

**Issued in: September 2003****Serial No: 17/03****CULTIVATION OF TEA SOILS - FORKING***(This Advisory Circular replaces Circular No. S 1, Serial No. 5/71)***1. Introduction**

The continuous growing of a single crop causes deterioration of soil physical properties. This may be at a maximum in a tea field with a poor bush density. The soil surface between tea rows are subjected to continual treading due to the movement of workers to harvest crop as well as to perform other cultural operations. This treading creates compaction of the surface layer, which in turn impedes the entry of rainwater causing run-off of most of the rain falling on the surface. The entry of air through the surface pores is also restricted thereby, causing a deficit of oxygen, that is most necessary for vigorous root growth. When infiltration of rainwater is low and run-off is high, the fertilizer applied will be washed away with the run-off water, thus causing wastage of costly fertilizer.

2. Method of Soil Cultivation

To break up such compaction and aerate the soil, the type of soil cultivation recommended is termed "forking". The objective of forking is to ensure deep cultivation of soil in a mild degree.

Forking could be carried out in the inter-row spaces both in VP and Seedling tea. In the case of seedling fields which is planted up and down the slope, forking could be carried out in a staggered manner.

While forking, the soil is opened up, at the center of the inter-row space, without turning over the clod and with minimum of disturbance to the feeder roots. Deep forking is undertaken with a garden fork having 3-4 tines, 38-45 cm long, which is forced in to the ground at a nearly vertical angle up to a depth of 38-45 cm. The handle of the fork is then pushed forward so as to open up a pocket behind the tines. The fork is then withdrawn when the operation is called "plain forking"; or else the ground litter, green manure loppings and such other materials (compost, well decomposed tea waste etc) are pushed into the pocket created, in which case it is called "envelope forking". This operation is repeated at intervals of about 22-30 cm apart.

3. Forking in Relation to Weather

Forking during prolonged dry weather should be avoided. When forking is carried out in such dry periods, the soil surface is exposed to wind and sun resulting in increased evaporation of soil water. It is also advisable to avoid forking during heavy rains, as soils of unstable crumb structure tend to puddle very readily.

4. Frequency and Time of Forking

4.1 Frequency of Forking: It is recommended that forking be carried out only once a cycle in the up and mid-country, and once in two cycles in the low-country. However, where low-country tea soils are known to be clayey and compacted, the flexibility to fork once a cycle may be allowed.

4.2 Time of Forking: Though forking is normally done after pruning, the best time to undertake when there is sufficient new foliage on the bush and adequate soil moisture, and this would be around tipping time.

Forking could also be spread over two intervals, when alternate rows are forked each time. The first round may be undertaken as described above, while the second round may be given mid-cycle, but at the latter time there would be insufficient space between two rows for comfortable worker movement.

5. Economics of Forking

The benefits of improving soil physical properties and water percolation into the soil through forking cannot always be calculated in physical terms, but it could be assumed to reflect in the yield. Recent research indicated that, over a 4-year cycle, forking can give a net incremental yield of about 20%, compared to the control. This analysis, whilst indicating the profitability of the operation of forking should not be taken out of context and generalized. Research data is applicable only to the specific set of conditions (slope, soil, rainfall and microclimate) operating in a given field yet could be taken to serve as an indicator of the economic advantages that could accrue through forking.

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