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Short Communication

EVALUATION OF OKRA GENOTYPES FOR YELLOW VEIN MOSAIC RESISTANCE

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One hundred fifty seven germplasm lines of okra including some wild related species were evaluated for resistance against yellow vein mosaic disease under natural epiphytotic conditions. Three accessions of *A. tetraphyllus*, three accessions of *A. ficulneus* and one accession each of *A. manihot* ssp *manihot*, *Hibiscus panduraeformis* and *H. vitifolius* were observed to be completely free from the disease. Most of the accessions of *A. esculentus* and all the five accessions of *A. tuberculatus* were highly susceptible to the yellow vein mosaic disease

Key words : *Abelmoschus* sp., *Hibiscus* sp., yellow vein mosaic

Okra (*Abelmoschus esculentus*) is an important vegetable crop of India. Amongst various diseases affecting the crop, yellow vein mosaic (YVM) is the most serious one. YVM is caused by virus (YVMV) and transmitted by insect vector white fly (*Bemisia tabaci* Gen.). The control of disease is very difficult and only viable alternative is to develop resistant cultivars. In this study, we have evaluated 157 germplasm accessions of okra, including some of wild relatives, against YVM disease under natural epiphytotic conditions in field to identify the resistant genotypes.

In all 131 accessions of *A. esculentus*, 11 accessions of *A. tetraphyllus*, 4 accessions of *A. moschatus*, 5 accessions of *A. tuberculatus*, 4 accessions of *A. ficulneus* and 1 accession each of *A. manihot*, *H. panduraeformis* and *H. vitifolius* were evaluated for YVM infection under field conditions in the *Kharif* season of 1998. Seeds of cultivated as well as wild types were sown at a spacing of 60 × 45 cm. Observations on the disease incidence were recorded at regular interval after one month of sowing. The accessions were classified in different categories viz., immune, resistant, moderately resistant, susceptible and highly susceptible, on the basis of disease incidence after Memane *et al.* (1986), as shown in Table 1.

The disease incidence in different accessions is presented in Table 2. Most of the accessions of *A. esculentus* were highly susceptible to YVM disease. Only two accessions showed disease incidence of less than ten per cent whereas 113 accessions were highly susceptible with disease incidence of more than 50 per cent. Among the wild species *H. panduraeformis*, *H. vitifolius* and *A. manihot* ssp *manihot* were observed to be completely free from the disease whereas *A. tuberculatus* was found to be highly susceptible. Three accessions of *A. tetraphyllus* were completely free from the disease and only one accession was highly susceptible. Three accessions of *A. ficulneus*

Table 1. Classification of okra genotypes on the basis of disease incidence

Incidence (%)	Reaction category	No. of accessions							
		A. esculentus	*A. tetraphyllus*	*A. moschatus*	*A. tuberculatus*	*A. ficulneus*	*A. manihot* ssp *manihot*	*H. panduraef ormis*	*H. vitifolius*
0.00	Immune/free (I)	-	3	-	-	3	1	1	1
0.1-10.0	Resistant (R)	2	5	-	-	1	-	-	-
10.1-25.0	Moderately resistant (MR)	6	2	2	-	-	-	-	-
25.1-50.0	Susceptible (S)	9	-	-	-	-	-	-	-
50.1 & above	Highly susceptible (HS)	113	1	2	5	-	-	-	-
Total		130	11	4	5	5	1	1	1

Table 2. Reaction of okra genotypes to yellow vein mosaic virus

Name of species	Accession number	Average disease incidence	Reaction
Abelmoschus tetraphyllus	IC-90530	0.0	I
	IC-140977	10.0	R
	IC-140997	0.0	I
	IC-141003	20.0	MR
	IC-141015	10.0	R
	IC-141037	2.0	R
	IC-141038	95.0	HS
	IC-141041	2.0	R
	IC-141046	20.0	MR
	Ac-552	2.0	R
	NIC-53	0.0	O
Abelmoschus moschatus	EC-316073	100.0	HS
	EC-316077	90.0	HS
	IC-141058	20.0	MR
	IC-141055	20.0	MR
Abelmoschus tuberculatus	IC-90328	100.0	HS
	IC-90340	100.0	HS
	IC-90379	100.0	HS
	IC-90398	100.0	HS
	IC-90378	100.0	HS
Abelmoschus ficulneus	IC-90420	0.0	I
	IC-90464	0.0	I
	IC-90491	0.0	I
	IC-90986	5.0	R
Abelmoschus manihot ssp *manihot*	Ac-218	0.0	I
Abelmoschus panduraeformis	214	0.0	I
Abelmoschus vitifolius	217	0.0	I
Abelmoschus esculentus	IC 45831	88.9	HS
	IC 90169	100	HS
	IC 90150	100	HS
	IC 90176	100	HS
	IC 90212	100	HS
	IC 90263	33.3	S
	IC 90298	100	HS
	IC 117005	55.6	HS
	IC 117011	100	HS
	IC 117012	100	HS
	IC 117018	83.3	HS
	IC 117020	100	HS
	IC 117034	100	HS
	IC 117078	100	HS
	IC 117095	50.0	S
	IC 117212	8.3	R
	IC 117216	6.7	HS
	IC 117218	85.0	HS
	IC 117238	100	HS
	IC 117323	100	HS
	IC 117329	50.0	S
	IC 128036	9.1	R

IC 128064	100	HS
IC 329353	100	HS
IC 329355	100	HS
IC 329369	94.1	HS
IC 329370	50.0	S
IC 329375	28.6	S
IC 329411	100	HS
IC 305616	16.7	MR
IC 305617	100	HS
IC 305618	66.7	HS
IC 305620	100	HS
IC 305623	100	HS
IC 305626	100	HS
IC 305628	16.7	MR
IC 305651	100	HS
EC 329369	100	HS
EC 329370	66.7	HS
EC 329375	25.0	MR
EC 329384	100	HS
EC 329411	100	HS
EC 329415	100	HS
IC 90177	16.7	MR
IC 90184	100	HS
IC 90185	25.0	MR
IC 90198	100	HS
IC 90201	100	HS
IC 90227	100	HS
IC 90230	100	HS
IC 90262	100	HS
IC 90263	100	HS
IC 90264	100	HS
IC 90265	100	HS
IC 90266	100	HS
IC 99734	88.9	HS
IC 99741	100	HS
IC 111350	100	HS
IC 111424	100	HS
IC 111438	100	HS
IC 111459	100	HS
IC 111472	100	HS
IC 111490	100	HS
IC 111497	28.6	S
IC 111503	37.5	S
IC 111508	100	HS
IC 111509	100	HS
IC 111533	66.7	HS
IC 111545	50.0	S
IC 112485	100	HS
IC 128071	100	HS
IC 128145	25.0	MR
IC 128147	50.0	S
IC 43279	100	HS
IC 50755	100	HS
IC 69113	100	HS
IC 69248	100	HS
IC 69257	100	HS
IC 69263	100	HS
IC 69272	100	HS
IC 69286	100	HS
IC 69303	100	HS
IC 85583	100	HS
IC 85584	100	HS
IC 72081	100	HS
IC 72082	100	HS
IC 85588	100	HS
Col. V4307	100	HS
IC 113904	100	HS
Col. V4380	100	HS
Col. V4395	100	HS
Col. V4447	100	HS
IC 14093	100	HS
IC 128035	100	HS
IC 128076	100	HS
IC 128093	100	HS
IC 128900	100	HS
IC 128122	100	HS
EC 329402	75.0	HS
EC 329411	100	HS
EC 305619	100	HS
EC 305698	100	HS
EC 305716	100	HS
EC 306742	100	HS
Col. VB9101	100	HS
Col. VB9104	100	HS
Col. VB9105	100	HS
EC 169367	100	HS
IC 85536	100	HS
Col. V 4549	100	HS

	Col. V 4968	100	HS
	Col. A 646	100	HS
	Col. V/89/0-125	100	HS
	Col. V/90/0-8	100	HS
	IC 111324	100	HS
	Col. V/90/0-81	100	HS
	Col. V/90/0-170	100	HS
	IC 111466	100	HS
	NIC 3226-A	100	HS
	NIC 3227	100	HS
	NIC 3257	100	HS
	NIC 3311	100	HS
	NIC 3331	100	HS
	NIC 3345	100	HS
	EC 305746	100	HS
	EC 140902	100	HS
	EC 140907	100	HS
	NIC 13948	100	HS
	IC 140929	100	HS
	IC 140931	100	HS

were found to be completely free from the disease whereas *A. moschatus* showed moderate resistance to high susceptibility in different accessions.

The present study shows that there is hardly any resistance in *A. esculentus* against YVMV. However, some accessions of wild species showed resistance against the disease. Earlier studies also indicated that there is no source of resistance to YVMV in cultivated okra through some related wild species are resistant to the disease (Arumugam *et al.*, 1975; Thakur, 1976; Arumugam and Muthukrishnan, 1978, Memane *et al.*, 1986). The resistant genotypes identified in the present study can be utilised for breeding resistant varieties.

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