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1. Helminthosporium maydis in Italy.*

The fungus Helminthosporium maydis Nishikado and Miyake has been noted to occur in isolated fields of maize in Italy (Goidanich, 1964). Symptoms of an infection by the fungus were observed on leaves, stalks and ears of maize. No economic significance was attached to these occurrences.

Photographic records of symptoms resembling those commonly associated with H. maydis infection were obtained by Cinzio De Carli of the "Ispettorato Agrario" of the province of Brescia in 1956-1958. These photographic records did not specifically cite the localities in which they were made.

Following the outbreak of the T-race epidemic of H. maydis in the U.S.A. in 1970, the authors undertook a survey to detect the presence of the fungus in Italy during the 1970 season. Symptoms of H. maydis were observed in a farm at Vacarrino, Padova originally located by Dr. Grancini of the Istituto Sperimentale per la Cerealicoltura, Bergamo, on September 15. Infected tissue collections were made on this site and in an additional field near Brescia on September 16.

The above collected samples were used as a source of inoculum for infecting normal (N) and Texas sterile (T) carrying counterparts of maize inbred lines. The inoculations were made under greenhouse conditions and according to procedures outlined by Hooker et al. (1970). The results of the inoculations are shown in Table 1.

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Table 1
Degree of infection of maize seedlings five days after
inoculation with H. maydis

	(a) mean	(a) range
WF9 N	5.7	5-7
WF9 T	7.7*	7-9
B14 N	3.7	3-5
B14 T	8.3**	7-9
A239 N	3.0	3
A239 T	7.7**	7-9
W64A N	3.0	1-5
W64A T	7.0**	7

(a) mean of 9 seedlings and possible range from 1 (free of symptoms) to 9 (completely susceptible).

* and ** indicate significance at the .05 and .01 levels for the difference between means of same inbred.

The data appear to be similar to those obtained with comparable material in the U.S.A. following inoculations with the T race of H. maydis and suggest that the same (T) or a similar race of the fungus were present in Italy. On the basis of the severity of symptom expression and economic loss under field conditions, however, the infections were considerably milder than those reported from the U.S. with race T. Had it not been for the U.S. epidemic with race T, the level and scale of infection in Italy would have been considered similar to those reported earlier in Italy and for periods before the Texas T cytoplasm was used for hybrid making. On this basis, it appears to the authors that if the presence of the T race is further confirmed in 1971 in Italy, its damaging effects may not be as significant as those reported from the U.S. Further, since H. maydis has only been observed in the Po Valley, local inoculum appears to be the likely source of infection. Movement of inoculum from areas in the South in a manner analogous to the U.S. experience does not appear to be plausible.

References

- Goidanich, G. (1964) *Manuale di Patologia Vegetale*. Vol. II: 1150.
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- Hooker, A. L. et al. (1970) Reaction of corn seedlings with male sterile cytoplasm to Helminthosporium maydis. *Plant Disease Reprtr.* 54 708-712.

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1. Tissue differences in the relative activity of alcohol dehydrogenase isozymes in maize in crosses with a newly discovered high activity line.

Efron (*Science* 170:751, 1970) described an inbred line of maize with low activity of alcohol dehydrogenase (ADH) in the scutellum of the mature seed. This line is homozygous $\underline{Adh}_1^S/\underline{Adh}_1^S$, having a slow migrating isozyme band. In a genetic study, the above line was crossed with a homozygous $\underline{Adh}_1^F/\underline{Adh}_1^F$ line having a fast migrating isozyme band and a normal activity of ADH. Based on the results obtained in the F_1 , F_2 and B.C. generations, it was concluded that the activity level of ADH in the scutellum of maize is controlled by the gene \underline{Adh}_r which is located about 17 crossover units from the \underline{Adh}_1 gene. The \underline{Adh}_r^N allele specifies equal activity of both the \underline{Adh}_1^F and \underline{Adh}_1^S products. The \underline{Adh}_r^L allele gives lower activity of the \underline{Adh}_1^S products only and is dominant over the \underline{Adh}_r^N allele.

In the present study, the ($\underline{Adh}_1^S/\underline{Adh}_1^S$; $\underline{Adh}_r^L/\underline{Adh}_r^L$) line (7) was crossed with six different homozygous $\underline{Adh}_1^F/\underline{Adh}_1^F$ inbred lines. Line 1 was of known activity (Efron, *Science* 170:751, 1970) whereas the other lines were of unknown activity. The scutella of the mature F_1 seeds from each cross were tested by means of starch gel electrophoresis and the intensities of the FF, FS and SS isozyme bands were measured with a densitometer. The results measured as the percent activity contributed by the \underline{Adh}_1^S allele are summarized in Table 1.