Research Note

THE ASIAN JOURNAL OF HORTICULTURE
Vol. 6 | Issue 2 | December, 2011 | 531-533

Article history:
Received : 16.12.2010
Revised : 15.05.2011
Accepted : 12.08.2011

Integrated nutrient management in carnation (*Dianthus caryophyllus* L.) cv. DESIO under green house

■ S. RENUKARDHYA, R. JAYANTHI[1], Y.C. VISHWANATH[1], G.B. SREENIVASULU[1], V. JANAKI[2] AND S. NATRAJ[1]

Associated Authors:
[1]Department of Horticulture, Junagadh Agricultural University, JUNAGADH (GUJARAT) INDIA

[2]Horticulture Department, Taluk Office Compound, BELLARY (KARNATAKA) INDIA

Author for correspondence :
S. RENUKARDHYA Department of Horticulture, Junagadh Agricultural University, JUNAGADH (GUJARAT) INDIA

Abstract : The present investigation on INM in Carnation cv. DESIO reveals that the 50 per cent RDF + vermi compost + 3 per cent Manchurian tea + 3 per cent panchagavya this helps in reducing the application of inorganic nutrients of about 50 per cent without any yield reduction.

Key words : Carnation, Nutrient management, Under green house, R.D.F., F.M.Y., Vermicompost

How to cite this article : Renukardhya, S., Jayanthi, R., Vishwanath, Y.C., Sreenivasulu, G.B., Janaki, V. and Natraj, S. (2011). Integrated nutrient management in carnation (*Dianthus caryophyllus* L.) cv. DESIO under green house, *Asian J. Hort.*, **6** (2) : 531-533.

Carnation (*Dianthus caryophyllus* L.) is a flowering plant. Its flowers are used in arrangements, they last a long time after being cut and stand well during harsh treatment. Balanced nutrition is one of the most important factor influencing the growth and productivity of carnation. The combined application of organic manures, fertilizers and bio fertilizers along with panchagavya and Manchurian tea may be helpful in the production of quanlity cut flowers. Information on integrated nutrient management is lacking due to raising cost of fertilizers, it has become imperative to arrive at an INM schedule for this crop to achieve target yield at economized use of plant nutrients, soil and optimization of nutrients use of bio inoculants and their efficient application should receive prime importance.

The experiment was conducted during 2004-05 in green house situated at Hebbal. U.A.S Bangalore. The variety chosen was Desio. Experiment comprised of 17 treatments laid out in a randomized block design with 3 replications, individual plot size was 1 m x 1 m. The treatments included inorganic form of N, P_2O_5 and K_2O at 250:80:200 g/m^2 alone as well as in combination with FYM 2 kg/m^2, vermicompost 1000 g/m^2, neem cake 200 g/m^2, bio fertilizers *viz.,* VAM + Azospirulum + PSB @ 240 g/m^2 per year at 2 g/m^2, per plant each bio fertilizer and *Trichoderma* 20 g/m^2. Manchurian tea was used as a foliar spray 500 ml and 4 litre as soil application at 15 days interval. Panchagavya 3 per cent was used as foliar spray and soil application as 4 litre. The growth and yield observations were recorded in three plants randomly selected in each replication.

Significant differences were observed for growth parameters plant height, number of branches, days taken for first flowering, number of flowers per plant per year, flower diameter and flower stalk length. Application of 50 per cent RDF + vermicompost + 3 per cent Manchurian tea + 3 per cent panchagavya recorded maximum plant height (65.86 cm), number of branches (6.50), no. of days taken for flower bud initiation (141.83 days), no. of flowers per plant year (132.33). The increase in height may be due to higher availability of nitrogen which will be converted into aminoacids, the building blocks of proteins which in turn leads to increase in the rate of meristematic activity resulting in better plant height.This is in

confirmation with earlier reports of Arora and Jhon (1978) Mukhopadhayay (1981) and Biswas *et al.* (1982) in carnation.

The increase in number of branches could be also be attributed to sufficient quantity of nutrient flow into plants treated with vermicompost and panchagavya but could have been stimulated leading to an increase in the number of branches. These findings are in line with the finding of Arora and Jhon (1976), Mukhopadhyay and Sadhu (1988) and Banker and Mukhopadhyay (1990).

The vermi compost might have direct role in early flowering through better up take of nutrients,where as in panchagavya, preasence of growth regulating substances such as GA and Cytokinin and some bio fertilizers such as *Acetobacter*, *Azospirillum* and phosphobacteria making nutrients readily available might have lead to early flowering (Somasundaram *et al.,* 2004).

The number of flowers per m^2 was significantly higher (132.22) with 50 per cent RDF + vermi compost + 3 per cent Manchurian tea + 3 per cent panchagavya and also application of fertilizer increased the number of flowers, which made early availability of nutrients to plants that might have resulted in increased the yield . These results are in accordance with Holley *et al.* (1951), Chan *et al.* (1958) and Arora and Saini (1976) in carnation. The maximum diameter of flower bud (6.54 cm) and flower stalk length (60.90 cm) were found in 50 per cent RDF + vermi compost + 3 per cent Manchurian tea + 3 per cent panchagavya. The maximum flower diameter attributed to vermi compost and panchagavya which could have facilited better uptake of nutrients. In addation panchagavya as foliar spray is found to contain GA and Cytokinin which might be present in 50 per cent RDF increase in size of flower and according to findings of Jhon *et al.* (1979) and Starck *et al.* (1991). Increase in flower stalk length might be due to better nutrient uptake, photosynthesis, source and sink relationship besides excellent physiological and biochemical activities and due to the presence of bioinoculants in the panchagavya. This may also be attributed to supply of macro and micro

Table 1 : Influence of Integrated Nutrient Management in carnation for growth yield and quantity parameters

Treatments	Plant height (cm)	No. of lateral branches	Days taken for flower bud initiation	Number of flowers/m^2/ year	Flower diameter (cm)	Stalk length (cm)
T_1:100% RDF and FYM (control)	59.60	5.53	158.36	112.00	5.69	55.73
T_2:50% RDF	57.20	5.00	154.90	104.00	5.65	52.73
T_3: 50% RDF+ 3% Manchurian tea	58.26	5.14	154.10	106.66	5.83	54.33
T_4: 50% RDF+ 3% Panchagavya.	59.03	5.22	152.60	107.33	5.85	54.15
T_5: 50% RDF+ 3% Manchurian tea + 3% Panchagavya	60.50	5.83	144.73	116.00	6.09	56.50
T_6: 50% RDF+ vermicompost	59.16	5.33	153.40	105.20	5.89	54.33
T_7: 50% RDF+ vermicompost + 3% Manchurian tea	61.70	6.03	143.34	120.33	6.15	57.40
T_8: 50% RDF+ vermicompost + 3% Panchagavya	65.53	6.30	141.96	122.80	6.30	57.73
T_9: 50% RDF+ vermicompost + 3% Manchurian tea + 3 % Panchagavya	65.86	6.50	141.83	132.33	6.54	60.90
T_{10}:Common basal dose	52.90	4.36	154.70	86.00	4.76	45.50
T_{11}: Common basal dose + 3% Manchurian tea	55.43	4.40	154.26	90.66	5.01	46.33
T_{12}: Common basal dose + 3% Panchagavya	55.50	4.53	152.25	92.00	5.30	47.16
T_{13}: Common basal dose + 3% Manchurian tea + 3% Panchagavya	55.95	4.63	150.76	93.33	5.33	47.93
T_{14}: Common basal dose+ vermicompost	56.20	4.66	149.90	93.33	5.38	48.33
T_{15}: Common basal dose+ vermicompost + 3% Manchurian tea	56.50	4.75	148.36	94.66	5.55	49.16
T_{16}: Common basal dose+ vermicompost + 3% Panchagavya	57.00	4.76	147.30	100.00	5.62	50.50
T_{17}: Common basal dose+ vermicompost +3% Manchurian tea + 3% Panchagavya	57.16	4.93	144.96	105.33	5.63	51.66
F test	*	*	*	*	*	*
S.E. $\pm$	0.88	0.18	0.68	3.52	0.07	0.63
C.D. (P=0.05)	2.55	0.54	1.97	10.13	0.22	1.83

* indicates significance of values at P=0.05

Common basal dose

1. FYM-2kg/m^2/year
2. Neemcake-200g/m^2/year
3. Biofertilizers - (VAM + azospirulum + PSB) @240 g/m^2/year
4. Trichoderma-20g/m^2/year.

nutrients , enzymes and growth harmones present in vermi compost. The positive effect of vermicompost in increasing the sipke length was reported in golden rod (Kusuma, 2001), gladiolus (Gangadharan and Gopinath, 2000).

REFERENCES

Arora, J.S. and Jhon, A.Q. (1976). Carnation a cut flower for aesthetics. *Indian J. Hort.,* **21**(1) 25-26.

Arora, J.S. and Jhon, A.Q. (1978). Effect of different levels of nitrogen, their time of application and plant density on the growth and flowering of carnation (*Dianthus Caryophyllus* L.).cv. MARGUERITE SCARLET. *Indian J. Hort.,* **35**(3) : 254-259.

Arora, J.S. and Saini,S.S. (1976). Respose of carnation to various levels of N,P and K fertilization. *J.Res.Punjab Agric. Univ.*, **13** (4) : 362-366.

Banker,G.J. and Mukhopadhyay (1990). Effect of NPK on growth and flowering in tuberose cv. DOUBLE. *Indian J. Hort.*, **47** : 120-126.

Biswas, B., Maity, R.G., Mitra and Mukhopadhyay, T.P. (1982). Effect of nitrogen, phosphorus and potassium on growth and flower production in Carnation (*Dianthus Caryophyllus* L.). *Lalbaugh*, **27**(1) : 30-37.

Chan, A.P., Heeney, H.B., Maginner, E.A. and Cannon, H.B. (1958). Mineral nutrition studies on carnations (*Dianthus caryophyllus* L.) Effect of N,P,K,Ca and temperature on flower production. *Proc. American Soc. Hort. Sci.*, **72** : 473-476.

Gangadharun,G.D. and Gopinath,G. (2000). Effect of organic and inorganic fertilizes on growth, flowering and quality of Gladiolus cv. WHITE PROSPERITY. *Karnataka J.Agric Sci.*, **13** (2) : 401-405.

Holley, W.D., Wagher, D.L. and Farmer, R. (1951). Response of carnation varieties,William simand white patrioan various levels of nitrate and moisture coldest flower Cis. *Ass. Bull.*, **26** : 1-3.

Jhon,A.Q.,Arora,J.S. and Sharma,S.C. (1979). Response of nitrogen to flower production,flower size in carnation (*Dianthus caryoplythus* L.) cv. MARGUERATE SCARLET. *Indian J. Hort.,* **36**(1) : 88-92.

Kusuma, G. (2001). Effect of organic and inorganic fertilizers on growth,yield and quality of golden rod (*Solidago Canadensis* L.) M.Sc. (Hort.) Thesis. University of Agricultural Science, BANGALORE, KARNATAKA (India).

Mukyopadyaya and Sadhu, M.K. (1988). Effect of N,P and K.on growth,flower and chemical compositon cardamom, *Indian J. Agric.*, **32**(1):1-6.

Somasundaram, E., Sankaran, N.,Chandragiri and Thaiarajan, I.M. (2004). Bio gas slurry and panchagery promising organic to reconstruct our Agro eco-system. *Agrobios News Letter,* **2** (10) : 13-14.

Starck, J.R., Lukaszuk, K. and Maciesewski, M. (1991). Effect of fertilizer nitrogen and potassium upon yield and quality carnation grown in peat and sawdust.*Acta Hort.,* **294** : 289-296.

****