

results are presented in Table 2. Significant differences were found in four of the IHO-line combinations; however, combined analysis for all experiments did not show significance as the IHO did not have a consistent effect.

Table 2
Number of Reciprocals, Total Number of Subsamples and Per Cent Oil Means for F_2 Seed Representing Both Cytoplasm Sources From Initial IHO By Line Crosses

Line Crossed Reciprocally With IHO	Number of Separate Reciprocals	Total Number of Subsamples	Per Cent Oil	
			IHO Cytoplasm	Line Cytoplasm
ILO	5	473	4.71*	4.81
WF9	2	284	9.24*	9.38
B37	2	284	8.81*	8.70
H49	2	241	8.69	8.75
Oh7A	2	272	7.52	7.60
B14	2	196	9.01	8.97
M14	2	239	9.23	9.17
Oh43	1	164	8.33*	8.29
		Average	8.19	8.21

*Significant difference between means at the 5% probability level.

It can be concluded from this data that a cytoplasmic effect on oil content exists. However as the magnitude of the F_2 differences is small and sometimes reversed from that expected based on the F_1 , the physiological influence of the maternal parent must be the primary factor causing the observed differences in the F_1 .

Douglas L. Garwood
Robert J. Lambert

2. Lipid and protein characteristics of a Peruvian archaeological specimen.

A well-preserved cache of corn ears 800 to 1,000 years old was uncovered during a road-building operation in the La Rinconada area near LaMolina. According to Alexander Grobman, the sample is representative of the ancestor of the Chilcano and Huachano complexes of early, drought resistant coastal floury corns.

NMR scans demonstrated that liquid oils were not present. However, petroleum ether and carbon tetrachloride extractions removed fats. In addition, fatty acid and amino acid analyses were made by GLC and automatic amino acid analyzer. Kjehldahl nitrogen determination also was made.

Fatty Acid	%	
	Peruvian Sample	Ill. Hi. Oil
Myristic C ₁₄	1.54	Trace
Palmitic C ₁₆	31.28	11.5
Palmitoleic C _{16:1}	1.92	0.4
Stearic C ₁₈	4.78	1.8
Oleic C _{18:1}	51.67	33.0
Linoleic C _{18:2}	8.78	50.0
Linolenic C _{18:3}	0.0	0.2
Total oil (Gravimetric)	1.7	15
Protein	7.8	15

If one assumes that the Peruvian sample was originally similar to modern corns in fat content and quality, it is apparent that the disappearance of linoleic acid over time was more pronounced than for other fatty acids.

Traces of short chains and other breakdown products were also observed.

Amino acid analyses are incomplete, but short column analysis suggests that lysine level was not different from ordinary corns.

D. E. Alexander
Ian de la Roche
Dennis Elmore
Floyd Collins
Ralph Rodgers

3. Lysine content of Peruvian floury varieties.

Nineteen Peruvian highland and selva floury varieties were selected from the germ-plasm bank maintained by the Programa Cooperativo de Investigaciones en Maize at LaMolina. Varieties were selected on the basis of phenotypic