

REGENERATION OF TEA.*

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Much discussion has recently taken place regarding the improvement of tea areas by the replacement of uneconomic bushes and other special treatment and the desirability, or otherwise, of replanting complete areas as opposed to other methods of renewing the *product*.

During the period 1930 — 1932 the writer had occasion to convert some 15 acres of old Rubber into Tea, replanting 5 acres yearly, and opportunity was taken to plant a Contour Clearing with plants spaced $1\frac{1}{2}$ feet \times 5 feet. This was planted with germinated seed along deep forked contours, without holing. The total cost, excluding the removal of the Rubber, worked out at Rs. 160 per acre for the first year, and the total cost up to June, 1937 amounted to Rs. 510 per acre. The clearing had to face the drought of 1934, and, owing to the depression, no manure was available until 1934.

Despite these difficulties, the appearance and yield of this small clearing is such as to encourage replanting by this method elsewhere rather than any other form of rejuvenation.

Since, however, in any commercial undertaking, figures are usually required in support of any proposal, the following is an attempt to compare two methods of rejuvenation from the point of view of cost.

* The Institute does not necessarily endorse the views expressed in papers contributed by persons other than members of the Staff.

Firstly, however, the object of rejuvenation is to eradicate the uneconomic yielder and replace with something better, in other words, to maintain, or increase the yield of the estate by adding to the number of economic yielders.

It is generally conceded that, within reasonable limits, the larger the number of bushes per acre the larger the yield of that acre. If this be so, then it necessarily follows that the same is applicable to the estate; the larger the number of economic bushes, irrespective of where they may be on the estate, the larger the yield must be. The object to be aimed at, therefore, is to increase the number of economic bushes on the estate in the cheapest and most effective manner possible. It is submitted that it is the cost per plant planted that matters, not the cost per acre, or the acreage treated. For instance, it will be more productive to establish 20,000 new plants over $3\frac{1}{2}$ acres for Rs. 1,000 than to establish 100 new plants per acre over 100 acres for Rs. 10 per acre.

The two methods to be compared are as follows:—

METHOD A.—To select an area on the estate containing the largest percentage of uneconomic yielders, eradicate all tea entirely and replant on the contour system, say $1\frac{1}{2}$ feet \times 5 feet, thus establishing approximately 6,000 plants per acre in place of the original 4,000 old bushes.

METHOD B.—To eradicate all uneconomic bushes over the whole estate, and to supply all vacancies by the ordinary supplying methods, cutting large holes, protecting all plants, and applying extra manure to supplies for three years after planting.

For the purpose of comparison let it be assumed that the estate has an original stand of 4,000 bushes per acre, and that the percentage of vacancies and uneconomic bushes combined amounts to 14 per cent. Let us also indulge in the delightful assumption that every plant planted is a success! Further for the sake of the comparison, figures and acreages are taken on which estimates have been worked out.

The estimates are based on actual work done in the past, with the exception of the replanting estimate; this is based on the cost of the ex-Rubber converted clearing mentioned above, and may therefore be inaccurate. Those, however, who disagree with these figures can substitute their own and work the comparison accordingly.

COMPARISON.

METHOD A.—Eradication of the old bushes from the complete area. 6 acres are replanted at 6,000 plants per acre. Thus 36,000 new plants are put out.

Cost at Rs. 200 per acre ... Rs. 1,200

This cost of Rs. 200 per acre represents only the bare cost of eradicating the old tea and lining, forking contours, and planting the new plants.

Other routine cultivation and work, such as Pruning, Manuring, Forking, Draining, Weeding, etc., would be undertaken if the area were not being replanted, and this cost of Rs. 200 per acre therefore represents for the purpose of comparison only the extra cost involved by replanting.

Regarding the upkeep of the new area, the same holds good; normal cultivation costs, sufficient for the upkeep of the new area until it comes into bearing, would normally be incurred and therefore for the purposes of this comparison may be disregarded.

Since Tea Export Control is in operation, it should be possible to harvest the quota of this small area replanted from other areas; in other words, enhanced profit from larger harvests from other areas should balance the loss of crop from the replanted area.

During Export Control then, loss of profit need not occur. Total actual cost at the end of three years therefore remains at the initial figure of Rs. 1,200.

METHOD B.—Taking a field of 40 acres, allowing a normal stand of 4,000 bushes per acre, and vacancies and uneconomic bushes totalling 14 per cent.

The number of vacancies then after eradication totals in round numbers 22,000.

The planting of 22,000 supplies will cost ... Rs. 1,451

Also, in addition to the normal cultivation programme of that area they will require manuring annually for three years at 2 oz. per plant, say 550

Application of manure, pegging, after care, etc., for three years, say 400

Total for 22,000 supplies ... Rs. 2,401

The comparison now stands as follows:—

METHOD A.—36,000 plants after three years cost Rs. 1,200

METHOD B.—22,000 plants after three years cost „ 2,401

Reducing this to cost per plant:—

METHOD A.—Costs per plant planted ... 03.33 cents

METHOD B.—Costs per plant planted ... 10.91 „

But it will be observed that the comparison is incorrect in that plants planted by Method A do not all represent additional plants as is the case in Method B.

Examining this point it appears that in the six acres dealt with in Method A there were 14 per cent of vacancies and uneconomic bushes — though in actual practice the worst area would be selected and the uneconomic percentage would be higher here than elsewhere.

Allowing for a stand of 4,000 bushes per acre, vacancies at 14 per cent then account for $\frac{4,000 \times 6 \times 14}{100}$ or 3360.

Thus before the area was cleared there were $(4,000 \times 6) - 3,360$ or 20,640 yielders.

Therefore in this area the additional plants now number 36,000 - 20,640 or 15,360 plants.

Comparing costs again on this basis:—

METHOD A.—Costs per additional plant planted 07.8 cents

METHOD B.—Costs per addition plant planted 10.9 „

Method A has moreover numerous other advantages, amongst which are:—

1. The soil erosion problem is largely solved.
2. A considerably larger percentage of successes is probable in practice with Method A.
3. Method A not only provides the additional new plants required, but also over the area treated replaces the old product with young and improved material, thus obviating the possibility of annual wastage from old age, a contingency likely in Method B.

It is suggested therefore that, granting that the object of rejuvenation is to increase the number of economic yielders on the estate and given that a certain sum of money is available for that purpose,

replanting over a proportion of the acreage may be not only the most effective, but also the cheapest method of achieving that end.

It will be realised that the higher the percentage of uneconomic bushes the more cogent the argument in favour of replanting becomes.

A criticism of the foregoing may be that the estimate of replanting at Rs. 200 per acre is unduly low.

In the converted clearing mentioned above, actual cost of seed, lining and pegging, forking contours and planting, shading and watering, amounted to Rs. 121 per acre.

In this estimate of Rs. 200 is included:—

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|-----|----|--|
| Rs. | 70 | per acre for eradicating old tea |
| „ | 80 | „ for one maund seed at Rs. 36, nursery, forking contours and planting. |
| „ | 30 | „ for sowing and control of ground cover. |
| „ | 20 | „ for shading and watering. |

Rs. 200

Germinated seed would be planted in pairs to allow of a certain amount of selection.

One of the problems of the practical planter is how to choose best between the prohibitively expensive ideal and that which is uneconomically cheap; in other words, how to obtain the optimum value per unit of expenditure. It is not claimed that the method outlined is necessarily the best method by any means, but it is claimed that under difficult conditions it has succeeded in the case of conversion from Rubber to Tea. Rubber, we know, is the dominant partner when interplanted with tea; if this method has succeeded in old rubber land, there seems no reason why it should not be equally successful in old tea land. It is at any rate worth trying.