fact, we shall be using this method next year. A great advantage is that when the cuttings have rooted they can be moved and the tunnel can be used again the same year. Instead of peat and grit, a 2" layer of gravel is placed under the trays.

Potting is carried out from the beginning of February to the end of August. Any done after that date gives poor results due to plants not being established before the winter.

All potting is carried out by hand using 3" poly pots. These are a little slower to use but the compost used consists of 50% peat, 25% loam, 25% grit by volume and made up to J.I.2 strength with Vitax Q4.

Once potted, the plants are placed in an Airfax or Correx tray at 40 per tray. They are placed in a polythene house to become established. Shading is needed during summer.

Once established, the liners are placed in a standing-out bed to harden off. At this stage Vitax 101 liquid feed is used at the rate of 1 in 200 in 50% of the waterings. This has been found to give a steady mature growth.

EFFECT OF TWO TEMPERATURE REGIMES ON ROOTING CUTTINGS

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Abstract: Cuttings of 19 different genera and cultivars were rooted by the warm bench and plastic system. The base temperature was thermostatically controlled at 21-24°C. The air temperature was 15.6°C minimum. In most cases rooting was as good or better when the heating current was cut off for 12 hours daily than when it was available for 24 hours, with economy in cost of electricity.

In these days of high energy costs, economy in the use of electricity for the maintenance of base temperature in the propagating bench is an obvious necessity.

In a previous season (January 1971) an attempt was made to save electricity by reducing the base temperature in a mist unit from the standard 21°-24°C to 16°-18°C. In several species the result was reduced rooting (Table 1). *Viburnum davidii*, however, gave better rooting at the lower temperature. *Ilex* 'Golden King' also showed some indication of higher rooting percentage at 16°-18°C.

Similar results were obtained with cuttings of the same species rooted under plastic instead of mist. Although these were unreplicated observational trials they indicate some scope

Table 1: Percent rooting of cuttings under 2 temperature regimes.

Species	Base temperature °C	
	21 - 24	16 - 18
Mahonia japonica	87%	79%
Osmanthus heterophyllus 'Variegatus'	20	0
Camellia 'M. Pratt'	60	52
C. 'Nagasaki'	65	35
Viburnum davidii	37	56

for further work on those species which will root as well or better at lower temperature regimes. The results, though, may not prove advantageous with many species.

In more recent trials (November 1976, March 1977) promising results have been obtained under the warm bench and plastic system by cutting off the electric current for 12 hours each day as compared with leaving it on continuously. The thermostat was set at 21°-24°C, and a time switch set to cut off the current at 10 a.m. and on again at 10 p.m. each day. Over a wide range of genera, as good or better percent rooting was obtained as when the current was not switched off (Table 2).

Table 2. Percent rooting of cuttings with 12 or 24 hour base heat.

Species	12 hours	24 hours
Prunus laurocerasus 'Otto Luyken'	77%	60%
Rosmarinus 'McConnell's Blue	92	92
Chamaecyparis l. awsoniana 'Fraseri'	75	42
Juniperus chinensis 'Pfitzerana Aurea'	47	42
J. chinensis 'Pfitzerana Glauca'	70	55
Juniperus virginiana 'Skyrocket'	55	55
Elaeagnus pungens 'Maculata'	30	32
Berberis verruculosa	12	0
Berberis × *ottawensis*	37	30
Ceanothus 'Southmead'	87	35
Choisya ternata	97	97
Hypericum 'Rowallane'	63	48
Senecio greyii	90	94
Camellia 'Salutation'	20	16
Ilex 'Handsworth 'Silver Queen'	97	100
Grevillea rosmarinifolia	80	87
Cupressocyparis leylandii	22	50
Viburnum davidii	62	95
Coronilla glauca	57	70

Only in the last four species out of 19 listed was rooting reduced by the shorter period of electricity supply. The number of units of electricity saved over 3.53 m^2 of bench space varied from 74.5 for a quick rooting species like *Prunus laurocerasus* 'Otto Luyken' to 225.75 for slow rooting species such as *Chamaecyparis lawsoniana* 'Fraseri'. If the cost of a unit is taken to be 2.5p, this represents savings of from £1.86 to £5.65

from this limited area of bench for periods of 27 days and 57 days respectively, in a glasshouse with a minimum air temperature of 15.6°C. These results indicate the possibility of quite substantial savings in costs, with as good or better percentage rooting, for many woody plants propagated from cuttings. The warm bench and plastic method employed would have the advantage over mist of greater insulation and of the absence of cooling effect due to the evaporation of water which takes place in a mist unit.

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STOCK PLANT MANAGEMENT

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The first stage in any production cycle is obtaining the propagation material of the right quality in the quantity required. As techniques become more exacting it is becoming increasingly important to have full control over propagation material from the earliest possible stages. This thinking has brought about an increasing awareness of the use of ornamental stock beds for vegetative propagation material and seed orchards for seed.

Sources of Vegetative Material. Cuttings can come from one of three sources:

1. *Saleable plants in the nursery.* It is only feasible to take cuttings if this fits in with normal trimming, otherwise you may be cutting away saleable material.

2. *Plants outside your control.* Many nurserymen still collect cuttings from local gardens, the wild and parkland areas. This material inevitably has an unknown history and often involves excessive labour and transport costs to obtain.

3. *Stock Beds/Hedges.* The advantage of a stock area is that the history of the plant is known and can be controlled. The plant is grown purely for the purpose of producing the right type of cutting at the right time. Large batches of cuttings are within easy reach, which reduces time and money when collecting. The plants can be easily managed and even manipulated to produce the cutting material required. The disadvantages of a stock area are that it takes up valuable land and that costs are involved in managing this area. Many people often imagine a small arboretum mushrooming in their nursery, but by planting hedgerows in lines 3m apart and 450 mm apart in