
COMPOST

By

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It is evident, from the large number of enquiries received recently, that there is still much time and money being wasted on estates in preparing compost. The subject is fully dealt with by Eden (1) and there is very little more to add to what appears in that reference.

However, the present policy of the Institute in this matter should be defined.

First of all let it be stated that the value of really well made compost is beyond dispute by anyone ; whether it is an economic proposition to prepare such a material is another question.

At its best the composting process is wasteful, for at least 50% of the organic matter originally put into the heaps is destroyed and lost during rotting. Nutrients such as nitrogen, phosphorus, potassium, etc., can be supplied to the soil in satisfactory form as inorganic manures but, to maintain a healthy soil, humus is necessary. This can only be supplied from plant sources. Hence, having grown a large crop of organic material, it is manifestly wasteful to throw half of that potential humus away by turning the organic residues into compost.

It is true that the addition of materials of high carbon-nitrogen ratio to the soil can easily lead to temporary nitrogen starvation of the growing crop, due to the using up of the available mineralized nitrogen by the decomposing organic material. Against this must be set the fact that a small dose of sulphate of ammonia applied before, or at the same time as the organic residues, will prevent any possible temporary nitrogen deficiency and will also assist in breaking down the organic matter.

Another point, frequently lost sight of, is that soil organic matter is probably of greatest value, both in building soil structure and supplying plant nutrients, when it is actively decomposing. Hence it would seem reasonable to carry out the composting process in the soil itself so that the full benefit is derived from the organic residues available.

What then is the place of compost on the average estate ?

On all estates there are waste materials of many kinds which are not suitable for direct incorporation into the soil or which would be obnoxious if applied untreated. Materials such as line refuse, weeds, etc., are the most common waste products. Such materials must be dealt with in some way before applying them to the soil and composting is probably the best treatment.

All other materials, green manure loppings (grown either in the tea or outside) and grasses of various kinds should be applied direct. In the case of the latter, care should be taken to apply these materials together with or shortly after an application of inorganic manure to avoid possible temporary nitrogen starvation of the tea.

It must be realized that composting should be used as a means of disposing of waste materials and not as an end unto itself. It is one part of the whole programme of the preservation and improvement of the organic matter status of the soil.

The place of composting on estates having been defined, the question of how to make compost properly is often asked. More has been written on this subject that the writer cares to recall but the notes given at the end of this article should help to produce a reasonably satisfactory product. Having made the compost it remains only to apply it in the field.

As a result of recent detailed investigations on St. Coombs into the root system of the tea bush, it seems highly likely that to dig holes or pits between the rows in healthy tea must result in considerable damage, not only to the feeding roots of the tea bush, but to many permanent roots in addition. Therefore it would appear that careful forking is possibly the best method of getting the compost into the soil. On many estates the burying of prunings and compost in pits has been carried on for many years and examination of cross-sections of the soil in these areas indicates that there are very few permanent roots in the top 12" of soil. Hence the damage due to burying compost in pits in such cases may be very much reduced.

The rate of application is also the subject of frequent questions. Eden (1) quotes an experiment on St. Coombs where 4 annual applications of 15 tons per acre of Adco compost gave a yield response lasting for nine years. Smaller annual doses are unlikely to have any material effect. In this connection it should be remembered that a soil having 5% of organic matter in the top 9" of soil contains 50 tons of organic matter per acre. 15 tons of really good compost probably contains only 6-7 tons of organic matter.

Most estates will find great difficulty in producing sufficient compost to treat more than very small areas and in general compost is best used in working up poor areas of tea. Another rather specialized use of compost is in minimising the effect of eelworm attacks in infected areas.

Those eelworms which are parasitic on tea have certain natural enemies such as predatory eelworms and parasitic fungi. These enemies are encouraged by a high content of organic matter in the soil and under such conditions they tend to keep the population of harmful eelworms within reasonable limits.

This indirect control of parasitic eelworms by building up a high organic matter status in the soil, is of considerable importance since at the present it is the only control method which can be applied in the presence of a growing crop.

It is hoped that this short statement of the Institute's views on this controversial subject will help to clarify many of the questions which caused this article to be written.

Notes On Compost Making

1. The materials used should be as fresh (green) as possible.
2. The heaps should be covered to prevent leaching of nutrients by heavy rain.
3. Heaps are made as follows :—
 - (a) A layer of vegetable matter about 1 ft. thick and say 4 ft. wide is laid down (The length of the heap is immaterial).
 - (b) Next is added either a layer of cattle manure 3" thick or sulphate of ammonia at the rate of $\frac{1}{2}$ ounce per square yard.
 - (c) Another 1 ft. layer of vegetable matter.
 - (d) Another treatment with cattle manure, or sulphate of ammonia.

This is repeated until the pile is of sufficient height.

N.B.—The vegetable layers should be as loose as possible to promote rapid heating and breakdown. A temperature of about 130° - 140°F (60°C) should be attained after about five days.

4. After 4-6 weeks, whilst the heap is still warm in the middle, it should be turned into a new heap, putting the outside of the old heap to the middle of the new one. In this turning the aim should be to get as much air into the heap as possible.

The compost should be ready in a total time of 3-4 months. If it is not, it is usually a sign that it has not been made properly.

5. In dry weather it is essential for the heap to be kept moist but not wet.

Reference

- (1.) Eden, T.—Monographs on Tea Production in Ceylon, No. 1, Chapter 6, pp. 52, 1949.