

Effect of nitrogen levels and varieties on vegetative growth and maturity parameters of fenugreek

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ABSTRACT

In the present investigation, the treatment comprised of the four levels of nitrogen, 0, 30, 60 and 90 kg per ha and four varieties viz, Rmt-1, Rmt-143, Rmt-303 and Pusa Early Bunching. The results indicated that the vegetative growth in terms of plant height and number of branches were increased with the application of 90 kg nitrogen per ha in the variety Pusa Early Bunching. The maturity parameters, like days required for first flowering, days required for 50 per cent flowering, days required for 50 per cent pod formation, days required for maturity of seed crop and days required for harvesting of seed crop were found to be delayed with increasing levels of nitrogen. These maturity parameters were found to be earlier in the variety Pusa Early Bunching.

Key words : Fenugreek, Nitrogen, Growth, Maturity

INTRODUCTION

Fenugreek (*Trigonella foenum-graecum* Linn.) is the third largest seed spice in India after coriander and cumin, specially known as 'Common Methi'. Fenugreek belongs to the family leguminosae and subfamily papilionaceae. India is the major producer and exporter of this seed spice. The dried fenugreek seeds, the leaves, fresh and dried and the tender shoots are all consumed and is valued as food, flavouring agent and medicines. In order to get higher production of good quality vegetable and seed spice, it is required to produce quality seed. The cultural practices viz., different doses of fertilizers and varieties play an important role in the growth and maturity parameters. In manurial trials conducted throughout India the nitrogen has showed to increase the crop yield invariably due to the better photosynthetic activity. Nitrogen is the major element required in adequate quantity for the growth and reproductivity of the plant.

Thus, keeping in view the potentialities of nitrogen and varieties for higher seed yield in fenugreek, the experiment carried out with the objective, to study the effect of nitrogen levels and varieties on vegetative growth and maturity parameters of fenugreek.

MATERIALS AND METHODS

The present investigation was carried on effect of nitrogen levels and varieties on vegetative growth and maturity parameters of fenugreek, at the Main Garden, University Department of Horticulture, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola (M.S.) during *Rabi*

season of the year 2005-2006. The experiment was laid out in the Split Plot Design with three replications and sixteen treatments combinations comprising of four levels of nitrogen (0, 30, 60, and 90 kg per ha) and varieties Rmt-1, Rmt-143, Rmt-303, Pusa Early Bunching. The selected varieties were planted at a spacing of row to row 30cm.

Main factor 'A' (Nitrogen levels)

N₀ - 0 kg N per ha.

N₁ - 30 kg N per ha.

N₂ - 60 kg N per ha.

N₃ - 90 kg N per ha.

Sub factor 'B' (Varieties)

V₁ - Rmt-1

V₂ - Rmt-143

V₃ - Rmt-303

V₄ - Pusa Early Bunching

All the recommended agronomic packages of practices were followed to raise healthy crop. Data were recorded on ten competitive plants selected randomly in each replication on various quantitative characters. The data were analyzed statistically as per the method prescribed and suggested by Panse and Sukhatme (1967)

RESULTS AND DISCUSSION

The results from Table 1 indicate that the maximum growth (88.72 cm) in terms of plant height and number of branches per plant (11.61) were increased with the increasing levels of nitrogen and found to be maximum with an application 90 kg per ha (N₃). It is due to the property of nitrogen to enhance the vegetative growth

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Table 1 : Effect of nitrogen levels and varieties on vegetative growth and maturity parameters of fenugreek

Character name	Nitrogen levels(kg ha ⁻¹)				C.D. (P=0.05)	Varieties				C.D. (P=0.05)
	N ₀ (0 kg)	N ₁ (30 kg)	N ₂ (60 kg)	N ₃ (90 kg)		V ₁ (Rmt-1)	V ₂ (Rmt-143)	V ₃ (Rmt-303)	V ₄ (Pusa early Bunching)	
Plant height(cm)	75.91	80.42	84.33	88.72	0.64	80.46	82.08	82.49	84.35	0.50
Branches per plant	6.42	8.24	11.46	11.61	0.46	8.93	9.22	9.45	10.11	0.28
Days required for first flowering	30.63	32.51	34.00	36.15	0.84	34.31	34.25	33.83	30.90	0.44
Days required for 50 per cent flowering	40.79	42.90	44.09	45.81	0.79	44.23	44.31	44.01	41.03	0.67
Days required for 50 per cent pod formation	58.43	60.61	61.83	63.36	0.90	61.80	61.80	61.77	58.86	0.89
Days required for maturity	117.10	123.56	126.79	133.18	12.03	134.87	134.74	133.01	98.08	14.75
Days required for harvesting	121.60	127.65	130.90	137.34	1.56	138.99	138.90	137.60	102.00	1.01

capacity of plant to utilize more amount of nitrogen with increasing dose of its application. These results are closely confirmed with the findings of Pareek and Gupta (1981) and Chaudhary (1999). The varietal difference in respect of plant height (84.35cm) and number of branches per plant (10.11) were recorded maximum in variety Pusa Early Bunching (V₄), than other varieties. Similar results were obtained by Kaswan *et al.*(1995). The maturity parameters in terms of days required for first flowering (36.15 days) and days required for 50 per cent flowering (45.81 days) were found to be delayed with higher doses of nitrogen 90 kg per ha (N₃). This might be due to the fact that, more utilization of nitrogen resulted into more vegetative growth for longer span and ultimately delayed flowering have been produced. Similar results were obtained by Mandal and Maiti (1992) and Kaswan *et al.* (1995). Significantly minimum days required for first flowering (30.90 days) and for 50 per cent flowering (41.03 days) were recorded in the variety Pusa Early Bunching (V₄) as compared to other varieties. Similarly higher level of nitrogen 90 kg per ha (N₃) was found significantly maximum (63.36 days) and minimum period (58.43 days) under the control treatment (N₀) in respect of days required for 50 per cent pod formation. The variety Pusa Early Bunching (V₄) took significantly minimum period (58.86 days) for 50 per cent pod formation than other varieties. This might be due to

varietal behaviour. These results are in close agreement with the findings of Kaswan *et al.*(1995).

In respect of days required for maturity of seed crop was recorded significantly minimum period (117.10 days) in the control treatment (N₀) whereas maximum period (133.17 days) was recorded under the treatment of nitrogen 90 kg per ha (N₃). It is clear from the findings that, an increasing nitrogen levels required more period for maturity of seed crop by diverting the carbohydrates into delayed vegetative growth which would have resulted in more period for maturity of crop. Significant result was recorded in respect of days required for maturity in the Pusa Early Bunching(V₄) which took minimum period for maturity (98.08 days). Similar results were obtained by Mandal and Maiti (1992), Kaswan *et al.*(1995) and Rao *et al.*(1983) in fenugreek. The maturity parameter in respect of days required for harvesting of fenugreek seed crop were significantly increased with an application of higher nitrogen levels *i.e.* significantly minimum period was recorded in the control treatment(121.60 days) and significantly maximum period(137.34) was recorded in the treatment nitrogen 90 kg per ha (N₃). Significant effect of variety Pusa Early Bunching (V₄) in respect of days required for harvesting required minimum period (102 days) as compared to other varieties. Similar results were recorded by Rao *et al.* (1983).

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