

REPLANTING TEA*

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In 1938 the writer had occasion to examine, in theory, the respective merits of supplying in old tea compared with eradication and replanting.—(*Tea Quarterly* Vol. XI, Part II, June, 1938).

Since that time actual replanting has been undertaken, and it is now possible to give some indication of experience gained in actual practice, in the hope that this information will be of interest.

To present any useful balance sheet it is necessary to know:—

1. The crops harvested from the area before replanting.
2. The actual cost of replanting and any connected expenditure, other

than that which would have been expended had the original tea remained.

3. Crops harvested after replanting.

CROPS HARVESTED BEFORE REPLANTING

The areas selected for replanting, three in number, formed each a part of three separate fields. By comparing the total yield of the field before and after the plot was replanted, it is obviously possible to arrive at a reasonably accurate figure representing the yield of the replanted area.

Averages for eight years prior to 1939, and also averages for the four years succeeding 1939 have been worked out and the figures are as follows:—

No. 1 Field — 38 acres. Average crop for 8 years	20,173 lb. made tea
„ 1 „ — 32 „ less 6 acres uprooted, average	
for 4 years	19,624 „ „
Presumed crop for 6 acres	549 „ „

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Crops for the remaining two plots were calculated in the same manner, and the total crop for the whole replanted area of 26 acres came out as follows:—

No. 1 Field — 6 acres	549 lb. made tea per annum.
" 2 " — 10 "	1,037 " " "
" 3 " — 10 "	968 " " "
<u>26 acres</u>	<u>2,554 lb.</u> " "

or an average of 98 lb. made tea per acre per annum.

During the period under review, yields per acre for the total tea area averaged for the first 8 years 526 lb. per acre; during the next four years, however, the average rose to 625 lb. per acre, owing to lifting of the Export Control etc:—

Thus for a reasonably true comparison the yield per acre of the replanted plots prior to replanting should be increased by $\frac{526}{21}$, or say 25, to offset the increased pro-

ductivity of the estate after the plots were replanted.

This raises the figure of 98 lb. per acre to 98×25 or 116 lb. per acre.

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So much for past performance.

2. COST OR REPLANTING

When examining costs in 1938 in theory, for the purpose of comparison between the two methods, supplying and replanting, it was assumed that every plant planted was successfully established.

In practice, of course, this is often far from the case, and the actual cost of replanting has been considerably higher than anticipated owing to the necessity of continued supplying in the clearings after droughts experienced in 1940 and 1941.

Under the same conditions, of course, an extensive programme of supplying in old tea would have met with similar difficulty.

The areas selected were replanted on the contour, the spacing of the plants being 1½ ft. × 5 ft., that is, the contours were approximately 5 feet apart and the plants 18 ins. apart in the row. This method is designed to produce eventually a hedge of tea along the contour which successfully creates its own terrace on steep land and thus goes a long way towards solving the problem of erosion, whilst the stand of tea, approximately 6,000 plants per acre, ensures a good yield.

Various cover crops were established between the contours whilst the young plants were growing, and eventually Vigna was found to be satisfactory, for it holds up the soil well, and is not too difficult to control or eradicate when the time comes.

Careful records of costs of all expenditure incurred over the 26 acres replanted have been kept, and from 1939—1943, excluding expenditure on manuring, weeding, forking, draining, etc., etc., all of which would have been incurred if the old tea had remained, a total of Rs. 8,564.41 has been expended over the four years as follows:—

Rooting out tea and forking out roots	Rs. 1,536.41	or	Rs. 59.09	per acre
Forking contours for planting	" 351.75	" "	13.53	"
Purchase of tea seed	" 2,425.80	" "	93.30	"
Nursery work	" 409.63	" "	15.76	"
Pegs and Lining	" 212.22	" "	8.16	"
Planting, supplying and shading	" 1,862.43	" "	71.63	"
Watering	" 631.48	" "	24.29	"
Planting, control and eradication of green manures (Boga, Crotalaria, Sword Plant, Sunflower and Vigna)	" 1,134.69	" "	43.64	"
	<u>Rs. 8,564.41</u>	or	<u>Rs. 329.40</u>	"

Labour was charged at an average of 58.58 cents per day over the period and these figures are, of course, exclusive of Dearness Allowance.

When checking the cost of the routine works *other* than replanting on the 26 acres, this was found to be some Rs. 29 per acre more expensive than the average expenditure per acre per annum of the remainder of the mature tea area. This is probably due to the fact that two manure applications per annum were made to the clearings, and weeding costs were slightly higher owing to lack of shade. This being so, this expenditure is presumably a legitimate charge upon replanting and the replanting costs must be enhanced by Rs. 29 × 4 years or Rs. 116. This then increases the figure of total replanting cost to Rs. 329.40 plus Rs. 116 or Rs. 445.40 per acre.

3. CROPS AFTER REPLANTING

Results obtained have not been very spectacular, in fact the plot of 6 acres has been almost a complete failure and can be disregarded as worthless at present.

The soil in this six acres is micaceous and worn out, and apparently no form of manure or cultivation will encourage a good stand of young tea to grow.

Results in the remaining two plots, 20 acres in extent, are however, much more encouraging. The stand of tea is not all that had been hoped for, but this area has now been in light plucking for the past nine months and 2,772 lb. of made tea have been harvested from this acreage, although part of this area is still not yet productive.

Taking, however, this crop as the return for the whole area of 26 acres replanted, this represents a crop of 106 lb. per acre for the nine months in plucking, or the equivalent of 141 lb. per acre for a full season of 12 months.

Thus it will be seen that the comparison at present between the area, before and

after replanting, stands as follows:—

Before Replanting:—

26 acres averaging 116 lb. made tea per acre per annum.

After Replanting:—

26 acres yielding the equivalent of 141 lb. per acre during the first year of plucking.

It is too early yet to forecast how soon the area will pay for having been replanted, but the first year's result would seem to indicate that the experiment will be a financial success in the not too far distant future.

The lessons to be learnt from this small experiment in replanting are interesting.

Firstly, the area to be replanted should be carefully examined. The first thought is naturally to replant the worst areas. It would appear, however, that on some of the older estates there are areas, particularly where the soil is poor and micaceous, which are not successfully replantable. Moreover, there is, of course, some reason for the uneconomic state of the area. It may be the jat of the tea or it may be the soil. If it is the soil, there is no reason to suppose that by replanting the tea will become economic, the soil itself is at fault and obviously it will be easier and less expensive to put the soil itself right, if possible, rather than replant and then also have to put the soil in order.

If the fault lies in the jat of the tea, then replanting should be the cure.

In the particular case of the six acres mentioned above, it was thought that the jat of the tea was at fault. The jat of the tea was poor certainly, but in practice it was found to be the soil that was primarily at fault, which causes speculation as to whether a wretchedly poor and wasted soil, can, by denying the needed foods, give tea the appearance of a small leaved jat through continued starvation?

Secondly, a liberal estimate must be allowed. Wherever tea is uneconomic it is reasonable to suppose that the soil must in some measure be at fault and that, therefore, it is unlikely that replanting will be as successful as in the usual new clearing.

Generally speaking, results of this small experiment so far have shown that replanting is not to be too lightly undertaken, and that careful investigations should first be made to ascertain the real cause of the uneconomic state of the tea.

It should also be borne in mind, however, that this experiment in replanting was undertaken with the object of increasing the number of economic yielders on the estate, and was carried out as an alternative to supplying.

Thus supplying costs over the four-year period were saved and may be set off against the cost of replanting.

Supplying costs for the period 1935 to 1939 totalled Rs. 10,074-41.

Replanting costs for the period 1939 to 1943 totalled Rs. 445.40×26 or Rs. 11,580.40 — not very much more.

Has the objective of increasing the number of economic yielders been attained?

It is yet too early to say for certain, but it is submitted that with a yield of 141 lb. per acre from immature 4-year-old bushes, it is likely that these will prove more economic than the original old tea which apparently yielded only 116 lb. per acre.

It should be possible, when the area reaches maturity, to reach more definite conclusions regarding the merits of replanting as compared with supplying.