

Preliminary germination tests from two selfed ears of y Rg/Y rg gave no ragged seedlings from 36 white kernels tested indicating close linkage of y with rg.

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7. Mutable su.

In 1955, a stock from Dr. McClintock carrying one Ds and one Ac was used as a pollinator on a sweet corn hybrid. From 500 outcrossed ears, about 1,000 endosperm mosaics were selected and planted in 1956. Out of approximately 500 selfed ears, two proved to be mutating su, Su, phenotype. It is hoped that a series of alleles can be isolated at the su locus.

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1. Comparative performance of some hybrids from Mexico, Colombia and Brasil.

During the season of 1955-56, an experiment in a 4 x 4 simple lattice with 4 replications, was carried out to test five three-way crosses of yellow dent corn from the Agricultural Program in Mexico for tropical regions, four double hybrids, of which three were orange flint (Rocol H-201, Rocol H-202, Rocol H-203), one white flint (Rocol H-251) two orange flint varieties (Eto and Peru 330), from the Agricultural Program in Colombia, three semi-dent double hybrids in distribution in our region and two synthetic varieties one being yellow dent (Pelotas) and one orange flint (Marilia). The Mexican hybrids used are experimental ones and were the best of some 300 in Mexico, according to Dr. Robert D. Osler. The pedigrees of these hybrids are as follows:

SR54

277 x 267	SLP28-2-1	x	(Cap. Amar. 76-4x Cap. 66-2-1)
289 x 267	Ver. 55-4-1	x	(" ")
275 x 268	Cap. Amar. 76-3	x	(SLP28-2-1-3-x Cap. 66-2-1)
284 x "	Cuba 23-7-1	x	(" ")
285 x "	Cuba 23-7-2	x	(" ")

Table 1. Performance of some hybrids and varieties from Mexico, Colombia and Brasil. Piracicaba, São Paulo - 1955-56.

Hybrid or Variety	Origin	Yield of grain		Relative Yield %	Grain Percentage	Moisture at Harvest %	Root Lodging %	Stalk Breaking %	Ears per Plant	Height of the Ear m
		Kg/ha	Bu/acre							
285 x 268	Mexico	6,494	103.90	174.5	87.26	22.5	-	2.5	0.99	1.90
275 x 268	Mexico	6,355	101.68	170.7	86.39	23.6	9.7	-	0.89	2.00
289 x 267	Mexico	5,888	94.21	158.2	86.40	21.8	12.4	1.7	0.97	1.90
284 x 268	Mexico	5,765	92.24	154.9	92.46	22.8	0.8	0.8	0.94	2.30
277 x 267	Mexico	5,500	88.00	147.8	88.42	21.5	1.6	0.8	0.85	2.10
Agroceres 7	Brasil	5,149	82.38	138.3	80.51	21.6	1.6	-	0.98	1.70
Agroceres 5	Brasil	5,055	80.88	135.8	83.46	21.2	4.1	0.8	1.02	1.90
Rocol H-201	Colombia	4,559	72.94	122.5	82.37	21.3	11.4	4.0	0.95	1.70
Rocol H-251	Colombia	4,281	68.50	115.0	79.33	21.9	9.0	4.8	0.85	1.90
I. A. H-4624	Brasil	3,722	59.55	100.0	86.77	20.0	8.1	1.6	0.82	1.70
Rocol H-202	Colombia	3,702	59.23	99.5	82.72	20.4	9.7	0.8	0.83	1.50
Rocol H-203	Colombia	3,640	58.24	97.8	84.43	20.2	2.5	1.6	0.89	1.70
Eto Amarillo	Colombia	3,439	55.02	92.4	78.90	21.0	7.2	4.0	0.75	1.80

The hybrids used from Colombia and from Brasil are already in distribution to farmers of each country.

This yield trial suffered through a very dry period during the flowering time. The varieties Pelotas, Marilia and Peru 330 had a very bad performance with yields below 2300 kg/ha. A summary of the data from the remaining entries (means from four replications) can be seen in Table 1.

All three Brazilian semi-dent double hybrids when compared with ordinary Brazilian field corns are very good under our conditions, and in another experiment carried out in 1954-55, in the same field, hybrid I.A. H-4624 yielded 4660 kg/ha, about 35% more than the mean of a group of 300 common yellow dent varieties from São Paulo (Maize Genetics Coop. News Letter 30: 129).

We can see the good performance of the Mexican hybrids and also of some Colombian ones. Mexican material was later than ours and the height of the ear and plant as a rule, was very high.

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2. Further studies on adhesions of non-homologous centromeres and knobs.

In the 1955 News Letter data were presented on the frequency of adhesions of non-homologous centromeres at pachynema and also on the frequency of fusion of knobs on non-homologous chromosomes. Data were obtained from a strain of inbred Kys with structurally normal chromosomes and from a Kys strain homozygous for a 4-10 translocation. Additional data are now available from four different Kys strains each homozygous for a different reciprocal translocation. These studies have been confined to Kys lines because of the excellence of the pachytene preparations. Whether or not our conclusions as to the relative frequencies with which different chromosomes participate in non-homologous centromere and knob adhesions will hold for other strains is, of course, wholly conjectural.

Centromere adhesions occurred in nearly 75% of the cells observed. The kinds and frequencies of non-homologous centromere associations are given in Table 1. In those PMC with centromere adhesions the most frequently observed cells were those where two pairs only were so associated. Next in frequency were PMC where four of the 10 pairs were involved but the associations were 2 by 2--i.e., two pairs had adhered centromeres as did two other pairs in the same microsporocyte. Much less frequent were those cells with 3 cases of centromere adhesions with two chromosome pairs involved in each fusion. Occasionally a cell was found with one adhesion involving the centromeres from three chromosome pairs. Rarest of all were cells with two adhesions, one involving two and the other three chromosome pairs.