

## THE SELECTION OF STOCKS IN *HEVEA*\*

By

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### SUMMARY

*With the development of high yielding scions in Hevea the selection of improved stocks to support the higher yields has assumed importance. Seedlings of the cultivar Tjir 1 have proved to be the only suitable stock so far: the fluctuation of oil content of the cotyledons within a clonal seedling population has clarified the detection of other sources of seedling stocks.*

### INTRODUCTION

The early *Hevea* plantings consisted of seedlings. Later with development of budgrafting initiated by van Helten in 1917 selected scions became the preferred method. The question of the most suitable stock acquired significance very rapidly. Seed of the cultivar Tjir 1 was found (Pardekooper, 1954) to be the most suitable, from the point of view of yield, but no definite reason could be adduced for this. With the evolution of newer clones of greater yielding capacity than Tjir 1, it became necessary to find replacements which were equally effective, but the search has not proved fruitful so far. Investigations into the relationships of a new parameter in *Hevea* selection, the oil content of cotyledons, have however opened fresh possibilities in this regard.

### MATERIALS AND METHODS

In the initial experiment (Fernando & de Silva, 1971) 36 seeds each from seven different cultivars Tjir 1, RRIC 37, RRIC 52, RRIM 513, RRIM 623, PB 86 and 506, were germinated in polythene bags. Measurements of diameter and height were taken every three weeks on all these plants and the oil content in mg per g dry weight was measured on half the seedlings. A method of micro-tapping (Waidyanatha & Fernando, 1972) consisting of 4 punctures made on a strip of filter paper wrapped round the smoothed plant stem was adopted to determine the index of latex content.

In the second experiment over a 100 seedlings from a larger number of sources were germinated, selected on the basis of vigour and latex content, and the oil content of the selections was determined. The cultivars selected for this assay were AVROS 429 Chaemara 26, GT 1, IAN 6497, KH 440, LCB 870, PB 86, 5/51, RRIC 2, 7, 36, 41, 45, 51, 52, 86, 100, 102, 103, RRIM 513, 607, 612, 623, H.P. Nos. 506, 1108, hand pollinated family 506 x IAN 45-710, Tjir1 and Tjir1(seedling) seeds.

### RESULTS AND CONCLUSIONS

In the earlier experiment a significant inverse relationship was shown between oil content and growth in the case of seedlings from cultivars Tjir 1, RRIM 513 and 506 (which is of parentage RRIC 52 x Tjir 1). These results are presented in the earlier paper (Fernando & de Silva, 1971).

In the second experiment a significant relationship was again shown in the case of seedlings from cultivars Tjir 1, RRIM 513, as well as IAN 6497, RRIC 45 and the seedlings of hand pollinated origin and parentage 506 x IAN 45-710 (Fig. 1). All the other sources did not show a significant relationship.

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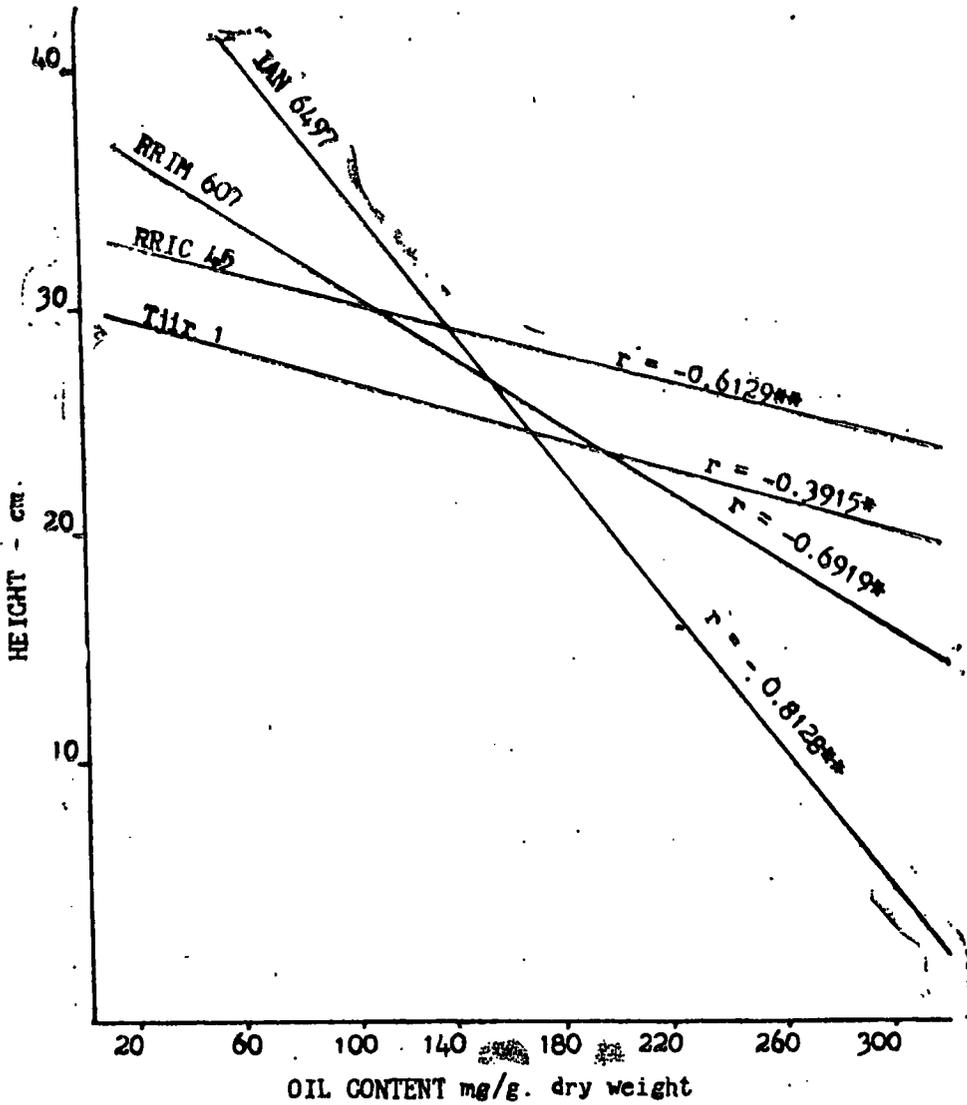


Fig. 1. Patterns of seedling growth in Hevea

## DISCUSSION

In the selection of seedlings in the nursery for budgrafting an initial thinning is done on the basis of growth. If there is a significant relationship, within a population, between growth and capacity for latex production, then thinning on the basis of growth would leave the higher yielders. It is reasonable to expect that the capacity for higher yield is necessary in the stock to support high yield of the scion. A significant relationship has been shown between growth and latex content on a micro-tapping basis (Fernando *et al.*, 1971). The suitability of Tjir 1 as a source of stock seedlings therefore seems to lie in the existence of this significant relationship between growth and oil content in the population. Out of the large number of clones examined it is also important to note that this relationship exists also in three more cultivars RRIC 45, RRIM 607 and 650, which have Tjir 1 as one of the parents. Thus it would be necessary to look for alternate sources of suitable stock firstly amongst Tjir 1 progeny, such as RRIC 45 and RRIM 607, which have been recommended for larger scale planting. It is fortunate that we could also use seed from sources such as RRIM 513 which has been extensively used as a parent in hand pollination programmes designed to upgrade yields. The occurrence of this relationship in IAN 6497 which has the South American Leaf Blight (SALB) resistant *H. benthamiana* cultivar F4542, as one of the parents, would enable effective seedling selection of high yielding SALB resistant progeny.

This method also opens possibilities of reverting to the more stable and wind-resistant seedling type for future *Hevea* plantings, with the attendant advantage of a more diverse germplasm than found at present on modern plantations. The first such planting has been carried out on a small scale in 1972 and early tapping indices are expected to give definite pointers in 1975.

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