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COMPOST PRACTICAL INFORMATION

This factsheet contains complementary information to the Best4Soil video on Compost Practical Information

INTRODUCTION

Compost is part of the natural cycle. It is a result of microbial decomposition of dead organic matter in the presence of oxygen (aerobic conditions). The repeated application of compost on arable and vegetable fields does increase soil organic matter content as well as the microbial diversity and abundance of the soil. Composts can also increase the suppression of soil borne diseases and increase soil health in general.

Different types of compost can be described as:

Thermophilic compost

When large amounts of organic matter or feedstocks with the right mixture of carbon and nitrogen content and moisture level are put together on a heap, bacteria and fungi start to decompose the material and within a short time, the activity of the microbes produces temperatures of 65 °C or more. Due to the level of these temperatures, weed seeds as well as human and plant pathogens are killed or deactivated. Thermophilic compost has to be monitored frequently to assess when important management steps such as turning, watering, or covering need to occur (fig. 1).

Fig. 1: Homogenizing resources for thermophilic compost production with a compost turner

Vermicompost:

Composting at ambient temperatures is a natural process and therefore part of the natural cycle. Epigeic earthworms (fig. 2) play a major role in vermicomposting. The lack of high temperatures result in a more diverse type of compost. If weed seeds are an issue in the final product, a combination of thermophilic- and vermicomposting can be used.

Fig. 2: Epigeic earthworms in vermicompost

Other composts

Alternative methods like applying the composting feedstock or material directly on the field without prior composting or piled composting (often used, when manure storing capacity is limited) are also possible. If the process is anaerobic (lack of oxygen), it is not composting, but fermentation.

WHY SHOULD WE PRODUCE AND APPLY COMPOST?

Compost application is an easy way to increase soil organic matter, soil microbial diversity as well as soil fertility and soil health. Organic matter is critical for most soil functions like soil structure, water purification and regulation, carbon sequestration and regulation, biodiversity

and nutrient cycling. The increase of microbial diversity and abundance is important for plants. They communicate, feed and breed microbes e.g. for nutrient mobilization or to suppress soil borne diseases (Bonanomi et al., 2007; Nobel and Coventry, 2005). Trace elements and all other nutrients are all elements of compost whereas with synthetic fertilizer, often only nitrogen, phosphorous and potassium are delivered. This is important to keep plants healthy and reduce the susceptibility of the plants for pests and diseases.

CHALLENGES WITH COMPOST

With all the benefits of compost production and application, some challenges have to be considered also. Sometimes the quantity and quality of resources for compost production are not sufficient, or technology and knowledge of the production and application of compost is not readily available. Additionally, national and regional regulations for production and application of composts have to be considered. The quality of the compost, heavy metal content, contamination from plastic or other debris, as well as pesticide residues and other quality factors have also to be considered, and therefore knowing the provenience of the starting feedstock is important.

Additional information on compost are published as an EIP-AGRI minipaper:

https://ec.europa.eu/eip/agriculture/sites/agri-eip/files/2_eip_sbd_mp_organic_matter_compost_final.pdf

References

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