SOUS-DIRECTION DE LA RECHERCHE AGRONOMIQUE
ET DE L'ENSEIGNEMENT
Rabat - Morocco

1. Location of a gene for susceptibility to Puccinia sorghi.

The Moroccan inbred line, MR 368, has been found to be very susceptible to the leaf rust, Puccinia sorghi. Crosses with normally resistant inbred lines have been made and F_2 segregations studied. The results obtained indicated that this susceptibility is due to a single recessive gene (X^2 value # 1.5 and P value # 0.25), named provisionally rp_x.

By crosses with Maize Cooperative Stocks, linkage relations have been established with some genes of chromosome II. The following data have been obtained:

Genes XY	Phase	XY	Xy	xY	xy	Total	Recombination
Rp_x Lg_1	RS	326	155	141	3	625	14
Rp_x Gl_2	RS	291	190	134	10	625	22
Rp_x B	CS	414	67	81	63	625	42
Lg_1 Gl_2	CS	387	80	38	120	625	19
Lg_1 B	RS	354	113	141	17	625	36

According to these data, the rp_x gene seems to be located on the short arm of chromosome II, probably near ws_3. Crosses with the ws_3 lg_1 gl_2 stock have been also made and the F_2 progenies will be studied this year; a three point test (rp_x ws_3 lg_1) will be elaborated.

Seeds of the susceptible inbred are available for eventual allelism tests with the known dominant factors for rust resistance.

A. Cornu

2. Location of floury-endosperm-2 (fl_2).

A fl_2 stock (from Dr. H. H. Kramer) has been crossed with Cooperative stocks (marker genes and A-B chromosome translocations). We obtained a positive result with TB-9 b (as female parent). Consequently,

this gene fl_2 is probably located on the short arm of chromosome IX. Further studies are foreseen in order to determine this location more precisely.

A. Cornu

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1. Substitution of a Tripsacum chromosome segment for a portion of the corn genome.

As a result of an interchange a segment from a Tripsacum chromosome was substituted for the distal half of the short arm of corn chromosome 2 in plants whose chromosomes were apparently otherwise unaltered corn chromosomes. Plants both heterozygous and homozygous for the substitution have been obtained. Genetic tests have indicated that the Tripsacum segment carries Lg_1 and Gl_2, and tests are underway to determine whether a Ws_3 locus is also present. Cytological and genetic evidence seem to support the view that the Tripsacum segment has remained intact (or nearly so) as derived from Tripsacum.

Heterozygous plants were indistinguishable from normal corn in gross appearance, but homozygous plants were characteristically short and stocky with stiff leaves and very few tassel branches, and silks which were usually split for an appreciable distance back from the tip. Both heterozygous and homozygous plants differed significantly from normal corn of the same stocks (at the five percent level in t tests) in having narrower leaves and a tendency to be proterogynous. Homozygous plants differed from heterozygous and normal plants in that these homozygous plants were shorter (had fewer nodes), had fewer tassel branches, a smaller number of rows of ovules and a smaller number of ovules per row.

Pollen carrying the substitution appeared normal and functioned in fertilization in direct competition with pollen of normal constitution with a frequency of about 40 percent.

It appears that adequate substitutes may exist in a Tripsacum chromosome region for those loci essential to the normal development and reproduction of corn which are located in the distal half of its chromosome 2.

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