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EFFECT OF HUMIC ACID APPLICATION THROUGH DIFFERENT MODES ON GROWTH, YIELD AND QUALITY PARAMETERS OF GREEN CHILLI (*CAPSICUM ANNUUM* L.)

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ABSTRACT

A field experiment entitled “Effect of humic acid application through different modes on growth, yield and quality parameters of green chilli (*Capsicum annuum* L.)” was carried out during *rabi* 2024–25 at the College of Horticulture, Bagalkot. The experiment was laid out in a Randomized Block Design comprising nine treatments replicated three times. The treatments involved different methods of humic acid application at 0.25 per cent and 0.50 per cent concentrations along with application of the recommended dose of fertilizers (RDF). Among the treatments, T₉ (treatment consisting of integrated application of 0.50 per cent humic acid administered through seedling dip, soil drenching and foliar application) achieved superior results, recording the highest plant height (67.16 cm), number of branches (11.05 plant⁻¹), stem diameter (11.5 mm) and chlorophyll content of (115.51 SPAD) with increased leaf area index (0.53). Significant improvement in quality parameters such as ascorbic acid (129.44 mg 100g⁻¹), TSS (8.53 °Brix), titratable acidity (0.49%), chlorophyll a content (0.69 mg g⁻¹), chlorophyll b content (0.34 mg g⁻¹) and total chlorophyll content (1.03 mg g⁻¹) were also observed under same treatment with overall green fruit yield of 15.26 t ha⁻¹, outperforming all other treatments. The enhanced growth and yield can be attributed to humic acid role in improving nutrient uptake, stimulating root development and promoting physiological processes such as photosynthesis and enzyme activity. Integrated application of humic acid through multiple modes significantly improves growth, yield and quality of green chilli, offering a sustainable approach to enhance productivity and profitability in horticultural systems.

Keywords: Humic acid, growth, yield and quality parameters, chilli (*Capsicum annuum* L.)

Introduction

Soil is a vital resource that supports terrestrial life by storing water, nutrients and biological activity essential for plant growth. However, intensive cultivation, heavy chemical use and poor land management have accelerated soil degradation, leading to loss of organic matter, weak soil structure, low water-holding capacity and reduced nutrient cycling, ultimately decreasing soil fertility and productivity

(Lal, 2015; Bunemann *et al.*, 2018). To maintain soil health and improve crop yields, strategies that enhance nutrient supply and nutrient-use efficiency are essential. Biostimulants play an important role in this regard. Applied in small quantities, they stimulate natural plant processes, improving nutrient uptake, stress tolerance and overall productivity (Jardin, 2015; Rouphael and Colla, 2020). Among these, humic acid has shown the best performance (Wani *et al.*, 2024).

Humic acids, derived from decomposed organic matter, are inexpensive and widely available from compost, peat, lignite and vermicompost and unlike microbial inoculants, they remain stable even under harsh conditions (Canellas *et al.*, 2015). They are heterogeneous macromolecules containing functional groups such as carboxyl, hydroxyl, phenolic, aromatic, aliphatic, sugar and amino groups, which influence their complex behaviour and mode of action (Piccolo, 2002; Olivares *et al.*, 2017). Their structure defined by molecular weight, hydrophobic–hydrophilic balance and degree of aromaticity determines their biological activity and interactions with soil particles, plant roots and microbial communities (Trevisan *et al.*, 2010; Canellas *et al.*, 2015). These functional groups enhance soil physical, chemical and biological properties by improving aggregate stability, porosity and aeration, increasing water-holding capacity and boosting cation exchange capacity, thereby helping soils retain essential nutrients more effectively for plant uptake (Muscolo *et al.*, 2013; Garcia *et al.*, 2016).

Seedling root dip is a pre-transplant practice in which seedlings are immersed in a biostimulant solution to promote early root establishment, reduce transplant shock and enhance nutrient uptake. Drenching involves applying biostimulant solution to the root zone, where humic acid benefits both plant physiology and soil fertility. Its chelation ability, due to functional groups like carboxyl and phenolic hydroxyls, forms stable complexes with micronutrients, improving nutrient availability. Humic acid also enhances soil aggregation, porosity and water-holding capacity, creating a favourable rhizosphere that supports beneficial microbes and promotes healthier plant growth (Nardi *et al.*, 2002; Canellas *et al.*, 2015).

Foliar application, where humic acid is sprayed onto leaves, directly influences plant physiology by increasing cell membrane permeability, thereby improving nutrient and water absorption (Nardi *et al.*, 2002; Canellas *et al.*, 2015). Humic acid also exhibits hormone-like activity, mimicking auxins that stimulate cell division, elongation and vigorous root development (Trevisan *et al.*, 2010; Zandonadi *et al.*, 2016). Additionally, it enhances photosynthesis, protein synthesis and antioxidant accumulation (Jindo *et al.*, 2012). These antioxidants protect plants from oxidative stress caused by drought, heat, UV radiation and chemicals (Calvo *et al.*, 2014; Olivares *et al.*, 2017). Thus, humic acid acts as both a soil conditioner and plant growth regulator.

Chilli (*Capsicum annuum* L.), an important Solanaceous crop ($2n = 24$), is widely grown across

India under diverse agroclimatic conditions and used as fresh fruit, dried spice, powder, sauces and oleoresin. India cultivates 438,700 ha, producing 4.6 million tonnes, with major production in Andhra Pradesh, Telangana and Karnataka; Belagavi alone yields 162,028 tonnes (Anon., 2025). Despite its significance, chilli suffers from flower drop, low fruit set, pests, diseases and stress. Humic acid helps overcome these issues through auxin-like activity, improved nutrient uptake and stress tolerance (Fathima and Denesh, 2013; Pavani *et al.*, 2022a), while vermicompost-derived humic substances also enhance growth (Kolape *et al.*, 2024).

Materials and Method

The current study was conducted during the *rabi* season of 2024–25 at the College of Horticulture, Bagalkot, University of Horticultural Sciences, Bagalkot, Karnataka. The experiment was laid out in a Randomized Block Design (RBD) with nine treatments, each replicated three times. The study was carried out using the chilli (*Capsicum annuum* L.) variety ‘HPH - 5531’ known for its good yield potential and adaptability to local conditions. Healthy, 21-day-old seedlings of HPH - 5531 were raised from a disease-free nursery and selected for uniform growth and vigor before transplanting. The total number of plants in each experimental plot was 44, spaced at 60 cm × 45 cm. The experiment consist of 9 treatments *Viz.*, T₁- Standard check (RDF), T₂- Seedling root dip with 0.25 per cent HA at the time of transplanting, T₃- Seedling root dip with 0.50 per cent HA at the time of transplanting, T₄- Drenching 100 ml of 0.25 per cent HA per plant 1 week after transplanting, T₅- Drenching 100 ml of 0.50 per cent HA per plant 1 week after transplanting, T₆- Foliar application of 0.25 per cent HA at 20, 40, 60 and 80 days after transplanting, T₇ - Foliar application of 0.50 per cent HA at 20, 40, 60 and 80 days after transplanting, T₈- T₂ + T₄ + T₆, T₉- T₃ + T₅ + T₇. Well-decomposed farmyard manure was incorporated into the soil 15 days prior to transplanting to enrich the nutrient base and improve soil structure. Following planting, chemical fertilizers were applied, supplying 50 per cent of the recommended nitrogen along with the full doses of phosphorus and potassium. Humic acid was applied to chilli plants as a foliar spray at 20, 40, 60 and 80 days after transplanting (DAT) according to the treatment schedule, ensuring a sustained and balanced supply of bioactive compounds throughout the crop growth period.

The growth parameters recorded included plant height, number of branches per plant, stem diameter, leaf area index and dry matter yield. Plant height was measured using a measuring tape, while stem diameter

was recorded using a digital vernier caliper at a fixed position on the main stem of five randomly selected plants from each plot. Dry matter yield was calculated on a plant density basis after uprooting five randomly selected plants from each plot, cleaning them thoroughly, recording their fresh weights and oven-drying the plant samples at 65–70 °C until a constant weight was obtained.

The yield-attributing parameters recorded included Days to 50 per cent flowering, Fruit set percentage, Fruit Volume, Number of fruits per plant, Fresh fruit yield (plant⁻¹, plot⁻¹ and ha⁻¹). For biochemical and quality analysis, five healthy fruits were randomly selected at full maturity from each treatment. Chlorophyll content of leaves and fruits was estimated using standard analytical procedures. Total soluble solids (TSS) were determined using a hand refractometer and expressed as °Brix. Ascorbic acid content was estimated by titration with a standard dye until a stable pink endpoint and expressed as mg 100 g⁻¹ fresh weight (Thimmaiah, 1999). Titratable acidity was determined by titrating the fruit juice against a standard alkali solution and expressed as percentage citric acid. Shelf life of fruits was assessed based on the number of days the fruits remained marketable under ambient storage conditions.

$$\text{Ascorbic acid (mg 100g}^{-1}\text{)} = \frac{\text{Dye factor} \times \text{Titrate value} \times \text{Vol. made up}}{\text{Aliquot of extraction} \times \text{Weight of sample taken}} \times 100$$

$$\text{Acidity (\%)} = \frac{\text{T.V.} \times \text{Vol. made up} \times \text{N. of NaOH} \times \text{equivalent weight of acid}}{\text{Volume of aliquot} \times \text{Weight of sample taken} \times 1000} \times 100$$

Result and Discussion

The growth parameters of chilli viz., plant height, number of branches, stem diameter, leaf area index and Chlorophyll (SPAD) produced by chilli plants were significantly influenced by the different modes of humic acid application and the results are summarized in Table 1.

Plants that received the combined application of 0.50 per cent humic acid through seedling root dip, soil drenching and foliar spraying (T₉) produced the highest plant height (67.16 cm), number of branches (11.05), stem diameter (11.50 mm), leaf area index (0.527) and Chlorophyll (SPAD) (115.51). The lowest plant height (52.31 cm), number of branches (8.11), stem diameter (8.65 mm), leaf area index (0.307) and Chlorophyll (SPAD) (77.90) was recorded in treatment (T₁) with sole application of recommended dose of fertilizers (RDF). The superiority of growth parameters under combined humic acid treatments may be attributed to

its auxin-like activity, when humic acid applied through foliar spray and in addition drenching stimulates cell elongation, meristematic activity and root growth, thereby humic acid enhances the absorption of nutrients and water, by improving root system development and cell permeability, which supports overall vegetative growth. The present findings are in line with Wani *et al.* (2025), Abdullah (2025) and Sulistyono *et al.* (2025), who reported that foliar and soil application of humic acid significantly increased plant height and vegetative growth in chilli. Similarly, El-Nemr *et al.* (2012) reported that humic acid application significantly increased plant height in cucumber and highlighted that humic substances improve cell permeability and cell division, leading to greater vegetative growth.

The improvement in leaf area index and chlorophyll content under humic acid treatments may be attributed to its stimulatory effect on cell division, leaf expansion and chlorophyll biosynthesis, resulting in enhanced canopy development, light interception and photosynthetic efficiency. Humic acid also promotes nitrogen metabolism and the uptake of Mg and Fe, essential constituents of chlorophyll, thereby increasing photosynthetic activity. Similar enhancements in leaf development and chlorophyll content due to humic acid application have been reported in chilli, tomato and cucumber by Ichwan *et al.* (2022), Vinay *et al.* (2023), Jan *et al.* (2020), Karakurt *et al.* (2009) and Canellas *et al.* (2015).

The days to 50 per cent flowering and fruit set percentage varied significantly among treatments (Table 2). Application of 0.50 per cent humic acid through a combined method (seedling root dip, soil drenching and foliar spray) resulted in earlier flowering and the highest fruit set, whereas the RDF-alone treatment (T₁) delayed flowering and recorded the lowest fruit set. The earliest flowering was observed in T₉ combined application of 0.50 per cent HA applied through root dip, drenching and foliar spray (49.67 days). The maximum number of days to flowering was registered in the T₁ control, with 53.33 days. The highest value of per cent fruit setting was obtained in (T₉) combined application of 0.50 per cent HA applied through root dip, drenching and foliar spray (54.33%), significantly superior to other treatments. Whereas the lowest fruit set was recorded in the control (T₁ – 42.40%). The advancement in flowering and improved fruit set under humic acid may be attributed to enhanced nutrient uptake, increased photosynthetic efficiency, higher chlorophyll content and the stimulatory effect of humic substances on plant hormones such as auxins and gibberellins, which

accelerate the transition from vegetative to reproductive phase, improve pollen viability and promote assimilate translocation to developing buds and fruits. These findings are in agreement with earlier reports in chilli by Jan *et al.* (2020), Fathima and Denesh (2013), Wani *et al.* (2024) and Pavani *et al.* (2022a) and in okra by Maurya *et al.* (2025), all of whom reported improved flowering behavior and fruit set due to humic acid application. The accumulation of dry matter was determined at harvest.

A pronounced increase in total dry matter was observed in plants treated with 0.50 per cent humic acid applied through a combination of root dip, soil drench and foliar spray, signifying better growth performance and efficient assimilation. However, the lowest dry matter accumulation was recorded in the treatment (T₁) where only the RDF was applied. At harvest, the cumulative effect of humic acid application was clearly reflected in total dry matter yield. Treatment (T₉) combined application of 0.50 per cent HA applied through root dip, drenching and foliar spray registered the maximum production (3744.99 kg ha⁻¹), was on par with treatment (T₈) combined application of 0.25 per cent HA applied through root dip, drenching and foliar spray (3668.95 kg ha⁻¹) and followed by (T₇) foliar application of HA at 0.50 per cent (3404.44 kg ha⁻¹). In contrast, the control treatment had the lowest dry matter accumulation (2507.31 kg ha⁻¹). The increase in total dry matter may be attributed to improved photosynthesis, higher chlorophyll content, efficient nutrient uptake and greater translocation of assimilates to vegetative and reproductive structures. These results corroborate those of Fathima and Denesh (2013) and Pavani *et al.* (2022a), who found that humic acid treatments significantly increased biomass and yield in chilli.

The effect of humic through different modes on number of fruits, fruit volume and yield parameters of chilli were studied (Table 3). The number of number of fruits and fruit volume varied under different modes of HA application. The combined application of 0.50 per cent HA applied through root dip, drenching and foliar spray (T₉) recorded the maximum (79.77 fruits plant⁻¹) number of fruits and fruit volume with 13.17 cc, which was on par with treatment T₈ combined application of 0.25 per cent HA applied through root dip, drenching and foliar spray (78.08 fruits plant⁻¹ and 11.70 cc respectively), while the lowest number was recorded in the control (60.84 fruits plant⁻¹ and 10.43 cc respectively).

The influence of humic acid applied through various modes of application on the fruit yield of chilli was systematically evaluated (Table 3). The yield

assessed included fruit yield per plant (g plant⁻¹), fruit yield per plot (kg plot⁻¹) and fruit yield per hectare (t ha⁻¹). The maximum yield (412.01 g plant⁻¹, 36.26 kg plot⁻¹ and 15.26 t ha⁻¹ respectively) was obtained in T₉ with combined application of 0.50 per cent HA applied through root dip, drenching and foliar spray which was on par with treatment T₈ combined application of 0.25 per cent HA applied through root dip, drenching and foliar spray (403.29 g plant⁻¹, 35.49 kg plot⁻¹ and 14.94 t ha⁻¹ respectively). These treatments were significantly superior to the control (314.25 g plant⁻¹, 27.66 kg plot⁻¹ and 11.64 t ha⁻¹ respectively). The increased fruit number under humic acid may be linked to improved fruit set percentage and nutrient uptake (N, P and K), enhanced photosynthetic efficiency (as shown by higher chlorophyll content) and efficient assimilation of food to reproductive sinks. This increase in fruit volume may be linked to improved cell expansion under humic acid influence. Fathima and Denesh (2013), observed improved fruit size and volume in chilli following humic acid application. Comparable findings were reported by Ichwan *et al.* (2022), demonstrated that combining humic acid with NPK fertilizers increased fruit number in chilli under field conditions. Similar results were observed by Pavani *et al.* (2022b) and Wani *et al.* (2024) under chilli cultivation. The improved yield may be attributed to enhanced growth (plant height, branching and leaf area index), higher fruit set, larger fruit volume and greater number of fruits per plant, all stimulated by humic acid application. These results are consistent with the findings of Jan *et al.* (2020) and Ichwan *et al.* (2022), reported significant yield advantages in chilli due to humic acid application.

The effect of humic acid on impact on the quality parameters of chilli fruit, the maximum Ascorbic acid content (129.44 mg 100g⁻¹), TSS (8.53 °Brix), Titratable acidity (0.49 %), Shelf life (4.33 days), Chlorophyll a content in fruits (0.69 mg g⁻¹), Chlorophyll b (0.34 mg g⁻¹) and Total Chlorophyll (1.03 mg g⁻¹) were recorded in T₉, while the lowest TSS and Ascorbic acid were observed in T₁.

Significant variations in fruit quality attributes were observed among the treatments, with the highest ascorbic acid content (129.44 mg 100 g⁻¹), total soluble solids (8.53 °Brix), titratable acidity (0.49 %) and shelf life (4.33 days) recorded in T₉ (Table 4), while the lowest values for these quality parameters were observed in the control treatment (T₁). The improvement in these quality traits may be attributed to the positive influence of humic acid on metabolic activity, nutrient uptake and assimilate translocation. Humic acid enhances photosynthetic efficiency and

enzymatic activity, leading to improved synthesis and accumulation of quality-related compounds in chilli fruits. These findings are consistent with Wani *et al.* (2025), Karakurt *et al.* (2009), Ibrahim *et al.* (2019) and Zamljen *et al.* (2024).

Significant differences in chlorophyll content of chilli fruits were observed among the treatments. Treatment T₉ recorded the highest chlorophyll *a* (0.69 mg g⁻¹), chlorophyll *b* (0.34 mg g⁻¹) and total chlorophyll content (1.03 mg g⁻¹) (Table 5). In contrast, the lowest chlorophyll *a*, chlorophyll *b* and total chlorophyll contents were observed in the control treatment (T₁). The enhanced chlorophyll content under T₉ may be attributed to the positive effect of humic acid on nutrient availability and photosynthetic pigment synthesis, resulting in improved fruit quality. These findings are consistent with Rathod *et al.* (2025) and Canellas *et al.* (2015).

Conclusion

From the present investigation, it can be concluded that humic acid application significantly enhanced growth, yield and quality parameters leading to greater economic returns in green chilli. Among the different modes of application, combined application of humic acid through seedling root dip, drenching and foliar spray proved most effective. Humic acid acts as both a soil conditioner and plant growth stimulant, improving nutrient-use efficiency and crop performance. Therefore, integrated application of humic acid can be recommended as a sustainable and eco-friendly practice for enhancing productivity and profitability of green chilli cultivation.

Table 1 : Influence of different modes of humic acid application on growth parameters of chilli

Treatments	Plant height (cm)	No. of branches	Stem diameter (mm)	Leaf area index	Chlorophyll (SPAD)
	90 DAT	90 DAT	90 DAT	90 DAT	90 DAT
T ₁	52.31	8.11	8.65	0.307	77.90
T ₂	54.40	8.91	9.19	0.344	82.13
T ₃	55.67	9.04	9.58	0.372	83.14
T ₄	60.71	9.63	10.02	0.403	88.59
T ₅	61.28	9.96	10.20	0.430	91.88
T ₆	63.81	9.65	10.37	0.451	98.44
T ₇	64.10	9.86	10.42	0.469	104.92
T ₈	66.74	10.63	11.32	0.497	113.42
T ₉	67.16	11.05	11.50	0.527	115.51
Mean	60.69	9.65	10.14	0.422	95.10
S. Em ±	0.74	0.12	0.16	0.015	1.12
C.D. at 5%	2.22	0.36	0.47	0.045	3.37

T₁ - Standard check (RDF)

T₂ - Seedling root dip with 0.25 per cent HA at transplanting

T₃ - Seedling root dip with 0.50 per cent HA at transplanting

T₄ - Drenching 100 ml of 0.25 per cent HA per plant 1 week after transplanting

T₅ - Drenching 100 ml of 0.50 per cent HA per plant 1 week after transplanting

T₆ - Foliar application of 0.25 per cent HA at 20, 40, 60 and 80 days after transplanting

T₇ - Foliar application of 0.50 per cent HA at 20, 40, 60 and 80 days after transplanting

T₈ - T₂ + T₄ + T₆

T₉ - T₃ + T₅ + T₇

Table 2 : Influence of different modes of humic acid application on growth parameters of chilli

Treatments	Days to 50 per cent flowering	Fruit set percentage (%)	Total dry matter (kg ha ⁻¹)
T ₁	53.33	42.40	2507.31
T ₂	52.00	44.05	2702.39
T ₃	51.67	46.19	2750.88
T ₄	51.33	49.13	2842.36
T ₅	51.00	49.60	2976.82
T ₆	51.33	50.67	3348.23
T ₇	50.67	52.45	3404.44
T ₈	50.33	52.20	3668.95
T ₉	49.67	54.33	3744.99
Mean	51.26	49.00	3105.15
S. Em ±	0.32	0.61	49.856
C.D. at 5%	0.97	1.84	149.568

T₁ - Standard check (RDF)T₂ - Seedling root dip with 0.25 per cent HA at transplantingT₃ - Seedling root dip with 0.50 per cent HA at transplantingT₄ - Drenching 100 ml of 0.25 per cent HA per plant 1 week after transplantingT₅ - Drenching 100 ml of 0.50 per cent HA per plant 1 week after transplantingT₆ - Foliar application of 0.25 per cent HA at 20, 40, 60 and 80 days after transplantingT₇ - Foliar application of 0.50 per cent HA at 20, 40, 60 and 80 days after transplantingT₈ - T₂ + T₄ + T₆T₉ - T₃ + T₅ + T₇**Table 3 :** Fruit volume, number of fruits and yield as influenced by different modes of humic acid application in chilli

Treatments	No of fruits plant ⁻¹	Fruit volume (cc)	Fruit yield (g plant ⁻¹)	Fruit yield (kg plot ⁻¹)	Fruit yield (t ha ⁻¹)
T ₁	60.84	10.43	314.25	27.66	11.64
T ₂	66.23	10.66	342.09	30.11	12.67
T ₃	68.51	11.27	353.85	31.14	13.11
T ₄	70.72	11.29	365.27	32.15	13.53
T ₅	72.00	11.44	371.88	32.73	13.77
T ₆	73.89	11.69	381.64	33.58	14.14
T ₇	75.49	11.70	389.91	34.31	14.44
T ₈	78.08	12.68	403.29	35.49	14.94
T ₉	79.77	13.17	412.01	36.26	15.26
Mean	71.73	11.59	370.47	32.60	13.72
S. Em ±	1.05	0.18	5.40	0.48	0.20
C.D. at 5%	3.14	0.55	16.19	1.43	0.60

T₁ - Standard check (RDF)T₂ - Seedling root dip with 0.25 per cent HA at transplantingT₃ - Seedling root dip with 0.50 per cent HA at transplantingT₄ - Drenching 100 ml of 0.25 per cent HA per plant 1 week after transplantingT₅ - Drenching 100 ml of 0.50 per cent HA per plant 1 week after transplantingT₆ - Foliar application of 0.25 per cent HA at 20, 40, 60 and 80 days after transplantingT₇ - Foliar application of 0.50 per cent HA at 20, 40, 60 and 80 days after transplantingT₈ - T₂ + T₄ + T₆T₉ - T₃ + T₅ + T₇

Table 4: Effect of humic acid application through different modes on ascorbic acid, total soluble solids, titratable acidity and shelf life of chilli fruits

Treatments	Fruit Quality			
	Ascorbic acid (mg 100g ⁻¹)	TSS (^o Brix)	Titratable acidity (%)	Shelf life (days)
T ₁	114.12	7.47	0.20	3.00
T ₂	116.27	7.55	0.24	3.33
T ₃	117.75	7.74	0.27	3.33
T ₄	120.35	7.64	0.32	3.67
T ₅	121.84	7.86	0.35	3.67
T ₆	124.14	7.99	0.39	4.00
T ₇	125.63	8.14	0.42	4.00
T ₈	127.92	8.30	0.46	4.33
T ₉	129.44	8.53	0.49	4.33
Mean	121.94	7.91	0.35	3.74
S. Em ±	1.58	0.11	0.05	0.22
C.D. at 5%	4.74	0.33	0.15	0.66

T₁ - Standard check (RDF)T₂ - Seedling root dip with 0.25 per cent HA at transplantingT₃ - Seedling root dip with 0.50 per cent HA at transplantingT₄ - Drenching 100 ml of 0.25 per cent HA per plant 1 week after transplantingT₅ - Drenching 100 ml of 0.50 per cent HA per plant 1 week after transplantingT₆ - Foliar application of 0.25 per cent HA at 20, 40, 60 and 80 days after transplantingT₇ - Foliar application of 0.50 per cent HA at 20, 40, 60 and 80 days after transplantingT₈ - T₂ + T₄ + T₆T₉ - T₃ + T₅ + T₇**Table 5:** Effect of humic acid application through different modes on chlorophyll content of chilli fruits

Treatments	Chlorophyll content (mg g ⁻¹) of fruit		
	Chlorophyll a	Chlorophyll b	Total Chlorophyll
T ₁	0.32	0.23	0.55
T ₂	0.41	0.26	0.67
T ₃	0.43	0.26	0.69
T ₄	0.45	0.27	0.72
T ₅	0.56	0.30	0.86
T ₆	0.57	0.30	0.87
T ₇	0.58	0.31	0.89
T ₈	0.67	0.33	1.00
T ₉	0.69	0.34	1.03
Mean	0.52	0.29	0.81
S. Em ±	0.01	0.01	0.01
C.D. at 5%	0.03	0.02	0.03

T₁ - Standard check (RDF)T₂ - Seedling root dip with 0.25 per cent HA at transplantingT₃ - Seedling root dip with 0.50 per cent HA at transplantingT₄ - Drenching 100 ml of 0.25 per cent HA per plant 1 week after transplantingT₅ - Drenching 100 ml of 0.50 per cent HA per plant 1 week after transplantingT₆ - Foliar application of 0.25 per cent HA at 20, 40, 60 and 80 days after transplantingT₇ - Foliar application of 0.50 per cent HA at 20, 40, 60 and 80 days after transplantingT₈ - T₂ + T₄ + T₆T₉ - T₃ + T₅ + T₇

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