

larvae were quite congenial. The 50% mortality of larvae fed on Antigua Gr I and OH45, against 100% survival in the case of variety No. 59 under the same laboratory conditions, justifies the conclusion that there is definite genetic resistance in maize against Chilo partellus Swinhoe. It is difficult to say anything about the exact nature of the resistance at this stage.

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1. Heritability of repressed R expression noted in R^6R^6R aleurone cells.

In Vol. 41 (under Washington University) we reported a high level of repression for R when introduced into aleurone tissue of an R^6R^6 (paramutated for six generations with R^{st}). The lightest kernels (R^6R^6R) were selected for planting in 1967 to test the heritability of the observed repression of R. Table 1 shows that the selected lightest phenotypes observed the previous year scored the same as unselected kernels in the testcrosses in 1967 (for testcross methods see our previous reports). Following the mating $R^6R^6 \times RR$, it can be concluded that the degree of repression of R in the presence of two R^6 chromosomes in the aleurone cannot be used to select for lighter phenotypic expression in the sporophyte. Several points may be noted:

- (1) Under the conditions of this experiment, specific levels of pigment expression in the endosperm phenotype will not identify a specific level of pigmentation for the testcross of the sporophyte included in the seed.
- (2) The repression effect of R^6 , when the lightest mottle kernels are selected, is a "preview" of the general level of secondary paramutation from R^6 to be observed when the R^6R "heterozygotes" are planted out and testcrossed the following year.
- (3) The degree of "immediate" paramutation (repression) in the R^6R^6R was greater than that in the $R^{st}R^{st}R$ (Vol. 41) though in the following generation the effect of the standard R^{st} on R was greater than that of R^6 on
- (4) The degree of paramutation on R from R^6 is of the order of that encountered with a weakly paramutagenic R^{st} allele.

Table 1
Comparison of \underline{R} Expressions from Testcrosses of \underline{R}^6
"Heterozygotes"

Unselected	Selected	Selected	Selected	Standard
17.30	15.06	19.44	15.10	20.94
17.36	14.04	15.18	16.64	20.90
15.55	16.88	16.16	17.64	20.88
15.82	16.37	19.42	18.50	20.66
16.16	16.36	16.84	18.54	20.94
16.06	15.26	17.96	17.00	20.96
Pooled \bar{X} 16.38	15.66	17.50	17.23	20.88

Three families of selected light kernels are compared with standard \underline{R} and unselected kernels, all of which were planted out and testcrossed to Inbred W23. Kernel selections for planting were based on an \underline{R}^6 \underline{R}^6 x \underline{RR} (standard) mating where pigment repression was observed in certain \underline{R}^6 \underline{R}^6 kernels.

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2. Tassel induction and alteration of \underline{R}^1 expression by short-term LD treatments.

In Vol. 41 MGCNL we reported that the degree of pigmentation from \underline{R}^1 (paramutated \underline{R}) in testcrosses could be related to the environmental treatments which \underline{RR}^{st} plants had been given during the 3rd and 4th weeks of seedling development. Plants which received LL (constant light) conditions had lower aleurone pigmentation scores than those plants which received LD (12 hr. light: 12 hr. dark) during the 3rd and 4th weeks. It was believed that tassel initiation took place during this interval and that the effect of environment upon \underline{R}^1 expression might in some way be correlated with the tassel induction period. A preliminary report follows on the relationship of these two points.

Light was supplied by six 200W daylight-type fluorescent bulbs approximately 1 m above the seedlings which were grown in 4" pots at 22°C in constant light. At given ages during the 3rd and 4th weeks of development (Table 2) plants were exposed to various numbers of 24 hr. LD periods then returned to LL (constant light) conditions. At the end of 30 days all plants were transferred to field conditions and testcrossed in the summer to assay the effect of the LD treatments on \underline{R}^1 expression. It was of interest to know: (1) how soon plants were susceptible to