

2. Aids to the maintenance of ys_1/ys_1 seed stocks.

The ys_1 phenotype is an iron-deficiency chlorosis. To maintain seed stocks for physiological study, a field plot of ys_1/ys_1 plants was sprayed twice weekly with an aqueous $FeSO_4$ solution containing 500 p.p.m. iron. These plants were visually indistinguishable from normally green maize. Inflorescences developed completely, and ears well-filled with viable grains were produced. Grains derived from inbred iron-sprayed ys_1/ys_1 plants were larger and apparently contained more available iron than grains produced by unsprayed plants. The seedlings from grains of the former required longer to display iron-deficiency symptoms in soil, sand, or solution cultures. At least two completely green leaves were produced by these seedlings on an iron-deficient medium. Seedlings grown from the exiguous grains set on unsprayed ys_1/ys_1 plants produced only chlorotic leaves on a similar substrate.

A report of the investigation demonstrating the interaction of iron and phosphorus metabolism in ys_1/ys_1 and normally green maize has been submitted to the Botanical Gazette.

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3. A new yellow stripe on chromosome 3.

A mutant type having yellow stripes between the main vascular bundles from the seedling stage onward arose in inbred material from the O. P. variety Early Butler at this station. Although expression is variable, classification is usually good and pollen and ears are produced on most plants.

The mutant was crossed to Dr. E. G. Anderson's waxy-marked translocation series involving all chromosomes and F_2 waxy and non-waxy seeds were screened separately. All F_2 populations showed normal 3:1 segregation except those involving the wx 3-9c interchange in which the following data were collected in three families. Non-waxy seeds gave 88 normals : 38 yellow stripes; waxy seeds gave 64 normals : 0 yellow stripes.

These data indicate that the mutant is located very close to the interchange point on chromosome 3, which has been recorded by Dr. Longley as 3L.09. The symbol, ys_3 , has been assigned tentatively to this new mutant.

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