

Attempt at Localization of male sterile-4, cut leaf and virescent Mutants in Muskmelon

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We have tried to find some linkages between male sterile-4 (ms-4) supplied by P. LOZANOV (Bulgaria) (2), cut leaf (cl) supplied by I. VELICH (Hungary) (5) or virescent (v) supplied by P.E. NUGENT (South Carolina, USA) (1) with other genes belonging to linkage groups already described (3, 4).

Male sterile-4 (ms-4) was found independent (Table 1) from genes belonging to linkage groups 1 to 7. Cut leaf (cl) was found independent (Table 2) from genes belonging to groups 1 to 7 and from ms-4. Virescent (v) has already been found independent from groups 2, 3 and 6 (4). We found it independent from genes belonging to groups 1, 4 and 7 and from ms-4 and cl (Table 3). It must be still tested with Fom-1 or Prv (synonym Wmv) from group 5.

Literature cited

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Table 1. Segregation data observed in F2 progenies between male sterile -4 (ms-4) and si-1, Vat, gl, r, Zym, Fom-1, yg and nsv.

Linkage group	Genes	[Male fertile]	[Male sterile]	chi square (9:3:3:1)	
		ms-4 <sup>+</sup> /-	ms-4/ms-4	Value	Probability
1	si-1 <sup>+</sup> /-	121	31	4.516	21 %
	si-1/si-1	41	7		
2	Vat/-	175	61	3.030	39 %
	Vat <sup>+</sup> /Vat <sup>+</sup>	55	12		
3	gl <sup>+</sup> /-	244	75	1.171	76 %
	gl/gl	71	26		
3	r <sup>+</sup> /-	125	45	2.008	57 %
	r/r	33	13		
4	Zym/-	111	43	6.213	11 %
	Zym <sup>+</sup> /Zym <sup>+</sup>	27	18		
5	Fom-1/-	154	57	7.719	5 %
	Fom-1 <sup>+</sup> /Fom-1 <sup>+</sup>	38	25		
6	yg <sup>+</sup> /-	117	32	1.333	72 %
	yg/yg	40	11		
7	nsv <sup>+</sup> /-	226	83	5.751	12 %
	nsv/nsv	77	14		

Table 2. Segregation data observed in F2 progenies between cut leaf (cl) mutant and si-1, Fn, Pa, Zym, Fom-1, Fom-2, ms-2, nsv and ms-4.

Linkage group	Genes	[normal]	[cut leaf]	chi-square (9:3:3:1)	
		cl <sup>+</sup> /-	cl/cl	Value	Probability
1	si-1 <sup>+</sup> /-	164	50	5.446	14 %
	si-1/si-1	58	28		
2	Fn <sup>+</sup> /-	100	39	5.796	12 %
	Fn <sup>+</sup> /Fn <sup>+</sup>	50	11		
3	Pa/Pa <sup>+</sup>	114	36	0.602 <sup>Z</sup>	90 %
	Pa <sup>+</sup> /Pa <sup>+</sup>	59	22		
4	Zym <sup>+</sup> /-	137	52	0.983	81 %
	Zym <sup>+</sup> /Zym <sup>+</sup>	50	14		
5	Fom-1 <sup>+</sup> /-	110	38	0.249	97 %
	Fom-1 <sup>+</sup> /Fom-1 <sup>+</sup>	38	14		
6	Fom-2 <sup>+</sup> /-	227	72	4.466	22 %
	Fom-2 <sup>+</sup> /Fom-2 <sup>+</sup>	66	34		
6	ms-2 <sup>+</sup> /-	107	37	0.236	97 %
	ms-2/ms-2	39	12		
7	nsv <sup>+</sup> /-	165	52	3.218	36 %
	nsv/nsv	57	26		
	ms-4 <sup>+</sup> /-	109	44	2.542	47 %
	ms-4/ms-4	32	15		

<sup>Z</sup> tested for 6:3:2:1 segregation because Pa/Pa is lethal

Table 3. Segregation data observed among the normal green plants in F<sub>2</sub> progenies segregating for virescent (v) and si-1, Zym, Fom-2, nsv, ms-4 and cl.

Linkage group	Genotypes	segregation among normal ( <u>v</u> <sup>+</sup> /-) plants	chi-square (3:1)	
			Value	Probability
1	si-1 <sup>+</sup> /- : si-1/si-1	121 : 34	0.776	38 %
4	Zym/- : Zym <sup>+</sup> /Zym <sup>+</sup>	125 : 39	0.130	72 %
6	Fom-2/- : Fom-2 <sup>+</sup> /Fom-2 <sup>+</sup>	229 : 70	0.402	53 %
7	nsv <sup>+</sup> /- : nsv/nsv	141 : 47	0.428	93 %
	ms-4 <sup>+</sup> /- : ms-4/ms-4	127 : 34	1.294	26 %
	cl <sup>+</sup> /- : cl/cl	222 : 80	0.358	55 %

Flava, a Chlorophyll Deficient Mutant in Muskmelon

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A spontaneous yellow mutant appeared in 'K 2035', a muskmelon line from China supplied by M. HEDDE (Caillard Seeds Company, Sarrians, France). From the original seed stock, three plants were selfed to maintain the line and in one inbred progeny appeared yellow plantlets. One of these plants was selfed and crossed with normal green 'Charentais'. The selfed progeny of the yellow plant was uniformly yellow. The F<sub>1</sub> was green and the F<sub>2</sub> segregates 237 green : 75 yellow close to a 3:1 expected ratio ( $\chi^2 = 0.154$  ; Prob. = 69 %) for a single recessive gene. Allelism test must be made with yellow green (yg) marker (1) but the phenotypes of the two mutants are quite different. Growth rate is reduced and the yellow color is more dull and dark than yellow green.

We propose the name flava and the symbol f for this mutant.

#### Literature cited

1. Whitaker, T.W., 1952. Genetic and chlorophyll studies of a yellow-green mutant in muskmelon. Plant Physiology 27:263-268.