lines for kernel set likely is caused by two recessive mutations of A619 line preventing outlet of silk from ear. In the A619 line these mutations do not act in full as they are compensated by several (5-7) semi dominant suppressors. In a recombinant progeny this compensatory gene complex breaks down.-

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More about curious mottling in highly paramutant R1 kernels

— Coe, E

In a previous note I asked, "Mottling expression is curious, and so is blotching — what is responsible?" This note does not answer the question but gives more information.

Typical mottling of r/r/R kernels shows colored aleurone cells in irregular, scattered distributions that are inconsistent with the morphogenesis of the aleurone layer. Tantalizing clues appear with highly paramutant *R1-iv* or *R1-v* (four or five times paramutagenized), in which pigmented cells are greatly reduced in frequency. The distributions suggest some systematic process is at play. Photographs at high magnification have been added to the database (Figs. 1A-G).

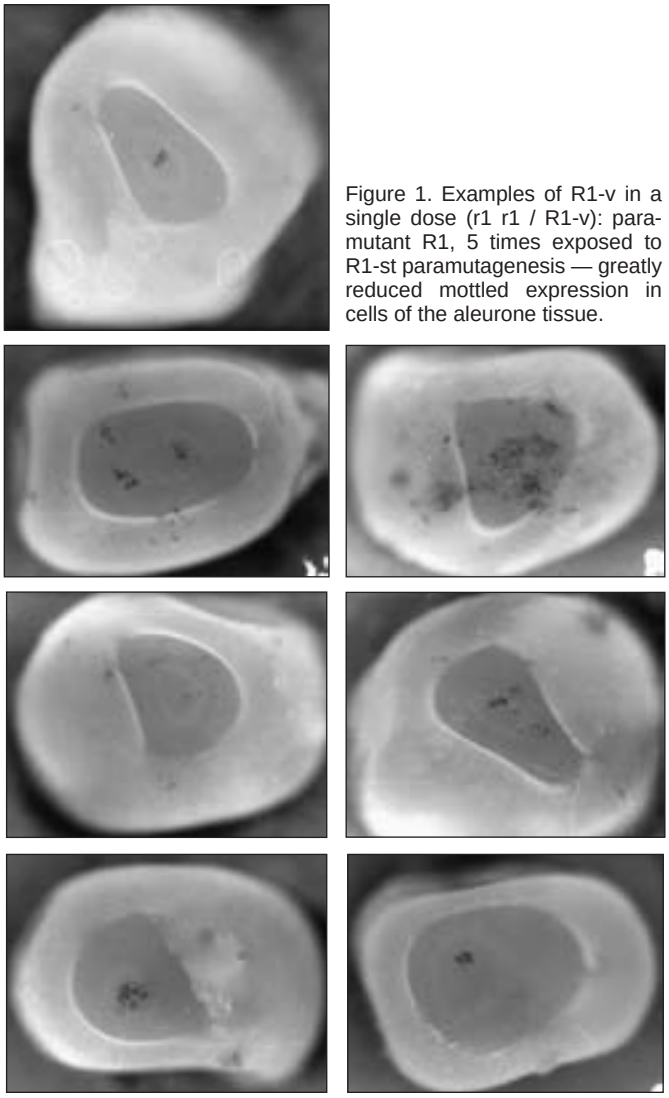

Figure 1. Examples of R1-v in a single dose (r1 r1 / R1-v): paramutant R1, 5 times exposed to R1-st paramutagenesis — greatly reduced mottled expression in cells of the aleurone tissue.

In highly paramutant genotypes there may be as few as 10-20 colored cells in an entire aleurone tissue of some 160,000 cells. If each cell makes an independent decision to be "on" or "off," a binomial or Poisson distribution would result in a random display of single colored cells. However, colored cells occur not in single, independently pigmented cells, but in irregular, very localized clusters, as seen in the images. _

What do the clusters suggest?

Procedures to improve Stock 6

— Chang, MT; Coe, E

Stock 6 was named by Coe in his genetic collection. Ed recognized its high haploid induction rate in 1952. He then converted Stock 6 in 1960 to carry homozygous *A B Pl C R-nj* anthocyanin genes, expressing purple plant color, purple plumule and purple seed crown for easy identification of haploid seeds. The induction rate of Stock 6 is about 2% to 3% with poor agronomic traits such as poor stalk, poor roots, easy to lodge and ear rot. These poor traits were improved by Chang with advice from Coe according to the following procedures, and the rate of haploid induction was increased by selection.

A green plant, yellow seed unfixed material (*AA cc rr bb plpl*) that had shown it was producing haploids in the field was used as female and crossed by purple plant, purple seed crown and purple plumule Stock 6 (*AA CC R-njR-nj BB PlPl*) pollen.

20 F1 seeds (*A/a C/c R-nj/r B/b Pl/pl*) were planted and selfed for F2 seeds.

The F2 seeds segregated nine colored crown and plumule seeds vs. seven colorless seeds. Selected and planted 200 F2 seeds of the most dark-colored crown and plumule to enhance the probability of homozygous *AA CC R-njR-nj* plants.

Selfed F2 plants with dark purple leaves. Ears should either segregate purple crown and colorless seeds or all homozygous colored seeds. Selected the homozygous ears that showed seed color fixation (*AA CC R-njR-nj*).

Planted 50 F3 seeds from each ear with seed color fixed. Identified the most dark purple leaf, sheath, and tassel plants and selfed. These plants were supposed to be homozygous for *AA BB PlPl* genes.

Planted 20 ear-to-row F4 seeds from each selfed F3 ear. Selected the rows showing all purple plants to confirm plant color fixation, and selfed all ears.

The genetic make-up of F5 seeds was fixed for *AA CC R-njR-nj BB PlPl*. The phenotypic expression was all purple plants and purple crown and plumule. Planted 200 F5 seeds and also 500 hybrid seeds as tester.

Selfed each F5 plant and carried pollen to cross onto two hybrid ears. Harvested all selfed F5 ears with ear number -1, -2, -3 and so forth. Also harvested all crossed ears with pollen source X-1,