WEED CONTROL

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Introduction :

Weed control is one of the most expensive items in the cost of producing tea. Although weed control is considered an unproductive item of expenditure, which cannot be avoided, weeds have got to be controlled, so that a tea plant gets the maximum benefit from the expensive fertilizers fed to it and grows freely without any competition from weeds. In this article, I wish to discuss ways and means of reducing cost in the control of weeds.

Prevention :

I am of the opinion that very little attention is being paid to this important aspect of weed control in most estates. It is an accepted fact that preventing weed growth will be definitely cheaper than having to control the weeds once they have established.

The tea bush itself is the most efficient weed killer and our aim should be to get a good cover of the ground by correct bush management, right from the time of planting, so as to prevent any light reaching the ground. In the absence of light, weeds would find it very difficult to grow. Correct pruning and proper slope plucking are some of the ways in which this could be achieved. Areas where the ground is exposed will have to be infilled with tea if the soil is suitable and until such time infilling is done, it is essential that all patches are planted up with a suitable grass like Mana or *Eragrostis*. Areas in which it may not be possible to plant grass *eg.* (rocky sections) may be mini-diversified with suitable species of trees. All banks, including sides of field paths, should also be planted with either *Paspalum* grass or *Eragrostis*, so that very little land is exposed in fields for weeds to grow and propagate.

If infilling is done, until such time the supplies cover the ground thatching will have to be done. Thatching, in addition to preventing weed growth, improves the organic matter content of the soil and helps retain moisture.

Another source from where weeds spread to the fields is from ravines close to the fields. It is important that ravines and also the boundaries are kept clean. Ideally these should be completely cleaned out and planted with fodder grass. Grass cut for fodder must only be transported in sacks where the open end is also properly covered. Now with the view to encouraging dairy development, government offers a good subsidy to grow grass, and plantations should make use of this offer to have their ravines cleaned and planted in grass. Animals, (goats, cattle, *etc.*) if allowed to graze, also spread weeds mainly through their dung and as such this has got to be prevented. I have noticed pluckers also spreading weeds by half-heartedly pulling out weeds, particularly creepers, from within the tea frames and putting them along the rows. By this process the weeds are not completely removed from the frames and are

allowed to spread from the row where the worker has put them down. This practice is best avoided but if it has to be done, the weeds should be removed with their roots and taken to a weed heap.

The growth of ground covers such as *Oxalis* or *Desmodium heterocarpum* (Kadalai Pillu) would be ideal as these prevent soil erosion and are least harmful of the weeds, since they dry up under drought conditions and do not compete for moisture. They also develop quickly during the rainy weather and provide protection at the time the soil most needs cover, preventing soil wash.

Control of Weeds :

Although considerable progress has been made in the formulation of suitable herbicides and in spraying equipment, the traditional method of controlling weeds by the use of scrapers of various sizes and dimensions is still widely practiced in most of the estates in Sri Lanka. This is undesirable leading to excessive soil erosion in addition to being also expensive.

(i) *Manual Weeding:* Scraper weeding has many disadvantages, most harmful of which being that it promotes soil erosion. Scraping breaks down the structure of the soil and leaves on the ground a layor of loose top-soil which is easily washed away by rain. In addition, this will not only prepare a suitable bed for weeds to grow but also stimulate dormant seeds to germinate. Although a small 2" scraper with an 18" handle is said to minimise soil erosion, in actual practice scrapers of these dimensions are rarely used.

Contract weeding with the use of scrapers is also widely practised. It is considered very convenient and is a relatively cheap way of controlling weeds. But this work is never properly supervised and the contractor's main interest is to complete his work within the shortest possible time for which he uses the largest possible scraper permitted. All available hands in a family including small children, who hardly know the value of the top-soil, usually attend to contract weeding, scraping away the soil at their will and pleasure and causing immense damage.

While undertaking weeding by scraping it is not always possible to collect all weeds that has been scraped, as the weeds usually get cut into small bits in the process of scraping. In attempting to remove weeds, numerous bits and pieces are left behind. These sprout and grow particularly during wet weather, and this process instead of controlling weed growth spreads weeds. Another objection to this type of weeding is the loss of plant nutrients carried from the fields with the weeds. These are said to amount to 30 lb nitrogen, 55 lb of P_2O_5 and 60 lb K_2O per year. At a time when fertilizer costs are exorbitant could we afford to lose this amount of nutrients!

In addition to all these reasons, manual weeding is far more costly, thus at a time when we are struggling to control the escalating C.O.P. could we afford this luxury, when there is a definite and a more satisfactory alternative!

(ii) *Chemical Weeding:* I have found chemical weeding to be most effective and the cheapest way of controlling weeds. At present, there are several suitable herbicides and sprayers available to effectively control all types of weeds without any adverse effect to the tea plant. A proper programme requires good planning, effective supervision and proper maintenance of all spraying equipment. It is only those who cannot do this who usually criticise adversely against using herbicides. Some of the adverse comments are damage caused to side branches and drop of the maintenance foliage. With trained labour under direct supervision, advice of the executive staff and the necessary precautions being taken to prevent drift, effective control of weeds by chemicals could be undertaken without any damage to the tea leaves.

In drawing up a chemical weeding programme no hard and fast rule can be laid down, as to the exact timing and the type of herbicide to be used. It will entirely depend on weather pattern and the type of weeds growing. But the main point to remember is that weeds must be tackled when they are young and actively growing. In addition to getting the best result from the chemicals, less chemicals will be required if spraying is undertaken on the immature weeds. Sufficient sprayers will however be necessary to cover the entire acreage of a plantation within a short period of time. I have had no difficulty in working out my requirements at 15 to 20 acres per sprayer depending on the rainfall. One aspect that usually gets neglected in a plantation undertaking chemical weeding is the negligence to carry out follow-up rounds. It is important that follow-up rounds are undertaken in an area sprayed with minimum delay so that no weeds left behind during the initial application is allowed to mature and spread. By this spreading of weeds is prevented thereby reducing the necessity for additional applications later on.

The proper maintenance of spraying equipment forms an important aspect in undertaking chemical weeding. Regular servicing will have to be arranged and all replacements must be made in time. If pressure prayers are used, it will be necessary to control the pressure being charged, to both minimise damage to spraying equipment and maximise control. Only the correct nozzles must be used; wasted nozzles must be changed when necessary. There are various types of herbicides which for convenience are classified into contact or translocated, selective or non-selective and pre- or post-emergent depending on their mode of action, differences in weed morphology and time of application of herbicides respectively. Some have residual action while others are inactivated on contact with the soil. Hence the above classification is not rigid and often one herbicide may fall into more than one category. Hence, effective control of weeds can be achieved by chemicals only by a full understanding of the chemicals, their properties and the weeds to be controlled.

I am not going to discuss the merits and demerits of the various herbicides presently available. The suppliers of these chemicals in their leaflets give this information. In a well planned herbicidal weed control programme, it will be necessary to incorporate different herbicides so that weeds do not become resistant to a given type of herbicide. Too much of some of the pre-emergent herbicides with residual action is harmful and it is advisable never to exceed prescribed quantities of this type of herbicides.

In my experience, I have found that just one application of manual weeding, programmed to tackle weeds within the frames and any refractive weeds along the row is sufficient, that too I usually plan to carry out during the dry months when it is very difficult to find suitable work for labour. Hand weeding alternating with chemical weeding done in some estates is not a desirable practice as the full benefit of the chemical spraying is not derived and hand weeding tends to propagate seeds by preparing a suitable bed.

Progressively costs come down when undertaking chemical weeding and in my opinion, it is possible to chemically weed a field with an average stand of tea at a cost of between Rs. 30/- to 60/- per ha, per month, at present-day costs. Cost of manual weeding will be at least twice this amount or more. This saving alone can make the difference between profit and loss in some plantations.