CANADA

Timber Talks

Department of Fisheries and Forestry

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CONSERVATION OF FUNGAL CULTURES No. 76

Disease causing organisms from fungi cause extensive damage and loss to the forests. A prerequisite for the development of effective measures of control is the identification of the damaging agent and a knowledge of its development in relation to the incidence of disease and resultant damage to the tree. This frequently requires culturing of the fungi in the laboratory and conserving a viable supply of the disease causing organisms for experimentation. Stocks of such cultures deteriorate and die, mainly due to the drying of media used for culturing. Periodic transfers of the cultures to fresh supplies of media alleviate the problem but the process is labourious and time-consuming. The use of plastic films as tube enclosures for the conservation of fungal cultures was investigated.

Test tubes containing 2 per cent malt agar were plugged with non-absorbent cotton plugs, stainless steel or plastic caps and sterilized. The media were inoculated with viable disease causing organisms from either of two fungi that cause root rot. The test tubes were then closed by one of several methods. Included were sealing with cotton plugs, plastic or steel caps, covering with saran wrap or polyethylene film, covering plugs inserted in the tubes with saran wrap or polyethylene, or covering the mouth of tubes with saran wrap or polyethylene and then inserting the plugs. The test tubes were maintained at room temperature for one week and then stored at 5 or 20°C. Each tube was weighed monthly for the succeeding year, then periodically for the next 10 months, to determine moisture loss from the medium. Viability of the cultures and their rate of growth was determined after 12 and 22 months.

Moisture loss from the media was the same for both fungi. Under all forms of test tube enclosure, moisture loss was greater when the storage temperature was 20°C than when it was 5°C. After 22 months storage at 5°C, moisture loss of the media was 5 per cent of its total weight when the plugs were covered with saran wrap or polyethylene film and 13 per cent when the plastic films were beneath the plugs; moisture loss in capped tubes was 75 per cent of total media weight and in those with cotton plugs, it was 98 per cent. At this temperature saran wrap and polyethylene film were equally efficacious, but at the higher storage temperature saran wrap was much superior in conserving moisture. Growth rate of the cultures was generally the same under all forms of tube enclosure.

Saran wrap or polyethylene film applied tightly over the mouth of the test tubes maintained cultures that were still viable after 35 months without impairment of their growth. The use of a plug with the plastic film facilitates subculturing and minimizes the possibility of contamination. The most suitable form of enclosure for the conservation of highly aerobic organisms is probably a plastic film underneath a plug.

REPORT: Plastic film tube closures in the conservation of Fungal Cultures. G. Reynolds and W. Lock, Forest Research Laboratory, Victoria, B. C.