Southern corn leaf blight disease), show differences in hydrolytic enzyme activity. At various stages during the development of lesions, leaves were assayed for β-amylase, ribonuclease, acid phosphatase and β-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. β -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. β -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. β-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 β-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 β-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 β-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