



UNIVERSITÀ
CATTOLICA
del Sacro Cuore



PRODUCTION OF APPROPRIATE FOOD: sufficient, safe, sustainable

COMPOSTING

WHY COMPOST?

The loss of soil fertility is one of the major problem in Developing Countries. Composting is a tool that can mitigate the decline of organic matter in soils. It is a good way to turn waste products into reliable and valuable plant nutrient source.

Composting consists of storing the organic materials in a pile while providing favourable water content, aeration and temperature. A biological-aerobic degradation occurs by microorganisms that oxide organic matter into simpler substances (water, minerals, carbon dioxide) and humus, thorough the mineralization of more degradable substances (fig. 1).

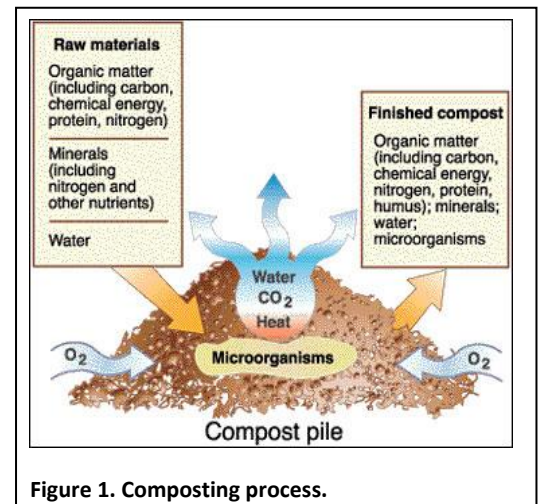


Figure 1. Composting process.

AEROBIC HEAP COMPOSTING

There are a lot of methods to composting but the most common is the preparation using an aerobic heap. The preparation is obtained by the realization of a pile of organic materials that is periodically turned. The organic compounds are crop residues or secondary products obtained from processing crops and waste from agro-industrial, gardening and forestry activities (fig. 2). The best composition consists

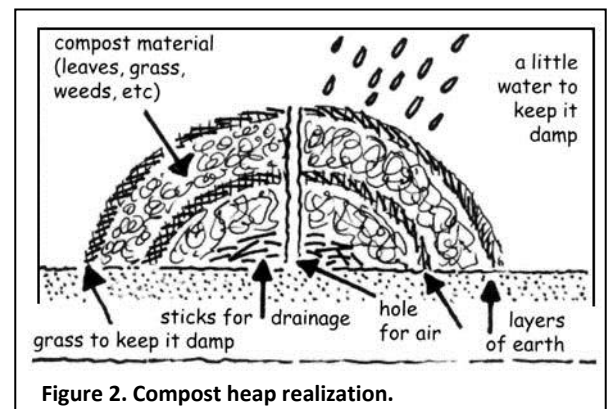


Figure 2. Compost heap realization.

in a mixture of fiber materials (rich in lignin and cellulose) and other organic materials more biodegradable by aerobic microorganisms. If manures and slurries are locally available it is possible and useful to mix them inside the heap. In some Developing Countries the heap is prepared by dig a hole in the soil (1.5-3 m of width and 20 cm of depth). After this operation the heap (1.5 m of height) is formed and structured in layers using crop residues, animal

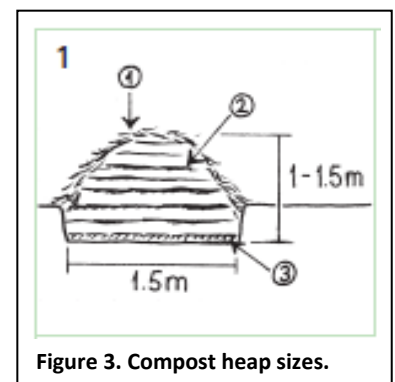


Figure 3. Compost heap sizes.

residues and ash (fig. 3).

To complete the heap it is necessary watering the layers and cover its with fiber materials (straw). After, about 15-20 days, when the decomposition will start, the heap will turned and watered. This action is realized almost 3 times.

When the material presents the color and texture like as soft soil, the composting process is finished. In this way compost is ready to be used or to be conserved in dry place for following uses.

LOCALISED APPLICATION

In regions where the level of organic matter in the soil is low because of scarcity of organic manures, the localized application of compost is a good practice. It is necessary realize a pit (20 cm of diameter) where the single plant is placed (fig. 4).

The major advantages of this special application are: more water retention in the soil, release of mineral substances after the process of mineralization, good development of the crops and control weeds' growth.

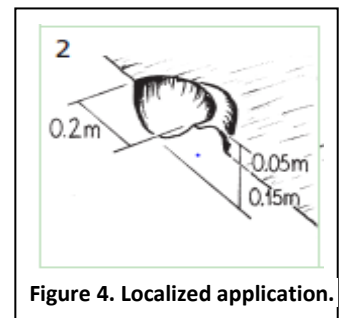


Figure 4. Localized application.

ADVANTAGES OF COMPOST REALISATION

One of the most important aspects of the composting is the best way to recycle organic residues. In this way the waste production and the use of external energetic inputs are reduced.

In addition, compost application on cultivated soils avoids the loss of fertility, reduces the use of chemical fertilizers that are expensive and unavailable in developing regions.