

3. Origin of inbred Pa703Y.

The Pennsylvania station has isolated a colourless pericarp, red cob subline (Pa703Y) of the Quebec (or Wisconsin) inbred 703. The standard inbred of this series has a white cob and strong red pericarp colour on the sides of the kernels with a colourless crown. A small F_2 from Pa703Y x Q703 has segregated 18 coloured pericarp-red cob, 10 coloured pericarp-white cob and 8 colourless pericarp-red cob. Both coloured vs. colourless pericarp and red vs. white cob show a good fit to a 3:1 ratio and the data would seem to indicate that the pericarp colour of Q703 or the red cob colour of Pa703Y is not the result of an allele at the pericarp-cob colour locus on chromosome 1. The absence of any colourless pericarp, white cob segregates is likely the consequence of the small population, since only two would be expected on the hypothesis of non-allelism.

It is difficult to envision the development of Pa703Y by simple mutation from Q703 since both cob and pericarp colour have changed (the cob colour presumably from recessive to dominant) and these appear to be dependent upon independent loci.

Robert I. Brawn

4. Mutational behavior of dark variegated pericarp.

It has previously been reported (N.L. 33, p. 73, 1959) that more red ears occur in the progeny of dark variegated, a new phenotype in the mutational spectrum of the P^{Vv} allele, than in the progeny of the parental medium variegated. In 1960 a selfed ear which could appropriately be classified as very dark variegated or even very-very dark, was found in a family segregating dark variegated in inbred W9 background. There were no spots of red on this ear exceeding one kernel in size. The progeny of this ear is as follows:

coloured pericarp-red cob				coloured pericarp-white cob		total
self red	very dk.	dark var.	medium var.	lt. var.	or homo. var.	
65 (35%)	104 (55%)	10 (5%)	5 (3%)	4 (2%)		188

The high proportion of red in the progeny of this phenotypically very dark variegated ear is consistent with the hypothesis of Brink and his students that the amount of red striping of the pericarp is related to the frequency of self-coloured offspring. However, the shortage of a corresponding lighter variegated class of progeny is difficult to explain.

This ear was apparently homozygous for pericarp colour since there were no colourless pericarp segregates. The red cob colour of the parental ear and of most of its offspring is inconsistent with the accepted hypothesis of pericarp-cob colour. Furthermore, the high proportion of self-coloured reds in the progeny is even more striking when one remembers that it has been established that the rate of change of medium variegated to red is lower in the progeny of homozygotes than in the progeny of heterozygotes.

Robert I. Brawn