STRATIFICATION — A DETAIL OF TECHNIQUE

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These notes are concerned with only the initial part of the stratification process. Stratification involves the chilling of a seed and this involves two factors — cold and moisture. Before the cold temperature treatment can have any effect the seed must be fully imbibed. Thus the medium with which the seeds are to be extended must hold sufficient moisture to allow the full imbibition of the seed and maintain the moist environment to prevent any subsequent water loss. The chilling effect will not begin until this stage is reached and I suspect that many of the variations in chilling time fail to take account of this fact. In practice dry seeds are put into the cold treatment and the first period is taken up with imbibition — not with the action of the cold, so attenuating the apparent chilling time.

In addition, the extending medium must maintain the aeration of the seeds as the chemical changes appear to require a fairly high level of respiratory activity. Thus the stratifying medium must balance the moisture content and aeration if successful chilling is to be achieved.

The following constitutes a technique which has proved successful under practical conditions. The stratifying medium is based on Irish sphagnum peat moss — medium grade. The peat, as dry, from the bale is sieved through a ¼″ or ⅜″ sieve and the tailings are discarded. This peat is now moistened until the stage when a handful of damp peat is gently squeezed and a drop of water is exuded: at this stage the moisture content is sufficient and aeration is maintained. Experience has shown that this stage will be achieved by mixing 4 volumes of dry, sifted peat with 1 volume of water.

This medium is now used to extend the seed lot; however, the quantity involved also needs to be standardised. Sufficient medium must be provided so that sufficient water for imbibition is available and yet aeration is maintained. Experience has shown that, as a rule of thumb, 1 volume of seed should be mixed with 4 volumes of damp peat. The seed and damp peat are thoroughly mixed and the mixture is then placed in a polythene bag together with a label. The bag is then tied to prevent water loss and a tie-on label is attached externally. The bag containing the seeds is now left in a warm environment for the seeds to imbibe; this will probably take 10 to 14 days.

The seeds are now ready to be chilled and can be transfer-

red to a cold room or refrigerator at a temperature of 38°F (3°C) or below (but above freezing). The bags should be turned and shaken at least once a week to maintain an even temperature effect and to prevent settling, with a consequent reduction in aeration.

If this procedure is adopted it will be found that chilling times are far less variable than might be anticipated from the available literature and any chilling time for a particular seed lot can be assessed accurately and with confidence.

CLONAL VARIATION IN ROOTING OF SOFTWOOD CUTTINGS OF WOODY PERENNIALS OCCURRING NATURALLY ON DERELICT LAND

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Abstract. The Institute is investigating many aspects of inter- and intra-specific variation in woody plants, including that enabling individuals to grow successfully on derelict and reclaimed land. Clonal stocks are being assembled by rooting cuttings of a wide range of species whose subsequent performances are compared with those of unselected stock in glasshouse experiments and field trials on difficult sites throughout Britain. All four criteria (i) proportion of cuttings which root, (ii) time taken to root, (iii) time of year when rooting is maximal and (iv) survival of rooted plants after potting, have been found to vary considerably both between species and between clones within a species — a feature that influences their possible commercial use. Average rooting of elder: *Sambucus nigra* L. throughout the season exceeded 90% for all clones tested whereas in goat willow: *Salix caprea* L. rooting varied with clone from only 19% to 83% and in silver birch: *Betula pendula* Roth. from 9% to 68%. In silver birch all clones rooted best in July but whereas one clone never dropped below 45% rooting, another gave nil rooting in June.

REVIEW OF LITERATURE

Trees and shrubs propagated commercially are, because they have not been intensively selected, more variable than most agricultural and horticultural crops (11). Excepting a few ornamental cultivars, mostly of exotic origin, there is no equivalent of the true-breeding cultivars of wheat or tomato. Seeds from a single birch tree are likely to produce a varied batch of seedlings, many distinctly different from the mother plant (4). This variation poses considerable problems for tree research, treatment effects often being ill defined unless many replicates are used. Variation can also be problematic for the practising forester and aboriculturist because only a proportion of his

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