

way, but has been limited by the availability or rather lack of seed. Initial results indicate that the above media supplemented with 40 ml-liter¹ of potato (homogenate) will work for germination and subsequent growth. Media supplemented with coconut milk and even an extract from oak leaves appears promising for initial germination. Light appears to inhibit germination and germination can be sporadic. Seed sown over 2 years ago is still germinating.

ADDITIONAL READING

Arditti, J. 1982. *Orchid biology: Reviews and perspectives, II*. Cornell University Press, Ithaca, New York.

Keenan, P.E. 1998. *Wild orchids across North America*. Timber Press. Portland, Oregon.

Scandinavia 2002, Observations from the Exchange Propagator®

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I would like to start by thanking the members of the Scandinavian Region and all of the other plants-persons that I had the fortunate opportunity to meet while traveling across Denmark. Their openness and willingness to share information was exemplary, as well as their hospitality to a foreign visitor.

My first taste of horticulture in Denmark was obtained while walking through a residential area in Copenhagen, a chance to stretch the legs after a long flight. Knowing little of Denmark upon my arrival I was amazed by the small, but meticulous gardens kept by the residents of Copenhagen. Every yard was surrounded by a hedge (I later found out that the tradition had ancient roots, first used to control livestock, later a law to mark property lines, and now an everyday tradition), past the hedges you would expect to see lawn/grass, maybe a few shrubs, but instead a wealth of plant material was found, only in the largest of "yards" could you find grass. If there wasn't room for a garden, there were planters, window boxes, and/or plants on the window sills. Everyone seemed to be a gardener or maybe they're like me and hate to mow grass. Horticulture in Denmark is definitely not restricted to commercial operations. As mentioned in previous reports from exchange propagators horticulture even extends into the cemeteries.

The morning of my first full day in Denmark was spent on the University Campus in Copenhagen with Dr. Arne Skytt Andersen viewing gardens, research greenhouses, and the remodeled research facilities (to be used for genetic and tissue research). Since school had yet to start little was actually happening at the time, but the dedication to horticulture was obvious when walking around the campus and the extensive plant collections.

By afternoon I was on a train traveling across Denmark to meet up with Per Boisen Andersen and Marianne Buchhave. Per was a very interesting individual indeed, besides the extensive plantings around his residence, he served on a Consulting Board for Garden Centers. One of his many projects included a downloadable full color labeling system for garden systems. Marianne serves as a consultant to commercial growers and worked closely with the research center at the Danish Institute of Agricultural Sciences at Aarslev. Per and Marianne are also very in-

volved in a program to bring children into the garden. After visiting a castle (Egeskov Oversigtspark) with extensive plantings along with several unique features (a children's playground designed to bring children into the garden and a tree-top bridge system) we went to a local garden center with extensive display gardens and demonstration plantings. My first impression of a Danish Garden Center was that plants and display areas were still more important than hardscape materials.

After visiting the garden center we then traveled to the Danish Institute of Agricultural Sciences Research Facility at Aarslev where I was given a presentation of the current research projects. No secrecy there that I could see. The research was not directly funded by grants, but was directly responsive to the commercial plant industry. The research ranged from the study of composts in potting mixes, to hybridizing for container production, plant selection which could include a complete production schedule including flowering triggers, growth regulators, etc., development of simple techniques to determine ideal digging time for bareroot woodies, ideal cutting size for automated propagation systems, to genetic manipulation, and aseptic germination (embryo cultures), along with tissue culture of a triploid self-sterile *Miscanthus* for biomass production in their compost studies. In the U.S.A., the few research facilities that I've visited everyone seemed to have their own independent agendas, while this group seemed to work very closely together.

Then it was onto a trade show for system automation (DanGartek) where you could find anything from pot fillers to automated cutting systems as well as a host of biologicals for incorporation in their IPM systems.

On the way to the trade show Kaj Ole Dideriksen from the Research Station pointed out one of the largest wholesale operations dedicated to the production of *Campanula carpatica* for export. Acres of containerized double-flowering campanula could be seen in an outdoor growing area. While we were passing one of the fields, two people were putting flats of plants on a conveyor (attached to a 200-foot-plus boom). At the end of the conveyor was a mower. The plants were then moved into a greenhouse to force into flower for export. We also stopped at Martin Jensen eller Langeskov Planteskole, the largest Garden Center in Denmark. While the plant selection was good, the most impressive part was the display plantings. A caleche of miniature gardens all tied together by a winding walk way.

Onto the Scandinavian meeting near Aarhus, though the language barrier prevented me from direct participation in most of the talks, however the participants more than made up for my deficiencies by their willingness to share information and exchange ideas, ranging from the trouble the growers had with too high of tannin levels in their peat a few years back, to the research being conducted in South Africa to find new plants for greenhouse production.

While at the conference another opportunity to visit a cemetery was made available to me. As noted by previous visitors to Denmark, cemeteries are a great place to look at plants. From their well-groomed hedges to their meticulous plantings in each plot. I even found a Giant Redwood planted in the cemetery. The use of dwarf conifers in cemeteries, but rarely found in residential landscapes, lead me to ask why? The answer was that dwarf conifers became popular in Denmark 10 to 15 years ago, then people started using them in cemeteries (an ideal fit), know they are considered cemetery plants, and are rarely used in home gardens.

During the conference we visited a large wholesale operation and a horticultural museum. Though many of the features of the wholesale nursery were similar to

that found in the U.S.A., the marketing and distribution were very different. From the racks being leased, the plants being sold through a central marketing group, and their uniformity of container sizes throughout the industry in Denmark. One of the more interesting features that I have not seen in use in U.S.A. nurseries was their irrigation options. Even though every area was irrigated by a boom system, under the plants was a subirrigation system consisting of a plastic barrier, spaghetti drip tubing, an absorptive mat, and topped by typical ground cloth. By using the two systems water use could be reduced as well as spotting of the foliage and flowers. This system was also in use in outdoor systems at the *Campanula* grower.

After the conference I traveled with Lars Sandgaard to Northern Jutland where we visited several garden centers and a natural area covered with heathers, sphagnum, and other natives.

I returned to Copenhagen where I had the opportunity to visit several public gardens including the Queens Garden (Rosenborg Have) and the University of Copenhagen Botanic Garden (Botnisk Have). Both were impressive in their plant collections and plantings.

Back to the U.S.A. with good memories of a warm and gracious group of plants-persons.