

RESPONSES OF PTERIDOPHYTE SPORES TO ULTRAFREEZING TEMPERATURES FOR LONG-TERM CONSERVATION IN GERMPLASM BANKS

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ABSTRACT

There are many unresolved questions around the loss of viability of pteridophyte spores and the most suitable conditions for long term conservation. The effects of humid and dry conditions, different temperatures, and the short exposure of spores to liquid nitrogen have been occasionally studied by various authors. The work presented here is the first result of a project focussed on long-term conservation of spores of pteridophytes. Using species from different ecological habitats, we show the effects of ultra-freezing, at -80°C and -196°C (LN) for six months of storage, on the germination process as well as on the development of the gametophyte until it reaches sexual maturity.

We analyze and comment on the results obtained for the final germination percentage and the germination rate, the final percentage of gametophytes that reach the laminate developmental phase, and of gametophytes that attain the sexual phase under the two conditions. All these data are referenced to the initial viability of the samples used as well as to a control of spores stored at room temperature (approx. 25°C).