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LITERATURE CITED

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BUDDING AND GRAFTING TECHNIQUES IN THE PRODUCTION OF STREET TREES

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The production of street trees from seed or cuttings in the past has been a slow and haphazard process with very indifferent results being obtained.

Seed from trees such as *Ulmus procera* (*U campestris*) gives such a wide variation in type that as many as 50% of seedlings need to be discarded. The other major problem is to grow the seedlings to an acceptable street tree height, i.e., 12 to 15 feet with a nice smooth trunk of 4 to 5 inches caliper. Usually *Ulmus procera* seedlings require 8 to 10 years or longer to reach this size and, even after initial culling, the finished products generally require further culling.

One method that we use to great advantage to overcome these problems and obtain 100% straight trunked trees of 12 to 15 feet in 3 to 5 years is by budding or grafting.

Selected cuttings of *Ulmus procera* are planted in the open ground, lifted after one year, trimmed and replanted out in nursery rows 9 inches apart with 3½ feet between rows.

Budwood from selected parent stock is then used to bud the stocks, using a normal T-bud during February. These stocks are then cut back to the bud during July - August. Those having buds that did not take are grafted using a simple whip and tongue graft, although, generally, 95 % bud take is achieved.

As the bud grows during the spring and the summer, it is trained to a single leader by breaking off any side shoots before they reach two inches in length. Staking may be necessary when the young tree reaches 4 to 5 feet. In a normal growing season a tree of 6 to 7 feet can be produced with a straight and smooth trunk.

The yearling trees are lifted the following winter and re-planted into rows 7 feet apart and 4 feet between trees. There they grow for a further 3 years and, with yearly shaping, reach a height of 12 feet with a trunk caliper of 3 to 5 inches.

Instead of budding, stocks can be grafted using a whip and tongue graft during the late winter or early spring using scion wood with 3 to 4 buds. When the buds shoot and reach 4 to 5 inches the scion is cut back to the strongest shoot, the rest being removed. The tree is then treated the same as a budded one. When grafting, a take of 100% can be expected.

Half-inch P.V.C. tape is used to tie all buds and grafts, the tape being removed from buds after 21 days. The tapes on grafts are removed after the shoots are 4 to 5 inches long. The P.V.C. tape must be removed before the tape cuts into the wood as growth takes place.

This method of producing straight-trunked trees is also used to produce standards for weeping trees such as *Acer palmatum*, *Ilex*, *Pyrus*, *Malus* and any other stocks that are slow growing.