Compost for Subsistence Farmers, Agricultural Nurseries, Vegetable Projects and Potting Media

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In many areas, the use of compost on the farm will greatly improve soil structure, soil fertility and, in consequence, crop yields. Subsistence gardens may become overcropped for a variety of reasons, and unless soil fertility is maintained at a satisfactory level, deterioration in crop yields will occur and a cycle of 'time hungry': harvest of immature gardens and replanting of old gardens takes place.

A compost heap in every subsistence garden will do much to prevent this situation.

What is 'Compost'?

Compost is the name given by gardeners for vegetable matter which has been rotted by bacterial action to form a dark brown or black, friable, peaty material. Good compost is virtually odourless, damp to the touch and falls apart in crumbs when handled.

What material to use

The basic principle is that only young, leafy plants and grasses or succulent fruit and vegetable waste, such as coffee pulp, should be selected. Diseased plant materials should not be used.

1. *Grasses*

Young Elephant grass, Guinea grass, Ischaemum, Setaria, Molasses, Para or any other leafy grass. Kunai grass and mature grasses with woody stems will not compost readily.

2. *Legumes*

Most pasture and vegetable legumes are ideal. Old pea and bean vines are good. It does not matter if some soil adheres to the roots.

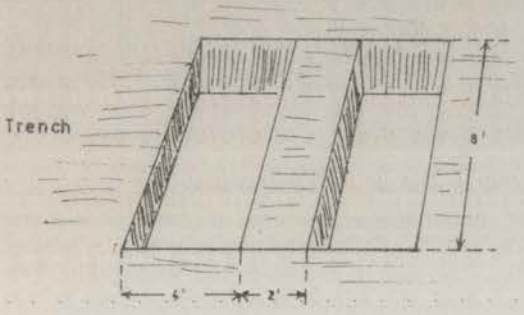

Figure 1.—Trenches for making compost

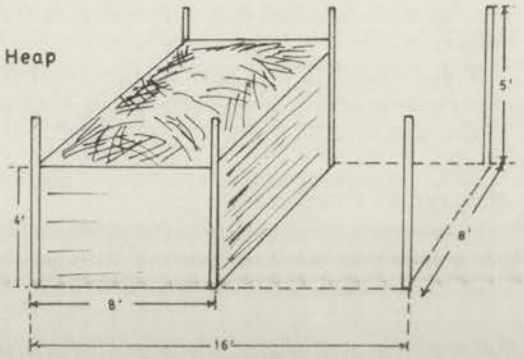

Figure 2.—Compost heap

3. *Vegetable waste*

All vegetable waste from the family kitchen—kaukau and potato peelings, cabbage leaves, carrot tops, etc., and garden residues—kaukau vine, peanut waste, etc.

4. *Fruit waste*

Citrus, papaw, banana and pineapple skins may be mixed with the above.

Method of Making

Compost can be made in two ways—

1. Below the ground in trenches (*Figure* 1).

2. Above the ground in heaps (*Figure* 2).

In areas where drainage is a problem, compost must be made in heaps above the ground.

It is essential to realize that the compost heap is not just a rubbish dump in the corner of the garden. The latter can become a breeding ground for flies, garden pests and disease.

Size of Heap or Trench

The sizes recommended for a subsistence farmer and for general use are as follows:—

Heaps: 8ft x 8ft x 4ft high
Trenches: 8ft x 2ft deep

For the best results, compost heaps or trenches should be completely filled by ten days from the start of operations.

Marking Out

For each 8ft x 8ft compost heap, mark out an area of 8ft x 16ft on level, well-drained ground. Grass, if growing, should be removed.

Six stakes, 5ft x 1½in are set at each corner where the compost heap is to be made, and later to be turned, as shown in the diagram (*Figure* 2).

If the ground is well drained, two trenches may be dug side by side as shown in *Figure* 2. An area of 10ft x 8ft is required for two trenches.

Making the Compost

Layers of composting material 6 to 8in thick are applied daily until the heap is 4ft high or until the trench is filled to 2ft above ground level. Care must be taken to ensure that the outside 'wall' is well stacked and consolidated before the centre is filled to a slightly convex shape. Failure to build the outside properly will allow heat and valuable gases to escape, thus impairing the efficiency of the composting process and lowering the plant food value of the final product.

Use of a 'Starter'

The success or failure of the heap to properly compost is related to the presence of the correct bacteria. The addition of a 'starter' will accelerate the compost process by assisting the rapid multiplication of bacteria.

Types of Starter

A. *Organic* (of animal or plant origin)

1. *Animal Manure*

For each 6 to 8in layer of plant material, spread a 1in layer of unprocessed animal manure—cow, pig or poultry (somewhat less of the latter).

2. *Animal Residue*

Apply 4oz of animal residue—meat meal, fish meal, dried blood, etc., per square yard of compost heap, i.e., approx. 1¾lb per 6in layer on an 8ft x 8ft heap.

3. *Compost*

Apply compost which has been made previously at the rate of 5lb per square yard on each 6in layer, i.e., approximately 35lb on an 8ft x 8ft heap.

4. *Nightsoil*

Apply one bucketful of nightsoil per 6in layer of plant material. It is important to spread nightsoil only to within 18 inches of the outside of the heap in order to avoid offensive smell and fly nuisance.

While nightsoil, properly composted, is pathogenically safe, it is aesthetically objectionable to many local farmers, who will refuse to eat crops grown in ground to which it has been added. This reservation does not apply where this compost is to be used in cash crop nurseries, for which it is excellent.

B. *Inorganic* (of mineral origin)

1. *Compound NPK Fertilizer*
Apply at the rate of 3oz per square yard.

2. *Sulphate of Ammonia*
Apply at the rate of 2oz per square yard.

3. *Proprietary Compost Starter*
Follow the maker's directions (e.g., Hortico No. 1.)

Notes on Starters

1. Starters must be evenly spread over the surface of each layer of the heap. Inorganic fertilizer starters must be dissolved in water at the rate of 1oz to 2 gallons of water.

2. All starters must be applied first and then covered with the day's layer of compost material.

3. The addition of lime or woodash in small quantities will assist to promote the alkaline conditions which are required in the heap.

4. If available, small quantities of fertilizer such as superphosphate, sulphate of potash, Solubor, etc., may be added and these will improve the chemical value of the compost.

Measurement of Temperature

Initial temperatures in the heap should rise to 180 deg F. A sharpened pole may be pushed into the side of the heap, and when withdrawn to check the temperature, it should not be too hot to be held in the hand.

Moisture Control

It is essential that the heap remains moist throughout the composting period and up to the time of use. If it is too dry no fermentation will take place—if it is too wet the plant material will become rotten and soluble nutrients will be leached.

In areas where rainfall exceeds 70in per annum or where heavy tropical storms are experienced, the heap should be covered with a waterproof material, e.g., plastic sheeting. Where sun temperatures are high, it may be necessary to water the outside of an uncovered heap occasionally and to provide rough shade over the heap.

Turning the Heap

One month after the heap is completed, it should be turned on to the adjacent 8ft x 8ft site (or trench). This will facilitate even fermentation. If necessary, water should be sprinkled during the turning operation. It will be found that the heap settles to a smaller size after turning. The temperature pole is then replaced in the side of the heap.

Further turning is carried out at monthly intervals until after approximately 130 days, as follows, when the compost is ready for use:—

Building the heap—10 days
First turn—30 days later
Second turn—30 days later
Third turn—30 days later
—30 days later ready for use
Total time taken—130 days

Protection from Animals

A protecting fence must be constructed round the heap or trench in order to keep out animals and poultry.

Rate of Application of Compost

Apply made compost to the garden at the rate of one bucketful per square yard. Apply two bucketfuls to each 4ft diameter kaukau mound. Make sure that the compost is dug in to a depth of 4 to 6 inches.

Benefits from the Use of Compost

The value of compost lies not in its chemical analysis, which is approximately 1 per cent N, 1 per cent K_2O, 0.5 per cent P_2O_5, but in its physical and organic properties—

1. As a soil conditioner; and
2. As a source of humus.

After compost is added to the soil, clays become less stiff and sandy soils are rendered more water-retentive. The humus content slowly breaks down to form valuable plant food. The quality and quantity of crops grown in ground to which compost has been added will be improved and soil fertility levels will have been maintained.

TOO MUCH PROTEIN IN PIG RATIONS CAN CAUSE POOR GROWTH

RECENTLY in the Highlands, a commercial pig farmer had problems with his weaned pigs which did not appear to be growing as well as they should. The pigs seemed to be well looked after and there did not appear to be any sickness in the herd, but they were still not growing as well as could be expected. It was decided that the feed rations which the farmer used could bear investigation.

Twenty-two of his pigs were divided into four groups. Two groups were kept at his piggery and two groups were brought to the DASF piggery at Goroka. One group in each place was fed on the farmer's rations and the other groups were given DASF rations. The pigs were weighed every week. At the end of the 50-day experiment it was found that the two groups which had received the DASF rations had grown more quickly than those on the farmer's rations. One reason why they grew more quickly was because they ate more of the DASF ration.

Investigation of the farmer's ration showed that he was using 23 per cent protein, while the recommended ration for weaned pigs is 18 per cent protein. It seems that the farmer's ration had too much protein in it. Since then he has reduced his protein to 18 per cent by increasing the amount of crushed sorghum in his mixture, with the result that his pigs are now growing well.

While it is known that protein is essential for growth, it is now apparent that too much protein retards as much as too little.

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