COMPATIBILITY AMONG DIFFERENT ISOLATES OF COCHLIOBOLUS HETEROSTROPHUS DRECHSLER IN INDIA

by

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ABSTRACT

In a study on the compatibility among different isolates of Cochliobolus heterostrophus DRECHSLER in India, 17 isolates were studied for their morphology, growth and sporulation. Of these, 8 isolates acquired from seven States of the country showing morphological and cultural differences among themselves, were selfed and mated in all possible combinations. Out of 36 (8 selfed and 28 crossed) crosses only 14 produced perithecia. Crosses also differed as regards the number of perithecia produced. Isolates were found to be self sterile but cross fertile. Further the 8 isolates were placed in two arbitrary compatibility group A and a. Only inter-group fertility was noted.

Helminthosporium maydis NISIKADO & MIYAKE which causes the leaf spot of maize is wide-spread throughout the major maize growing areas of the world. DRECHSLER (1925) obtained perithecia by inoculating naturally diseased maize leaves on moistened filter paper in a damp chamber. Some of the perithecia developed within the tissues of the leaves and others on the filter paper. TINLINE (1951) obtained mature perithecia of Cochliobolus sativus (ITO & KURIBAY) DRECHS. ex DAST., the perfect stage of H. sativum PAM., KING & BAKKE on artificial medium. NELSON (1957) for the first time reported the production of perithecia of C. heterostrophus in paired cultures of monoconidial isolates and pointed out the heterothallic nature of the fungus. In India BHOWMIK & PRASADA (1966) also obtained perithecia in crosses between monoconidial isolates of the pathogen.

The present work was carried out in furtherance of the above and deals with investigations on seventeen monoconidial isolates from different parts of the country. Eight of these isolates from widely separated localities in seven States were selfed and mated in all possible combinations to study the compatibility among them and whether there were differences on geographical basis in respect of compatibility and perithecial production.

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MATERIALS AND METHODS

Maize leaves showing typical symptoms of *H. maydis* Nisikado & Miyake were obtained from different parts of the country during Kharif season, 1967 (Fig. 1). Small pieces of leaves with leaf-spot symptoms were kept in humid chambers and isolations made from single spores. The spore measurements, colony characters and sporulation of the isolates were recorded after 10 days.

![Map of India with geographic origins of isolates](image)

Fig. 1. Geographic origins of 17 isolates of *H. maydis*. Numbers denote the isolate numbers.

**Perithecial production**

For perithecial production the technique developed by Nelson (1966) was followed. Maize leaves (4 cm × 1 cm) sterilised at 15 lbs p.s.i. for 20 minutes were placed in the centre of petri plate containing Sach’s nutrient agar (Calcium nitrate 1.0 g, Calcium carbonate 0.1 g, Phosphorus pentoxide 0.1 g) and incubated at 25°C.