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Short Communication

FIELD SCREENING OF MUSKMELON GERMPLASM AGAINST CUCUMBER GREEN MOTTLED MOSAIC VIRUS

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Forty germplasm lines of muskmelon were screened for cucumber green mottled mosaic virus (CGMMV) under field conditions and on the basis of two-year observations, average per cent disease index (PDI) was calculated. The maximum disease incidence was observed in Bagpat Local while phoot (*Cucumis melo* var. momordica) showed minimum disease incidence of CGMMV. Out of 40 germplasm, 16 were observed to be resistant while 17 and 7 germplasm, showed moderately resistant and susceptible reaction respectively. The resistant germplasm can be utilized for evolving disease resistant varieties with desirable quality traits.

Key words : Muskmelon, CGMMV, screening, resistance

Cucumber Green Mottled Mosaic Virus (CGMMV) is one of the most limiting factor for muskmelon production in the garden land as well as in the river beds of north India (Roychaudhuri and Varma, 1975). Research on screening and resistance breeding aspects for this disease was hardly undertaken in India barring the reports of More *et al.* (1993) and Pan and More (1996). Keeping in view the above facts, the present investigation was conducted at IARI, New Delhi during spring summer season of 1996-97 and 1997- 98 to screen muskmelon germplasm against CGMMV under field condition. Forty (40) germplasm consisting of released varieties, local collections, exotic collections, breeding lines [cross derivatives of phoot (R) × M4 (S) and FM1 (R) × Pusa Madhuras (S)] and wild species were undertaken for the study. The crop was sown in rows, 2.5 cm apart with a spacing of 45 cm between the plants. All the recommended agronomical packages were followed to grow a successful crop in spring summer season. However, no insecticide was applied during the entire period of crop. Out of 12 plants, 10 were marked for taking observations of the disease reaction. The screening was done on the basis of weekly observation on occurrence of the above disease in each genotype throughout the growing period. For scoring the resistance, the scale from resistance to susceptibility ranging from 0 to 5 was assigned. The scale used on the basis of symptom expression is given below :

0	No symptoms	Immune (I)
1	Slight vein clearing,very light mottling of light and dark green colour in younger leaves	Resistant (R)
2	Mottling of leaves with light and dark green colour	Moderately Resistant (MR)
3	Blisters and raised surface on leaves	Moderately Susceptible (MS)
4	Distortion of leaves	Susceptible (S)
5	Stunted growth with negligible or no flowering and fruiting	Highly Susceptible (HS)

Table 1. Percent disease index and reaction of muskmelon germplasm against CGMMV

Sl. No.	Germplasm	P.D.I. (%)		Average (%)	Reaction
		1996-97	1997-98		
1	Pusa Madhuras	34.8	24.6	29.7	MR
2	Pusa Sarbati	52.8	62.7	57.7	S
3	Punjab Sunheri	34.9	28.9	31.9	MR
4	Lucknow Safeda	28.6	37.2	32.9	MR
5	Chittidar	66.5	57.8	61.6	S
6	Harela	19.8	16.3	18.0	R
7	Ravi	58.5	62.8	60.5	S
8	T-96	39.3	54.9	47.1	MR
9	Punjab Rasila	12.3	16.9	14.6	R
10	Batti-1	30.8	26.8	28.8	MR
11	Batti-2	22.6	29.7	26.1	MR
12	Batti-3	24.8	39.8	32.3	MR
13	Batti-4	37.0	19.8	28.4	MR
14	Batti-5	25.4	27.9	26.6	MR
15	Batti-6	24.9	29.4	27.1	MR
16	Bagpat Local	67.0	76.8	71.9	S
17	NDM-5	42.6	49.8	45.6	MR
18	NDM-9	39.8	44.7	42.3	MR
19	Honey Dew	29.8	33.4	31.6	MR
20	Joublen	72.8	62.7	67.8	S
21	51-2	7.5	5.9	6.7	R
22	53-5	4.9	6.2	5.5	R
23	31-1-2	4.3	5.9	5.1	R
24	29-1	6.9	7.6	7.2	R
25	7-12	9.8	16.3	13.1	R
26	43-6	4.8	4.1	3.9	R
27	42-4	3.9	5.8	4.8	R
28	5-10A	5.1	4.6	3.4	R
29	5-10B	3.9	6.8	5.3	R
30	Gurbeli	29.9	37.5	33.7	MR
31	M3	36.8	41.6	39.2	MR
32	Durgapura Madhu	62.6	53.8	58.2	S
33	Hara Madhu	32.6	23.3	27.9	MR
34	Charantris	19.8	13.6	16.7	R
35	Topmark bush	29.3	38.4	33.8	MR
36	PI 414723	11.6	8.2	9.9	R
37	PI 124122	7.8	4.3	6.0	R
38	Mau	59.8	67.4	63.6	S
39	Phoot (*C. melo* var. momordica)	2.7	3.6	3.1	R
40	Kochri (*C. callosus*)	11.8	19.4	15.6	R

The scoring was done in the morning to avoid the confusion between the resistant and moderately resistant plant. On the basis of symptoms expressed by the individual plant, per cent disease index (PDI) values for each germplasm were calculated as suggested by Silbernayel and Jafri (1974) and Bos (1982). On the basis of two-year data, average PDI was calculated and five reaction categories were made as suggested by Pan (1993).

Average PDI values of 40 germplasm and their reaction on the basis of five reaction categories are presented in Tables 1 and 2. The average PDI values varied from 3.1 per cent to 71.9 per cent. The maximum value was observed in Bagpat Local (71.9%), while phoot (*Cucumis melo* var. *momordica*) showed minimum incidence (3.1%). The breeding lines 51-2, 53-5, 31-1-2, 29-1, 7-12, 43-6, 5-10A and 5-10B derived from crosses, Phoot (resistant) × M4 (susceptible) and FM1 (resistant) × Pusa Maduras (susceptible) at Division of Vegetable Crops, were observed to be quite promising (Table 1). Out of 40 germplasm screened, 16 were observed to be resistant, while 17 and 7 germplasm, showed moderately resistant and susceptible reaction towards CGMVV. None of the germplasm was found to be either immune or highly susceptible.

The germplasm observed to be resistant, will be utilized in breeding programme to develop CGMMV resistant/tolerant varieties with desirable horticultural characters.

Table 2. Reaction of muskmelon germplasm against cucumber green mottled mosaic virus based on five categories

P.D.I(%)	Reaction category	Number of genotypes
0	Immune (I)	0
1-25	Resistant (R)	16
26-50	Moderately Resistant (MR)	17
26-50	Susceptible (S)	7
76-100	Highly Susceptible (HS)	0

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