

## 1. Kys male sterile inheritance.

When cytoplasms of five standard inbred lines were substituted for that of inbred Kys, comparable classes of normal, sterile and partially filled pollen plants were produced. The cross (Kys mm\*ssxNormal Inbred MMSS) x Kys mm ss gave 147, 90 and 62 plants of the classes normal pollen, partially filled pollen, and male sterile respectively. The cross (normal inbred x Kys) x Kys gave 99, 63 and 31 plants of the same respective classes.

Certain inbred lines were found to differ from others in regard to M and S constitution. Among these were Kansas K64 and P.A.G. 287. All F<sub>1</sub> plants of the cross Kys (mm ss) x K64 were normal for pollen type. Test crosses made with Kys sterile plants (Mm ss) x K64 yielded 43 normal : 46 partial pollen plants. This ratio is evidence that the genotype of K64 is mm SS. Testcrosses of Kys male sterile x (Normal Inbred x Kys), or Mm ss x (MMSS x mmss) gave 3 partial to 1 normal pollen plant. Actual numbers obtained were 92 partial : 34 normal. This indicates that mm Ss plants are phenotypically normal pollen producers.

Testcrosses similar to those made with K64 indicated that P.A.G. 287 is also homozygous recessive mm, but that some plants of this line may segregate for Ss. Testcrosses of one P.A.G. 287 strain (mm SS) gave evidence that heterozygous Ss segregates normally and is transmitted normally by pollen of plants that are recessive mm. The testcross was made of the genotypes, Mmss x (mm ss x mm SS) and yielded 36 normal : 17 partial pollen plants : 15 male sterile compared to the expected 34:17:17.

F<sub>1</sub> reactions indicating other than the MM SS constitution were observed for M14, Oh7, and P.A.G. 169. This type of male sterility is not practical as a means of eliminating detasseling in hybrid production fields because no more than an average of 50% of a given population can be sterile.

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\* Dominant MS<sup>21</sup> gene.