

Fern Propagation from Spores

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I was born in Western Canada and moved to the states and established a nursery in western Tennessee, about 40 miles northeast of Memphis. My facilities include 155 polyhouses, all 20 ft × 96 ft. Most polyhouses have 5 ft side walls. Six houses are gutter-connected greenhouses with Ambirad radiant heat, fertilizer injectors, raised benches, cool cell pads, and cooling fans. This is where we start the ferns from spores. We also have 40 propagation houses without heat—we move the ferns into this area after being potted into 2-1/4-in. rose pots.

Ferns are easy to grow and they are profitable. This year the theme for the I.P.P.S. is back to basics. There is not much more basic than growing ferns from spores. There are many good fern books available which list more taxa than you will care to grow. Edgar T. Wherry, Ph.D., Professor of Botany, Emeritus, University of Pennsylvania put together a very fine book on ferns which I often use. Most books have a couple of paragraphs telling how to propagate ferns from spores.

We have stock blocks for fern spores just as we have stock blocks for *Spiraea japonica* 'Little Princess' or *Euonymus alatus* 'Compactus'. The fern stock blocks are located in a heavily wooded area of deciduous trees. I have planted from 10 to perhaps 100 of about 20 types of ferns that I am interested in propagating.

Depending on fern species, fern spores are ready to pick from late May to early autumn. The exact time of a particular species varies with each year. I walk through the stock blocks and watch for when the spores are about ready to pick. When I think the spores are ready, I will pick a tip with 2 or 3 spore cases on it, take it to the office, and put it on a white piece of paper. If spores are dropping the next day, then we start picking leaves of that particular type of fern. We pick large quantities of fronds and place them immediately on a white, 8-1/2 in. × 11 in. sheet of typing paper that has been creased down the middle. We then spread these papers out so they touch edge-to-edge on the office floor where the wind, heat, or air conditioning will not blow them away. Usually within 48 h, all of the spores have dropped that will drop. Then we remove the old fronds, gently tap the spores to the crease in the middle of the paper, and tap the spores into a black film canister like 35-mm slide film comes in. We type the name and date the fern was picked and tape this to the black canister. The canisters are stored in the refrigerator. I have used fern spores as old as 6 or 7 years and had very good results.

We use 1020 flats without holes in the bottom, place one inch of Metro Mix in each, and carefully shake spores from the end of a small plant stake. The soil is barely covered with spores—perhaps like putting pepper on mashed potatoes. Then lightly mist—like a “dew”—the spores with non-chlorinated water applied with a spray bottle. The spores produce male and female haploid structures and the moisture allows them to “swim” together and pollinate. The flats are covered with clear plastic domes. The tops and bottoms are ordered from A.H. Hummert Seed Co. in St. Louis.

When the small ferns are 1/2 to 3/4 of an inch tall, it is time to slowly prick them out and replant in a 288-plug tray. We also use Metro Mix in the plug trays. The

ferns remain in the plug trays for 2 to 4 months. We apply Peters 20-10-20 fertilizer at 100 ppm through an injector system when the ferns are growing in the 288-plug trays. From the plug tray we transplant to a 2-1/4-in. rose pot in June or July. At this stage the potted ferns are moved from heated to unheated houses. They remain in the unheated houses until they are finished and sold or transplanted into a 1-gal container.

From the 2-1/4-in. pot liner to a 1-gal container in late spring you will have a very well established fern in 4 months.

Our gallon container mix is 9 pine bark (screened to 1/4- to 3/8-in. pieces): 1 red sand (v/v). We mix 10 yards at a time and add 50 lb of Sta-green prostart with minors and 50 lb agricultural lime.

Ferns are profitable for me to grow. I have figured my cost at 38¢ to produce each fern to the finished 2-1/4-in. pot. If you want to be friendly with a group of plants, then be in the friendship business with ferns.

PETER VERMEULEN: What do you mean by low temperatures, and what is the minimum you would go to?

KENNETH O'DELL: The houses can freeze. I imagine that they could go to zero degrees. We are interested in keeping the plants dormant when we ship in the spring so we want them to remain cold.

VOICE: What is the time to a salable plant from the time you put that spore into the flat until you have a salable plant? We can produce a 2-1/4-in. potted liner in 8 to 9 months. We start the germination of the spores at 55F in a greenhouse after the pointsettia crop is finished.

SUNDAY MORNING 5 DECEMBER 1993

The morning session was convened at 8:00 a.m. with Dan Studebaker serving as moderator