

FIRST SESSION
NURSERY STOCK PRODUCTION IN DENMARK

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Nursery stock production in Denmark covers a large field which I cannot cover completely in 15 minutes, but I shall try to give a general picture of the Danish nursery industry today. There are 932 nurseries in Denmark, from quite small nurseries covering less than ½ ha, to the largest one which covers approximately 120 ha.

Everyone who either grows plants or offers them for sale has to report to the Government Plant Protection Service for inspection; thus there are a great number of nurseries registered, though most of them are, more strictly, garden centres. This also includes some who just produce a few perennials, roses, evergreens, etc. in their garden as a part-time occupation. I should say that 120 nurseries covers 95 % of the total plant production. The plant inspectors are rather strict in their judgment of the general health condition of the plants and are especially checking for virus; thus “outsiders” who do not care about quality etc. soon learn either to become better growers or to quit.

We have quite a number of forestry nurseries because the different forest owners have wanted to grow their own plants for various reasons; today, however, the trend is towards a few big nurseries, and these nurseries are the most highly mechanized in the business. They sow, plant, weed, dig the plants, pick them up, drive them home to the cold storage without much labour cost; then during the winter they are graded by hand and, if already sold, they are packed ready for delivery in the spring.

Quite a few nurseries have become specialized. For example, two nurseries cover 65 % of the fruit tree market, four nurseries wholesale 80 % of the perennials, six nurseries supply about 85 % of the rose understocks both for home production and for export. Other nurseries grow evergreens, shrub and/or roses. Only very few nurseries, however, have become completely specialized and most nurseries do have more than one line. In our own nursery we have specialized in the wholesale production of *Juniperus*, *Taxus*, *Picea*, *Abies* and *Pinus*, with some other plants which do well in containers. Additionally we grow 60,000 roses, some *Malus*, *Prunus* and some shrubs for our own garden centre. Quite a few nurseries carry different lines like us but it is really too mixed an affair.

The Danish Nurserymen's Association have had their own Adviser, Jorgen Mosegaard, for several years; he keeps the nurseries informed of what is going on in nurseries and research stations in other countries and also keeps us abreast of any relevant developments in

other branches of industry. He has done a lot to promote container growing and I think we are doing quite well in this line of the business.

Danish nurseries have also had a great help from the "Egedal Machine Factory" where teamwork between Adviser, Jorgen Mosegaard, a practical machine-minded nurseryman, Mr. Grave and other technicians has resulted in the development of several very fine and labour-saving machines which have also been exported to a great number of countries. The State Experimental Station, Hornum, is mainly doing research on three subjects: "Nursery Crops, Softfruit, and Production and Maintenance of Nuclear Stock".

Research into nursery problems can be summarized as follows:

Container production of plants.

Nutrition.

Propagation of understocks for fruit, roses and for difficult evergreens. This was started a few years ago.

Replant problems of apples, pears, etc. This work is being investigated in the laboratory and chemical treatments are being tested in the field.

During the last years the work on variety trials of ornamental woody plants, including roses, have been intensified and Poul Brander, who took his Master's degree at Wye College, has done a very great job on this.

The production and maintenance of nuclear stock primarily concerns fruit trees and shrubs; when it comes to research on propagation of evergreens and many of the ornamental plants we have to use English, American, German and Dutch literature. A large group of growers and retailers got together some years ago and formed "Planteskolernes Propagandacentral" which makes colored pictures, catalogues and pamphlets telling people how to grow rhododendrons, etc. All this is to help the nurseryman encourage people to buy plants and nice gardens instead of color TV, Hi-Fi, or mink coats!

We, in our nursery, co-operate with another nurseryman to produce our own colored catalogues with our own pictures. These catalogues we sell to different Danish, Swedish, Norwegian and Finnish nurseries in order to keep the price fairly low and, in this way, we have also gathered a large collection of colored plant pictures. The catalogues are sold to only one nursery in any particular area.

In the last years quite a few garden centres have turned up, which only sell and do not grow plants. Two of them keep most of their plants inside during most of the season; this looks rather nice in some ways, but not all the plants appreciate it and it is rather cold for the customers in the fall and early spring. Supermarkets have started to sell roses and small evergreens and, this fall, the first low-priced warehouse is opening a small garden centre. Still some of the old-time

nurseries, which not only propagate, but also sell both wholesale and retail are doing quite well.

A few of the larger nurseries have their own export businesses. We have also an organization called "Danplanex" which consists of a group of growers sharing common sales management and a common sales office. To some degree, therefore, the growers in this organization will be told what to grow as the salesman will know best what their customers in the various countries want. The export trade has been helped considerably by the extensive use of cold storage which has lengthened the season and evened out labor peaks.

CLEMATIS ARMANDII GRAFTING

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We find that the most economical way of propagating this plant is by grafting.

Preparing scion material. We first planted a stock plant on an east wall, with some protection from the north side. When this plant had established itself after the first year, we waited for young growth to commence, which normally is about late April or the beginning of May; when growth has reached about 18 — 30 inches (45 — 80 cm) and just before the main terminal bud ceases to grow, we cut back to about half its length. If this is not done, it will go on to produce excellent flowering wood for the next season; by cutting back we encourage more young growth to come from the remainder of the stem which will produce the right size and type of material for which we are looking, i.e. about 5 — 8 mm in thickness and with no "flowering wood" which normally will not produce a plant after grafting.

Stocks. Stock required for clematis grafting is *Clematis vitalba* — commonly known as old man's beard or travellers' joy which is raised from seed, sown in February to March in a light sandy loam, and lifted in December. We, however, buy our stocks from a nursery which specializes in growing stocks for the trade. The best size for grafting *C. armandii* is 5 — 8 mm; the smaller sized stocks (3 — 4 mm) are normally used for grafting clematis hybrids.

Propagation pit space. Any propagating pit in which one can obtain a temperature of 65° to 70° F (17° to 21° C) and cover with a polythene sheet or frame will be adequate for grafting *C. armandii*. Plenty of good daylight is essential, so make sure the glass is washed