

EARLY PLANT PROPAGATION TECHNIQUES THAT STILL WORK TODAY

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While serving my apprenticeship in a tree and shrub nursery during the aftermath of the war-ravaged Germany of the early 1950s, we did not have any fancy machinery or any sophisticated equipment. We did not have a single greenhouse. We did all of our propagation in cold frames outdoors, without foggers or misters. Considering Germany's temperate climate with frequent cool and rainy summers and moderately cold winters, careful preparation of the cold frames was a necessary step to ensure success.

The cold frames were 150 cm wide. At the lower end they were 20 cm high and at the upper end 30 cm high. They were covered by glass windows 100 cm in width. The length of the frames could be variable. Every 100 cm a wooden lath was nailed like a cross beam to the frames, to give them stability and to support the windows. At that time all our frames were made of wood.

In the bottom of the cold frames first came a layer of horse manure (to provide the heating), which was covered with sifted compost tamped down with a strong wooden board. On top of that came the actual propagation medium, a mixture of 3/4 fine sand and 1/4 sifted peat (we did not have perlite or vermiculite at that time). For ericas and other acid-loving plants we increased the peat content to 50%. Each of these layers was about 5 cm thick. The propagation medium was very carefully flattened by moving a thin lath repeatedly over the surface which was then tamped down lightly. Then we watered heavily and let the lot settle for some time before tamping it down very firmly. Now the frame was ready to receive the cuttings.

We used a piece of lath with a set of equidistant nails to punch holes for an entire row of cuttings, which were then inserted rather shallowly and firmed into the mix. For very small-leaved material we used a lath without nails and cut a narrow trench with an old, blunt knife, so the cuttings could be put closer together.

Then the cuttings were watered in thoroughly and the clear glass frames put on. No shade cloth was rolled on until sufficient heat and steam had been generated within the frame which, of course, depended on the day's weather. The condition was checked by simply lifting the glass frame and inserting the hand for temperature and moisture control. Naturally it took some time for

a novice to gain the necessary experience, but it worked very well, primitive as the method was.

When deemed right, the cuttings were given a quick dousing from a small watering can, then the shade cloth rolled on over the glass frames. That procedure was repeated several times during the day, depending on the weather. Every morning they got a good watering to prevent the rooting medium from drying out. Then everything was repeated for the next four to six weeks until the cuttings were rooted.

To harden the cuttings off, a notched piece of wood was put under the frame cover to allow air to enter, first only a centimeter or two, then gradually the windows were lifted higher, and finally they were taken off and only the shade cloth was rolled on when necessary.

The layer of compost under the propagation medium supplied enough nutrients to the young plants initially, so transplanting could be delayed if necessary. We only used auxins in difficult cases, like certain evergreen *Berberis*, for example, and for conifers.

In winter we took a great many hardwood cuttings. The long water shoots were cut in the afternoons, when it was relatively warm. The following morning we cut them to length in a heated workroom, where they were bundled together with thin willow branchlets. The labeled bundles were then wheeled out to a large sand pile where they were buried upside down and covered with a thin layer of sand, topped by a thick layer of leaves, to prevent the sand from freezing. After the spring thaw the callused cuttings were taken to the field and planted directly into long rows.

We also grafted dwarf conifers. The rootstock was planted in clay pots and the grafts were tied on with cotton strings. (To accommodate such larger size plants in the cold frames we used two frames, one placed on top of the other). Before putting the grafts into the frame the pots were thoroughly watered, then plunged into wet peat in the frame. The pots were inserted at a diagonal angle, with the grafted scions facing up. Then they were covered with the glass frames. The frames were lifted every morning, to allow the condensation to run off, so that no water droplets could fall onto the grafts. These frames were shaded in the same way as the cuttings, but no daily watering took place. Only when necessary did we dampen the peat. The grafting took place in late summer and very early spring.

Our success rate with grafts, as well as most of the cuttings was generally very high, whether softwood or hardwood. This shows that one does not need to have sophisticated equipment to get ahead. What we did have, were tools of the highest quality. Shears

and knives we used were always the top of the line, as available at the time.

These simple techniques, as primitive as they may be, work very well in situations where the application of high-tech methods is not feasible, but they are very labor intensive.