PROPAGATION OF *PRUNUS TENELLA* 'FIREHILL' FROM CUTTINGS

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Abstract. The rooting response of *Prunus tenella* 'Firehill' to a combination of composts and growth regulators was evaluated. The growth regulators tested were the proprietory preparations of the combination of potassium salts of indole-3-butyric acid (0.5%) and naphthaleneacetic acid (0.5%) and of indole-3-butyric acid (0.8%) only. In addition, the rooting response to media mixes of two parts moss peat to one of sand (granitic origin), and one part perlite to one and two parts moss peat, respectively was noted. The potassium preparation produced rooting responses of between 44 and 76% and is a promising pre-propagation treatment for aiding root development of *Prunus tenella* 'Firehill'.

High rooting percentages (60 to 75%) were obtained with the potassium preparation where a 2P:1S mix was used. Results with IBA alone were poor in all composts.

REVIEW OF LITERATURE

References to propagation of this subject are sparse. Although *Prunus tenella* 'Firehill' is a plant of considerable worth (receiving an Award of Merit in 1959) its propagation, especially by cuttings, has received little formal attention. Attempts to propagate it by this means met with little success (3) and grafting produced 80 to 90% success with a slightly better result from field budding.

Previous work with softwood cuttings at Kinsealy (2) produced variable results. Here also, grafting success indicated a superior, though more complex system of propagation and resulting plants made rapid growth during the first season. Nevertheless, improved rooting resulting from a riper cutting (1) presented an opportunity for studying the effects of other factors like compost and growth regulators in the rooting process.

MATERIALS AND METHODS

Cutting Material. This trial was carried out in early July. The cuttings were taken from bushes grown outdoors in full sunlight. Each propagule was removed with a sharp knife by cutting through the junction of its attachment to one-year-old wood. This material was usually 12 to 15cm (5 to 6 in) long, and still in active growth. The soft growing point was removed.

The dominant type of current season shoots were longer and stouter than that described above. This growth inclined towards pithiness at its base, and being variable it was not used in the trial. Those cuttings being used in the test were placed in polythene bags after removal from the bush and were prepared by removing the lower two leaves from the stem base. No wounding of the propagation material was done.

Composts. As softwood cuttings in previous trials suffered severe basal rot when propagated under mist, the provision of an open and free-draining compost was considered necessary. Moss peat was mixed with a washed river sand, granitic in origin, in the proportion 2:1. Two further compost types were used, i.e. moss peat mixed with perlite in the proportions 1:1 and 1:2. As the cuttings were being propagated under light gauge polythene (25 microns) on a warm (20°C) bench the inclusion of such a high ratio of peat would ensure adequate moisture retention in the compost.

Growth Regulators. The standard against which other growth regulator treatments were compared was a powder containing 0.8% indole-3-butyric acid. Into this substance the basal 2.5 cm (1 in) of the cutting was dipped, and excess material adhering to the stem shaken off. The remaining formulations were: i) equal volumes of water and a combination of 0.5% potassium salt of indole-3-butyric acid (IBA) plus 0.5% potassium salt of naphthaleneacetic acid (NAA); and ii) three parts by volume of water to one part of a liquid growth regulator. In these compounds a fungicide and a synergistic additive were present. The precise nature of these is unknown. The base of each cutting was submerged in the preparations for a period of five seconds and, having been allowed to dry off for a further one minute, was inserted into the compost to a depth of 2.5 cm (1 in). After a light watering the trays of cuttings were placed in the propagation bench in an unheated glasshouse; shade material prevented all direct sunlight falling on the polythene covering.

RESULTS

During the propagation period the cuttings were ventilated once per week by removing the polythene cover for three or four minutes. During this operation, fallen leaves were removed and, when necessary, a light watering was given. The cuttings were lifted and recorded for rooting after 38 days. Table 1 shows the rooting responses to the various treatments.

Table 1: Effect of compost and growth regulator on the percentage rooting of *Prunus tenella* 'Firehill'. (Mean of three replicates of 15 cuttings per replicate).

Compost	Growth regulator		
	Water:K-salt[1] (1:1)	Water:K-salt[1] (3:1)	0.8% IBA
1 Peat : 1 Perlite	44%	60%	6%
2 Peat : 1 Perlite	51	67	6
2 Peat : 1 Sand	60	76	9
	Interaction : NS		
	LSD : 5% - 10.99		
	: 1% - 15.19		
	: 0.1% - 20.86		

[1]K salt of IBA and NAA

Both potassium salt treatments showed significantly (0.1% level) better rooting than the treatment with 0.8% IBA and significantly differ from each other at the 5% level, whilst in each respective compost the solution with the higher proportion of water gave the best rooting. There was no significant difference in compost/growth regulator interaction.

DISCUSSION

The use of the combination of potassium salts of indole-3-butyric and naphthaleneacetic acid dip considerably improved rooting in comparison to the use of 0.8% IBA used as a proprietory powder treatment. The low percentage rooting in the latter could not have been improved by extending the propagation period beyond that described, as all unrooted cuttings in this trial were dead at the time of recording.

A greater number of cuttings had decayed at the base where the concentration of the liquid growth regulators was higher, although rooting was satisfactory in this treatment also. The lower concentration of the liquid preparation in addition to aiding the percentage rooting, yielded root systems which were larger by 25% than the other treatments. This may indicate faster initial rooting where this substance was used as a prepropagation treatment.

The use of a compost comprising two parts moss peat to one of sand was an advantage. It was significantly better than both perlite composts. Although the variability in rooting success with *Prunus tenella* 'Firehill' appears to be related to the choice of growth regulator as a rooting aid, some significance must attach to the condition in which the cuttings remain whilst in the propagation bench. Serious deterioration of the material occurred in the warm bench and plastic system of propagation after about three or four weeks. Leaf drop commenced and this greatly lessened the possibility of rooting. It, therefore, appears that the role of a suitable growth regulator is associated with the speed of rooting and this reduces the danger of deterioration whilst this subject is being propagated from softwood cuttings.

LITERATURE CITED

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