Influence of Rooting Media in Cuttings Propagation of *Caryopteris* ×*cladonensis* 'Pershore Jubilee', *Rosmarinus officinalis* 'Tuscan Blue', *Fuchsia magellanica* var. *molinae* 'Sharpitor', and *Abeliophyllum distichum*©

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The paper describes a nursery trial that aimed to ascertain the best medium for rooting and whether a peat-free medium had any significant influence on rooting. Softwood cuttings of four different plants were stuck in seven different media. The trial was replicated in the main nursery mist unit and Specialist Plant Unit (SPU) mist house. There was very little difference between rooting in each medium for each of these plants. Other factors are therefore more important when choosing a suitable medium, such as supply, cost, shelf life, and ease of handling.

INTRODUCTION

Avonbank Nurseries consists of two areas, the main nursery and the Specialist Plant Unit (SPU). The SPU has been using peat-free growing media successfully for the last 3 years. The main nursery uses both peat-based and peat-free media. It is reducing its peat use and trialling peat-free media. However, a few technical problems have arisen, including an inability to incorporate the pesticide Intercept™ (imidacloprid) and supply problems.

There are two propagation units on the site. The propagation unit on the main nursery is a 192 m^2 polytunnel with four low, heated beds with mist controlled by electronic leaf and a further four low, heated beds used for rooting silver-leaved plants and for weaning. The SPU propagation facility is also a mist unit, but is an 84-m^2 glasshouse with three beds at waist height. The differences in the set up of each mist unit results in two different environments being created.

The plants chosen for this trial were *Caryopteris* ×*cladonensis* 'Pershore Jubilee' (easy to root), *Rosmarinus* 'Tuscan Blue' and *Fushsia magellanica* var. *molinae* 'Sharpitor' (fairly easy to root), and *Abeliophyllum distichum* (more difficult to root).

Seven different media were used. Both Ellepots and a peat/bark/perlite mix are used for propagation on the main nursery. The SPU has replaced a 1 peat : 1 bark (v/v) mix with peat-free compost. Geo Pots, Fertil plugs, and Humax were also included in the trial.

In addition to rooting success, there are other factors to consider when choosing a suitable rooting medium. There has been a shift from nurseries mixing their own compost and using modular trays, to preformed plugs being used, and there are a number of different plugs on the market. Plugs are easier to handle and quicker to prepare, as well as being easier to pot on. The plugs generally come out of the tray effortlessly, without disturbing the roots avoiding loss of rootball.

The cost, ease of ordering, and reliability of supply are also important commercial considerations. Certain kinds of plug trays can only be bought in large numbers

and have a limited shelf life. For some nurseries this could be a problem. For example, Ellepots must be used within 3 months of purchase; self-mixed media may contain controlled-release fertiliser, which has a specific life.

Table 1. Ingredients of trial media.

Medium	Bulk Ingredients
Geo Pot™	Peat-based plug
Fertil Plug	4 wood fibre : 1 peat (v/v)
Ellepots™	Peat-based plug (exact contents unknown)
Peat/bark mix	1 peat : 1 bark (v/v)
Peat/bark/perlite mix	2 peat : 1 bark : 1 perlite (v/v)
Peat-free mix	1 Sylvamix (composted forestry residues) : 1 bark (v/v)
Humax™	Peat and silver sand blend

METHODS

The trial began on 20 April 2005. The trays were prepared, and uniform softwood cuttings taken from the chosen plants. As this trial was a grower trial rather than a scientific trial, large numbers of replicates were not used. Eleven cuttings of each plant were placed into each medium, totalling 44 cuttings in each tray. The trays were laid out in the same way each time: *Rosmarinus* 'Tuscan Blue' was placed into the first two rows, two rows were left empty, and then *Fuchsia* 'Sharptior' was placed in the next two rows, and so on. The trial was replicated in slightly different environmental conditions: one set of trays was placed in the main nursery mist unit and one in the SPU mist unit.

Two weeks before the end of the trial, the trays were moved onto a drier bed within the mist unit for weaning.

The results were recorded after 7 weeks on 8 June 2005. The cuttings were eased out of the trays, and the roots were scored on a scale of 0 to 5 as follows: 0 = Dead, 1 = Callus, 2 = Very few roots, 3 = Rooted, 4 = Well rooted, roots can be seen at the edge of the plug, 5 = Entire plug rooted and extending out of plug.

RESULTS AND DISCUSSION

Rooting results are shown in Table 2.

The media presented as plug trays were easier and quicker to prepare. However, if they were slightly dry, it was difficult to stick the cuttings without damaging them. Modular trays of loose media took longer to prepare because they needed to be filled and wetted before use. This was not a major issue during a small trial. However, in a commercial situation, when a large number of trays are needed, modular tray preparation can take a considerable length of time and may even require an extra employee to complete this task.

When removing the plants from the trays the plugs were much easier to handle and would have been quicker to pot into liners. Unless the cuttings had rooted especially well, a lot of compost fell away from the roots of the cuttings in modular trays. This was especially the case with the peat-free compost and the 1 peat : 1 bark (v/v) mix, making the roots quite vulnerable for potting.

Table 2. The root scores of plant for both units and in all media.

	Media used						
Plant/unit	Geo pot	Fertil plug	Elle pot	Peat/ bark	Peat/bark /perlite	Peat free	Humax
Carytoperis Main Nursery	4	5	5	4	4	4	4
Caryopteris SPU	5	5	5	5	5	5	5
Rosmarinus Main Nursery	3	5	4	4	4	3	3
Rosmarinus SPU	4	5	5	5	5	4	4
Fuchsia Main Nursery	3	3	3	2	3	2	2
Fuchsia SPU	4	4	4	3	3	3	3
Abeliophyllum Main Nursery	2	3	1	2	1	2	3
Abeliophyllum SPU	4	4	3	3	3	3	2

Abeliophyllum distichum rooted best in the Fertil plug and in the Humax and less well in the Ellepots and peat/bark/perlite mix when grown in the main nursery unit. They rooted well in the Fertil plug and Geo pot and less well in the Humax, in the SPU.

Rosmarinus 'Tuscan Blue' rooted well in the Fertil plugs and least well in the Humax and Geo pot in the main nursery unit. There was little difference between the media in the SPU.

With both *F. magellanica* var. *molinae* 'Sharpitor' and *C.* ×*clandonensis* 'Pershore Jubilee', there was very little difference in rooting in the different media or the two different propagation units.

With the exception of *C.* ×*clandonensis* 'Pershore Jubilee', cuttings rooted better in the SPU than in the main nursery unit by one point on the rooting score. The environment in the SPU mist unit could be better for a number of reasons, including the size of the unit and the difference between rooting under glass and plastic.

The peat-free medium trialled was neither exceptionally better nor worse for rooting than any of the other media trialled and so has a place in propagation. Trials comparing propagation performance of different kinds of peat-free media would be useful while a larger trial using a greater number of replicates would enable more robust statistical analysis to be carried out, perhaps resulting in a more definite outcome regarding the optimum medium for each crop.

With the exception of Humax, which performed consistently poorly in this trial, there was little difference in the rooting media generally. Other factors may therefore be more important in influencing commercial media choice, for example efficiency of handling and use, reliability of supply, and cost.