

UNIVERSIDADE DE SAO PAULO
 Sao Paulo, Brazil
 Escola Superior de Agricultura "Luiz de Queiroz"
 Instituto de Genetica

1. Genetic analysis of the absence of aleurone color in South American maize.

One method of analyzing the structure of populations of indigenous races of maize consists in the analysis of characters with simple inheritance. This report is concerned with the genetics of absence of anthocyanin in the aleurone in South American Highland and Lowland races of maize, as part of a project testing a large number of indigenous races for the genetic basis of colorless aleurone, started by Brieger several years ago (M.N.L. 28:74, 1954). Plants of indigenous races with strong modifier complexes for colorless aleurone were crossed with plants of Negrito, a race from Northern Colombia, which is completely homozygous for all the genes for aleurone color and which has a strong modifier complex for coloration. By selfing the F_1 plants, segregating F_2 ears were obtained. These ears give normal Mendelian ratios owing to the apparent randomization of the two types of modifier complexes. A statistical analysis was elaborated for the observed segregations in 1,764 F_2 ears from Highland races and 704 F_2 ears from Lowland races. The results are given in Table 1 on the following page.

From the lowland data, we may conclude that the colorless races were homozygous for at least one recessive inhibitor gene; a second recessive inhibitor was present in all races with a frequency of approximately $f = 60\%$, and the presence of the third recessive inhibitor varied from race to race. Future analysis with genetic testers should elucidate more clearly the situation, especially with regard to the exact nature of the loci involved but it is interesting to note that there seems to be a certain stability in the gene frequencies of two of the loci involved.

M.R.B. Alleoni

UNIVERSITY OF SYDNEY
 Sydney, N.S.W., Australia

1. The Navajo phenotype at the R locus - an example of phase change or a cell differentiation?

In a recent interesting paper P.A. Peterson (Genetics 54:249, 1966) described two unusual phenotypic patterns of mutability, designated "flow" and "crown", at the A_1 locus. These were interpreted as due to phase variation of two different regulatory elements. It was implied also, that the Navajo allele (R^{nj}) at the R locus could be a further example of phase variation in maize.

An alternative, though not readily distinguishable, concept of the Navajo phenotype is that it is a manifestation of a cell differentiation

Table 1
 Frequency of Mendelian ratio in F₂ ears from the crosses between colorless
 races x Negrito

	3:1	9:7	27:37	1:3	3:13
<u>HIGHLAND</u>					
CAPIA	13	15	--	--	--
	13	19	15	15	--
	--	9	9	4	16
DENT BRANCO	16	49	26	--	--
	13	57	61	18	--
	--	54	31	--	--
	--	50	25	9	--
	--	23	16	5	6
FLINT BRANCO	11	6	--	--	--
	27	134	53	--	--
	11	89	38	16	--
	--	174	77	--	--
	--	6	15	7	--
FLINT AMARELO	15	108	31	3	--
	12	--	--	--	--
PISINCHO	33	45	2	--	--
	41	111	61	13	5
	--	13	2	2	--
	--	--	--	--	--
<u>LOWLAND</u>					
CAINCANG	50	71	--	--	--
	3	39	24	--	--
LENHA	--	6	13	10	--
	30	68	95	--	--
GUARANI YELLOW Soft Corn	--	29	49	--	--
	--	3	15	10	--
CALCHAQUI	--	74	58	--	--
	--	10	14	6	--
PIPOCA PAULISTA	--	53	95	--	--
CRISTAL	--	+	+	--	--

