SOILCOM: From Waste to Resource

Beginning 2019 participants in 5 countries started to work on the project 'SOILCOM', a project granted within the Interreg North Sea Region. In the project, partners are active in the supply chain of compost, from collection of the waste till the application and effects of specific composts in the cultivation of vegetables, bulbs and other horticultural products. The consortium is an interesting combination of universities, research centres, dissemination (growers' advice) and compost facilities.

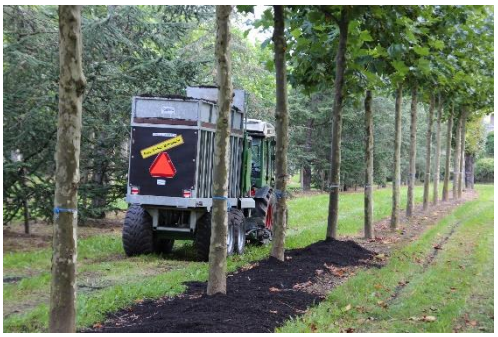
The need for specific composts as soil improvers

The decrease of soil organic matter has been widely recognised as a major threat for sustainable soil management. Organic matter is crucial for many soil functions such as food and biomass production, carbon storage and filtering, as a biological habitat and for the gene pool.

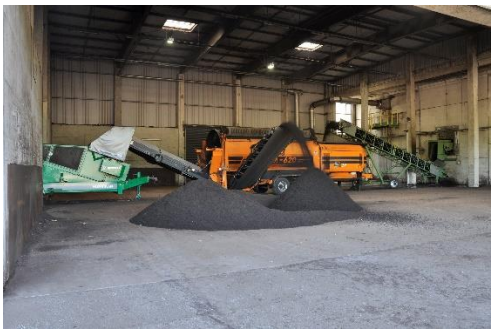
Recent years, extension centres have noticed that a stable, resilient and high quality soil is the most important factor for sustainable crop growth. Because of the decreasing soil quality across Europe, the agricultural sector is therefore extra vulnerable for declining yields of high-value crops. This is a development that underlines the need for soil improvement and the increase of soil organic matter. With this, it is the ambition to increase plant resilience and to grow crops under sustainable conditions with minimal use of crop protection products.

Active measures are needed to work on soil organic matter and by this, soil and crop resilience.

Compost is an important solution to the challenge to increase organic matter. The compost is produced from a diverse input of waste streams resulting in different composts with specific characteristics. The SOILCOM project dives into the subject of turning waste streams into resources. The objective is to gain and distribute new knowledge of waste streams that are suited for specific end products and how they influence soil characteristics and crops.



Picture: compost application in horticulture (HMC)



Compost facility (source: Stadtreinigung Hamburg)

Field trials and practical tests increase trust of growers

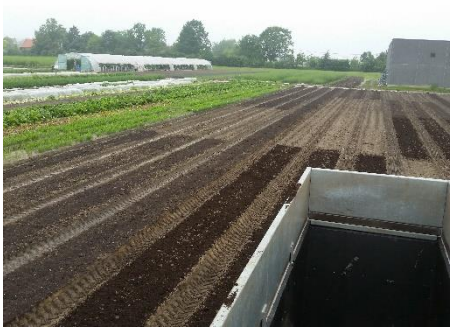
One of the important target groups of the SOILCOM project are growers of fruit, vegetables, trees, potatoes, shrubs and bulbs. In the SOILCOM countries, which are Denmark, Scotland, Germany, the Netherlands and Belgium, growers have more or less experience with the use of soil improvers leading to increase of soil organic matter. Still the existing knowledge of the North Sea Region

growers is quite fragmented and often not adopted by the enterprises. This is due to a set of reasons: low availability of good quality compost and lack of awareness concerning the added value of compost. But, also poor experience with compost is an important factor due to pollution with salts, glass, plastics, weed seeds and pesticide residues, which may influence crop growth and quality in a negative way. The SOILCOM mission is to stimulate and educate growers: about knowledge of soils in general, how to improve the soils of their own fields, how to recognise good quality composts and the role of specific composts for their soils. **T**he premise is that ECN QAS provides basic quality requirements for all composts. Depending on the compost application, additional specific requirements are required. Knowledge transfer is done by workshops, field days, visits at the field trials and new media such as YouTube films and webinars by the participating advisory services Delphy, HortiAdvice, PCA, PSKW, and PCS.

From waste to resource

'From waste to resource' is the common thread of the project! The challenge is to change compost from a cheap waste product (in some regions) to a high value soil improver, and to improve soils and crop growth. There is a big difference in the quality assurance of compost in the different regions. There is a need for implementation of a basic quality assurance scheme (e.g. ECN QAS) over the different countries.

Aarhus University, ILVO and the James Hutton Research Institute conduct research to characterise the compost quality by the physical, chemical and biological elements. They study the relation between the compost applied and the resulting effects in specific soils and crop growth. The needs of the soil and its characteristics are the starting point to find the most optimal and appropriate compost. Not every soil has the same advantage of a compost application. There is a need for a deeper understanding of in influence of compost application on the quality of different soil types. The aim is to establish the relationship between soils, their quality potential and the best suited beneficial compost, that is, tailormade compost products. During the project period new information and knowledge will be communicated directly to different composting facilities in the participating countries. VLACO, the representative of the European Composting Network, is participating in SOILCOM and takes care of the communication to the compost producers from the project. Practical knowledge about the composting process is also brought into by the partners Klintholm and Stadtreinigung Hamburg.



Picture: compost trial at PSKW (source PSKW Marketing & Communication)

Picture: semi-field trial testing effects of compost at Aarhus University (source: Hessel

Recycling of waste

The SOILCOM project wants to make a difference and recognises the need to take recycling of biological waste for compost as soil improver to a higher level of quality, awareness and applicability. In the North Sea Region there is already a large variety of different existing composts. From very young 'several weeks), older composts but not produced under optimized conditions, to high quality, stabilised compost produced in specialized composting facilities. In SOILCOM the researchers of the Technical University of Hamburg are developing flow charts of the process from inputs to end products. In the participating countries' national partners are also mapping the routes from input to end products. This part of SOILCOM helps to visualize the size of the market and how to optimize and predict the process from organic waste of different sources, the compost process in which the waste streams are processed and the resulting end-product. The end products will be applied on agricultural soils.

SOILCOM's mission

During the project period of four years, the SOILCOM partners will collate and increase the knowledge about compost and the effects of compost on soils. By intensive dialog and communication with composting facilities and the users of compost, the project is expected to lead to more knowledge, optimization of compost production and an increase in compost use by agricultural producers.

Increasing soil organic matter by the application of composts has a broader range of benefits, which will be in focus within SOILCOM:

- CO_2 mitigation by soil carbon storage
- Water holding capacity of soils and less water use
- Nutrient holding capacity and higher nutrient use efficiency
- Soil resilience leading to plant resilience
- Decrease of pesticide use

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