POLYTHENE BAGS VERSUS BAMBOO SUPPLY BASKETS

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Preliminary trials of planting out cuttings direct into the field or after rooting in polythene bags have been carried out at Palmgarden and a few other estates. The results have been so successful that many estates have now stopped using bamboo supply baskets, and one firm has sold within one year 10,300 lb. of polythene tubular film to about 150 estates. At a rate of 200 bags per pound of polythene, this quantity is sufficient for over 2 million bags.

Polythene is obtainable in reels of seamless tubing, either flat or gusseted. Gusseted polythene is preferable for ease of handling, especially because it can be much more easily opened, sealed, and filled with soil. The tubing is available in many widths and gauges. We use 150-gauge, 7-8 inches long, which at a width of 6 inches gives a tube of about 3.5 inches diameter. Plants kept in the nursery longer than 12 months would require a sleeve longer than 8".

A very convenient method of cutting sleeves is to wind the tubular film round a board (*see* Figure 1). The length of the board should correspond with the length of the tube required, whilst its width should be slightly greater than that of the film used. The film is wound about 50 times round the board and cut off at both ends. In this way 100 sleeves are produced.

One end of the sleeve is either stapled with two or three staples or heat sealed. To seal the material, it is placed on, and clamped by a steel rule on to, a heat-resisting surface so that about $\frac{1}{8}$th inch protrudes. A naked flame is then run along the protruding edge and the polythene burnt off to form the seal. Bags that are sealed should be perforated with a letter punch to allow water to drain through. A number of perforations can be made if the sealed end is folded, the number of folds depending upon the number of rows of perforations desired.

A pound of polythene tubing costs about Rs. 3/25. With a pound of 150-gauge 6-inch film it is possible to make 175 to 200 bags. A thousand staples cost Re. 1/-. A thousand bags inclusive of labour would cost between Rs. 20/- and Rs. 26/-.

Filling of polythene bags is more elaborate than that of baskets. This operation is best carried out by one labourer keeping the neck of the sleeve open whilst another fills it with soil in the same way as for baskets. A metal cylinder, resembling a Hersall cylinder and smaller than the diameter of the tube, could be used as a loading funnel. The tubular film is pulled over the cylinder and soil put in. When the tube is nearly full, the cylinder is drawn out.

The polythene bags can be arranged more neatly in the nursery than baskets on account of their uniform size. They can be held in position by placing stumps of trees or strands of wire round the bed or by earthing up along the sides of the bed. It is important, however, for the surface of the bed on which the bags are placed to be above the level of the path, in order to facilitate drainage of the bags.

Before transplanting, the tubes with the plants are placed in a box holding 12 to 16 plants in order to avoid damage during transport to the field. In the field the plants may be put out as follows:

(1) The bag is slit both lengthwise and at the bottom, then placed into the hole and the hole subsequently filled up with soil; the polythene can be either left or removed, or

(2) only the bottom end of the bag is slit and the polythene is carefully removed, in which case the bag can be used again.

The effect of using polythene bags and baskets on the growth of nursery plants was assessed in trials at Dickwella and St Coombs Estates. Cuttings of Dickwella Clone No. L.D. 4/1 were propagated in the nursery and transferred six weeks later into polythene bags or baskets; their growth was assessed one year later. At St Coombs Estate, cuttings of Clone TRI 2024 were put direct into baskets, polythene bags, or nursery beds and assessed after one year. The polythene bags (3.5 in. diameter, 7½–8 in. long) and the baskets (5 to 5½ in. in diameter and 6½–7 in. long) contained about the same volume of soil.

There were about 100 randomly chosen plants per treatment (treatments were not replicated). The dry weights of the different parts of the plants are given in Table 1.

TABLE 1.—*Effect of polythene bags and baskets (and nursery bed) on the growth of clonal plants (dry weights per plant in grams)*

A. Dickwella Estate

Plants in	Stem and leaves	Roots	Total	Top/Root Ratio
Baskets ...	3.60 (=100)	0.83 (=100)	4.43 (=100)	4.34
Polythene ...	3.92 (=109)	1.28 (=154)	5.20 (=117)	3.04

B. St Coombs Estate

Plants in	Stem and leaves	Roots	Total	Top/Root Ratio	Length of root (in.)
Baskets ...	1.26 (=100)	0.45 (=100)	1.71 (=100)	2.80	9.35 (=100)
Polythene ...	1.60 (=113)	0.51 (=113)	2.01 (=118)	2.94	11.28 (=121)
Nursery bed ...	2.30 (=183)	0.29 (= 65)	2.59 (=152)	7.88	6.68 (= 71)

It is evident from the above table that plants grown in polythene bags were better developed than those in baskets. Root growth in polythene bags was superior to that in baskets, particularly at Dickwella (Figure 2).

Cuttings planted direct into nursery beds produced more stem and leaves, but fewer roots, resulting in a high top/root ratio. High top/root ratios are often associated with a high water table and an ample nutrient supply.

Fig. 1 The winding of tubular polythene round a board to facilitate the making of bags of a required length.

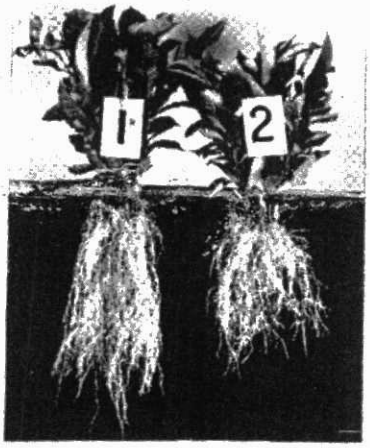

Fig. 2 The growth of cuttings propagated directly in polythene bags (1) and in baskets (2) respectively. (St Coombs Estate)

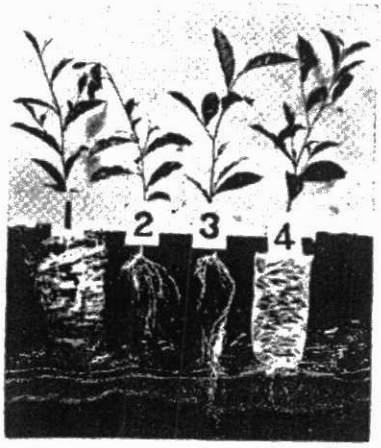

Fig. 3 The state of a basket and plant (1 & 2) in comparison with that of a polythene bag and plant (3 & 4) after one year.

The advantages of using polythene instead of bamboo baskets may be summarised as follows:—

MATERIAL

1. Polythene film can be stored for a longer time and requires little storage space.

POLYTHENE BAGS

2. are cheaper;
3. may be used more than once;
4. suffer fewer losses from breakage in transit and from disintegration (see Figure 3);
5. are easier to handle and arrange in the nursery;

GROWTH OF PLANTS

6. better growth;
7. better developed root system;
8. better moisture conservation, hence less watering;
9. no washing out of soil and nutrients.