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Varietal Evaluation of Fenugreek (*Trigonella foenum-graecum* L.) for Growth and Yield

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Abstract Seven entries of fenugreek (*Trigonella foenum-graecum* L.) collected from different research institutes were evaluated for various growth parameters and seed yield during *rabi* season of 2013. Significant differences were obtained for all the parameters. Maximum seed yield 12.89 q ha^{-1} was recorded in Rajendra Kranthi, which was statistically superior over all other cultivars. Rajendra Kranthi gave 12.89 q ha^{-1} higher seed yield over local check followed by Kasuri Selection (12.20 q ha^{-1}).

Keywords Fenugreek, Seed yield, Growth characters, Varietal evaluation.

Introduction

Fenugreek (*Trigonella foenum-graecum* L.) is an annual diploid species, popularly grown by its vernacular name "methi", belonging to the sub-family Papilionaceae of the family Fabaceae. It is native to the countries bordering the Eastern shores of Mediterranean region, extending to Central Asia. It is a self- pollinated crop with chromosome no. 2n=16. It is an important condiment crop grown for both seed as well as leaves purpose, largely in North India during *rabi* season. Fenugreek can be grown under a wide range of climatic conditions. It is extensively used as fresh leaves (green leafy vegetable), chopped s (salad), micro greens (salad) and pot herbs (decoration), seeds (spice, condiments or medicines extracts) and powders (medicines). It is widely cultivated in India, Iran, Nepal, Bangladesh, Pakistan, North Africa, East Africa, Ukraine, South East Asia, Russia, Greece, Argentina, Egypt, France, Spain, Turkey, Morocco and China. In India, it is grown in about 93 thousand hectare with an annual production of 113 thousand tonnes during 2013 (Anonymous 2013). Being a cool season crop, it is widely grown in Rajasthan, Madhya Pradesh, Gujarat, Uttar Pradesh, Punjab, Haryana and Maharashtra states.

It has medicinal values to prevent constipation, remove indigestion and stimulate spleen and liver (Acharya et al. 2007). Fenugreek seeds are used to treat flatulence, dysentery, enlargement of lever span, gout, headache, deafness, baldness, vata disease, leucorrhoea, back pain, mouth ulcer, abdominal pain, kidney problem, hernia, beriberi, chapped lips, diabetes, colic,dropsy, spleen, heart disease, obesity. Seeds are considered to be a restorative, to ease mensuration, promote milk flow and have aphrodisiacal property. Yield is a complex character governed by several other yield attributing characters. In spite of its large scale cultivation in India, the productivity of the crop is very low because of lack of proper attention given to this crop. Use of improved varieties/cultivars is

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Table 1. Growth, yield and yield attributes of fenugreek varieties under Allahabad agro-climatic condition.

Sl. No.	Varieties	Plant height (cm)	Branches per plant	Leaves per plant	Days to 50% flowering	Pods per plant	Pod length (cm)	Grains per pod	Green herbage yield (q ha^{-1})	Seed yield (q ha^{-1})
1.	Pusa early bunching type	41.33	6.04	68.83	31.63	23.85	11.00	18.87	20.90	10.64
2.	Pusa Kasuri	34.17	5.78	57.78	30.47	25.89	11.15	19.53	19.50	11.47
3.	Methi No-47	39.66	5.89	61.98	31.83	31.73	11.78	21.33	19.25	11.93
4.	Rajendra Kranthi	31.99	5.44	55.17	30.01	32.40	12.02	23.53	18.70	12.89
5.	Methi No-04	33.11	5.45	55.31	30.75	27.00	11.28	19.63	18.22	11.90
6.	Kasuri selection	36.78	5.79	60.00	30.38	32.28	12.00	22.28	18.65	12.20
7.	Local selection	31.38	4.89	45.22	31.50	24.98	11.00	19.40	17.38	10.90
	CD at 5% level	0.97	1.00	1.52	1.33	1.44	0.32	1.56	0.98	11.81
	Grand mean	35.48	5.61	57.75	30.93	28.30	11.60	20.65	18.67	11.71
	SEm (±)	0.47	0.48	0.73	0.64	0.70	0.15	0.75	0.47	5.72

one of the important factors for increasing the area and production of the crop. The present paper aims to report the performance of different varieties performance in Allahabad conditions.

Materials and Methods

The seven fenugreek varieties (Pusa early bunching type, Pusa Kasuri, Methi No-47, Rajendra Kranthi, Methi No-04, Kasuri Selection, Local Selection) were evaluated in a randomized complete block design (RCBD) with three replications in the Central research farm Department of Horticulture, Allahabad Agriculture University, Allahabad during *rabi* season of 2013. All recommended packages and practices were followed to raise healthy crop and application methods of manure and fertilizers were applied in the experimental field (Chattopadhyay et al. 2007). Necessary intercultural operations and irrigation were done during the crop period to ensure normal growth and development of the plants. The varieties were cultured in 4-line with the size of 2.5 meter in each replication. Distance between the plants and between the lines was 5 cm and 40 cm respectively. Data on, leaves per plant, branches per plant, days to 50% flowering, pod length, grain yield per plot (g), herbage yield, plant height, pods per plant, seed yield/plant, 100 seed weight were recorded. The data on seven quantitative characters are recorded on five competitive and randomly selected plants in each variety and in each replication. Observations on morphological and fruit yield were recorded from five randomly selected plants from each replication. The data statistically analyzed for different characters as suggested by Panse and Sukhatme (1961).

Results and Discussion

Significant difference was observed for all the parameters (Table 1). The plant height among different entries ranged from 31.38 to 41.33 cm with maximum for Pusa early bunching type which was statistically at par with all the entries except Local Selection and Rajendra Kranthi. Number of branches per plant ranged from 4.89 to 6.04 being maximum in Pusa early bunching type. As regards leaves per plant, Pusa early bunching type was significantly superior to all the other cultivars. Days to 50% flowering varied from 30.01 to 31.83 being maximum in Methi No-47. Maximum number of pods per plant was also found in Rajendra Kranthi. Grains per pod ranged from 18.87 to 23.53 being maximum for Rajendra Kranthi and minimum for Pusa early bunching type. Green herbage yield ranged from 17.38 to 20.90 (q ha^{-1}) with maximum for Pusa early bunching type and minimum for Local selection.

The seed yield depends upon number of pods per plant, grains per pod, number of seeds per pod and test weight. Significant variation among the vari-

eties might be due to genetic characters. All yield-attributing characters were superior in Rajendra Kranthi as compared to other varieties and ultimately the seed yield per hectare was maximum followed Kasuri Selection, Methi No-47, Methi No-04, Pusa Kasuri. These results are in conformity with the findings of Santhosha et al. (2014), Singh et al. (2012), Thakral et al. (2006). On the basis of average yield the maximum seed yield (12.89 q/ha^{-1}) was recorded as in Rajendra Kranthi, which was statistically superior over all other cultivars except Kasuri Selection. Rejendra Kranthi gave 11.59% higher seed yield over local check followed by Kasuri Selection (10.97%). This was recommended for further breeding programs. The cultivation of these superior varieties would help in upgrade the production of fenugreek in the country.

Conclusion

It may be concluded that Rajendra Kranthi and Pusa early bunching type showed better performance in respect of vegetative growth and yield.

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