

## TEA WEEDING\*

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There appears to have been an interesting discussion on this subject at the P. A. General Committee Meeting in Kandy in September. Possibly, therefore, the experiences of someone who has tried selective weeding for more than twelve years may be of interest.

It had struck the writer that in the large amount of weed growth available there must be two natural advantages viz.

Prevention of soil erosion,

Addition to the humus content of the soil.

It happened that on this estate in 1929 a sudden outbreak of Lime Weed (*Polygonum nepalense*) occurred in one block of 7 acres. This came on so suddenly that in a matter of 6 weeks a complete cover obtained and the oxalis was stunted and all other weeds were temporarily obliterated. On examination it was found this weed had some very useful features. They were as follows:—

The root system existed only on the surface to a depth of an inch, many plants actually existing on the dead tea leaves and not in the soil below.

Secondly, the rate of growth was such that other weeds were choked out or as in the case of 'white weed' (*Ageratum conyzoides*) they had to come up to a height of 15 or more inches before they could flower, thus resulting in easier eradication and greater weight of weed spoil.

Thirdly, the Lime Weed cycle of life is short, varying from a few weeks to three months. A small drought at flowering time or beating down by weeders caused an immediate wilting away resulting in a thick cover of decaying vegetable matter.

Fourthly, the quick cycle allowed Oxalis to come back rapidly thus causing cycles of each and a fairly constant ground cover.

Fifthly, there appeared to be no deleterious effect on the tea after a year or more of observation. In fact this small block improved considerably, as it had previously suffered from erosion and the effects of drought.

By 1931 Lime Weed was established in further areas, so that when in 1932, and more particularly in 1933, a drastic curtailment of weeding costs was necessary it was possible to allow Lime Weed to spread at once throughout the estate.

Other conditions obtaining were the fact that grasses and white weed seemed to come in cycles, and the planting of paspalum grass verges on all road edges and banks gave shelter to bamboo grass. It was found this bamboo grass seeded in April-July and by September many areas were infested with sprouting grass particularly under the bushes. It became more than ever essential to have a cover to stop bamboo grass spreading.

The other weed was "Spanish Needle" (*Bidens chinensis*) known as 'Usi Pillu.' This also occurred mainly in dry months

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and in open areas such as vacancies and poria plots.

The average elevation of the estate is 4,400 feet; there is much rock in some areas and there are no flat places of more than a few square yards. A primary need was therefore to guard against erosion. Evidence of many years of scraping were easily to be found. All drains and silt pits were put into good order and terracing commenced on eroded areas. The next problem was to evolve the technique of what is called selective weeding with the object of keeping down costs and if possible making a reduction, preventing erosion and finally getting some return — increased numus. For the time being it was not necessary to press for crop as restriction had arrived. Thus in a way it has been impossible to draw any clear conclusions as to the effect of weeds on crop. Further there was a change in pruning policy. However, it has been found possible to extend the pruning cycle by several months, and the tea almost throughout the year maintains a good colour. Only under exceptional weather conditions have areas been noticeably 'run out' before pruning, and then only in small blocks. Artificial manure has been short averaging under 26 lb. Nitrogen per acre over 15 years.

However, some results are definite as follows:—

1. There is now no wash over 90 per cent of the estate. Where it does occur the faces are so steep as to prohibit the extension of the ground cover, or terracing. Wash inevitably also occurs where concentrations of water fall from large rocks, or where road banks have not yet been protected.
2. There is definitely an improvement in the surface soil in texture and depth.

3. Value is given to leaf-fall from shade trees and the tea by the ground cover holding it up.
4. An immense amount of weed spoil is rotted down under a very simple system giving over 1,000 tons a year. A large amount of Indore Compost apparently is not suitable for tea, and supplies in particular, but this weed spoil can be put out anywhere at any time, even in large quantities.
5. Costs have been reduced compared with the old clean weeding without reckoning any advantages from Item No. 4.
6. The spread of *Drymaria* is kept in check. Though deleterious effects on tea cannot be ascribed to *Drymaria*, it definitely hinders weeders in search of grass and it tends to climb into the tea. It does, however, hold up leaf-fall and gives a thick mat of decaying material when it dies back.

To come back now to the system employed, it was first necessary to overcome the labourers' dislike of pulling out weeds, to prevent scraping as much as possible, to use the point of the scraper and not the side, to prevent the trick of covering weeds in drains by cutting down banks, and finally to teach them that ground covers in the end make weeding easier during most months of the year. It is necessary to repeat all this tens of thousands of times before it makes any impression. Determined persistence alone will bring any results.

It was reckoned that roughly one collecting centre per 2 acres was required to build up 'Composting' heaps sufficiently rapidly, but this would vary with the prevalent weed and type of land, etc. It is better to have these collecting sites cut into road banks, or where roads cross

ravines. They must be handy or weeders won't bring the weeds. They must be large enough to collect all the weeds and allow the 'Compost' men to work on the heaps, cutting, ferning, etc. About 6×12 feet is ample as a rule. If there are too many sites it will take a long time to collect enough weeds to build up a 'loaf' of them to start the breaking down process.

With adequate supervision 2 or 3 men, according to the weed season, are ample to do a round a month working only, say, 10 to 12 days actually on collecting and heaping over 200 to 250 acres. They should have mamoties, baskets and sacks, otherwise weeds will be dropped all along the roads, and it is extremely dangerous to allow pieces of cootch and 'Ammalai pillu' (*Commelina nudiflora*) to be dropped. These men after collecting proceed to press the weeds into a 'loaf' say 4×2 feet or according to weeds available. After every 4 to 6 weeks these heaps are chopped up and rebuilt until it is considered they are broken down sufficiently to use as spoil. The condition usually reached in 4 months or so is a blackish, crumbly soil and this is put out when required at, say, one basketful to every group of 4 bushes. A cubic foot would weigh about 20 to 30 lb. according to the moisture. In dry weather sometimes additional water must be used on the heaps. Any grasses, ferns and leaves can also be heaped with the weeds and rotted down. Lime, if available, is useful to help break down the weeds. With a few pounds of cattle manure added, this weed spoil is a splendid filler for bringing on Dadap cuttings. When the spoil is put out for tea some demarcation of the areas should be made so that gradually a large area is supplied. In this way over a period of two years large backward areas can be treated.

Regarding costs these can be deduced from the number of men required monthly as stated above. To this must be added

cost of baskets, sacks, etc. and any extra coolies needed for lime and cattle additions. The first year will be more expensive till the method is understood, say, Re. 1 per acre per annum and later it should not exceed 75 cents per annum. Weeders, however, must be made to do the bulk of the collecting in small heaps along roads and on convenient rocks and ravines, etc.

The appended costs (on next page) per annum to the nearest rupee will show that the inauguration of 'selective weeding' has caused a big saving as these figures can be multiplied by many hundreds of acres. The check-roll rate in 1928 was actually higher than now but contract rates have not varied very considerably, except in 1933 when full selective weeding was started and rates were cut very much due to the slump. In 1942 very bad weeds were experienced and rates increased.

Finally, very many other weeds were tried at different times, but none has fulfilled the requirements even to a small degree compared with Oxalis, Lime Weed and *Drymaria*, these being in order of preference. It must be understood though that Oxalis gives practically no additions to the weed heaps compared with the latter two kinds.

The matter of forking in weeds is another large subject, really cultivation, and cannot be dealt with here. But whatever such policy was it would be negated to a great extent with the present shortage of labour, if any particular programme fell through and fields were neglected. What is cheaper in the long run and will help in the weed control question is leaf-fall. This is also a subject which cannot be dealt with here, but unless lopping of Albizzias and Dadaps is reduced many estates will find little advantage from having merely weeds by themselves. High shade apart from giving constant leaf-fall protects the tea against wind and rainbeat.

## Cost of Annual Weeding Per Acre

Year	Rupees per Acre	Year	Rupees per Acre
1926	35-00	1935	21-00
1927	31-00	1936	22-00
1928	33-00	1937	20-00
1929	43-00	1938	21-00
1930	35-00	1939	20-00
1931	33-00	1940	20-00
1932	30-00	1941	24-00
1933	16-00 (Slump rates)	1932	26-00
1934	20-00	1943 (½ Year)	19-00