Table 1

Observed and expected number of plants in the F_2 of a cross between ramosa eared and normal plants of Nal-Tel, Yucatán 7 (progeny 1) and Tuxpeño V520C (progeny 2) and the X^2 tests.

F_2 progeny	Observed		1:3 Expected		Total	d.f.	X^2	Prob.
	Normal	Ramosa	Normal	Ramosa				
1	39	121	40.00	120.00	160	1	.0333	.9-.8
2	56	191	61.75	185.25	247	1	.7139	.7-.5
Total	95	312	101.75	305.25	407	1	.5970	.7-.5

These results clearly indicate (1) that the character is dominant over the normal and (2) that this new ramosa ear character is monogenic and follows a Mendelian type of inheritance.

An interesting feature of this mutant is that the plants are fully fertile developing kernels inside of the branched part of the ear.

The tassel of the ramosa plant is normal with the exception that the distal end of the main branch frequently becomes bifurcated.

The above information indicates that the new ramosa ear character is different from the $\underline{ra}_1$ and $\underline{ra}_2$ already reported.

Localization of the gene on the corn chromosomes is underway.

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2. Influence of B chromosomes on 4 characters.

In order to find out whether certain variations in morphological or physiological characters are related to the number of B chromosomes in the plants, a preliminary correlation study was carried out.

The variety Nayarit 39 of the race Reventador was planted at Tepalcingo, State of Morelos, during the winter of 1967-68. Microsporocytes were collected from 200 plants and the number of B chromosomes determined. Data were also collected concerning the following 4 characters: days to male and female flowering, plant height, and number of

tillers. With such data several correlation coefficients were calculated which are presented in Table 2.

Table 2

Correlation coefficients and their statistical significance between 5 characters in Nayarit 39 of the race Reventador.

Characters	Days to male flowering	Days to female flowering	Plant height	Number of tillers
Number of B chromosomes (range 0 to 13)	0.2043* n=131	0.0968 n=131	-0.1876* n=124	-0.1103 n=139
Days to male flowering		0.7841** n=131	0.6747** n=124	
Days to female flowering			-0.0293 n=124	

*Significant at 5% level.
**Significant at 1% level.
n = Number of plants used.

The r values may indicate that B chromosomes have some influence on days to male flowering and on plant height. It seems that as B chromosomes increase, the plants are later in flowering and shorter in height. It must be said that the correlations presented here are probably smaller than they are in reality because data were taken from plants with and without complete competition.

Similar information has been found in rye (Jones and Rees, 1968).

An interesting observation is that the days to male flowering, apparently affected by the B's, has a high correlation with plant height and that the days to female flowering, which is indifferent to the presence of the B's, has no correlation with plant height.

Pollen was also collected from 25 plants with different numbers of B's and 100 grains were measured on each plant. The average pollen grain diameter and its variability were computed. The results are presented in Table 3.

Table 3

Data on B chromosome constitution, the average pollen grain size and its variability in 25 plants of Nayarit 39 of the race Reventador. Also the correlation coefficient values computed are presented.

Plant Number	Number B's (X_1)	Average Pollen Diameter u (X_2)	s^2 (X_3)
1	0	90.7	14.62
2	2	86.9	7.12
3	3	92.1	21.35
4	4	88.0	29.03
5	4	88.7	9.96
6	4	92.9	14.58
7	5	92.4	14.75
8	5	86.7	15.12
9	5	92.2	11.09
10	5	95.4	12.35
11	5	90.5	19.29
12	5	92.7	15.51
13	5	91.8	13.15
14	5	91.9	15.48
15	5	93.9	10.64
16	6	88.2	9.75
17	6	83.4	8.90
18	7	94.5	9.65
19	7	89.6	8.43
20	8	88.7	7.02
21	8	96.6	15.96
22	9	91.7	10.61
23	10	91.8	7.80
24	10	93.2	12.57
25	11	92.9	14.27

$r_{X_1X_2} = 0.2505$ $\qquad$ $r_{X_1X_3} = -0.2884$

With these data the correlation coefficients between number of B's and average pollen grain size and its variance were computed. The r values obtained were 0.2505 and -0.2884, respectively, showing no statistical significance. These results mean that there is no apparent influence of the presence of B's on the pollen grain size and there is no change in the variability of the pollen grain size.

The fact that B chromosomes do not have any apparent influence on pollen grain size suggests that plants with B chromosomes have cell sizes similar to those of plants without B's, at least within a certain range of B numbers. If this is true, an explanation is needed for the mechanism by which B's affect male flowering and plant size. One possible explanation is that the presence of B's affects the timing of the cell division cycle, and/or the speed of cell growth is changed by changing the cell metabolic processes. This idea is supported by the findings of Ayonoadu and Rees (1968) who have presented data showing that the duration of the complete mitotic cycle in root tip meristems of rye increases in the presence of B chromosomes.

References.

Jones, R. N. and H. Rees. 1968. The influence of B-chromosomes upon the nuclear phenotype in rye. Chromosoma 24:158-176.

Ayonoadu, U. W. and H. Rees. 1968. The regulation of mitosis by B-chromosomes in rye. Exp. Cell Res. 52:284-290.

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3. Frequencies of maize by teosinte crosses in a simulation of a natural association.

A study was carried on to learn about the frequency with which different maize and teosinte races would hybridize in nature.

Several maize races (table 1) and Chalco (T_1) and Guerrero (T_2) teosintes were planted in Tepalcingo Experimental Station in Morelos State in Mexico. At flowering time, 5 pollinations were made on Jala race shoots using a mixture of equal volumes of pollen of Jala race and T_1. Another 5 pollinations were made on Cuba 12 shoots using a mixture of pollen of Cuba 12 and T_1 and so on until 5 pollinations were made on