

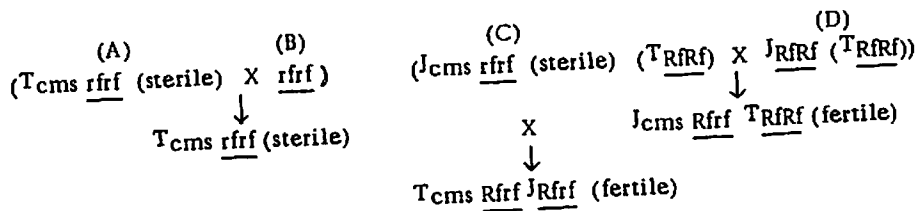
for partial fertility in 1958 than expected on the basis of two factors. Genes operating for partial fertility in  $F_2$  would likewise be expected to operate in the backcrosses. Such is not the case. If the modifying gene is necessary for complete fertility half of the fertile plants in the backcrosses should be only partially fertile. In some populations a higher percentage of fully fertile plants was obtained, while in others more partially fertile plants were obtained.

Progeny tests should reveal whether genes for partial fertility can operate independently from the major gene. Differences in the two types of backcrosses indicate that Ky27 possibly possesses a modifying gene necessary for fertility that functions only when carried in sterile cytoplasm. The different results obtained in the two types of backcrosses suggests a gametic influence. If backcrosses are considered a more accurate determination of the genetic mechanism, then it must be assumed that an excess of fertile or partially fertile plants is expressed in the  $F_2$  populations. This could be caused by differential competitive effects between  $Rf$  and  $rf$  pollen grains such that genotypes carrying  $rf$  genes are eliminated. This would also account for the excess number of fertile plants in the backcrosses made by pollinating the sterile inbred with fertile  $F_1$  pollen.

-- L. M. Josephson

### 3. Hybrids without detasseling.

It is interesting to note that by utilizing both Texas and 33-16 type sterile cytoplasm it will be possible, without detasseling at any stage, to produce double crosses giving only fertile plants in the farmer's fields by the following method:



Texas sterile cytoplasm will be used to produce the seed parent single cross and 33-16 sterile cytoplasm to produce the male parent single cross. Inbred K55 can be utilized in the (C) position since it has been converted to 33-16 sterile cytoplasm and is a natural restorer of Texas sterile cytoplasm. Inbred K64 can be used in the (D) position since a selection which is a full restorer of Texas sterile cytoplasm has been obtained and it in turn is being converted to a restorer of 33-16 sterile cytoplasm. Other lines could similarly be converted.

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### 1. A presumed stippled-Navajo compound R allele.

A new  $R$  allele has been isolated giving an aleurone phenotype resembling the effects of both stippled ( $\underline{R}^{st}$ ) and Navajo ( $\underline{R}^{nj}$ ). Pigmentation is restricted mostly to the crown region of the kernel, as in Navajo, but occurs in spots rather than a solid patch, as in stippled. The limited evidence at present available suggests that (i) the new allele reflects the action of  $\underline{R}^{st}$  and  $\underline{R}^{nj}$  when present in the