

1. Variation in color intensity and frequency of sectoring in separate self-red mutations from a given variegated pericarp allele.

Red pericarp families derived from mutant red (self-colored) kernels on variegated ears of a given origin were divided into two groups: those containing Modulator (Mp) somewhere in the genome and those lacking Mp altogether. The presence of Mp was determined by testcrossing to appropriate Dissociation (Ds) stocks, and scoring for the phenotypes expected from chromosome breaks. The frequency of changes to or toward colorless (sectoring) was then measured.

It was found that families which were derived from independent red mutations on the same variegated ear, and which did not contain Mp anywhere in the genome, sometimes differ significantly in the frequency of pericarp sectoring. However, larger and more frequent differences were found between comparable families which contained Mp than between those which do not contain this factor. The data thus show that the families lacking transposed Mp, in general, are more stable for pericarp than those which contain it.

To obtain additional information on the effect of Mp on stability of P^{rr} expression, inbred 90RR (red pericarp and cob) was crossed with near-isogenic stocks of inbreds 22R and 4Co63, each inbred being represented in the crosses by both variegated and colorless pericarp stocks. The two groups of families derived from the crosses with 22R did not differ in the frequency of pericarp sectoring. However, one of the crosses made with 4Co63 differed from the others. This family, resulting from the mating 90RR x 4Co63 medium variegated, showed a relatively high frequency of pericarp sectoring.

Families that were scored for the frequency of pericarp sectors were scored also for color intensity against a set of standard ears. It was found that both the families which contained Mp and those lacking it occasionally differed in color intensity. No consistent relationship between variations in color intensity and the frequency of pericarp sectoring was found.

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