

A SHORT REVIEW OF THE PRESENT POSITION OF THE PLANTING OF BUDDINGS OF PROVED CLONES.

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Questions relating to the distribution of buddings in the field have received a considerable amount of attention during the past two years. To make the position more clear a résumé of the advice which has been given from time to time on this subject may prove useful.

Some six years ago Dr. Heusser, of the A. V. R. O. S. Experiment Station in Sumatra, published the results of his first test tapping experiments on budded trees (1923). The results obtained with certain clones were so promising that it was advised that the future planting material should consist of an equal mixture of buddings of the best clones and seedlings from the best available mother tree seed. At that time buddings had not been tapped for a sufficiently long period to justify planting them on a commercial scale without the precaution of mixing them with seedlings.

At the present time the position has changed considerably; the results of subsequent tapping tests over a period of six years have borne out the promise of success indicated in the earliest experiments. For certain clones, e.g. AVROS clones 49 and 50, long records are available. Of equal importance with the high yielding properties of such clones early doubts as to the future behaviour of budded trees with regard to bark renewal, resistance to disease, and liability to mechanical damage have been dispelled to a great extent.

It is important to bear in mind that the planting of seedlings mixed with buddings was advised as a precautionary measure. In the event of the buddings proving unsatisfactory in later years it was considered that this policy would allow of their removal leaving the area still fully planted with seedlings of good quality.

Since it has been proved beyond reasonable doubt that a uniformly high yielding stand of trees can be established by planting with proved clones the interplanting of seedlings is now unnecessary. Experience has shown that the yields obtained from so-called selected seedlings (the seed produced by high yielding mother trees, the male parent being unknown) are lower and much more variable than the yields obtained from buddings of good proved clones. Furthermore, the practice of mixed planting even as a precautionary measure has obvious disadvantages. In an area established on such a plan there will be a few seedlings of high yielding capacity which it will pay to

keep at the expense of a few of the buddings, but these seedling trees can only be determined by laborious individual yield tests. This would necessitate leaving all trees, except obviously diseased and weakly specimens, for at least one year of commercial tapping, i.e., until about the sixth year from planting. At this stage the thinning out of alternate trees would be a costly operation and considerable damage to the remaining trees would be unavoidable. During the whole of the period of six years the close planting (200 to 250 trees per acre) required by the system would have impaired the general growth. Since budded trees in their later years are generally a little less vigorous than non-budded trees, they would probably suffer most from the over-crowded conditions.

A further complication arises in the tapping of buddings and seedlings in the same area. The bark of a budded tree, at least in its early years, does not usually show the heavy development of outer corky tissues characteristic of the lower portions of the trunk of a seedling. This fact gave rise to the early, exaggerated reports that budded trees produced a thin bark which was hardly tappable. Actually the latex producing region of the "cortex" of a good budding is generally rather thicker than that of a good seedling. The absence of the thick outer corky layer does, however, make more careful tapping essential. To attempt to modify the tapping in a mixed area of buddings and seedlings so that both types of the tree will be correctly tapped will be extremely difficult.

These defects in the system were no doubt realised at the outset and it is not surprising therefore, as soon as sufficient data on the later performance of buddings became available, that the practice was no longer advised. The planting of buddings of good clones only, well intermingled, was advised for future developments. But still a note of caution crept into this advice. Areas were to be planted with proved clones of which tapping records were available for two or three years, and the clones were to be mixed. In large areas as many as ten clones were used in this way, sometimes in equal proportions but frequently with larger proportions of the most promising clones.

Recent work on the tapping of budded trees has shown that different clones behave very differently when tapped on a uniform tapping system. Certain clones reach their highest yield six days from the commencement of a tapping period; others reach their maximum yield at a much later period. There is, in fact, very strong evidence that, to get the best yield from a clone, tapping will have to be carried out for definite periods with definite intervals of rest and these periods will differ for different clones. Such treatment would be practically impossible in a mixed planting of proved clones.

Either, only clones of similar yield performance should be mixed in a given area or, planting should be carried out in blocks each of

a single clone if full advantage is to be taken of the individual yield characteristics of each clone. To be in a position to adopt such a policy more information is required on the behaviour of a large number of the promising clones at present available. Comparatively few clones have been tested over a sufficiently long period to justify their use in pure plantings. Many of the more recently established clones show promise of giving better results than those developed in the early days of budding. For the present therefore the desire to include promising newer clones with the best of the older established clones will generally lead to the adoption of a policy of mixed planting. During the development of the young areas thinning out will be based on the results of continued observation and recording of the original budded trees of each clone. Should the oldest buddings of a particular clone develop a serious defect in later years it will be possible to remove the young buddings of this clone from more recent plantings. The increased space made available may be utilised by the buddings of more satisfactory clones.

Applied to plantings consisting entirely of buddings of the oldest proved clones this argument loses much of its force. It seems unlikely that buddings of a high yielding clone, which has a satisfactory record over a period of ten years or more, will suddenly develop a serious defect. In such cases it may be decided to take the risk of such a possibility and, by planting sufficiently large areas each with a single clone to reap the fullest advantage from the trees when they come into bearing. It seems unnecessary to stress the practical advantages of the system from the point of view of establishment and maintenance. In the event of the failure of a clone the question to be decided appears to be whether it is better for the loss which this will entail to be evenly distributed throughout the whole area planted or whether to confine the possibility of loss to a particular portion of the area sufficiently large to allow of successful re-planting in the extreme case.

Though block planting or pure planting of clones has already been adopted to a small extent, the question is raised in this article in order to indicate the trend of recent development in budding practice.