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Effect of topping and side pruning on growth and yield of Jamun cv. AJG 85 under high density planting system

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Abstract

A field study was conducted during 2018-19 and 2019-20 on "Growth and yield dynamics of jamun cv. AJG-85 under varied pruning, nitrogen and potassium levels in high density planting system" at KRC college of Horticulture, Arabhavi, Gokak, Karnataka. The research results revealed that the values for stem girth (12.48 cm), plant spread east-west (4.27 m), plant spread north-south (4.48 m) were found highest in T₃ (topping at 3.5 m height) after 9 months after pruning. The maximum values for plant height (4.57 m), stem girth (11.17 cm), plant spread north-south (4.24 m) and plant spread east-west (4.14 m) was recorded in L₁ (20 per cent of annual extension growth) plants. Significantly highest plant height (5.61 m), north south canopy spread (4.59 m) and east west canopy spread (4.49 m) were recorded in T₄L₁ (No pruning and 20 per cent of annual extension growth) treatment. Significantly highest total number of fruits per plant (518.28), highest fruit yield (6.20 kg/plant), highest yield per hectare (6.89 t) were recorded in T₄ (No topping). Significantly highest number of flowers per branch (402.47), total number of fruits per plant (557.65), fruit yield per plant (6.55 kg) and fruit yield per hectare (7.28 t) was recorded in L₄ (No pruning). Highest number of fruits per plant (702.72), highest fruit yield (8.17 kg/plant and 9.07 t/ha) in T₄L₄ were recorded in interaction effects.

Keywords: Jamun, AJG-85, topping, side pruning, yield

Introduction

Syzygium cuminii is a large, evergreen beautiful tree of the Indian subcontinent but has also naturalized throughout Southeast Asia and the Pacific Islands. It is widely cultivated in Haryana as well as the rest of the Indo-Gangetic plains on a large scale. Fruits are generally ovoid to oblong in shape, deep purple or bluish in colour, having juicy, sweet pulp and a small stone. Jamun grows tall and reaches to a height of 30m. The fruit bearing branches are situated on the periphery of canopy throughout its height and spread. All fruits do not mature at one time and four to five plucking is required for harvesting ripe fruits in a bunch. The peel of jamun is very thin and hence, fruits are to be essentially harvested by hand plucking. For this, it is necessary to climb jamun tree. Harvesting becomes laborious and 30 to 40 per cent fruits are lost during harvesting. Due to differential ripening time, non climacteric nature and very soft skin, it is inevitable to go for hand picking of the fruits to harvest.

Pruning is one of horticultural practices followed in the temperate and sub-tropical fruit crops to bring a balance between vegetative and reproductive growth of the plant. Untrained and unpruned jamun trees become huge and unmanageable after a few years of growth. The bearing area is reduced and the interior of plants become entirely without fruits. Proper canopy management is therefore essential to avoid competition for light under high density planting and to achieve higher productivity. Hence, managing canopy of tree at proper height would be the better way to harvest the clean and ripe fruits with labour economy. There is hardly any work on canopy management in jamun. This calls for an urgent need to undertake investigation to standardize pruning height. In this context, the present research was undertaken to standardize topping and pruning in jamun.

Material and Methods

An investigation was carried out to study the 'Effect of levels of pruning on growth, yield and quality of Jamun cv. AJG-85 under HDP system' at Kittur Rani Channamma College of Horticulture, Arabhavi, Karnataka, University of Horticultural Sciences, Bagalkot during

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2018-19 and 2019-20. The experiment was laid out in factorial design with sixteen treatments and two replications.

Treatment details

Factor I: Topping

- T₁- Topping at 2.5 m height
- T₂ - Topping at 3.0 m height
- T₃- Topping at 3.5 m height
- T₄ – No topping

Factor II: Side pruning

- L₁: Pruning of 20 per cent of annual extension growth (side branch growth)
- L₂: Pruning of 40 per cent of annual extension growth (side branch growth)
- L₃: Pruning of 60 per cent of annual extension growth (side branch growth)
- L₄: No pruning

Plants were planted at a spacing of 3 m x 3 m and were 6 years old. As per the treatment, topping and side pruning was done in the month of August- 2018 and August- 2019 *i.e.*, after harvest of the crop. The cultivation practices are done as per the package of practice.

Observations on growth parameters *viz.*, plant height, stem girth, east west canopy spread and north south canopy spread were recorded on selected plants in each replication of different treatments at 3, 6 and 9 months after pruning (MAP). Yield parameters *viz.*, total number of fruits per plant, highest fruit yield and highest yield per hectare were recorded.

Result and Discussion

The results obtained from the present experiment and relevant discussions have been summarized here.

Plant height (m): The data related to plant height recorded at 3, 6 and 9 MAP is presented in Table 1. In 2018-19, 2019-20 and in pooled data, significantly maximum plant height was recorded in T₄: No topping (4.35, 4.68 and 4.51 m, respectively) which was at par with T₃: Topping at 3.5 m height (3.96, 4.25 and 4.11 m, respectively) whereas, minimum plant height was recorded in T₁: Topping at 2.5 m height (2.94, 3.41 and 3.18 m, respectively). Similar trend was noticed in 6 and 9 MAP also. The interaction effect revealed significant differences for plant height after 3, 6 and 9 MAP. The treatment T₄L₃ recorded significantly maximum plant height (4.48, 4.81 and 5.05 m, respectively) in 2018-19 after 3, 6 and 9 MAP respectively. During 2019-20 (5.53, 5.81 and 6.36 m, respectively) and in pooled data (4.91, 5.25 and 5.61 m, respectively) the plants in T₄L₁ recorded significantly the highest values for plant height after 3, 6 and 9 MAP. Results of interaction revealed maximum plant height in plants under T₄L₁ (No topping and pruning of 20 per cent of annual extension growth) treatment indicating that plants pruned less produced more height compared to severe pruning indicating that severe pruning might delay growth. Similar findings were reported by Singh *et al.* (2007) [12], Singh and Chanana (2005) [11] in guava, Lal and Mishra (2007) [4] in mango and Robinson *et al.* (1983) [9] in apple.

Stem girth (cm): The data related to stem girth recorded at 3, 6 and 9 MAP is presented in Table 2. In 2018-19 (11.78, 11.89 and 12.09 cm, respectively), 2019-20 (12.28, 12.56 and 12.87 cm, respectively) and in pooled data (12.03, 12.23 and

12.48 cm, respectively) the significant high values for stem girth was recorded in T₃: Topping at 3.5 m height after 3, 6 and 9 MAP. The interaction of data for stem girth as influenced by topping and level of pruning at 3, 6 and 9 MAP indicated significant differences. In 2018-19 (12.92, 13.10 and 13.54 cm, respectively) and in pooled data (12.59, 12.77 and 13.05 cm, respectively) significant higher values for stem girth was recorded in T₃L₃ (Topping at 3.5 m height and 60% of annual extension growth) However, in 2019-20, T₃L₄ (12.56, 13.04 and 13.64 cm, respectively) recorded maximum stem girth at 3, 6 and 9 MAP respectively. The present findings are in close conformity with Mehta *et al.* (2012) [7] who also reported non-significant differences in the trunk girth as influenced by different levels of pruning in guava. The interaction effect revealed that maximum stem girth was obtained in the treatment combination of T₃L₃ (Topping at 3.5 m height and pruning of 60 per cent of annual extension growth) and T₃L₄ (Topping at 3.5 m height and no pruning). This might be the fact that pruned trees stored more reserved food. Proper control of vegetative growth is a pre requisite for high density planting and without which there is overcrowding and inefficient light utilization, reduced flower bud formation and fruit set (Singh, 2011) [10]. Thus, balanced canopy architecture promoting more number of productive shoots could be the aim of canopy management under high density planting.

East-West canopy spread (m): The analyses of data revealed significant differences for East-West canopy spread (Table 3) as influenced by topping at 3, 6 and 9 MAP. The maximum East-West canopy spread was recorded in T₃: topping at 3.5 m height during 2018-19 (3.86, 3.99 and 4.19 m, respectively), 2019-20 (3.76, 4.19 and 4.36 m, respectively) and in pooled data (3.81, 4.09 and 4.27 m) at 3, 6 and 9 MAP. The interaction effect revealed significant differences for East-West canopy spread at 3, 6 and 9 MAP. Maximum East-West canopy spread was recorded in T₃L₁ (4.14 m) during 2018-19. In 2019-20 (4.05 m) and in pooled data (4.09 m) the T₄L₁ plants recorded highest values at 3 MAP respectively. The highest values recorded in T₃L₁ during 2018-19 (4.23 and 4.39 m), 2019-20 (4.80 and 4.94 m) and in pooled data (4.52 and 4.66 m) at 6 and 9 MAP respectively.

North-South canopy spread (m): The interpretation of data highlighted significant differences in the north-south (N-S) canopy spread (Table 4) as influenced by topping at 3, 6 and 9 MAP. The values for canopy spread were significantly highest in T₃: topping at 3.5 m height during 2018-19 (4.01, 4.18 and 4.43 m, respectively), 2019-20 (4.05, 4.41 and 4.53 m, respectively) and in pooled data (4.03, 4.29 and 4.48 m, respectively) at 3, 6 and 9 months after pruning respectively. The interaction effect revealed significant differences for North-South canopy spread at 3, 6 and 9 MAP. The values for the North-South canopy spread showed significant differences at 3, 6 and 9 MAP and the highest values were recorded in T₃L₃ plants during 2018-19 (4.13, 4.24 and 4.54 m, respectively) and during 2019-20 (4.30, 4.65 and 4.78 m, respectively) and in pooled data (4.17, 4.42 and 4.59 m, respectively) the T₃L₁ plants recorded maximum values at 3, 6 and 9 MAP respectively. Higher values in this treatment may be attributed to mild pruning provided plants with sufficient period of rest followed by pruning and irrigation, thereby resulting in profuse growth. The present findings are in accordance with views of Lal *et al.* (2000) [5], Singh and

Chanana (2005) ^[11], Gopikrishna (1979) ^[3], Bajpai *et al.* (1973) ^[1] in guava and Sundararaj *et al.* (1969) ^[14] in fig and Robinson *et al.* (1983) ^[9] in apple.

Number of fruits per plant: Topping had significant effect on number of fruits per plant (Table 5) during 2019-20. However, it was observed that the number of fruits per plant was far higher during 2018-19 when compared to 2019-20 irrespective of treatment imposed indicating a certain degree of biennial bearing in jamun. However, the maximum numbers of fruits were harvested from T₄ plants during 2018-19, 2019-20 and in pooled data (806.47, 230.09 and 518.28 respectively). Number of fruits harvested per plant varied significantly with side pruning. Among the pruning levels, the highest number of fruits was recorded in L₄ plants during 2018-19 (875.83) and in pooled data (557.65). During 2019-20, number of fruits per plant was found non-significant. Among the interactions significant variation was found with respect to number of fruits per plant. Maximum number of fruits per plant was recorded in T₄L₄ plants during 2018-19 (1116.94), 2019-20 (288.49) and in pooled data (702.72) respectively.

Yield (kg/plant): The interpretation of data clearly indicated that the fruit yield (Table 5) was higher during 2018-19 compared to 2019-20 irrespective of treatment. There was non-significant variation found in yield (kg/ plant) with respect to topping during 2018-19 and in pooled data whereas in 2019-20 it was found significant. Maximum yield in kg per plant was recorded in T₄ (2.56 kg/ plant) treatment. Significant difference was observed for yield (kg/ plant) as influenced by pruning levels. Maximum yield in kg per plant was recorded in L₄ during 2018-19 (10.48 kg) and in pooled

data (6.55 kg). Maximum yield (kg/ plant) was recorded in T₄L₄ plants during 2019-20 (3.24 kg/ plant) and in pooled data (8.17 kg/ plant) which were at par with all the treatments except T₁L₁ and T₃L₁ during 2019-20 and in pooled data T₁L₁.

Yield (t/ha): The interpretation of data clearly indicated that the fruit yield (Table 5) was higher during 2018-19 compared to 2019-20 irrespective of treatment. There was significant variation found in yield (kg/ ha) with respect to topping in 2019-20. Maximum yield in kg per hectare was recorded in T₄ (2.85 kg/ ha) treatment which was on par with T₃ and T₂. Maximum yield in kg per hectare was recorded in L₄ during 2018-19 (11.65 kg/ ha) and in pooled data (7.28 kg/ ha) which were at par with L₂ and L₃. Among the interactions, maximum yield (kg/ ha) was recorded in T₄L₄ plants during 2019-20 (3.60 kg/ ha) and in pooled data (9.07 kg/ ha) which were at par with all the treatments except T₁L₁ and T₃L₁ during 2019-20 and in pooled data T₁L₁. Significantly higher yield realization in plants might be due to a balance in the plant canopy architecture in these plants with higher values for plant height (Table 1) and canopy spread in North- South (Table 4) and East-West direction (Table 3). These findings have similarity with the observation of Lawande *et al.* (2014) ^[6] in jamun. In pear, highest fruit yield per tree was recorded in pruning at 2.7 m height (Singh *et al.*, 2012) ^[13]. Similarly in ‘Alphonso’ mango, heading back was found beneficial for earliness and getting higher yield (Mistry and Patel, 2009) ^[8]. Sundararajan and Muthuswamy (1966) ^[15] reported that pruning increased the number of flowers and fruits per shoot in guava. Similar results were also given by Bajpai *et al.* (1973) ^[1] and Gopikrishna (1979) ^[3] in guava and Dhaliwal and Sandhu (1982) ^[2] in ber.

Table 1: Effect of topping and side pruning on plant height in jamun cv. AJG 85

Treatments	Plant height (m)								
	3 MAP			6 MAP			9 MAP		
	2018-19	2019-20	Pooled	2018-19	2019-20	Pooled	2018-19	2019-20	Pooled
Topping									
T ₁ - Topping at 2.5 m height	2.94	3.41	3.18	3.24	3.81	3.52	3.44	4.13	3.78
T ₂ - Topping at 3.0 m height	3.38	3.74	3.56	3.71	4.08	3.89	3.93	4.36	4.15
T ₃ - Topping at 3.5 m height	3.96	4.25	4.11	4.28	4.73	4.51	4.46	5.22	4.84
T ₄ - No topping	4.35	4.68	4.51	4.71	4.98	4.85	4.88	5.34	5.11
S. Em±	0.14	0.26	0.17	0.18	0.23	0.18	0.18	0.22	0.18
CD at 5%	0.44	0.77	0.52	0.55	0.70	0.54	0.54	0.66	0.53
Side pruning									
L ₁ - 20% of annual extension growth	3.65	4.17	3.91	3.96	4.56	4.26	4.13	5.01	4.57
L ₂ - 40% of annual extension growth	3.62	3.93	3.77	3.93	4.34	4.14	4.11	4.63	4.37
L ₃ - 60% of annual extension growth	3.67	3.96	3.81	4.01	4.32	4.16	4.24	4.67	4.45
L ₄ - No pruning	3.70	4.02	3.86	4.04	4.38	4.21	4.23	4.74	4.49
S. Em±	0.14	0.26	0.17	0.18	0.23	0.18	0.18	0.22	0.18
CD at 5%	NS	NS	NS	NS	NS	NS	NS	NS	NS
Interactions									
T ₁ L ₁	3.00	3.15	3.07	3.20	3.55	3.38	3.38	4.06	3.72
T ₁ L ₂	2.99	3.31	3.15	3.31	3.81	3.56	3.43	4.06	3.74
T ₁ L ₃	2.90	3.55	3.22	3.21	3.90	3.56	3.49	4.14	3.81
T ₁ L ₄	2.89	3.65	3.27	3.23	3.96	3.59	3.46	4.24	3.85
T ₂ L ₁	3.49	3.84	3.66	3.88	4.13	4.00	4.05	4.35	4.20
T ₂ L ₂	3.26	3.56	3.41	3.48	3.90	3.69	3.71	4.28	3.99
T ₂ L ₃	3.19	3.53	3.36	3.50	3.85	3.68	3.78	4.13	3.95
T ₂ L ₄	3.59	4.03	3.81	3.98	4.43	4.20	4.20	4.69	4.44
T ₃ L ₁	3.84	4.18	4.01	4.06	4.76	4.41	4.24	5.25	4.74
T ₃ L ₂	3.96	4.34	4.15	4.30	4.90	4.60	4.54	5.18	4.86
T ₃ L ₃	4.09	4.35	4.22	4.50	4.78	4.64	4.64	5.34	4.99
T ₃ L ₄	3.96	4.15	4.06	4.28	4.48	4.38	4.41	5.11	4.76
T ₄ L ₁	4.29	5.53	4.91	4.69	5.81	5.25	4.85	6.36	5.61

T4L ₂	4.26	4.49	4.37	4.65	4.74	4.69	4.78	5.00	4.89
T4L ₃	4.48	4.44	4.46	4.81	4.74	4.78	5.05	5.06	5.06
T4L ₄	4.36	4.25	4.31	4.70	4.65	4.68	4.85	4.93	4.89
S. Em±	0.29	0.51	0.35	0.36	0.47	0.36	0.36	0.44	0.35
CD at 5%	0.87	1.55	1.04	1.10	1.40	1.09	1.07	1.31	1.07

MAP- Months after pruning NS- Non significant

Table 2: Effect of topping and side pruning on stem girth in jamun cv. AJG 85

Treatments	Stem girth (cm)								
	3 MAP			6 MAP			9 MAP		
	2018-19	2019-20	Pooled	2018-19	2019-20	Pooled	2018-19	2019-20	Pooled
Topping									
T ₁ - Topping at 2.5 m height	8.58	9.67	9.12	8.76	9.87	9.32	8.91	10.12	9.52
T ₂ - Topping at 3.0 m height	8.58	9.52	9.05	8.73	9.75	9.24	8.92	9.93	9.42
T ₃ - Topping at 3.5 m height	11.78	12.28	12.03	11.89	12.56	12.23	12.09	12.87	12.48
T ₄ - No topping	10.14	10.83	10.48	10.31	11.22	10.76	10.50	11.49	11.00
S. Em±	0.62	0.60	0.59	0.63	0.60	0.60	0.65	0.64	0.63
CD at 5%	1.86	1.82	1.79	1.89	1.81	1.81	1.96	1.93	1.89
Side pruning									
L ₁ - 20% of annual extension growth	10.40	11.02	10.71	10.55	11.34	10.94	10.71	11.63	11.17
L ₂ - 40% of annual extension growth	9.27	10.38	9.82	9.43	10.62	10.02	9.64	10.74	10.19
L ₃ - 60% of annual extension growth	10.04	10.63	10.33	10.22	10.89	10.56	10.46	11.13	10.79
L ₄ - No pruning	9.37	10.27	9.82	9.49	10.55	10.02	9.60	10.92	10.26
S. Em±	0.62	0.60	0.59	0.63	0.60	0.60	0.65	0.64	0.63
CD at 5%	NS	NS	NS	NS	NS	NS	NS	NS	NS
Interactions									
T ₁ L ₁	8.74	9.56	9.15	8.82	9.71	9.26	8.90	10.24	9.57
T ₁ L ₂	8.78	10.49	9.64	9.01	10.78	9.89	9.36	10.93	10.14
T ₁ L ₃	8.64	9.57	9.10	8.85	9.81	9.33	8.95	9.98	9.47
T ₁ L ₄	8.16	9.05	8.60	8.36	9.20	8.78	8.42	9.35	8.88
T ₂ L ₁	9.39	10.67	10.03	9.69	10.84	10.26	10.10	10.95	10.52
T ₂ L ₂	7.99	9.01	8.50	8.16	9.29	8.73	8.39	9.39	8.89
T ₂ L ₃	8.87	9.70	9.29	8.93	10.01	9.47	8.99	10.16	9.57
T ₂ L ₄	8.08	8.69	8.38	8.13	8.86	8.50	8.18	9.25	8.71
T ₃ L ₁	11.34	12.36	11.85	11.39	12.62	12.01	11.46	12.97	12.22
T ₃ L ₂	11.29	11.96	11.62	11.42	12.12	11.77	11.57	12.31	11.94
T ₃ L ₃	12.92	12.26	12.59	13.10	12.44	12.77	13.54	12.56	13.05
T ₃ L ₄	11.57	12.56	12.06	11.67	13.04	12.36	11.78	13.64	12.71
T ₄ L ₁	12.14	11.51	11.82	12.30	12.18	12.24	12.39	12.35	12.37
T ₄ L ₂	9.02	10.05	9.53	9.12	10.28	9.70	9.25	10.34	9.79
T ₄ L ₃	9.73	10.97	10.35	10.00	11.32	10.66	10.35	11.83	11.09
T ₄ L ₄	9.66	10.78	10.22	9.81	11.11	10.46	10.03	11.46	10.74
S. Em±	1.23	1.21	1.19	1.26	1.20	1.20	1.30	1.28	1.25
CD at 5%	3.72	3.64	3.58	3.79	3.61	3.62	3.92	3.85	3.77

MAP- Months after pruning NS- Non significant

Table 3: Effect of topping and side pruning on E-W spread in jamun cv. AJG 85

Treatments	E-W (m)								
	3 MAP			6 MAP			9 MAP		
	2018-19	2019-20	Pooled	2018-19	2019-20	Pooled	2018-19	2019-20	Pooled
Topping									
T ₁ - Topping at 2.5 m height	3.33	3.11	3.22	3.43	3.49	3.46	3.59	3.61	3.60
T ₂ - Topping at 3.0 m height	3.43	3.11	3.27	3.52	3.42	3.47	3.67	3.58	3.62
T ₃ - Topping at 3.5 m height	3.86	3.76	3.81	3.99	4.19	4.09	4.19	4.36	4.27
T ₄ - No topping	3.82	3.46	3.64	3.89	3.85	3.87	4.01	4.03	4.02
S.Em±	0.15	0.16	0.15	0.15	0.19	0.16	0.15	0.21	0.18
CD at 5%	0.45	0.48	0.45	0.44	0.59	0.49	0.45	0.64	0.53
Side pruning									
L ₁ - 20% of annual extension growth	3.80	3.59	3.70	3.88	4.15	4.01	4.02	4.27	4.14
L ₂ - 40% of annual extension growth	3.41	3.21	3.31	3.49	3.51	3.50	3.62	3.67	3.64
L ₃ - 60% of annual extension growth	3.53	3.29	3.41	3.67	3.62	3.64	3.90	3.76	3.83
L ₄ - No pruning	3.70	3.34	3.52	3.78	3.67	3.73	3.91	3.89	3.90
S. Em±	0.15	0.16	0.15	0.15	0.19	0.16	0.15	0.21	0.18
CD at 5%	NS	NS	NS	NS	0.59	0.49	NS	NS	NS
Interactions									
T ₁ L ₁	3.24	2.83	3.03	3.33	3.35	3.34	3.48	3.43	3.45
T ₁ L ₂	3.28	3.33	3.30	3.38	3.54	3.46	3.55	3.68	3.61

T ₁ L ₃	3.34	3.13	3.23	3.44	3.54	3.49	3.60	3.70	3.65
T ₁ L ₄	3.48	3.15	3.31	3.57	3.53	3.55	3.72	3.63	3.67
T ₂ L ₁	3.69	3.50	3.60	3.79	3.91	3.85	3.95	4.00	3.98
T ₂ L ₂	2.98	2.85	2.92	3.06	3.23	3.14	3.20	3.31	3.26
T ₂ L ₃	3.19	2.73	2.96	3.29	2.98	3.13	3.45	3.18	3.31
T ₂ L ₄	3.87	3.35	3.61	3.95	3.55	3.75	4.08	3.83	3.95
T ₃ L ₁	4.14	4.00	4.07	4.23	4.80	4.52	4.39	4.94	4.66
T ₃ L ₂	3.76	3.48	3.62	3.83	3.80	3.81	3.95	4.05	4.00
T ₃ L ₃	3.90	3.98	3.94	4.13	4.24	4.18	4.50	4.34	4.42
T ₃ L ₄	3.66	3.58	3.62	3.76	3.93	3.84	3.91	4.13	4.02
T ₄ L ₁	4.12	4.05	4.09	4.18	4.53	4.35	4.28	4.70	4.49
T ₄ L ₂	3.64	3.18	3.41	3.69	3.48	3.58	3.78	3.63	3.70
T ₄ L ₃	3.70	3.33	3.51	3.83	3.73	3.78	4.04	3.84	3.94
T ₄ L ₄	3.81	3.28	3.54	3.86	3.68	3.77	3.94	3.98	3.96
S. Em±	0.30	0.32	0.30	0.29	0.39	0.33	0.30	0.43	0.35
CD at 5%	0.90	0.97	0.90	0.88	1.17	0.98	0.90	1.28	1.06

MAP- Months after pruning NS- Non significant

Table 4: Effect of topping and side pruning on N- S spread in jamun cv. AJG 85

Treatments	N-S (m)								
	3 MAP			6 MAP			9 MAP		
	2018-19	2019-20	Pooled	2018-19	2019-20	Pooled	2018-19	2019-20	Pooled
Topping									
T ₁ - Topping at 2.5 m height	3.41	3.27	3.34	3.56	3.71	3.63	3.78	3.84	3.81
T ₂ - Topping at 3.0 m height	3.65	3.44	3.55	3.75	3.77	3.76	3.91	3.98	3.94
T ₃ - Topping at 3.5 m height	4.01	4.05	4.03	4.18	4.41	4.29	4.43	4.53	4.48
T ₄ - No topping	3.68	3.62	3.65	3.84	3.92	3.88	4.07	4.10	4.09
S. Em±	0.11	0.14	0.11	0.11	0.15	0.12	0.13	0.15	0.13
CD at 5%	0.32	0.43	0.34	0.32	0.44	0.36	0.38	0.44	0.39
Side pruning									
L ₁ - 20% of annual extension growth	3.71	3.86	3.79	3.88	4.20	4.04	4.13	4.35	4.24
L ₂ - 40% of annual extension growth	3.71	3.54	3.62	3.84	3.88	3.86	4.05	4.12	4.08
L ₃ - 60% of annual extension growth	3.61	3.49	3.55	3.75	3.91	3.83	3.97	4.06	4.01
L ₄ - No pruning	3.72	3.49	3.60	3.85	3.81	3.83	4.05	3.92	3.98
S. Em±	0.11	0.14	0.11	0.11	0.15	0.12	0.13	0.15	0.13
CD at 5%	NS	NS	NS	NS	NS	NS	NS	NS	NS
Interactions									
T ₁ L ₁	3.11	3.20	3.15	3.32	3.48	3.40	3.65	3.68	3.66
T ₁ L ₂	3.65	3.55	3.60	3.75	3.95	3.85	3.90	4.06	3.98
T ₁ L ₃	3.41	3.23	3.32	3.57	3.80	3.69	3.83	3.89	3.86
T ₁ L ₄	3.47	3.10	3.29	3.59	3.60	3.59	3.76	3.73	3.74
T ₂ L ₁	3.71	3.63	3.67	3.83	4.08	3.95	4.03	4.19	4.11
T ₂ L ₂	3.73	3.30	3.52	3.79	3.68	3.73	3.88	4.08	3.98
T ₂ L ₃	3.16	3.28	3.22	3.30	3.55	3.42	3.51	3.78	3.64
T ₂ L ₄	4.02	3.55	3.78	4.09	3.78	3.93	4.21	3.86	4.04
T ₃ L ₁	4.03	4.30	4.17	4.19	4.65	4.42	4.40	4.78	4.59
T ₃ L ₂	3.92	4.08	4.00	4.16	4.38	4.27	4.40	4.35	4.38
T ₃ L ₃	4.13	3.85	3.99	4.24	4.25	4.24	4.54	4.53	4.53
T ₃ L ₄	3.96	3.98	3.97	4.11	4.38	4.24	4.35	4.48	4.41
T ₄ L ₁	4.02	4.30	4.16	4.17	4.60	4.38	4.44	4.75	4.59
T ₄ L ₂	3.54	3.23	3.38	3.67	3.54	3.60	3.88	3.80	3.84
T ₄ L ₃	3.75	3.63	3.69	3.91	4.05	3.98	4.15	4.21	4.18
T ₄ L ₄	3.43	3.33	3.38	3.60	3.50	3.55	3.86	3.63	3.74
S.Em±	0.21	0.29	0.22	0.21	0.29	0.24	0.25	0.29	0.26
CD at 5%	0.64	0.87	0.67	0.65	0.88	0.71	0.76	0.88	0.78

MAP- Months after pruning NS- Non significant

Table 5: Effect of topping and side pruning on number of fruits per plant and fruit yield in jamun cv. AJG 85

Treatments	No. of fruits/ plant			Fruit yield (kg/ plant)			Fruit yield (t/ha)		
	2018-19	2019-20	Pooled	2018-19	2019-20	Pooled	2018-19	2019-20	Pooled
Topping									
T ₁ - Topping at 2.5 m height	424.67	128.23	276.45	5.14	1.39	3.27	5.71	1.55	3.63
T ₂ - Topping at 3.0 m height	606.48	182.87	394.67	7.67	2.01	4.84	8.52	2.24	5.38
T ₃ - Topping at 3.5 m height	668.09	204.90	436.49	7.99	2.24	5.12	8.88	2.49	5.69
T ₄ - No topping	806.47	230.09	518.28	9.83	2.56	6.20	10.93	2.85	6.89
S. Em±	130.43	33.42	81.13	1.67	0.38	1.02	1.85	0.43	1.13
CD at 5%	NS	100.74	NS	NS	1.16	NS	NS	1.29	NS

Side pruning									
L ₁ - 20% of annual extension growth	408.30	141.05	274.68	5.01	1.52	3.26	5.56	1.68	3.62
L ₂ - 40% of annual extension growth	637.40	181.04	409.22	8.01	1.98	4.99	8.90	2.20	5.55
L ₃ - 60% of annual extension growth	584.18	184.54	384.36	7.13	2.11	4.62	7.93	2.34	5.13
L ₄ - No pruning	875.83	239.46	557.65	10.48	2.62	6.55	11.65	2.91	7.28
S. Em±	130.43	33.42	81.13	1.67	0.38	1.02	1.85	0.43	1.13
CD at 5%	393.17	NS	244.54	5.03	NS	3.06	5.59	NS	3.40
Interactions									
T ₁ L ₁	251.94	74.24	163.09	3.05	0.83	1.94	3.38	0.93	2.16
T ₁ L ₂	402.90	114.22	258.56	4.86	1.23	3.04	5.40	1.36	3.38
T ₁ L ₃	430.94	139.73	285.34	5.38	1.60	3.49	5.98	1.78	3.88
T ₁ L ₄	612.91	184.73	398.82	7.25	1.92	4.59	8.06	2.13	5.10
T ₂ L ₁	600.99	216.25	408.62	7.82	2.34	5.08	8.69	2.60	5.65
T ₂ L ₂	468.22	138.06	303.14	6.28	1.48	3.88	6.98	1.64	4.31
T ₂ L ₃	392.86	121.47	257.17	5.04	1.40	3.22	5.60	1.55	3.58
T ₂ L ₄	963.84	255.71	609.77	11.55	2.84	7.19	12.83	3.16	7.99
T ₃ L ₁	297.66	80.42	189.04	3.52	0.90	2.21	3.91	1.00	2.46
T ₃ L ₂	918.74	269.19	593.96	11.08	2.86	6.97	12.31	3.18	7.75
T ₃ L ₃	646.32	241.08	443.70	7.32	2.74	5.03	8.13	3.04	5.59
T ₃ L ₄	809.64	228.91	519.28	10.04	2.47	6.26	11.16	2.74	6.95
T ₄ L ₁	482.62	193.30	337.96	5.63	1.98	3.81	6.26	2.20	4.23
T ₄ L ₂	759.76	202.69	481.22	9.81	2.34	6.08	10.90	2.60	6.75
T ₄ L ₃	866.58	235.90	551.24	10.80	2.68	6.74	12.00	2.98	7.49
T ₄ L ₄	1116.94	288.49	702.72	13.09	3.24	8.17	14.55	3.60	9.07
S. Em±	260.87	66.84	162.25	3.34	0.77	2.03	3.71	0.85	2.26
CD at 5%	786.34	201.48	489.08	NS	2.32	6.12	NS	2.58	6.80

NS- Non significant

Conclusion

Finally it is summarized that plants topped at 3.5 m height from ground and no topped trees gave good vegetative growth and maximum yield contributing parameters were also recorded with no topping and no pruning treatments.

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