

3. A floury endosperm, high lysine locus on chromosome 10.

A floury endosperm mutant, which occurred spontaneously in a W22 $\underline{ACr}^E/\underline{ACr}^E$ stock, was analyzed for lysine content.* The floury mutant had 3.4 gms lysine per 100 gms protein, compared with 2.1 gms lysine/100 gms protein for the isogenic normal endosperm stock of W22. In the same analysis opaque-2 and floury-2 stocks gave values of 3.65 and 3.2 gms lysine/100 gms protein, respectively.

The floury mutant is linked with \underline{R} on chromosome 10. Five separate estimates of the recombination value in $\underline{R}^r/\underline{r}^{Efl}$ plants are 23%, 26% (F_2 Data); and 22%, 24% and 26% (Backcross data). Linkage relations with other chromosome 10 markers are being determined.

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4. Measurement of gene effects by application of a mathematical model to triploid endosperm data.

Various models have been used by workers such as Hayman & Mather, Kempthorne & Cockerham to describe gene action and interaction for diploid genotypes. Data are available for endosperm tissue which gives sixteen triploid genotypes rather than the nine genotypes from diploids. The triploid data are used in this article for application of Cockerham's model. In the original diploid model, 9 orthogonal coefficients were used to provide each of 8 parameters which measured deviations from the mean value for the 9 genotypes. The triploid model has 16 orthogonal coefficients for each parameter, as shown in the columns of Table 1. The sixteen columns are headed by μ , the mean value of the 16 genotypes and the symbols for the 15 parameters which describe the gene action or deviation from the mean.

At the foot of each column are figures for these parameters derived from three sets of data. The sources of these data were:

- 1) K. S. McWhirter (1962). "A Phenotypic Comparison of Three Stippled Genes" M.G.C. N.L. 36:100-101.
- 2) Helm, J. L., V. L. Ferguson & M. S. Zuber (1969). "Interaction of Dosage Effects on Amylase Content of Corn at the \underline{Du} and \underline{Wx} loci" Hered. 60:259-260.