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Effect of organic and inorganic fertilizers on vegetative growth, and reproductive growth parameters of sapota (*Manilkara achras* Forsberg) Var. Kalipatti

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Abstract
The present investigation was conducted at Department of Horticulture, Vasantrao Naik Marathwada Agriculture University, Parbhani during the year 2009-10. The experiment was laid out in randomized block design with three replication and ten treatments. In this investigation the sapota tree were applied with different organic and inorganic fertilizers and their combination namely T_1 (100% RDF), T_7 (100% FYM), T_3 (100% Vermicompost), T_4 (50% FYM + 50% Vermicompost), T_5 (75%RDF+ 25% FYM), T_6 (50% RDF + 50% FYM), T_7 (25% RDF + 75% FYM), T_8 (75% RDF + 25% Vermicompost), T_9 (50% RDF + 50% Vermicompost) and T_{10} (25% RDF + 75% Vermicompost). The effects of these treatments were noted on vegetative growth, reproductive growth, and yield attributes of sapota. The results of experimentation on confirmed the efficiency of integration of organic and chemical fertilizers for better growth, and yield of sapota. The application of 50% RDF + 50% Vermicompost enhanced the vegetative and reproductive growth as well as yield attributes.

Keywords: Sapota, Kalipatti, FYM, RBD vermicompost

1. Introduction
Sapota (*Manilkara achras*), it is a native of tropical America and probably originated in the southern Mexico (Papenoe, 1974) [8]. It is not known when sapota first introduced to India, but sapota cultivation was taken up for the first time in Maharashtra in 1898 in a village named Gholwad & district Thane (Chadha 1993) [6].

Sapota is a good source of digestible sugar which ranges from 12 to 18 percent. Composition of ripe sapota per 100 g of edible portion is moisture 73.7 g, carbohydrates 21.4 g, protein 0.7 g, fat 1.1 g, calcium 28.0 mg and phosphorus 27.0 mg (Shanmugavelu and Srinivasan, 1973) [9]. Area of this fruit is on ascendancy due to high production per unit area, liking to Indian palate, continuous fruiting throughout the year in humid climate and hardy nature of crop against biotic and abiotic stresses. Sapota has become one of the important fruit in southern and western parts of country due to its wild range of adaptability, low production costs and reasonably high economic returns with very low pest and diseases susceptibility (Singh, 1991) [10]. In 1953, the area under this crop was 800 ha. only but now area increases also in non-coastal area of country. India is leading producer of sapota and area under sapota is estimated to be 156 lakh ha. with a production of 1308 million tonnes (Anonymous, 2009) [1, 2]. In Maharashtra an area of sapota is about 65.4 lakh ha. concentrated in coastal region particularly in Thane district. Production of Maharashtra is about 298.7 million tonnes. There is significant increase in area from 1990, an account of implementation of EGS scheme. However, in Marathwada area under this crop is increasing recently at and very rapid rate it is 0.11 lakh ha with production of 41,072 metric tonnes (Anonymous 2009) [1, 2]. Now the sapota crop is included in the scheme of National Horticulture Mission from 2005. The Kalipatti cultivar is the main choice of the farmers and therefore, 99 per cent area under sapota is under this cultivar. Sapota crop is highly responsive to fertilizers (Durrani *et al*, 1982) [7]. Experiments conducted at the Regional Fruit Research Station, Gujarat Agricultural University, Navsari indicated that sapota crops needs N, P and K nutrients for higher fruits production with better quality (Anon., 1984) [4]. On organic manure for sapota orchardists is 200 kg FYM/tree for getting highest production of fruits and net return (Anon., 2003a). Sapota fruit demand good nutrition and respond well to fertilization.

Among major nutrient, nitrogen is most important element, which influences growth and productivity of sapota.

At present condition it is not possible to completely eliminate the use of chemical fertilizers. For this dose of chemical fertilizer need to be gradually reduced and balanced by increasing the use of optimum quantity of organic manures particularly FYM, sheep manure and poultry manures etc. Organic manures are the soil store house for nitrogen supply to plant. There is very little inorganic nitrogen in soil and much of it is obtained by the conversion of organic forms. Sapota is a major important fruit crop grown in Maharashtra, Gujarat, Karnataka, Tamil Nadu, Andhra Pradesh and Kerla. It gives fruits throughout the year. Use of various organic manures and fertilizers is a good practice to obtain higher yield with good quality fruits.

Organic farming is a production system which favours maximum use of organic material (crop residues, animal excreta, legumes on and off farm organic wastes, bio pesticides etc.) and discourages the use of synthetically produced agro inputs for maintaining soil productivity and fertility and pest management under conditions of sustainable natural resources and healthy environment.

According to Padmashree R.S. Paroda (ICAR) "Today we need an integrated intensive Farming System (IIFS) which provides a pathway to achieving an evergreen revolution in agriculture". The choice of using organic vs conventional farming system depends upon a number of factors including the availability of land, population density and associated demand for food, fibre, feed and fuel and capability of consumers to pay higher price for farm produce and it is more sustainable and does less damage to the environment and for minimum utilization of natural resources. Looking to the above recent aspects this experiment has been carried out with keeping in mind following objectives.

2. Material and Methods

The present was conducted at the Department of Horticulture, Vasantrao Naik Marathwada Agricultural University, Parbhani during the year 2009-10. The experimental trees used were 35 years old grafts of chiku var. Kalipatti on Khirni (*Manilkara hexandra*) root stock spaced at 10x10 metres.

Treatment Details

Treatment details the different treatment combinations of organic and inorganic fertilizer were ten, as given below.

Tr. No	Treatment details
T_1	100% RDF viz., 1000:500:500 NPK (g/tree)
T_2	100% FYM
T_3	100% Vermicompost
T_4	50% FYM + 50% Vermicompost
T_5	75% RDF + 25% FYM
T_6	50% RDF + 50% FYM
T_7	25% RDF + 75% FYM
T_8	75% RDF + 25% Vermicompost
T_9	50% RDF + 50% Vermicompost
T_{10}	25% RDF + 75% Vermicompost

Recommended dose of fertilizers

1. Recommended dose of N, P and K @ 1000:500:500 g/tree.
2. Dose of FYM application calculated on the basis of their nitrogen content. (NPK of FYM - 0.5:0.2:0.5).
3. Dose of Vermicompost application calculated on the basis of their Nitrogen content. (NPK of Vermicompost - 3; 1.0:1.5).

3. Results and Discussion

Various aspect of growth parameters of sapota were studied and observation in respect of days required for sprouting of new shoot, length of shoot, girth of shoot, number of leaves per shoot, leaf area, days to initiation of flowering from application of treatment, number of flowers per shoot, percentage of flowers drop, percentage of fruit set, number of fruits per shoot, percentage of fruits drop, final retention of fruits per shoot, days required for maturity, number of fruits per tree, as affected by various organic and inorganic fertilizers viz. FYM, Vermicompost and chemical fertilizers these combinations were studied and the data on various parameters were recorded during the investigation had been subjected to statistical analysis and the results are presented in this chapter.

3.1 Vegetative growth parameters

3.1.1 Days required for sprouting of new shoots

The data in respect of average number of days required for sprouting of new shoot in various treatments are presented in Table 1.

Table 1: Effect of organic and inorganic fertilizers on days required for sprouting of new shoots

Tr. No.	Treatment details	Days required for sprouting of new shoots
T_1	100% RDF viz., 1000:500:500 NPK (g/tree)	26.74
T_2	100% FYM	31.25
T_3	100% Vermicompost	30.12
T_4	50% FYM + 50% Vermicompost	30.67
T_5	75% RDF + 25% FYM	28.38
T_6	50% RDF + 50% FYM	25.96
T_7	25% RDF + 75% FYM	29.82
T_8	75% RDF + 25% Vermicompost	27.92
T_9	50% RDF + 50% Vermicompost	24.93
T_{10}	25% RDF + 75% Vermicompost	29.00
	Mean	28.48
	SE±	0.71
	CD at 5%	2.11

The data revealed that there were significant effect of 50% RDF and 50% Vermicompost on sprouting of new shoot. The treatment T_9 (50% RDF + 50% Vermicompost) produced significantly earlier sprouting of new shoot than all other treatments except T_6 and T_1 which were found to be statistically at par with the treatment T_9. The treatment T_9 (50% RDF + 50% Vermicompost) showed earliness in sprouting which took minimum number of days for sprouting of new shoot (24.93days) followed by the treatment T_6-50% RDF + 50% FYM (25.96 days). The treatment T_2 recorded late sprouting of new shoot (31.25 days) except T_4, T_3 and T_7 which were found to be statistically at par with the treatment T_2.

3.1.2 Length of shoot

The data in respect length of shoot were presented in Table 2 revealed that there were significant effects of organic and inorganic fertilizers on length of shoot. The treatment T_9 (50% RDF + 50% Vermicompost) showed significantly more shoot length than treatments T_7, T_3, T4 and T_2. The treatment T_9 was found to be statistically at par with treatments T_6, T_1, T_8, T_5, andT_{10}.The treatments T_9 (50% RDF + 50% Vermicompost) showed more shoot length (12,55 cm) followed by treatments T_6- 50% RDF + 50% FYM (12.52 cm). Significantly less length of shoot was recorded in

treatment T_2- 100% FYM (11.70 cm) and was found to be statistically at par with treatments T_4, T_3 and T_7.

Table 2: Effect of organic and inorganic fertilizers on length of shoot

Tr. No.	Treatment details	Length of shoot (cm)
T_1	100% RDF viz., 1000:500:500 NPK (g/tree)	12.48
T_2	100% FYM	11.70
T_3	100% Vermicompost	11.91
T_4	50% FYM + 50% Vermicompost	11.91
T_5	75% RDF + 25% FYM	12.28
T_6	50% RDF + 50% FYM	12.52
T_7	25% RDF + 75% FYM	12.02
T_8	75% RDF + 25% Vermicompost	12.46
T_9	50% RDF + 50% Vermicompost	12.55
T_{10}	25% RDF + 75% Vermicompost	12.23
	Mean	12.21
	SE+	0.13
	CD at 5%	0.40

3.1.3 Girth of shoot (cm)

The data recorded regarding girth of shoot presented in Table 3 showed that there were significant treatment differences on girth of shoot at all observation.

The treatment T_9 (50% RDF + 50% Vermicompost) recorded significantly more girth of shoot than all other treatment except the treatments T_6, T_1 and T_8 which were found to be statistically at par with treatment T_9.The maximum girth of shoot was recorded in treatment T_9- 50% RDF + 50% Vermicompost (2.04 cm) followed by T_6-50% RDF + 50% FYM (1.94 cm) and T_1 100% RDF (1.87 cm). The minimum girth of -shoot was observed in treatment T_2- 100% FYM (1.49 cm) among all the treatments.

Table 3: Effect of organic and inorganic fertilizers on girth of shoot

Tr. No.	Treatment details	Girth of shoot (cm)
T_1	100% RDF viz., 1000:500:500 NPK (g/tree)	1.87
T_2	100% FYM	1.49
T_3	100% Vermicompost	1.57
T_4	50% FYM + 50% Vermicompost	1.54
T_5	75% RDF + 25% FYM	1.77
T_6	50% RDF + 50% FYM	1.94
T_7	25% RDF + 75% FYM	1.62
T_8	75% RDF + 25% Vermicompost	1.85
T_9	50% RDF + 50% Vermicompost	2.04
T_{10}	25% RDF + 75% Vermicompost	1.65
	Mean	1.73
	SE+	0.075
	CD at 5%	0.225

3.1.4 Number of leaves per shoot

The data in respect number of leaves per shoot are presented in Table 4. The data revealed that there were significant differences between the treatment mean showing that the number of leaves was affected by different treatments.

The combination of 50% RDF and 50% Vermicompost resulted in maximum number of leaves. The treatments T_9 (50% RDF + 50% Vermicompost) was at par with T_6 (50% RDF + 50% FYM) and T_1 (100% RDF) treatments.

Table 4: Effect of organic and inorganic fertilizers on number of leaves per shoot

Tr. No.	Treatment details	Treatments Number of leaves/shoot
T_1	100% RDF viz., 1000:500:500 NPK (g/tree)	25.69
T_2	100% FYM	23.12
T_3	100% Vermicompost	23.88
T_4	50% FYM + 50% Vermicompost	23.56
T_5	75% RDF + 25% FYM	24.78
T_6	50% RDF + 50% FYM	26.32
T_7	25% RDF + 75% FYM	23.97
T_8	75% RDF + 25% Vermicompost	25.07
T_9	50% RDF + 50% Vermicompost	26.93
T_{10}	25% RDF + 75% Vermicompost	24.20
	Mean	24.75
	SE+	0.52
	CD at 5%	1.55

The treatment T_9 (50% RDF + 50% Vermicompost recorded maximum number of leaves per shoot (26.93) followed by T_6- 50% RDF + 50% FYM (26.32). The treatment T_2- 100% FYM recorded significantly minimum number of leaves (23.12) per shoot.

4.1.5 Leaf Area (cm^2)

The data presented in Table 5. showed that effect of different organic and inorganic fertilizers played a significant role in affecting leaf area.

Table 5: Effect of organic and inorganic fertilizers on leaf area

Tr. No.	Treatment details	Treatments Leaf area (cm^2)
T_1	100% RDF viz., 1000:500:500 NPK (g/tree)	19.70
T_2	100% FYM	18.51
T_3	100% Vermicompost	18.58
T_4	50% FYM + 50% Vermicompost	18.52
T_5	75% RDF + 25% FYM	19.52
T_6	50% RDF + 50% FYM	19.82
T_7	25% RDF + 75% FYM	18.74
T_8	75% RDF + 25% Vermicompost	19.63
T_9	50% RDF + 50% Vermicompost	19.82
T_{10}	25% RDF + 75% Vermicompost	18.79
	Mean	19.16
	SE+	0.27
	CD at 5%	0.80

3.2 Reproductive growth (flowering and fruiting)

The effect of organic and inorganic fertilizers on flowering and fruiting characters such as number of days required for first flower initiation, number of flowers per shoot number of fruits per shoot percentage of flower drop, percentage of fruit set, percentage of fruits drop, final retention of fruits per shoot and number of fruits per tree are presented under appropriate heads.

3.2.1 Days to initiation of flowering from application of treatment

The data in respect of average number of days required for appearance of first flower in various treatments are presented in Table 6

Table 6: Effect of organic and inorganic fertilizers on days to initiation of flowering from application of treatment

Tr. No.	Treatment details	Treatments Initiation of flowering (days)
T_1	100% RDF viz., 1000:500:500 NPK (g/tree)	82.77
T_2	100% FYM	87.25
T_3	100% Vermicompost	86.10
T_4	50% FYM + 50% Vermicompost	86.67
T_5	75% RDF + 25% FYM	84.15
T_6	50% RDF + 50% FYM	81.92
T_7	25% RDF + 75% FYM	85.12
T_8	75% RDF + 25% Vermicompost	83.50
T_9	50% RDF + 50% Vermicompost	80.96
T_{10}	25% RDF + 75% Vermicompost	85.00
	Mean	84.34
	SE+	0.84
	CD at 5%	2.51

The data revealed that there were significant effects of 50% RDF + 50% Vermicompost on flowering. The treatment T_9 (50% RDF + 50% Vermicompost) produced significantly earlier initiation of flowering than all other treatments except T_6 and T_1, which were found to be statistically at par with the treatment T_9. The treatment T_8, T_5, T_{10}, and T_7 were statistically similar and at par to each other and significantly superior over the treatment T_3, T_4 and T_2.

The treatment T_9 (50% RDF + 50% Vermicompost) showed earliness in flowering which took minimum number of days for initiation first flower (80.96 days) followed by the treatment T_6-50% RDF + 50% FYM (81.92 days) and T_1 100% RDF (82.77 days). The treatment T_2-100% FYM recorded late initiation of flowering (87.25 days) as compared to other treatments.

3.2.2 Number of flowers per shoot

The data in respect of number of flowers per shoot as affected by different treatment are presented in Table 7.

The treatment T_9 (50% RDF + 50% Vermicompost) produced significant more number of flowers per shoot. It was at par with T_6, T_1, T_8 and T_5. The treatment T_9 produced significantly more number of flowers per shoot than T_{10}, T_7, T_3, T_4 and T_2.

The treatment T_9-50% RDF + 50% Vermicompost recorded more number of flowers per shoot (9.68) followed by treatment T6-50% RDF + 50% FYM (9.60). Least number of flower produced by treatment T_2- 100% FYM (8.86) and treatment T_4, T_3, T_7, and T_{10} which were found at par to each other.

Table 7: Effect of organic and inorganic fertilizers on number of flowers per shoot

Tr. No.	Treatment details	Treatments Number of flowers per shoot
T_1	100% RDF viz., 1000:500:500 NPK (g/tree)	9.58
T_2	100% FYM	8.86
T_3	100% Vermicompost	8.92
T_4	50% FYM + 50% Vermicompost	8.89
T_5	75% RDF + 25% FYM	9.40
T_6	50% RDF + 50% FYM	9.60
T_7	25% RDF + 75% FYM	8.96
T_8	75% RDF + 25% Vermicompost	9.46
T_9	50% RDF + 50% Vermicompost	9.68
T_{10}	25% RDF + 75% Vermicompost	8.99
	Mean	9.23
	SE+	0.16
	CD at 5%	0.49

3.2.3 Flower drop and fruit set

Data on per cent flower drop and fruit set are presented in Table 8.

All the organic and inorganic fertilizers reduced the flower drop and increased the fruit set. The flower drop was significantly reduced by treatment T_9 (50% RDF + 50% Vermicompost) which ultimately increased fruit set and was found significantly superior over T_4, T_3 and T_7 while treatments T_6, T_1, T_8, T_5 and T_{10} were at par with T_9. The treatment (50% RDF + 50% Vermicompost) found 56.72 per cent flower drop and increased the 43.28 Percent fruit set.

Higher percentage of flower drop was found in treatment T_2-100% FYM (63.20 Percent), while T_4, T_3 and T_7 were at par with it.

Table 8: Effect of organic and inorganic fertilizers on percent flower drop and fruit set

Tr. No.	Treatment details	Flower drop (%)	Fruit set (%)
T_1	100% RDF viz., 1000:500:500 NPK (g/tree)	57.83	42.17
T_2	100% FYM	63.20	36.80
T_3	100% Vermicompost	62.30	37.70
T_4	50% FYM + 50% Vermicompost	62.70	37.30
T_5	75% RDF + 25% FYM	59.43	40.57
T_6	50% RDF + 50% FYM	56.87	43.13
T_7	25% RDF + 75% FYM	61.20	38.80
T_8	75% RDF + 25% Vermicompost	57.67	42.33
T_9	50% RDF + 50% Vermicompost	56.72	43.28
T_{10}	25% RDF + 75% Vermicompost	59.30	40.70
	Mean	59.72	40.28
	SE+	1.44	1.44
	CD at 5%	4.27	4.27

3.2.4 Number of fruits per shoot

The data pertaining to the mean number of fruits per shoot influenced by various treatments were presented in Table 9. Clearly indicated that significant treatment differences were existed in number of fruits per shoot amongst various treatments.

Table 9: Effect of organic and inorganic fertilizers on number of fruits per shoot

Tr. No.	Treatment details	Treatments Number of fruits/shoot
T_1	100% RDF viz., 1000:500:500 NPK (g/tree)	4.106
T_2	100% FYM	3.340
T_3	100% Vermicompost	3.440
T_4	50% FYM + 50% Vermicompost	3.395
T_5	75% RDF + 25% FYM	3.880
T_6	50% RDF + 50% FYM	4.213
T_7	25% RDF + 75% FYM	3.556
T_8	75% RDF + 25% Vermicompost	4.069
T_9	50% RDF + 50% Vermicompost	4.233
T_{10}	25% RDF + 75% Vermicompost	3.878
	Mean	3.811
	SE+	0.187
	CD at 5%	0.558

The treatment T_9 (50% RDF + 50% Vermicompost) produced significantly more number of fruits per shoot than treatments T_7, T_3, T_4, and T_2. The treatment T_9 was found to be statistically at par with treatments T_6, T_1, T_8, T_5 andT_{10}. The treatment T_9 (50% RDF + 50% Vermicompost) produced

more number of fruits per shoot (4.233) followed by treatments T_6-50% RDF + 50% FYM (4.213), $T_1$100% RDF (4.106) and T_8-75%RDF+25% Vermicompost (4,069). Significantly less number of fruits per shoot was recorded in treatment T_2-100% FYM (3.340). The treatments T_4, T_3, and T_7 which were found at par to each other.

4.2.5 Fruit drop and fruit retention

It is evident from the data presented in Table 10 that the application of organic and inorganic fertilizers influenced the fruit drop and increases the fruit retention.

Table 10: Effect of organic and inorganic fertilizers on percent fruit drop and fruit retention

Tr. No	Treatment details	Fruit Drop (%)	Fruit Retention (%)
T_1	100% RDF viz., 1000:500:500 NPK (g/tree)	84.09	15.91
T_2	100% FYM	87.10	12.02
T_3	100% Vermicompost	87.03	12.97
T_4	50% FYM + 50% Vermicompost	87.98	12.90
T_5	75% RDF + 25% FYM	84.96	15.04
T_6	50% RDF + 50% FYM	83.03	16.97
T_7	25% RDF + 75% FYM	86.12	13.88
T_8	75% RDF + 25% Vermicompost	84.30	15.70
T_9	50% RDF + 50% Vermicompost	82.83	17.17
T_{10}	25% RDF + 75% Vermicompost	85.15	14.85
	Mean	85.26	14.74
	SE+	0.68	0.68
	CD at 5%	2.03	2.03

The Table l0 Revealed that the treatment T_2 (100% FYM) has highest fruit drop 87.98 percent and ultimately resulted poor fruit retention 12.02 percent. The treatments T_4, T_3 and T_7 were at par with T_2. The treatment T_9 (50% RDF + 50% Vermicompost) was found significantly superior over T_4, T_3, T_7, T_{10} and T_5. The treatment T_6, T_1 and T_8 were at par with T_9.The treatment T_9 (50% RDF + 50% Vermicompost) has recorded significantly reduced fruit drop (82.83 percent) and increased fruit retention (17.17 percent).

3.2.6 Days required for fruit maturity

Data on number of days required for fruit maturity are presented in Table 11. It is evident from the data that application of organic and inorganic fertilizers had significantly influenced on the number of days required for fruit maturity. The treatment T_9 (50% RDF + 50% Vermicompost) was found significantly superior over T_1, T_8, T_5, T_{10}, T_7, T_3, T_4, and T_2 and at par with T_6.

The treatment T_9 (50% RDF + 50% Vermicompost) recorded early maturity of fruits (248.32 days) followed by T_6-50% RDF + 50% FYM (249.08 days). The treatment T_2-100% FYM required (252.26 days) for fruit maturity. Treatments T_4, T_3, T_7 and T_{10} were at par with treatment T_2.

Table 11: Effect of organic and inorganic fertilizers on days required for fruit maturity

Tr. No.	Treatment details	Days required to fruit maturity
T_1	100% RDF viz., 1000:500:500 NPK (g/tree)	249.96
T_2	100% FYM	252.26
T_3	100% Vermicompost	251.66
T_4	50% FYM + 50% Vermicompost	251.89
T_5	75% RDF + 25% FYM	250.64
T_6	50% RDF + 50% FYM	249.08
T_7	25% RDF + 75% FYM	251.00
T_8	75% RDF + 25% Vermicompost	250.14
T_9	50% RDF + 50% Vermicompost	248.32
T_{10}	25% RDF + 75% Vermicompost	250.91
	Mean	250.59
	SE+	0.47
	CD at 5%	1.39

3.2.7 Number of fruits per tree

The data pertaining to the mean number of fruits per tree as influenced by various treatments were presented in Table 12 clearly indicated that significant treatment differences were existed in number of fruits per tree amongst various treatments.

Table 12: Effect of organic and inorganic fertilizers on total number of fruits per tree

Tr. No.	Treatment details	Total number of fruits per tree
T_1	100% RDF viz., 1000:500:500 NPK (g/tree)	2341.70
T_2	100% FYM	1965.70
T_3	100% Vermicompost	2050.00
T_4	50% FYM + 50% Vermicompost	2028.70
T_5	75% RDF + 25% FYM	2196.00
T_6	50% RDF + 50% FYM	2447.00
T_7	25% RDF + 75% FYM	2102.33
T_8	75% RDF + 25% Vermicompost	2250.33
T_9	50% RDF + 50% Vermicompost	2569.66
T_{10}	25% RDF + 75% Vermicompost	2157.70
	Mean	2210.91
	SE+	93.11
	CD at 5%	276.21

The treatment T_9 (50% RDF + 50% Vermicompost) produced significantly more number of fruits per tree than treatments T_8, T_5, T_{10}, T_7, T_3, T_4 and T_2. The treatment T_9 was found to be statistically at par with treatments T_6 and T_1. The treatment T_9 (50% RDF + 50% Vermicompost) produced more number of fruits per tree (2569.66) followed by treatments T_6-50% RDF + 50% FYM and T_1 100% RDF (2341.70). Less number of fruits per tree was recorded in treatment T_2-100% FYM (1965.70) and was at par with T_4, T_3, T_7, T_{10}, and T_5.

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