Several useful methods have been developed for observing the behaviour of fungal propagules in soil. However, most require the use of lethal stains in order to render the propagules visible. Therefore viability tests or investigations of subsequent development is precluded. Such methods involve soil smears (Nash et al., 1961), recovery from soil surfaces by plastic films (Lingappa and Lockwood, 1963), or the use of inert carriers such as nylon gauze (Waid and Woodman, 1957; Sneh and McIntosh, 1974), or membrane filters (Bristow and Lockwood, 1975). The membrane filters, moreover, need to be treated with oil (for cellulose acetate) or chloroform (for polycarbonate), to make them transparent (Bristow and Lockwood, 1975). These treatments may kill and sometimes distort the propagules and their germ tubes.

Fungi in or on soil may be observed in a viable condition by the use of fluorescent stains (Tsao, 1969) or with the vertical illumination microscope (Ko, 1971). But these methods have the disadvantage that the microscopic facilities are expensive. A simple method was required which would allow recovery of viable propagules and the observation of their continued development after recovery.

In the method developed, propagules were incubated in soil on Nuclepore membranes, after which they were recovered and transferred to water agar for observation, viability tests and other purposes.

Oospores of Phytophthora megasperma (Drechs.) var. sojae Hildeb. were harvested from 2-5 week old cultures grown on V-8 juice broth supplemented with 30 µg ml⁻¹ cholesterol (Ayers and Lumsden, 1975). Mycelial mats were air-dried and homogenized in water using a tissue grinder. The suspension was applied to Nuclepore (polycarbonate) membrane filters (13 mm dia., 0.4 µm pore size, General Electric Corp., Pleasantville, California) placed on a base of a membrane filter apparatus. About 10³ spores were applied per membrane. The excess water was removed with a slight vacuum applied to the filter base. The membranes were covered with a nylon net of 16 mm diameter (0.4 mm pore size) and placed in a Petri dish containing Conover loam soil (Bristow and Lockwood, 1975), previously adjusted to 25% water potential. In some cases soil was flooded with water and membranes bearing oospores were floated on the surface. After incubation, the membranes were recovered and placed on the cover of a 9 cm dia. Petri dish. Glass rings (13 mm dia. × 10 mm) were placed on the membranes and melted water agar (3%) at 43°C was poured into them. When solidified, the rings were removed.
These resting spores germinated after an additional incubation period of 3-6 h, formed sporangia (Fig. 3) and released zoospores, which can be transferred for isolation. One of the chytrids has been identified as *Hyphochytrium catenoides* Karling based on a culture supplied by W. A. Avers. The method also has been used for determining germination of *Thielaviopsis basicola* (Berk. & Br.) Ferr., chlamydospores and *Coelhoholas victoriae* (Meehan & Murphy) conidia in soil.

This method provided a transparent background for observation of propagules recovered from soil without interference by soil particles and permitted observation of further development of the propagules and of oospore hyperparasites which was not possible with most other methods. It may serve as a useful tool for studies on the behaviour of fungal propagules and their hyperparasites in soil.

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