early in the development of the endosperm. Kernels from the atypical variegated cross, however, exhibited a high frequency of very small colorless sectors (6 to 8 aleurone cells each) which was not found in the kernels from the orange medium variegated crosses.

The occurrence of the orange variegated phenotype as pericarp sectors and among the progeny of this mutant atypical very light variegated indicates that the Modulator component of p^{ovov}, Mp^{a}, has not changed to a new state (mutant form). The loss of Mp^{a} from p^{ovov} which results in the orange variegated phenotype, however, is inhibited except for rare somatic and germinal changes which allow the normal expression of this unstable allele. This atypical variegated phenotype could most easily be explained by postulating a second transposable element as a component of this new mutant P allele that suppresses p^{ovov} until it leaves the P locus by transposition allowing the normal expression of p^{ovov}. The difference observed in the Ds-type chromosome breakage pattern induced by the atypical very light variegated and by p^{ovov} could then be attributed to the action of this second element. The action of this second transposable element at P would appear similar to that of the Mp component of P^{vv} as postulated by Brink and Nilan (1952). In this new mutant allele, however, the action of Mp^{a} as well as P^{rr} (i.e. p^{ovov}) would be suppressed. The present tests do not provide direct evidence for such a second element. Additional tests now in progress may provide information which will clarify the nature of this atypical very light variegated allele.

-- F. A. Valentine

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1. Fertility restoration in Southern inbreds.

The fertility restoring inbred lines K55, Ky21, T115, Mp307, T210, T216, H·40B, Mp460, A14, E184 and A447 have been used in restored sterile hybrids in Tennessee. The last three are South African lines. All lines were crossed with A14Tcms and E184Tcms and advanced to F_2. All crosses failed to segregate sterile plants indicating that the restoring factors in all lines are allelic and controlled by a single dominant gene. This fact was also demonstrated by F_2 crosses and backcrosses. It is assumed from the tests that all lines carry the two dominant complementary genes as demonstrated for Ky21 and K55 by other workers and which are lacking in WF9.

-- L. M. Josephson

2. Studies with 33-16 male-sterile cytoplasm.

F_1 hybrids of 33-16 as seed parent and CI.61, CI.43 and H21 have been completely fertile while those with K63, Mo2RF, Ky27, K64 and K6 have been only partially fertile. In backcrosses, plants segregate completely fertile, completely sterile, and into various degrees of partially fertile plants indicating that more than one genetic factor, or at least modifiers, as well as sterile cytoplasm is operating in determining sterility. Some crosses indicate only a single gene for partial fertility is operating while others indicate both a gene for complete fertility and one for partial fertility are operating. Further backcrosses to sterile plants have generally rendered the populations completely sterile. Inbred Ky27 has remained completely sterile through 13 generations of backcrossing. This source has in turn been transferred to several other inbreds and has remained stable.