

tusa forms. Here I feel, through unsuccessful experiences of attempting to emulate other propagator's timing, that a variation in climate from area to area is, perhaps, the key.

PEAT/SAWDUST MIXTURE AS A PROPAGATING MEDIUM

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While the properties of peat have been well researched and are known to all nurserymen, sawdust as a propagating medium has received surprisingly little attention. As far as I can ascertain the only New Zealand literature on the subject was produced by Mr. Charles Challenger of Lincoln College some ten years ago. I find it amazing that a material so readily available and with such obvious potential should have escaped critical analysis.

History. At Duncan and Davies we have been using sawdust as an integral part of the propagating medium for the last 14 years during which time a change was made from "pit" to "container" propagation. Sawdust was considered suitable because it had the following advantages:

(1) *Availability* – Most materials had to be imported from outside the Taranaki region, e.g. sand and pumice from the Waikato area. Sawdust was available from a number of local mills and a regular supply could be maintained.

(2) *Cost* – For a medium which is being used once only, it becomes important to keep the cost at a relatively low level. The extreme cheapness of sawdust, coupled with the excellent results achieved, led to increased trials and usage.

Earlier our mix was comprised of sand/pumice or peat/sand and, with the change-over to plixi trays as containers, these orthodox mixes appeared to be too wet. Trial work done with sawdust showed that here was a material worthy of further investigation. Some problems had to be resolved — whether plants grown in a sawdust mix would transplant into soil, and drainage problems with the container — not to mention the elusive rooting percentage!

Results continued to be highly successful and eventually led to the adoption of a *standard medium* consisting of: 3 parts sawdust, 1 part peat, and 1 part sand (or pumice). This mix has been in use up to the present day and is used on an extremely wide range of plant material.

Ingredients.

(1) *Sawdust.* The type of sawdust we use is generally from *Pinus radiata* trees, but sometimes that from *Cupressus macrocarpa*, and occasionally *Dacrydium cupressinum* (Rimu) is used, although this is generally mixed with the pine sawdust. The sawdust is untreated, coming straight from the breaking-down saws at the mill and may be up to three months old. It is of a coarse chip grade due to the large set on the saws.

(2) *Peat.* The peat used is imported from Ireland. The cost of New Zealand peat is comparative but the Irish peat moss is consistently of a better structure and grade.

(3) *Sand.* This is brought in from the Waikato area, the reason being that our local product is very heavy, the supply has been inconsistent, and it had been difficult to obtain within a given envelope. We are thus faced with a very high freight charge.

(4) *Pumice.* Pumice has recently replaced sand in our medium — mainly for purposes of standardization throughout the nursery, and due to our increasing export trade, where sand is often considered unsuitable.

In common with many other nurseries we are always anxious to improve our techniques and the availability of materials such as *perlite* in differing grades and *polystyrene* has led us to some interesting trials. Keeping in mind our standard mix as a basis for comparison, a number of trials have been done within the production line.

Table 1. Results achieved in media trials within the production line, showing the percentage of rooting in each case

Plant	Std Mix	Peat-Sawdust, 1 1	Peat-Perlite, 1 1	Peat-Polystyrene, 1·1	Peat Only
<i>Rhododendron</i> 'President Roosevelt'	70 %	82 %	57 %	87 %	30 %
<i>Soulangeana Magnolia</i> 'San Jose'	90	80	100	—	—
<i>Boronia megastigma</i>	87	95	83	37	79
<i>Phebalium</i> 'Illumination'	88	100	88	—	—

Results to date seem to indicate the following points about a 50/50 peat-sawdust rooting medium:

(1) In most cases it is as good as, or better than our standard medium.

(2) Rooting occurs more quickly.

(3) Root quality also appears to have improved.

The largest trial to date of this medium has been on an easily rooted subject, *Phebalium squameum* grown as a contract crop.

Of the 10,000 required 8,000 were set in a 50/50 peat-sawdust and a much superior rooting system was apparent.

Another interesting fact emerging from trial work such as this is that where the pumice fraction is reduced (or removed altogether) there appears to be a marked increase in rooting percentage. In line with this, from the results with the peat-sawdust mix, and new soil mixing facilities at the nursery, we have recently changed to a 3:2:1 medium (3 parts sawdust, 2 parts peat and 1 part pumice) and the results appear to be very promising.

Where do we go from here? It is obvious that a lot more research has to be done into the materials available as propagating media, including those as commonplace (in New Zealand, anyway) as sawdust.

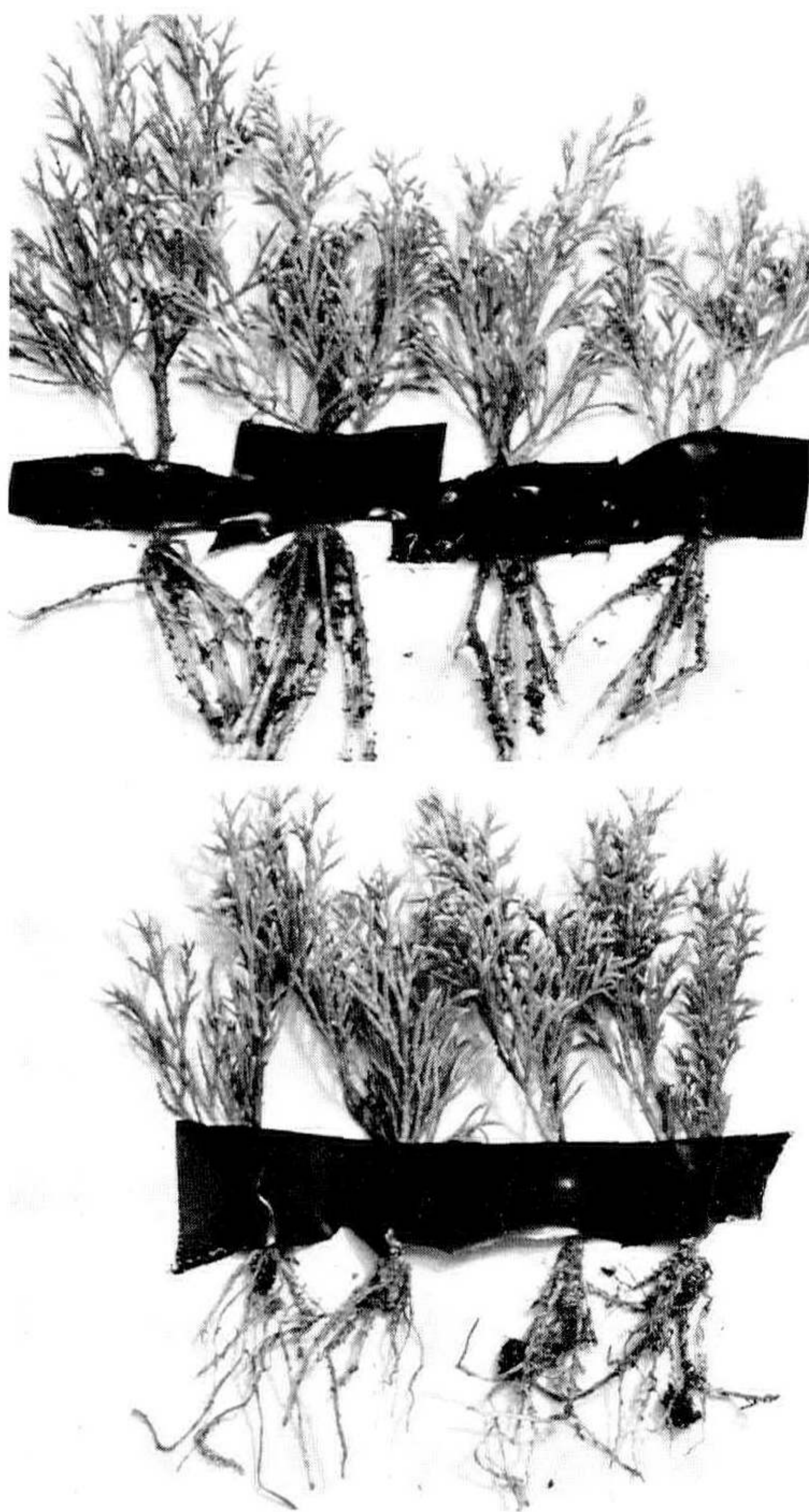


Figure 1. Comparison of root quality in *Cupressus sempervirens* 'Swane's Gold' cuttings. Above. Peat-sawdust, 1:1. Below. Standard medium; sawdust-peat-sand, 3:1:1. Reset September 14, 1973. Lifted November 1, 1973.

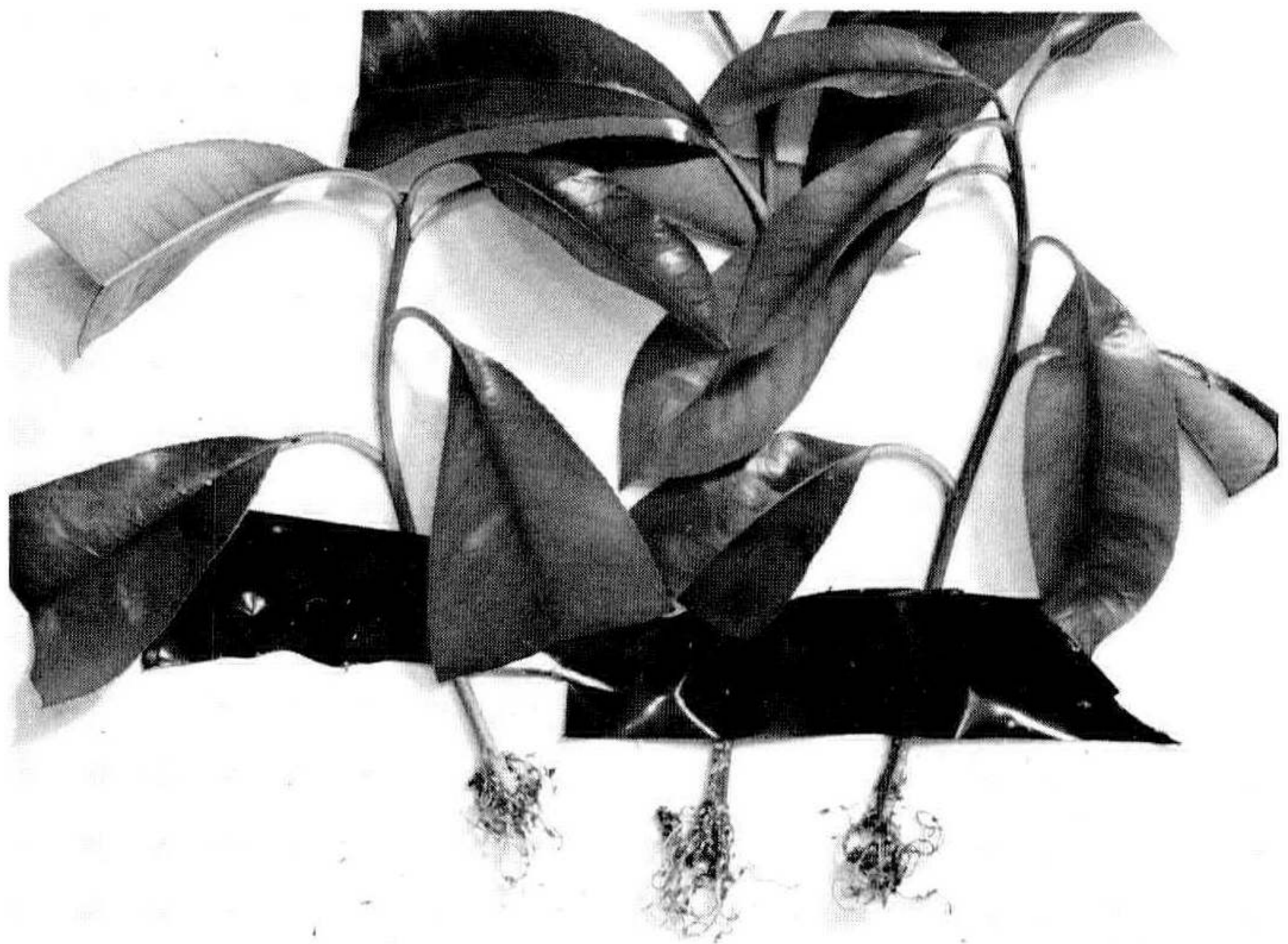


Figure 2. Comparison of root quality in *Photinia* X 'Red Robin' cuttings using a peat-sawdust, 1:1 medium (*above*) vs. standard medium: sawdust-peat-sand, 3:1:1 (*below*). Set September 24, 1973. Lifted November 1, 1973.