CERTAIN ASPECTS OF PROPAGATION IN HOLLAND AND GERMANY

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The following is based on horticultural experiences gained when I worked in Holland and Germany during the period 1970 to 1972. I was initially employed by a Boskoop export nursery — William de Jong & Sons, and worked there during the despatch and packing season. I then worked with a specialist propagator for one year — Mr. Leo van Lint. I was then engaged by Firma Wilhelm Eberts, in Schleswig-Holstein, Germany. Mr: Eberts' nursery specialized in the production of pot liners of a wide range of evergreen and deciduous shrubs and conifers.

In many ways I was luckier than most British students because I became involved with the growers who supply the better known Export Nurseries. I was, therefore, able to understand the business functions and dealings reciprocating between nurserymen and exporters alike. Although cultural methods are different in Holland as compared to those in Germany, the business methods used in both countries are very similar and, in turn, quite different to our present methods in Britain.

Most exporters and dealers on the Continent are also growers although they do not propagate vast quantities themselves. Propagation is usually contracted out, or plants are bought as liners from specialist nurseries such as the firms of van Lint and Eberts.

I think it is fairly obvious to all of us that propagation is a specialized job. The equipment and labour necessary for successful commercial propagation is expensive compared to other key jobs involved in growing. To fully utilize this labour and equipment vast amounts of plants have to be produced intensively. The annual turnover of plants for such a unit is usually too large for even very large firms to grow on to saleable sizes.

As propagation timings often coincide with other cultural timings such as planting, containerising, staking and tying, or lifting and packing, it seems logical that propagation should be carried out by specialists. This streamlined system is universal throughout Holland and Germany. I feel that British nurserymen will very shortly need to be thinking on similar lines, especially when the market becomes even more competitive and the need for maximum utilization of labour and equipment becomes essential. One of the first things I noticed on the Continent was the production of stock plants' I am pleased to see that the British

nurseryman is becoming more and more aware of the need for porperly grown stock plants. Successful propagation can only be achieved if mother plants are pruned and fed to give maximum production of cutting or scion material. The hedge system of growing mother plants ensures that the plants are cut hard back every year, and therefore reproduce vigorous young material for harvesting the following season. This system of hard pruning and forcing can be used with most plants, with only few exceptions such as *Cotinus coggygria* 'Royal Purple'. I find *Cotinus* cuttings root very well when the young growing shoots from large unpruned plants which have just formed their terminal buds are taken as cuttings.

The German and Dutch nurseries have extensive areas of well kept mother plants. The Dutch also force deciduous azalea mother plants under glass or polythene structures. They were originally forced in order to produce cutting material earlier than from open ground grown plants, but it was very quickly noticed that the percentage take was also much higher using indoor material. I have since proved this with other crops whilst working in Germany and South England. I would imagine that mother plants grown under artificial lighting in conjunction with glass or polythene would produce still better strike rates. I feel this would be particularly so in crops such as Japanese maples, magnolias, Japanese and deciduous azaleas, *Prunus*, *Exochorda*, and even difficult subjects such as *Kalmia*, *Daphne x. burkwoodii* and *Acer griseum*.

Mist propagation is very rarely used in Boskoop. Instead, polythene film is used to cover cuttings and grafts in cold frames as well as in heated glasshouses. The clear polythene film is only 0.015 mm thick — heavier gauge polythene film does not give acceptable propagation results. I have since used polythene film in Germany and England, with excellent results. Cuttings rooted by this method included clematis, Japanese maples, *Chaenomeles*, evergreen and deciduous azaleas, rhododendrons, etc. The technique is very simple basically — after the cuttings are watered in, the polythene film is laid on top of the cuttings. The edges of the polythene are tucked in, so sealing the cutting bed. It is, of course, important to shade the cutting frames adequately. I have found that 250 gauge dense white (milk-white) polythene is the ideal material for this job. After about ten days, the cuttings are aired for an hour or two and, if necessary, are sprayed with captan if fungal attack is at all suspected The cutting bed is then sealed up again and opened at weekly intervals until the crop is rooted. It is important, especially in high summer, to harden-off a crop by removing the polythene film gradually (i.e. opening the cutting bed up daily for about one or two hours for at least three days before finally removing the polythene film). If the

film is simply taken off at the first signs of rooting, severe scorching and possibly collapse can occur. Nevertheless, I was very impressed with the way the Dutch used this cheap method of propagation to best advantage, proving that sophisticated heated mist units are not the only means of propagating commercially.

Firma Wilhelm Eberts in Holstein-Germany did, however, have extensive misting houses. Firma Eberts is a firm which is geared up to production of pot-liners only and, it could be said, is run on factory lines. One third of the nursery area is taken up by stock plants which are planted in the hedge system. Briefly, cuttings are rooted in summer, autumn and early winter. The cuttings are stuck in boxes, rooted in the mist units, then weaned and kept under cold glass until they are potted off and graded in the following spring. All the cuttings are liquid fed after they are weaned off.

The bulk of the potting at Eberts was done on a Meyer potting machine. Square pots were used throughout the nursery, ranging from 7 cm. to 11 cm. The majority of the potliners were, however, in 7 or 8 cm. pots. Square pots are much easier to handle than round pots because a block of up to twenty-one pots can be lifted in one movement, whereas no more than six round pots can be moved at any one time.

Pallets were used throughout the nursery for taking plants from the potting machine to the frames. The Datsun-Nissan pallet truck could be operated on gas or petrol so it could be used safely in the glasshouses and sheds.

The potted cuttings were stood in 9' (approx.) wide beds which were covered with dense white polythene for winter protection. It was interesting to see that conifers over-wintered under glass were of inferior quality and colour when compared to those overwintered under polythene tunnels. The plants in the polythene tunnels were also quite moist throughout, and no signs of frost damage could be noticed even though the temperature had often remained below freezing for periods of four days or more at a time. The glass-covered frames, on the other hand, did have a number of frost-damaged and dry plants in them.

Secateurs were used whenever possible for making cuttings. Tina, 18 cm. long, were found to be easiest type of secateur for cutting making. *Symphoricarpos*, *Potentilla*, *Cotoneaster* and similar shrubs were bunched up and cut into sections about three inches long. Seradix No. 2, mixed with captan, was the only hormone used at Eberts.

The bulk of the nursery's labour force was made up of Spaniards who worked from April until early December every year. During winter and the early part of the year, only a skeleton staff of regular workers were employed.

Although the bulk of Mr. Eberts' production consisted of cuttings, a wide range of plants were also grafted. Miniature roses were grafted in December using dormant buds. The understock used was 8/12 mm. *Rosa multiflora*. A "T" incision was made at the top of the stock, and a single-eyed scion was then inserted in the same way as in summer budding. The grafts were not tied, and were plunged into beds of moist peat which was heated to 65°F. The bed was covered with a polythene tent and after about six weeks the young shoots produced from the dormant eyes were used for 'green-leaf' scions; so the process was repeated. The first batch of grafts were potted into 9 x9 cm. square pots making saleable plants within fifteen weeks. A production line was set up when we grafted the roses, in which one man collected and cut the scions and two others made the incisions and inserted the scions into the stocks. *Cedrus*, *Hammamelis*, *Picea*, *Pinus*, *Syringa* and *Parthenocisus tricuspidata* 'Veitchii' were also grafted. I was interested to note that two, three and five-needled pines were *all* grafted onto the common rootstock, *Pinus montana* (syn. P *montana mugo*) (i.e. reverse)

I hope in this very general paper to have summarised the highlights of the time I spent working on the Continent. I felt, as is usual in similar cases that the time spent on the Continent was all too short but the memories and horticultural experience gained will always be of value to me.

It is encouraging to know that our products are in great demand throughout Europe, and I see great futures for progressive companies within the now enlarged Common Market.

INITIATING A PROPAGATION PROGRAMME AT KINSEALY

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The considerations that prompted the initiation of a research programme on hardy nursery stock at Kinsealy in 1967 included a rising import bill, the possibility of building up an export trade, and consideration of the very favourable conditions of soil and climatic factors as evidenced by the existence of famous gardens in all parts of the island. These gardens are of international repute for the extent of their collections and for the size and luxuriance of growth of many of the trees and shrubs cultivated in them. Another positive factor was the comparative freedom from