

# †TOWARDS LOW-COST VEGETATIVELY-PROPAGATED TEA PLANTS

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Tea planters are now quite familiar with the technique of raising vegetatively propagated plants but their problem is to produce them at a low cost. A critical analysis of the standard methods generally accepted and followed, indicates many expensive items which lend themselves to less expensive modification and other items which, because of the insignificant benefits they confer, can be considered superfluous and, therefore, eliminated altogether. On the other hand, certain less-known but inexpensive and useful practices can be added to the routine, to reduce the cost of labour and materials and thereby to lower the cost of production of VP plants. This article sets out to discuss some of these practices which have been successfully adopted on Hapugastenne Group, Ratnapura, to produce healthy plants 12-in. to 18-in. tall, in polythene bags at a provocatively low cost, on a large scale.

## **Contract work**

Much of the work which needs to be done carefully to achieve good results, has been done on a contract basis, the balance work being done on the checkroll. Initial clearing of the nursery site, collecting and heaping the surface soil and forking the sub-surface soil are done on the checkroll before the contractor takes over. The contractor is the nursery kangany. He employs his friends and relations to fill and stack the bags, bring branch shoots from the multiplication nursery, make internodal cuttings, insert them in bags, cut bracken, make pandals and shade as necessary. Much of the planting and shading is done after sundown by the light of Petromax lamps, so as to use off-duty labour and also to avoid drying out and scorching of mother leaves. For this work, the contractor is paid 2 cents for every bag planted with a single internodal cutting.

Upkeep of the nursery, including weeding, fertilizer application and watering is carried out by checkroll labour, until in about nine months, the plants are taken out of the nursery. At this stage, the contractor is paid a bonus of 2 cents per plant for those which are 12 in. or more in height.

The works done on contract must conform to the standards required by the management. The bonus payment is conditional on the achievement of a minimum success of 95% of 12-in. plants in nine months. It is this incentive bonus which ensures that all contract works are carried out with the utmost care, to obtain optimum results (see Figure 1). The contractor goes further and, being the nursery kangany, sees that non-contract works such as watering and manuring are also done thoroughly. He even relieves the estate of the burden of taking the necessary security measures to see that plants are not stolen. It pays him ultimately to do all this.

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†*Advance Information on Research Projects*

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### *Stacking bags*

Levelling is not done and no expensive beds are made. Bags which are held in place by thin bamboo stanchions (see Figure 2) are stacked to a width of four ft and to any convenient length across the general slope of the land, leaving a working passage between stacks. The slope down the width of the bed helps drainage and is preferable to a level bed. In order to prevent water logging, bags are stacked on a drainage layer of Guatemala Grass in the form of a thick mat.

### *Nursery site*

Transport of plants, often by head, is an expensive item and this has been minimized by shifting the nursery each year to a site within the proposed new clearing (see Figure 3). In large clearings at Hapugastenne, some over 100 acres, suitable nursery sites are not difficult to find. This can, however, be a problem on small clearings. The nursery site is planted up last, after the removal of plants.

### *Shade*

In areas where mist is thick and humidity generally high, shade is in the form of pandals of Guatemala Grass on thin bamboo frames, so as to allow free circulation of air (see Figure 4). In less humid nurseries, low bracken shade is used, the stems of the bracken being directly in the bag earth. Manual thinning and removal of shade is not necessary as the progressive decomposition and disintegration of the grass or bracken (see Figures 5 & 6) achieve this objective, where the plants are weathered in direct sunlight preparatory to planting out in the field.

### *Filling bags*

As cuttings strike root better in a fertilizer-free rooting medium and once rooted, grow better in a nutrient-rich growing medium, these two types of soil are kept separate in the polythene bag. The humus-rich surface soil in the nursery site is collected for use as the growing medium, while the sub-surface soil thereby exposed, is forked and used as the rooting medium. Sub-surface soil is not sterile subsoil but the soil containing roots *etc* immediately below the first three or four in. of surface soil. The latter, of course, has a high humus content. The lower two thirds of the bag is filled with the growing medium and the balance topped up with the rooting medium. When the developing roots reach the rich growing medium, the plant gets a good boost and growth is, thereafter, very rapid.

### *Rooting medium*

The sub-surface soil is forked and, if necessary, sulphur is broadcast to reduce the pH. Later, the soil is heaped and treated with superphosphate to promote root growth and aluminium sulphate if the pH needs further correction.

### *Growing medium*

The surface soil can be mixed with any manures that are readily available, such as cattle manure, compost, decomposed tea fluff, *etc*.

### *Fertilizer*

As the growing medium is rich, it can sustain rapid growth until the plant is put out in the field. Applications of fertilizers can, therefore, be reduced to a minimum

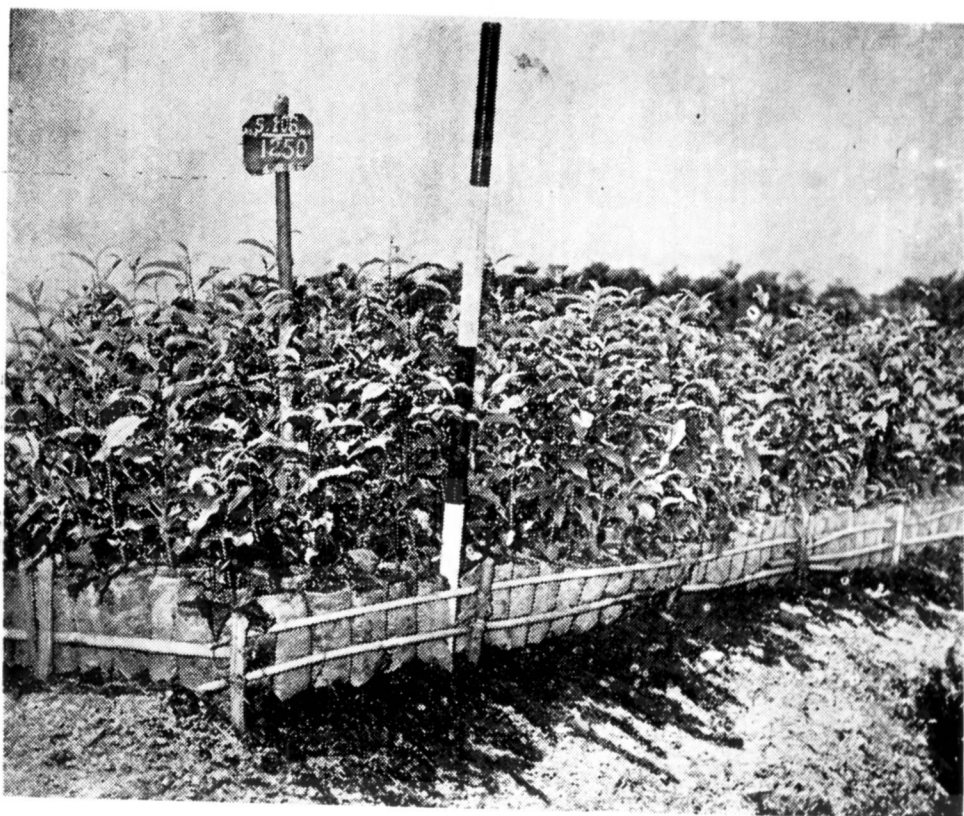


FIGURE 1 — A typical set of plants of clone S106 which are 24 in. tall in nine months (95% success)

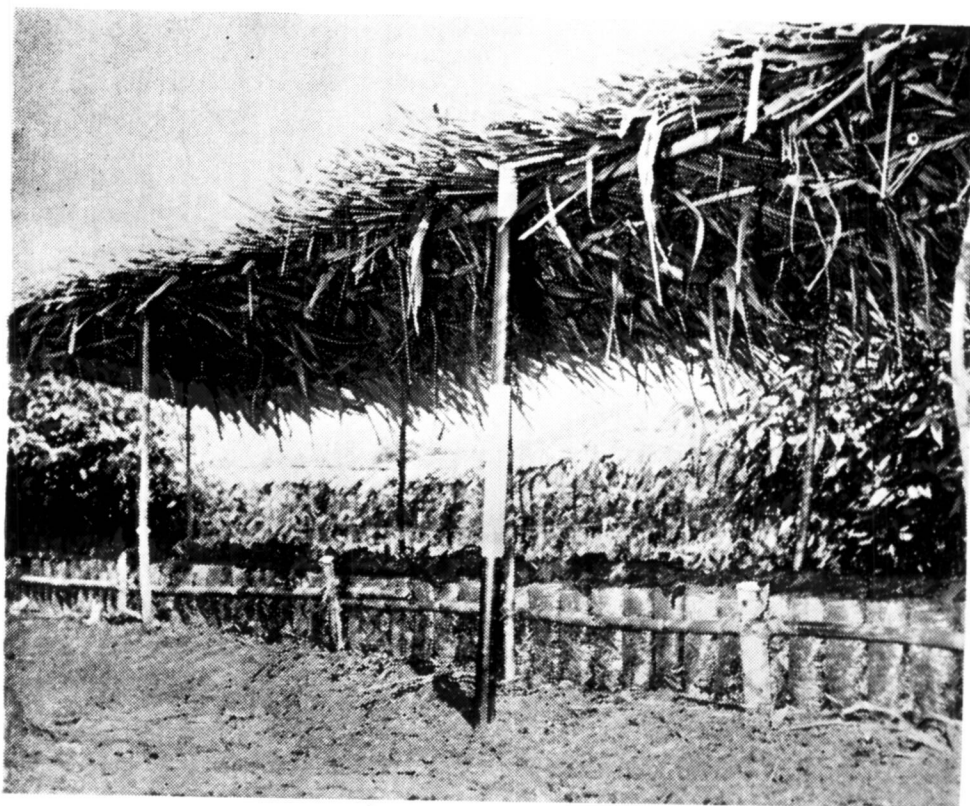


FIGURE 2 — Shade provided by a guatemala grass pandal and thin bamboo stanchions for supporting the bags



FIGURE 3 — *A nursery sited within the clearing*



FIGURE 4 — *A nursery sited within the clearing showing pandals of Guatemala Grass*

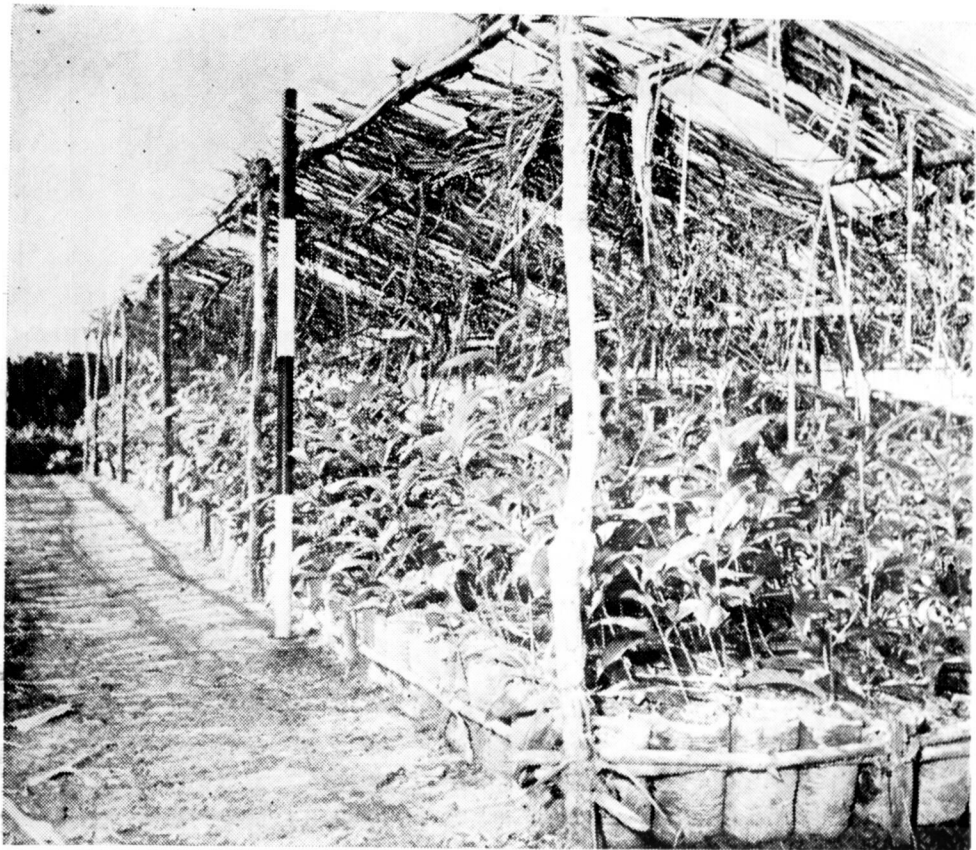


FIGURE 5 — *Disintegration of the guatemala grass pandal covering 15 in. plants at 7 months*

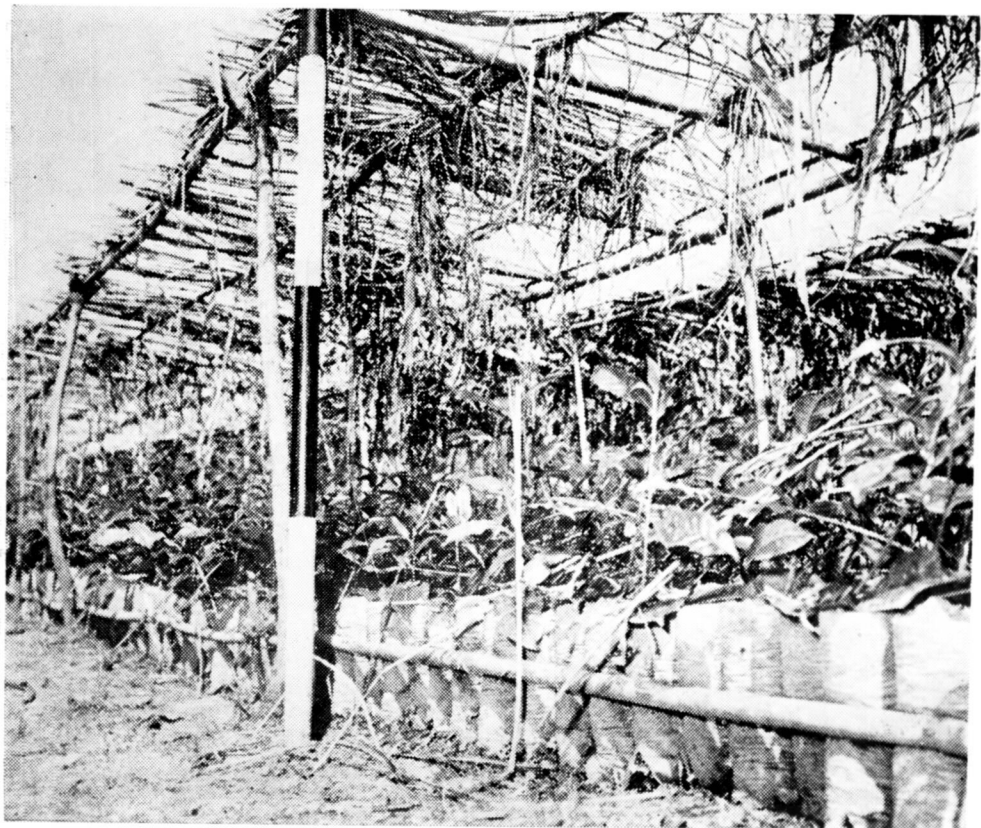


FIGURE 6 — *The guatemala grass pandal almost completely disintegrated*



FIGURE 7 — *Irrigation channels*



FIGURE 8 — *Irrigation of bag plants*

or omitted completely in the nursery stage, depending on the richness of the growing medium and the consequent rate of growth of the plant. The use of cheap cattle slurry while watering is often quite adequate.

### *Irrigation*

One of the very expensive factors in the cost of plants is irrigation, which, most often, is achieved by hand watering with cans. A prime consideration in the selection of the nursery site is the availability of gravity-fed water. This is exploited to the maximum by a simple network of shallow channels (see Figure 7) which can be blocked or opened as necessary to flood the beds (see Figure 8) and thereby irrigate the soil in the polythene bags, bottom upwards.

Where flooding cannot be achieved because of the difficult terrain, the channels are made to feed storage pits conveniently spaced, so as to facilitate hand watering.

### *Polythene bags*

With careful handling in the planting field, polythene bags are used for a second season in the nursery. On this occasion, a bracken eekel is used to fasten the bottom of the bag or it is not fastened at all.

### *Weeding*

Weeding is another labour-consuming item which, if not kept within reasonable limits, can seriously affect the cost of production of the plants. Weeding is not carried out as a regular monthly operation but rather, only if and when weeds tend to smother or seem to compete with the tea plants. Weeding of nursery surroundings and working passages, is reduced to a bare minimum. That the aesthetic aspect must take low priority in a commercial nursery is recognized and kept in mind.

### **Costs**

The scope of this article does not permit the writer to divulge details of the cost per plant but merely to generalize by saying that over one million healthy, 12 in. - to 18 in.-tall plants in polythene bags were raised during the season, at an inclusive cost which was just over eight cents each. The writer will, however, be pleased to answer individual queries.

The contractors are able to complete their work within the initial payment of 2 cents per planted cutting ; the second payment of 2 cents per 12 in.-plant is, in fact, a bonus. The estate is pleased to be able to raise large numbers of low-cost VP plants and the contractors are amply rewarded.

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