THE ISOLATION OF TWO CHLOROPHYLL MUTANTS, EACH EXPRESSING AS A COTYLEDON CHARACTER

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Two spontaneously occurring chlorophyll mutants were isolated in 1987. One may be new because its expression seems unlike any reported previously; the other is similar to mutants already identified, so its novelty is uncertain. Both mutants are distinguished by the fact that they are cotyledon characters, i.e. presence of the mutant in each case is already manifest in the cotyledon of the seed and characterized as pale greenish yellow.

The first, and possibly new, mutant somewhat resembles py in expression. Affected plants have rather normal green foliage until the podding stage. Then the pedicels and receptacles become yellow, and the stem (starting at the base of the plant) becomes progressively pale yellow. Likewise, the developing pods become pale yellowish green.

The trait was first observed in several small F3 populations grown in the field in 1987. All affected material traces to crosses between an F4 carrying aero, among other markers, and an af line obtained from the Brotherton Seed Company. Mr. Harley Brotherton discovered the af mutant occurring spontaneously in the variety 'Sprite', an early maturing freezer variety which Itself has normal foliage and green cotyledons. Evidently it is this mutant that is the source of the chlorophyll mutant. Presumably the mutational event that gave rise to the af allele simultaneously gave rise to the chlorophyll mutant. The tight linkage between af and the chlorophyll mutant further supports this assumption. So far, no crossovers have been observed in the coupling phase linkage between af and the chlorophyll mutant, Thus af, aero, i, and the chlorophyll mutant lie in close proximity on chromosome 1.

The second chlorophyll mutant was observed segregating in F3 populations involving crosses with det. In contrast with the mutant described above, this mutant expresses clearly soon after seedling emergence. In common with several other known chlorotica mutants (1), the seedling leaves are pale yellowish green. As the mutant plant develops, the new leaves are pale yellowish green while the older leaves become darker green, approaching the color of non-mutant counterparts. Seed production in the chlorotic plants is only slightly reduced. Cotyledons of seeds carrying the mutant in a homozygous recessive condition are distinctly pale yellowish green. I do not intend to investigate this mutant further, but for those who may wish to do so, voucher samples will be available from my collection and a seed sample will also be sent to the Nordic Gene Bank for preservation.

Since for both mutants the cotyledons of mutant seeds become pale, the contrast between normal and mutant seeds is best shown in plants with green(i/i), unbleached seeds.

1. Blixt, S. 1972. Agri Hort. Genet.

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