

## Prolonged Storage of *Helminthosporium victoriae* in Soil

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### ABSTRACT

Isolates of *Helminthosporium victoriae* stored in soil at ca. 5 C remained viable for 12 yr without change in cultural characteristics or virulence. The fungus appeared to survive in the form of conidia and mycelia.

Phytopathology 64:1158

*Additional key words:* Victoria blight, oats.

Storage in soil has been found to be a convenient method of long-term preservation of fungi (1). Variations in growth habit and virulence that frequently occur upon repeated transfer of certain fungi are often reduced by this method of maintenance.

Twelve years ago a virulent isolate of *Helminthosporium victoriae* Meehan & Murphy was introduced into soil to determine the efficacy of this method. Screw-cap glass culture tubes 25 × 150 mm were half filled with aliquots of a friable potting soil and autoclaved for 30 min at 120 C. The tubes were removed for 24 h and again autoclaved. On 15 June 1961 the soil was inoculated with 5 × 5 mm sections cut from cultures of the fungus growing on potato-dextrose agar. The cultures were incubated in the dark at room temp for 14 days, at which time mycelial growth could be seen permeating the soil. Caps were tightened, and the cultures stored in a refrigerator at ca. 5 C.

Soil from the stored tubes was sampled at various times

over a period of years with the fungus always viable and virulent. The latest sampling was on 30 July 1973. Soil from each of six tubes was sprinkled lightly over potato-dextrose (PDA), lima-bean (LBA), and water agar (WA) in 9-cm diam petri dishes, 18 in total. Fungus growth was obtained with all samples on all media within three days. Heavy conidial production occurred on LBA in six days, with lesser amounts on WA. Growth on PDA was primarily mycelial with sparse conidial production. The growth habit on these media was normal for the fungus.

Microscopic examination of the soil particles following seeding on culture media showed that regeneration occurred from both conidia and mycelial cells.

Virulence of the recovered fungus was tested by using inoculum prepared by washing conidia from the surface of the cultures with distilled water. Three 100-ml lots of inoculum were prepared by combining the conidial suspensions from the six plates of each medium. Each lot of inoculum was then divided into two 50-ml aliquots. Each aliquot was poured over 20 Victoria (2) oat seeds placed in a 10.2-cm (4-inch) diam clay pot before the seeds were covered. A similar no-treatment control was provided by substituting distilled water for inoculum. After seven days in the greenhouse, 38 plants emerged from the 40 no-treatment seeds and 15, 1, and 0 from the treatments with fungal inoculum from PDA, WA, and LBA, respectively. Of the 15 plants in the PDA treatment, 14 became blighted and died within 11 days. The 38 check plants remained healthy.

The moisture content of the soil cultures after 12 yr of storage was 2.6% as determined by oven drying at 90 C for 24 h. It appears possible that the dry condition of the soil contributed to the prolonged survival of the fungus (1).

### LITERATURE CITED

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2. MURPHY, H. C., and F. MEEHAN. 1946. Reaction of oat varieties to a new species of *Helminthosporium*. *Phytopathology* 36:407 (Abstr.).