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Sprouting and survival of bush pepper cuttings as influenced by planting month

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Abstract

The field experiment was carried out at College of Horticulture, Dapoli during the years 2019 and 2020 to assess the effect of planting season on sprouting and survival of bush pepper. The experiment was laid out in Randomized Block Design with Seven treatments as month of propagation; January to July and replicated three times. The sprouting percent in bush pepper cutting plating in different season during 2019 and 2020. The treatment T₆ i.e., planting in June 2020 registered maximum sprouting (91.33%) which was at par with the treatments T₃. The lowest sprouting percent (46.67%) was recorded in T₁ (planting in January) which was at par with T₂ (52.33%) i.e., planting in February. The significant difference was observed for survival percentage of bush pepper cutting planting in different season of both year of planting. The highest survival percentage (55.83%) was recorded in treatment T₆ i. e. planting in June which was at par with the treatment T₃ (48.33%).

Keywords: Bush pepper, cuttings, success and survival percentage

Introduction

Black pepper (*Piper nigrum* L.), known as the “King of Spices” belonging to the family piperaceae, is one of the most important export-oriented spice crops in the world. India is one of the major producers, consumer, supplier and exporter of black pepper. India is the land of spices and black pepper, clove, cardamom, nutmeg, cinnamon, etc. are the dominated spices. The flavour and fragrance of Indian spices had magic spell in human civilization and culture. Black pepper (*Piper nigrum* L.), known as the “King of Spices” belonging to the family piperaceae, is one of the most important export-oriented spice crops in the world. India is one of the major producers, consumer, supplier and exporter of black pepper. India is the land of spices and black pepper, clove, cardamom, nutmeg, cinnamon, etc. are the dominated spices. The flavour and fragrance of Indian spices had magic spell in human civilization and culture. Pepper alone contributes about 70 per cent of total export earnings from all spices. Popularly it is known as “Black gold” because of its unique position in the international trade.

Bush pepper is nothing but alternative to climbing vines, the lateral fruiting branches are rooted and grown in pots or in field under shade net such plants are bushy in appearance, starts flowering from the same year of planting continues flower and yield fruits throughout the year. The cultivation of bush pepper directly in field and also under protected environment is gaining popularity in the district of Konkan region of Maharashtra considering Sindhudurg, Ratnagiri, Thane, Palghar and Raigad districts. On an average, about 500-1000 ha. of Konkan region is occupied with bush pepper cultivating fields.

Bush pepper propagated by vegetative propagation method i.e. shoot cuttings on commercial scale. Propagation through cuttings is easier, Cuttings are taken from plagiotropic shoots for bush Pepper. Orthotropic branches are straight, with upward growing growth habit. At the axil of each leaf of orthotropic branches, there is an axillary bud which develops into plagiotropic branches (Ravindran and Babu, 1994) [5].

The time of propagation and the prevailing environment are the determinant of success of vegetative propagation. Sprouting percentage is an important parameter which has significance in accelerating growth of the plant. Root and bud development is usually unsatisfactory when stem cuttings are planted in an inverted position. The higher survival and success in bush pepper cutting is indispensable as the availability of the cuttings is limiting factor. Considering the fact, the present investigation was carried out to study the effect of season on survival and success of bush pepper cuttings.

Material and Methods

The field experiment was conducted at Nursery No. 4 of College of Horticulture, Dapoli during two successive year, 2019 and 2020. The experiment was laid out in Randomized Block Design with Seven treatments as month of propagation; January to July and replicated three times. The planting material i.e., the plagiotropic shoots of black pepper with 3 nodes of Panniyur – 1 variety of one year old healthy plants were selected for propagation in polyethene bag of 12.5 cm X 20.0 cm. In each treatment, 50 cuttings were planted in every replication. The observations on the success and survival of graft was recorded at 180 days after planting of bush pepper cuttings of experiment in each treatment. The data was statistically analysed as method suggested by Panse and Sukhatme (1995) [3].

Results and Discussion

The data pertaining to the effect of different season planting of cutting on percent sprouting of bush pepper cuttings were recorded at last cutting sprouted in each treatment during the years 2019 and 2020 and are presented in Table 1.

Results of the present investigation revealed that the sprouting percentage of bush pepper cutting was significantly influenced by the planting season. In the first year (2019) of experiment, the mean percent sprouting of bush pepper as affected by planting in different season was 72.48%. The highest percent sprouting was recorded in treatment T₆ i.e., planting in June (88.67%) which was at par with T₃ i.e., planting in March (88.00%). The treatment T₄ i.e., planting in April was recorded (82.00%) and it was at par with T₅ i.e., planting in May (78.67%). The lowest percent sprouting was observed in treatment T₁ i.e., planting in January (45.33%) and it was followed by T₂ i.e., planting in February (50.67%). In the second year (2020), the mean percentage of sprouting was 77.52%. The maximum spouting percent (94.00%) was observed in T₆ i.e., planting in June 2020 which was significantly superior over rest of the treatments. Whereas, the sprouting percentage was observed in treatments T₃, i.e., planting in March (88.67%), T₄ i.e., planting in April (85.33%), T₅ i.e., planting in May (81.33%). The minimum sprouting percent was recorded in T₁ i.e., planting in January (48.00%).

The pooled data revealed that the treatment T₆ i.e., planting in June registered maximum sprouting (91.33%) which was at par with the treatments T₃. The lowest spouting percent (46.67%) was recorded in T₁ (planting in January) which was at par with T₂ (52.33%) i.e., planting in February.

During the present investigation, it was seen that sprouting of bush pepper cutting was significant difference in planting during various season of the year. However, sprouting of cutting in initial months (January and February) of the year was minimum as compare to other months of the year and it might be due to climatic factors like lower temperature, low humidity etc. as well as maturity of cuttings selected for plating. The maximum sprouting percentage in bush pepper cutting was obtained in month of June. The weather conditions to onset of monsoon. i.e., high humidity and high temperature favors the sprouting of cuttings. Simultaneously, the physiological maturity of the cutting also favor the sprouting. The results of present study are in conformity with finding of most of the earlier workers i.e., Sannidhi *et al.* (2018) [6] and Ramya *et al.* (2017) [4]. Haldankar *et al.* (1991) [1] reported that the maximum sprouting of kokum grafts was noted in month of October followed by June.

Survival percentage is very important decisive factor for bush pepper as it influences the success of plant propagules production. Due to different environmental factors survival of bush pepper cutting was varied. During the present investigation, survival of bush pepper cutting were studied. The data on the effect of season on percent survival of bush pepper cuttings are presented in Table 2. The mean values of percent survival was recorded for all treatments at 180 days after planting (DAP).

The data exhibited significant difference in survival percentage as influenced by various treatments under study. During the year 2019, the maximum survival percentage (53.33%) was registered in treatment T₆ i.e., planting in June which was significantly superior over all other treatments. It was followed by the treatment T₃ i.e., planting in March recorded (45.33%) survival percentage. The minimum survival percentage (22.00%) was observed in treatment T₁ i.e., planting in January and it was at par with T₂, T₇ and T₅. During year 2020, the highest survival percentage (58.33%) was recorded in treatment T₆ i.e., planting in June was significantly superior over all other treatments. The lowest survival percentage (24.33%) was noted in treatment T₁ i.e., planting in January, T₅, T₇ and T₂ treatments was statistically at par with it.

The highest survival percentage (55.83%) was recorded in treatment T₆ i.e., planting in June which was at par with the treatment T₃ (48.33%). The lowest survival percentage (23.17%) was observed in treatment T₁ i.e., planting in January.

Survival percentage of bush pepper cutting decides the individual growth which contribute to the vigor of the plant that ultimately decides the further growth and development. In present investigation, the survival percentage recorded was in the range of 23.17 to 55.83. The highest survival percentage was recorded in June month planting and it might be because of higher sprouting in the same month and favorable climatic conditions for further growth and rooting of cuttings as well as presence of high C/N ratio and high content of reserves in cutting which in turns contributed to maximum survival percentage of cutting. The results are analogues with the earlier findings of Thankamani *et al.*, (2020) [7]. The finding in close agreement with present investigation have been reported by Joshi *et al.*, (2020) [2] in phalsa. Haldankar *et al.*, (1991) [1] in kokum.

From the present study for two consecutive years, it is inferred that the sprouting percent and survival percent of bush pepper cutting was highest in June month planting. Hence, it is concluded June is best month suitable for survival and subsequent growth of bush pepper cutting.

Table 1: Effect of season on spouting (%) of Bush pepper cutting

Treatments	Sprouting (%)		
	2019	2020	Pooled
T ₁ - January	45.33(42.32)*	48.00(43.85)	46.67(43.09)
T ₂ - February	50.67(45.38)	54.00(47.29)	52.33(46.34)
T ₃ - March	88.00(69.73)	88.67(70.33)	88.33(70.02)
T ₄ - April	82.00(64.73)	85.33(67.48)	83.67(66.17)
T ₅ - May	78.67(62.49)	81.33(64.40)	80.00(63.43)
T ₆ - June	88.67(70.33)	94.00(75.82)	91.33(72.88)
T ₇ - July	74.00(59.34)	77.33(61.57)	75.67(60.45)
Mean	72.48(58.36)	75.52(60.35)	74.00(59.34)
S.E.m ±	1.39	1.40	1.26
CD at 5%	4.29	4.32	3.89

* Figures in parenthesis indicates arcsine transformed value.

Table 2: Effect of season on survival (%) of Bush pepper cutting

Treatments	Survival (%) at 180 DAP		
	2019	2020	Pooled
T ₁ - January	22.00(27.97)	24.33(29.55)	23.17(28.77)
T ₂ - February	22.67(28.43)	25.00(30.00)	23.83(29.77)
T ₃ - March	45.33(42.32)	51.33(45.76)	48.33(44.04)
T ₄ - April	30.67(33.63)	34.00(35.67)	32.33(34.04)
T ₅ - May	24.00(29.33)	25.33(30.22)	24.67(29.78)
T ₆ - June	53.33(46.91)	58.33(49.80)	55.83(48.35)
T ₇ - July	23.33(28.88)	25.33(30.22)	24.33(29.55)
Mean	31.62(34.22)	34.81(36.16)	33.21(35.19)
S.E.m ±	1.46	1.89	1.57
CD at 5%	4.50	5.84	4.85

* Figures in parenthesis indicates arcsine transformed value.

References

1. Haldankar PM, Joshi GD, Salvi MJ, Patil JL. Effect of season and shade provision of softwood grafting in kokum. Indian Cocoa Arecanut and Spices J 1991;14(4):158-159.
2. Joshi NK, Thakar CJ, Parmar DL. Propagation of phalsa by cutting. Journal of Pharmacognosy and Phytochemistry 2020;9(4):389-391.
3. Panse VG, Sukhatme PV. Statistical Methods for Agricultural workers. ICAR, New Delhi 1995.
4. Ramya MKA, Harsha KN, Saju KA, Kumar KP. Evaluation of potting mixtures and humidity conditions for rooting and establishment of plagiotropic branches of Black pepper (*Piper nigrum* L.). Annals of plant science 2017, 1622-1624.
5. Ravindran PN, Babu KN. Genetic resources of black pepper (*Piper nigrum* L.). Advances in Horticulture, 1994;9:99-120.
6. Sannidhi HS, Bhoomika HR, Priyanka Nandish BM, Shetty GR, Ganapathi M. Influence of growth promoting substances on rooting of bush pepper cuttings. Int. J Microbiol. App. Sci 2018;7(9):1685-1690.
7. Thankamani CK, Prathyusha K, Hamza S, Kandiannan K. Enhancement of rooting and growth of bush pepper by jeevamruthum and tender coconut water. Journal of Plantation Crops 2020;48(2):146-149.