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1. Preferential pairing in trisome 3 plants with two standard chromosomes 3 and a chromosome 3 from exotic strains of maize.

Data were presented in the 1962 News Letter which indicated that preferential pairing was active in trisome 3 plants which had two standard chromosomes 3 and a chromosome 3 from an exotic strain. Additional data have been collected on some of the exotic trisome hybrids used last year and also on some new ones. It has become apparent that there is considerable variability in the progeny ratios of different plants obtained from the same exotic source in some cases. This is to be expected as the exotic lines used are open pollinated varieties and the structure of their chromosomes 3 may not be homogeneous. Also there may be genic control of the trivalent frequency which may be variable. Therefore, the data must be presented giving the interaction X^2 s between plants and any conclusions must be deferred until a thorough sampling is made. This finding does not invalidate the experiment but it does complicate it. It may be necessary to extract inbred lines from the exotic sources before any critical work can be done.

Table 1 presents data on the backcross progeny ratios of trisome 3 plants containing exotic material from twelve different strains. Eight of them exhibited preferential pairing. In the case of Argentine popcorn the percentage of A gametes was significantly higher than 1/3. No explanation can be offered at the present time. The interaction X^2 's were significant in seven cases.

TABLE 1
Gene Segregation of Trisome 3 Plants used as the Pollen Parent

Source of <u>A</u> Chromosome	No. of plants	No. of gametes	% <u>A</u>	X^2 (2a : 1A)	Inter. X^2 between pls.
Standard	8	13,984	32.75	2.11	2.31
Argentine popcorn	11	17,005	35.10	23.97**	28.31**
Gaspe flint	5	9,368	33.63	.34	22.09**
Nnura	2	2,001	33.58	.06	.08
Tepite	2	1,439	32.66	.32	.77
Maiz chapolote	6	9,583	31.25	18.58**	75.56**
Reventador	6	5,815	30.47	21.31**	10.49
Grande	4	2,737	30.14	12.45**	14.34**
Jala	4	3,455	30.13	16.04**	2.57
Papago flour	14	10,620	29.82	58.95**	19.28
Gourdseed	9	10,496	29.23	79.26**	39.22**
Zapaluta chica	12	16,824	27.18	290.10**	40.74**
Avati tupi	3	5,321	24.78	175.02**	14.58**

**significant at .01 level

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