

Table G.

Sterile	S - Type		T - Type	
	Fertile	Sterile	Fertile	Sterile
6.30	14.9	14.6	13.1	12.7
6.16	12.0	12.1	11.6	11.8
5.98	12.8	12.0	12.6	12.3
6.93	Sum	39.7	37.3	36.8
25.37	F	.072		.127

Table H.

	S - Type		T - Type	
	Fertile	Sterile	Fertile	Sterile
5.85	13.6	13.8	13.2	13.5
6.96	14.7	14.1	14.8	14.3
6.46	15.4	15.0	15.0	14.6
6.01	15.4	14.7	14.4	14.2
7.67	Sum	74.4	Sum	57.4
32.95	F	1.38		.184

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EAST AFRICAN AGRICULTURE AND FORESTRY RESEARCH ORGANIZATION
Kenya Colony, East Africa

1. Breeding maize for resistance to Puccinia polysora Underw.

Puccinia polysora was first recorded in East Africa in 1952. Genetic studies, by seedling tests in glasshouses and breeding from plants selected in these tests, were undertaken at Muguga, Kenya; and field breeding by collaborators on three stations in Kenya, Uganda and Tanganyika.

Only one physiologic race, termed "EA.1", has yet been detected in the field. A second race, "EA.2", appeared in the glasshouses in 1955.

No resistance to either race was found in any African maize. Through the generosity of correspondents, a collection of over 200 maizes from Central America and the Caribbean area was assembled. In 45 of

these, plants showing the hypersensitive type of resistance were detected. True immunity was not found.

Two genes conferring the hypersensitive reaction have been recognized. Rpp1, from the variety "Colombia 2" (AFRO. 29), confers reaction "01" (chlorotic - necrotic lesions, probably close to the "0;" of the Stakman system) to EA.1, but full susceptibility to EA.2. Rpp2, from a Mexican line (AFRO. 24), and also probably from several other sources including certain plants of "Colombia 2", confers reactions "01" to "1" (necrotic lesions with small sori) or sometimes "X" (mixed) against both races of P. polysora. Rpp2 is incompletely dominant; Rpp1 apparently fully dominant.

These two genes have been transferred by the plant breeders to a number of East African maizes; and in 1957 bulks of several pure resistant stocks will be available for issue to cultivators.

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1. Geographic distribution of pericarp and cob color gene frequencies of Peruvian Highland corn.

A survey of pericarp and cob color gene frequencies was started in 1955, and is being continued at the present time on all collections made in Peru.

Five ears selected at random from each collection are scored according to a conventional classification (Emerson, Beadle and Fraser's) for pericarp and cob color alleles. While the survey is being made for the initial purpose of studying geographical variation in gene frequencies, the distribution of the different corn races is disregarded and counts are made on all collections from a given Département, considering for the time being only areas above 1800 meters above sea level. Later, the same data will be rearranged to provide information on gene frequencies within races, and in interaction with geographical areas.

Table No. 1 shows zygotic frequencies for some of the Sierra (Highland) Departments of Peru, without discriminating for altitude and races. Evidence appears there that Ancash is a center for a^{Pl} (reddish-brown pericarp), while Ancash, Apurímac, Ayacucho, and Huancavelica have a very high frequency of a^{Pl} (brown pericarp). We may also point out the high frequencies of P^{WR} in Cuzco and Cajamarca (notice also high frequencies of A in these two Departments), which