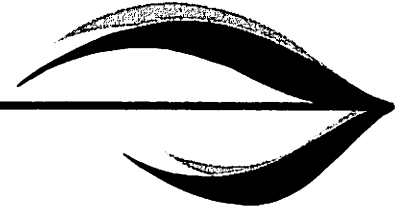


FLOWER AND NURSERY REPORT

FOR COMMERCIAL GROWERS



ASPLENIUM AND PTERIS FERN SPORE GERMINATION

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Tests carried out in the Department of Environmental Horticulture, Davis, on germination of *Asplenium nidus* and *Pteris tremula* spores produced some very useful results. Media upon which the spores were sown were sphagnum peat moss, fir bark plus peat moss, or sphagnum moss by itself. Peat moss was found to be a good medium for spore germination, if ground dolomitic limestone was incorporated at the rate of 100 to 200 grams per cubic foot. Sphagnum moss also proved to be a good medium. Boiled deionized water was used to irrigate the media during the germination period. Only freshly collected spores from plants at the UCD Botany greenhouses were used in the tests.

Preliminary experiments had shown that light was necessary for spore germination. During the tests at Davis, a light intensity of 50 foot-candles was supplied continuously until the majority of spores germinated. This was merely an arbitrary level, because the lowest light tolerance levels were not determined. Good spore germination was accomplished in the laboratory under fluorescent lamps, provided the temperature

was maintained at 69° to 73°F. Germination began to take place in approximately 10 to 14 days, at which time a light-green cast was evident on the surface of the media. Spores continued to germinate after the initial period but, for all practical purposes, germination was complete within a month.

As a result of this work, the following would constitute guidelines for uniform fern spore germination.

- Use fresh spores
- Sow spores on sphagnum peat moss to which dolomitic limestone has been incorporated at the rate of 100 to 200 grams per cubic foot.
- Sphagnum moss also makes a good germinating medium, provided a layer of finely graded moss covers the surface. Pasteurization or the incorporation of dolomitic limestone is not necessary.
- Irrigate with good quality water that is free of algae. If algae content of the water is unknown, it is best to boil the water to kill any algae that

may be present. Young fern prothallia and algae enjoy the same environmental conditions for growth. If given a chance, the algae might eventually smother the prothallia; therefore all precautions should be taken to prevent algal growth.

- Temperatures of 70°F and above induce best spore germination.
- Provide continuous light for germination (although we did not try less than 24 hours daily).
- Cover flats or containers with glass or polyethylene to prevent drying out. Provision for indirect sunlight or application of shade on greenhouse glass also helps prevent drying of the media.
- Gradually remove shade or covering. It might be necessary to provide a cheesecloth cover temporarily on bright days after a majority of the spores have germinated.
- Finally, prothallia should be misted occasionally to accomplish the sexual fertilization process that initiates development of the "adult" fern plant.

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