2005 and treated as described above, but no rooted cuttings were produced. Root cutting propagation was also done (Winter 2004-2005), but results were poor.

RESULTS AND DISCUSSION

Cuttings of *S. albidum* rooted sporadically (Table 1). Those taken on 16 June rooted the best, suggesting a seasonal factor. Of these cuttings, mean root number per rooted cutting was higher for cuttings in sand and was unaffected by hormone treatment (data not shown). Cuttings of *L. benzoin* rooted more easily. Rooting percentage for hormone-treated *L. benzoin* cuttings ranged from 71 to 100, with the exception of cuttings taken on 5 Aug. 2005, which had not rooted, by mid September (Table 1). August may be too late in the season to successfully root *L. benzoin* cuttings. In general, hormone treatment had little effect on rooting percentage, but increased root numbers (Fig. 1). In general, cuttings of *L. benzoin* rooted in sand had more roots per rooted cutting than those rooted in peat-perlite. The vegetative propagation of *L. benzoin* is easy enough to permit selection of superior cultivars.

Propagation of Woody Plants Through "Long" Cuttings©

Jelle Hiemstra and Bart van der Sluis
Applied Plant Research, Nursery Stock Research Unit (PPO-Bomen), P.O. Box 118, 2770 AC Boskoop, The Netherlands

OBJECTIVE

Development of a quick method for vegetative propagation with a higher rate of rooting than the present methods.

PROBLEM

To ensure uniformity, many street trees in the Netherlands are vegetatively propagated. However, success rates of the methods in use depend on the species being propagated, and several problems may occur such as:

- Difficulty in propagating certain species through rooting of cuttings.
- Slow regrowth of rooted cuttings.
- Occurrence of delayed incompatibility in certain combinations of rootstock and scion after propagation by chip budding or grafting.

Especially for research on *Acer platanoides* (propagation of *Verticillium*-resistant rootstock selections) and for *Quercus frainetto* (to overcome rootstock-scion incompatibility) we needed a reliable method to root cuttings. Common methods do not work well for these two species, so a method using long leafy cuttings ("Spethmann method") was tested.

APPROACH

- Greenhouse compartment with high humidity (95%–100%) atmosphere (PlantFog system) (Fig. 1).
- Several series of rooting rose (*Rosa*) cuttings of 60–80 cm length (2002–2003).

Figure 1. Cuttings of *Acer platanoides* in a box with substrate (peat) in a glasshouse at 95%–100% humidity.

Figure 2. A well rooted cutting of *Quercus robur*.

Figure 3. A poorly rooting cutting of *Acer platanoides*.

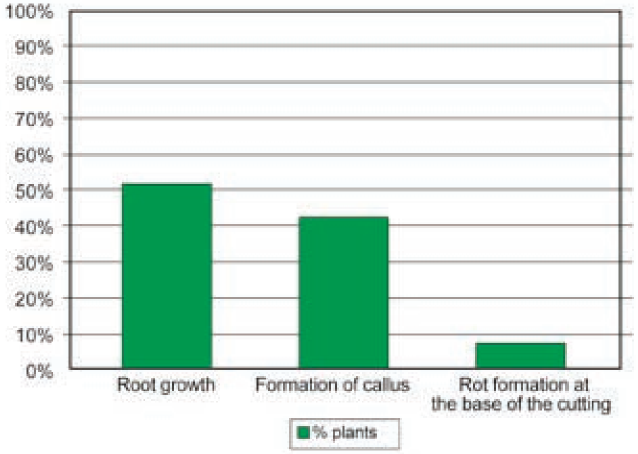

Figure 4. Rooting assessment after 6 to 8 weeks.

- Testing rooting of long cuttings (30–50 cm length) of *Acer platanoides* selections and *Q. frainetto* with *Q. robur* and *Magnolia stellata* as comparison trials in 2004.
- After 6 to 8 weeks rooting percentages were assessed.

RESULTS

Rose.

- High rooting percentages were possible (up to 85%).
- Moisture content of rooting medium was very important (too high: just one root sprout; too low: formation of callus but no roots).

Shade Trees.

- *Acer platanoides*: Rooting percentage differs with selection (genotype) being propagated; on average 51% rooting was observed (Fig. 2).
- *Quercus frainetto*: No rooting at all.
- *Quercus robur*: Only 25% rooted cuttings (Fig 3).
- *Magnolia stellata*: Very good rooting; up to 85% observed.

CONCLUSION

Long cuttings may be a way to propagate some of the "difficult" shade tree species. The percentage of success; however, strongly depends on the genotype being used; the results differ between species as well as between individuals within a species (Fig. 4). The method will be further evaluated for *Acer platanoides* in a new trial in 2005.

Acknowledgement. This research project was financed by the Dutch Product Board of Horticulture (PT).