

# Varietal and germplasm screening of *Trigonella-foenum graecum* L. against powdery mildew under field conditions in South Gujarat

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## ABSTRACT

Two variety and thirteen germplasms of fenugreek (*Trigonella-foenum graecum* L.) were screened against powdery mildew under field condition. One germplasm FGK-94 was found resistant reaction to powdery mildew. While, three germplasms FGK-97, FGK-98 and FGK-103 found to be moderately resistance. FGK-95, FGK-96, FGK-99, FGK-100, FGK-101 and FGK-102 showed moderately susceptible reaction. Two variety Hissar sonali, RMT-361 and one germplasm FGK-104 showed susceptible reaction.

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Fenugreek (*Trigonella foenum-graceum* L.) is an important spice crop of Gujarat. Fenugreek is attacked by several diseases viz., damping-off, leaf spot, powdery mildew, downy mildew and sclerotium rot. Among them powdery mildew occurred severely in Gujarat especially during flowering and pod formation stage of the crop and cause significant losses (27- 33%) in grain quality as well as quantity (Dange *et al.*, 2002). Occurrence of powdery mildew in fenugreek has become a major problem, with threat of profitable cultivation. Out of various disease management strategies used, use of resistant varieties is ideal, ecofriendly and cheapest method, for escaping disease rather than control. The identification of the source of resistance is a basic need

in breeding for disease resistance and hence, present investigation was under taken.

For this purpose, two variety and thirteen genotypes of fenugreek were grown in field at Breeding farm, NAU, Navsari. The observations on per cent disease intensity were recorded by selecting ten plant in each treatment. The disease intensity was recorded by observing three trifoliate leaves, one each from upper, middle and lower portion of selected plant by using 0-5 standard scale (Rathi and Tripathi, 1994).

Observations were recorded at the initiation of the disease and at 15 days interval starting from germination to harvesting and were graded as mentioned in Table 1 (Rathi and Tripathi, 1994).

Reaction of the disease was calculated on the basis of grades in Table 2 (Prakash and Saharan, 1999).

Formula for calculating per cent disease intensity was (Prakash and Saharan, 1999) :

$$\text{Per cent disease intensity} = \frac{\text{Sum of all numerical rating}}{\text{No. of leaves examined} \times \text{Maximum disease rating}} \times 100$$

Out of two variety and thirteen genotypes screened, minimum disease intensity was recorded in germplasms

FGK-94 (9.66%) with resistant reaction. Hence, these were regarded as resistant, while 3 germplasms FGK-97 (13.33%), FGK-98 (22.07%) and FGK-103 (23.62%) were found moderately resistant reaction. While, FGK-95 (36.22%), FGK-96 (32.52%), FGK-99 (28.07%), FGK-100 (31.77%), FGK-101 (46.96%), FGK-102 (32.66%), FGK-105 (26.44%) and FGK-106 (45.85%) showed moderately susceptible reaction (Table 3). Whereas, FGK-104 (50.52%), RMT-351 (53.85%) and

**Table 1 : Grading of the disease in percentage and scale**

Scale	Percentage (%)	Particulars
0	0-5	Healthy
1	6-20	Suppressed colonies
2	21-40	Upper leaf surface only
3	41-60	Upper and lower surface both side
4	61-80	On leaves and petioles
5	>80	On leaves, petioles and stems

**Table 2 : PDI and Reaction of diseases**

Scale	Percentage	Particulars
0	Free from disease	Immune
1	1 to 10 per cent area of leaves/plant parts infected	Resistant
2	11 to 25 per cent area of leaves/plant parts infected	Moderately resistant
3	26 to 50 per cent area of leaves/plant parts infected	Moderately susceptible
4	51 to 75 per cent area of leaves/plant parts infected	Susceptible
5	More than 75 per cent area of leaves/plant parts infected	Highly susceptible

**Table 3: Reaction of different fenugreek variety and germplasms to powdery mildew infection under field condition**

Sr. No.	Variety/germplasm	Per cent disease intensity (%)	Disease reaction
1.	FGK-94	9.66	R
2.	FGK-95	36.22	MS
3.	FGK-96	32.52	MS
4.	FGK-97	13.33	MR
5.	FGK-98	22.07	MR
6.	FGK-99	28.07	MS
7.	FGK-100	31.77	MS
8.	FGK-101	46.96	MS
9.	FGK-102	32.66	MS
10.	FGK-103	23.62	MR
11.	FGK-104	50.52	S
12.	FGK-105	26.44	MS
13.	FGK-106	45.85	MS
14.	Hissar sonali	53.77	S
15.	RMT-351	53.85	S

Fenugreek (FGK), Resistant (R), Moderately resistant (MR), Moderately susceptible (MS), Susceptible (S)

hissar sonali (53.77%) showed susceptible reaction.

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