

Effect of different sources of nitrogen on yield and quality of cabbage (*Brassica oleraceae* L. var. Capitata)

B.G. HIWALE*, P.G. NAIK AND S.V. KAWATHE

Department of Horticulture, Marathwada Agricultural University, PARBHANI (M.S.) INDIA

ABSTRACT

An experiment was conducted to study the effect of different sources of nitrogen on yield and quality of cabbage at Central Nursery, Department of Horticulture, Marathwada Agricultural University, Parbhani during 2008-09. The treatment T₄ (50% RDF + 50% N through sheep manure) was found to produce maximum head yield per hectare (305.51 q/ha), highest total soluble solids (6.13°B), highest ascorbic acid 42.23 (mg/100 g), maximum shape index of head (0.93), maximum keeping quality (9.30 days) and staying capacity of head (12.63 days) followed by T₅ (25% RDF + 75% N through sheep manure), while the lowest performance was observed in treatment T₁ (100% RDF) control.

Key words : Different sources of nitrogen, Yield, Quality and cabbage

INTRODUCTION

Cabbage (*Brassica oleraceae* L. var. Capitata) is an important cruciferous vegetable, which belongs to the genus *Brassica* of the family cruciferae. Cabbage has an anticancer property, as it gives protection against bowel cancer due to presence of indole-3-carbinol.

The production of cabbage is influenced by various factor like use of proper variety, good quality seeds, planting time, nutrition, control of pest, diseases and weed control. Among various cultural practices nutrition is considered to be most important for getting better growth, yield and quality of crop. The use of manures and organic sources is one of the essential requirements to increase the yield. The growth parameters were influenced by the application of inorganic fertilizers in combination with organic manures (Londhe, 2002).

In recent years importance has been given to sustainable crop production. Hence, the need of the hour is to popularize eco-friendly and cost effective organic manures. Integrated plant nutrient management is flexible approach to minimize the use of chemicals and can bridge the gap between nutrient removal and addition. Thus the need of hour is to focus on benefits of organic manures in the vegetable production. Therefore, present investigation entitled "Effect of different sources of nitrogen on growth and yield of cabbage was undertaken"

MATERIALS AND METHODS

The present investigation entitled "Effect of different sources of nitrogen on yield and quality of cabbage" was conducted at Central Nursery, Department of Horticulture, Marathwada Agricultural University, Parbhani. A field experiment was laid out during 2008-09 in Randomized Block Design (RBD) with three replications and seven treatments viz.,

Sr. No.	Treatment No.	Treatment details
1.	T ₁	100% RDF (control)
2.	T ₂	50% RDF + 50% N through FYM
3.	T ₃	25% RDF + 75% N through FYM
4.	T ₄	50% RDF + 50% N through sheep manure
5.	T ₅	25% RDF + 75% N through sheep manure
6.	T ₆	50% RDF + 50% N through vermicompost
7.	T ₇	25% RDF + 75 % N through vermicompost

Half dose of N and full of P₂O₅ and K₂O were applied during transplanting and remaining half dose of N was applied 30 days after transplanting. The observations on various character were recorded and subjected to statistical analysis.

RESULTS AND DISCUSSION

Analysis of variance was carried out for all characters as indicated in Table 1 revealed significant differences among all the treatments.

Head yield (q/ha):

Treatment T₄ recorded highest head yield per hectare which was statistically at par with treatment T₅ and significantly superior over remaining treatments. Lowest head yield per hectare was recorded is treatment T₁ (control). Bharadwaj *et al.* (2002) recorded maximum head yield per hectare in cabbage by application of 33 per cent recommended NPK + 33% FYM + 33% rapeseed cake. Londhe (2002) found highest head yield per hectare in cabbage by application of 50 % N through FYM and 50% N through inorganic fertilizer.

Total soluble solids:

Maximum total soluble solids were recorded in

Table 1 : Effect of different sources of nitrogen on yield and quality of cabbage

Treatment No.	Head yield (q/ha)	Mean total soluble solids (^o B)	Ascorbic acid (mg/100 g)	Shape index of head	Keeping quality of head (days)	Staying capacity of head (days)
T ₁	195.25	5.33	40.60	0.63	6.74	10.50
T ₂	214.91	5.76	41.46	0.86	8.63	11.63
T ₃	223.27	5.63	40.93	0.80	8.43	11.13
T ₄	305.51	6.13	42.23	0.93	9.30	12.63
T ₅	296.36	5.93	41.50	0.90	8.93	12.50
T ₆	267.07	5.96	40.96	0.73	8.80	11.86
T ₇	260.14	5.73	40.70	0.70	8.73	11.76
S.E. ±	9.43	0.09	0.31	0.049	0.27	0.30
C.D. (P=0.05)	29.02	0.28	0.95	0.152	0.85	0.95

treatment T₄ (6.13^oB), which was statistically at par with treatment T₆ (5.96^oB) and T₅ (5.93^oB). Significantly minimum TSS was recorded in T₁ (control) 5.33^oB. Yano *et al.* (1981) reported that application of organic fertilizer increased glucose and fructose, but inorganic N caused a slight decrease in sugar content in cabbage.

Ascorbic acid:

Maximum ascorbic acid content in cabbage head was recorded in treatment T₄ (42.23 mg/100 g), which was statistically at par with treatment T₅ (41.50 mg/100 mg) and T₂ (41.46 mg/100 g). Significantly lowest ascorbic acid was recorded in treatment T₁ (40.60 mg/100 g). Mahendra and Kumar (1997) and Gurav (2002) recorded highest ascorbic acid content in cabbage with application of N through organic sources.

Shape index of head:

Highest shape index of head was observed in treatment T₄ (0.93), which was statistically at par with treatment T₅ (0.90), T₂ (0.86) and T₃ (0.80) and significantly superior over remaining treatments under study. Lowest shape index was recorded in treatment T₁ (0.63). Similar results were obtained by Mahendra and Kumar (1997) in cabbage.

Keeping quality of head:

Maximum keeping quality of head was observed in treatment T₄ (9.30 days) which was statistically at par with treatment T₅ (8.93 days), T₆ (8.80 days), T₇ (8.73 days) and T₂ (8.63 days) and superior over rest of treatments. Minimum keeping quality of head was observed in treatment T₁ (6.74 days). Similar results were obtained by Berad (1990) in cabbage.

Staying capacity:

Maximum staying capacity of head was observed in

treatment T₄ (12.63 days), which was statistically at par with treatment T₅ (12.50 days), T₆ (11.86 days) and T₇ (11.76 days) and superior over treatment T₃, T₂ and T₁. The minimum staying capacity of the head was observed in treatment T₁ (10.50 days). Results on similar time were obtained by Gurav (2002). Chitrakar (2004) in cabbage.

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