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DSCN8395 (Photo: Kirsty Mckinnon)

NORSØK engaged in European research-cooperation to find replacements for the use of peat in soil production

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The use of peat for soil-production creates large climate emissions and threatens vulnerable bog areas where the peat is harvested. At the same time it is a challenge to find a good alternatives that growers can trust.

The Norwegian Centre for Organic Agriculture (NORSØK) is active in this work, and recently arranged a webchat that brought together people from the entire value-chain with growers, waste industry and researchers in order to exchange experience and knowledge

The conclusion is that there are good alternatives based on compost, and that there is great interest among the actors. However, there is still a need for knowledge and trust-building before with peat-free alternatives can come to fruition in Norway.

There is also some concern about the discovery of pesticide residues in compost-based alternatives based on garden waste and livestock manure. Herbicides with pyralids are very poorly degradable in soil or compost, and can cause serious damage to sensitive plants such as peas and tomatoes.

European cooperation

The chat was arranged by the European research collaboration Organic-PLUS, where NORSØK has a leading role in the work aiming to phase out unwanted input-factors in organic farming. Margi Lennartsson Turner from the Royal Horticultural Society and Coventry University spoke about the process of replacing peat [illegible] UK.

14 stakeholders representing the whole value chain were present and active A few of the participants we producers of growing media, still based on peat, but with high ambitions to phase *in* increasing proport composted materials such as garden waste, animal manure, and source-separated organic household waste. The challenge is to derive a type of organic material with low nutrient content. Many organic residual materials are too rich in nutrients and need to be "diluted" with less rich materials for an appropriate growing media. The application of compost in growing media is currently significantly hampered because producers fear that compost may contain herbicide residues (e.g., pyralid).

Input from the stakeholders to the project

Stakeholders from the organic waste sector, making compost from solid anaerobic digestate from organic household waste, produce soil amendments and growing media and work hard to get rid of the plastic pollutants. One solution may be to dry the solid digestate while stripping off NH_3.

Compost in organic green house growing

The Norwegian research institute for bioeconomy research, NIBIO, presented results from projects with organic greenhouse growing, where compost has functioned well for growing tomatoes and cucumbers. This is an alternative to conventional growing systems where peat or rockwool is used and liquid fertilisers are added.

In Aurland, West-Norway, Sogn Jord- og hagebruksskule is located, educating organic growers and farmers for more than 35 years. The school produces a range of growing media for various crops, partly from composted farmyard manure and locally available green waste made on site. They apply about 60 m^3 annually, in a large greenhouse. Again, the main challenge in reducing the proportion of peat to zero is access to organic materials with low nutrient content.

Wool and Compost

Experienced advisors from the Norwegian Agricultural Extension Service, one of the partners in Organic-PLUS, participated actively in the discussion and demonstrated satisfactory results of raising broccoli transplants in a mixture of downgraded wool and a commercial growing media consisting of peat and composted cow manure. The wool fibers seemed to be a feasible substrate for root development. Large-scale

organic growers purchase transplants from two producers. The quality of growing media is very critical, and the risk of failure is always present. In Norway, there is currently no test system for growing media, and there is a great need to develop a simple testing system ensuring that growing media are acceptable for plant growth. Such a system exists e.g. in the UK, a leading country in the effort of phasing out peat.

Replacing Peat in the UK

Margi Lennartsson from the Royal Horticultural Society and Coventry University presented the process that is in place for reducing the dependency on peat in growing media in UK, which has been a long-term work by many stakeholders over decades. In 2011 DEFRA (UK Government Department for Environment, Food and Rural Affairs) first introduced voluntary targets for phasing out the use of peat in horticulture, by 2020 in the hobby gardening sector and by 2030 for professional growers. However, as the 2020 target was not met, DEFRA has recently proposed to make the targets mandatory, whereby there would be a ban to use peat in the hobby gardening sector by 2024 and in professional horticulture by 2028. Margi also presented a tool developed in the UK to assess the responsibly sourcing/sustainability of growing media.

Assessments are based on a number of criteria, including water use, energy use, habitat and biodiversity pollution, social compliance, resource use efficiency and renewability, with decision trees for each crite Several growing media on the market have now been assessed according to the Responsible Sourcing S some of which are are permitted for use in organic growing. Composted wood materials are an importa ingredient in peat-free growing media in UK. Phasing out also the vermiculite, which consumes signific amounts of energy and is a non-renewable resource, is a challenge which we also need to consider.

Experiment with peat-free growth medium in Norway

Kirsty McKinnon referred to results obtained in Organic-PLUS to phase out peat in growing media. A study conducted in 2021, further described in the report from Organic-PLUS, compared compost of leaves or horse manure as growing media for transplants of iceberg lettuce and cauliflower. Germination occurred very fast in birch leaves composted over 3 years, but the leaf compost could not support further growth as well as the horse manure composts. Horse manure composted over 1 year was comparable with the control soil (a Klassman-Deilman product).

Anne-Kristin Løes and Susanne Friis Pedersen from the Organic-PLUS work package on soil, fertilisers, peat, and plastic, organised the communication event, which was considered highly useful by all participants. Everyone expressed their experiences and opinions, the conclusion being that there is a long way to go in order to manage and utilize organic materials for use as soil amendments in Norway, and also to reduce the consumption of peat.