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## **INTEGRATED WEED MANAGEMENT IN TEA**

*(This Circular cancels Advisory Circular No. WM1 Serial No. 9/03 issued in July 2003)*

### **1. Introduction**

Weeds in tea lands, could interfere with the growth of tea by competing for light, nutrients and water thus affecting the productivity of tea. A dense weed cover could also interfere with routine field practices such as fertilizer application, pruning, forking etc., and, could also serve as alternate hosts for some tea pests and disease organisms.

Various practices are adopted for weed management in tea and these include manual, chemical, cultural / ecological and biological methods. Preventive measures following above methods are also very important as their adoption could help to minimize the cost of weeding. Integrated Weed Management (IWM), refers to a combination of some or all the above methods, in a rotational manner throughout the year. IWM utilizes the available know-how on weeds and their management to achieve cost-effective and eco-friendly weed control (Figure 1).

### **2. Reason for a build-up of weeds**

The abundant occurrence of weeds in tea fields could be attributed to factors such as extensive areas of exposed soil resulted from poor bush stand high rainfall, delayed weed control rounds and surrounding neglected areas serving as weed seed-banks. The introduction of weed seeds and vegetative parts with applied compost and mulch, and resorting continuously to a single herbicide that could lead to resistance development are other attributes that have contributed towards a build-up of weeds in tea fields. A general understanding of the possible causes for weed build-up is important for the tea grower to select and integrate two or more of the appropriate weed management methods.

### **3. Choice of weed management methods**

The decision making process utilized to arrive at the particular weed management method that is to be adopted, should be based on the cost factor, its impact on soil and environment and the possible risk of building up of resistance in weeds to the herbicide used. The Climate and weather patterns of a given area should also be taken into consideration while formulating a suitable weed management programme.

### **4. Methods of weed control**

#### **4.1 Preventive measures**

The objective of adopting preventive measures is to minimize accumulation of weed seeds in the soil which would in turn assist in lowering the cost of management of the present and future weed population in tea fields. The appropriate preventive measures that could be adopted are as follows:

Undertake weeding before the weeds reach a height of 10-15 cm (i.e. tender stage), so that they may be removed before reaching the stage of flowering. This would necessitate undertaking weeding at approximately 8 – 10 week intervals.

Keep boundaries of tea fields, roadsides, ravines and other areas adjacent to tea fields free of weeds to prevent the continuous dispersal of weed seeds into tea fields. Any over-grown weeds in such areas should be kept slashed to prevent seeding or, in the alternative, using a suitable herbicide for keeping them under check.

Plant cover crops in all exposed areas and utilizing uncultivated areas for thatch banks, or forestry, to suppress indiscriminate weed growth.

Plan a year-round weed management programme so that all areas are given timely attention.

Avoid the use of a single herbicide or one method of weed control for long periods, since such a practice could lead to a weed shift where some weeds could dominate through development of resistance to the herbicide.

Use compost and mulching materials in a more rational way, by taking due care not to bring weed seeds and other vegetative parts such as rhizomes, yams, propagules etc. that are capable of regeneration into tea fields.

#### **4.2 Manual weeding**

Manual weeding could either be undertaken by exclusively "hand-pulling" weeds or by "slash weeding", as described below:

**Hand pulling** is the removal of weeds totally by hand. Although a costly operation, it is a safer method than chemical weeding. However, the use of implements such as weed scrapers ("Sorandi") and mamoty for scraping the soil is strongly discouraged. (The use of "sorandi" was banned in 1951, by Soil Conservation Act No: 25 as it caused severe soil erosion in steep lands).

Clean weeding either by hand, or by using the scraper, should be strongly discouraged. Selective weeding should be advocated, where shallow rooted soft herbs which are beneficial are retained to serve as a live ground cover.

Digging the soil to remove tuberous or rhizomatous weeds is not advocated because such a practice could aggravate weed infestation arising through regrowth of fragmented underground plant parts that are capable of regeneration. Where rhizomatous weeds are present, chemical control measures should be undertaken.

Weeds that are resistant to herbicides should be hand pulled, along with other free-growing weeds.

