PRACTICE ABSTRACT 1

Recycling agricultural residues in organic farming by on-farm compost production

Applicability box

Geographical coverage
Global
Required time
From about 90 to 120 days
Equipment
concrete platform, aeration system or a shovel, water, temperature probe, non-woven sheet
Period of impact and best in
Entire year, all farming systems

Picture 1: plant residues collected on-farm in the foreground and a composting pile behind

About this practice abstract and Bio4Food

This practice abstract was elaborated in the BIO4FOOD project: the project is running from November 2020 to October 2023, and is to contribute to reducing crop wastes providing natural protection products, vegetables rich in health-promoting minerals and biofertilizers.

Project websites:

https://www.horticell.ugent.be/bio4food/

https://susfood-db-era.net/main/

Authors: *Mariangela Diacono, Alessandro Persiani, Angelo Fiore, Claudia Di Bene, Alessandra Trinchera, Roberta Farina, Francesco Montemurro*
(CREA - Research Centre for Agriculture and Environment)

Permalink:
10.5281/zenodo.7276687

PROBLEM

Farmers are frequently facing agricultural waste production problems (which incorrect disposal may determine a damaging environmental impact) and soil fertility depletion.
Sustainable valorization of crop residues could allow recovering valuable components as substrates and nutrients in microbial/enzymatic controlled processes, such as composting.

SOLUTION

To set up small-scale composting plant at farm (or district) level to effectively recycle organic wastes, by producing green compost as valuable (rich in humified substances) biofertilizer, that would improve soil fertility in organic and sustainable farming.

PRACTICAL RECOMMENDATIONS

- A correct starting mixture in a composting pile should have around 70-50% of "nutritional" materials (e.g., vegetable residues) and 30-50% of "bulking" ones, (e.g. cereal straw) plus small quantities (1-3%) of material with the function of microorganisms "starter" (mature compost or soil).
- The maturity of the compost can be monitored indirectly considering the microbiological activity linked to the composting process. Compost pile oxygenation is ensured by turning the material with a shovel or by using ventilation with a blower linked with a timer, thus allowing residues degration by microorganisms (with increase of temperature).
- Temperature of the pile should be continuously controlled to evaluate the ending phase of the process (that is when the compost temperature approaches the ambient one).
- The composting pile moisture should be regularly checked (weekly) and kept between 40 and 70%.

Picture 2: composting pile (1.0 m high x 1.5 m base diameter of about 300 kg) managing

ERA-NET SUSFOOD2 and CORE Organic Cofund projects have received funding from the European Union's Horizon 2020 research and Innovation programme under grant agreement No. 727473 and No. 727495, respectively. Bio4Food is granted by MIPAAF - DM 9295088 - 05.11.2020.