

SoildiverAgro project

Adoption of new management practices to increase crop production and quality



THE WHAT AND WHY

During crop growth, nutrients become depleted and need to be replenished. Is biomass useful?

Organic material like manure and composts, with or without co-substrates like biochar or digestate, are increasingly being used to replace synthetic fertilizers. Nutrient catch and cover crops are regularly part of crop rotation systems. Like crop remnants, they can improve soil fertility and structure after incorporation. More recently, different sources of organic waste from households or industries are investigated to reveal their

usefulness to ameliorate the soil in different ways. However, biomass cannot be uptaken as such by crops to grow. It needs to be mineralised into nutrients first. For this, soil organisms are crucial. Unfortunately, agricultural soils often suffer from a degraded biodiversity. So, importantly, does biomass also increase the biodiversity?



1. Field trial with an application of biochar (ILVO).



2. 'On farm' composting site (ILVO).

HOW IS THE CHALLENGE ADDRESSED

Biomass can be used to boost soil biodiversity to profit from ecosystem services including soil fertility

Generally, applications of biomass enhances soil biodiversity. Earthworms and micro-organisms, especially bacteria and fungi, thrive on various sources of organic material. They are at their turn a food source for many soil-inhabiting organisms like nematodes, beetles, spiders and moles. Adding biomass eventually impacts the whole soil ecosystem and supports associated provision of ecosystem services such as disease suppressiveness, soil fertility, drought resistance, soil erosion prevention, water purification and climate mitigation. However, there are several factors still to be addressed. The effects of different organic sources on different organism groups is unknown. Some contain pollutants that might be toxic for certain soil organisms, others contain phytopathogens that reduce crop yield. Additionally, economic aspects are still not fully considered. Some organic sources are quite expensive because they have limited availability, or need to be processed before use. Ongoing and future research will provide additional information about the advantages of and conditions for applying biomass in the European agriculture.



3. Grassland with a high organic matter content and biodiversity (ILVO).

KEYWORDS

Biomass, crop nutrients, organic material, soil biodiversity, soil fertility.

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This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 817819

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