

Ber (*Ziziphus mauritiana* Lamk) is popularly called the king of arid zone fruits. It is an important fruit crop for arid and semi-arid regions in tropical and sub-tropical regions. Its origin is India. It is known for its ability to withstand adverse conditions. It is truly a desert apple of Thar Desert. The cultivars Umran, Kathapal and Gola are the most promising varieties of ber in North India. The area under cultivation with this fruit is 8.7 lakh ha with an annual production of 8.9 lakh tones in India.

There are two major domesticated jujubes, Z. mauritiana Lam. the Indianjujube or ber, and Z. jujuba Mill. the Chinese or common jujube. These twospecies have been cultivated over vast areas of the Old World and a limitednumber of others have been, and are, cultivated on a more localised scale.However all jujubes remain relatively minor crops although demand forproduction remains steady in many parts where they were originallydomesticated.

It is deciduous and highly resistant to frost. Its draught hardiness, xerophytic nature, tolerance to salt (40 ESP and 12-15 dSm-1), deep tap root system, spiny nature and ability to shed its leaves during hot summer have helped the plant to adopt well to the arid and semi-arid conditions. It can be successfully cultivated even in the most marginal ecosystems of the subtropics and tropics. It is cultivated widely for its resistance to grow in drought and other diversified soil and climatic conditions. It is a hardy tree that copes with extremes

temperature and thrives under dry conditions. Fruit quality is best under hot sunny and dry conditions but there should be a rainy season to support growth and flowering leaving enough soil moisture to carry the fruit to maturity. The ber plant is quick growing, early bearing and spreading tree. It has remarkable adoptability enabling to grow in wide range of agro-climatic situation and soils.

Establishment of ber orchard is very difficult because of high rate of mortality of young plants at transplanting. This cannot be overcome by budding the seedlings in-situ as it is very tedious process and the trees in the orchard never have a uniform stand. Like other fruit trees, it is desirable to raise budded plants of known varieties, as the seedling trees bear the poorquality fruits of low-commercial value.

Material and Method

The present investigation was conducted in Department of Horticulture, Sam Higginbottom University of Agriculture, Technology & Sciences Prayagraj during ferbrury 2023 to august 2023. The experimental site was comes under sub-tropical belt in the South Eastern Uttar Pradesh, which experience extremely hot summer and fairly cold winter. The maximum temperature of the location reaches up to 45° C to 48° C and seldom falls as low as 4° C to 5°C. The relative humidity ranged between 20-94%. The average rainfall in this area is around 850-1100mm annually.The experiment consisted of two factors: planting dates and varieties. A field experiment was conduct with 3 varieties viz. V_1(Apple ber),V_2(Kashmiri ber), V_3 (Miss India) with different planting dates viz. 15thfebruary, 1st march, 15th march. The experiment was laid out in randomized block design With 3 replication and 9 treatment. Land was prepared for ber plants by applying the recommended doses of organic manures (F.Y.M, Vermicompost, Neem cake) and fertilizers.The remaining portions of N.P.K were applied into two equal parts by using around the root zone at 60 and 90 days after planting. Staking of ber plants with stick for givingextra spot to the plant. Staking is absolutely essential during the first two years to train the tree properly. Irrigation along with other cultural operations including plant protection measures were done as and when required. The observations were recorded on randomly selected plants based on vegetative characteristics viz., plant height (cm), bud breaks, number leaves per plant, number of branch per plant, plant spread (cm) east-west and north-south, leaf area (cm), leaf area index, chlorophyll content, survival percentage. The growthparameters were recorded at periodical intervals of 30,60, 90, 120, 180 DAP from the randomly selectedplants in eachtreatment. The data was analyzed by using the completely randomized block design by applying the technique of analysis of variance by Fisher (1958). The data presented in this paper are the mean values of different parameters and the significance level is compared with the critical difference.

Table 1: Details of treatment combination

Treatment Notation	Treatment combination
T_1	Apple ber+ (15th february)
T_2	Kashmiri+ (15th february)

T_3	Miss india+ (15th february)
T_4	Apple ber+ (1st march)
T_5	Kashmiri+ (1st march)
T_6	Miss india+ (1st march)
T_7	Apple ber+ (15th march)
T_8	Kashmiri+ (15th march)
T_9	Miss india+ (15th march)

Results and Discussion

The present investigation entitled investigation, **"Influence of different planting dates on the survival and growth parameters of different cv. of Ber(Zizyphus mauritiana)"** was laid out on the experimental site ofDepartment of Horticulture, Sam Higginbottom University of Agriculture Technology & Sciences, Naini, Prayagraj (UP), February to August 2023. The experiment was conducted in Randomized block design with 9 treatmentsand three replications.

The results obtained have been summarized below:-

At 180 DAP, The maximum plant hight 65.73cm was found in V_2 (Kashmiri, 1st march) and the minimum was recorded in V_1 (apple ber, 15th march) with 51.20cm.

At 180 DAP, The highest bud break 27.67 was recorded in V_3 (Miss india, 15thfebruary) and the lowest was found in V_1(Apple ber, 15th march) with 19.00.

At 180 DAP, The maximum leaves 124.50 was found in V_3 (Miss india, 15thfebruary) and the minimum was recorded in V_1 (Apple ber, 15thmarch) with 92.00.

At 180 DAP, The maximum branches 12.83 was found in V_3 (Miss india, 15th february) and the minimum was recorded in V_1 (Apple ber, 15th march) with 8.67.

At 180 DAP, The maximum plant spread (E-W) 30.08cm found in V_3 (Miss india, 15thfebruary) and the minimum was recorded in V_1 (Apple ber, 15th march) with 24.57cm (E-W).

At 180 DAP, The maximum plant spread (N-S) 32.20cm found in V_3 (Miss india, 15thFebruary) and the minimum was recorded in V_1 (Apple ber, 15th march) with 25.27cm(N-S).

The highest leaf area 18.50cm was found in V_1 (Apple ber, 1st march) and the lowest was recorded in V_3 (Miss india, 15thmarch) with 8.58cm.

The maximum leaf area 0.035 was found in V_1 (Apple ber, 1st march) and the minimum was recorded in V_3 (Miss india, 15th march) with 0.015.

At 180 DAP, The highest chlorophyll content 35.67 was found in V_1 (Apple ber, 1st march) and minimum was recorded in V_3 (Miss india, 15th march) with 26.83.

At 180 DAP, The maximum survival(%) 88.89 was found in V_3 (Miss india, 15thFebruary), and the minimum survival (%) was recorded in V_1 (Apple ber, 1st march) with 33.33.

Table 2:Effect of different planting date on different cv.of ber.

Treatment symbol	Variety	Plant height(cm)	Bud breaks	No. of leaves
T_1	Apple ber+ (15th february)	59.88	19.83	97.67
T_2	Kashmiri+ (15th february)	60.30	25.33	108.00
T_3	Miss india+ (15th february)	62.36	27.67	124.50
T_4	Apple ber+ (1st march)	61.20	21.33	94.33
T_5	Kashmiri+ (1st march)	65.73	24.33	113.67
T_6	Miss india+ (1st march)	60.97	27.17	114.83
T_7	Apple ber+ (15th march)	51.20	19.00	92.00
T_8	Kashmiri+ (15th march)	57.33	21.83	104.83
T_9	Miss india+ (15th march)	55.93	26.67	111.83
F.test		S	S	S
S.E (d) (±)		2.82	1.98	5.92
CD(5%)		5.98	4.21	12.29

Table 3: Effect of different planting date on different cv.of ber.

Treatment	Variety	No. of branches	Plant spread(cm)

symbol			East-West	North- South
T_1	Apple ber+ (15th february)	9.00	28.30	26.77
T_2	Kashmiri+ (15th february)	10.17	29.50	30.03
T_3	Miss india+ (15th february)	12.83	30.08	32.20
T_4	Apple ber+ (1st march)	9.30	27.13	28.37
T_5	Kashmiri+ (1st march)	10.83	27.30	28.17
T_6	Miss india+ (1st march)	10.17	28.03	27.40
T_7	Apple ber+ (15th march)	8.67	24.57	25.27
T_8	Kashmiri+ (15th march)	9.83	26.33	25.40
T_9	Miss india+ (15th march)	10.50	27.50	26.77
F.test		S	S	S
S.E (d) (±)		0.81	1.07	1.11
CD(5%)		1.73	2.28	2.37

Table 4: Effect of different planting date on different cv.of ber.

Treatment symbol	Variety	Leaf area(cm)	Leaf area index
T_1	Apple ber+ (15th february)	17.83	0.037
T_2	Kashmiri+ (15th february)	12.33	0.028
T_3	Miss india+ (15th february)	9.47	0.016
T_4	Apple ber+ (1st march)	18.50	0.035
T_5	Kashmiri+ (1st march)	12.83	0.027
T_6	Miss india+ (1st march)	8.50	0.015
T_7	Apple ber+ (15th march)	17.67	0.034
T_8	Kashmiri+ (15th march)	11.50	0.025
T_9	Miss india+ (15th march)	8.97	0.017
F.test		**S**	**S**
S.E (d) (±)		0.75	0.0028
CD(5%)		1.59	0.0058

Table 5: Effect of different planting date on different cv. of ber.

Treatment symbol	Variety	Chlorophyll content	Survival(%)
T_1	Apple ber+ (15th february)	34.90	66.67
T_2	Kashmiri+ (15th february)	30.93	77.78
T_3	Miss india+ (15th february)	27.17	88.89
T_4	Apple ber+ (1st march)	35.67	55.57
T_5	Kashmiri+ (1st march)	30.80	66.67
T_6	Miss india+ (1st march)	27.23	77.78
T_7	Apple ber+ (15th march)	34.33	33.33
T_8	Kashmiri+ (15th march)	29.80	55.57
T_9	Miss india+ (15th march)	26.83	66.67
F.test		S	S
S.E (d) (±)		2.16	11.47
CD(5%)		4.60	24.20

Conclusion

From the present study it can be concluded that (T_3) treatment on15thfebruary are most suitable date for transplanting and miss India (V_3) variety is shown significantly superior performance in relation to growth and survival in prayagraj Agro-climatic condition.

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