

CARBOHYDRATE UTILIZATION BY *DIPLODIA*  
*MACROSPORA*

NEIL E. HOWARD AND HOWARD W. LARSH

University of Illinois, Urbana, Illinois

While studying the growth of certain fungi in culture Miss Kinsel observed that *Diplodia macrospora* Earle is unable under any conditions thus far secured, to grow on culture media containing only monosaccharides as sources of carbohydrates, but grows freely on culture media containing starches or cane sugar. In following up on unusual discovery, it seemed desirable to determine first of all whether this limitation was characteristic of the species as a whole, or merely of the single strain which she used in her work. The writers accordingly undertook to assemble for testing a number of different isolations of this relatively rare corn fungus. In all, 24 isolations were obtained and tested. Two of these came from samples of Argentine corn turned over to us for study by the Chicago office of Federal Grain Supervision, Bureau of Agricultural Economics. Fifteen were obtained from corn stalks in the fields of Alabama, Florida, and Tennessee during January and February, 1938. Seven were furnished us by Mr. Paul E. Hoppe from materials secured in the course of his annual survey for the relative prevalence of various corn ear rot fungi. These last came from Alabama, Tennessee and Mississippi.

On the advice of Dr. A. J. Mayer of the Bureau of Chemistry and Soils, a more

elucidate medium was substituted for the one used by Miss Kinsel. This solution in which the fungus grows much more rapidly contains  $\text{K}_2\text{HPO}_4$ , 0.3 gm., Mg  $\text{SO}_4$ , 0.25 gm.,  $\text{KNO}_3$ , 2.0 gm., 3 per cent of sugar by weight and distilled water to make one liter. A number of other nitrogen sources were tried, using quantities sufficient to give amounts of nitrogen equivalent to 2 gm.  $\text{KNO}_3$  per liter.

Under the conditions of the experiment, all isolations of *D. macrospora* failed to grow in media containing only cereulose (commercial corn sugar) as a source of carbohydrate, while all grew readily when cane sugar was used. This difference held regardless of the source of nitrogen. Numerous isolations of *D. zeae* (Schw.) Lev. grew readily in the solutions containing cereulose. It is apparent that the unusual physiological characteristic discovered by Miss Kinsel is widely distributed in this species which should serve as an object of much further investigation.

## REFERENCES

1. Kinsel, K. Carbohydrate utilization by *Corn Diplodia*. *Phytopathology* 27:1114-1129, 1937.
2. Larsh, Howard. Relative prevalence of *Diplodia zeae* and *Diplodia macrospora* on corn. *Plant Disease Reporter*, 22: 139-142, 1938.
3. Hoppe, P. E. Relative prevalence and geographical distribution of various ear rot fungi in the 1937 corn crop. *Plant Disease Reporter*, 22:234-241, 1938.