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## Performance of potential fenugreek genotypes for seed yield and its attributing traits in vertisols of Central India

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### Abstract

The present investigation was undertaken for three years 2015-16 to 2017-18 at Department of Horticulture, JNKVV, Jabalpur during *Rabi* season to identify high yielding fenugreek genotypes suitable for Central India. All the 16 genotypes which were selected for the experiment varied significantly with respect to growth, yield and yield attributing characters. Among tested genotype the DFC-17 was found superior with respect to growth parameters, Seed yield q/ha was highest in check RMt-361 (18.32q/ha) which was at par with RM-204 (17.29q/ha) and JFG-224 (16.66q/ha). The National Check RMt-361 was found to be the earliest and flowered in 43.78 days even it had maximum number of branches.

**Keywords:** Fenugreek, performance evaluation, Central India

### Introduction

Fenugreek (*Trigonella foenum-graecum* L.) also called 'ox horn' or 'goat horn' because of the pods projecting in opposite directions usually from the nodes of the stem base that resembles ox or goat horns is widely distributed throughout the world. It is mainly cultivated in India, Argentina, Egypt, Morocco, South France, Algeria, Ethiopia and Lebanon. The major fenugreek producing states are Rajasthan, Gujarat, Madhya Pradesh, Haryana, Maharashtra, Uttar Pradesh, Punjab, Bihar, Tamil Nadu and Andhra Pradesh. In addition to its use of seeds as spice, leaf as vegetable and fodder, it has medicinal value too. Seeds are used as spice, condiments and flavoring agent for food preparation. Being a leguminous crop, it also serves as a soil renovating crop, its root nodules containing bacteria *Rhizobium* which improves the soil fertility by fixing atmospheric nitrogen. Total area and production of fenugreek is 219720 hectare and 311280 tonnes in 2017-18 respectively (Spice board, 2019). Rajasthan is the leading state in fenugreek production followed by Madhya Pradesh, Gujarat and Haryana. In Madhya Pradesh it is grown in an area of 53440 ha with 104220 tonnes production (Spice Board, 2019) [7]. Hence, taking into account the importance of fenugreek as one of the important seed spice crop, genetic variability were assessed in fourteen fenugreek genotypes along with two checks over three consecutive years at JNKVV, Jabalpur.

### Material and methods

Fourteen fenugreek genotypes along with two checks over were evaluated in randomized block design (RBD) with three replications during *rabi* for three consecutive years 2015-2016 to 2017-18 under AICRP on Spices at Department of Horticulture, JNKVV, Jabalpur. The experimental site was located at an altitude of 411m from the mean sea level on 23°10' North latitude and 79°59' East longitude in Kymore Plateau and Satpura Hill Agroclimatic zone of Madhya Pradesh. Each entry was sown in plots of size 3×2.4 m at 30 cm and 10 cm distance between rows and plants, respectively during each year of experimentation. Application of 5 t FYM ha<sup>-1</sup>, 25 kg N ha<sup>-1</sup>, 50 kg P<sub>2</sub>O<sub>5</sub> ha<sup>-1</sup> and 50 kg K<sub>2</sub>O ha<sup>-1</sup> was applied as basal dose. All the recommended agronomic practices were adopted for raising a good crop. The data on days to first flowering was recorded on plot basis, while ten randomly selected plants from each of the entry in each replication were tagged for recording the observations on plant height (cm), number of branches per plant, number of pods/ plant pod length (cm), seed yield (g)/plant and

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Seed yield q/ha. Analysis of variance was carried out as per the procedure suggested by Panse and Sukhatme, 1963<sup>[3]</sup>.

## Results and Discussion

Sixteen genotypes of fenugreek including check were evaluated for three consecutive years (2015-16, 2016-17 and 2018-19) and the pooled analyzed data is depicted in Table-2. The result revealed that ample amount of variability is present in the germplasm under study. Data on days to flowering revealed that National Check RMT-361 was the earliest 43.78 days to flower. Genotypes HM-257 (44.33) and HM-425 (44.33) were at par with the check variety. The genotype LFC-90 was a late genotype which flowered in 48.00 days. Giridhar *et al.*, 2016<sup>[2]</sup> evaluated thirteen diverse fenugreek genotypes in Guntur, Andhra Pradesh and reported significant variation in flowering. With regards to plant height the average mean height was recorded to be 84.87 cm. Genotype JFG-224 has the maximum height 93.52 cm which was at par with UM-126 (89.80 cm) and check RMT-361 (89.56 cm). Minimum height was recorded in PM-1 (75.50cm). In case of number of branches per plant highest was recorded in check variety RMT-361 which was at par with UM-294 with 5.88 branches per plant. However, JFG-268 recorded minimum number of branches (5.31).

Number of pods/ plant, branches/ plant and plant height were the important characters for selection of high yielding lines as they exhibited direct and positive effect on seed yield per plant (Pushpa *et al.*, 2012<sup>[5]</sup>, Singh *et al.*, 2013<sup>[6]</sup> and Datta and Chatterjee, 2014<sup>[1]</sup>). Number of pods per plant was significantly highest (32.03) in AFG-7 which was at par with AFG-224. Minimum number of pods per plant (19.64) was recorded in genotype AFG-8. With respect to pod length it was observed that RM-204 had maximum pod length of 10.29 cm which was at par with JFG-224 (9.87cm) followed by AFG-7 (9.86 cm).

Pathak *et al.* (2014)<sup>[4]</sup> reported that yield traits in fenugreek differed significantly and offer a good scope for selection of better genotypes. Seed yield q/ha was highest in check RMT-361 (18.32q/ha) which was at par with RM-204 (17.29q/ha) and JFG-224 (16.66q/ha). These traits can be exploited in for further breeding programme for development of high yielding varieties suitable for Central India.

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**Table 1:** Pooled quantitative data of Fenugreek (2015-16 to 2017-18)

S. No	Varieties	Days to first flowering	Plant height	No. of branches/plant	No. of pods/plant	Pod length (cm)	Seed Yield/plant (g)	Seed yield (q/ha)
1.	JFG-224	44.78	93.52	5.86	30.37	9.87	7.61	16.66
2.	JFG-268	46.33	80.89	5.31	25.07	9.81	6.89	11.99
3.	UM-126	45.33	89.80	5.69	28.07	9.27	8.14	15.83
4.	UM-294	46.45	86.46	5.88	28.60	9.64	8.00	15.36
5.	LFC-72	46.11	81.63	5.60	24.96	9.09	7.04	14.06
6.	LFC-90	48.00	88.97	5.45	25.98	9.13	7.71	13.34
7.	AFG-7	47.89	81.88	5.53	32.06	9.86	7.78	15.83
8.	AFG-8	47.89	88.70	6.26	19.64	9.42	7.20	10.73
9.	NDM-79	46.44	85.85	5.49	27.61	9.22	8.57	15.66
10.	NDM-82	46.33	82.22	5.73	25.36	9.17	8.31	17.31
11.	HM-257	44.33	87.25	6.50	24.23	9.24	7.57	16.50
12.	HM-425	44.33	78.56	6.42	23.26	9.03	8.82	16.46
13.	RM-204	46.22	83.83	5.60	28.75	10.29	7.74	17.29
14.	PM-1	46.71	75.50	6.13	28.58	9.77	6.00	14.07
15.	Hisar Sonali (NC)	45.78	83.24	5.43	26.66	9.25	6.79	16.81
16.	RMT-361 (NC)	43.78	89.56	6.83	26.56	9.03	6.89	18.32
	CD 5%	2.32	9.17	0.89	4.25	0.75	1.46	3.90
	SEm±	0.80	3.16	0.31	1.46	0.26	0.50	1.34
	SEd	1.13	4.47	0.43	2.07	0.36	0.71	1.90
	CV %	3.00	6.45	9.02	9.52	4.72	11.51	15.11

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