

- (b) When proportionate changes from the controls are compared, significantly different Wx frequencies are found for the same homoallelic combinations at the same position. These differences are not assignable to the influence of the wx-centromere or wx-breakage point distances.

Ming-Hung Yu\*  
Peter A. Peterson\*\*

\*O. M. Scott & Sons, Plant Breeding Department, Marysville, Ohio

\*\*On leave to: Institut fur Biochemie, University of Vienna, Vienna IX, Austria

2. The  $a_2^{m(r-pa-pu)}$  allele: phase changes.

The  $a_2^{m(r-pa-pu)}$  allele is a derivative of  $a_2^{m 1 1511}$  (Peterson 1968, Genetics 59: 391) of the En system. In the absence of En this allele shows a uniform pale pigmentation and in the presence of En it shows purple, pale and colorless sectors in a colorless background. Changes in the mutability pattern from higher to lower levels have been observed among kernels and some of these have been ascribed to changes in En. Thus, En undergoes phase variation changing from periods of high activity to various levels of lower activity that is expressed in a reduced ability to suppress the  $a_2^{m(r-pa-pu)}$  allele and the responsive  $a_2^{m(r)}$  allele. This altered activity, designated En<sup>v</sup> (En variable) originally exhibiting a low level of activity expressed a higher level of activity in kernels of ears from tillers than in kernels of ears from main stalks of the same plant. These different levels of En<sup>v</sup> expression were inherited in the next generation in main stalk ears indicating that En<sup>v</sup> itself had been altered. Thus, En<sup>v</sup> is in a labile or unstable condition and susceptible to environmental alterations that influence its level of activity.

Robert Fowler\*  
Peter A. Peterson

\*Department of Biochemical Sciences, Princeton University, Princeton, New Jersey

3. Hydrolytic enzymes during development of SCLB.

Resistant (N-Normal) and susceptible (T-Texas male sterile) varieties of maize, infected with Helminthosporium maydis race T (SCLB -

Southern corn leaf blight disease), show differences in hydrolytic enzyme activity. At various stages during the development of lesions, leaves were assayed for  $\beta$ -amylase, ribonuclease, acid phosphatase and  $\beta$ -glucosidase and compared with uninfected leaves. The greatest responses approach two-fold increases in the amount of activity. Each enzyme shows a distinctive pattern of activity changes with time.  $\beta$ -amylase activity in N leaves rises sharply after infection and drops again after 4 days, but in T leaves, only a small change in activity occurs with the maximum at 7 days after inoculation.  $\beta$ -glucosidase activity rises sharply in both N and T leaves, but the maximum activity is reached later in T than in N leaves. The response of ribonuclease in N and T leaves is very similar during the first 4 days after inoculation. After this period, the activity declines in N leaves, but continues to increase in T. Acid phosphatase activity does not decline in the later stages of the experiment as did the other activities; a larger response to infection is seen in T rather than in N leaves.

M. N. Reddy\*  
 Peter A. Peterson  
 C. L. Tipton\*\*

\*Pritzker School of Medicine, University of Chicago, Chicago, Illinois

\*\*Department of Biochemistry and Biophysics

#### 4. $\beta$ -amylase activity between cytoplasms and among inbreds.

In a comparison of the cytoplasms of Normal (N) and Texas (T-Texas-cytoplasmic male sterile), consistently higher total and specific  $\beta$ -amylase activity was found in 10-day-old leaves of N plants. This was consistent in 9 inbred lines tested. The inbred lines differed markedly in total amylase activity ranging from a low of 2.7 to a high of 112.5 (mg maltose/g/hr). Differences in  $\beta$ -amylase activity between cytoplasms and between inbred lines were statistically significant. There was no interaction between cytoplasms and inbred lines indicating a constancy of effect due to the cytoplasm. For  $\beta$ -amylase activity T-restored lines were not consistent when compared to N though, in 4 out of 5 cases, the values of T-restored were closer to N than to T-sterile.

Peter A. Peterson  
 M. N. Reddy  
 C. L. Tipton