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Response of Pruning Intensity, Vermicompost and Nitrogen Application on Growth, Quality and Yield of Peach

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ABSTRACT

The present investigations were conducted in new orchard of Khalsa College, Amritsar. The experimentation was conducted on peach cv. Florida prince. In case of pruning intensity and nitrogen levels peach cv. Florida prince was treated with 30, 40, 50 per cent of pruning intensity with 260g N, 360g N, 130g N + 8.5kg vermicomposting and 175g N + 11.5kg vermicomposting. The results revealed that the treatment P_3N_4 (50% and 175g N + 115kg vermicomposting) proved to be best results with maximum trunk girth, total leaf area, fruit colour, fruit weight, size, pulp: stone ratio, organoleptic ratio, TSS and TSS acid ratio. But the yield become maximum in 30% pruning and 175 g N + 11.5kg vermicomposting.

***Key words*:** Peach, Florida prince, Pruning, Nitrogen, Vermicompost

Peach (*Prunus persica* (L.) Batsch) is one of the major stone fruits grown in temperate zones of the world where it occupies the third position (next to apple and pear). Peach is a species of Prunus native to China. It belongs to the sub family prunoideae of the family Rosaceae. It had its origin in China, from where it came to Persia and Spread to Europe, Korea and Japan. The peach is adopted to temperate and sub-tropical zones and is commercially grown between 30º and 40º North and South of the equator [1] though it is now grown almost all over the world extending from 10º to 49º North and South latitudes [2]. In India, peach is grown in temperate regions of Jammu and Kashmir, Himachal Pradesh, Uttarakhand. It is also grown on small scale in Nilgiri hills of Tamil Nadu. The low chilling peaches are also successful grown in Indian subtropics includes Uttar Pradesh, Haryana, Punjab, etc. Its low chilling cultivars evolved in Florida and California states of USA have been introduced in sub-tropical area of Punjab, where these have exhibited excellent performance. Presently, varieties like Shan-*i*-Punjab, Partap, Earli-Grande, Flordasun, Florida. Prince are grown commercially in the Punjab. Under Punjab conditions, the fruit of these cultivars matures from the last week of April to first week of May, hence the grower gets high market prices at this time due to scarcity of other fruits.

Peach is a very delicious juicy fruit with high nutritive value being rich in protein, sugars, minerals and vitamins. The proteins present in the fruit comprises of all essential amino acids. The tree health and productivity of fruits mainly depends upon the various cultural practices, such as fertilization and pruning, influenced yield and certain quality attributes of peaches [3]. Nitrogen is the most important element in peach production to its learning of previous year's growth [4]. Severe pruning to peach trees during their first growing season, similar to that applied in orchards to young trees which allows a few shoots to develop and form the vegetative structure that will support fruit production [5]. Peach plants bear fruits on lateral position of previous season's emerged branches. The branches which once borne fruits will not bear thereafter. The levels of pruning in peach is obtain either through heading back, thinning out alone or in combinations [6].

In Punjab, peach cultivation has gained a fast momentum with the introduction of superior cultivars. The Punjab farmers are not taking up cultivation of fruits due to their long juvenile phase as they receive regular income from field crop cultivation. There is strong need to device the methods for efficient cultivation in such a way that intercrops can be grown very well at least up to first 3-4 years of the main crop. For this hedge row planting system in peach may prove successful alternative. Keeping the above facts in view, the present study is an attempt to find out the pruning intensity and application of Nitrogen fertilizer for the success of peach cultivars. in hedge row system. The training, pruning and thinning in peach are the most important parameters for attaining desirable shape and excellent fruits. These operations are needed to be studied for the hedge row planting.

MATERIALS AND METHODS

The present investigation entitled, response of pruning intensity, vermicompost and nitrogen application on growth,

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quality and yield of peach planted in hedge row system" spaced at 7 × 3.5 m in the cv. Florida prince of 4 year old age at Khalsa College Orchard, Amritsar. Fifty-seven trees of peach cv. Florida prince were selected randomly and the selected plants were provided with uniform cultural practice as per package of practice for cultivation of fruits published by Punjab Agricultural University, Ludhiana. The uniform doses of fertilizers were applied for 4 years old tree i.e., 260, 130, 350, 175g N plus 8.5, 11.5kg vermicomposting with 30% 40% and 50% pruning treatments to 36 plants. Half of nitrogen was given before flowering and the remaining half after the fruit set.

Table 1 Effect of pruning treatments and nitrogen levels on fruit growth, yield and quality

Treatment	Pruning intensity	Nitrogen level
P_1N_1	30%	260g N
P_1N_2	30%	130g N + 8.5 kg vermicomposting
P_1N_3	30%	350g N
P_1N_4	30%	175g N+11 kg vermicomposting
P_2N_1	40%	260g N
P_2N_2	40%	130g N + 8.5kg vermicomposting
P_2N_3	40%	350g N
P_2N_4	40%	175g N +11.5kg vermicomposting
P_3N_1	50%	260g N
P_3N_2	50%	130g N + 8.5kg vermicomposting
P_3N_3	50%	350g N
P_3N_4	50%	175g N + 11.5 kg vermicomposting

Layout plan

Number of treatments	:	12
Number of replications	:	3
Number of trees / treatment	:	1
Total number of trees	:	12 × 3 × 1 =36
Statistical design	:	RBD

Observations recorded

Tree vigour

Tree height (m)

Height of the peach tree was measured with the help of calibrated pole from ground level to the height point of the tree and was expressed in meters.

Tree spread (m)

The distance between points to which the branches of a tree had grown in North-South and East-West directions was measured with the help of a metric tape keeping in view tree trunk as the central point and was expressed in meters.

Trunk girth

Trunk girth or circumference was measured at breast height, or about 1.3-1.5 meters from the ground.

Total leaf area (cm^2)

Leaf area was calculated by the help of leaf area photometer and expressed in sq. cms.

Physico-chemical parameters of fruits

The Physico-chemical parameters of fruits were determined as per the standard procedures AOAC [7].

Fruit count

Fruits are count at the time of fruit setting and after fruit drop.

RESULTS AND DISCUSSION

Investigations entitled, Response of Pruning Intensity, Vermicompost and Nitrogen Application on Growth, Quality and Yield of Peach" are presented under followed headings:

Tree vigour

Tree height

The data pertaining to the effect of pruning treatments and nitrogen levels on tree height in (Table 1). Maximum tree height (6.00) was measured in P_1N_4 followed by P_1N_2 (5.93), and minimum tree height was recorded (4.80) in P_3N_1 followed by (4.93) P_3N_3, however, the differences are found to be statistically significant. The interaction between the pruning intensities and fertilizers treatments were found to be statistically significant. The fruit trees which were lightly pruned attain maximum tree height followed by P_2 (40%) and P_3 (50%) levels of pruning with nitrogen 17.5 g N + 11.5 kg vermicomposting respectively (Table 1). Severe long dormant pruning registered increased tree height [8]. On the other hand [9] did not observe any significant effect of pruning intensities and nitrogen on the height of trees. The variation in findings may be due to differences in variety, age of trees and climatic conditions of the region.

Tree spread

The data with regard to tree spread as affected by different pruning treatments and nitrogen level are presented in (Table 2). The tree spread was measured in meters keeping in view North-South direction and East-West direction. The data show that great tree spread (5.98m) was recorded in trees under P_1N_4 in North-South direction. It was followed by P_1N_2 (5.89m) of tree spread respectively and the minimum tree spread North-South (4.80m) was recorded in P_3N_1 followed by (4.39 m) in P_3N_3 and the differences are found to be significant statistically. The tree spread in East-West direction (Table 4.1) showed that greatest increased (5.04 m) of the spread was recorded in P_1N_4 followed by (6.00m) in P_1N_2 and minimum tree spread (4.71m) in P_3N_1 followed by (4.81m) in P_3N_3. The differences are found to be statistically significant. The tree volume was also found to be significantly higher in light pruning than in medium and heavy pruning treatments in peach trees [10-11].

Table 2 Effect of pruning treatments and nitrogen levels on tree height and tree spread of peach cv. Florida prince

Treatments	Tree height (m)	Tree spread (m) North-South	Tree spread (m) East-West
P_1N_1	5.77	5.60	5.91
P_1N_2	5.93	5.89	6.00
P_1N_3	5.83	5.73	5.96
P_1N_4	6.00	5.98	6.04
P_2N_1	5.11	4.89	5.46
P_2N_2	5.26	5.00	5.69
P_2N_3	5.18	4.95	5.53
P_2N_4	5.34	5.03	5.90
P_3N_1	4.80	4.24	4.71
P_3N_2	5.05	4.59	4.95
P_3N_3	4.93	4.39	4.81
P_3N_4	5.15	4.82	5.11
CD (5%)	0.024	0.031	0.034

Trunk girth

The effect of pruning treatments and nitrogen levels on trunk girth in (Table 2) from the data it is conclude that higher

trunk girth (20.33 cm) in P_1N_1 followed by (18.80cm) in P_3N_2 and the minimum trunk girth is (9.53cm) in P_1N_1 followed by (10.33cm) in P_1N_1. All these treatments differ significantly from each other. The pruning treatments and nitrogen levels significantly affect the trunk girth (Table 3). The heavily pruned trees produced maximum trunk girth as compared to the trees pruned with light and medium levels. A significant increase in trunk girth of peach by heavy pruning [12]. Same findings are given by [13] reported that increase in trunk girth with N application.

Total leaf area

The data with regard to total leaf area (Table 3) reveal that maximum total leaf area ranges (36.33cm) in P_3N_4 followed by (34.33cm) in P_2N_4 and minimum total leaf area (2.133cm) was recorded in P_1N_1 followed by (23.33cm). The differences are found to the significant statistically. Different levels of pruning and nitrogen significantly influenced leaf area in peach. Maximum leaf areas have been noted in P_3N_4 followed by P_2N_4 i.e., maximum leaf area was found in highest pruned trees. Similar finding on the effect of severity of pruning and nitrogen level on leaf area [14]. He reported that with the increase in pruning intensity and nitrogen level, the leaf area become increased. On the other hand, [15] stated that at the fruit maturation stage leaf area decreased with increasing number of peach per tree with the application of nitrogen.

Table 3 Effect of pruning treatments and nitrogen levels on trunk girth and total leaf area

Treatments	Trunk girth (cm)	Total leaf area (cm^2)
P_1N_1	9.53	21.33
P_1N_2	11.60	27.33
P_1N_3	10.33	23.33
P_1N_4	12.20	31.33
P_2N_1	12.86	32.66
P_2N_2	14.40	28.33
P_2N_3	13.46	25.00
P_2N_4	15.43	34.33
P_3N_1	16.73	24.00
P_3N_2	18.80	28.66
P_3N_3	17.43	27.00
P_3N_4	20.33	36.33
CD (5%)	.25	2.04

Physico-chemical parameters of fruits

Fruit colour

The data on the effect of pruning treatments and nitrogen levels on fruit colour of peach fruit is given in (Table 4). Maximum fruit colours was observed (7.53) in P_3N_4 followed by (7.16) in P_3N_2 and minimum fruit colour was recorded (5.40) in P_1N_1 followed by 5.70. The interactions between the pruning and nitrogen levels were found to be statistically significant. The effect of pruning treatments and nitrogen levels shows significant effect on fruit colour, maximum fruit colour score was recorded in P_3N_4 at 50% of pruning level with 175 g N + 11.5 kg vermicomposting followed by P_3N_2. Severely pruned trees have greater red-coloured fruits [16]. Indicated that high N doses result in producing poorly coloured fruit [17].

Fruit weight

The fruit weight of peach fruits are affected by pruning treatments and nitrogen levels are presented in (Table 4). It is clearly indicated from the data that fruit weight was significantly higher (62.20gm) in P_3N_4 followed by (60.56g) in P_2N_4, both these treatments were found to be at par with each other, significantly lower fruit weight (48.66g) in P_1N_1 followed by (50.06g) in P_2N_1 was recorded. The difference is found to be statistically significant. Different pruning intensities and nitrogen levels were found effective in modifying the weight of peach fruits (Table 4) the heavily pruned trees were able to produce heavy fruits than the medium and lightly pruned trees with different nitrogen levels. Minimum fruit weight was recorded in lightly pruned trees with lower dose of nitrogen application. The average fruit weight and diameter increased with heavy pruning [18]. Fruit weight were significantly increased by pruning in Flordasun peach [19].

Average fruit size

The effect of pruning treatments and nitrogen levels on fruit length of peach showed in (Table 4). Maximum fruit length (5.53cm) was recorded in P_3N_4 followed by (5.47cm) in P_3N_2. Minimum fruit length (4.28cm) was recorded in P_1N_1 followed by (4.42cm) in P_2N_1. Significantly interaction between pruning treatments and nitrogen levels were noted. The data regarding fruit breadth of peach fruit as affected by different pruning treatments and nitrogen levels are presented in (Table 4). From the data it is revealed that significantly higher fruit breadth (5.46cm) was recorded in P_3N_4 followed by (5.24 cm) in P_3N_2 and the minimum fruit breadth was observed (4.33 cm) in P_1N_1 followed by (4.52cm) in P_1N_3. The interaction between pruning treatments and nitrogen levels on fruit breadth are significantly statistically. The effect of pruning treatments and nitrogen levels on fruit size. The heavily pruned trees with nitrogen levels produced peach fruits with maximum length and breadth as compared to the fruits produced by lightly pruned trees with minimum length and breadth. Bigger and heavier fruits from heavily pruned peach than medium and lightly pruned [20]. N fertilization results in an increase of peach fruit size [21]. Increased severity of pruning promotes larger fruits of better quality [22]. The effect of heavy pruning of Partap Peach trees in increased fruit size [23].

Table 4 Effect of pruning treatments and nitrogen levels on fruit colour, fruit weight, and average fruit size

Treatments	Fruit colour	Fruit weight	Fruit length (cm)	Fruit breadth (cm)
P_1N_1	5.40	48.66	4.28	4.33
P_1N_2	5.80	54.50	4.64	4.69
P_1N_3	5.70	51.56	4.48	4.52
P_1N_4	6.00	57.36	4.70	4.94
P_2N_1	6.10	50.06	4.42	4.90
P_2N_2	6.20	55.56	4.94	4.76
P_2N_3	6.10	53.50	4.53	4.71
P_2N_4	6.50	60.56	5.34	5.16
P_3N_1	6.60	51.03	5.15	4.69
P_3N_2	7.16	56.26	5.47	5.24
P_3N_3	6.76	55.10	5.32	5.05
P_3N_4	7.53	62.20	5.53	5.46
CD (5%)	.17	.38	.023	.028

Stone size and stone weight

The data with regard to the stone length are presented in (Table 5). The fruits with maximum stone length (3.83cm) in P_3N_4 followed by (3.80cm) in P_3N_1 and minimum stone length was recorded (3.46cm) in P_1N_1 followed by (3.56cm) in P_1N_2. All these treatments are found to be statistically

significant. The data pertaining the effect of pruning treatments and nitrogen levels on stone breadth in (Table 5). The maximum stone breadth (2.93cm) in P_1N_4 was recorded followed by (2.86cm) in P_3N_2 and the minimum stone breadth (2.56cm) in P_1N_2 was observed followed by (2.6cm) in P_1N_1 and P_2N_1 and the treatments are significantly differ with each other. The different treatments influence the stone weight significantly. The higher stone weight (5.36gm) in (P_3N_4) was achieved with pruning treatment and nitrogen levels followed by (5.24gm) in P_2N_4 and the lowest stone weight (4.53 gm) in P_1N_1 followed by (4.62gm) in P_3N_1. Pruning and nitrogen levels were found effective in modifying the stone length and stone breadth of peach fruits (Table 5). Maximum stone length was recorded in heavily pruned trees with nitrogen application and maximum stone breadth was observed in lightly pruned trees with nitrogen. The stone weight become highest in trees which are treated with heavily pruned with nitrogen application. The results are as in agreement with the findings of that stone weight and size improved significantly by pruning severity as compared to control. The effect of pruning severity on stone weight and size improved significantly in comparison to control [24]. Improvement of stone weight and size increased with severity of pruning [25].

Table 5 Effect of pruning treatments and nitrogen levels on stone size and stone weight

Treatments	Stone length (cm)	Stone breadth (cm)	Stone weight (gm)
P_1N_1	3.46	2.63	4.53
P_1N_2	3.56	2.56	4.92
P_1N_3	3.63	2.66	4.68
P_1N_4	3.80	2.93	5.16
P_2N_1	3.73	2.63	4.58
P_2N_2	3.73	2.70	4.95
P_2N_3	3.66	2.76	4.75
P_2N_4	3.76	2.80	5.24
P_3N_1	3.80	2.63	4.62
P_3N_2	3.66	2.86	4.97
P_3N_3	3.70	2.76	4.88
P_3N_4	3.83	2.73	5.36
CD (5%)	.096	.85	.021

Pulp stone ratio

The pulp stone ratio of peach fruit as affected by different pruning intensities and nitrogen levels are presented in (Table 6). From the date it is revealed that highest pulp: stone ratio was observed (10.58) in P_3N_4 followed by (10.53) in P_2N_4 and lowest pulp: stone ratio was recorded in (9.71) in P_1N_1 followed by (9.89) in P_2N_1. Significant interaction between pruning intensity and nitrogen levels are to be found. By giving a look at data (Table 6) maximum pulp: stone ratio was calculated in fruits from heavily pruned trees with high nitrogen application followed by medium and lightly pruned trees. The pulp: stone ratio increased with pruning intensities [26]. On the other hand, pulp-stone ratio were not affected by pruning levels which can be owned to varietal differences [27].

Organoleptic rating

The study of (Table 6) containing data regarding organoleptic rating reveals that pruning treatments and nitrogen levels significantly influenced organoleptic rating. Maximum organoleptic rating was observed (7.96) in P_3N_4 followed by (7.80) in P_3N_2 and minimum organoleptic rating was recorded (4.70) in P_1N_1 followed by 4.90 in P_1N_3. The differences are found to be significant statistically. The effect of pruning treatments and nitrogen levels on organoleptic rating of peach fruit revealed (Table 6) highest in heavily pruned trees with nitrogen application followed by medium and light pruned trees with different nitrogen levels. Excessive fertilizer application for peach trees significantly diminishes fruit flavour by reducing sweetness [28].

Table 6 Effect of pruning treatments and nitrogen levels on Pulp: stone ratio and Organoleptic rating

Treatments	Pulp: Stone ratio	Organoleptic rating
P_1N_1	9.71	4.70
P_1N_2	10.05	5.30
P_1N_3	9.96	4.90
P_1N_4	10.15	5.73
P_2N_1	9.89	6.23
P_2N_2	10.18	6.96
P_2N_3	10.22	6.60
P_2N_4	10.53	7.30
P_3N_1	10.01	7.46
P_3N_2	10.26	7.80
P_3N_3	10.23	7.46
P_3N_4	10.58	7.96
CD (5%)	0.066	0.13

Total soluble solids

Pruning treatments and nitrogen levels proved beneficial in improving total soluble solids of peach fruits showed in (Table 7). Maximum total soluble solids (13.34%) were recorded in peach trees in P_3N_4 followed by (13.19%) in P_3N_2. The minimum total soluble solids (11.43%) in P_1N_1 were recorded followed by (11.71%) in P_1N_3 and the difference were found to be statistically significant. Total soluble solid contents of peach fruits were enhanced with pruning of maximum intensity with nitrogen application followed by fruits from medium pruned and lightly pruned trees (Table 7). The TSS become higher with the application of 500 g N/tree in peach [29]. The significant increase in TSS in peaches with heavy pruning [30] On the other hand [12] reported non-significant effect of fertilizers on TSS in Flordasun peaches.

Acidity

The data with regard to titratable acidity of peach fruits as affected by pruning treatments and nitrogen levels are presented in (Table 7). The perusal of data showed that high acidity was recorded (0.76%) in P_2N_4 followed by (0.75%) in P_2N_2 and low acidity was recorded (0.69%) in P_1N_2 followed by (0.70%) in P_1N_4 and P_3N_4 and the difference were found to be statistically significant. It has been observed that titratable acidity of peach fruits increased with increasing pruning severity with nitrogen application (Table 7). Effectiveness of nitrogen fertilizer applied favourably increased acidity [31]. Severity of pruning significantly improved acidity [32].

TSS: Acid ratio

The data regarding the TSS, acid ratio of Peach fruits as affected by different pruning levels and nitrogen doses are presented in (Table 7). From the data it is clearly stated TSS: acid ratio was affected significantly by treatments, however higher value of TSS: acid ratio (19.06) in P_3N_4 followed by (18.32) in P_3N_2 and the lowest TSS: acid ratio recorded (15.31) in P_1N_1 followed by 16.11 in P_1N_3. The interaction between dates of pruning and nitrogen levels recorded statistically significant. Effect of pruning treatments and

nitrogen levels on TSS: acid ratio were found highest in heavily pruned trees with nitrogen application followed by medium and light pruning with nitrogen application. No significant effect on TSS: acid ratio of Flordasun peach fruits by severity of pruning [12]. TSS: acid ratio improved whereas, acidity decreased with the severity of pruning in peaches [33].

Yield per tree

The data with regard to yield of peach fruits as affected by pruning treatments and nitrogen levels are presented in (Table 7). The maximum yield (69.80 kg) per tree earned from P_1N_4 followed by (68.26) kg per tree from P_1N_2. The minimum yield (58.20 kg) per tree recorded from P_3N_1 followed by (58.66 kg) per tree in P_3N_3. The highest yield recorded with lighter pruning intensity and the lowest yield recorded with higher primary intensity. The difference were found to be significant statistically. The lightly pruned trees produced maximum yield (Table 7) with nitrogen application followed by medium and high pruning treatments with nitrogen level but the fruit produced by the highly pruned, medium pruned and lightly pruned trees were good quality with respect to size, weight, colours etc. Trees pruned and treated with N gave the highest yield [34]. Significant reduction in yield of Shan-i-Punjab peach with heavy pruning treatment [12]. Chauhan (1996) also found that yield become maximum with light pruning treatment [35]. Yield of Partap Peach trees drastically reduced by heavy pruning [22].

Table 7 Effect of pruning treatments and nitrogen levels on Total Soluble Solids, Acidity and TSS: acid ratio

Treatments	TSS%	Acidity (%)	TSS: acid ratio
P_1N_1	11.43	0.74	15.31
P_1N_2	11.87	0.69	17.21
P_1N_3	11.71	0.73	16.11
P_1N_4	12.32	0.70	17.44
P_2N_1	12.04	0.73	16.49
P_2N_2	12.64	0.75	16.70
P_2N_3	12.23	0.73	16.60
P_2N_4	12.93	0.76	16.87
P_3N_1	12.29	0.73	16.68
P_3N_2	13.19	0.72	18.32
P_3N_3	12.41	0.73	17.05
P_3N_4	13.34	0.70	19.06
CD (5%)	.057	.0050	.101

No. of fruit count

The data presented in (Table 8) revealed that the effect of pruning intensity and nitrogen levels on fruit set. The highest fruits was counted (1491.6) in P_1N_1 followed by (1417.0) in P_1N_3 and the lowest fruits was counted (1103.6) in P_3N_4 followed by (1179.3) in P_3N_2. Highest fruit was counted from the tree treated with lightest pruning and nitrogen application and lowest number of fruits was counted from the tree treated with highest pruning and nitrogen application. The data regarding fruit count after fruit drop as affected by different pruning treatments and nitrogen levels are presented in (Table 8). The maximum fruit count after fruit drop was recorded (1366.00) in P_1N_1 followed by (1302.6) in P_1N_3 and minimum fruit count after fruit drop was recorded (966.0) in P_3N_4 followed by (1060.0) in P_3N_2. The maximum fruit was counted after fruit drop in peach tree treated with lightest pruning with nitrogen dose and minimum fruit was counted after fruit drop which are treated with highest pruning with nitrogen dose. Effect of pruning treatments and nitrogen levels on fruit count at set and after fruit drop (Table 8) observed maximum in lightly pruned trees with nitrogen application followed by medium and heavy pruned trees with nitrogen levels. Number of fruits per tree diminished with high nitrogen application [36]. Number of fruits harvested per tree was not related to number of shoots per tree [37].

Table 8 Effect of pruning treatments and nitrogen levels on yield and fruit count per tree

Treatments	Yield/tree (kg)	Fruit count at fruit set	Fruit count after fruit drop
P_1N_1	65.56	1491.6	1366.0
P_1N_2	68.26	1398.0	1264.0
P_1N_3	66.40	1417.0	1302.6
P_1N_4	69.60	1345.0	1221.0
P_2N_1	59.70	1304.0	1194.0
P_2N_2	60.56	1217.0	1101.3
P_2N_3	60.03	1250.6	1132.3
P_2N_4	61.26	1133.3	1021.0
P_3N_1	58.20	1261.3	1141.0
P_3N_2	59.36	1179.3	1060.0
P_3N_3	58.66	1182.3	1067.3
P_3N_4	59.90	1103.6	966.0
CD (5%)	.21	4.39	4.93

CONCLUSION

In present investigation the peach trees of cv. Florida prince were pruned at experiment 30%, 40% and 50% pruning intensity with different level of nitrogen i.e., 260g N, 130N+8.5kg vermicomposting, 350g N and 175g N +11.5kg vermicomposting. The pruning was done second week of January and Nitrogen was applied in two splits. Half of nitrogen was given before flowering in second week of January and the remaining half after the fruit set in 3rd week of March. The trees treated with pruning 30% and 175g N+115kg vermicomposting (P_1N_4) resulted maximum tree height (6m). The maximum tree spread in North-South and East-West recorded at P_1N_4 (30% pruning and 175g N+11.5kg vermicomposting) followed by medium and heavily pruned trees. The maximum trunk girth was observed in P_3N_4 (50% pruning and 175g N+11.5kg vermicomposting) i.e. (20.33cm) whereas lightly pruned tree recorded minimum trunk girth. Total leaf area was recorded maximum (36.33cm^2) in P_3N_4 (50% pruning and 175g N + 11.5kg vermicomposting) while the minimum total leaf area recorded in P_1N_4 (30% pruning and 260g). The fruit colour recorded (7.53) maximum in P_3N_4 (50% pruning and 175N+11.5kg vermicomposting) while the minimum (5.40) recorded in P_1N_1 (30% pruning and 260g N). The highest fruit weight was observed in P_3P_4 followed by P_2N_4 and lowest fruit weight was observed in P_1N_1 and lowest fruit weight was observed in P_1N_1 followed by P_2N_1. Highest fruit size was recorded in P_3N_4 (50% pruning and 175g N + 11.5kg vermicomposting) and the lowest fruit size recorded in P_1N_4 (30% pruning and 260g N). Fruits treated with P_3N_4 (50% pruning and 175g N+11.5kg vermicomposting) showed maximum stone length (3.83cm) and the minimum stone length (3.46cm) was found in P_1N_1 (30% pruning and 260g N). Stone breadth recorded highest (293) in P_1N_4 (30% pruning and 175g N+11.5kg vermicomposting posting) while the lowest (2.56 cm) recorded in P_1N_2 (30% pruning and 130g N+8.5 kg vermicomposting). The stone weight observed maximum (5.36gm) in P_3N_4 (50% pruning and 175g N+11.5kg vermicomposting) followed by (4.53gm) in P_1N_1 (30% pruning and 260g N). Pulp: stone ratio maximum (10.58) in P_3N_4 (50% pruning and 175g N + 11.5kg

vermicomposting) which was at par with P_1N_1 (30% pruning and 260g N) and the mean minimum (9.71) pulp: stone ratio. The fruits treated with P_3N_4 (50% pruning and 175g N+11.5g vermicomposting) showed maximum organoleptic rating (7.96) followed by P3N2 (50% pruning and 130g N + 8.5kg vermicomposting). Minimum organoleptic rating (4.70) was observed in P_1N_1 (30% pruning and 260g N). The TSS and TSS: acid ratio recorded maximum in P_3N_4 (50% pruning and 175g N + 11.5kg vermicomposting) followed by P_3N_2 (50% pruning and 130g N+8.5kg vermicomposting) while the minimum TSS and TSS: acid ratio recorded in P_1N_1 (30% pruning and 260g N). Titratable acidity in fruits was found maximum (0.76) in P_2N_4 (40% pruning and 175g N+11.5kg vermicomposting) followed by (0.75) in P_2N_2 (40% pruning and 130g N+8.5kg vermicomposting). The minimum average titratable acidity (0.69) was noticed in P_1N_2 (30% pruning and 130g N+8.5kg vermicomposting). The fruit treated with P_1N_4 (30% pruning and 175g N+11.5 kg vermicomposting) showed maximum (69.60kg) yield/tree followed by (68.26kg) in P_1N_2 (30% pruning and 130g N+ 8.5kg vermicomposting). However, the minimum yield (58.20kg) per tree observed in P_3N_1 (50% pruning and 260g N). The maximum fruit count at fruit set was recorded (1491.6) in P_1N_1 (30% pruning and 260g N) followed by (1417) in P_1N_3 (30% pruning and 350g N). The minimum fruit count at fruit set recorded (1103.6) in P_3N_4 (50% pruning and 175g N+11.5kg vermicomposting). While the minimum fruit count after fruit drop recorded (966) in P_3N_4 (50% pruning and 175gN+11.5kg vermicomposting).

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