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1. Inheritance of resistance to strain A and B of maize dwarf mosaic virus.

In Maize Genetics Coop News Letter 42, pp. 149-150, 1968, data were presented in support of the dominant single gene hypothesis for resistance to MDMV strain A in the maize inbreds Pa 11 and Pa 405. In 1968 field inoculated tests of the  $F_2$  of the crosses Pa 11 x W153R and Pa 11 x Pa 54 segregated in a ratio of 3 resistant to 1 susceptible and the backcross to the susceptible parents W153R and Pa 54 respectively, segregated in a 1:1 ratio (Table 1). The  $F_2$  and backcross population of

Table 1

Number of resistant (R) and susceptible (S) seedlings in  $F_2$  and backcross populations from resistant and susceptible crosses when inoculated with MDMV strain A or B

Crosses	MDMV Strain A				MDMV Strain B			
	R	S	$\chi^2$	P	R	S	$\chi^2$	P
(Pa 11 x Pa 54) ⊗	234	78	0	100%				
(Pa 11 x Pa 54) Pa 54	163	135	2.61	20-10				
(Pa 11 x W153R) ⊗	573	167	2.33	20-10				
(Pa 11 x W153R) W153R	155	141	0.66	50-30				
(Pa 32 x W153R) ⊗	270	91	0.01	95-90				
(Pa 32 x W153R) W153R	212	208	0.04	90-80				
(Pa 32 x Pa 33) ⊗	199	73	0.49	50-30				
(Pa 32 x Pa 33) Pa 33	131	112	1.5	30-20				
(Pa 32 x Pa 881P) ⊗					66	105	0.86	50-30
(WF9 x Pa 32) ⊗					39	80	4.15	5-2
(Pa 54 x Pa 32) ⊗					53	83	0.48	50-30
(Pa 422P x Pa 881P) ⊗					120	132	3.19	10-5
(Pa 422P x Pa 881P) Pa 881P					54	261	4.7	5-2

the resistant inbred Pa 32 crossed with the susceptible parents W153R and Pa 33 also clearly segregated in a ratio of 3 resistant to 1 susceptible and 1:1, respectively. These data strongly support the hypothesis for a monogenic dominant control of resistance to strain A in the maize inbred lines Pa 11, Pa 405, and Pa 32. Additional studies are being conducted with the resistant inbred lines Oh 7B, Pa 422P and Pa 884P. At present the exact nature of gene control for these is not clear.

Recent data support the hypothesis of 3 genes with complementary action controlling resistance to strain B in the resistant inbreds Pa 32 and Pa 422P. The data (Table 1) from F<sub>2</sub> population of Pa 32 with susceptible lines Pa 881P, WF9 and Pa 54 indicate a good fit for a ratio of 27 resistant to 37 susceptible. Another inbred, Pa 422P, also appears to have 3 genes with complementary action for resistance to strain B.

Continued tests are underway to determine: 1. the complexity of inheritance to the control of resistance to maize dwarf mosaic virus strain A and strain B and 2. the relationship, if any, between these two genetic systems controlling resistance to MDMV in a number of resistant maize inbreds.

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1. Genetic control of phytoglycogen accumulation.

Investigations on the control of phytoglycogen accumulation in maize endosperm by the genes ae and su<sub>1</sub> were accomplished by quantitating the phytoglycogen from the 16 genotypes resulting from all possible crosses between normal, ae, su<sub>1</sub> and ae su<sub>1</sub>. Background effects were minimized by having normal and the mutants in the BC-2 generation of the inbred W64A. The phytoglycogen was extracted in HgCl<sub>2</sub> from 20 day old kernels and was quantitated by using glucoamylase from Aspergillus niger