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Reducing the use of external fertilisers in organic agriculture

RELACS partners 'University of Hohenheim', 'University of Copenhagen' and the 'Research Institute of Organic Agriculture' (FiBL) investigate current need and use in 7 European countries

To be able to reduce the use of contentious manures and fertilisers in organic farming it is crucial to understand the current use of such inputs in organic farming systems. Yet, an extensive literature review on this topic revealed that knowledge about it is limited. This led the RELACS partners to perform a comprehensive farm gate nutrient budget study along with qualitative interviews. These took place with farmers in 7 study regions in Europe.

Preliminary results

Preliminary results on the first farm gate nutrient budgets are available for Germany, Estonia and the United Kingdom. Outcomes from Germany show a small surplus of nitrogen (N) (19 kg/ha and year) and potassium (K) (9 kg/ha and year) on average. But the average phosphorus (P) budget was almost balanced with -1 kg/ha and year. Yet, there was a huge variation between farms for N (-38 to 120 kg/ha and year) and K (-33 to 72 kg/ha and year), whereas the variation was smaller for P (-12 to 28 kg/ha and year). This imbalance could largely be explained by the percentage of N supplied by external sources in contrast to that supplied by biological nitrogen fixation of legumes. The higher the percentage of external nitrogen supply to the farm the more surplus of N, P and K.

During the interviews the use of recycled fertilisers was discussed. These include compost from household waste and park cuttings, sewage sludge or sewage sludge products as well as fertilisers derived from animals like horn meal. Almost all farmers were open to using recycled fertilisers from urban waste streams to close the nutrient cycle. Yet, when it came to the different fertilisers many farmers raised the question of contaminants. In Germany a major concern with compost was micro plastic contamination. For sewage sludge or sewage sludge products the question of societal acceptance and contamination with toxic elements and organic pollutants prevailed. Both toxic elements and organic pollutants are not allowed in organic farming systems.

Methodology

In each study region 10 to 20 farms were chosen as case studies. RELACS partners (see table below) helped in identifying the farms and performed the interviews. Many interesting conversations with farmers took place, resulting in a vast knowledge on their different approaches to fertilisation management.








Germany	Italy	Estonia	UK	Denmark	Switzerland	Hungary
20 farms	5 farms	9 farms	10 farms	10 farms	15 farms	10 farms
						

Table 1: Number of farms and involved partner in each country



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What's next?

A Delphi panel was established to further investigate the acceptance of recycled fertilisers and the use and need of nutrients. Four experts from different stakeholders of each country discussed a variety of topics. These are soil fertility, use of external fertilisers in organic farming and possible use of recycled fertilisers from human waste streams. Outcomes will be available later in 2019.



Picture 1: View over the fields in Bavaria (Germany) while taking soil samples (Photo: Marie Reimer, University of Hohenheim)

Picture 2: View over the orchards while taking soil samples in southern Italy (Photo: Marie Reimer, University of Hohenheim)

About this news story and RELACS

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RELACS: 'Replacement of Contentious Inputs in Organic Farming Systems' (RELACS) builds on results of previous research projects and takes far-advanced solutions forward. As a system approach to sustainable agriculture, organic farming aims to effectively manage ecological processes whilst lowering dependence on off-farm inputs. The RELACS partners will evaluate solutions to further reduce the use of external inputs and, if needed, develop and adopt cost-efficient and environmentally safe tools and technologies.

Project website: www.relacs-project.eu

Social media: Facebook ([RELACSeu](https://www.facebook.com/RELACSeu)) & Twitter ([RELACEeu](https://twitter.com/RELACEeu))

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