

TECHNICAL SHEET

Improvement of soil quality by application of compost

Some definitions

Compost: product of composting waste (Larousse, 2021).

Composting: the fermentation of certain agricultural or urban wastes, in order to recover elements rich in minerals and organic matter, which are then incorporated into agricultural land to enrich it (Larousse, 2021).

Composting is a natural process of "degradation" or decomposition of organic matter by microorganisms under defined conditions (Misra et al, 2005). Organic feedstocks, such as crop residues, animal wastes, food scraps, some municipal wastes, and appropriate industrial wastes, can be applied to soils as fertilizer once the composting process is complete (Misra et al, 2005).

Composter: a vessel in which plant debris to be composted is placed (Baraton, 2014). All plant waste from the garden is poured into the pile or composter, avoiding branches that are too large in diameter (Baraton, 2014).

Types de compostage (Misra et al, 2005)

In **anaerobic composting**, decomposition occurs when oxygen (O) is absent or present in limited quantities. In this process, anaerobic microorganisms dominate and develop intermediate compounds such as methane, organic acids, hydrogen sulfide and other substances.

In the absence of oxygen, these compounds accumulate and are not metabolized. Many of these compounds have strong odors and some of them exhibit phytotoxicity.

Aerobic composting takes place in the presence of a large amount of oxygen. During this process, aerobic microorganisms break down organic matter and produce carbon dioxide (CO₂), ammonia, water, heat and humus, which is the relatively stable final organic product.

Although aerobic composting can produce organic intermediates such as certain organic acids, these are then broken down by aerobic microorganisms. The resulting compost, which has a relatively unstable form of organic matter, has very little risk of phytotoxicity.

Benefits of compost (CODEVAL, 2016)

The application of compost has benefits such as: - Increasing crop yields with the application of essential nutrients. - Prevention of soil erosion caused by rain and wind. - Prevention of infections and diseases. - Fertilization of arable land. - Quality product (cereals, vegetables etc.) without chemical elements.

Characteristics of the technology

Crop residues (of all kinds: chopped cereal stalks, legume tops, peanut shells, etc.) mixed with manure and ash or urea and left to decompose under cover and moistened regularly (every 2-3 days for 45 to 50 days); Application at a rate of 2-5 t/ha for sorghum, millet, peanuts and cowpeas.

Bibliographics references

Misra R.V., Roy R.N., Hiraoka H. (2005) : Méthodes de compostage au niveau de l'exploitation agricole ; DOCUMENTS DE TRAVAIL SUR LES TERRES ET LES EAUX ; FAO ; 35p.

Baraton (2014) : Mes trucs et astuces de jardinier ; 192p.

CODEVAL (2016) : Manuel du Caisson de Compost du CODEVAL ; 11p.

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Other references

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