

An acute yellow stripe appeared to be lethal in the field (3 plants perished with only scant greening). Two other chlorotic seedlings from the same row (16 green:5 chlorotic) greened completely after transfer from the field to sand culture with Fe-HEDTA in the greenhouse.

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3. Nutritional factors of maize mutants involving factors other than iron metabolism.

Tightly rolled leaves of adherent seedlings and plants have responded to foliar applications of a nutrient solution (Hoagland and Arnon's #1 minus iron). A 0.005 M CaCl_2 solution poured into the leaf rolls of such plants elicited an unrolling of the leaves but symptoms subsequently developed which appeared to be those of potassium deficiency. More leaf unrolling occurred when the application of the nutrient solution was accompanied by puncturing the main vascular bundles of the adherent leaves. A solution containing both 0.005 M CaCl_2 and 0.005 M K_2SO_4 was less effective than the nutrient solution in correcting adherence.

Albescent seedlings producing only white leaf tissue regreened in some cases following one or more transfers to aerated or unaerated complete nutrient solutions; sand-cultured seedlings of the same selfed seedlot continued to produce only white leaves. Greening of al seedlings seemed to be most pronounced when the attached grain was immersed in the nutrient solution. Applications of casein hydrolysate, yeast extract or coconut milk to mechanically exposed cotyledons of white al seedlings produced no beneficial effects. Leaf tip feeding with 0.3 M sucrose (method of Spoehr) prolonged the life of white al plants but induced no further visible chlorophyll formation.

A pale green selection segregating from selfed plants of P.I. 194047 has responded to foliar applications of Nu-Iron, a product of Tennessee Corp. Leaf areas which had been in contact with the spray became visibly greener in several days; untreated seedlings or those sprayed with solutions of FeSO_4 alone or in combination with micronutrients did not survive. Sprays of ferric oxalate solution did not produce the same effect nor were benefits observed following the incorporation of Fe-HEDTA or ferric oxalate in the solutions supplied to sand-grown pale green 194047 seedlings.

Comparable responses in unclassified pale green seedlings were observed in the field; when splashed with a clay loam mud either deliberately or during precipitation, a localized increase of the greening of leaf tissues resulted. Areas greened when in contact with the dried mud applied to either the adaxial or abaxial leaf surface. Iron and/or micronutrient solutions as sprays elicited no greening of these seedlings.

A selfed selection from P.I. 174415 was reported by Dr. H. H. Kramer (personal communication) to respond to a mixture of micronutrient solutions. The enhancement of greening of pale green, yellow, or white seedlings from this ear was confirmed using an aqueous foliar application of FeSO_4 with the micronutrients indicated by Hoagland and Arnon. A white seedling thus treated became green enough to produce selfed

seed; white and yellow seedlings appeared in the succeeding seed generation. Ferrous sulfate or any of the micronutrients (B, Mn, Zn, Cu, Mo) alone as sprays did not produce results equivalent to the combination.

Unclassified chlorophyll-deficient mutants are requested for comparison with the above. No reports seem to be available on ys_2 which would be desirable to compare with the iron-deficiency mutants.

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1. Restorer factors in Philippine corn inbreds.

In an effort to eliminate detasseling in the production of F_1 double crosses, it was necessary to survey the ability of Philippine inbreds to restore pollen shedding in plants with Texas-type cytoplasm. Standard and promising flint inbreds extracted from College Yellow Flint and Cuban Yellow Flint and promising sweet corn inbreds extracted from Hawaii Yellow Sweet, Philippine Yellow Sweet, Maize Chiripo Dulce and Colombia Yellow Sweet were included in the test. Regardless of whether inbreds from individual varietal sources were treated separately or in bulk, equal frequencies of restored and unrestored plants were observed among the F_1 crosses of the flint corn lines to Texas-type cytoplasm sources. This strongly indicates that the two flint varieties used as inbred sources were originally heterozygous for the restorer factors.

Among the sweet corn inbreds only one line extracted from Philippine Yellow Sweet showed a partial capacity of pollen restoration (1:1 ratio of sterile to fertile plants in the F_1 and BC_1). The rest were non-restorers.

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2. The susceptibility of cytoplasmic male sterile lines of corn to *Helminthosporium maydis*.

Twelve standard Philippine inbred lines of corn which were sterilized through the incorporation of cytoplasmic male sterility derived from $F_{14}T$, an introduced inbred line from Florida, U.S.A., were compared to their respective normal counterparts for their reaction to *Helminthosporium maydis* at College, Laguna, in 1961 wet season. In all cases, the cyto-sterile inbred versions obtained after four to seven backcrossings were found to be much more susceptible to the disease than their normal inbred counterparts.

Male-cyto-sterile lines representing four single crosses and five double-crosses with one of these cyto-sterile inbreds as seed parent, consistently showed extreme susceptibility to the same disease whereas the normal counterpart manifested conditions of slight to moderate infection only.

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