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1. Effect on quantitative characters of a permanent heterozygosis system.

Several quantitative plant and ear traits have been studied in the offspring of one selfed F_2 ear derived from crossing two lines, possessing respectively the well known y factor and an ij type semilethal mutant. The recombination frequency between these factors, both located on chromosome 6, is very low (near 0.02); moreover, the $y\ ij/y\ ij$ recombinants, when found, behave as lethals.

The aim of this work was to determine whether the double heterozygote ($Y\ ij/y\ Ij$) has some morpho-physiological advantage compared with the other viable genotypes involving the same alleles. Through self-pollination, the genotype of the tested plants (with the exception of two $Y\ Ij/Y\ ij$ and one $y\ Ij/y\ ij$) proved to be $Y\ ij/y\ Ij$ or $y\ Ij/y\ Ij$; the comparison, then, has been possible between these two classes only. The data obtained are reported in the table.

The lack of information about the behaviour of the other viable genotypes prevents a decision as to whether the higher performance of the double heterozygote depends on a negative action of the y factor, when homozygous, or on a heterotic effect due to the factors under study or to some others closely linked with them. In any case, the y and ij factors seem to constitute a permanent heterozygosis system, less drastic than previously studied systems based on balanced lethal factors, but possibly more efficient, at least in some environmental conditions, in improving the fitness of a population.

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1. Further data on the Ga factor of chromosome 9.

In 1968 further data have been obtained in order to locate Ga_8 on the linkage map and to test its rate of transmission. Plants of $Ga\ wx/$