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INTEGRATED NUTRIENT MANAGEMENT ON GROWTH ATTRIBUTES OF CAPE GOOSEBERRY (*PHYSALIS PERUVIANA L.*)

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ABSTRACT

The present study was conducted during the winter seasons of 2023-24 and 2024-25 in Banda University of Agriculture and Technology, Banda (U.P.), to examine the effect of integrated nutrient management (INM) on vegetative growth of Cape gooseberry (*Physalis peruviana* L.). The experiment comprised of 11 treatment combinations having different proportions of inorganic fertilizers (NPK), organic manures (FYM, vermicompost, poultry manure), and biofertilizers (Halo *Azotobacter* and Halo PSB), was done in a Randomized Block Design (RBD) with three replications. Significant variations were observed among treatments for all vegetative parameters. The treatment receiving 75% NPK + 25% poultry manure + Halo Azo + Halo PSB recorded the highest plant height (116.36 cm), stem girth (3.57 cm), plant spread (121.92 cm N–S and 118.69 cm E–W), number of branches (18.68), number of leaves (121.60), and leaf area (86.20 cm²) at 150 days after transplanting. The results clearly indicated that partial substitution of chemical fertilizers with poultry manure and biofertilizers not only enhanced growth attributes but also promoted sustainable nutrient management under semi-arid conditions. This INM strategy can be effectively recommended for improving vegetative performance of Cape gooseberry while reducing chemical input dependency.

***Keywords* :** INM, cape gooseberry, FYM, vermicompost, poultry manure and biofertilizer.

Introduction

Cape gooseberry (*Physalis peruviana* L.), a nutrient-rich minor fruit crop belonging to the family Solanaceae, is gaining increasing attention for its high nutritional and medicinal value. Native to the Andean region of South America, it is now cultivated in various parts of the world including India, particularly in semi-arid and hilly regions. The fruit is an excellent source of vitamin C, vitamin A (carotenoids), antioxidants, and bioactive compounds such as polyphenols and with anolides, which possess anti-inflammatory, anti-cancer, and hepatoprotective properties (Puente *et al.,* 2011; Ramadan, 2011). Despite its immense potential, Cape gooseberry remains underexploited in India due to lack of standardized agronomic practices and limited research on its nutrient management. Integrated Nutrient Management (INM), which involves the combined application of chemical fertilizers, organic manures, and biofertilizers, is recognized as a sustainable strategy to enhance soil fertility, crop productivity, and environmental quality (Roy *et al.,* 2006; Bhardwaj and Sharma, 2011). INM helps to reduce dependency on synthetic fertilizers, improve microbial activity, and maintain soil organic carbon thereby ensuring long-term agricultural sustainability (Choudhary *et al.,* 2014). Organic sources like farmyard manure (FYM), vermicompost, and poultry manure not only supply macro- and micronutrients but also enhance soil structure and water-holding capacity, while biofertilizers like *Azotobacter* and phosphate-solubilizing bacteria (PSB) facilitate nutrient uptake and promote plant growth (Jat *et al.,* 2011; Yadav *et al.,* 2021). Previous studies on horticultural crops such as tomato, chilli, and brinjal have reported improved vegetative growth and yield with INM practices (Kumar *et al.,* 2014; Singh *et al.,* 2018). However, limited information is available regarding the effect of INM on the growth and development of Cape gooseberry, especially under the semi-arid conditions of the Bundelkhand region. Considering the nutrient-deficient and low-organic-matter status of soils in this area, an efficient and balanced nutrient management approach is crucial to harness the crop's full potential. Therefore, the present study was undertaken to evaluate the effect of various INM treatments on the vegetative growth attributes of Cape gooseberry.

Materials and Methods

The present investigation on "Integrated Nutrient Management for Growth, Yield and Quality Attributes of Cape Gooseberry (Physalis peruviana L.)" was conducted during the winter seasons of 2023-24 and 2024-25 in Banda University of Agriculture and Technology, Banda, Uttar Pradesh, India, using a Randomized Block Design (RBD) with 11 treatments and 3 replications. Treatments included different combinations of inorganic fertilizers (NPK), organic manures (FYM, vermicompost, poultry manure), and biofertilizers (Halo Azotobacter and Halo PSB) i.e., T_1: Control, T_2: 75% NPK + 25% FYM + Halo Azo + Halo PSB, T_3: 75% NPK + 25% Vermicompost + Halo Azo + Halo PSB, T_4: 75% NPK + 25% Poultry manure + Halo Azo + Halo PSB, T_5: 50% NPK + 50% FYM + Halo Azo + Halo PSB, T_6: 50% NPK + 50% Vermicompost + Halo Azo + Halo PSB, T_7: 50% NPK + 50% Poultry manure + Halo Azo + Halo PSB, T_8: 25% NPK + 75% FYM + Halo Azo + Halo PSB, T_9: 25% NPK + 75% Vermicompost + Halo Azo + Halo PSB, T_{10}: 25% NPK + 75% Poultry manure + Halo Azo + Halo PSB, T_{11}: 25% NPK+25% FYM+ 25% Vermicompost+25% Poultry manure + Halo Azo + Halo PSB with the recommended dose of fertilizer being (10, 10, 5 g/plant) NPK. Seedlings were raised in a polyhouse, bio-primed, and transplanted at 1 m × 1 m spacing. Observations were recorded from six randomly selected plants per treatment on key vegetative growth parameters including plant height, stem girth, number of leaves, number of branches, plant spread (N–S and E–W), and leaf area at successive growth stages (30 to 150 DAT). The soil was clay loam, slightly alkaline, and low in available nitrogen and phosphorus. Statistical analyses of data were done using ANOVA as per the method of Panse and Sukhatme (1985).

Results and Discussion

The pooled analysis of vegetative parameters in Cape gooseberry exhibited significant effects of different Integrated Nutrient Management (INM) treatments. Among all treatments, the application of 75% NPK + 25% poultry manure + Halo Azo + Halo PSB consistently outperformed the rest across all stages of observation. This treatment had plant height at 150 DAT (116.36 cm), showing the beneficial role of poultry manure in combination with biofertilizers in improving vegetative growth (Table 1). The improvement may be due to better nutrient availability and microbial activity in the rhizosphere, particularly due to the contribution of poultry manure, which is rich in easily available nitrogen, phosphorus, and micronutrients, and the role of Azospirillum and phosphate-solubilizing bacteria (PSB) in nutrient mobilization (Kumar *et al.,* 2014; Bhattacharyya *et al.,* 2015). Likewise, plant spread, both in the north-south and east-west directions, followed a similar pattern. At 150 DAT, the maximum spread was observed under 75% NPK + 25% poultry manure, reaching 121.92 cm (N-S) and 118.69 cm (E-W), indicating improved canopy development and overall vigor (Tables 2 & 3). This suggests that integrated nutrient sources enhance cell division and elongation, leading to better vegetative growth, as witnessed by Singh *et al.* (2018). Similar patterns were witnessed in stem girth, where the same treatment showed the maximum value (3.57 cm) at 150 DAT, showing a significant improvement as compared to control (Table 4). Improved girth indicates stronger stem development, likely due to improved biomass accumulation governed by consistent nutrient supply and improved soil structure (Jat *et al.,* 2011). The number of branches per plant also responded positively to INM. The highest number of branches (18.68) was recorded at 150 DAT under the same treatment (Table 5). The enhancement in branching could be attributed to the enhanced hormonal activity induced by organic manure and biofertilizers, especially the improved production of cytokinins, which promote shoot proliferation (Kannan *et al.,* 2017). In the same way, Leaf area, another important physiological trait, was significantly affected by INM treatments. The highest leaf area (86.20 cm² at 150 DAT) was again observed under the 75% NPK + 25% poultry manure + Halo Azo + Halo PSB treatment (Table 6). Larger leaf areas improve light interception and photosynthetic activity, which are beneficial for biomass production and subsequent reproductive development (Singh *et al.,* 2020). These findings are in accordance with earlier reports suggesting that poultry manure improves leaf expansion and chlorophyll content due to its high nitrogen content and synergistic action with beneficial microbes. The number of leaves per plant showed a consistent increase under integrated treatments. The highest leaf count was also recorded under the poultry manure-inclusive treatment (121.60 leaves at 150 DAT), showing improvement over the control (Table 7). Organic sources improve soil aeration, microbial activity, and the slow release of nutrients, thereby supporting sustained leaf development (Ramesh *et al.,* 2009). Overall, the application of 75% NPK + 25% poultry manure supplemented with biofertilizers emerged as the most effective INM practice for improving vegetative growth in Cape gooseberry. These results in agreement with the global trend of integrating organic and inorganic nutrient sources to enhance crop productivity while maintaining soil health. Studies by Al-Shammary *et al.* (2024) and Bhattacharyya *et al.* (2015) have also emphasized that such combinations not only enhance yield attributes but also contribute to sustainable soil fertility and environmental safety.

Conclusion

Among all treatments, the combination of 75% NPK + 25% poultry manure + Halo Azotobacter + Halo PSB consistently outperformed others in improving plant height, stem girth, plant spread, number of leaves, number of branches, and leaf area. The synergistic effect of reduced chemical fertilizers with organic manures and biofertilizers not only improved plant vigor but also suggests a sustainable approach for nutrient management in fruit crops. Thus, this INM strategy can be recommended for maximizing growth performance and promoting eco-friendly cultivation of Cape gooseberry, especially in nutrient-deficient soils like those of the Bundelkhand region.

Fig. 1 : Nursery preparation

Fig. 3 : Field

Fig. 2 : Pit preparation & manure application

Fig. 4 : Cape gooseberry plant

Fig. 5: Recording no. of branches.

Fig. 6 : Recording the no. of leaves

Table 1 : Response of Integrated nutrient management on plant height (cm) of cape gooseberry (*Physalis peruviana L.*)

Treatments	Plant Height (cm)														
	30 DAT			60 DAT			90 DAT			120 DAT			150 DAT		
	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled
T1	24.17	24.87	24.52	48.82	51.15	49.99	68.18	69.84	69.01	84.99	86.40	85.70	93.72	95.06	94.39
T2	41.98	42.54	42.26	64.08	66.45	65.27	80.02	83.86	81.94	95.85	100.19	98.02	104.51	105.22	104.86
T3	42.05	43.54	42.80	66.08	67.48	66.78	83.54	86.00	84.77	98.00	102.88	100.44	107.24	108.78	108.01
T4	45.68	47.88	46.78	72.57	73.70	73.14	91.13	93.60	92.37	107.25	110.91	109.08	115.24	117.47	116.36
T5	34.54	27.16	30.85	60.00	61.67	60.84	74.12	77.45	75.78	85.80	86.65	86.22	93.07	95.48	94.28
T6	36.52	42.05	39.28	60.81	63.14	61.97	75.89	78.56	77.23	90.31	92.64	91.47	98.45	101.32	99.88
T7	41.80	43.12	42.46	63.27	65.37	64.32	79.44	81.50	80.47	94.12	98.42	96.27	101.67	103.92	102.79
T8	28.45	29.55	29.00	53.13	54.46	53.79	69.20	72.20	70.70	87.21	94.18	90.70	96.27	99.60	97.94
T9	32.66	41.23	36.95	58.88	60.55	59.71	76.10	77.76	76.93	90.85	92.52	91.68	98.18	101.93	100.05
T10	26.70	33.45	30.08	50.63	56.10	53.37	74.35	76.68	75.51	89.31	91.67	90.49	96.85	99.41	98.13
T11	39.07	37.51	38.29	64.91	67.25	66.08	75.45	78.78	77.12	93.61	95.28	94.45	102.10	103.18	102.64
CD at 5%	**3.13**	**3.64**	**3.32**	**5.54**	**6.15**	**5.52**	**7.07**	**7.00**	**6.83**	**9.52**	**8.25**	**9.27**	**8.60**	**8.82**	**8.88**
SEm ±	**1.06**	**1.24**	**1.12**	**1.88**	**2.09**	**1.87**	**2.40**	**2.37**	**2.31**	**3.23**	**2.80**	**3.14**	**2.92**	**2.99**	**3.01**

Table 2 : Response of Integrated nutrient management on plant spread (N-S) (cm) of cape gooseberry (*Physalis peruviana L.*)

Treatments	Plant Spread (N-S) (cm)														
	30 DAT			60 DAT			90 DAT			120 DAT			150 DAT		
	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled
T1	5.70	6.46	6.08	11.77	12.21	11.99	45.45	46.54	45.99	58.94	63.21	61.08	79.57	88.54	84.06
T2	16.90	16.90	16.90	23.86	27.10	25.48	58.07	66.33	62.20	80.22	84.73	82.47	107.76	108.56	108.16
T3	17.39	17.29	17.34	25.14	30.45	27.80	58.54	68.03	63.28	81.42	84.99	83.20	110.29	114.00	112.15
T4	18.60	19.32	18.96	26.09	33.41	29.75	65.12	72.83	68.97	89.59	92.83	91.21	120.45	123.39	121.92
T5	6.87	9.58	8.23	13.38	15.29	14.33	48.06	54.62	51.34	69.03	76.95	72.99	90.93	98.63	94.78
T6	14.11	14.32	14.22	19.70	24.22	21.96	56.35	58.88	57.61	76.86	76.88	76.87	97.60	99.15	98.38
T7	15.43	16.32	15.88	21.69	26.73	24.21	57.09	64.06	60.58	78.94	83.20	81.07	99.74	107.56	103.65
T8	13.88	14.53	14.21	21.61	23.74	22.67	51.65	55.35	53.50	72.91	76.14	74.52	93.29	96.39	94.84
T9	13.87	14.24	14.06	20.80	23.19	21.99	51.00	58.86	54.93	77.61	75.86	76.74	99.56	99.67	99.62
T10	8.56	10.26	9.41	15.29	24.13	19.71	43.02	59.46	51.24	67.79	77.46	72.63	83.40	98.17	90.78
T11	15.20	15.65	15.43	20.82	22.58	21.70	45.96	60.58	53.27	68.07	75.22	71.65	85.16	98.52	91.84
CD at 5%	**1.15**	**1.54**	**1.50**	**1.71**	**2.98**	**2.00**	**6.87**	**5.75**	**6.15**	**6.42**	**6.82**	**6.98**	**8.38**	**8.79**	**8.80**
SEm ±	**0.39**	**0.52**	**0.51**	**0.58**	**1.01**	**0.68**	**2.33**	**1.95**	**2.08**	**2.17**	**2.31**	**2.37**	**2.84**	**2.98**	**2.98**

Table 3 : Response of Integrated nutrient management on plant spread (E-W) (cm) of cape gooseberry (*Physalis peruviana L.*)

Treatments	Plant Spread (E-W) (cm)														
	30 DAT			60 DAT			90 DAT			120 DAT			150 DAT		
	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled
T1	6.77	7.23	7.00	12.64	14.00	13.32	39.55	41.00	40.27	57.58	59.85	58.71	65.87	68.85	67.36
T2	16.55	17.24	16.90	24.37	26.44	25.41	60.49	65.68	63.09	86.94	88.53	87.73	104.34	105.30	104.82
T3	17.58	18.11	17.85	28.11	29.27	28.69	65.94	67.62	66.78	90.66	91.38	91.02	108.09	109.33	108.71
T4	18.79	19.74	19.27	31.34	33.30	32.32	71.06	72.66	71.86	96.78	98.81	97.80	117.87	119.51	118.69
T5	13.23	14.76	14.00	23.56	25.86	24.71	51.41	54.11	52.76	64.66	68.88	66.77	84.58	86.18	85.38
T6	9.45	10.11	9.78	15.12	20.17	17.65	43.10	48.87	45.99	56.73	59.32	58.02	73.86	75.66	74.76
T7	14.55	15.45	15.00	23.85	25.31	24.58	59.58	61.46	60.52	84.15	87.10	85.63	99.66	102.43	101.05
T8	9.11	9.95	9.53	16.78	20.74	18.76	47.51	51.97	49.74	65.23	67.13	66.18	81.05	84.46	82.76
T9	13.66	14.01	13.84	21.66	22.23	21.95	55.51	56.63	56.07	67.08	69.61	68.34	84.88	85.61	85.24
T10	8.76	9.32	9.04	17.09	19.60	18.35	51.69	53.78	52.73	69.03	70.07	69.55	84.44	86.71	85.57
T11	14.35	15.45	14.90	22.35	24.33	23.34	54.07	55.94	55.01	76.54	78.13	77.33	95.40	97.45	96.42
CD at 5%	**0.38**	**0.52**	**1.22**	**2.95**	**3.10**	**1.95**	**5.57**	**5.08**	**5.71**	**6.32**	**7.52**	**7.06**	**9.46**	**9.54**	**8.44**
SEm ±	**1.13**	**1.52**	**0.41**	**1.00**	**1.05**	**0.66**	**1.89**	**1.72**	**1.94**	**2.14**	**2.55**	**2.39**	**3.21**	**3.23**	**2.86**

Table 4 : Response of Integrated nutrient management on stem girth (cm) of cape gooseberry (*Physalis peruviana L.*)

Treatments	Stem girth (cm)														
	30 DAT			60 DAT			90 DAT			120 DAT			150 DAT		
	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled
T1	1.22	1.27	1.24	1.91	2.15	2.03	2.34	2.47	2.40	2.68	2.92	2.80	2.77	2.99	2.88
T2	1.61	1.66	1.64	2.26	2.42	2.34	2.71	2.82	2.77	2.99	3.22	3.11	3.10	3.30	3.20
T3	1.63	1.67	1.65	2.27	2.45	2.36	2.73	2.83	2.78	3.10	3.29	3.19	3.13	3.32	3.23
T4	1.78	1.82	1.80	2.59	2.84	2.72	3.04	3.12	3.08	3.30	3.55	3.43	3.45	3.68	3.57
T5	1.52	1.54	1.53	2.24	2.41	2.32	2.64	2.70	2.67	2.91	3.15	3.03	3.09	3.18	3.13
T6	1.39	1.46	1.42	1.96	2.18	2.07	2.40	2.63	2.51	2.84	3.13	2.99	2.94	3.20	3.07
T7	1.60	1.65	1.63	2.25	2.42	2.33	2.70	2.79	2.75	2.97	3.18	3.08	3.10	3.24	3.17
T8	1.41	1.50	1.46	2.05	2.24	2.15	2.43	2.57	2.50	2.80	3.05	2.92	2.88	3.14	3.01
T9	1.33	1.38	1.36	2.14	2.31	2.23	2.50	2.65	2.58	2.88	3.10	2.99	2.98	3.15	3.07
T10	1.40	1.47	1.44	2.09	2.33	2.21	2.52	2.58	2.55	2.76	3.01	2.88	2.85	3.09	2.97
T11	1.47	1.57	1.52	2.18	2.36	2.27	2.59	2.72	2.65	2.91	3.17	3.04	3.04	3.22	3.13
CD at 5%	**0.14**	**0.13**	**0.14**	**0.28**	**0.36**	**0.29**	**0.31**	**0.25**	**0.24**	**0.29**	**0.28**	**0.28**	**0.31**	**0.30**	**0.29**
SEm ±	**0.05**	**0.05**	**0.05**	**0.10**	**0.12**	**0.10**	**0.11**	**0.08**	**0.08**	**0.10**	**0.10**	**0.10**	**0.11**	**0.10**	**0.10**

Table 5 : Response of Integrated nutrient management on number of branches per plant of cape gooseberry (*Physalis peruviana L.*)

Treatments	Number of branches per plant														
	30 DAT			60 DAT			90 DAT			120 DAT			150 DAT		
	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled
T1	1.23	1.61	1.42	3.04	3.37	3.20	5.02	5.42	5.22	8.22	8.56	8.39	11.36	11.59	11.48
T2	3.84	4.21	4.03	7.40	7.79	7.60	9.78	10.10	9.94	14.20	14.58	14.39	16.96	17.24	17.10
T3	3.90	4.31	4.10	8.00	8.30	8.15	10.32	10.64	10.48	14.35	14.70	14.52	17.00	17.29	17.15
T4	4.18	4.69	4.44	8.61	8.91	8.76	11.12	11.43	11.28	15.84	16.22	16.03	18.55	18.81	18.68
T5	1.53	1.93	1.73	3.91	4.23	4.07	5.70	6.04	5.87	9.43	9.81	9.62	12.15	12.41	12.28
T6	2.23	2.65	2.44	4.34	4.70	4.52	6.33	6.62	6.48	9.89	10.26	10.07	12.59	12.88	12.74
T7	3.03	3.43	3.23	6.92	7.32	7.12	8.93	9.27	9.10	13.43	13.84	13.64	16.21	16.43	16.32
T8	1.71	2.18	1.95	3.93	4.25	4.09	5.78	6.11	5.95	8.65	8.98	8.82	11.42	11.68	11.55
T9	1.87	2.27	2.07	4.06	4.32	4.19	6.19	6.48	6.34	9.44	9.75	9.59	12.07	12.37	12.22
T10	2.12	2.79	2.45	4.99	5.36	5.17	6.61	6.93	6.77	10.23	10.57	10.40	12.98	13.25	13.11
T11	2.04	2.61	2.32	5.60	5.92	5.76	7.60	7.88	7.74	11.11	11.43	11.27	13.88	14.14	14.01
CD at 5%	**0.28**	**0.39**	**0.30**	**0.60**	**0.59**	**0.59**	**0.86**	**0.81**	**0.81**	**1.50**	**1.54**	**1.52**	**1.44**	**1.45**	**1.45**
SEm ±	**0.09**	**0.13**	**0.10**	**0.20**	**0.20**	**0.20**	**0.29**	**0.27**	**0.27**	**0.51**	**0.52**	**0.52**	**0.49**	**0.49**	**0.49**

Table 6 : Response of Integrated nutrient management on leaf area (cm^2) of cape gooseberry (*Physalis peruviana L.*)

Treatments	Leaf area (cm^2)														
	30 DAT			60 DAT			90 DAT			120 DAT			150 DAT		
	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled
T1	15.66	15.72	15.69	26.80	29.40	28.10	42.88	43.58	43.23	59.62	63.48	61.55	66.21	69.68	67.95
T2	23.12	23.26	23.19	34.34	42.34	38.34	50.68	54.58	52.63	68.12	74.08	71.10	74.75	78.33	76.54
T3	23.36	24.94	24.15	35.00	43.53	39.27	51.03	55.00	53.02	73.45	75.45	74.45	77.66	80.42	79.04
T4	26.35	27.81	27.08	38.19	49.13	43.66	55.54	60.62	58.08	80.21	84.52	82.36	84.61	87.79	86.20
T5	20.66	20.87	20.77	31.89	39.79	35.84	47.97	52.41	50.19	63.51	68.25	65.88	69.74	72.39	71.06
T6	19.34	19.51	19.43	30.53	39.20	34.87	46.67	49.18	47.93	64.59	66.30	65.44	71.02	74.41	72.72
T7	22.34	22.54	22.44	33.62	41.76	37.69	49.70	53.42	51.56	68.04	72.22	70.13	74.12	77.57	75.85
T8	18.09	18.13	18.11	29.21	38.20	33.70	45.29	48.72	47.00	63.78	66.02	64.90	70.11	70.35	70.23
T9	15.90	16.08	15.99	27.16	34.76	30.96	43.71	48.21	45.96	61.64	64.72	63.18	67.14	69.85	68.50
T10	16.77	17.28	17.03	28.88	34.79	31.83	42.98	47.72	45.35	66.72	69.33	68.02	71.97	73.54	72.75
T11	20.75	20.81	20.78	31.20	39.01	35.10	48.03	51.45	49.74	67.10	70.00	68.55	72.92	74.85	73.88
CD at 5%	**2.34**	**2.74**	**1.85**	**3.03**	**5.22**	**3.42**	**4.38**	**5.41**	**4.69**	**7.01**	**9.36**	**8.22**	**6.65**	**6.72**	**6.43**
SEm ±	**0.79**	**0.93**	**0.63**	**1.03**	**1.77**	**1.16**	**1.48**	**1.83**	**1.59**	**2.38**	**3.17**	**2.79**	**2.25**	**2.28**	**2.18**

Table 7 : Response of Integrated nutrient management on number of leaves per plant of cape gooseberry (*Physalis peruviana L.*)

Treatments	Number of leaves per plant														
	30 DAT			60 DAT			90 DAT			120 DAT			150 DAT		
	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled	2023-24	2024-25	Pooled
T1	15.64	15.93	15.79	42.83	43.45	43.14	67.71	69.89	68.80	81.95	82.41	82.18	85.28	86.52	85.90
T2	26.28	27.11	26.69	54.58	56.32	55.45	82.25	84.12	83.18	104.73	106.26	105.50	109.49	110.08	109.78
T3	27.71	28.73	28.22	55.17	57.50	56.33	84.33	86.98	85.66	107.88	109.66	108.77	111.83	113.24	112.54
T4	31.84	33.01	32.43	62.34	64.45	63.39	92.11	95.57	93.84	117.03	119.31	118.17	121.05	122.16	121.60
T5	25.23	26.09	25.66	52.41	54.66	53.54	80.27	83.42	81.84	103.25	104.44	103.84	106.25	107.23	106.74
T6	23.83	24.75	24.29	52.61	54.17	53.39	79.81	81.41	80.61	102.15	103.02	102.58	105.81	106.51	106.16
T7	25.72	26.59	26.15	53.42	55.05	54.24	81.22	82.81	82.02	103.56	104.72	104.14	107.56	108.06	107.81
T8	23.20	24.15	23.67	50.95	53.11	52.03	76.78	80.09	78.43	96.64	98.58	97.61	101.31	102.45	101.88
T9	19.98	20.63	20.31	48.21	49.31	48.76	77.55	78.10	77.82	96.14	96.76	96.45	100.47	101.47	100.97
T10	19.38	21.46	20.42	47.72	51.06	49.39	78.65	79.07	78.86	103.01	104.33	103.67	107.01	108.25	107.63
T11	23.51	24.52	24.02	51.45	52.95	52.20	80.15	81.36	80.75	101.71	102.55	102.13	106.04	105.35	105.70
CD at 5%	**2.70**	**2.64**	**2.63**	**4.87**	**5.82**	**4.66**	**6.89**	**6.99**	**7.30**	**9.20**	**9.72**	**9.89**	**9.23**	**9.28**	**9.42**
SEm ±	**0.91**	**0.89**	**0.89**	**1.65**	**1.97**	**1.58**	**2.34**	**2.37**	**2.47**	**3.12**	**3.29**	**3.35**	**3.13**	**3.15**	**3.19**

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