*ASPECTS OF REPLANTING

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One of the most important aspects to be considered in planning replanting of tea is perhaps the problem of deciding how much of the land is unsuitable for cultivation of tea and should instead be reafforested. The purpose of this article is to suggest that it would be wise to adopt a liberal policy of re-afforestation.

First, there is the very obvious reason that nearly every estate has areas which should never have been opened in tea because of unsuitable soil or steepness of the terrain. Such areas may well total 10 per cent of the cultivated acreage on the average Ceylon mid and upcountry estate. In addition there are marginal areas which might respond to intensive soil re-conditioning.

Let us however consider two important factors which have an indirect bearing on the subject, and are therefore not so obvious at first sight. The first of these is the agricultural consequence of doubling, or even trebling, yields by replanting with selective clonal material, while the second is the economic consequence on the world market.

Agricultural Aspect.—Fertiliser application will have to be increased to maintain sufficient N.P.K. "reserves", while at the same time healthy soil condition must be maintained by adequate supplies of green manure. The denser cover of tea will help to a great extent, but it is doubtful, even with normal loppings from shade trees, whether this would be sufficient. The aim should be to build up a thick carpet of continuously decaying vegetable matter, in the same manner that Nature maintains soil fertility in wet tropical forest. This can only be accomplished if, at the time of replanting, ample thatching material is grown in areas situated sufficiently near the tea to avoid heavy cost of transport. It is suggested that a minimum of 25 per cent of the old tea area should be set aside in convenient blocks, or wide contour bands between fields, in which timber and fuel trees as well as green manure grasses could be grown. To facilitate transport of thatching material into the tea rows it would be preferable to establish these reservations on each side of lead-off drains. The new contour rows of tea will eventually develop into almost impenetrable hedges. Thatching material will therefore have to be taken along the rows from the lead-off drains. Reservations about 30 feet wide on each side of these drains would obviously be the most convenient layout for this purpose.

Let us pause for a moment to consider the benefit to be derived from establishing a carpet of decaying vegetation below the cover of the tea. There would be a slow but continuous process of building up new soil. Consequent on improvement in soil structure and its micro-biological activity, nitrification would be accelerated. It may well be found that the present recommended minimum fertiliser rate of 8 pounds nitrogen to 100 pounds of crop could be lowered, and that inorganics could be regarded more in the nature of an activator for the decomposition of vegetable matter.

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Another vital benefit would be the elimination of weeds by smothering. Instead of weeders being employed to scrape soil down the hillsides they would be spending their time thatching green manure obtained from the blocks. Tests carried out in 1-acre blocks have shown that a 4 inch deep thatch of mana grass in old tea needs only 1 labourer per acre per month over the six months following the thatching to keep weeds under control. If in addition there is a dense cover of tea, and a fresh layer of mulch spread every six months or so, there would no longer be any weed problem. It would indeed be a happy day for Ceylon if all scrapers could be dumped in the Indian Ocean.

Economic Aspect.—Let us take a property of 120 acres of which 100 acres is tea, 10 acres buildings, roads etc., and 10 acres scrub and forest, the average up-country estate in miniature. We are getting 800 pounds per acre, at a C.O.P. of Rs. 1.60. We are satisfied that replanting with proved clonal material will produce a yield of 2000 pounds per acre. Being progressive we decide on a long-term policy of replanting annually 5 per cent of our tea area, *i.e.* 5 acres. After a survey of the 100 acres it is decided that 10 acres are definitely unsuitable for tea and should be re-afforested as a timber and green manure reserve. There is a further 10 acres of marginal land, at present giving about 600 pounds per acre, which could, we consider, with replanting yield 1200 pounds per acre. However, we decide this area would be more valuable as a timber, fuel, and green manure reserve. This leaves 80 acres of the best land, which we wish divided into 5 fields of approximately 15 acres each. In order to shape off our timber and green manure reserves in convenient blocks, or contour bands between each field, it is decided to appropriate a further 5 acres for this purpose, finally leaving 75 acres for replanting at 5 acres per year.

For the sake of comparison we have to assess the worth of our property before and after replanting in terms of present day values:—

1. Before Replanting:—
   100 acres @ 800 lb. per acre = 80,000 lb. made tea @ C.O.P. Rs. 1/60
   Profit at Rs. 2/- per lb. Market Average Rs. 32,000/-

2. After Replanting:—
   75 acres @ 2000 lb. per acre = 150,000 lb. made tea @ C.O.P. Rs. 1/20
   Profit at Rs. 2/- per lb. Market Average Rs. 120,000/-

There are already indications that yields of well over 2000 pounds per acre may be obtained from first class clonal material, but a conservative figure has purposely been used in this comparative assessment. To assess the C.O.P. for a yield of 2000 pounds per acre calculation was made from actual costs of an estate yielding 800 pounds per acre, which revealed a reduction in C.O.P. of over 40 cents per pound had a yield of 2000 pounds per acre *been obtained*, assuming proportional increase in fertiliser. This is in fact a very conservative assessment of the increase in profit which would occur if, by the wave of a magic wand, 100 acres yielding 800 pounds per acre be overnight transformed into 75 acres yielding 2000 pounds per acre.

No account has however been made for the capital expenditure which would be required for extra accommodation for increased labour requirements, and factory expansion.

Whether world consumption of tea will progress sufficiently to absorb the potential increase in production is a matter of speculation. Even by converting 75 per cent of Ceylon's present tea acreage into high yielding clonal stock annual output could be doubled. Spread over many years conversion will, however, be very gradual.

The question of matching supply to demand leads one to speculate on whether it would not be prudent to convert even more than 25 per cent of our old tea into timber and pasture. At lower elevations cocoa, spices, etc. could be considered. Might it not be better agricultural economy to utilise at least one third of the land for other products thereby maintaining a more balanced economy. It will be noted that in the assessment of the income from our 100 acre estate no profit from the 25 acres in timber and fuel trees has been included, yet the potential value of produce from this area would be considerable, apart from reducing our dependence on oil for fuel.

Finally it must be borne in mind that land used for other produce can always be reconverted into tea should a strong world demand for this commodity persist in spite of increased production. Provided the land were suitably cultivated over a period of 20 to 25 years the fertility of the soil would improve, with benefit to the tea which may subsequently be planted.

Summary.—It is suggested that between one quarter to one third of our present tea areas should be utilised for cultivation of timber, fuel, green manure and other products when replanting is carried out. This will require a careful survey and planning ahead as if a new estate were being opened up. Blocks, or wide contour bands between each new field, would facilitate transport of green manure for thatching in the tea.

Benefits to be derived from this part-reafforestation and cultivation of "other products" are:

1. Establishment of much needed timber and fuel reserves.

2. Ample green manure for thatching in the tea for improvement of tilth and elimination of weeds.

3. Soil improvement from a period under other products.

4. Adequate wind breaks.

5. Improved water retention which, together with improved tilth, will reduce effects of drought.

6. Exercise of control measures against over-production of tea.

7. The cultivation of "other products" would give a better agricultural and economic balance.

Now is the golden opportunity to plan ahead when replanting is in its infancy.