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Workshops and meetings

SOFIE3: call for presentations – open to 15th October

3rd Summit of Organic and organo-mineral Fertiliser Industries in Europe. 16-17 January 2024, Brussels Plaza & hybrid SOFIE is the only industry meeting place for organic-carbon-based fertiliser producers, distributors, advisory, technology suppliers. The <u>first SOFIE</u> (2019) attracted 125 participants, with 230 for <u>SOFIE2</u> (January 2023, *photo below*).





SOFIE3 will cover:

- policy and market
- agronomic benefits, in particular field trials and case studies
- processing from divers input materials to consistent products for farmers
- application best practices, e.g. co-application with mineral fertilisers, biostimulants
- environment, carbon benefits, LCA, Circular Economy
- business models and product success stories

Short proposals for presentations, company showcases or posters should be sent by 15^{th} October to $\underline{info@phosphorusplatform.eu}$: see details \underline{HERE} .

www.phosphorusplatform.eu/SOFIE2024

SOFIE3 is co-organised by ESPP, Eurofema and Fertilizers Europe, with support of the International Fertiliser Society.

Recycled nutrients for Organic Farming

Monday 18th September 2023, 14h - 17h, online

Co-organised by IFOAM Europe and ESPP.

Registration is free and is open to representatives of Organic Farming organisations from across Europe. *Full meeting agenda HERE*. *Registration: Eventbrite*.







RAMIRAN - the manure and organic residues recycling conference

12-14 September 2023, Cambridge, UK

The "Recycling of Agricultural, Municipal and Industrial Residues in Agriculture Network" (RAMIRAN) expertise and research network, established 25 years ago, expects over 200 delegates at its 18th international conference. Themes addressed include policy and regulation (including ESPP update on EU policies and regulations), recycled and organic nutrient crop utilisation, soil quality, air and water nutrient losses, treatment and processing technologies and best practices. Speakers include the UK ministry DEFRA, Chinese Academy of Sciences, ADAS, TEAGASC,



Wageningen WUR, University of Minnesota, OCAPI Paris, ESPP. The conference will lead to a Frontiers special issue in Sustainable Food Systems – Waste Management in Agroecosystems. (abstract submission: 30th September 2023)

RAMIRAN 2023, 12-14 September, Cambridge UK https://ramiran2023.org/

6th PERM becomes NERM (Nutrients in Europe Research Meeting)

Save the date. NERM - 16-17 April 2024 - Brussels & online - plus research students meeting & site visits.

NERM (Nutrients in Europe Research Meeting) is organised by ESPP, FERTIMANURE, LEX4BIO, RUSTICA, SEA2LAND, WALNUT and Biorefine Cluster Europe. Towards closing nutrient cycles for a sustainable future, from R&D to implementation.

- key outcomes of recent nutrient recycling R&D under Horizon 2020, LIFE, Interreg and other programmes
- roadmap for future nutrient recycling R&D needs
- nutrient recovery technologies and recycled fertiliser production
- quality, application and use, stakeholder acceptance of secondary fertilisers
- from nutrient recovery to market

 $Plus\ PhD\ /\ research\ students\ event\ April\ 15^{th}\ 2024\ and\ site\ visits\ (on\ -farm\ and\ sewage\ treatment\ nutrient\ recovery\ sites).$

Call for abstracts and outline programme will be published in September 2023.

NERM, 16-17 April 2024, Brussels https://phosphorusplatform.eu/nerm

Consultants - tenders

Consultant for EFSA dossier on Animal By-Products

ESPP is looking for a regulatory consultant to prepare a dossier on Cat1 ABP ashes for input to EFSA (European Food Safety Agency) on possible use of Cat1 ashes and derivates in fertilisers, in particular prion safety.

See relevant background documents at www.phosphorusplatform.eu/regulatory

Full details of services requested <u>HERE</u>. To express interest, please contact ESPP info @phosphorusplatform.eu before 15th September 2023.

EU tender: Animal By-Product (ABP) fertilisers

European Commission (DG GROW) tender to assess agronomic efficiency and safety for use of certain ABPs in fertilising products, as per art. 51-1(b) of the EU Fertilising Products Regulation 2019/2009. Budget 120 000 €. Submission deadline 18th September 2023. The study does NOT concern health safety aspects which are assessed by EFSA (European Food Safety Agency, see ESPP eNews n°61). It does concern environmental safety and worker safety, for use as or in fertilising products, and "agronomic efficiency" either in itself in a fertilising product or to facilitate production of effective fertilising products. The study covers (i) materials listed in the DG SANTE Delegated Act (not yet published, see C(2023) 3366 here) and (ii) twelve other ABP materials specified in the tender documents. The study does NOT cover "Processed Manure" (as defined in the EU Animal By-Product Regulations) because this is being assessed separately by JRC. Also, the study does NOT cover ABPs in composts, digestates, Cat. 2-3 ashes which are included in the Delegated Act (art. 3 a, b, c) because (to ESPP's understanding) these are covered by CMCs 3, 5, 13 and so will not be added to CMC10 (the tender specifies that it concerns ABPs to "include in CMC 10").

EU tender "Technical study to include new materials in CMC 10 to the Fertilising Products Regulation", GROW/2023/OP/0027. Submission deadline 18th September 2023 <u>HERE</u>.



Policy

EU Soil Health Directive proposal

Public consultation open to 26th October 2023. Possibility to input plain text comments (max. 4 000 characters) plus document. https://ec.europa.eu/info/law/better-regulation/have-your-say/initiatives/13350-Soil-health-protecting-sustainably-managing-and-restoring-EU-soils en

Regulation published: Animal By-Products (ABPs) in EU fertilising products

The EU Regulation amending the Animal By-Products Regulations to allow use of certain ABPs in CE-Mark fertilising products is now published. This establishes 'End Points' under the Animal By-Products Regulations for a number of ABP materials for use in fertilising products without traceability (the EU Fertilising Products Regulations FPR provide CE-Mark fertilisers with 'End-of-Waste' and product status), whereas currently these materials can be authorised for use under national fertilisers regulations but only subject to traceability.

The published amending Regulation is essentially as proposed to public consultation in October 2022 (see <u>ESPP eNews n°70</u>) and covers, under specified conditions:

- Cat2 and Cat3 ABP ashes
- Composts
- · Biogas digestates
- "Processed" manure and insect frass ("processed" as defined in the ABP Regulations)
- Certain (as specified) Cat3 materials, glycerine, processed animal protein, meat and bone meal, blood, hoof, horn products

It is ESPP's understanding that:

- the inclusion of these materials into the EU Fertilising Products Regulation CMC10 requires also modification by a
 Commission Delegated Regulation of the EU FPR and this is delayed to at least end 2023 for "Processed Manure"
 and at least end 2024 for the other ABPs cited, because environmental safety assessments are legally required.
 These are being launched (see EU tender above)
- nonetheless, manure (and other specified Cat. 2 and 3 ABPs) are now already today authorised as input materials to EU fertilising product composts, digestates, precipitated phosphates, ash-based materials and pyrolysis materials (CMCs 3, 5, 12, 13, 14), following publication of the ABP amending Regulation on 8th August and subject to the processing criteria specified in this Regulation. ESPP will ask that this be clarified in the EU Commission's FPR Frequently Asked Questions document.

European Commission Delegated Regulation 2023/1065 of 22 May 2023 published in the EU Official Journal 8th August 2023 "supplementing Regulation (EC) No 1069/2009 of the European Parliament and of the Council as regards the determination of end points in the manufacturing chain of certain organic fertilisers and soil improvers" https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv/3AOJ.L...2023.198.01.0001.01.ENG

UK may change "Nutrient Neutrality" rules

The UK Government has announced its intention to relax requirements that building of new houses in catchments of protected natural areas must be "Nutrient Neutral". Current requirements are derived from EU case law concerning protection of Natural (Habitats Directive) areas from eutrophication (detail in ESPP eNews n°59 and n°35). The EU case law effectively requires that any action in the catchment (from building houses to grazing cattle) must only be authorised if it is demonstrated "there is no reasonable scientific doubt as to the lack of adverse effects" on the Natura site. Currently the UK regulator prevents any new house build in catchments of Natura areas impacted by eutrophication unless compensatory measures are engaged, such as creating wetlands as nutrient buffers, or reducing nutrient emissions from farms or sewage works. The UK Home Builders Federation (HBF) claims (30th June 2023) "145,000 homes currently blocked. Rivers increasingly polluted. SME builders threatened despite no link between house building and river pollution. Builders forced to fallow farmland and trout farms to comply with rules, threatening food security". The UK Wildlife Trusts say (24th July 2023) that the proposed UK "Environment Act" would fix the target to reduce P, N and sediment losses by 40% by 2038, with upgrades to wastewater treatment works and review and expansion of environmental permits controlling pollution from farming, so creating "the necessary headroom that will mean that housing development will no longer have to worry about nutrients".

[&]quot;Pollution rules could change to ease housebuilding", BBC 29th August 2023.

[&]quot;Policy paper. Nutrient pollution: reducing the impact on protected sites", UK Government, 28th June 2023.



Research

UKWIR report. Biosolids to land: carbon emissions and storage

Literature and expert assessment concludes that treated sewage sludge (biosolids) use can reduce the carbon footprint of agriculture, improve soil quality and reduce mineral fertiliser use, but underlines lack of long-term data. The 117-page report considers different sewage sludge treatment processes (drying/liming, composting, digestion, pyrolysis = biochar) and analyses carbon loss and soil carbon storage, nitrous oxide and other greenhouse emissions in land application, fertiliser replacement. Part of the organic carbon in sewage sludge is lost or transformed in sewage treatment (e.g. conversion to biogas in anaerobic digestion). Around 25% of carbon in sludge is estimated to be retained in soil after 11 - 34 years, resulting in an average increase in SOC (soil organic carbon) of c. 14% after repeated biosolids application. The report reminds that the SOC capacity of soils is limited, so that long-term repeated applications will eventually not further increase SOC. No studies were identified as providing evidence of impacts of sewage sludge biochars on soil carbon storage. Nitrous oxide emissions from land application of digested sludge are estimated at 0.6% of applied N-total - somewhat lower than the 1% factor currently used in the UK GHG Inventory (emissions are much lower after composting or pyrolysis). Nearly 90% of UK sewage sludge is currently applied to agricultural land after treatment (3 – 4 Mt biosolids/y), supplying c. 5 600 tN/y, 37 500 tP/y, 2 400 tK/y and 28 000 tS/y, representing a saving of c. 33 000 t/y carbon emissions. The report concludes that available evidence supports that appropriate agricultural use of treated sewage sludge (biosolids) is environmentally beneficial, but that there is a lack of data from long-term field studies, and in particular inadequate data on nitrous oxide emissions, ammonia emissions and nitrate leaching from biosolids land use, soil organic carbon retention, use of sewage sludge biochar.

"Biosolids to land: carbon emissions and carbon capture", report no. 23/CL/01/38, UKWIR (UK Water Industry Research), 2023. UKWIR research reports online https://ukwir.org/water-industry-research-reports

Desired properties for end-users of recycled fertilisers

Survey in seven European countries suggests that reliably known nutrient levels, organic matter content, cost, and ease of application of are the most desirable properties.

The survey was conducted among stakeholders (farmers and advisors) in seven North-West European countries to understand which qualities they consider important in recycled-derived fertilisers and would encourage them to use these to substitute mineral fertilisers. The survey indicated that recycled-derived fertiliser means processed organic wastes or products from these, including from manures, food waste, green waste or sewage sludge. This will mean that the results are biased because mainly persons already informed or motivated will have responded. The authors fail to mention this inherent bias anywhere in the paper. Most of the 1225 participants responded from France, Belgium and Ireland, and over 80% were farmers (mostly conventional farming) with the remaining 20% from horticulture, agricultural companies and research. In the farmers' view, the most important parameter for the selection of a fertiliser was good quality at good price, whereas other stakeholders were more interested in the nutrient content, composition and availability. Nutrient ratio corresponding to crop nutrient demand was the most noted quality for users, followed by a high organic matter content, whereas non-users preferred qualities were price per unit nutrient, ease of use and environmental security. 46% of participants also indicated that a known NPK concentration was the most important reason why they would substitute mineral fertilisers, highlighting that high variability in nutrient composition of recycled fertilising materials is often the reason behind farmers' choice of synthetic mineral fertilisers. Over 80% of respondents indicated that if recycled fertilisers had the desired important qualities, they were willing to substitute mineral fertilisers if the recycled fertilisers were subsidised and free of charge or cheaper than mineral fertilisers, whereas less than 20% were willing to substitute if they were slightly more expensive than mineral fertilisers.

"What are the desired properties of recycling-derived fertilisers from an end-user perspective?", A. Egan et al., Cleaner and Responisble Consumption 5, 100057 (2022), DOI

Terrestrial nutrient limitation significantly reduces global greenhouse carbon budget

Modelled climate scenarios were compared without terrestrial nutrient limitation in the model (C), with nitrogen (N) limitation and with nitrogen and phosphorus (NP) limitation. The University of Victoria Earth System Climate Model was used and carbon emission budgets to limit global warming to +1.5°C or +2°C were modelled. Results suggest that the carbon budget would be c. 20% lower in both cases for N limitation, and c. 25% lower for NP limitation. Phosphorus is considered less limiting in tropical regions. These results are coherent with Peng et al. 2022 (see ESPP eNews n°77) who concluded that P limitation could reduce global carbon CO₂ uptake by 7.5%.

"Effect of terrestrial nutrient limitation on the estimation of the remaining carbon budget", M. De Sisto & A. MacDougall, Biogesciences Discussions 2023, DOI.



New modelling questions benefits of ocean iron fertilisation

Iron dosing to open oceans has been proposed as a route to stimulate algae growth, and so carbon sequestration. New study suggests that global consequences may be negative, because resulting uptake of major nutrients reduces supplies in coastal waters and reducing carbon uptake there as well as possibly impacting ecosystems and fisheries. Phytoplankton growth in open ocean surface waters is often limited by iron, especially in zones of nutrient upwelling, so iron dosing can increase primary production, so absorbing atmospheric CO₂ which may then be sequestered as part of the biomass sinks to deeper waters. This study models impacts of global ocean iron fertilisation, in the context of climate change, using the PISCESv2 (within NEMO) and APECOSM oceanographic and IPSL CMSA climate models, under the CMIP5 RCP8.5 high emissions scenario. This shows that iron fertilisation is likely to exacerbate a key impact of climate change which is to deplete upper ocean waters of nutrients because of stratification (heating of the upper layer reduces vertical mixing). The modelling concludes that global ocean iron fertilisation would result in reductions in upper ocean water animal biomass, in particular in tropical regions, including in coastal ecosystems, with possible negative impacts on fisheries, and possibly overall limited or net negative global impact on primary production and carbon sequestration. These effects occur only after a delay of maybe two decades with ocean currents so that short-term or local monitoring of ocean iron fertilisation may not provide transposable results.

"Ocean iron fertilization may amplify climate change pressures on marine animal biomass for limited climate benefit", A. Tagliabue et al., Glob Change Biol. 2023;29:5250–5260, DOI

Effects of phosphorus addition on soil nitrogen dynamics

A global meta-analysis suggests that P fertilisation increases the soil total N pool, enhances biological nutrient immobilisation, reduces N losses, accelerates soil N cycling and could enhance soil C sequestration.

Over 1700 observations from 116 peer-reviewed publications were analysed to assess the effects of P addition on soil N pools and cycling processes and how these vary among ecosystem types and P fertiliser management schemes. Data were limited to studies reporting clear information on P addition rate and duration and including both a control and a P-addition treatment, and covered mainly field tests. Data was from across the world, but with most coming from Asia and North America. The factors considered were related to soil N pools (soil total N, NO_3^- , NH_4^+ , dissolved inorganic and organic N, microbial biomass N), N cycling (mineralisation, nitrification, denitrification, ammonification, N₂O emission, NO_3^- leaching), and P and C soil pools. The analysis underlined the role of P fertilisation in increasing the soil total N pool in field experiments, particularly after long term P addition (\geq 5 yr). This was potentially the result of increased plant N uptake (as evidenced by the increase in plant productivity and decrease in available soil N pools), enhanced biological N fixation and reduced N losses (NO_3^- leaching). The accumulation of soil total N was coupled with an increase in the soil C pool size, suggesting a role of P in promoting soil C sequestration. Phosphorus addition also accelerated some of the soil N cycling processes, including N mineralisation (especially in grasslands), nitrification, and denitrification (in forests and wetlands) with the effect sizes varying among ecosystem types and increasing with P fertilisation rates. No impacts on N_2O emissions were observed.

"Phosphorus supply increases nitrogen transformation rates and retention in soil: A global meta-analysis" R. Wang et al., Earth's Future, 10, e2021EF002479, 2022 DOI

Sweden watershed: nutrient loss reduction targets require wetland restoration

Modelling of nutrient losses with climate change in two small Swedish catchments suggests that Green Deal -50% nutrient loss reduction targets will require conversion of c. 1% of cropland to wetland / nutrient buffers. Hestadbäcken catchment (8 km²), centre-east Sweden, and Tullstorpsån (62 km²), south Sweden, both mainly agricultural, were modelled for nutrient losses, including under climate change scenarios. Modelling considered a 20% reduction in fertiliser application, cover crops and "stream mitigation" consisting of reconversion of agricultural land to wetland or buffer zones along streams. Conclusions are, in both cases, that around 1% of catchment cropland area must be converted to stream mitigation to achieve the Green Deal nutrient loss reduction target, other measures being insufficient. Modelling suggests that climate change could lead to a slight increase in P loss to the streams, related to increased precipitation, and either an increase or decrease in inorganic N loss depending on the balance between increased runoff, evapotranspiration and increased N mineralisation. In particular, high rainfall events are likely to increase, and measures are needed to prevent these leading to nutrient losses to the stream, such as a low threshold barrier to prevent wetland floodwaters entering the stream.

"How to Achieve a 50% Reduction in Nutrient Loads from Agricultural Catchments under Different Climate Trajectories?", M. Wynants et al., Authorea. 2023, DOI.

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