

## THE IMPORTANCE OF TIMING IN PROPAGATION BY CUTTINGS

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There seem to be more contradictions in scientific experimentation in the plant propagation field than in any other phase of horticulture.

Ask any propagator the proper time to take cuttings of a given species. He will say, "take your cuttings in November, April, or July and you can expect 100% rooting."

My personal experiences keep me from making any calendar predictions on timing. Weather patterns change from year to year. Erratic results arise from various cultural practices. Stock plants grown in a greenhouse, a shadehouse or outdoors, irrigated or non-irrigated, well-fertilized, or starved will lead to different responses.

Since each of these factors can change rooting from 0 to 100% and interact with the time taken, it is not a surprise to find some dogmatic conclusions that cannot be verified by repeated trials.

My first experience in timing in the taking of camellia cuttings occurred in 1951. The nursery owner would check the maturity of the wood by using the snap method. In early July the new shoots would be bent back. If the stem collapsed it was not mature enough. If it would snap we would make cuttings of that particular cultivar. Years later I realized that the same shoots might snap on a cool, damp morning but not on a hot, sunny afternoon.

Sometimes if the stem tip is soft and too succulent it can be removed and the lower portion will have the proper maturity.

A number of years ago the Rhododendron Society held a meeting in Portland discussing timing in making rhododendron cuttings. Each speaker had a favorite time for taking cuttings which varied from June to November. All seemed to agree on taking the more mature cuttings first except one grower at the coast. He said "I take my cuttings very scientifically. I start with the letter A and put in 'Anne Bedford', 'Augfast', etc., then go on to the letter B."

One grower told me to take ivy cuttings on March 1 for best results, but I have taken them every month of the year and I get nearly 100% rooting.

Since a cutting roots from the energy it has stored, the maturity of the cutting should be and is a major factor in timing.

The question arises in rooting cuttings, are there any plants that have a calendar or seasonal optimum time. At our nursery we root junipers and arborvitae from December 1 to about April 1, or when spring growth begins. Even then I prefer to wait until after a hard freeze and the plant has had its cold requirements satisfied so that it will grow normally in the spring.

On the other hand, the timing for rooting cuttings in the genus *Chamaecyparis* does not appear to be as exacting in our area.

Broadleaved evergreens and deciduous plants and trees are usually propagated by cuttings in late spring and summer after the first flush of new growth begins to mature. Magnolias, smokebush, and barberries are also successfully rooted at this time.

About the time I become positive as to the exact time to take cuttings someone shows me 100% rooting of a species taken at what I consider the "wrong" time. I then move back to square one and become less positive than ever that timing by the calendar is of any benefit at all.

BRUCE BRIGGS: Ellen, have you tried putting your *Liquidambar* explants into a liquid as well as a solid medium?

ELLEN SUTTER: No, we have not. We have had problems at times with internal contamination so we have used shorter and shorter buds. With short buds, as a chip bud, we cannot put them in liquid medium so we stay with the agar.

BARRIE COATE: Wouldn't it be advisable for propagators in the Pacific Northwest to be looking for specific *Liquidambar* clones which do well in this climate? There is a need for *Liquidambar* clones superior to those now available. On another subject — an interesting rejuvenation procedure has been used with a number of species which has increased rooting percentages considerably, for example with *Ceanothus* 'Julia Phelps,' a silver form of *Sequoia sempervirens*, and with *Quercus ilex*. In the latter case we cut down a 20 ft. stock plant in the field, which stump sprouted. The sprouts then rooted easily, being due probably to this rejuvenation procedure. This can be applied to many more species, I believe.

WARREN ROBERTS: This question is for Larry Landauer. Can you name any rhododendron cultivar that can be grown under alkali conditions, such as we have in the central valley of California?

LARRY LANDAUER: There are rhododendrons that will grow under alkali conditions, not well — but they will grow. However, when you combine alkaline soil with high temperatures, rhododendrons will not make it. They can tolerate one or the other of these conditions, but not both together.

ED SCHULTZ: How early in the season do you start taking rhododendron cuttings?

LARRY LANDAUER: We start June first, starting with the dwarf types — on through the end of December. You can root a rhododendron cutting anytime of the year the wood is hard enough to stick into the rooting medium. We have rooted 12 months of the year.

## MICROPROPAGATION OF FILBERTS, *CORYLUS AVELLANA*<sup>1,2</sup>

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**Abstract.** A micropropagation system is described for shoot multiplication and root initiation followed by a successful transfer of filbert plantlets to soil in a greenhouse environment. Essential factors beneficial for shoot multiplication were the combination of two cytokinins, BAP and 2iP, and the incorporation of Anderson's inorganics, a low salt medium. Shoot proliferation arose primarily from lateral bud break. Proliferated shoots were subcultured on shoot elongation/rooting medium, then planted into greenhouse soil and placed into a humidity tent. The survival of the micropropagated filberts was 93%.

### INTRODUCTION

The primary objectives of this research was to develop commercially feasible micropropagation techniques for filberts. Micropropagation of filberts may be an attractive alternative propagation method because of reductions in both costs of production and time required to introduce commercial quantities of new cultivars to the industry.

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