

2. Phenotype reversal in a variegated aleurone color system.

A variegated aleurone color phenotype, produced by interaction of an element, designated \underline{Ac}^R , with alleles at the \underline{R} locus, was described in the preceding note. This phenotype consists of irregular colorless areas on a colored aleurone background. The variegated phenotype can be considered to result from a loss of pigmenting capacity in tissues normally capable of aleurone pigmentation.

A heritable alteration of one of the components of this system has given rise to phenotype reversal. A mutant which produces a "dotted" aleurone phenotype, consisting of regular, small pigmented areas on a colorless background, has been isolated. The latter phenotype can be considered to result from a gain of pigmenting capacity in aleurone cells in which this capacity is normally inhibited. The phenotype is similar to that produced by action of \underline{Dt} on \underline{a}_1 , except that the "dots" of pigmented aleurone cells are smaller and more numerous than is characteristic of the $\underline{a}_1 - \underline{Dt}$ system.

The exceptional kernels which gave rise to the "dotted" aleurone mutant stock occurred in a somatic sector of 3 "dotted" aleurone and 3 near colorless kernels on the basal portion of an ear produced by selfing a plant of $\underline{R}^G/\underline{R}^G$, $\underline{Ac}^R/-$, genotype. Plants grown from the exceptional "dotted" aleurone kernels gave selfed ears segregating "dotted" aleurone, near colorless aleurone and fully pigmented kernels, whereas plants grown from parental type kernels gave ears segregating only colored, variegated and colored, nonvariegated kernel phenotypes as expected.

Testcrosses of the plants from exceptional kernels show that the \underline{R} locus constitution of these plants is unchanged. All three plants were $\underline{R}^G/\underline{R}^G$.

The \underline{Ac}^R element, present in the parental plant, could not be detected in plants grown from "dotted" kernels.

The present observations suggest that the "dotted" aleurone phenotype resulted from heritable alteration of the \underline{Ac}^R element. The new form of this element apparently has a suppressor-mutator effect, giving a "dotted" phenotype, in contrast to the earlier form, which had an irregular suppressor effect giving a variegated aleurone phenotype.

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