

PART 2

TECHNIQUES OF VEGETATIVE PROPAGATION OF HARDWOODS

PROPAGATION OF *PLATANUS* × *ACERIFOLIA* WILLD. FROM CUTTINGS

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ABSTRACT

A method of rooting *Platanus* × *acerifolia* Willd. cuttings with a heel gave 60-80% success, as compared with 20-50% success with simple stem cuttings; the latter method was more economical of material. Mean annual height increments were about the same with both methods, i.e., 75-80 cm.

INTRODUCTION

In Romania, the genus *Platanus* is almost exclusively represented by *Platanus* × *acerifolia* Willd., the hybrid between *Platanus orientalis* L. and *Platanus occidentalis* L. This exotic has a limited forestry importance, despite its fast growth, good wood quality and its resistance to wet soils. But it is valued for its ornamental characteristics such as crown shape, stem form, large dimensions and resistance to smoke, fumes and heat. This hybrid plane is found along avenues and streets, in gardens, and in the neighbourhood of factories and mills.

Successful attempts were made to root stem cuttings of *Platanus* × *acerifolia* Willd. some years ago (Benea and Cocalcu, 1960), and today's planting stock is generally produced by this means.

Two vegetative propagation methods tested, and the results obtained, will be described.

MATERIALS AND METHODS

The stem cuttings were made from one- to two-year-old shoots that were collected from the crowns of mature trees, in the last two months of the year. The length of the shoots was 30 cm to 50 cm. Bundles of 50-100 pieces were placed temporarily in beds or boxes, outdoors in the nursery, in an equal mixture of forest soil and sand. The shoots were placed with the tops all orientated in the same direction (downwards) and having at least one-third of their length in the ground. Two kinds of subsequent procedures were then tested:

(a) *Stem cutting with "heel"*

In March or April (i.e., after a period of four or five months) shoots were sectioned into cuttings of 20-25-cm in length, with three to four internodes. The lower part of the cutting had a "heel" of three to four cm, formed from two-year-old wood. The upper part of the cutting was cut on an angle immediately above the bud (Fig. 1). The cuttings were then ready for the rooting bed, which had been dug to a depth of 35-40 cm the previous autumn. The cuttings were placed vertically in the rooting medium up to the bud and the surrounding ground was firmly pressed. The space between the cuttings was 5 cm and between the rows 10 cm. During the growing season the rooting bed was kept clean of weeds and watered with about 5 l of water per sq. m each day without rain, until September.

FIG. 1.—Cutting of *Platanus* × *acerifolia* Willd. with heel.

(b) *Simple stem cutting*

In December or in January (i.e., one to two months after collection) the shoots were shortened into cuttings with a length of 15-20 cm and with at least two buds. The extremities of the cuttings were cut on an angle above the distal and below the proximal buds respectively. Bundles of 50-100 cuttings were made and settled in a ditch with a width of 40 cm and a depth of 60 cm. The rows of bundles were alternated with rows of sand. The upper part of the ditch was covered by forest soil and well firmed. In March or at the beginning of April the cuttings were put in an unheated greenhouse, in a sand and humus (or organic fertiliser) rooting medium, having a thickness of approximately 25 cm, the lower layer of approximately 10 cm being the humus (or the organic fertiliser). The cuttings were placed vertically in the rooting medium with 1 cm of stem under the ground level. The space between the cuttings was 5 cm and between the rows 10-15 cm. The unheated greenhouse was covered with a wooden lattice designed to provide 50% shade to the cuttings, for protection against the sun. Watering was as in the first method.

Following both procedures the rooted stem cuttings were transferred to the nursery or directly to the forest after one or two growing seasons, depending on their development. The outplanting spacing in the nursery was 50-60 cm between the plants and 80-100 cm between the rows for plants for ornamental purposes, and about the half of these spacings for plants for forestry purposes.

RESULTS

Stem cutting with "heel"

After three years' testing, 60-80% of cuttings rooted with a mean annual increment of 80 cm in height.

Generally one shoot provides only one cutting, because of the necessity to have at its

lower part the "heel" formed from the two-year-old wood. Sometimes, however, it is possible to obtain two cuttings, one with a "heel" and one without.

Simple stem cutting

After three years' testing, 20-50% of cuttings rooted with a mean annual height increase of 75 cm.

From one shoot it is possible to produce two or three cuttings as two-year-old wood at the base is not necessary.

CONCLUSIONS

- (a) Vegetative propagation from stem cuttings with a "heel" is more efficient than that from simple stem cuttings; the percentage rooting being respectively 60% to 80%, and 20% to 50%.
- (b) The procedure with a "heel" uses more shoots than that without a "heel", but it is more suitable for the production of large ramets, especially for ornamental purposes. In the first method generally only a single cutting can be produced from one shoot while in the second method two or three cuttings can be made.
- (c) The mean annual height increase of the ramets is about the same in both procedures, being approximately 75-80 cm.

REFERENCE

- BENEA, V. and COCALCU, Th. 1960: Contributii la inmultirea vegetativa a platanului /*Platanus* × *acerifolia* Willd./ (Contributions to the vegetative propagation of *Platanus* × *acerifolia* Willd.) Recomandari pentru productie. Edit. Agro-Silvica, 20-23.