

DISCUSSION GROUP REPORTS

Group A.

Propagation under Polythene Tunnels

CHAIRMAN — J.L.W. DEEN

This subject was not an easy one to discuss because of the lack of information and experience of using this technique in Great Britain. The only written information on the subject is in the CAB Digest No. 2, *Mist Propagation of Cuttings*, by Patricia Rowe-Dutton, 1959, and in the short paper by the Chairman of this group in Vol. 21 Combined Proceedings of the IPPS (p. 248). The section in Miss Rowe-Dutton's book on 'Plastic Tents' (p.23-25) contains descriptions of systems of polythene tunnels for plant propagation. In particular the Phytotektor unit introduced by Templeton in Tennessee in 1953 has similarities to the systems being introduced in several nurseries in Great Britain.

The various systems in use in Great Britain were reviewed starting with that developed at GCRI and described in the 1971 Proceedings. Simple wire hoops are used to support white translucent polythene over a prepared bed three feet wide, the polythene being secured by polypropylene baler twine. The propagating bed is prepared by chemically sterilising the soil with Dazomet and rotovating into the top 3-4 in. to give a rooting medium of approximately 1:1, peat-soil. Cuttings are inserted into this prepared bed and kept covered for a period about 4 weeks. During this period whilst rooting is taking place the bed is watered by trickle irrigation or, where this is not available, by hand application of water. The cuttings are weaned by progressively raising the sides of the tunnel until the polythene can be removed completely. The plants are then left *in situ* to grow on for a further season. The approximate cost of materials (hoops, polythene, twine, peat and Dazomet) for a tunnel of this type 100 ft. long is £ 10.70. This tunnel will cover approximately 2,500 cuttings at a spacing of 4 in. x 4 in., giving a cost of materials per cutting of 0.43p.

A similar system of propagation used last year at Blakedown Nurseries was described, the differences here being that the cuttings were inserted directly into pots under the tunnel and the sides of the tunnel were sealed by covering the edges of the polythene with soil. In the system used at GCRI it was not found necessary to seal the tunnel in this way to maintain an adequately high humidity. Some difficulties were experienced at Blakedown due to drying out of the pots resulting in losses. It was also suggested that handling costs might be higher than in more traditional systems of propagation.

Probably the most well developed system is that used at the nursery of Hillier and Sons, located at Winchester which was described by Postill. The tunnel construction used is a little more detailed than that previously described. Sterilised beds 4 ft. wide are prepared by machine and wooden boards are laid down along the

edges. The wire hoops which support the polythene are fastened to the boards and the polythene stretched over the hoops and stapled to the boards. The cuttings are inserted in a layer of sand on the beds and watered at intervals by mist applied from nozzles positioned down the centre of the tunnels. Weaning is achieved by cutting holes in the polythene after about 6 weeks. Eventually the polythene hoops are removed completely and the rooted cuttings grown on for a further season before lining out in the field.

A similar system has been used at Hadlow College. In this case soil sterilisation was avoided by eliminating perennial weeds from the area to be used, allowing weed seeds to germinate and burning them off with Paraquat and then covering with a layer of sand to suppress further weed seed germination. The polythene was supported with wire netting and the polythene dug into the soil at the edges of the tunnel to completely seal it. Again irrigation was applied by mist nozzles centrally positioned in the tunnel. At the close spacing of the cuttings used here it was necessary to lift and line them out at an earlier date than in the previously described system so that the plants were not grown on for a further season *in situ*.

Members of the Conference also had the opportunity to see a system in use at Hills Limited, Stone, Staffordshire, where existing frames had been adapted to form polythene tunnels by erecting metal hoops over the frames, over which was stretched clear polythene. Shading was provided by diluted white emulsion paint. The cuttings were rooted directly into small peat pots in trays. The rooted cuttings were transferred to the field in the trays for field planting.

There is an obvious contrast in the conditions achieved under tunnels and those in a normal mist propagation bench. Temperatures, in particular, may be very much higher under tunnels and the leaves are not cooled as in the mist system by the evaporation of water. The cuttings are also not able to maintain a high photosynthetic rate because of the heavy shading necessary to prevent excessively high air temperatures. The reserves of the cuttings must in consequence be severely depleted, but it was felt that for the range of subjects which can be successfully rooted under tunnels this was not a limiting factor. It would probably however, be a limiting factor for those subjects which were normally difficult to root.

It was suggested that one possible advantage of polythene tunnels would be the potential use of much larger cuttings than would be normal. Results from GCRI had shown that cuttings 9-12 in. long of *Cornus alba* 'Argenteo-marginata' and *Cornus alba* 'Spaethii' could be rooted and grown-on successfully, as could large cuttings of ground-cover *Cotoneasters*. Considerable success had also been achieved with large cuttings (3-4 in. long) of a range of heathers.

Mr. Salter considered that it was important to remember labour costs when considering systems of this type as the low capital cost

might mask high handling costs inherent in the systems. He felt that a more flexible system using mist under "walk-in" polythene tunnels would be more satisfactory particularly as a series of crops could be rooted in the same area in a single season thus off-setting the initially higher capital costs. A cautionary note was added here on the use of the dense white polythene, available in Great Britain for "walk-in" tunnels. Whilst this type of polythene seemed to provide a good growing environment in conditions of high light intensity, some nurserymen had found that the reduction of light was too great in poor light conditions in spring.

In conclusion it was felt that the types of structure described provided the nurseryman with a number of alternatives which might fit into his system of production. It was important, before adopting one of these systems, to consider the end product the nurseryman wished to achieve and to use the system appropriate to this. It might be worthwhile to divide the subjects being produced by cuttings in a nursery into those which were difficult to root, where traditional methods would give the best results, and those subjects which were easy to root, where a simpler method provided by the use of polythene tunnels might be successfully adopted.

DISCUSSION GROUP REPORTS

Group B.

Field Budding

CHAIRMAN — STEPHEN HAINES

The Group was mostly composed of members with considerable experience in the practice of budding. We were, therefore, able to be fairly specific in our discussion, having a useful blend of commercial, research and advisory experience to draw upon, and it is proof of the interest in this subject that such a knowledgeable group wished to exchange views and information.

On 20th July several members had attended the Open Day at East Malling Research Station, when field budding problems had been discussed. Talking to various growers and to the East Malling staff during the visit, it was apparent that many had suffered low bud takes due either to frost damage or to other reasons which were not too obvious. Although at East Malling the frost damage was on apple buds, many growers were more concerned with bad bud-take on *Prunus* species, particularly on the ornamental cultivars.

The Chairman, having encouraged everyone to take part in the discussion, launched the debate in typically "John Blunt" fashion by