Journal of Pharmacognosy and Phytochemistry

Available online at www.phytojournal.com

E-ISSN: 2278-4136
P-ISSN: 2349-8234
JPP 2019; 8(3): 3630-3632
Received: 13-03-2019
Accepted: 15-04-2019

SV Bhavar
Chilli and Vegetable Research Unite, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, Maharashtra, India

SM Ghawade
Associate Professor, Chilli and Vegetable Research Unit, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, Maharashtra, India

SG Thakare
Ph.D. Scholar, Department of Horticulture, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, Maharashtra, India

RP Gore
Soil Expert, Solarvibes, Germany

Correspondence
SV Bhavar
Chilli and Vegetable Research Unite, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola, Maharashtra, India

Influence of sowing times and fertilizer levels on seed yield and yield contributing parameters in Kasuri Methi (*Trigonella corniculata* L.), under Akola (M. S.) conditions

SV Bhavar, SM Ghawade, SG Thakare and RP Gore

Abstract
The present investigation entitled "Effect of sowing time and fertilizer levels on seed yield of kasuri methi (*Trigonella corniculata* L.)" was carried out in the year of 2016 – 2017 and 2017-18, at Chilli and Vegetables Research Unit, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola. An experiment was laid out in Factorial Randomized Block Design (FRBD) with twenty four treatment combinations. There were two factors of an experiment, first being sowing time with six levels and second was fertilizer dose with four levels and replicated thrice to study the sowing times and fertilizer levels effect on seed yield and yield contributing characters in kasuri methi.

Results of the present investigation revealed that, the yield and yield contributing characters viz. days to flower initiation, days to 50% flowering, florets per plant, pods per floret, seeds per pod, seed yield per plant, yield per plot (g) and yield per ha (q) were increased with early sowing D_1 (10th October) and with the maximum fertilizer dose F_4 (50:50:25 kg ha^{-1} NPK). As regards the interaction effect of sowing times and fertilizer levels, the treatment combination D_1F_4 viz. kasuri methi sown on 10th October and fertilized @ 50:50:25 kg ha^{-1} NPK produced significantly the maximum seed yield and yield contributing characters.

Keywords: Fertilizer levels, sowing times, yield parameters, kasuri methi

Introduction
Kasuri methi is called as 'champa methi', 'marwari methi' (Anupama, 2012) [1], 'nagauri methi', 'paan methi' or 'scented methi' (Godara *et al*., 2013) [3]. *Trigonella corniculata* L. is herbaceous, bushy, slow growing annual spice crop, growing to the height of 60 cm. Leaves are pinnate, flowers are hermaphrodite, yellow in colour having racemes type inflorescence. Pods are 1.2-2.0 cm long, sickle shaped, 4 to 8 seeded. Kasuri methi is a semi-arid crop, mainly grown as a *rabi* season crop and the cultivation methods of kasuri methi is more or less similar to that of common methi.

Kasuri methi is a multipurpose crop. Its every part is useful and utilized in one or other forms as food, fodder, medicine and cosmetics. Seeds and tender pods are used as spice. These are also used in indigenous medicines like diuretic, tonic, carminative, astringent, aphrodisinic (Sharma, 2006) [7]. Kasuri methi is recognized as a vital source of essential minerals, vitamins and dietary fibers. Diosgenin has been identified as the major steroidal sapogenin in the leaves of kasuri methi (Varshey and Sood, 1971). Infusion of seeds is given to small pox patients as a cooling drink. It is also used in sweets served to ladies during post natal period.

Material and methods
The present investigation was carried out during *rabi* seasons of 2016-2017 and 2017-18, at Chilli Vegetable Research Unit, Dr. Panjabrao Deshmukh Krishi Vidyapeeth, Akola. An experiment was laid out in Factorial Randomized Block Design (FRBD) with twenty four treatment combinations. There were two factors of an experiment, first being sowing time with six levels viz., D_1 (10th October), D_2 (30th October), D_3 (20 November), D_4 (10th December), D_5 (30th December), D_6 (20th January) and another was fertilizer dose with four levels i.e. F_1 (40:40:20 kg ha^{-1} NPK), F_2 (40:50:25 kg ha^{-1} NPK), F_3 (50:40:20 kg ha^{-1} NPK) and F_4 (50:50:25 kg ha^{-1} NPK) and thee replications were undertaken, for study the sowing times and fertilizer levels effect on yield and yield contributing characters for seed yield of kasuri methi. Irrigations were given at an interval of 4-5 days during the whole cropping period depending on the soil moisture conditions. Plot size 2.10 m x 2.00 m, spacing 30 cm x 20 cm and seed was sown on flat bed. Variety Rajendra Abha was used for conducting the experiment.

In order to evaluate the effects of different treatments on yield and yield contributing parameter of crop, necessary periodical observations were recorded and the recorded data was statistically analyzed by ANOVA method given by Panse and Sukhatme (1967) [5].

Results and discussions

Effect of sowing times

It was observed from the data pertaining to Table 1 revealed that, sowing times significantly influenced on different yield contributing characters i.e. days to flower initiation, 50% flowering, florets per plant, pods per floret, seeds per pod, seed yield per plant (g), seed per plot (g) and yield per ha (q). Significantly, the maximum days to flower initiation and 50 per cent flowering (53.81 and 59.42, respectively) were reported by the sowing date 30th October (D_2). While, the maximum florets per plant (35.45), pods per floret (23.54), seeds per pod (5.63), seed yield per plant (5.32 g), seed yield per plot (370.77 g) and yield per ha (8.83 q) were attained by sowing date 10th October (D_1). However, the minimum days to flower initiation and 50 per cent flowering (47.49 and 53.09, respectively), minimum florets per plant (16.75), pods per floret (12.98), seeds per pod (2.92), seed yield per plant (2.69 g), seed yield per plot (189.39 g) and seed yield per ha (4.51 q) were obtained by sowing date 20th January (D_6).

Daley in sowing hasten flowering. These wide variation in occurrence of flower initiation and 50% flowering might be due to the weather variation particularly temperature within the different dates of sowing. While, better vegetative growth with the early sowing date (10th October) coupled with increased net photosynthesis towards reproduction structure, on the other might have increase the yield attributes like florets per plant, pods per floret and seeds per pod which is effect on more seed yield per plot. Similar results have been recorded by the earlier workers like Nandre *et al*. (2011) [4] and Singh *et al*. (2017[a]) [6] in fenugreek.

Effect of fertilizer doses

It is evident from the data presented in Table 1 that, days to flower initiation, 50 per cent flowering, florets per plant, pods per floret, seeds per pod, seed yield per plant (g), seed yield per plot (g) and yield per ha (q) were showed significant differences in respect to fertilizer levels. Significantly, the maximum days to flower initiation and 50 per cent flowering (50.89 and 56.89, respectively) were reported by the fertilizer dose 40:40:20 kg ha^{-1} NPK (F_1). While, the maximum florets per plant (27.82), pods per floret (19.34), seeds per pod (4.52), seed yield per plant (4.26 g), seed yield per plot (297.71 g) and yield per ha (7.09 q) were found by the fertilizer dose 50:50:25 kg ha^{-1} NPK (F_4). However, the minimum days to flower initiation and 50 per cent flowering (49.82 and 56.03, respectively) were reported by the fertilizer dose 50:50:25 kg ha^{-1} NPK (F_4). While, the minimum florets per plant (24.89), pods per floret (17.60), seeds per pod (4.03), seed yield per plant (3.90 g), seed yield per plot (273.58 g) and yield per ha (6.51 q) were obtained by the fertilizer dose 40:40:20 kg ha^{-1} NPK (F_1).

The delay in flowering in crop supplied with different levels of primary nutrients might be due to the fact that, lower levels of nutrients delayed the flowering mainly because of poor growth parameters which might have passed through long span resulted to delay in flowering. Similarly, The application of higher level of primary nutrients positively effects on growth parameters like plant height and number of branching might have passed through long span resulted to delay in flowering and positively effects on yields and yield attributes and which is positively correlated with number of branches per plant, florets per plant, pods per floret and seeds per pod. Similar results have been recorded by the earlier workers like Datta *et al*. (2017) [2] in fenugreek.

Table 1: Effect of dates of sowing and fertilizer levels on seed yield and yield contributing parameters in kasuri methi

Treatments	Days to flower initiation	Days to 50% flowering	Florets per plant	Pods per floret	Seeds per pod	Seed yield per plant	Seed yield per plot (g)	Seed yield per ha (q)
Dates of sowing (D)								
D_1 - 10th October	52.25	58.03	35.45	23.54	5.63	5.32	370.77	8.83
D_2 - 30th October	53.81	59.42	34.07	22.74	5.41	5.18	361.85	8.42
D_3 - 20th November	50.69	56.86	26.93	20.09	4.67	4.34	305.15	7.27
D_4 - 10th December	49.25	55.71	24.78	17.66	4.04	3.61	259.42	6.18
D_5 - 30th December	48.11	54.46	20.25	14.61	3.15	3.26	220.88	5.27
D_6 - 20th January	47.49	53.09	16.75	12.98	2.92	2.69	189.39	4.51
'F' test	Sig	Sig	Sig	Sig	Sig	Sig	Sig	Sig
SE(m) ±	0.10	0.12	0.39	0.22	0.06	0.05	3.54	0.08
CD at 5%	0.27	0.33	1.12	0.62	0.17	0.15	10.08	0.24
Fertilizer dose (F)								
F_1 - 40:40:20 kg ha^{-1} NPK	50.89	56.89	24.89	17.60	4.03	3.90	273.58	6.51
F_2 - 40:50:25 kg ha^{-1} NPK	50.02	56.24	26.93	19.02	4.36	4.12	288.33	6.87
F_3 - 50:40:20 kg ha^{-1} NPK	50.55	56.57	25.84	18.46	4.31	3.99	278.69	6.64
F_4 - 50:50:25 kg ha^{-1} NPK	49.82	56.03	27.82	19.34	4.52	4.26	297.71	7.09
'F' test	Sig	Sig	Sig	Sig	Sig	Sig	Sig	Sig
SE(m) ±	0.08	0.10	0.32	0.18	0.05	0.04	2.89	0.07
CD at 5%	0.22	0.27	0.91	0.51	0.14	0.12	8.23	0.20
Interaction (D X F)								
'F' test	NS	NS	Sig	Sig	NS	Sig	Sig	Sig
SE(m) ±	0.19	0.23	0.79	0.44	0.12	0.11	7.08	0.17
CD at 5%	-	-	2.24	1.24	-	0.30	20.16	0.48

Conclusion

From the two year experimentation, it could be concluded that, the yield and yield contributing parameter such as days to flower initiation and 50 % flowering were significantly decreased with delay sowing (20th January) and higher fertilizer dose applied @ 50:50:25 kg ha^{-1} NPK (F_4). While,

florets per plant, pods per floret, seeds per pod, seed yield per plant (g), seed yield per plot (g) and yield per ha (q) were significantly increased with early sowing (10th October) and fertilized with 50:50:25 kg ha^{-1} NPK (F_4). There is scope to undertake this study for more years for confirmation of the results obtained in present study.

Reference

1. Anupama G. Effect of nitrogen and spacing levels on growth and yield of kasuri methi (*Trigonella corniculata* L.) var. Pusa kasuri. M.Sc. M.Sc. (Horti) Thesis (Unpub.). Submitted to University of Horticultural Sciences, Bagalkot, 2012.
2. Datta Nilanjana, Jitesh Hore K, Shreyasi Malik, Tapas Sarkar. Response of fenugreek (*Trigonella corniculata* L.) to different levels of nitrogen, phosphorus and potassium. Curr. J of App. Scie. and tech. 2017; 22(5):01-08.
3. Godara AS, Kapade S, Laland Ravindra Singh G. Effect of phosphorus and sulphur levels on the performance of Nagauri Methi (*Trigonella corniculata* L.) under semi-arid areas of Rajasthan. International J Seed Spices. 2013; 3(2):70-73.
4. Nandre DR, Ghadge RG, Rajput BS. Effect of sowing dates and nutrient management on growth and seed yield fenugreek. Adv Res. J Crop Improt. 2011; 2(2):215-220.
5. Panse VG, Sukhatme PV. Statistical methods for Agricultural workers. New Delhi, ICAR, 1967.
6. Singh B, Kumar Nanavati, Sirpurkar WM, Nanavati VS. Standardization of date of sowing and stage of pinching on fenugreek yield and quality parameters. International J. of Agriculture Sciences. 2017[a]; 7(4):1309-1313.
7. Sharma SK. Effect of different fertility levels on yield and nutrient uptake by kasuri methi (*Trigonella corniculata* L.). M.Sc. Thesis (Unpub.) Jawaharlal Nehru Krishi VishwaV idyalaya, Jabalpur, 2006.
8. Varshney IP, Sood AR. J Indian. Appl. Chem. Soc. 1971; 34:208.