

backcrosses are as follows:

	S.S.	F	Lg	lg
+ 2-3a/lg + $\frac{0}{+}$ X lg/lg (group 1)	149	109	178	186
" X " (group 2)	259	252	301	265
lg/lg X + 2-3a/lg +	388	346	324	294
Bm 1-5 (8041)/bm + X bm/bm	446	409	$\frac{Bm_1}{314}$	$\frac{bm_1}{323}$

In no case, was there an excess of fertile progeny. Certain of the differences in the other direction were significant, but were not consistent, either in different tests or for similar deviations in the segregation for closely linked alleles.

It is obvious that in corn in this type of material, segregation of unequal chromatid pairs at anaphase 2 is at random in the female parent. In species in which this segregation is not random, segregation ratios for alleles linked with the breakpoints would be different in reciprocal backcrosses.

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3. Recombination in single and multiple interchange heterozygotes in maize.

The single interchanges used were: T1-7 (4405) = 1S.43, 7S.46; T1-9b = 1L.50, 9L.60; T5-7 (5179) = 5L.55, 7L.73; and T9-10b = 9S.13, 10S.40. The multiple interchange stocks that had been synthesized from these stocks were: T1-7-5, T7-1-9, T1-9-10, T5-7-1-9, and T5-7-1-9-10. The order of genes and breakpoints and recombination values with genes nearest the single interchange breakpoints were:

Chromosome 1: Sr-10-(T1-7)-4-P- ad-1-(T1-9)-35-bm₂

Chromosome 5: Pr-2-(T5-7)-4-ys

Chromosome 7: Q₂-2-(T1-7)-1-v₅--ra gl-23-(T5-7)

Chromosome 9: wx-6-(T9-10)-6-gl₁₅ bk₂-6-(T1-9)

Chromosome 10: nl-1-(T9-10)-11-gl₁

Recombination values in regions adjacent to the breakpoints were reduced in single and multiple interchange heterozygotes. There was no consistent change in recombination in the other regions of the chromosomes

including the differential segments in the bigger rings.

Cytological analysis of backcross progeny from the ring of 8 and the ring of 10 showed that 64% and 76% of the progeny, respectively, were the parental type, either the big ring or 10 pairs. The remainder had smaller rings and were presumably the products of crossing over in differential segments. "The fact that there is no drastic reduction in recombination in the bigger rings must be taken into account in any application of multiple interchanges as a tool in gametic selection."

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4. New combinations for genetic marker stocks.

chromosome 1

br segregating ts₂

chromosome 3

Stock segregating ra₂ and d₁

chromosome 4

Stocks homozygous for su, expected to segregate for la gl₄

Linkage tests with a₃

Tests of a₃ with R vs r, sr₂, and gl₁ give no satisfactory evidence of linkage.

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5. Albino seedling W7748.

Stocks segregating albino W7748 (originally from Coop stock 60-529-1) failed to show linkage with ba₁ (originally from Coop stock 62F-1116-4), as reported in M.N.L. 41:133, 1967. Ears of this material that were segregating for one to three aleurone color factors were used by a senior undergraduate student, Mr. Robert Kennedy, as a special problem. He made the seedling tests for linkage between aleurone color and albino seedlings. Cultures from ears segregating for three aleurone color factors, and certain of those segregating for two, showed linkage between aleurone color and albino.

The past summer, plants from the colored aleurone classes from ears showing linkage were selfed. An ear segregating 3:1 for aleurone