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Influence of different Levels of Plant Density and Pruning Intensity on Vegetative Growth of Newly Planted Guava (*Psidium guajava* L.) cv. Allahabad Surkha under Open Environment condition

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ABSTRACT: The results of the present investigation indicated that, different levels of pruning severity *viz.*, 50%, 30% and 10% and planting density *viz.*, D_1: 2.0 m × 1.0 m, D_2: 2.0 m × 2.0 m, D_3: 2.0 m × 3.0 m, D_4: 2.0 m × 4.0 m, D_5: 6.0 m × 6.0m highlight the significant effect on vegetative growth of newly planted Guava *(Psidium guajava* L.*)* cv. Allahabad Surkha under open based environment condition. The results of the study revealed that among the various pruning based treatment combinations the best 10% and 30% pruning intensity proved significantly superior over other pruning treatments for vegetative growth parameters. On other hand the results of the research study showed that among the various planting density treatments, the density *i.e.* D_4: 2.0 m × 4.0 m, D_5: 6.0 m × 6.0m conclude the significant effect and found more superior over other pruning treatments for their vegetative growth performance during rainy and winter season based research experiments. The interaction effect of different levels of pruning intensity and planting density was also found significant on vegetative growth parameter of Guava cv. Allahabad Surkha. The maximum increase plant height (cm), number of leaves per plant, no. of branches per plant, plant spread (cm) (E-W and N-S), days to 1st emergence of new shoots per plant (in days), stem girth (cm), stem length (cm), leaf area (cm^2) and LAI (Index %) was recorded best with T_{19} (P_3 10% + D_4D_4: 2.0 m × 4.0 m) and T_{20} ($P_3$10% + D_5 6.0 m × 6.0 m). It is concluded from the results obtained in research findings that 10% and 30% pruning intensity and planting density D_5 6.0 m × 6.0 m and D_4 2.0 m × 4.0 m proved as best in terms of growth parameters of Allahabad Surkha Guava in Prayagraj Agro-Climatic region.

Keywords: Allahabad Surkha, Guava, Plant density, Pruning intensity, Vegetative Growth, open environment and rainy & winter season.

INTRODUCTION

According to Singh *et al.* (2007), the guava (*Psidium guajava* L.) is a significant fruit crop in India and is known as the "Apple of the Tropics" or the "Poverty Man's Fruit". Both fresh consumption and processing are done using guava fruits. Due to their astringency, the roots, bark, leaves, and young fruits are frequently used to treat diarrhoea, dysentery, and gastroenteritis. According to Yadav (1990), the guava belongs to the family Myrtaceae, genus *Psidium,* which has about 153 species of plants, 20 of which produce edible fruits. The common guava, *Psidium guajava*, has so far been commercially and economically used. The continuing decline in the availability of cultivable land, rising energy, taxes, production cost and land cost together with the mounting demand of horticultural produce, have given thrust to the concept of high density planting of horticultural crops. It is an intensive form of horticulture production which has high relevance to the nutritional security of our ever-increasing population.

In general, guava is cultivated mainly through a traditional system, under which it is difficult to achieve desired levels of production because large trees provide low production per unit area and needs high labour inputs (Araujo *et al.,* 1999; Reddy *et al*., 1999; Singh *et al.,* 2003). High density planting in guava has been achieved through closer spacing. Under high density planting system where fruiting starts from first year, a precise level of pruning is required to make the balance between the vegetative and reproductive growth. Factors like improper training method adoption, competition for natural resources i.e., space, water, sun light and nutrients etc., influencing the productivity and quality of fruits in high density orchards of guava. However, appropriate canopy management or training method strongly mitigates the overall orchard yield reductions in plants adopted with high density planting

system Mishra and Goswami (2016). Therefore, pruning could prove to be the most effective method for eliminating rainy season crop and production of winter season guava which is superior in quality free from diseases and fetches high price as compared to rainy season crop Prakash *et al.* (2012). Pruning is defined as the art and science of cutting away a portion of the plant to improve the shape, vegetative growth, flowering, fruitfulness and to improve the quality of the product. It also leads to rejuvenation, better ventilation and higher penetration of sunlight and also become feasible in application of plant protection chemicals. Several workers have reported an increased yield, fruit size and qualitative attributes of guava as a result of pruning at different time intervals thus improvement is attributed to better light penetration into fruit bearing portions of the tree canopy. The results of investigation revealed that with the increase in severity of pruning, there was significant increase in shoot length Singh and Grover (2020). Pruning technique is used to minimize the disease and insect pest attack, mostly fruit fly infestation. Pruning is very important horticultural operation leads to regulate the crop with season. It increases the yield and quality of fruit it evades the flowering and fruiting of crop and gives the better canopy structure Choudhary *et al.* (2022).

MATERIALS AND METHODS

An experiment entitled "Influence of different levels of plant density and pruning intensity on vegetative growth of newly planted Guava (*Psidium guajava* L.) cv. Allahabad Surkha under open environment condition" was carried out at Horticulture Research Farm, Central Orchard, Department of Horticulture, Naini Agricultural Institute, Sam Higginbottom University of Agriculture, Technology and Sciences (SHUATS), Prayagraj, U.P., India during rainy and winter season of 2020-2021. The level of pruning intensities and planting density which is applied in this study is based on shoot pruning of lateral shoots,heading back, be-heading, de-heading pruning practices in guava plant. The various levels of pruning severity in this experiment was carried out at 1 year old wedge grafted plants of guava. A one year old wedge grafted guava plants which is (approx. 150 no. of plants) were purchased from fruit nursery block, Horticulture Experiment & Training Centre, Khusrobagh, Prayagraj. The total no. of plants incorporated during research trail is about 105 plants whereas the rest of extra plants were used for gap filling and re-planting as per requirement and need. The research experiment is based under two way factorial randomized block design, it consist spacing factor on different levels of density wise treatments *viz.*, D_1: 2.0 m × 1.0 m, D_2: 2.0 m × 2.0 m, D_3:2.0 m × 3.0 m, D_4: 2.0 m × 4.0 m & D_5: 6.0 m × 6.0 m whereas the pruning factor consists different levels of pruning severity *viz.*, 50%, 30% and 10%. The experiment was laid out in {FRBD} with 20 treatments and each was replicated thrice. Data was recorded on vegetative parameters *viz.*, plant height (cm), number of leaves per plant, no. of branches per plant, plant spread (cm) (E-W and N-S), days to 1st emergence of new shoots per plant (in days), stem girth (cm), stem length (cm), leaf area (cm^2) and LAI (Index %). The observed data was statistically analyzed with Factorial Randomized Block Design (FRBD) by Steel and Torrie (1960). The standard error of mean (S.Em.) and Critical difference (CD) at 5 % level of probability were worked out and presented in respective tables for interpretation of the results.

RESULTS AND DISCUSSION

The data pertaining to plant height (cm) of guava under different levels of pruning has been given in (Table 1). After perusal of the results it is clear that the maximum plant height was found in P_3: 10(%) (177.34 & 192.18) which is higher significantly to other treatments during rainy and winter season of research experiment. The data pertaining to number of leaves per plant of guava under different levels of pruning has been given in (Table 2). After perusal of the results it is clear that the maximum number of leaves per plant was found in P_3: 10(%) (113.49 & 208.82) which is higher significantly to other treatments during rainy and winter season of research experiment. The data pertaining to number of branches per plant of guava under different levels of pruning has been given in (Table 3). After perusal of the results it is clear that the maximum number of branches per plant was found in P_3: 10(%) (14.04 & 26.69) which is higher significantly to other treatments during rainy and winter season of research experiment. The data pertaining to plant spread of guava under different levels of pruning has been given in (Table 4 & 5). After perusal of the results it is clear that the maximum plant spread was found in P_3: 10(%) (81.50 & 100.12 cm E-W) and (73.96 & 1002.58 cm N-S) which is higher significantly to other treatments during rainy and winter season of research experiment. Data pertaining to vegetative growth parameter of guava cv. Allahabad Surkha under different levels of plant density *viz.,* (D_1: 2.0 m × 1.0 m, D_2: 2.0 m × 2.0 m, D_3: 2.0 m × 3.0 m, D_4: 2.0 m × 4.0 m × D_5: 6.0 m × 6.0 m) has been given in (Table 1-5). The effect of different levels of planting density had a significant influence on the increase in vegetative growth parameters of Guava cv. Allahabad Surkha.

The annual increase in plant growth was recorded minimum in closed spacing due to less light penetration into foliage and restricted apical growth, ultimately reducing plant growth and vigour. While working in different plant spacing of guava crop, similar reports have also been reported Lal *et al.* (2007); Pilania *et al.* (2010); Pratibha *et al.* (2013); Pal and Lal (2015). The shoot pruning severity overcomes apical dominance thus, increasing the activity of cytokinine which helps to promote growth in terms of stem diameter. In other hand, the stored carbohydrates in plants and available nutrients in soil have been utilized by plants, which

might have been used for further growth of pruned shoots Marini (2014). Therefore, the severely pruned plants showed minimum annual increase in plant growth.

The maximum increase plant height (cm) at 120 DAT (154.73 & 149.20), number of leaves per plant at 120 DAT (103.89 & 182.74), No. of branches per plant (12.87 & 24.51), plant spread (E-W) (66.70 & 82.66) and plant spread (N-S) (69.22 & and 85.18) was recorded in treatment D_4: 2.0 m × 4.0 m & D_5: 6.0 m × 6.0 m during rainy and winter season. As far interaction effect between different levels of planting density and pruning intensities was also significant on plant height, number of leaves per plant, number of branches per plant. The maximum plant height (195.08 & 212.25), number of leaves per plant (119.11 & 227.32) & number of branches per plant (15.12 & 29.1) was found in T_{19} (P_3 10% + D_4D_4: 2.0 m × 4.0 m) during rainy and winter season of research experiment. The interaction effect between different levels of planting density and pruning intensities was also significant on plant spread (E-S & N-S). The maximum plant spread (83.28 & 111.10 cm E-S & 85.72 & 113.54 cm N-S) was found in T_{20} (P_3 10% + D_5: 6.0 m × 6.0 m) during rainy and winter season of research experiment. In the present investigation, it was observed that early pruning result in more plant growth vice versa late pruning decrease the shoot growth. Similar findings were reported by Basu *et al.* (2007); Singh *et al.* (2001); Singh *et al.* (2001) further concluded that pruning might shift the allocation of metabolites from rainy season crop in favour of increased vegetative growth due to flower and fruit let removal as a result of pruning. Thus, the vegetative growth of guava seems to respond to variation in month of pruning operation. With an increase in severity of pruning the increase in plant height was less. Kumar and Rattanpal (2010) stated that this may be due to the fact that pruned trees were unable to make up the loss of growth caused by severe pruning in this short period. Similar views were reported by Mahesh *et al.* (2016); Kohli *et al.* (2017) in guava. The data pertaining days to 1st emergence of new shoots per plant (in days) of guava under different levels of pruning has been given in (Table 6). After perusal of the results it is clear stated that the maximum days to 1st emergence of new shoots per plant (in days) was found in P_3: 10(%) (32.99 & 35.18) which is higher significantly to other treatments during rainy and winter season of research experiment. It is clearly showed that the minimum days to 1st emergence of new shoots per plant (in days) was recorded in D_4: 2.0 m × 4.0 m (30.51 & 33.53) highly significant. The interaction effect between different levels of planting density and pruning intensities was also significant on days to 1st emergence of new shoots per plant (in days). The maximum days to 1st emergence of new shoots per plant (24.41 & 26.44 Days) was found in T_{19} (P_3 10% +D_4 2.0 m × 4.0 m) during rainy and winter season of research experiment. New shoots emerged by early pruning. This may be due to removal of apical dominance. Similar finding were reported by Basu *et al.* (2007) who stated that the increase in severity of pruning encouraged early vegetative bud emergences. The result of the present finding is similar to the findings of Bhagawati *et al.* (2015) where they stated that in severe pruning, more nutrients available to vegetative bud and also may be due to more light interception that induces early sprouting of vegetative buds. The data pertaining to stem girth (cm) of guava under different levels of pruning has been given in (Table 6). After perusal of the results it is clear that the maximum Stem girth (cm) was found in P_2: 30(%) & P_3: 10(%) (2.66 & 5.86) which is higher significantly to other treatments during rainy and winter season of research experiment. Further, it was noticed that the maximum stem girth (2.69 & 6.03cm) was found in D_4: 2.0 m × 4.0 m which is highly significant. The interaction effect between different levels of planting density and pruning intensities was also significant on stem girth (cm). The maximum stem girth (3.10 & 6.81) was found in T_{19} (P_3 10% + D_4 2.0 m × 4.0 m) during rainy and winter season of research experiment. The data pertaining to stem length of guava under different levels of pruning has been given in (Table 6). After perusal of the results it is clear that the maximum stem length was found in P_3: 10(%) (29.47 & 34.62) which is higher significantly to other treatments during rainy and winter season of research experiment. Further, it was noticed that the maximum Stem length in (28.41cm & 33.66) was found in D_4: 2.0 m × 4.0 m and D_3:2.0 m × 3.0 m which is highly significant. The interaction effect between different levels of planting density and pruning intensities was also significant on stem length (cm). The maximum stem length (31.24 & 37.05) was found in T_{19} (P_3 10% + D_4 2.0 m × 4.0 m) and T_{14} (P_2 30% + D_4 2.0 m × 4.0 m) during rainy and winter season of research experiment. The results revealed that the shoot length increased upto May pruning and later decrease with delay in pruning time. However, with the increase in severity of pruning the shoot length increased. This may be attributed due to relatively less number of shoots and availability of more nutrients per shoots Bhagawati *et al.* (2015). The data pertaining to Leaf area (cm^2) of guava under different dates of pruning has been given in (Table 6). After perusal of the results it is clear that the maximum Leaf area (cm^2) was found in P_2: 30 % & P_3: 10% (84.47 & 79.44) which is higher significantly to other treatments during rainy and winter season of research experiment. Further, it was noticed that the maximum leaf area (90.11 & 85.28cm^2) was found in D_4: 2.0 m × 4.0 m which is highly significant. Interaction effect between different levels of planting density and pruning intensities was also significant on Leaf area (cm^2). The maximum Leaf area (cm^2) (95.51 & 91.73) was found in T_{19} (P_3 10% + D_4 2.0 m × 4.0 m) during rainy and

winter season of research experiment. The data pertaining to LAI (Index %) of guava under different levels of pruning has been given in (Table 6). After perusal of the results it is clear that the maximum LAI (Index %) was found in P_1: 50 % (3.78 & 5.28) which is higher significantly to other treatments during rainy and winter season of research experiment. Whereas the maximum LAI (5.44 and 6.81 index %) was found in D_5:6.0 m × 6.0 m during rainy and winter season. Interaction effect between different levels of planting density and pruning intensities was also significant on LAI (Index %). The maximum LAI (Index %) (5.72 & 7.05) was found in T_{20} (P_3 10% +D_5 6.0 m × 6.0 m) during rainy and winter season of research experiment. Proper control of vegetative growth is a prerequisite for high-density planting and without it there is overcrowding and shading, which reduces flower-bud formation, fruit retention, fruit size and fruit colour. Control of apical growth must begin within the first year of planting and continue each year in high density planting (HDP). Since guava is highly responsive to pruning, topping and hedging in different periodicity. Pruning removes carbon starved, fruiting exhausted shoots and promotes new leaf growth to build up carbohydrates reserves for the next flowering and allows the sprouting of lateral buds, which ultimately influence the plant height, plant spread, plant volume and other vegetative characters of plants. This is in accordance with the findings of Dhaliwal *et al.* (2000); Kumar and Rattanpal (2010); Sah *et al.* (2015) in guava.

Table 1: Effect of different levels of plant density and pruning intensity on vegetative growth of newly planted Guava (*Psidium guajava* L.) cv. Allahabad Surkha during winter and rainy season under open based environment condition.

	Rainy Season			Winter Season		
	Initial plant height (cm)	**Plant height (cm) after pruning**	**Increase plant height (cm) at 120 DAT**	**Initial plant height (cm)**	**Plant height (cm) after pruning**	**Increase plant height (cm) at 120 DAT**
Pruning intensity: P_0: 00.0% , P_1:50.0%, P_2:30.0% and P_3: 10.0%						
P_0:0.00	45.73	45.73	100.05	100.05	100.05	118.71
P_1: 50(%)	88.27	44.13	138.02	138.02	69.01	98.65
P_2: 30(%)	89.43	62.60	159.45	159.45	111.61	142.79
P_3: 10(%)	91.52	82.37	177.34	177.34	159.60	192.18
F-Test	-	-	**S**	-	-	**S**
S.Ed. (±)	-	-	**0.768**	-	-	**0.718**
S.Em	-	-	**0.543**	-	-	**0.508**
C.D. at 0.5%	-	-	**1.561**	-	-	**1.459**
Plant Density D_1: 2.0 m × 1.0 m, D_2: 2.0 m × 2.0 m, D_3: 2.0 m × 3.0 m, D_4: 2.0 m × 4.0 m and D_5: 6.0 m × 6.0 m						
D_1	77.90	58.12	142.15	142.15	109.32	136.10
D_2	77.23	57.58	141.75	141.75	108.58	135.34
D_3	81.55	60.78	145.08	145.08	111.46	139.01
D_4	88.90	65.87	154.73	154.73	117.94	149.20
D_5	68.11	51.20	134.86	134.86	103.05	130.78
F-Test	-	-	**S**	-	-	**S**
S.Ed. (±)	-	-	**0.859**	-	-	**0.802**
S.Em	-	-	**0.607**	-	-	**0.567**
C.D. at 0.5%	-	-	**1.745**	-	-	**1.631**
Interaction : Pruning intensity × Planting density						
T_1 (P_0 +D_1)	49.55	49.55	106.65	106.65	106.65	125.15
T_2(P_0+ D_2)	48.05	48.05	102.32	102.32	102.32	122.49
T_3(P_0 +D_3)	44.75	44.75	102.84	102.84	102.84	120.75
T_4(P_0 +D_4)	43.97	43.97	98.07	98.07	98.07	116.34
T_5(P_0 +D_5)	42.32	42.32	90.36	90.36	90.36	108.84
T_6 (P_1 +D_1)	89.61	44.80	134.77	134.77	67.38	95.61
T_7(P_1+ D_2)	88.18	44.09	136.87	136.87	68.44	97.39
T_8(P_1 +D_3)	90.03	45.02	136.54	136.54	68.27	96.97
T_9(P_1 +D_4)	100.78	50.39	149.62	149.62	74.81	108.53
T_{10}(P_1 +D_5)	72.74	36.37	132.31	132.31	66.16	94.73
T_{11}(P_2 +D_1)	85.49	59.85	155.99	155.99	109.19	138.26
T_{12}(P_2 +D_2)	86.24	60.37	157.39	157.39	110.17	139.45
T_{13}(P_2 +D_3)	94.68	66.28	160.57	160.57	112.40	142.86
T_{14}(P_2 +D_4)	103.11	72.17	176.16	176.16	123.32	159.69
T_{15}(P_2 +D_5)	77.61	54.32	147.13	147.13	102.99	133.69
T_{16}(P_3 +D_1)	86.95	78.26	171.18	171.18	154.06	185.36
T_{17}(P_3 +D_2)	86.44	77.80	170.43	170.43	153.38	182.01
T_{18}(P_3 +D_3)	96.74	87.07	180.35	180.35	162.31	195.44
T_{19}(P_3 +D_4)	107.73	96.95	195.08	195.08	175.57	212.25
T_{20}(P_3 +D_5)	79.75	71.78	169.65	169.65	152.68	185.84
F-Test			**S**			**S**
S.Ed. (±)			**1.71**			**1.26**
C.D. at 0.5%			**3.48**			**3.26**

Table 2: Effect of different levels of plant density and pruning intensity on vegetative growth of newly planted Guava (*Psidium guajava* L.) cv. Allahabad Surkha during winter and rainy season under open based environment condition.

	Rainy Season			Winter Season		
	Initial number of leaves per plant	**number of leaves per plant after pruning**	**Increase number of leaves per plant at 120 DAT**	**Initial number of leaves per plant**	**number of leaves per plant after pruning**	**Increase number of leaves per plant at 120 DAT**
Pruning intensity: P_0: 00.0% , P_1:50.0%, P_2:30.0% and P_3: 10.0%						
P_0:0.00	24.34	24.34	85.51	85.51	85.51	155.51
P_1: 50(%)	43.94	21.97	96.06	96.06	48.03	143.44
P_2: 30(%)	43.60	30.52	107.36	107.36	75.16	177.12
P_3: 10(%)	44.56	40.10	113.49	113.49	102.14	208.82
F-Test	**-**	**-**	**S**	**-**	**-**	**S**
S.Ed. (±)	**-**	**-**	**0.735**	**-**	**-**	**0.650**
S.Em	**-**	**-**	**0.520**	**-**	**-**	**0.460**
C.D. at 0.5%	**-**	**-**	**1.494**	**-**	**-**	**1.321**
Plant Density D_1: 2.0 m × 1.0 m, D_2: 2.0 m × 2.0 m, D_3: 2.0 m × 3.0 m, D_4: 2.0 m × 4.0 m and D_5: 6.0 m × 6.0 m						
D_1	37.41	28.55	98.61	98.61	76.57	163.67
D_2	37.68	28.31	99.23	99.23	77.14	167.81
D_3	40.88	30.58	102.84	102.84	79.44	169.86
D_4	44.36	32.87	103.89	103.89	79.95	182.74
D_5	35.21	25.86	98.47	98.47	75.46	172.03
F-Test	**-**	**-**	**S**	**-**	**-**	**S**
S.Ed. (±)	**-**	**-**	**0.822**	**-**	**-**	**0.727**
S.Em	**-**	**-**	**0.581**	**-**	**-**	**0.514**
C.D. at 0.5%	**-**	**-**	**1.670**	**-**	**-**	**1.477**
Interaction: Pruning intensity × Plant Density						
T_1 (P_0+D_1)	28.17	28.17	86.64	86.64	86.64	157.38
T_2(P_{0+} D_2)	27.28	27.28	91.24	91.24	91.24	162.00
T_3(P_0+D_3)	24.53	24.53	86.53	86.53	86.53	156.61
T_4(P_0+D_4)	22.37	22.37	82.97	82.97	82.97	148.78
T_5(P_0+D_5)	19.35	19.35	80.15	80.15	80.15	152.78
T_6 (P_1+D_1)	38.70	19.37	91.34	91.34	45.67	127.86
T_7(P_{1+} D_2)	43.07	21.54	91.86	91.86	45.93	137.76
T_8(P_1+D_3)	45.25	22.62	99.47	99.47	49.74	143.28
T_9(P_1+D_4)	50.61	25.31	99.05	99.05	49.52	158.59
T_{10}(P_1+D_5)	42.07	21.03	98.58	98.58	49.29	149.70
T_{11}(P_2+D_1)	39.14	27.40	104.24	104.24	72.97	168.56
T_{12}(P_2+D_2)	39.66	27.76	105.27	105.27	73.69	171.83
T_{13}(P_2+D_3)	45.88	32.12	106.69	106.69	74.68	169.48
T_{14}(P_2+D_4)	51.11	35.77	114.41	114.41	80.09	196.27
T_{15}(P_2+D_5)	42.20	29.54	106.21	106.21	74.35	179.48
T_{16}(P_3+D_1)	43.64	39.27	112.22	112.22	101.00	200.89
T_{17}(P_3+D_2)	40.72	36.65	108.54	108.54	97.68	199.65
T_{18}(P_3+D_3)	47.84	43.05	118.66	118.66	106.80	210.05
T_{19}(P_3+D_4)	53.36	48.03	119.11	119.11	107.20	227.32
T_{20}(P_3+D_5)	37.22	33.50	108.93	108.93	98.03	206.17
F-Test			**S**			**S**
S.Ed. (+)			**1.64**			**1.45**
C.D. at 0.5%			**3.34**			**2.95**

Table 3: Effect of different levels of plant density and pruning intensity on vegetative growth of newly planted Guava (*Psidium guajava* L.) cv. Allahabad Surkha during winter and rainy season under open based environment condition.

	Rainy Season			Winter Season		
	Initial No. of branches per plant	**No. of branches per plant after pruning**	**Increase No. of branches per plant**	**Initial No. of branches per plant**	**No. of branches per plant after pruning**	**Increase No. of branches per plant**
Pruning intensity: P_0: 00.0% , P_1:50.0%, P_2:30.0% and P_3: 10.0%						
P_0:0.00	1.57	1.57	6.72	6.72	6.72	14.73
P_1: 50(%)	2.64	1.82	13.66	13.65	9.05	25.09
P_2: 30(%)	2.71	1.87	13.85	13.85	8.53	25.43
P_3: 10(%)	2.70	1.83	14.04	14.04	8.81	26.69
F-Test	**-**	**-**	**S**	**-**	**-**	**S**
S.Ed. (±)	**-**	**-**	**0.173**	**-**	**-**	**0.420**
S.Em	**-**	**-**	**0.122**	**-**	**-**	**0.297**
C.D. at 0.5%	**-**	**-**	**0.352**	**-**	**-**	**0.853**
Plant Density D_1: 2.0 m × 1.0 m, D_2: 2.0 m × 2.0 m, D_3: 2.0 m × 3.0 m, D_4: 2.0 m × 4.0 m and D_5: 6.0 m × 6.0 m						
D_1	2.24	1.67	11.69	11.69	7.67	23.07
D_2	2.22	1.69	11.86	11.86	7.75	23.09
D_3	2.65	1.96	12.46	12.46	8.78	23.09
D_4	2.91	2.14	12.87	12.87	10.01	24.51
D_5	2.01	1.41	11.47	11.46	7.18	21.18
F-Test	**-**	**-**	**S**	**-**	**-**	**S**
S.Ed. (±)	**-**	**-**	**0.193**	**-**	**-**	**0.469**
S.Em	**-**	**-**	**0.137**	**-**	**-**	**0.332**
C.D. at 0.5%	**-**	**-**	**0.393**	**-**	**-**	**0.953**
Interaction : Pruning intensity × Planting density						
T_1 (P_0 + D_1)	1.91	1.91	6.99	6.99	6.99	18.75
T_2(P_0 + D_2)	1.79	1.79	6.95	6.95	6.95	16.41
T_3(P_0 +D_3)	1.62	1.62	6.98	6.98	6.98	14.97
T_4(P_0 + D_4)	1.45	1.45	6.52	6.52	6.52	13.09
T_5(P_0 + D_5)	1.06	1.06	6.17	6.17	6.17	10.45
T_6 (P_1 + D_1)	2.40	1.75	12.34	12.34	8.90	23.71
T_7(P_1+D_2)	2.33	1.64	14.07	14.07	9.29	26.54
T_8(P_1 +D_3)	2.89	1.97	14.11	14.11	9.44	24.63
T_9(P_1 + D_4)	3.17	2.21	14.84	14.84	9.86	26.84
T_{10}(P_1 + D_5)	2.41	1.52	12.95	12.91	7.78	23.73
T_{11}(P_2 + D_1)	2.34	1.43	13.13	13.13	7.39	24.06
T_{12}(P_2 + D_2)	2.42	1.85	13.29	13.29	7.43	23.67
T_{13}(P_2 + D_3)	3.02	2.08	14.59	14.59	9.30	26.10
T_{14}(P_2 + D_4)	3.39	2.37	14.98	14.98	11.11	28.94
T_{15}(P_2 + D_5)	2.40	1.62	13.28	13.28	7.40	24.38
T_{16}(P_3 + D_1)	2.30	1.57	14.29	14.29	7.40	25.75
T_{17}(P_3 + D_2)	2.34	1.47	13.14	13.14	7.33	25.72
T_{18}(P_3 + D_3)	3.08	2.16	14.15	14.15	9.41	26.66
T_{19}(P_3 + D_4)	3.64	2.51	15.12	15.12	12.56	29.17
T_{20}(P_3 + D_5)	2.15	1.44	13.48	13.48	7.37	26.16
F-Test			**S**			**S**
S.Ed. (+)			**0.38**			**0.93**
C.D. at 0.5%			**0.78**			**1.90**

Table 4: Effect of different levels of plant density and pruning intensity on vegetative growth of newly planted Guava (*Psidium guajava* L.) cv. Allahabad Surkha during winter and rainy season under open based environment condition.

	Rainy Season			Winter Season		
	Initial plant spread (cm) (East to west)	**Plant spread (cm) (East to west) after pruning**	**Increase plant spread (cm) (East to west)**	**Initial plant spread (cm) (East to west)**	**Plant spread (cm) (East to west) after pruning**	**Increase plant spread (cm) (East to west)**
Pruning intensity: P_0: 00.0% , P_1:50.0%, P_2:30.0% and P_3: 10.0%						
P_0:0.00	20.67	20.67	44.22	44.22	44.22	59.53
P_1: 50(%)	18.47	8.57	51.79	51.79	25.90	58.66
P_2: 30(%)	19.35	10.83	61.68	61.68	43.18	77.08
P_3: 10(%)	19.82	16.99	71.50	71.50	64.35	100.12
F-Test	**-**	**-**	**S**	**-**	**-**	**S**
S.Ed. (+)	**-**	**-**	**0.637**	**-**	**-**	**0.519**
S.Em	**-**	**-**	**0.450**	**-**	**-**	**0.367**
C.D. at 0.5%	**-**	**-**	**1.294**	**-**	**-**	**1.054**
Plant Density D_1: 2.0 m × 1.0 m, D_2: 2.0 m × 2.0 m, D_3: 2.0 m × 3.0 m, D_4: 2.0 m × 4.0 m and D_5: 6.0 m × 6.0 m						
D_1	15.36	10.85	46.98	46.98	36.36	64.18
D_2	18.76	13.57	48.88	48.88	37.85	66.58
D_3	20.46	14.61	60.70	60.70	47.00	76.62
D_4	18.95	14.49	63.24	63.24	49.12	79.19
D_5	24.37	17.81	66.70	66.70	51.74	82.66
F-Test	**-**	**-**	**S**	**-**	**-**	**S**
S.Ed. (+)	**-**	**-**	**0.712**	**-**	**-**	**0.580**
S.Em	**-**	**-**	**0.503**	**-**	**-**	**0.410**
C.D. at 0.5%	**-**	**-**	**1.446**	**-**	**-**	**1.178**
Interaction : Pruning intensity × Planting density						
T_1 (P_0 + D_1)	13.33	13.33	35.07	35.07	35.07	47.59
T_2(P_0+D_2)	21.11	21.11	36.84	36.84	36.84	50.36
T_3(P_0 + D_3)	22.40	22.40	47.17	47.17	47.17	63.72
T_4(P_0 + D_4)	23.06	23.06	49.86	49.86	49.86	65.38
T_5(P_0 + D_5)	23.47	23.47	52.17	52.17	52.17	70.58
T_6 (P_1 + D_1)	15.83	7.57	41.66	41.66	20.83	52.98
T_7(P_1+D_2)	15.83	7.94	44.43	44.43	22.21	54.84
T_8(P_1 + D_3)	19.52	7.56	55.76	55.76	27.88	61.13
T_9(P_1 + D_4)	17.22	8.67	56.51	56.51	28.25	61.39
T_{10}(P_1 + D_5)	23.97	11.10	60.61	60.61	30.31	62.94
T_{11}(P_2 + D_1)	15.44	8.61	52.71	52.71	36.89	69.00
T_{12}(P_2 + D_2)	17.37	7.41	52.44	52.44	36.71	70.34
T_{13}(P_2 + D_3)	19.53	11.36	64.69	64.69	45.29	77.43
T_{14}(P_2 + D_4)	19.45	11.83	67.85	67.85	47.50	82.62
T_{15}(P_2 + D_5)	24.96	14.96	70.72	70.72	49.50	86.02
T_{16}(P_3 + D_1)	16.83	13.89	58.47	58.47	52.63	87.15
T_{17}(P_3 + D_2)	20.72	17.80	61.82	61.82	55.64	90.79
T_{18}(P_3 + D_3)	20.40	17.11	75.19	75.19	67.67	104.19
T_{19}(P_3 + D_4)	16.06	14.41	78.74	78.74	70.86	107.38
T_{20}(P_3 + D_5)	25.08	21.72	83.28	83.28	74.96	111.10
F-Test			**S**			**S**
S.Ed. (+)			**1.42**			**1.16**
C.D. at 0.5%			**2.89**			**2.35**

Table 5: Effect of different levels of plant density and pruning intensity on vegetative growth of newly planted Guava (*Psidium guajava* L.) cv. Allahabad Surkha during winter and rainy season under open based environment condition.

	Rainy Season			Winter Season		
	Initial plant spread (cm) (North to South)	**Plant spread (cm) (North to South) after pruning**	**Increase Plant spread (cm) (North to South)**	**Initial plant spread (cm) (North to South)**	**Plant spread (cm) (North to South) after pruning**	**Increase Plant spread (cm) (North to South)**
Pruning intensity: P_0: 00.0% , P_1:50.0%, P_2:30.0% and P_3: 10.0%						
P_0:0.00	23.08	23.08	46.63	46.63	46.63	61.94
P_1: 50(%)	21.14	11.24	54.46	54.46	28.56	61.32
P_2: 30(%)	21.71	13.20	64.05	64.05	45.54	79.45
P_3: 10(%)	22.28	19.45	73.96	73.96	66.81	102.58
F-Test	**-**	**-**	**S**	**-**	**-**	**S**
S.Ed. (+)	**-**	**-**	**0.637**	**-**	**-**	**0.483**
S.Em	**-**	**-**	**0.450**	**-**	**-**	**0.341**
C.D. at 0.5%	**-**	**-**	**1.294**	**-**	**-**	**0.981**
Plant Density D_1: 2.0 m × 1.0 m, D_2: 2.0 m × 2.0 m, D_3: 2.0 m × 3.0 m, D_4: 2.0 m × 4.0 m and D_5: 6.0 m × 6.0 m						
D_1	17.83	13.32	49.45	49.45	38.82	66.65
D_2	21.28	16.08	51.40	51.40	40.37	69.10
D_3	22.88	17.03	63.12	63.12	49.42	79.04
D_4	21.40	16.95	65.69	65.69	51.57	81.65
D_5	26.89	20.34	69.22	69.22	54.26	85.18
F-Test	**-**	**-**	**S**	**-**	**-**	**S**
S.Ed. (+)	**-**	**-**	**0.712**	**-**	**-**	**0.540**
S.Em	**-**	**-**	**0.503**	**-**	**-**	**0.832**
C.D. at 0.5%	**-**	**-**	**1.446**	**-**	**-**	**1.097**
Interaction : Pruning intensity × Planting density						
T_1 (P_0 + D_1)	15.79	15.79	37.53	37.53	37.53	50.05
T_2(P_0+ D_2)	23.73	23.73	39.46	39.46	39.46	52.98
T_3(P_0 + D_3)	24.54	24.54	49.31	49.31	49.31	65.86
T_4(P_0 + D_4)	25.28	25.28	52.08	52.08	52.08	67.60
T_5(P_0 + D_5)	26.08	26.08	54.78	54.78	54.78	73.19
T_6 (P_1 + D_1)	18.81	10.55	44.64	44.64	23.81	55.96
T_7(P_1+D_2)	18.28	10.39	46.88	46.88	24.66	57.29
T_8(P_1 + D_3)	22.44	10.48	58.68	58.68	30.80	64.05
T_9(P_1 + D_4)	19.69	11.14	58.98	58.98	30.72	63.86
T_{10}(P_1 + D_5)	26.49	13.62	63.13	63.13	32.83	65.46
T_{11}(P_2 + D_1)	17.76	10.93	55.03	55.03	39.21	71.32
T_{12}(P_2 + D_2)	19.74	9.78	54.81	54.81	39.08	72.71
T_{13}(P_2 + D_3)	21.68	13.51	66.84	66.84	47.44	79.58
T_{14}(P_2 + D_4)	21.91	14.29	70.31	70.31	49.96	85.08
T_{15}(P_2 + D_5)	27.48	17.48	73.24	73.24	52.02	88.54
T_{16}(P_3 + D_1)	18.94	16.00	60.58	60.58	54.74	89.26
T_{17}(P_3 + D_2)	23.35	20.43	64.45	64.45	58.27	93.42
T_{18}(P_3 + D_3)	22.87	19.58	77.66	77.66	70.14	106.66
T_{19}(P_3 + D_4)	18.72	17.07	81.40	81.40	73.52	110.04
T_{20}(P_3 + D_5)	27.52	24.16	85.72	85.72	77.40	113.54
F-Test			**S**			**S**
S.Ed. (+)			**1.42**			**1.08**
C.D. at 0.5%			**2.89**			**2.19**

Table 6: Effect of different levels of plant density and pruning intensity on vegetative growth of newly planted Guava (*Psidium guajava* L.) cv. Allahabad Surkha during winter and rainy season under open based environment condition.

	Days to 1st emergence of new shoots per plant (Days)		Stem girth (cm)		Stem length in (cm)		Leaf area (cm^2)		LAI (Index %)	
	Rainy	Winter	Rainy	Winter	Rainy	Winter	Rainy	Winter	Rainy	Winter
Pruning intensity: P_0: 00.0% , P_1:50.0%, P_2:30.0% and P_3: 10.0%										
P_0:0.00	43.26	46.12	2.08	4.46	20.26	25.07	79.52	72.40	3.32	4.62
P_1: 50(%)	34.42	37.29	2.41	5.66	25.45	30.29	84.01	72.86	3.78	5.28
P_2: 30(%)	33.70	36.10	2.66	5.78	26.01	31.10	84.47	78.52	3.70	4.94
P_3: 10(%)	32.99	35.18	2.62	5.86	29.47	34.62	83.97	79.44	3.65	4.87
F-Test	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**NS**	**S**	**S**
S.Ed. (±)	**0.389**	**0.220**	**0.034**	**0.066**	**0.308**	**0.313**	**1.452**	**3.689**	**0.099**	**0.113**
S.Em	**0.275**	**0.156**	**0.024**	**0.047**	**0.218**	**0.221**	**1.027**	**2.608**	**0.070**	**0.080**
C.D. at 0.5%	**0.791**	**0.447**	**0.069**	**0.134**	**0.626**	**0.637**	**2.950**	**-**	**0.201**	**0.229**
Plant Density D_1: 2.0 m × 1.0 m, D_2: 2.0 m × 2.0 m, D_3: 2.0 m × 3.0 m, D_4: 2.0 m × 4.0 m and D_5: 6.0 m × 6.0 m										
D_1	38.55	40.03	2.30	5.30	22.55	27.05	78.39	72.15	2.32	3.62
D_2	38.09	40.64	2.34	5.23	23.13	28.03	79.65	67.56	2.94	4.19
D_3	33.99	37.71	2.59	5.64	28.33	33.66	86.38	80.90	3.13	4.53
D_4	30.51	33.53	2.69	6.03	28.41	33.47	90.11	85.28	4.23	5.49
D_5	39.34	41.46	2.30	5.01	24.08	29.16	80.45	73.14	5.44	6.81
F-Test	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**	**S**
S.Ed. (±)	**0.435**	**0.246**	**0.038**	**0.074**	**0.344**	**0.350**	**1.623**	**3.689**	**0.111**	**0.126**
S.Em	**0.308**	**0.174**	**0.027**	**0.052**	**0.244**	**0.248**	**1.148**	**2.608**	**0.078**	**0.089**
C.D. at 0.5%	**0.885**	**0.500**	**0.077**	**0.149**	**0.700**	**0.712**	**3.299**	**7.496**	**0.225**	**0.257**
Interaction : Pruning intensity × Planting density										
T_1 (P_0 + D_1)	40.91	42.94	2.13	4.70	19.57	23.82	76.79	72.02	2.27	3.49
T_2(P_0+ D_2)	41.32	44.44	2.17	4.59	20.24	24.83	78.33	70.68	2.90	4.12
T_3(P_0 + D_3)	42.94	46.06	2.00	4.40	22.97	27.62	81.50	73.95	3.10	4.43
T_4(P_0 + D_4)	44.60	48.14	2.03	4.49	20.25	25.30	81.05	74.05	3.20	4.44
T_5(P_0 + D_5)	46.54	49.04	2.08	4.13	18.28	23.80	79.91	71.32	5.11	6.63
T_6 (P_1 + D_1)	38.96	41.52	2.06	5.44	22.48	26.36	80.17	69.93	2.34	3.78
T_7(P_1 + D_2)	37.68	39.47	2.09	5.46	21.21	25.15	79.89	51.80	3.31	4.75
T_8(P_1 + D_3)	33.01	36.83	2.70	5.90	31.18	37.33	88.37	81.68	3.43	5.25
T_9(P_1 + D_4)	27.13	30.73	2.79	6.31	31.16	35.91	91.45	86.15	4.55	5.91
T_{10}(P_1 + D_5)	35.33	37.91	2.41	5.20	21.20	26.69	80.19	74.72	5.27	6.71
T_{11}(P_2 + D_1)	37.40	37.01	2.49	5.40	20.46	25.06	79.48	73.10	2.31	3.62
T_{12}(P_2 + D_2)	36.29	39.26	2.56	5.40	22.16	27.10	81.77	74.40	2.68	3.88
T_{13}(P_2 + D_3)	30.86	34.94	2.82	6.08	29.14	34.47	86.94	83.59	3.48	4.72
T_{14}(P_2 + D_4)	25.91	28.80	2.85	6.52	30.97	37.05	92.41	89.19	4.38	5.61
T_{15}(P_2 + D_5)	38.06	40.50	2.57	5.52	27.33	31.83	81.73	72.31	5.65	6.86
T_{16}(P_3 + D_1)	36.92	38.66	2.52	5.66	27.69	32.95	77.10	73.55	2.37	3.57
T_{17}(P_3 + D_2)	37.06	39.39	2.53	5.48	28.90	35.03	78.60	73.37	2.85	3.99
T_{18}(P_3 + D_3)	29.14	33.01	2.84	6.17	30.02	35.23	88.70	84.38	2.51	3.73
T_{19}(P_3 + D_4)	24.41	26.44	3.10	6.81	31.24	35.60	95.51	91.73	4.80	6.01
T_{20}(P_3 + D_5)	37.42	38.38	2.12	5.20	29.52	34.30	79.96	74.19	5.72	7.05
F-Test	**S**	**S**	**S**	**S**	**S**	**S**	**NS**	**NS**	**S**	**S**
S.Ed. (+)	**0.87**	**0.49**	**0.07**	**0.014**	**0.68**	**0.700**	**3.24**	**7.34**	**0.22**	**0.25**
C.D. at 0.5%	**1.76**	**0.99**	**0.15**	**0.09**	**1.40**	**1.42**	**-**	**-**	**0.45**	**0.51**

CONCLUSIONS

It is concluded from the results obtained in research findings that 10 and 30% pruning intensity and planting density *i.e.* D_5 6.0 m × 6.0 m and D_4 2.0 m × 4.0 m was found to be most effective to improve growth parameters like plant height (cm), number of leaves per plant, no. of branches per plant, plant spread (cm) (E-W and N-S), days to 1st emergence of new shoots per plant (in days), stem girth (cm), stem length (cm), leaf area (cm^2) and LAI (Index %) of Guava cv. Allahabad Surkha.

FUTURE SCOPE

The experiment entitled "Influence of different levels of plant density and pruning intensity on vegetative growth of newly planted Guava (*Psidium guajava* L.) cv. Allahabad Surkha under open environment condition" was conducted under open environment of Pryagraj Agro Climatic conditions hence, it may be repeated to confirm the findings of the present investigation for considerable effect on vegetative growth parameter and canopy management for the awareness and skilled scientific knowledge about balance between vegetative growth phase and reproductive development phase which may help to maintain canopy, plant structure, light interception, shoot growth, to have less wood and moreover increase in plant nutrient uptake for the efficiency and efficacy in terms of foliage development and more number of fruits on plant.

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Conflict of Interest. None.

REFERENCES

Basu, J., Das, B., Sarkar, S., Mandal, K. K., Banik, B. C., Kundu, S., Hasan, M. A., Jha, S. and Ray, S. K. (2007). Studies on the response of pruning for rejuvenation of old guava orchard. *Acta. Hortic*, *735,* 303-309.

Araujo, F. J., Urdaneta, T., Salazar, N. and Simancas, R. (1999). Effect of planting density on guava (*Psidium guajava* L.) yield in the Maracaibo Plain, Venezuela. *Revista dela Faculfad de Ayronomia, Zulia, 16*(1), 13-16.

Bhagawati, R., Bhagawati, K., Choudhary, V. K., Rajkhowa, D. J. and Sharma, R. (2015). Effect of pruning intensities on the performance of fruit plants under midhill condition of Eastern Himalayas: Case study on guava. *Int. Let. Nat. Sci., 46,* 46-51.

Choudhary, S. M., Musmade, A. M. and Kulkarni, S. S. (2022). Impact of pruning time on shoot sprouting and yield attributes of guava (*Psidium guajava* L.) Genotypes. *Biological Forum – An International Journal, 14*(1), 965-971.

Dhaliwal, G. S., Rattanpal, H. S. and Gill, H. S. (2000). Effect of time and severity of pruning on cropping and physico-chemical properties of 'Sardar' guava Haryana. *Journal of Horticultural Science, 29,* 20– 27.

Kohli, K., Kumar, R., Kumar, A. and Dubey, M. C. (2017). Effect of pruning height and planting distance on growth and yield of guava (*Psidium guajava* L.) cv. Pant Prabhat. *Bioscan, 12*(1), 395-398.

Kumar, Y. and Rattanpal, H. S. (2010). Effect of pruning in guava planted at different spacing under Punjab condition. *Indian J. Hortic. Sci., 67*, 115- 119.

Lal, S., Tiwari, J. P., Awasthi, P. and Mahajan, A. R. (2007). Studies on planting systems in guava (*Psidium guajava* L.) cv. Sardar. *Acta Horticulture*, *735,* 263-266.

Mahesh, R. K., Jholgiker, P., Mamatha, N. P., Ravi, P., Shivanand, M. R. and Kallappa, S. N. (2016). Effect of time and level of pruning on growth and yield of guava cv. Sardar under high density planting. *Res. Environ. Life Sci.*, *9*(7), 849-853.

Marini, R. (2014). Physiology of pruning fruit trees. *Virginia cooperative Extension* Publication, 422-025: 1-8.

Mishra, D. S., & Goswami, A. K. (2016). High density planting in fruit crops. *HortFlora Research Spectrum*, *5*(3), 261-264.

Pal, M. and Lal, S. (2015). Effect of different high density planting on growth and yield of guava cv. Pant Prabhat. *International Journal of Basic and Applied Agricultural Research, 13*(3), 420-424.

Pilania, S., Shukla, A. K., Mahawer, L. N., Sharma, R. and Bairwa, H. L. (2010). Standardization of pruning intensity and integrated nutrient management in meadow orcharding of guava (*Psidium guajava* L.). *Indian Journal of Agricultural Sciences, 80*(8), 673-678.

Prakash, S., Kumar, V., Saroj, P. L. and Sirohi, S. C. (2012). Response of yield and quality of winter guava to severity of summer pruning. *Indian J Hort, 69*, 173-76.

Pratibha, L. S. and Goswami, A. K. (2013). Effect of pruning and planting systems on growth, flowering, fruiting and yield of guava (*Psidium guajava* L.) cv. Sardar. *Indian Journal of Horticulture*, *70*(40), 496-500.

Reddy, N. N., Gangopadhyay, K. K., Rai, M. and Kumar, R. (1999). Evaluation of guava cultivars under rainfed sub-humid region of *Chhotanagpur plateau*. *Indian J. Horticult., 56,* 135-140.

Sah, H., Lal, S. and Pratibha (2015). Effect of shoot pruning on growth, flowering and yield of meadow orchard of guava cv Pant Prabhat. *International Journal of Basic and Applied Agri. Research, 13*(3), 395- 399.

Singh, G., Gupta, S., Mishra, R. and Singh, A. (2007). Technique for Rapid Multiplication of Guava (*Psidium guajava* L.). *Acta Hortic., 735*, 177-183.

Singh, G., Rajan, S. and Singh, A. K. (2003). Approaches and strategies for precision farming in guava. In: Precision Farming in Horticulture, Singh, H.P., Singh, Gorakh, Samual, J.C. and Pathak, R.K. (eds.), NCPAH, DAC, MoA, PFDC, CISH. pp. 92-113.

Singh, G. and Grover, J. (2020). Influence of nodal pruning on vegetative and reproductive attributes of Sardar guava. *International Journal of Chemical Studies, 8*(4), 921-924.

Singh, G., Singh, A. K. and Rajan, S. (2001). Influence of pruning date on fruit yield of guava (*Psidium guajava* L.) under subtropics. *J. Appl. Hortic, 3*(1), 37.

Steel, R. G. D. and Torrie, J. H. (1960). Principles and procedures of statistics. Principles and procedures of statistics. pp.xvi + 481 pp.

Yadav (1990). Genotypes including psidium species cultivars and hybrids mainly at CISH, Lucknow, IIHR, Bangalore, NDUAT, Faizabad, and HAU, Nisar.

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