

measure 3-4 mm in length; vulva 210-250 μ from the junction of the oesophagus and intestine; vulva is everted and provided with a membranous funnel-like apparatus; vagina muscular, very long and passes into uteri; eggs barrel-shaped with plug and measure 30-39 μ \times 15-18 μ in size; anus inconspicuous, 6-8 μ from the posterior end; tail truncate,

The bile duct was greatly distended and its wall appeared enormously thickened. The eggs were deposited in clusters in bile capillaries (Fig. 2). With the obstruction of bile canaliculi, there was retention of bile in them and central necrosis, which perhaps caused cell infiltration and granulomatous reactions resulting in multinucleate cells (Fig. 3).

Department of Zoology,
M.M. College of Science,
Nagpur 440 009, India,
and

T. S. V. NAIDU.

Department of Zoology,
Nagpur University,
Nagpur 440 010, India.

V. K. THAKARE.

December 31, 1979.

1. Yamaguti, S., *Systema Helminthum*, 1961, Vol. III. Parts I and II.

ROOT- AND FOOT-ROT OF *ERUCA SATIVA* CAUSED BY *ALTERNARIA ALTERNATA* (FR.) KEISSLER

A SEVERE root- and foot-rot of *Eruca sativa* Mill. was observed during December-February for the last two years around Allahabad. *Alternaria alternata* (Fr.) Keissler was isolated from the infected plants. The fungus was more destructive at the seedling stage (Fig. 1).

The first evidence of the disease was poor germination of seeds in the field. The root system of severely infected plants is sometimes completely destroyed. Infected cotyledons first become chlorotic and then necrotic. The necrotic lesions extend on the stem upto 6-7 cm from the soil level. The fungus was also isolated from the seeds. Infected seeds are generally smaller than healthy ones. Heavily infected seeds are shrivelled and may be partially or completely covered by mycelium of the pathogen in humid conditions. Such seeds do not germinate. Pathogenicity tests were carried out by sowing surface sterilized healthy seeds of *Eruca sativa* in pots containing soil earlier infested with the fungus. Suitable controls were



FIG. 1. Root- and foot-rot of seedlings of *Eruca sativa* caused by *Alternaria alternata*. \times 5.

also maintained. In another experiment healthy seedlings (15-day old) were planted in pots containing soil infested with 3% maize-meal inoculum of the organism.

Results from first experiment showed poor germination while those seedlings which survived developed root- and foot-rot at later stages. In the second experiment seedlings that were sown in infested soil developed typical foot-rot within 10 to 15 days.

Earlier *Alternaria brassicae* has been reported to cause a disease of *Eruca sativa*¹, however, *A. alternata* is a new record for *Eruca sativa* causing root- and foot-rot.

The authors are thankful to Head of the Botany Department, University of Allahabad, for providing laboratory facilities.

Botany Department,
University of Allahabad,
Allahabad,
December 10, 1979.

S. N. BHARGAVA.
D. N. SHUKLA.
NARENDRA SINGH.

1. Prasada, R., Khandelwal, G. L. and Jain, J. P., *Ind. Phytopathology*, 1970, 23, 105.