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Evaluation of fenugreek genotypes for their adaptation in sandy loam soil of eastern Uttar Pradesh

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ABSTRACT : A field experiment was conducted at Main Experiment Station, Deptt. of Vegetable Science, N.D. University of Agriculture and Technology, Kumarganj, Faizabad to evaluate promising genotypes of fenugreek in sandy loam soil. The experimental site is located in between 24.47° and 26.56° N latitude and 82.12° and 83.98° E longitude having elevation of 113 m above the mean sea level. Among tested genotypes FGK-77 found most promising and well adapted to the edaphic and climatic condition of eastern Uttar Pradesh.

KEY WORDS : Fenugreek, *Trigonella foenum-graecum* L., Therapeutic

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T*Trigonella foenum-graecum* L. (fenugreek) is an annual plant belongs to the family Papilionaceae. It is native to the Indian subcontinent and the Eastern Mediterranean region. It is currently widely cultivated in India, central Asia, central Europe, northern Africa, North America and parts of Australia. India is the leading fenugreek producer in the world. The plant is well suited to cool and temperate growing regions with low to moderate rainfall. Fenugreek is well adapted to rainfed growing conditions. Fenugreek, perhaps, is best known for presence of the distinctive, pungent aromatic compounds in the seed that impart flavour, colour and aroma to foods, making it a highly desirable supplement for use in culinary applications. As a spice, it constitutes one of the many ingredients that make up curry powders (Srinivasan, 2006). In countries such as India, fenugreek leaves are consumed as leafy vegetables in the diet (Sharma, 1986), while in Ethiopia and Egypt, the plant is

used as a supplement in maize and wheat flour for bread-making (Al-Habori and Raman, 2002). It possess therapeutic properties and used as antidiabetic, hypocholesterolemic since ages (Khosla *et al.*, 1995; Al-Habori *et al.*, 1998 and Motamedi *et al.*, 2011). Various polysaccharides, galactomannan, saponins *viz.*, diosgenin, yamogenin, mucilage, volatile oil and alkaloids such as choline and trigonelline were extracted from the seeds of fenugreek (Aasim *et al.*, 2010). Trigonelline, coumarin and nicotinic acid have been isolated from fenugreek seeds and shown to be useful in diabetes (Moorthy *et al.*, 2010). Trigonelline may also have several therapeutic properties, such as anti-migraine, anti-carcinogenic (cervix and liver), antiseptic, hypoglycemic and hypocholesterolemic, activities.

In view of the above observations seventeen promising genotypes were evaluated in sandy loam soil of eastern Uttar Pradesh.

RESEARCH PROCEDURE

A field experiment was conducted at Main Experiment Station, Deptt. of Vegetable Science, N.D. University of Agriculture and Technology, Kumarganj, Faizabad to evaluate promising genotypes of fenugreek in sandy loam soil. The experimental site is located in between 24.47° and 26.56° N latitude and 82.12° and 83.98° E longitude having elevation of 113 m above the mean sea level. The experiment was laid in Randomized Block Design (RBD) with three replications. Soil of the experimental field was alluvial plain and sandy loam in texture with slightly alkaline pH (8.0). The organic carbon content of the soil was very low (0.37%). The climatic condition of the experimental site is subtropical. The experimental field was prepared by harrowing followed by leveling whereas well decomposed manure F.Y.M @ 15 tonnes per hectare was applied at 30 days before sowing. Seeds of the fenugreek were treated with carbadanzim to control diseases. The plot size of the experimental plot was 5 m². Spacing of 30 cm row to row and 100cm plant to plant was maintained. The each genotype was sown on 22nd November, 2014 and harvested on 14th March, 2015. Recommended package

of practices was adopted to raise good crop of fenugreek. Observation pertaining to yield and ancillary characters viz., plant height (cm), number of branches/plant, number of pods/plant, length of pod (cm), number of grains/pod, days to maturity and yield (q/ha) was recorded and presented in Table 1. Standard statistical methods were adopted for data analysis and validation of experimental data.

RESEARCH ANALYSIS AND REASONING

Data presented in Table 1 show that among tested genotypes FGK-77 was found most promising and well adapted to the edaphic and climatic condition of eastern Uttar Pradesh. The highest yield was recorded for FGK -77 (13.29 q/ha) followed by FGK-65 (12.98 q/ha) and FGK -73 (12.84 q/ha). Wide range of variability was observed for yield attributing traits among tested genotypes. The plant height ranged from 64.55 cm (FGK-73) to 86.33 cm (Hisar Sonali). Hisar Sonali is the early maturing genotypes among tested genotypes. It matures in 123 days while genotype FGK-73 matures late (130 days).

It is concluded that among genotypes FGK -77 was

Table 1 : Yield and ancillary characters of fenugreek

Genotypes	Plant height (cm)	No. of branches/plant	No. of pods/plant	Length of pod (cm)	No. of grains/pod	Days to maturity	Yield (q/ha)
FGK-65	66.11	5	84	10.90	17	126	12.98
FGK-66	85.22	5	84	8.63	16	124	12.15
FGK-67	85.88	4	70	9.13	17	126	12.70
FGK-68	78.11	5	57	9.65	17	126	10.97
FGK-69	80.44	5	60	9.61	18	127	12.08
FGK-70	75.22	4	47	8.50	15	128	12.29
FGK-71	80.77	4	47	7.75	16	125	11.59
FGK-72	75.55	4	60	10.11	15	128	11.66
FGK-73	64.55	5	46	9.80	15	130	12.84
FGK-74	72.88	4	53	8.85	18	123	12.29
FGK-75	70.00	4	50	8.43	17	124	11.04
FGK-76	78.00	4	46	10.05	16	126	11.59
FGK-77	75.55	4	62	9.37	17	123	13.29
FGK-78	75.45	4	65	10.17	17	125	12.22
RM-361	75.55	4	64	10.00	17	127	11.11
Hisar Sonali	86.33	5	63	11.15	15	123	11.11
NDM-19	81.66	5	62	10.40	16	126	11.80
S.E. _±	0.84	0.19	3.36	0.18	0.24	0.68	0.27
C.V. (%)	1.89	7.65	9.70	3.38	2.63	0.94	4.00

most promising and it was well adapted to the climatic condition of eastern Uttar Pradesh.

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