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SMALL GERM: A RECESSIVE LETHAL MUTATION IN MAIZE*

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Several lethal mutations have been reported which cause a more or less pronounced abortion of the maize embryo (*1,2*). These mutations, called *germless*, do not affect the endosperm and produce a very small, defective germ. WENTZ (*3*) described *mn* (*miniature germ*), which also reduces germ size considerably. Like the germless mutations, *mn* does not affect the endosperm. However, *mn* is not lethal.

In this paper a new recessive lethal germ mutation is described.

The material used in this study was derived from an ear of a 'Flint Synthetic' variety of maize harvested in 1971 which segregated for a *small germ* character. Kernels of that ear were classified for *normal* versus *small germ* phenotypes, and both types were planted.

All attempts to grow plants from small germ seeds in the field were unsuccessful, since no seed germinated. Of 43 selfed plants grown from normal seed, 29 segregated for normal and small germ, and 14 did not segregate. This is a good fit ($x^2 = 0.012$, P = 0.95 - 0.90) to the 2:1 ratio of heterozygous to homozygous seeds expected if one pair of alleles was controlling the character. Sixteen segregating ears were classified for *normal* and *small germ* kernels. The data (Table 1) clearly indicate that the *small germ* mutant is conditioned by a single recessive allele. The symbol *smg* is tentatively proposed for the new mutant.

Figure 1 shows *normal* and *small germ* kernels from the same ear. The *small germ* mutation causes a reduction in germ size such that classification is usually good. However, the decrease in germ size is not very striking, so that homozygous *smg* kernels usually appear to be normal and viable. In general, small germ kernels have an almost round germ contour.

RESUMO

Descreve-se uma mutação (*small germ*) letal, recessiva, em milho. O símbolo *smg* é proposto para o novo mutante.

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TABLE 1 - Segregation for *normal* and *small germ* kernels on ears of selfed plants derived from normal seed

Ear Number	No. of Kernels		X^2 (Exp. 3:1)
	Normal	Small germ	
306 - 2	251	108	4.948
306 - 3	348	110	0.236
307 - 5	233	78	0.001
307 - 7	219	62	1.292
309 - 1	211	70	0.001
309 - 2	157	50	0.079
309 - 5	195	58	0.581
309 - 6	259	98	1.144
310 - 1	309	117	1.380
310 - 3	211	77	0.463
311 - 2	300	97	0.068
510 - 1	120	51	2.123
510 - 5	199	64	0.062
511 - 2	189	62	0.012
512 - 2	212	73	0.057
512 - 4	204	62	0.406
Pooled data	3617	1237	0.607 (1 d.f., P = 0.50 - 0.30)
Heterogeneity			12.246 (15 d.f., P = 0.70 - 0.50)

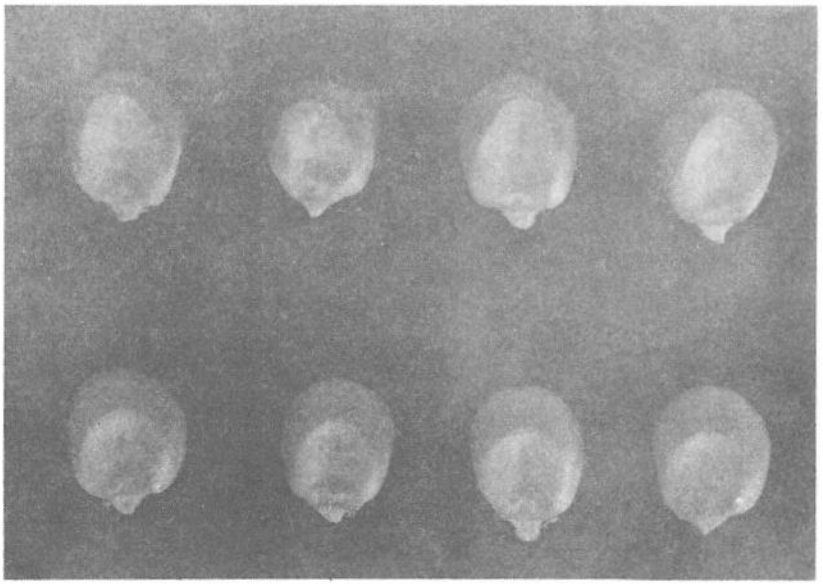

FIGURE 1 - Normal (top row) and small germ kernels from the same ear.

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