

1. Use of translocations to locate fertility restorer genes

A test cross utilizing translocation 3-9_{F24} has shown a close linkage between the translocation locus and the major fertility restorer (FR) factor of the inbred WG3. (See table 1.) WG3 restores fertility to the T type of cytoplasmic pollen sterility. Test crosses with translocations 1-9c, 1-9, 6-9 and 7-9 showed no apparent linkage.

Table 1.

wx WF9 ^T / <u>wx 3-9 (R4) F-24</u>		ear no. <u>54-2799-1</u>			
WG3		2784-4			
Kernel type	Row No.	Number of Plants			Total
		Sterile	Partially Fertile	Fertile	
Non-waxy	222	4	0	19	23
	223	5	3	18	26
	Total	9	3	37	49
Waxy	224	23	1	4	28
	225	17	0	4	21
	Total	40	1	8	49
Grand Total		49	4	45	98

The limited data in table 1 indicate about 11% crossovers between the translocation and the FR locus, after allowing for misclassifications due to crossovers between wx and the translocation locus (about 7.3%), minus about 1% correction due to double crossovers involving translocation, wx and FR loci. Since translocation 3-9_{F24} near the middle of the long arm of chromosome 3 (3L .46) this would place the FR locus about 11 crossover units either side of that location. It is interesting to note that Snyder (Maize News Letter, 1955) placed a restorer gene for T cytoplasm in about the proximal third of the long arm of chromosome 3. The FR line he tested was a marker stock, Coop 50-32. A test cross for allelism between the FR locus of WG3 and the FR locus of Coop 50-32 is being made (in cooperation with Dr. J. E. Wright, Jr.) and will be grown in 1956.

Additional test crosses utilizing other translocations, including 3-9c which tests a different location on the long arm of chromosome 3, have been made and will be grown in 1956.

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