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## Events and conferences

### Waste water phosphorus removal tomorrow: ambitions and reality



9<sup>th</sup> October, Liège, near Brussels. In the context of the current revision of EU water policy (Water Framework Directive, Waste Water Treatment Directive), and with participation of the European Commission (DG ENVI, DG RTI), this workshop will enable dialogue between the water industry, experts and policy makers (EU, national) on perspectives for phosphorus removal: low discharge consents, flexible permitting / emissions trading, P-removal from small sewage works.

Registration now open [here](#).

In partnership with / supported by: IWA (the International Water Association), Eureau, CIWEM (Chartered Institution of Water and Environmental Management), Université de Liège and ECSM'19 (European Conference on Sludge Management), Liège 6-8 October 2019  
<https://events.uliege.be/ecsm2019/> for information on the phosphorus removal workshop, contact [info@phosphorusplatform.eu](mailto:info@phosphorusplatform.eu)

### Call for papers ESPC4



The [call for abstracts and posters](#) is now open (closes 31/12/2019) for the 4<sup>th</sup> European Sustainable Phosphorus Conference (ESPC4), Vienna, 15-17 June 2020. Abstracts are invited for presentations for the six parallel sessions, for plenary success story mini-presentations, for posters or for stands. The parallel session themes are: economy (of phosphorus sustainability and nutrient recycling), enhanced efficiency fertilisers, sustainable phosphorus removal from waste streams, R&D cooperation and platforms, taking R&D developments through to the market and phosphorus

sustainability perspectives. Proposed success story mini-presentations (3 minutes, plenary) should present company, local authority (city, region ...) or stakeholder successes in implementing phosphorus recycling or phosphorus management. Posters and stands can address any subject related to nutrient sustainability.

Full details and more information about ESPC4 [www.phosphorusplatform.eu/ESPC4](http://www.phosphorusplatform.eu/ESPC4)

See more upcoming events at [www.phosphorusplatform.eu/upcoming-events](http://www.phosphorusplatform.eu/upcoming-events)



## Policy

### Horizon Europe public consultation



The European Commission has launched a **public consultation on Horizon Europe, open to 8<sup>th</sup> September 2019**, including inviting comments on the **proposed “Orientations” document** which will define the content of Horizon Europe (thematic funding, Missions, Partnerships ...). The consultation aims to define the general research and innovation challenges to be addressed by Horizon Europe, citing the United Nations Sustainable Development Goals and questioning priorities (Europe to be Protective, Fair, Sustainable, Competitive or Influential?) and opens the possibility for detailed comments on the thematic objectives, targeted impacts and R&I orientations which will define the content of future R&D calls (‘Second Pillar’).

*Public consultation open to 8<sup>th</sup> September 2019 (Horizon Europe Co-design 2021-2024 consultation) introduction [https://ec.europa.eu/info/news/have-your-say-future-objectives-eu-funded-research-and-innovation-2019-jun-28\\_en](https://ec.europa.eu/info/news/have-your-say-future-objectives-eu-funded-research-and-innovation-2019-jun-28_en)  
**Orientations document for comment** (Orientations towards the first Strategic Plan implementing the research and innovation framework programme Horizon Europe) [https://ec.europa.eu/research/pdf/horizon-europe/ec\\_rtd\\_orientations-towards-the-strategic-planning.pdf](https://ec.europa.eu/research/pdf/horizon-europe/ec_rtd_orientations-towards-the-strategic-planning.pdf)  
Online survey and submission form [https://ec.europa.eu/eusurvey/runner/HorizonEurope\\_Codesign\\_2021-2024](https://ec.europa.eu/eusurvey/runner/HorizonEurope_Codesign_2021-2024)*

### EU Circular Bio-Economy public consultation



The European Commission has launched a **public consultation open to 27<sup>th</sup> August 2019 on a proposed “Partnership for a Circular bio-based Europe”**, envisaged under the Horizon Europe “European Partnerships” tool. The partnerships objectives will be to support innovation for value creation from waste and biomass, including renewable products and nutrients, and will build on the “Bio Based Industries Joint Technology Initiative” (BBI) of Horizon 2020. The proposed

roadmap identifies as challenges to address: the multi-sectoral, fragmented nature of the bio-based sector, the complex policy environment, the high risk and high capital expenditure of large biorefineries and uncertainties around feedstock materials availability and costs. It underlines the need to understand resource variability and flows, deploy demonstration biorefineries and reduce policy fragmentation. Citizen and stakeholder input on the proposed roadmap is requested through the public consultation.

*Public consultation open to 27<sup>th</sup> August 2019 <https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2019-4972449>*

### EU public consultation: CAP agriculture policy and soil

The European Commission has launched a **public consultation open to 27<sup>th</sup> August 2019 on a planned evaluation of how EU agriculture policy (CAP) impacts soil**, citing in particular soil erosion, compaction, organic matter, biodiversity, pollution and salinisation. The evaluation will consider interactions between CAP and other EU policies. This will input to the 2021 EU report on performance of the Common Agricultural Policy (CAP).

*Public consultation open to 27<sup>th</sup> August 2019 [https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2019-3760776\\_en](https://ec.europa.eu/info/law/better-regulation/initiatives/ares-2019-3760776_en)*

### Netherlands nitrogen policy cancelled by Council of State

The Netherlands Council of State (29<sup>th</sup> May 2019) has effectively cancelled part of The Netherlands nitrogen policy, concerning nitrogen emissions near to Natura 2000 areas, and has also invalidated a significant number of permits accorded to livestock farms and also infrastructure projects. The Council of State judgement transposes the European Court of Justice decision of 7<sup>th</sup> November 2018, which was a preliminary ruling on interpretation of the EU Habitats Directive (92/43/EEC), following an action brought by environmental NGOs. This ECJ judgement states that “grazing of cattle or application of fertiliser” (in the vicinity of a Natura 2000 site) may be classified as a “project” (under the EU Project Assessment Directive 2011/92/EU), and thus that national legislation authorising such activities must be subject to an “appropriate assessment”, before permitting, which shows “that there is no reasonable scientific doubt as to the lack of adverse effects” on the integrity of the Natura 2000 site. The Netherlands “PAS” (Nitrogen Action Programme) did not respect these criteria, and so permits accorded under this programme could be cancelled. Media coverage suggests that over 200 court cases are already underway in the Netherlands concerning PAS permits, for livestock farms, but also for road and airport projects, and that their existing permits may now be cancelled. The Ministry of Agriculture, Nature and Food Quality (LNV) is currently assessing the court decisions and possible consequences, and is looking at possible legally secure solutions in dialogue with stakeholders.

*“Dutch nitrogen policy in violation of European nature legislation”, 29 May 2019 [www.tellerreport.com/life/2019-05-29---judge--dutch-nitrogen-policy-in-violation-of-european-nature-legislation-.Hyh8XHn6V.html](http://www.tellerreport.com/life/2019-05-29---judge--dutch-nitrogen-policy-in-violation-of-european-nature-legislation-.Hyh8XHn6V.html) and also: [www.nos.nl/artikel/2289778-tientallen-projecten-dreigen-te-sneuvelen-door-stikstof-uitspraak-raad-van-state.html](http://www.nos.nl/artikel/2289778-tientallen-projecten-dreigen-te-sneuvelen-door-stikstof-uitspraak-raad-van-state.html)*

*Netherlands Ministry (LNV) letter to Parliament, 29 May 2019 (in Dutch):*

*[www.rijksoverheid.nl/binaries/rijksoverheid/documenten/kamerstukken/2019/05/29/eerste-reactie-op-uitspraak-raad-van-state-inzake-het-programma-aanpak-stikstof/Eerste\\_reactie\\_op\\_uitspraak\\_Raad\\_van\\_State\\_inzake\\_het\\_Programma\\_Aanpak\\_Stikstof.pdf](http://www.rijksoverheid.nl/binaries/rijksoverheid/documenten/kamerstukken/2019/05/29/eerste-reactie-op-uitspraak-raad-van-state-inzake-het-programma-aanpak-stikstof/Eerste_reactie_op_uitspraak_Raad_van_State_inzake_het_Programma_Aanpak_Stikstof.pdf)*

*European Court of Justice, decision of 7 November 2018, cases C-293/17 and C-294/17 – search by case number on <http://curia.europa.eu>*

## EU publishes regulation on sewage sludge spreading information

The new EU Regulation updating environmental reporting obligations has been published, as presented in ESPP eNews n°s [25](#) and [27](#). Current EU legislation (art. 10 of the EU Sludge Directive 86/278) already obliges Member States to maintain a register of data on quantities of sewage sludge produced, quantities used in agriculture, treatments, identification of farms and fields where the sludge is used. The new regulation additionally requires that this information be made available to the public “in a consolidated form”.

EU Regulation 2018/1010, 5<sup>th</sup> June 2019, “on the alignment of reporting obligations in the field of legislation related to the environment ...”  
<https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32019R1010>

## EU tender for risk assessment of contaminants in fertilisers



European  
Commission

The European Commission (DG ENVI) has opened a tender (**closing 26/8/19**, estimated budget 400 000 €) “*Contaminants in fertilisers: Assessment of the Risks from their Presence and of the Socio-economic impacts of a Possible Restriction under Reach*”. Tasks include to assess contaminants in fertilisers, to prepare a “pre-regulatory Management Option Analysis (pre-RMOA) and a pre-Annex XV dossier”, to screen data in REACH Registrations and in literature and to assess

“alternatives to fertilisers”, including market and cost aspects. It is not clearly stated but it seems this study concerns contaminants in **both organic and inorganic fertilisers** (the “Tender Specifications” refer to “fertilising products placed on the market”, and to organic contaminants). Compost and digestate are however not covered, because the Commission already has a service contract report (see below). The Tender Specifications refer to possible future amendments to modify contaminant limits in the EU Fertilising Products Regulation or, in order to cover also national fertilisers, in Annex XVII of REACH. The study is very wide, in that analysis of “alternatives to fertilisers” is specified to include “a move to organic farming, limiting the fertilising doses, with an assessment of the potential consequences (reduction in supply of certain crops, reduction of competitiveness of the sector, increase of imports of crops, etc.)” and also “the possible reactions of farmers to the unavailability of a specific fertiliser the possibility to use risk management measures for agricultural fields (such as vegetative edge strips, deep placement, etc.), instead of a ban.” Concerning **compost and digestate**, the Tender Specifications refer to a previous service contract report to the European Commission: “Digestate and compost as fertilisers. Risk assessment and risk management option” (Amec). It is indicated that this report will be transmitted to the contractor selected for the new fertiliser study. To our understanding, this Amec report is not published. ESPP has requested to receive a copy.

EU Commission tender, open to 26<sup>th</sup> August 2019, ENV/2019/OP/0001, 2019/S 132-323039 “Contaminants in fertilisers: Assessment of the Risks from their Presence and of the Socio-economic Impacts of a Possible Restriction under Reach” <https://etendering.ted.europa.eu/cft/cft-display.html?cftid=5131> and Tender Specifications <https://etendering.ted.europa.eu/cft/cft-document.html?docid=56624> NOTE: thank you to Fertilizers Europe for alerting ESPP to this information

## Preparation of a “Guidance” for German P-recovery regulation



In Germany, the new Sewage Sludge Ordinance (AbfKlärV) came into force in October 2017, making obligatory phosphorus (P) recovery from sewage sludge from 2029. Sewage plant operators thus need to decide which recovery method to choose. However, various aspects of the legal framework are not easy to interpret. Therefore a “Guidance” document (Vollzugshilfe) for the AbfKlärV is currently being prepared by the German authorities. The Environment Ministries of the federal states have set up an ad-hoc group of the waste working group “Bund Länderarbeitsgemeinschaft Abfall” (LAGA) to prepare this Guidance. The Guidance will not be legally binding, but aims to enable a

uniform implementation in the federal states. In June 2019, stakeholder organisations were given the opportunity to comment on a first draft and provide input. With its members, the [German Phosphorus Platform \(DPP\)](#) submitted detailed comments. DPP called in particular to clarify the calculation of the specified P-recovery level based on concentrations: the sludge mass may be lower after the P-recovery operation and this should not impact the recovery rate calculation. Furthermore, DPP called for a clear definition of the legal areas of wastewater and waste so that users know exactly to which legal area a P-recovery technology belongs. In Germany, phosphorus recovery is only mandatory in the AbfKlärV (waste legislation, applicable to sewage sludge). However, there are also processes that recover P during wastewater treatment. Publication of the Guidance is expected in spring 2020.

Summary of German P-recovery legislation, see SCOPE Newsletter [n°129](#)  
German Phosphorus Platform [www.deutsche-phosphor-plattform.de](http://www.deutsche-phosphor-plattform.de)

## Assessment of EU detergent phosphate ban

The European Commission (COM) has [published](#) an assessment of the 2004 EU Detergents Regulation (648/2004), which banned phosphates in domestic laundry and domestic dishwasher detergents (in 2013 and 2017). The ban does not concern industrial and institutional detergents. The assessment concludes that there is no evidence of any environmental benefit from the phosphates ban, because the ban only entered into force recently, because the contribution of detergents to eutrophication was already “relatively small” compared to agriculture before the ban, and because many sewage works in any case remove phosphorus so that detergent P was not reaching the environment. The political nature of the detergent phosphates discussion

is demonstrated by the fact that the European Commission website title states the contrary to the assessment conclusions, saying that it “shows environment protection”. COM estimates that the ban has resulted in 55 000 tonnes P/year less being used in detergents. The total cost of Regulation implementation (including other aspects, such as labelling) is estimated to be 0.7 – 1.8 bn€/year (around 0.5% of detergent industry turnover). Overall, the COM assessment considers that the impact of the Regulation has been positive.

“Review of the detergents regulation shows improved consumer and environment protection”, European Commission, 10<sup>th</sup> July 2019 [ec.europa.eu/growth/content/review-detergents-regulation-shows-improved-consumer-and-environment-protection\\_en](http://ec.europa.eu/growth/content/review-detergents-regulation-shows-improved-consumer-and-environment-protection_en) and “Evaluation of Regulation (EC) No 648/2004 of the European Parliament and of the Council of 31 March 2004 on detergents”, SWD(2019) 298 final = [summary](#) and SWD(2019) 299 final = [full assessment](#) 10<sup>th</sup> July 2019

## Netherlands “Circular Agriculture” vision



Government of the Netherlands

The Netherlands Minister of Agriculture, Carola Schouten, presented in 2018 a vision for “The Netherlands as a leader in circular agriculture”, and plan to implement this vision was transmitted to the Netherlands Parliament in June 2019. The Ministry document indicates that Dutch farming, horticulture and fisheries are constantly innovating, making the Netherlands a global leader in these sectors. However, current production methods are not without cost. The Netherlands faces serious social and ecological challenges and needs to prevent depletion of soil, freshwater supplies and raw materials, halt the decline

in biodiversity and fulfil commitments to the Paris climate agreement. Carola Schouten sees circular agriculture as the logical and conclusive answer to these issues. This means closing cycles of minerals and other resources as far as possible, strengthening the focus on biodiversity and respecting the Earth’s natural limits, preventing waste and ensuring that farmers are paid a fair price for their work. The government’s goal is for cycles of raw materials and resources to be closed at the lowest possible level, either nationally or internationally, by 2030. The Minister hopes that the Netherlands’ vision on circular agriculture will become a source of inspiration at European level.

Netherlands vision for circular agriculture: “Agriculture, nature and food: valuable and connected”, English version [www.government.nl/ministries/ministry-of-agriculture-nature-and-food-quality/documents/policy-notes/2018/11/19/vision-ministry-of-agriculture-nature-and-food-quality---english](http://www.government.nl/ministries/ministry-of-agriculture-nature-and-food-quality/documents/policy-notes/2018/11/19/vision-ministry-of-agriculture-nature-and-food-quality---english)

## Cooperation and perspectives

### Fertilizer Focus magazine features organic fertilisers perspectives

The July-August edition of the trade magazine Fertilizer Focus [summarises](#) the first Summit of the Organic Fertilisers Industry in Europe (SOFIE, organised by ESPP) and a discussion of the organic-based fertilisers market by ECOFI. It is underlined that most fertilisers used in Certified Organic Farming are organic-based (based on natural materials containing organic carbon), but that most organic-based fertilisers are not Organic Farming Certified. Both articles state that sales of organic-based fertilisers in Europe are estimated to be around 2.5 bn€ (source: Allied Market Research [2016](#)). ECOFI underline the complementarity between mineral and organic fertilisers (including with organo-mineral products), as was also emphasised by Fertilizers Europe at SOFIE. ECOFI indicate that EU organic-based fertiliser producers are increasingly developing high-value export markets, and the SOFIE conference article highlights a number of companies innovating in this market: ILSA, Veolia, Fertikal, 4R Group, Biolan, Soilfood, OvinAlp. The SOFIE conference conclusions are summarised, including recommendations for clarifying new products, data on agronomic performance and on industry, importance of ensuring consistent quality and tailor-made, added-value products for continuing development.

Fertilizer Focus (Argus Media) [www.argusmedia.com/en/fertilizer/fertilizer-focus](http://www.argusmedia.com/en/fertilizer/fertilizer-focus)  
[This article](#), and also full summary of SOFIE conference in ESPP SCOPE Newsletter n°130, at [www.phosphorusplatform.eu/SOFIE2019](http://www.phosphorusplatform.eu/SOFIE2019)

### The future of water



A discussion paper from IDB (Inter-American Development Bank) discusses disruptive technologies susceptible to restructure water and wastewater management in coming decades. Ideas presented include “one water” (integration of waste-, storm- and drinking water infrastructures) enabled with advanced processing technologies (e.g. membranes), to facilitate water reuse and address challenges of drought and floods; energy and resource recovery (especially biogas from sewage sludge and phosphorus recycling; decentralisation facilitated by distant digital sensing and control; cost reduction of desalination (to address water supply), LED UV for advanced oxidation and disinfection. The importance of regulation to enable technology uptake is underlined.

“The future of water”, essays by G. Daigger, N. Voutchkov, U. Lall, W. Sami, IDB (Inter-American Development Bank) Discussion Paper n° IDB-DP-657, April 2019 (75 pages) [http://water.columbia.edu/files/2019/04/FINAL\\_The\\_Future\\_of\\_Water\\_28March2019.pdf](http://water.columbia.edu/files/2019/04/FINAL_The_Future_of_Water_28March2019.pdf)

### Global alliance for “regenerative farming”

The three year project “Farming for Generations” has been launched by eight leading global agri-food companies: Danone (leader), Connectera, Corteva Agriscience, DSM, FutureCow, MSD Animal Health, Neogen and Yara, with Wageningen UR. The project will work with 25 dairy farms in Europe, the USA and Russia to identify and test new approaches and best practices,

and develop an applied toolbox for dairy farmers. The project states that “food systems need to be changed to be fit for the future” and “sustainable diets” need to be defined to provide nutrition to the world population whilst respecting environmental limits. “Regenerative (dairy) farming” is indicated as aiming to reduce greenhouse gas emissions, protect soil and biodiversity, provide quality feed for cows, ensure that animals have a healthy and stress-free life and empower farmers.

“Global alliance Farming for Generations launches to transform dairy farming towards regenerative agriculture” 26 June 2019  
[www.yara.com/news-and-media/news/archive/2019/global-alliance-farming-for-generations/](http://www.yara.com/news-and-media/news/archive/2019/global-alliance-farming-for-generations/) and [www.connecterra.io/about-us/press-media/press-release-farming-for-generations](http://www.connecterra.io/about-us/press-media/press-release-farming-for-generations)

## Canada Nutrient Platform development

Discussions are underway, between academics, government staff and stakeholders, to establish a Canadian Nutrient Recovery and Reuse (CNRR) Platform. This follows the 8<sup>th</sup> March 2018 National (Canadian) Nutrient Recovery and Reuse (NNRR) Forum [held in Toronto](#) and hosted by the International Institute of Sustainable Development (IISD) Inc., which brought together more than 80 participants from government and academic sectors. The Platform intends to work collaboratively with the [European Sustainable Phosphorus Platform \(ESPP\)](#) and the USA based [Sustainable Phosphorus Alliance \(SPA\)](#). The development of the CNRR Platform was a key recommendation in IISD's [report](#) from the Toronto Forum, titled “Nutrient Recovery and Reuse in Canada, Foundations for a national framework”. This proposes to base the CNRR Platform around stakeholder communication strategies / programs, public policy, industry practices and technology improvements and development, and market based incentive development and to focus initially on phosphorus recovery and reuse from urban and rural point and non-point sources. Work is currently underway to develop a multi-year funding proposal to build and lead the CNRR platform and allow it to transform to a self-sustaining platform.

Toronto 8 March 2018 Canada Nutrient Reuse and Recovery Forum, including presentations and report: [www.iisd.org/event/national-nutrient-reuse-and-recovery-forum](http://www.iisd.org/event/national-nutrient-reuse-and-recovery-forum)

## Dutch Nutrient Platform members meet-up, March 2019



Bringing supply and demand together, that was the aim of the first Nutrient Platform member meeting in 2019. The members *Meststoffen NL*, *Agro America* and *Avebe* joined forces to facilitate this meeting. Curious about what the meeting looked like? Watch the video [here](#) (in Dutch). The program started with a presentation from *Wageningen UR* about circularity in agriculture and the *Next Level Manure Valuation* project. The new *SusPhos* company showed how they are actively working on recovering phosphate from ash and *Van Iperen* shared their insights from the fertilizer side about the use of recovered nutrients. After these introductions it was time for real matchmaking. During three different round table discussions, the participants

looked at products from waste water streams, animal waste streams and organic waste streams. *Agro America*, *BMC*, *SusPhos*, *IRS (Royal Cosun / SuikerUnie)* and the water boards presented their products to the Nutrient Platform members and to the producers and distributors of *Meststoffen NL*. For some members this immediately resulted in follow-up agreements. The discussions provided the secretariat of the Nutrient Platform with new action points and suggestions to facilitate the use of recovered nutrients.

Netherlands Nutrient Platform [www.nutrientplatform.org/](http://www.nutrientplatform.org/) and meeting video: [www.youtube.com/watch?v=uXUAWUcJ2A](https://www.youtube.com/watch?v=uXUAWUcJ2A)

## Research

### H2020 calls on Critical Raw Materials

Two calls are open for Horizon Europe R&D funding on circular economy and Critical Raw Materials, both 2-stage with first **deadline 6 February 2020**. The first call looks for innovative pilots and scale-up of (non-energy, non-agriculture) circular and Critical Raw Materials production technologies TRL 6-7, including market uptake and link to the EC Raw Materials Information System [RMIS](#). Actions can include: processing of primary or secondary raw materials, recycling from end-of-life products. The second call is for expert network(s) to cover all EU Critical Raw Materials (current list and/or under evaluation and/or future lists).

Call: “Raw materials innovation for the circular economy: sustainable processing, reuse, recycling and recovery schemes” CE-SC5-07-2020  
<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/ce-sc5-08-2020>

Call: “Raw materials policy support actions for the circular economy - Expert network on Critical Raw Materials” CE-SC5-08-2020  
<https://ec.europa.eu/info/funding-tenders/opportunities/portal/screen/opportunities/topic-details/ce-sc5-08-2020>

### Horizon Europe “Missions” and cluster themes defined



The EU institutions have agreed the key aspects of Horizon Europe, the EU's 9<sup>th</sup> research and innovation funding programme, which will follow on from Horizon 2020 and run from 2021 to 2028 with an expected budget of around 100 billion € EU funding. Horizon Europe will be structured in four “Pillars”: I - Excellent Science (inc. Marie-Curie networks), II - “Global Challenges and European Industrial Competitiveness”, III - Innovative Europe (inc. SMEs = now EIC) and IV - Widening participation & ERA. Pillar II will have seven “Clusters”: Health;



Culture and inclusive society; Civil security; Digital & space; Climate, energy, mobility; Food, bioeconomy, natural resources, agriculture & environment and JRC. The 6<sup>th</sup> cluster “Food, bioeconomy, natural resources, agriculture & environment” is of strong relevance to phosphorus sustainability. Also, five “Missions” have been decided, which will be horizontal across all pillars with objectives to “boost the impact of EU-funded research and innovation by mobilising investment and EU wide efforts around measurable and time-bound goals around issues that affect citizens’ daily lives”. The five “Missions” are: (1) Adaptation to Climate Change including Societal Transformation; 2 - Cancer; 3 - Healthy Oceans, Seas, Coastal and Inland Waters; 4 - Climate-Neutral and Smart Cities; 5 - Soil Health and Food. Nutrients are central to the 5<sup>th</sup> mission, and also relevant to the 2<sup>nd</sup> mission.

Horizon Europe “Missions” announced (4/7/19)

[https://ec.europa.eu/info/news/commission-launches-work-major-research-and-innovation-missions-cancer-climate-oceans-and-soil-2019-jul-04\\_en](https://ec.europa.eu/info/news/commission-launches-work-major-research-and-innovation-missions-cancer-climate-oceans-and-soil-2019-jul-04_en)

“Political agreement” on Horizon Europe (reached between Council, Parliament and the Commission), April 2019: statement [http://europa.eu/rapid/press-release STATEMENT-19-2163\\_en.htm](http://europa.eu/rapid/press-release_STATEMENT-19-2163_en.htm) and full document as adopted by Parliament (17/4/2019) [www.europarl.europa.eu/doceo/document/TA-8-2019-0396\\_EN.html](http://www.europarl.europa.eu/doceo/document/TA-8-2019-0396_EN.html)

European Commission proposal published FP9 regulation proposal published (7/6/18)

[http://europa.eu/rapid/press-release IP-18-4041\\_en.htm](http://europa.eu/rapid/press-release_IP-18-4041_en.htm)

and [https://ec.europa.eu/info/designing-next-research-and-innovation-framework-programme/what-shapes-next-framework-programme\\_en](https://ec.europa.eu/info/designing-next-research-and-innovation-framework-programme/what-shapes-next-framework-programme_en)

## Sweden: sewage and manure nutrient recycling geo-distribution challenges

Currently Sweden supplies 81% of its crop nitrogen (N) need from mineral fertilisers, 38% of phosphorus (P) and 33% of potassium (K). Livestock manure and human excreta also supply 55% + 20% of N, 65% + 16% of P and 151% + 16% of K, showing significant (localised) nutrient supply surpluses. A study assesses to what extent nutrients in livestock manure and human excreta could supply crop needs. Figures of 11 gN, 1.5 gP and 3.6 gK per person per day for nutrients in human excreta\* and for nutrients in different animal manures were combined with municipality human and livestock population data. Crop needs were estimated based on agricultural district data, nutrient needs for different crops and soil data. The study concludes that human excreta and animal manure could cover 75% of crop N needs and 81% of P needs, with a 67% K\*\* excess. However, necessary movement of manures and human excreta from livestock density and high human population areas to crop production areas would generate 24 000 km/year of truck movements (estimated cost 200 M€/year), based on wet weight of manure (solid or slurry), urine and faeces, assuming 100% nutrient collection and availability from both human and livestock excreta (so effectively assuming 100% separate collection of human urine and faeces) but discounting N losses in storage.

“Enhancing nutrient recycling from excreta to meet crop nutrient needs in Sweden – a spatial analysis”, U. Akram, N-H. Quttineh, U.

Wennergren, K. Tonderski, G. Metson, *Scientific Reports* volume 9, Article number: 10264 (2019), <https://doi.org/10.1038/s41598-019-46706-7>

\* calculated from Supplementary Table 2. \*\* the figure for K is corrected, the number in the study abstract was missing 16%

## Cost-effective phosphorus management on arable farms



The final report of the [UK Sustainable Arable LINK study](#) (AHDB) concludes that phosphorus (P) management in arable farming should become “crop focused” rather than targeting only soil P status, with grain P content a much more reliable management tool than soil P analysis. Results are based on field trial data from twelve site-seasons (9 sites) and from soil P data over seven years in the UK. Field tramline trials confirmed that crop yields were significantly affected by soil P status in soils with low P, but showed that new P applications in soils with low or variable P status, generally increased crop yield, but were not necessarily cost-effective (cost of fertiliser), whereas crop yield was significantly impacted by long-

term soil phosphorus. Grain P content showed to be a good indicator of crop responsiveness to P (i.e. of whether or not P fertiliser application was necessary) and was more reliable (but more expensive) than soil Olsen P analysis. Routine soil Olsen P results were so variable as to be very unreliable unless several analyses were taken nearby, probably because of inherent variability of P fixation within soil. Annual grain P analysis is recommended to both calculate P offtake with harvest and to predict future P fertiliser requirements. For a given soil P status, soil P rundown was significantly faster where soil P status had been recently built up to Index 2 (compared to soils where it had been maintained at Index 2 for some time). Whereas current agronomic recommendation is to maintain soil P at Index 2, it was cost effective for some crop rotations to maintain soil P at Index 1 only (for other rotations, Index 2 should be maintained). The report underlines that initial take-up of P fertilisers by arable crops was only 4% and overall <8%, showing “massive scope for improvement”, whereas the cost of P fertilisers used in the UK is over 100 M€ per year. Nonetheless, around one quarter of cereal crops in the UK are P-deficient and would benefit from increased P fertilization. A table of revised default values for P-removal from soil by different crops is proposed. The report proposes the establishment of a farm “Phosphorus Efficiency Network” and recommends further R&D into: testing products and practices for P efficiency, improving P monitoring (analysis, standards, benchmarks ...) and dissemination of best practice and science.

“Final Project Report. Cost-effective Phosphorus Management on UK Arable Farms” (includes the report on “Work-Package 3: Improving the efficiency of fresh P applications”), R. Sylvester-Bradley et al., March 2019, 66 pages, AHDB (UK Agriculture and Horticulture Development Board) project report n° 570 <https://cereals.ahdb.org.uk/media/1487193/pr570-final-project-report-wp3.pdf>

## Biochar and compost tested as fertilising products

The results of the EU-funded [FERTIPLUS](#) (7<sup>th</sup> FP) project are now [published](#) in “Agronomy”. Biochar (from oak tree biomass) and composts from olive mill by-products, green waste and biowaste (municipal solid organic wastes) and from sheep manure were tested at 20 – 100 tonnes/ha in one to three year field trials in four crop systems: olive groves in Spain, greenhouse tomatoes in Spain, arable rotation in Belgium and vineyards in Italy. The biochar alone had no fertiliser effect (because of its very low nutrient content) but both biochar and composts, and the two together, showed in most trials to increase soil organic carbon, water retention and nutrient availability and to improve soil pH. They showed no negative impacts on crop yield and in some cases led to improved crop qualities. The conclusion is that biochar and compost can contribute to support and maintain soil fertility.

*“Agronomic Evaluation of Biochar, Compost and Biochar-Blended Compost across Different Cropping Systems: Perspective from the European Project FERTIPLUS”, M. Sánchez-Monedero et al., Agronomy 2019, 9, 225; <http://dx.doi.org/10.3390/agronomy9050225>*

## Struvite recovery uses less “emergy” than mineral fertiliser production

A desk study presents “emergy” accounting for struvite recovery from municipal wastewater (based on data from Ostara 2013 for Crystal Green struvite) and compares to mineral fertiliser production (DAP, based on data from Mosaic and from Agrium, both 2013). “Emergy” is stated to be the “available energy required directly and indirectly to make a product”. The paper concludes that, taking into account variability of data for DAP production and also for struvite (e.g. possible economies from scale-up, with or without WASSTRIP), the “emergy” for recovered struvite is in all scenarios significantly lower than for DAP.

*“Nutrient Recovery from Municipal Wastewater for Sustainable Food Production Systems: An Alternative to Traditional Fertilizers”, Env. Eng. Science 2019 <http://dx.doi.org/10.1089/ees.2019.0053>*

## Nitrification inhibitor impacts struvite plant availability

Struvite recovered from dairy wastewater (Phos-Paques) was assessed in 65-day pot trials with rye grass, comparing to conventional magnesium and phosphate fertilisers (Epsom Salts - magnesium sulphate, TSP - triple super phosphate), with and without addition of the nitrification inhibitor DCD (dicyandiamide). Soil was nutrient poor, sandy, pH 5.5. In these conditions, struvite was as effective or better than the conventional fertilisers for rye grass shoot growth and for phosphorus and magnesium uptake, with no significant impact of whether the struvite was fresh, air dried, or heat dried (40°C). The magnesium uptake could be positive to redress declining magnesium in many crops over recent decades (e.g. cereals). The nitrification inhibitor slowed short-term phosphorus uptake from struvite in some of the tests, probably because it inhibited struvite breakdown because of struvite’s ammonium content. This could in some circumstances be significant where crops need rapid early phosphorus supply for growth.

*“Plant availability of magnesium and phosphorus from struvite with concurrent nitrification inhibitor application”, C. Watson, J. Clemens, F. Wichem, within the Interreg Food Pro.tec project, Soil Use Management 2019, 00:1-8 <https://doi.org/10.1111/sum.12527>*

## Different phytases show varying benefits for poultry

Tests carried out for DuPont looked at effects on phosphate uptake by chickens with two different phytase enzymes, and also at digestion of protein and sodium and overall growth. A total of 1152 broilers were fed controlled diets for 16 days. The two phytases were produced by different bacteria: *E. coli* and *Buttiauxella sp.* Increasing phytase doses (or increasing phosphate food additive MCP mono calcium phosphate) resulted in improved feed intake and weight gain, but effects were greater for the *Buttiauxella* phytase. This phytase, but not the *E. coli* phytase, showed to improve protein digestibility. The authors conclude that “non phosphate” effects of phytases are not necessarily correlated to effects on phosphorus uptake, and can vary between different phytases.

*“Comparative effects of two phytases versus increasing the inorganic phosphorus content of the diet, on nutrient and amino acid digestibility in broilers”, Y. Dersjant-Li, C. Kwakemaak, Animal Feed Science and Technology 253 (2019) 166–180, <https://doi.org/10.1016/j.anifeedsci.2019.05.018>*

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