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Growth, yield and fruit quality of sweet pepper hybrid SH-SP-5 (*Capsicum annuum* L.) as affected by integration of inorganic fertilizers and organic manures (FYM)

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The growth, yield and fruit quality of sweet pepper hybrid SH-SP-5 (*Capsicum annuum* L.) was affected by integration of inorganic fertilizers and organic manures (FYM) which carried out at two locations of Experimental Farm of the Division of Olericulture, SKUAST-K, Shalimar and Regional Research Station, Faculty of Agriculture, Wadura (Sopore), during Kharif 2007. Observations were recorded on growth, yield, and fruit quality. Under both locations, Treatment 9 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 40 t ha^{-1}) proved better to improve the growth and yield attributing traits than other treatment combinations. Maximum plant height (55.65 cm), number of branches (6.61), plant spread (44.50 cm), fruit length (8.30 cm), fruit diameter (8.00 cm) were recorded in treatment T9. The highest fruit yield (686.39 kg.ha^{-1}) was recorded in treatment T9, and followed by T8 (670.26 kg ha^{-1}). The treatment T9 also exhibited the highest fruit quality in terms of vitamin-C (243.34 mg/100g), total chlorophyll content (732.66 mg/100 g), dry matter content (9.93 g/100 g), nitrogen (4.38%), phosphorus (0.46%) and potassium (3.65%) in fruit.

Key words : *Capsicum annuum*, chemical fertilizers, growth, organic manures

Introduction

Capsicum (*Capsicum annuum* L. var. *grossum*) commonly known as Shimla mirch or sweet pepper belongs to family Solanaceae and is native to Mexico with secondary centre of origin at Guatemala and Bulgaria (Safford, 1926). It is a high value crop and its fruits are highly nutritious, rich in vitamins particularly pro-vitamin-A, vitamin-B, vitamin-C and minerals such as Ca, P, K and Fe. The fruits are non-pungent and have been widely used in immature or

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green stage as vegetable for stuffing or for salads.With the increase in population, the demand for the crop has been increasing day by day and the traditional varieties due to their inherent low yield potential would not be fulfilling the demand. On the other hand, hybrids have not only shown a potential to fulfil the demand, but also opened the export avenues as they had done an edge over traditional varieties in terms of yield, uniformity, early maturity, tolerance to biotic and abiotic stresses and better quality (Arya, 1999).

In India, in spite of its great potential the yield per unit area is very low than that of developed countries, mainly due to lack of proper production technologies especially, the nutrient management. For harnessing higher yield, balanced application of nutrition is a prerequisite. The continuous application of chemical fertilizers alone without use of organic manures has deteriorated soil health in terms of chemical, physical and biological characters resulting in decline in crop yield. On the other hand, organic manures such as farmyard manure, sheep manure, poultry manure, and compost are known to have beneficial effect on soil health but their limited nutrient content and their availability in large amount is a constraint for their wider usage. This indicates that sole application of organics or inorganic fertilizers are in no way a suitable solution for maintaining soil health and enhancing crop productivity. So the solution lies in the integrated use of chemical fertilizers and organic manures for obtaining sustainable crop production, better nutrient availability and efficient nutrient use, besides reducing nutrient losses (Hegde, 1997) and improving fruit quality (Singh *et al.*, 2000).

Hybrids have inherent vigour, to harvest higher yield and better quality they should be provided with adequate quantity of nutrients. Therefore, the nutrient requirements of newly developed hybrid capsicum were ascertained. The present investigation on integrated nutrient management was carried out during summer 2007.

Material and methods

The field experiment was conducted at two locations of the Experimental Farm, Division of Olericulture, SKUAST-K, Shalimar and Regional Research Station/Faculty of Agriculture, Wadura (Sopore). During kharif 2007, the optimum combination of inorganic fertilizers and farmyard manure (FYM) for growth, yield and quality attributing traits of capsicum hybrid SH-SP-5 was done. The experiment was laid out by Randomised Completely Block Design (RCBD) which three replications, at a spacing of 60 x 45 cm with ten treatment combinations. Ten treatment combination as follows T1 (N=90 kg ha^{-1}; P_2O_5 = 60 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 20 t ha^{-1}), T2 (N=90 kg ha^{-1}; P_2O_5 = 60 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 30 t ha^{-1}), T3 (N=90 kg ha^{-1}; P_2O_5 = 60 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 40 t ha^{-1}), T4 (N=120 kg ha^{-1}; P_2O_5 = 90 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 20 t ha^{-1}), T5 (N=120 kg ha^{-1}; P_2O_5 = 90 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 30 t ha^{-1}), T6 (N=120 kg ha^{-1}; P_2O_5 = 90 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 40 t ha^{-1}), T7 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 20 t ha^{-1}), T8 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 30 t ha^{-1}), T9 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 40 t ha^{-1}), T10 (control = no chemical fertilizers or FYM). Nitrogen phosphorus and potassium were applied in the form of urea, diammonium phosphate and muriate of potash, respectively. Half of nitrogen and full dose of phosphorus, potassium and FYM were given as basal dose and rest half dose of nitrogen was top dressed. Other cultural practices were done as per recommended package of practices. Data were collected as fruit weight (g), number of fruits per plant, fruit yield plot^{-1} (kg/ha) and fruit yield (q/ha) was recorded and statistically analysed following methodology suggested by Gomez and Gomez (1984) and economic of production was also worked out.

Results

Influence of inorganic fertilizers and organic manures (FYM) on growth attributes of capsicum hybrid SH-SP-5

It was shown a significant effect of various treatments on plant height, number of branches, plant spread among the treatments as seen in Table1. Treatment 9 (N=150 kg ha^{-1}; P_2O_5 = 120 kg.ha^{-1}; K_2O = 60 kg.ha^{-1}; FYM = 40 t .ha^{-1}) recorded a maximum of plant height (57.14cm and 54.16cm), number of branches (6.70 and 6.53), plant spread (46.00 and 43.00 cm) at Wadura and Shalimar, respectively and it was found significantly superior to all other treatments. With this, it was significantly different in T9 in terms of plant height (55.65 cm), number of branches (6.61) and plant spread (44.50) when compared to other treatments.

Influence of inorganic fertilizers and organic manures (FYM) on yield attributes of capsicum hybrid SH-SP-5

The significant effect of various treatments on number of fruits per plant, fruit length, fruit diameter, average fruit weight, average fruit yield (kg/plot) and average fruit yield (kg/ha) were shown in Tables 2 and 3. With this, T9 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 40 t ha^{-1}) was recorded a maximum number of fruits per plant (20.45 and 19.00), fruit length (8.40 and 8.20cm), fruit diameter (8.09 and 7.70cm), average fruit weight (94.85 and 93g), average fruit yield (38.79 and 35.34 kg/plot) and average fruit yield (718.47 and 686.39 kg ha^{-1}) at Wadura and Shalimar respectively. The results gave a significantly superior when compared to other treatments but exhibited at par results as T8 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 30 t ha^{-1}). Treatment 9 was showed a significant different with maximum number of fruits per plant (19.72), fruit length (8.30cm), fruit diameter (7.89 cm), average fruit weight (93.92g), average fruit yield (37.06 kg/plot) and average fruit yield (686.39 kg/plot) as compared to other treatments but were statistically at par with T8.

Influence of inorganic fertilizers and organic manures on quality attributes of capsicum hybrid SH-SP-5

Results revealed a significant variation due to various treatments with respect to different quality attributes (Vitamin-C, total chlorophyll content, dry matter content, nitrogen content, phosphorus content and potassium content) of fresh fruit of capsicum hybrid SH-SP-5 (Tables 4 and 5). Among all treatments, T9 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM 40 t ha^{-1}) were recorded as Vitamin-C (250.93 and 235.75 mg/100g), total chlorophyll content (745.33 and 720.00 mg/100g), dry matter content (10.11 and 9.75 g), nitrogen content (4.46 and 4.30 %), phosphorus content (0.49 and 0.44 %) and potassium content (3.80 and 3.50 %) at Wadura and Shalimar respectively. It was significantly superior to all other treatment combinations. Treatment 9 was significantly superior with maximum content of Vitamin-C (243.34 mg /100g), total chlorophyll content (736.66 mg/100g), dry matter content (9.93 g), nitrogen content (4.38 %), phosphorus content (0.46 %) and potassium content (3.55 %) as compared to other treatments.

Discussions

Growth attribution

Result revealed that maximum values for plant height, number of branches per plant, plant spread were observed in treatment T9 as seen in Table1. The increase in growth was attributed due to increase in fertilizer and FYM application may be ascertained to increase amount of nutrients such as nitrogen, phosphorus and potassium in plants, leading to increase formation of plant metabolites that helped to build the plant tissue. The result clearly indicated in the beneficial effect of added FYM. Application FYM improved the soil tilth and aeration, increased water holding capacity of the soil and stimulated the activity of microorganisms that made the nutrients elements readily available in the soil for crops beside containing N, P and K in significant amounts (0.3, 0.15 and 0.3% N, P, K). These results obtained in the this study were in line with those of Singh *et.al.,* (1973) in potato, Jose *et al.*

(1988) in brinjal, Harikrishna *et al.* (2002) in tomato, Magray (2002) in capsicum, Prabu *et al.* (2003) in okra, Tripathy *et al.* (2004) in okra and Hiremath *et al.* (2006) in Paprika.

Yield attribution

Result revealed significantly highest number of fruits per plant, fruit length, fruit diameter, average fruit weight, average fruit yield/ plot and average fruit yield kg/ ha in T9 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 40 t ha^{-1}) as seen in Tables 2 and 3. Integration of farmyard manure and inorganic sources exhibited an increase in yield and yield related attribution of capsicum. This could be happened due to balanced C/N ratio, decomposition, mineralization, availability of native and applied macro and micro-nutrients. All these might have accelerated the synthesis of carbohydrates and its better translocation from sink to source that might have led to an improvement in yield and yield related attributes. These results were in conformity with the findings of Harikrishna *et. al.*(2002) in tomato, Magray (2002) in capsicum, Prabu *et al.* (2003) in okra, Malawadi *et. al.*(2004) in chilli and Hiremath *et. al.* (2006) in paprika. Fruit yield was significantly influenced by increase in application of fertilizers (organic FYM and inorganic fertilizer). The treatment 9 was recorded the highest fruit yield of 686.39 g which due to increase the number of branches per plant and fruits per plant. It would explain that the sustained availability of nutrients throughout the growing season. The efficacy of inorganic fertilizes is much pronounced when they are combined with organic manures. The increase vegetative growth and balanced C/N ratio might increase the synthesis of carbohydrates which ultimately promoted greater yield. These results were in line with findings of Malewar *et al* (1998) in chilli, Magray (2002) in capsicum and Hiremath *et al* (2006) in capsicum.

Quality parameters

Result revealed the maximum values for vitamin-C content (243.34 mg 100/g), total chlorophyll content (732.66 mg/100 g), dry matter content (9.93 g) and NPK content in fruit (4.38, 0.46, 3.55%, respectively) that observed in treatment 9 as seen in Tables 4 and 5. The increase in ascorbic acid content may be due to good growth of plants resulting from higher assimilation of the micronutrients which are made available to the plant due to decompose organic matter. The increased activity of ascorbic acid oxidase enzyme in presence of micronutrients may be concerned to another reason for increase in ascorbic acid content. These findings were found in conformity with those of Jose *et al.*

(1988) in brinjal, Malewar *et al.* (1998) in chilli, Singh *et al.* (2000) in brinjal and Magray *et al.* (2002) in capsicum.

The colour of fruit is an important determinant of the quality status of any vegetable. The chief pigment of fruits and vegetables which impart the green colour is chlorophyll. Different treatments were found to promise the effect on total chlorophyll content of capsicum fruits at edible stage. As a result, it revealed that the maximum chlorophyll (732.66 mg /100 g) was recorded in the treatment 9 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 40 t ha^{-1}) as seen in Table 4. The chlorophyll is an essential component for photosynthesis occurs in chloroplasts a green pigments in all photosynthetic plant tissues, so more chlorophyll content in plants may be attributed to more uptake of nitrogen by the plants. These results were found in conformity to those of Hiremath *et al.* (2006) in paprika. Result revealed that dry matter content in fruits was significantly influenced with the increase in application of nutrients through organic sources (FYM) and inorganic fertilizers. The treatment 9 was recorded the highest dry matter content of 9.93 g. Significant increase in the dry matter content was attributed to increase in nutrient availability especially N, P, K. nitrogen being an essential constituent of chlorophyll to increase chlorophyll formation and to ultimate effect on photosynthesis, thus resulted for greater dry matter accumulation and improvement on dry matter production were also reported by Cerna (1981) in capsicum, Manchanda and Singh (1987) in bell pepper. Result indicated that treatment T9 had significantly higher NPK content of 4.38, 0.46, 3.55 per cent respectively in capsicum fruits as vseen in Table 5. The enhanced NPK content in capsicum fruit due to integration of organic with inorganic sources could be attributed to balance C/N and C/P ratios, organic matter build up, cation exchange capacity, nutrient retention and leaching losses. The organic and inorganic acids lead to solubilization of native nutrient compounds, availability of plant nutrients, and absorption. The improvement in soil physical, chemical and biological activities might improve the ability of capsicum to draw more nutrients from the soil. Besides this, synergistic and stimulatory effects of organic source might result in better root development, keeping the plants photosynthetically active for a longer period. The increased in nitrogen and phosphorus have synergistic effect on potassium uptake as reported by Tandon (1933). Decomposition, mineralization and solubilization might have accelerated their availability and uptake resulted in maximum NPK content in capsicum fruits.

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Table 1. Effect of inorganic fertilizers and organic manures (FYM) on Plant height (cm), No. of fruits/plant, Plant spread (cm) of capsicum hybrid SH-SP-5

Treatments	Plant height (cm)		Pooled Mean	No,of branches per plant		Pooled Mean	Plant spread (cm)		Pooled Mean
	Wadura	Shalimar		Wadura	Shalimar		Wadura	Shalimar	
T_1	41.50	40.48	40.99	4.60	4.43	4.51	31.44	30.71	31.07
T_2	42.97	42.30	42.63	4.73	4.66	4.70	33.83	32.50	33.16
T_3	45.65	44.64	45.14	5.00	4.95	4.97	35.00	33.90	34.45
T_4	46.53	45.49	46.01	5.35	5.23	5.29	37.00	36.06	36.53
T_5	48.45	47.83	48.14	5.60	5.35	5.47	38.33	37.29	37.81
T_6	50.96	48.63	49.79	5.85	5.83	5.84	40.25	39.00	39.62
T_7	51.19	51.68	51.44	6.12	6.03	6.07	41.41	40.91	41.16
T_8	54.20	52.31	53.25	6.38	6.33	6.35	43.83	41.91	42.87
T_9	57.14	54.16	55.65	6.70	6.53	6.61	46.00	43.00	44.50
T_{10}	31.08	30.35	30.71	3.50	3.30	3.40	24.58	26.13	25.35
CD ($P \leq 0.05$)	1.02	0.98	0.76	0.15	0.13	0.11	1.20	1.07	1.00

T_1 (N=90 kg ha^{-1}; P_2O_5 = 60 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 20 t ha^{-1}), T_2 (N=90 kg ha^{-1}; P_2O_5 = 60 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 30 t ha^{-1}), T_3 (N=90 kg ha^{-1}; P_2O_5 = 60 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 40 t ha^{-1}), T_4 (N=120 kg ha^{-1}; P_2O_5 = 90 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 20 t ha^{-1}), T_5 (N=120 kg ha^{-1}; P_2O_5 = 90 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 30 t ha^{-1}), T_6 (N=120 kg ha^{-1}; P_2O_5 = 90 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 40 t ha^{-1}), T_7 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 20 t ha^{-1}),
T_8 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 30 t ha^{-1}), T_9 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 40 t ha^{-1}),T_{10}(non chemical fertilizers or FYM]).

Table 2. Effect of inorganic fertilizers and organic manures (FYM) on number of fruits per plant, fruit length, fruit diameter of *Capsicum* hybrid SH-SP-5

Treatment	No. of fruits/plant		Pooled Mean	Fruit length (cm)		Pooled Mean	Fruit diameter (cm)		Pooled Mean
	Wadura	Shalimar		Wadura	Shalimar		Wadura	Shalimar	
T_1	14.00	13.86	13.93	6.00	5.90	5.95	5.16	5.00	5.08
T_2	14.67	14.00	14.33	6.19	6.00	6.10	5.30	5.16	5.23
T_3	15.02	14.70	14.86	6.50	6.30	6.40	5.56	5.30	5.43
T_4	16.78	16.00	16.39	7.00	7.00	7.00	6.20	6.00	6.10
T_5	17.00	16.55	16.77	7.33	7.20	7.26	6.50	6.50	6.50
T_6	17.65	16.78	17.21	7.90	7.60	7.75	6.90	6.80	6.85
T_7	19.41	18.50	18.95	8.00	7.95	7.97	7.33	7.00	7.16
T_8	19.83	18.75	19.29	8.09	8.00	8.05	7.90	7.50	7.70
T_9	20.45	19.00	19.72	8.40	8.20	8.30	8.09	7.70	7.89
T_{10}	10.33	9.95	10.14	5.30	5.15	5.22	4.60	4.33	4.46
CD ($P \leq 0.05$)	0.65	0.45	0.40	0.15	0.12	0.10	0.25	0.21	0.20S

T_1 (N=90 kg ha^{-1}; P_2O_5 = 60 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 20 t ha^{-1}), T_2 (N=90 kg ha^{-1}; P_2O_5 = 60 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 30 t ha^{-1}), T_3 (N=90 kg ha^{-1}; P_2O_5 = 60 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 40 t ha^{-1}), T_4 (N=120 kg ha^{-1}; P_2O_5 = 90 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 20 t ha^{-1}), T_5 (N=120 kg ha^{-1}; P_2O_5 = 90 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 30 t ha^{-1}), T_6 (N=120 kg ha^{-1}; P_2O_5 = 90 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 40 t ha^{-1}), T_7 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 20 t ha^{-1}),
T_8 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 30 t ha^{-1}), T_9 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 40 t ha^{-1}),T_{10}(non chemical fertilizers or FYM]).

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Table 3. Effect of inorganic fertilizers and organic manures (FYM) on fruit weight, fruit yield/plot, fruit yield/ha of *Capsicum* hybrid SH-SP-5

Treatment	Average Fruit weight (g)		Pooled Mean	Average Fruit yield (kg/ plot)		Pooled Mean	Average fruit yield (kg/ha)		Pooled Mean
	Wadura	Shalimar		Wadura	Shalimar		Wadura	Shalimar	
T_1	83.82	83.00	83.41	23.47	23.01	23.24	434.68	426.27	430.48
T_2	84.33	83.82	84.07	24.74	23.47	24.11	458.23	434.74	446.49
T_3	84.60	84.33	84.46	25.40	24.79	25.09	470.36	459.17	464.76
T_4	89.46	89.00	89.23	30.01	28.47	29.24	555.85	527.40	541.63
T_5	89.75	89.28	89.51	30.51	29.54	30.03	565.03	547.28	556.16
T_6	90.01	89.46	89.73	31.77	30.02	30.90	588.44	556.10	572.27
T_7	94.53	92.25	93.39	36.70	34.12	35.41	679.71	632.08	655.89
T_8	94.73	92.85	93.79	37.57	34.81	36.19	695.80	644.73	670.26
T_9	94.85	93.00	93.92	38.79	35.34	37.06	718.31	654.47	686.39
T_{10}	59.00	58.95	58.97	12.19	11.73	11.96	225.79	217.23	221.51
CD ($P \leq 0.05$)	0.40	0.37	0.35	1.25	1.10	1.01	25.35	21.88	18.85

T_1 (N=90 kg ha^{-1}; P_2O_5 = 60 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 20 t ha^{-1}), T_2 (N=90 kg ha^{-1}; P_2O_5 = 60 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 30 t ha^{-1}), T_3 (N=90 kg ha^{-1}; P_2O_5 = 60 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 40 t ha^{-1}), T_4 (N=120 kg ha^{-1}; P_2O_5 = 90 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 20 t ha^{-1}), T_5 (N=120 kg ha^{-1}; P_2O_5 = 90 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 30 t ha^{-1}), T_6 (N=120 kg ha^{-1}; P_2O_5 = 90 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 40 t ha^{-1}), T_7 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 20 t ha^{-1}),
T_8 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 30 t ha^{-1}), T_9 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 40 t ha^{-1}),T_{10}(non chemical fertilizers or FYM]).

Table 4. Effect of inorganic fertilizers and organic manures (FYM) on vitamin-C content, chlorophyll content, dry matter of *Capsicum* hybrid SH-SP-5

Treatment	vitamin C content (mg 100 g^{-1})		Pooled Mean	chlorophyll content (mg 100 g^{-1})		Pooled Mean	Dry matter (g)		Pooled Mean
	Wadura	Shalimar		Wadura	Shalimar		Wadura	Shalimar	
T_1	158.82	152.75	155.78	515.00	500.00	507.50	7.60	7.43	7.51
T_2	162.02	158.25	166.13	530.66	514.83	522.75	8.07	7.60	7.84
T_3	165.16	162.80	163.98	556.33	520.22	538.27	8.30	7.95	8.13
T_4	176.21	170.46	173.34	620.16	605.00	612.58	8.89	8.31	8.60
T_5	181.86	178.30	180.08	638.00	615.00	626.50	8.97	8.70	8.83
T_6	192.60	186.25	189.42	664.33	630.00	647.16	9.39	8.90	9.14
T_7	215.80	205.75	210.77	705.33	695.33	700.33	9.69	9.20	9.44
T_8	235.68	215.80	225.74	720.38	705.00	712.69	9.75	9.38	9.57
T_9	250.93	235.75	243.34	745.33	720.00	732.66	10.11	9.75	9.93
T_{10}	105.36	102.25	103.80	410.11	405.00	407.55	5.94	5.40	5.67
CD ($P \leq 0.05$)	1.99	1.73	1.18	3.50	3.30	3.10	0.40	0.37	0.36

T_1 (N=90 kg ha^{-1}; P_2O_5 = 60 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 20 t ha^{-1}), T_2 (N=90 kg ha^{-1}; P_2O_5 = 60 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 30 t ha^{-1}), T_3 (N=90 kg ha^{-1}; P_2O_5 = 60 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 40 t ha^{-1}), T_4 (N=120 kg ha^{-1}; P_2O_5 = 90 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 20 t ha^{-1}), T_5 (N=120 kg ha^{-1}; P_2O_5 = 90 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 30 t ha^{-1}), T_6 (N=120 kg ha^{-1}; P_2O_5 = 90 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 40 t ha^{-1}), T_7 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 20 t ha^{-1}),
T_8 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 30 t ha^{-1}), T_9 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 40 t ha^{-1}),T_{10}(non chemical fertilizers or FYM]).

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Table 5. Effect of inorganic fertilizers and organic manures (FYM) on nitrogen content, phosphorus and potassium contents of *Capsicum* hybrid SH-SP-5

Treatment	nitrogen content (%) in fruit		Pooled Mean	phosphorus content (%) in fruit		Pooled Mean	potassium content (%) in fruit		Pooled Mean
	Wadura	Shalimar		Wadura	Shalimar		Wadura	Shalimar	
T_1	2.90	2.80	2.85	0.23	0.20	0.21	2.00	1.95	1.97
T_2	3.00	2.95	2.97	0.27	0.23	0.25	2.05	2.00	2.02
T_3	3.26	3.00	3.13	0.31	0.27	0.29	2.15	2.05	2.10
T_4	3.76	3.50	3.63	0.34	0.31	0.32	2.60	2.30	2.45
T_5	3.90	3.76	3.83	0.37	0.34	0.35	2.98	2.60	2.79
T_6	4.03	3.95	3.99	0.39	0.37	0.38	3.03	2.90	2.96
T_7	4.16	4.05	4.10	0.41	0.40	0.40	3.30	3.00	3.15
T_8	4.30	4.20	4.25	0.46	0.41	0.43	3.53	3.30	3.41
T_9	4.46	4.30	4.38	0.49	0.44	0.46	3.80	3.50	3.55
T_{10}	1.40	1.20	1.30	0.15	0.12	0.13	1.20	1.04	1.12
CD ($P \leq 0.05$)	0.16	0.10	0.08	0.024	0.022	0.016	0.30	0.20	0.20

T_1 (N=90 kg ha^{-1}; P_2O_5 = 60 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 20 t ha^{-1}), T_2 (N=90 kg ha^{-1}; P_2O_5 = 60 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 30 t ha^{-1}), T_3 (N=90 kg ha^{-1}; P_2O_5 = 60 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 40 t ha^{-1}), T_4 (N=120 kg ha^{-1}; P_2O_5 = 90 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 20 t ha^{-1}), T_5 (N=120 kg ha^{-1}; P_2O_5 = 90 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 30 t ha^{-1}), T_6 (N=120 kg ha^{-1}; P_2O_5 = 90 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 40 t ha^{-1}), T_7 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 20 t ha^{-1}),
T_8 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 30 t ha^{-1}), T_9 (N=150 kg ha^{-1}; P_2O_5 = 120 kg ha^{-1}; K_2O = 60 kg ha^{-1}; FYM = 40 t ha^{-1}),T_{10}(non chemical fertilizers or FYM]).

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