

IOWA STATE UNIVERSITY
Ames, Iowa
Department of Agronomy

1. Popcorn fertility restorer.

The popcorn inbred line W41 previously reported as a fertility restorer (Maize Newsletter 1957, pp. 95-96) with "T" sterile cytoplasm has also been tested on "S" sterile cytoplasm. Fertility Restoration was complete in 1958 and 1959. In addition, "S" sterile cytoplasm was completely restored in 1959 in crosses involving the male single cross Ky21 x W41.

W. I. Thomas*
John C. Eldredge

* Present address: Department of Agronomy
Pennsylvania State University
University Park, Pennsylvania

IOWA STATE UNIVERSITY
Ames, Iowa
Department of Genetics

1. Relationship between the two components of a mutable system.

In the mutable pg system it is hypothesized that I, the inhibitor, is located at the pg locus and is removed by En the Enhancer. The interaction of these two components results in the mutation of pale green to green.

There is some suggestion that I and En are more closely related than previously supposed. This is inferred from the observation of individual stripes and sectors of mutability in stable (Pgl) plants. These mutable sectors in stable seedlings indicate that mutability has been induced at the otherwise stable locus. Such a possibility is strengthened by the isolation in stable stocks of a newly arisen mutable allele. In tests, this new mutable was found to be of the autonomous type (PglEn). It follows, therefore, that in this case, En arose at the locus. Perhaps the En factor arises from the I factor that is associated with the pg allele.

New m-type F_2 progenies have also originated in outcrosses of pg^m stocks containing independent En. Four m-type F_2 progenies were observed in such outcrosses. It is proposed that En arose from I material at the pg locus.

Other evidence supporting the relationship between I and En is seen in the interaction effect of both pg^s and En upon pg^{mo} . In the hybrid, pg^{mo}/pg^s , the seedlings are stable. The characteristic pg^{mo} expression is inhibited. Likewise, the independent Enhancer (En) causes pg^{mo} to appear stable. Thus the I element at the pg^s locus and independent En act in a similar manner upon the pg^{mo} allele.