



Influence of nitrogen on quality parameters of different varieties of chrysanthemum

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Abstract : Investigation was carried out to evaluate the performance of different varieties under varying levels of nitrogen for quality parameters. Variety Flirt combine with 200 kg N per ha gave superior performance in all quality parameters like fresh weight, dry weight, stalk length and shelf life of flower (*in situ*) as compared to other varieties. While maximum vase life was observed in variety Flirt with 100 kg N per hectare and size of flower was largest in variety IIHR-6 with 200 kg N per hectare.

Key Words : Nitrogen, Chrysanthemum, Fresh and dry weight, Stalk length, Vase and shelf life

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INTRODUCTION

Chrysanthemum is an important flower crop grown commercially in Karnataka, Andhra Pradesh, Maharashtra and Gujarat state. Small flower varieties of chrysanthemum are in great demand for making garland, veni and bouquet as well as in different religious occasions, also the great demand of quality flower in national and international flower market. So proper selection of variety and judicious use of nitrogen was quite imperative factor which use to sustained boosting in the quality parameters of chrysanthemum.

MATERIALS AND METHODS

A field trial was conducted at the Floriculture Research Scheme, Regional Horticulture Research Station, Navsari Agricultural University, Navsari during 2008-2009. The soil of experimental field had a pH (7.7), available nitrogen (160 kg/ha), available phosphorus (40.02 kg/ha), available potash (387.50 kg/ha). The experiment was laid out in Factorial Randomized Block Design with three nitrogen levels *i.e.* 100, 150 and 200 kg/ha and three varieties *viz.*, IIHR-6, Flirt and Shyamal. Basal dose of FYM was applied at rate of 20 tonnes per ha, phosphorus and potash were applied uniformly to

each plot at the rate of 100 kg/ha. Nitrogen was applied in two splits; first half dose of nitrogen was applied as basal and second split was applied 30 days after transplanting. The data were collected on fresh and dry weight of flower, size of flower, stalk length, vase life and shelf life (*in situ*) of flower.

RESULTS AND DISCUSSION

The results obtained from the present investigation have been discussed under following heads :

Fresh weight of flower (g):

Fresh weight of flower was affected significantly by nitrogen levels and varieties (Table 1). Maximum fresh weight of flower (2.937g) was recorded in the 200 kg N per hectare. Among different varieties, highest fresh weights of flower (2.928g) was obtained in Flirt. Improvement in fresh weight was due to improvement in vegetative growth of plant under optimum level of nitrogen which caused more storage of carbohydrates and thus improved fresh weight. Similar results were obtained earlier by Jain and Gupta (2004) in marigold.

Dry weight of flower (g):

Data in Table 1 clearly reveal that the maximum dry weight

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Table 1 : Effect of nitrogen levels on the quality parameters of chrysanthemum varieties

Treatments	Fresh weight (g)	Dry weight (g)	Size of flower (cm)	Stalk length (cm)	Vase life (days)	Self life (days)
Nitrogen (N)						
100	2.158	0.441	3.7	9.6	12.8	5.67
150	2.512	0.521	4.1	10.5	10.5	6.42
200	2.937	0.653	5.9	11.6	9.7	7.39
S.E.±	0.10	0.11	0.18	0.41	0.48	0.46
C.D. (P=0.05)	0.012	0.009	0.52	1.23	1.28	0.73
CV %	10.45	10.46	11.66	11.63	11.47	11.78
Varieties (V)						
IIHR-6	2.164	0.435	6.0	9.8	9.6	4.9
Flirt	2.928	0.648	3.8	11.9	12.9	6.12
Shyamal	2.508	0.517	4.2	9.2	11.2	5.2
S.E.±	0.10	0.11	0.18	0.41	0.48	0.46
C.D. (P=0.05)	0.017	0.007	0.54	1.22	1.30	0.69
CV %	10.45	10.46	11.66	11.63	11.47	11.78
Interaction (VXN)						
S.E.±	0.18	0.19	0.31	0.71	0.74	0.79
C.D. (P=0.05)	NS	NS	NS	NS	NS	NS
CV %	10.45	10.46	11.66	11.63	11.47	11.78

NS=Non-significant

of flower was recorded in 200 kg N per ha (0.653 g) where as in case of different varieties Flirt variety showed maximum dry weight (0.648 g). This might be due to the vigorous growth and development of plant under optimum nitrogen, ultimately maximum growth of flower, produced more dry matter. These results are in conformity with Vaghasia (1997).

Size of flower (cm):

Flower size increased with an increase in nitrogen level in different varieties (Table 1). Largest flower (5.9 cm) was obtained in 200 kg N per hectare, while among different varieties, IIHR-6 variety had maximum flower size (6.0 cm). This increase in the size of flower may be contribution of increase maristamatic activity of metabolites from vegetative growth of plants. Similar trend of results were earlier reported by Beniwal *et al.* (2005) in chrysanthemum, Karuppaiah and Krishna (2005) in marigold.

Flower stalk length (cm):

Data in Table 1 reveal that flower stalk length was significantly influenced by nitrogen level and variety. The longest flower stalk length (11.6 cm) was noted in 200 kg N per hectare, while in case of different variety, Flirt showed highest flower stalk length (11.9 cm). The increase in length of flower stalk may be attributed to excessive growth on radial aspect of plant as observed through increase in plant height with higher nutrient application. Similar findings were earlier reported by Kumar *et al.* (2002) in chrysanthemum and Gaikwad *et al.* (2004) in chinaaster.

Vase life of the flower (days):

Various levels of nitrogen and varieties also influenced vase life of flower (Table 1). The longest vase life (12.8 days) obtained in nitrogen applied at 100 kg per hectare. Among different varieties Flirt showed maximum vase life (12.9 days). This improvement in keeping quality due to the nitrogen produces carbohydrates, which extend the vase life but with increase nitrogen depletion of carbohydrates causing digestion of protein which might reduce sugar content, is one factor to extend vase life. These results are in conformity with the earlier finding of Grawal *et al.* (2004) and Behera *et al.* (2002).

Self-life of flower *in situ* (days):

Table 1 reveals that with increase in nitrogen it, increased the self-life. The highest dose of nitrogen 200 kg per ha gave highest self life (7.39 days) as compared to other doses. Among different varieties Flirt gave maximum self life (6.1 days) as compared to other varieties.

This increase in self life might be due to desirable carbohydrate nitrogen ratio (C: N). As the more carbohydrate supply in relation to nitrogen directly affects the self-life. Similar results were reported by Anuradha *et al.* (1990).

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