

indicated an entirely different pattern of selection (against pericarp color) in those regions.

Table 1. Zygotic frequencies of pericarp and cob color alleles.

	Ancash	Apurimac	Ayacucho	Gajamarca	Cuzco	Huancavel	Junin	Puno
A	0.465	0.552	0.300	0.700	0.800	0.566	0.639	0.806
aP'	0.114	0.013	0.025	---	0.021	0.037	0.033	---
a ^b	0.421	0.434	0.675	0.300	0.177	0.397	0.328	0.193
p ^{rr}	0.577	0.486	0.725	0.325	0.237	0.452	0.409	0.207
p ^{rw}	0.044	0.105	0.050	0.150	0.029	0.105	0.098	---
p ^{wr}	0.052	0.092	0.100	0.400	0.410	0.288	0.229	0.483
p ^{cr}	0.179	0.144	0.025	---	0.187	0.037	0.098	0.010
p ^{cw}	0.075	0.052	0.050	---	0.028	0.009	0.033	0.034
p ^{vv}	0.031	0.092	---	0.125	0.072	0.082	0.131	0.172
p ^{mo}	0.019	0.026	---	---	0.014	0.023	---	---
P?*	0.021	---	0.050	---	0.022	0.005	---	---

* New P allele, undescribed yet.

2. Association between imbrication and pericarp color in Peruvian Highland corn.

A study of association between imbrication and pericarp color disclosed that within collections originating in nine Sierra Departments there was a positive and highly significant association between those two characters, in the sense that ears with high score for kernel imbrication were more likely to be colored in the pericarp.

Table 2. Association between imbrications and pericarp color.

Score for Imbrication	Observed		Expected	Increase of Observed Yes over Expected
	Pericarp Color Yes	No		
0	630	767	698.5	- 9.8 %
-1	102	53	77.5	31.6 %
1	147	75	111.0	32.4 %
2	66	33	49.5	33.3 %
3	8	1	4.5	77.7 %

$$\chi^2 = 34.35^{**} \quad \text{d. f.} = 5$$

Discriminating between three pericarp colors: brown, red, and reddish-brown (Table 3) there was evidence in favor of a positive association of red pericarp and high score for imbrication. Studies within each Department for the same associations have been carried on, and will be published elsewhere. These data might serve to support the hypothesis that primitive corn in the highlands of Peru, which was highly imbricated, had a pigmented pericarp, probably red. This is also supported by findings of ears of corn in pre-Inca graves along the Peruvian coast, where red pericarp and high imbrication were dominant associations.

Table 3. Association between specific pericarp colors and imbrication.

Pericarp Color		Imbrication				
		0	-1	1	2	3
Red	Obs.	95	10	26	15	1
	Exp.	98.47	11.99	23.97	11.51	0.94
	Dev.	-3.47	-1.99	2.03	3.49	0.06
Brown	Obs.	283	27	57	27	3
	Exp.	266.07	32.39	64.77	31.11	2.54
	Dev.	16.93	-5.39	-7.77	-4.11	0.46
Reddish-brown	Obs.	41	14	19	7	0
	Exp.	54.47	6.63	13.26	6.37	0.52
	Dev.	-13.47	7.37	5.74	0.63	-0.52

$$\chi^2 = 19.808^{**} \quad \text{d.f.} = 8$$

3. Association between cob color and endosperm color and texture.

A high association between red cob color and yellow endosperm exists both for floury and flint highland Peruvian corn, the same being true for white cob and white endosperm. As for reddish brown and brown cob colors, they are well below expected zygotic frequencies when flint endosperm is present, but, on the other hand, their zygotic frequencies in association with floury endosperm are very high, regardless of endosperm color.

The significant deviation from randomness in the association of these characters might lead us to confirm the hypothesis that there is a high positive selection pressure (presumably human) in favor of some phenotypic associations.