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Short Communication

A NOTE ON INCIDENCE OF CASSAVA MOSAIC DISEASE (CMD) IN CASSAVA COLLECTIONS

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Indian cassava mosaic disease (CMD) is a wide spread disease in cassava growing areas in India. No completely resistant lines have been obtained so far. Its intensity varies from area to area and collection to collection depending upon various factors influencing the epidemiology of the disease. However, high degree of field resistance has been reported in collections maintained at CTCRI, Trivandrum (Nair and Thankappan, 1990). The transmission of the disease is caused by white fly as reported by Malathy, 1985. The authors responsible for collection, maintenance and evaluation of cassava germplasm in the Southern region in collaboration with CTCRI have amassed a total of 166 accessions of the crop from southern region over the years. The planting materials brought from farmers' field, even if free from CMD symptoms initially, succumb to it usually in 3-4 years. Hence, in order to find out the field resistance of these collections under field epiphytotic conditions, an attempt was made to study the intensity of CMD infection in 166 accessions of cassava during four years period. On the basis of symptomatology, the disease identified in the crops grown in the fields.

A total of 166 accessions of cassava collections grouped into 54 morphophytes subjectively were observed in maintenance plots from 1994-1997. The experimental plants were planted in augmented design with three controls on raised beds at line to line distance of 1.25 m and plant to plant 50 cm. Five to ten plants of each accessions were planted. Every year intensity of CMD infection was scored (rating) on a subjective scale of 0-9 during September-October when the crop attained good growth. Zero indicated complete absence of any symptom of the disease and 9 extreme infection with discoloured and curled leaves in all the collections. The observed values were computed collection-wise and morphotypic group-wise mean values of scale of infection over the years. Range and standard deviation (SD) morphotype-wise were also calculated.

Table 1 presents morphotype-wise range, mean and SD over the years. Number of collections/ morhotype varies from one to as many as 18 in Morphotype-2. Mean incidence of CMD also varied from 0-9 and maximum incidence of CMD was observed in M-9 and M-39 and the least (0) in M-4, M-47 and M-53. High field tolerance with a mean score of 2 or less was noticed in M-2, M-14 and M-40.

Table 1. CMD incidence in cassava morphotypes

Morph-otype	No. of Accs.	Range	Mean	SD	Rating	Name of Cultivar
1	2	6-8	6.8	2.891	High	Ariyan
2	18	0-5	1.9	1.474	Low	M-4
3	6	2-8	4.6	1.897	Medium	Ammayappan kappa
4	1	-	0.0	-	Absent	Thanduchoppan
5	16	1-8	5.3	1.957	Medium	Mixture
6	2	2-2.25	2.1	0.1P5	Low	Block kattan
7	6	7-9	7.5	0.359	High	Arumasam
8	1	-	8.7	-	High	Chullithandu
9	1	-	9.0	-	High	Thooavella
10	1	-	2.3	-	Low	*
11	15	6-9	7.8	1.429	High	Karuthakattan
12	1	-	8.0	-	High	Anamanthari
13	1	-	5.25	-	Medium	Vella
14	4	0-9	2.0	2.365	Low	Chullikkappa
15	5	5-9	7.4	0.784	High	Elamuriyan
16	2	2-8	5.9	1.875	Medium	Anakkomban
17	1	-	7.0	-	High	Padinjattivella
18	1	-	2.5	-	Low	Vellarosa
19	3	0-8	6.2	1.885	Medium	Thodan
20	1	-	8.8	-	High	Rottivarikka
21	7	0-9	6.02	1.349	Medium	Mullanthalayan
22	1	-	6.5	-	High	Karuthakattan
23	2	4-9	6.25	1.750	High	Kottaramchulli
24	8	0-9	6.5	1.587	Medium	Aambakkadan
25	4	1-7	4.9	1.021	Medium	Ethakkakamban

(Contd. on next page)

Morp-hotype	No. of Accs.	Range	Mean	SD	Rating	Name of Cultivar
26	8	4-9	7.9	1.184	High	Thulakkappa
27	1	-	7.5	-	High	*
28	1	-	8.5	-	High	Ethakkakappa
29	1	-	8.0	-	High	*
30	5	8-9	8.8	0.292	High	Kantharipadarpan
31	2	7-9	8.0	0.250	High	Pathinettu
32	1	-	7.5	-	High	M-137
33	2	0-4	0.75	0.500	Low	Arumasam
34	1	-	7.0	-	High	Kadalakkamaniyan
35	4	8-9	8.0	0.836	High	Kalale local
36	1	-	3.8	-	Low	Ayoorvella
37	1	-	2.8	-	Low	Ambalamkulukki
38	1	-	5.8	-	Medium	Ornamental
39	1	-	9.0	-	High	*
40	1	-	0.99	-	Low	Vakkeel kappa
41	1	-	5.3	-	Medium	*
42	1	-	8.5	-	High	Areekkara
43	8	0-6	3.0	2.304	Low	Ramanthala
44	1	-	6.8	-	High	Karikkalapadarpan
45	1	-	7.5	-	High	*
46	1	-	8.8	-	High	Mullanthalayan
47	2	0.0	0.0	-	Absent	Kattan
48	1	-	6.3	-	Medium	Sutharivella
49	1	-	5.3	-	Medium	Rottikkappa
50	1	-	5.3	-	Medium	*
51	1	-	8.0	-	High	Quintalkappa
52	1	-	5.8	-	Medium	Vellaelamuriyan
53	1	-	0.0	-	Absent	Chullithari
54	1	-	3.0	-	Low	Vellachulli

*Cultivar name not available

Frequency class distribution of intensity of disease incidence pooled collection-wise over the years as depicted in Fig. 1 showed a abnormal curve

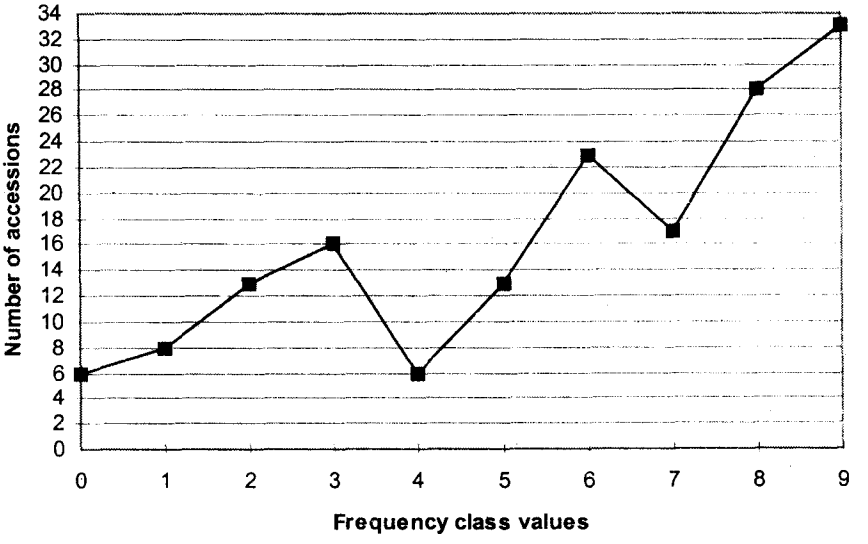

Fig. 1. Distribution of Frequency Classes

indicating a very complicated nature of disease incidence. This also probably indicates a high degree of susceptibility of the crop collections to the disease. It also appears that the genetic variability available in the collections with respect to CMD resistance/susceptibility is very discontinuous and fragmented.

Table 2 presents six collections that were completely free of disease symptoms during the study period. Of these, 3 collections belong to M-2 which morphologically conform to Malayan 4. Two collections 140 and 174 belonging to M 47 and 236 belonging to M 53 were also free of any disease symptoms. The results indicate that the spread was negligible in Malayan 4 confirming the earlier studies by Nair and Thankappan (1990).

Table 2. Collections showing complete absence of CMD symptom grown in field

IC No.	TCR No.	Morpho type	Site of collection	Cultivar
86731	2	2	Udurkara, Palghat	Pathinettu
86773-A	52 A	2	Nellippuram, Kannur	*
-	232	2	Edakkurissi, Palghat	Kollathary
137781	140	47	Mannamangalam, Trichur	Kattan
136783	174	47	Karippilingad, Idukki	Kattan
-	236	53	Chakkittapara, Kozhikode	Chuttutheeni

*Cultivar name not available

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