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A NOTE ON VEGETATIVE PROPAGATION OF *HEVEA BRASILIENSIS* BY AIR-LAYERING

Hevea brasiliensis (Willd. ex Adr. de Juss.) Muell. Arg., the most important source of natural rubber, is generally propagated by budgrafting. Rootstock-scion interaction in budgrafted plants may be one of the reasons for the observed lack of uniformity in growth and yield in *Hevea* (Buttery, 1961; Leong and Yoon 1984; Sobhana *et al.*, 1980; Ng *et al.*, 1981) Cuttings and layers have long been practised as a technique in propagation of many horticultural crop plants and tree species (Hartmann and Kester, 1976; Chai, 1976; Tiang Bian, 1976; Khosla *et al.*, 1979; Nunez - Elisia *et al.*, 1992). Vegetative propagation of clones of *H. brasiliensis* by stem cuttings has been reported earlier (Tinley, 1960; Yoon and Leong, 1975; Saraswathyamma *et al.*, 1993), but commercial planting with rooted cuttings was not successful due to the difficulty in rooting and the unstable root system. There is only meagre information available on vegetative propagation by air-layering. Hence, an attempt was made to propagate *Hevea* by air-layering.

A preliminary trial was undertaken in three year old potted plants. Three popular clones of *H. brasiliensis* (RRII 105, RRIM 600 and GT 1) were selected for the experiment. The rooting media tried were sphagnum moss, soil, coconut husk and coconut husk with soil. Mature branches 45-60 cm in length, having 1.5 - 2.0 cm diameter with two flushes of leaves, were girdled by completely removing a ring of 2.0 - 2.5 cm bark with a sharp budding knife. The latex from the girdled portion was carefully removed using moist cotton without damaging the cut ends. The girdled portion was then immediately covered with moist rooting medium and completely wrapped with a polythene film 25 - 30 cm in length and 15 cm width. The polythene film was tied firmly on the stem with jute twine to prevent moisture loss and water seepage. Fifteen branches were layered under each treatment. The air layers were monitored regularly for root formation. After about 45 days, root formation could be detected through the transparent film of polythene. At 60 days after the treatment, when the roots were fully developed (Figures 1 & 2), the branches were severed and planted in polythene bags filled with garden soil to study survival.

Among the four rooting media tried, sphagnum moss soaked in water gave good results. The clones differed in response to rooting, RRIM 600 giving a success of 86.6 per cent and RRII 105 only 33.3 per cent. While no rooting of any clone was observed in soil and coconut husk, RRIM 600 gave 6.7 per cent success in the medium consisting of coconut husk and soil (Table 1) . Out of the 13 layers of RRIM 600 planted in polybags, nine showed establishment success one month after planting.

Since the stem is not severed in air layers, the xylem remains intact, so that water and mineral supply to the girdled shoot is not affected unlike in propagation by cuttings. Moreover, girdling causes an interruption in the downward translocation

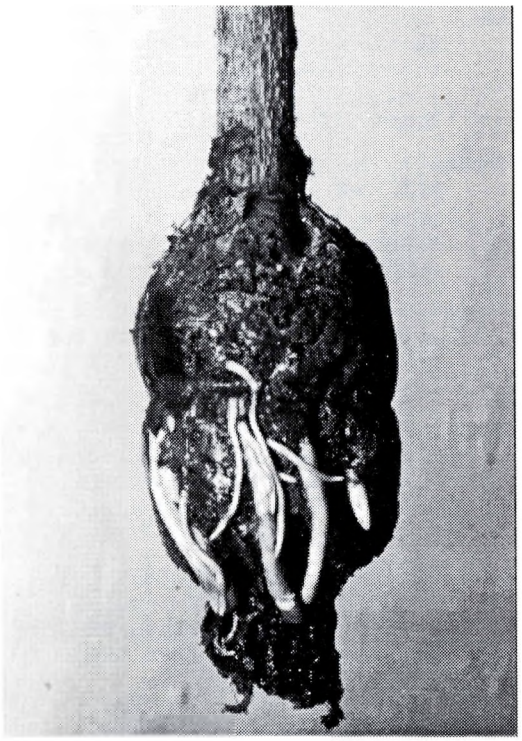

Fig. 1. Rooted layer after 45 days

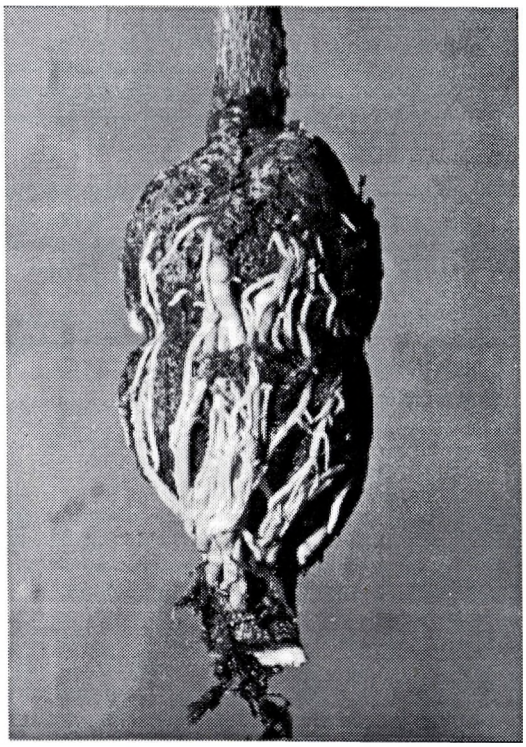

Fig. 2. Rooted layer after 60 days

of organic materials, carbohydrates, auxin and other growth factors from the leaves and growing shoot tips. These materials accumulate near the point of treatment and rooting occurs in this area . This is one of the important factors for layering being more successful with many plants than propagation by cuttings. The importance of sphagnum moss as a rooting medium is also well established (Hartmann and Kester, 1976). Attempts to induce rooting in scion stem by marcottage in *Hevea* were, however, not successful (Yoon and Ooi, 1976). This preliminary study establishes good promise of a cheap and effective technique of propagation to raise homogenous population of *Hevea brasiliensis*.

Table 1. **Effect of rooting media on rooting percentage of air layers in *H. brasiliensis***

Clone	Rooting media			
	Sphagnum moss	Soil	Coconut husk	Coconut husk and soil
RRIM 600	86.60	0	0	6.66
RRII 105	33.30	0	0	0
GT 1	66.66	0	0	0

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