



Summary of the first Summit of the Organic Fertiliser Industry in Europe (SOFIE)

In partnership with:

Brussels 5th – 6th June 2019 <u>www.phosphorusplatform.eu/SOFIE2019</u>

The SOFIE Summit, organised by ESPP, brought together, for the first time ever, the European carbon-based fertiliser sector, and attracted over 125 participants, from industry (two thirds of participants), regulators, stakeholders and R&D, covering 14 European countries, as well as India and North America. Sessions addressed:

- Industry and markets: examples of companies developing new products, providing added value to farmers, export growth, circular economy for nutrients and organic carbon
- Agronomic evidence: scientific knowledge of how organic carbon based materials impact soil, the environment, crop yields
- Opportunities and challenges for industry from developments in European regulations, in particular the future CE-Mark for organic fertilisers and other products (new EU Fertilising Products Regulation)

Presentations showed that the organic and organo-mineral fertiliser industry is both innovative and open, with a range of different types of products delivered to farmers and to other markets. Organic fertilisers have close **links to related sectors such** as **biostimulants**, growing media, composts, digestates and liming materials.

The industry covers a continuum of markets such as stabilised organic by-products (manures, food industry, animal byproducts ...), digestates or composts, through to processed, bespoke products for specialist markets. The industry's circular economy added value can combine gate-fees from waste management, recycling of local secondary resources and delivery to farmers and other end-users of products adapted to their specific requirements with accompanying information and services.

Industry and agronomists underlined the **importance of delivering consistent and quality products to farmers**, adapted to their specific agronomic requirements and to practical considerations (logistics, use of existing spreading equipment, packaging, accompanying advice and information ...). This applies for markets from stabilised manures through to processed export products. Reliable information is needed about nutrient contents of materials delivered, including consistent nutrient content but also information about expected release patterns (crop availability over time). Quality assurance for farmers, and for their customers (food industry, supermarkets) also implies traceability of secondary materials sourcing and processing.

Key strategy conclusions from the SOFIE conference are:

- The significance of new opportunities for industry, and for the nutrient circular economy, opened by the new EU Fertilising Products Regulation (FPR). Under the new CE-Mark, companies in sectors which until today have been operating in nationally separated markets (organic and organo-mineral fertilisers, composts, digestates, biostimulants ...) will have access without barriers to the whole European market. This will impact both fertilising product manufacturers and processing technology suppliers.
 Sofie was organised in partnership with the IFS (International Fertiliser Society) technical conference, 4-5
- The need for the organic and organo-mineral (carbon-based) fertiliser industry sector to engage with the European Commission and with stakeholders for implementation and adaptation of the new EU Fertilising Products Regulation (FPR), in particular already concerning the inclusion of By-Products (industrial and other, inorganic and organic, CMC 11) and Animal By-Products = ABPs (CMC 10) and to address other regulations (REACH, ABPs ...).
- There are also considerable growth opportunities for organic fertilisers by diversification of input raw materials (circular economy) and in certified 'Organic Agriculture'.

SOFIE was organised in partnership with the **IFS** (**International Fertiliser Society**) technical conference, 4-5 June, which addressed mineral fertilisers production and regulation. IFS proceedings are available at <u>https://fertiliser-society.org/event/2019-ifstechnical-conference.aspx</u> SOFIE (First Summit of the Organic Fertiliser Industry in Europe), Atelier des Tanneurs, Brussels, 6-7 June 2019: slides are here www.phosphorusplatform.eu/SOFIE2019



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SOFIE identified areas where better information is needed or specific actions should be engaged to further nutrient and organic matter recycling in organic soil amendments:

- Organic and mineral fertilisers are complementary products, acting together to provide different functions which can harmoniously ensure optimal nutrient supply to crops (slow release over time, rapid availability in growth periods), optimal soil functions and together a full range of services to farmers.
- All fertilisers sectors should work together to promote Nutrient Use Efficiency and farm nutrient balance accounting (e.g. support of the EU CAP FaST proposal)
- How can mineral fertilisers and organics be better incorporated into 'hybrid' products and / or be combined in crop nutrition regimes? What challenges need to be overcome to achieve this?
- The organic (carbon-based) fertiliser industry is not well identified, and there is very little data available concerning overall market size, different products, companies. This is partly because of confusion between carbon-based fertilisers and products certified for 'Organic Farming'. Data collection is difficult because the market is mainly SMEs operating today at the national level, and because of overlap with related markets such as biostimulants and soil improvers, and with operators in waste recycling and by-product valorisation. How can the organic fertiliser industry be better defined and monitored?
- How can organic fertiliser companies, currently nationalbased, develop towards pan-European operation and markets? How can producers of organic fertilisers better 'get to market'? Which markets can be targeted? Which 'routes' can products take to reach these markets?
- Need for agronomic evidence on the performance of processed organic fertiliser products, whereas to date the field trial data available concerns mainly unprocessed organic amendments, such as manures or biosolids. Need also for better information on nutrient release and crop uptake time curves from organic fertilisers, depending on climate and soil conditions.

- Lack of scientific data on the stability in soil of organic carbon from organic soil amendments, and so difficulty to assess the real net greenhouse gas impact, over time, of use of these products.
- Significance for climate and air pollution (ammonia emissions -> particulates) of nitrogen losses in processing of secondary raw materials (especially manure) and in field application. Development of processes to recover and recycle nitrogen emissions.
- Different organic soil amendments will have different agronomic effects, contributing to soil structure (e.g. composts), soil biology (e.g. fresh manures), nutrient content, nutrient retention and mobilisation ... Benefits will also depend on soil and climate conditions. Information and advice for farmers means added-value.
- Organic and organo-mineral fertilisers have specific benefits in the Mediterranean region, addressing low soil carbon, and improving water retention / drought resilience. Mediterranean food industry / crop residues provide local raw materials for their production (e.g. vinasse, olive cake ...).
- Organic (carbon-based) fertilisers are not necessarily eligible for use in certified 'Organic Farming'. However, 'Organic Farming' is a growing and added-value market for organic fertilisers, subject to appropriate raw material sourcing and processing.
- There are close links between organic fertilisers and biostimulants, because some organic substances can facilitate plant nutrient uptake (e.g. humic acids), and with growing media, which require nutrient sources.
- Plastics contamination in secondary raw materials poses important problems. In order to prevent this becoming an increasing obstacle to organic fertiliser development and to nutrient and carbon recycling, upstream responsibility should be engaged: packaging producers, supermarkets, collection systems. A challenge is that "biodegradable" plastics may not be degradable in current composting or digestion processes.

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Luc Maene, International Fertiliser Society (IFS) opened the first SOFIE Conference, underlining that IFS's mission is to facilitate the dissemination and discussion of technical information about fertilising materials and crop nutrition, in particular through conferences, member newsletter, webinars and archived proceedings.

IFS sees SOFIE as a potential forum for expertise, discussion and debate

to evaluate new opportunities offered by the new EU Fertilising Products Regulation (FPR), to better understand the use of organic fertilisers in 'conventional' farming systems and their **complementary use with mineral fertilisers**, and to **address barriers to more widespread uptake of organic fertilisers in 'mainstream' crop production**.

Context and markets

Laetitia Fourié, <u>ECOFI</u> (European Consortium of the Organic-Based Fertilizer Industry) and Angibaud Derome fertilisers (Veolia group) outlined the definition of an "organic fertiliser", as integrated into the new EU Fertilising Products Regulation (FPR): that is, products



containing minimum levels of nutrients and also of organic carbon of biological (non-fossil) origin.

This is not to be confused with fertilisers certified for use in Organic Farming. Organo-mineral fertilisers are generally a combination of organic and inorganic fertilisers, although the definition in the FPR includes specific requirements.



ECOFI emphasise the waste

hierarchy: priority is recycling of materials back to the human food chain, then animal feed, and use in fertilising products only if these options are not possible.

Organic fertilisers offer a slow rate of nutrient release (and nutrient availability to crops), which depends on climate and soil conditions. They offer **sustainability benefits**, in particular increasing soil organic carbon, so improving soil structure and water retention.

Traceability

They are produced from a **wide range of different** secondary resources, including plant materials, slaughterhouse by-products, food industry by-products, as well as processed streams such as composts. All these materials are naturally variable, and industry's challenge is to provide high quality products, in a form adapted to farmers' needs (pellets, powders, liquids), which can be stored, transported and applied (stable) and which offer reliably consistent nutrient levels and other characteristics. This requires expertise in both raw materials sourcing and in processing.

The other key to product credibility is **traceability**, from raw material inputs, through processing, to the final product, and ECOFI offers support to its members in analysis, traceability, quality control and regulation.

ECOFI has 7 organic and organo-mineral fertiliser producer members, with a total turnover of 250 million



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Wim van Dijk, Wageningen University & Research, underlined the potential and importance of developing recycled fertilisers. related to local sources of secondary raw materials. The Netherlands and other regions in Europe face regional excesses of manure, which cannot be used by local farmers because of environmental application limits, but which are safe, and can be valorised if processed to products which can be

stored, transported and are adapted to farmers' needs.

Farmers need recycled fertilisers to be **homogenous and consistent and in a form consistent with farm machinery**, to be compatible with precision farming and nutrient balance management.

Many farmers are interested to **combine use of organic fertilisers** (for base fertilisation, contributing slowly available nutrients and improving soil structure) and mineral



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fertilisers (for additional nitrogen application to the growing crop). For this application to standing crops, nutrients must be rapidly available and the fertiliser must be concentrated, to reduce traffic of heavy machinery.

Available side streams can also be utilized for purposes other than fertilisers, **e.g. animal feed**, **directly or indirectly by growing feed biomass on side streams, e.g.** algal or plant biomass (e.g. duckweed) grown on wastewater or worms/insects grown on solid organic materials

Circular Economy Opportunities for Fertilisers



Florence Nys, UNIFA France (French federation of fertiliser industries). UNIFA's 42 members represent 96% of French fertiliser production with turnover of over 2 billion Euros.

In France, Mineral fertilisers represent nearly 2/3 of the 18 million tonnes of fertilisers and soil conditioners sold (2017), **the proportion of organic (carbon-**

based) **products is slightly increasing**, from 29% in 2010 to reach 36% in 2017.

Mineral fertilisers **represent 73% of total nitrogen** applied in French agriculture (including local, non-marketed application of animal manure). However, **phosphorus in the minerals represents only 46% application**, and potassium 28%. (Source: ANPEA Observatoire de la Fertilisation Minérale et Organique)

Florence Nys underlined the significance of the **new EU Fertilising Products Regulation (FRP)** which will provide a European legal framework for organic fertilisers, coherent with recognising that organic and mineral fertilisers are complimentary and that best practices should enable coherent use of both types of product.

She noted that the **French National Circular Policy**, expected to be voted before end 2019, proposes a priority for production of recycled fertilisers which high agronomic value and safety.



Chris Thornton, ESPP (European Sustainable Phosphorus Platform). summarised available information concerning the market for organic (carbon-based) fertilisers. The European Commission 2012 Study" "Fertilisers (cited in SWD(2016)64) estimates that organic and organo-mineral fertilisers represented 6.5% of fertilising products (by value), that is a turnover of 1.5 bn.€in Europe (see

diagram). A <u>published</u> market study suggests a higher **turnover of 2.5 bn.** \in (EU sales only). The EU study was based on responses from 61 SMEs in 10 Member States only, whereas it estimates a total of over 3 000 SMEs operating across Europe.



ESPP considers that **the new EU Fertilising Products Regulation will open opportunities for considerable change in the industry** structure, by opening the EU market to both organic fertilising products and to processing technologies.

ESPP has organised this SOFIE conference, with IFS, to bring together, for the first time, the European organic and organo-mineral fertiliser industries, to enable dialogue with agronomists and regulators. **ESPP's objective is thus to facilitate the development of nutrient recycling and improved nutrient use**.

Company innovation: products and markets



Vincent Walker, Research and Innovation Manager, **OvinAlp**, **France**, presented the company's activities, producing nearly 45 000 t/y of quality and innovative recycled organic solid and liquid fertilisers, and delivering to farmers. Founded in 1988. the company today has 80 staff and operates compost production under ISO 14001.

Raw materials used are mainly sheep manure (only from Protected Geographical Indication PGI Sisteron Lamb sheep), but also meat meal, grape and olive processing by-products, as well as mineral fertiliser additives.

OvinAlp: innovation and environment

The company **combines environment**, **innovation and quality for the farmer**, with actions including dust aspiration and recycling (safe working environment), solar energy, new raw materials to improve nutrient use efficiency, a composting process which ensures sanitisation, direct delivery to the farm (avoiding plastic waste), room temperature granulation without additives and pellet diameters adapted to customer requirements.

Innovative products include **Ov**, an active ingredient from bio-fermentation of green organic materials, and **Imis**, the first natural chelating agent to be accredited by the French national authorities (an amino-acid complex which improves plant uptake of macro- and micro-nutrients).





Humintrade

Mugurel Surupaceanu, General Manager, Humintrade SRL, Romania, discussed humic acids, an organic carbon based product which function principally to improve nutrient uptake, by adjusting plant osmotic balance and interacting with cell membranes. They can also improve soil water retention and soil structure and reducing toxicity of

nitrogen compounds. They are thus classified as a "biostimulants" under the new EU Fertilising Products Regulation.

Humic acids can be produced (by alkaline extraction) from natural organic carbon materials, such as lignite or leonardite, or in composting. The world market is growing at over 6% per year and is expected to reach around 1 billion USD within 5-7 years.

Added value is ensured by processing to **provide concentrated**, **uniform products**, **adapted to farmers' needs for precision application**, and by developing sustainable sourcing and processing from secondary raw materials, e.g. specific composting.



Fertikal: growth and export

Geert Brosens, CEO, Fertikal, Belgium, explained that the company converts local secondary resources into added-value products for export markets.

Added value is based on **feeding the soil, not only the plant**.

The company employs 70 staff and produces around 270 000 t/y of organic fertilising products, using

mostly secondary materials from < 120 km. Some **99% of** the 28 M€turnover is exported outside Belgium, of which around three quarters outside Europe (mainly Asia, South America, northern Africa). Sales are via local dealers who provide adapted advice and support to farmers and users.

Products include compost, crumbs and pellets, with **pellets markets growing rapidly** (3x increase since 2015, objective 100 000 t/y by 2022), because they offer a consistent product, with quality ensured by homogenisation, sanitisation, palletisation and appropriate packaging.

Fertikal see as opportunities the **increase in demand for "Organic Farming" certified products** (but with difficulties because of different requirements by Organic Farming organisations in different countries), the need to increase organic carbon in soils, and the worldwide recognition of EU food safety regulations.

Questions for the future are posed by perspectives for livestock production in the EU (**future of concentrated animal production**, risk of disease outbreak) because Fertikal's main input material is local livestock manure.

4R Group: know-how and trust



Beckv Wheeler, Director. **4R** Group, **UK**, showed how the company provides added value to both farmers and producers, by making the connection between organic matter and nutrient sources and agronomic requirements (different materials offer different properties), and by fostering working partnerships between waste and by-product producers and farmers. Logistics, transport and

application seasons are essential points.

4R Group has €11m turnover with 45 staff working with over 150 contractors delivering 750 000 t/y of bulk organic amendments to farmers in the UK. The company provides the farmer not only with an agronomic product, but also with the full compliance service required for waste recycling and agricultural regulations. 4R delivers accredited operational, technical and farm assurance services, ensuring compliance across multiple **regulatory routes and quality standards** for both producers and end users.

Different regulatory routes include the Sludge (use in Agriculture) Regulations for biosolids, Publicly Available Standards (PAS) and Quality Protocols for quality composts and anaerobic digestates and the Environmental Permitting Regulations for other wastes and by-products. Compliance for farm wastes, including farm yard manure (FYM), slurry and farm-fed anaerobic digestion is achieved through cross compliance audits. There is a growing interest in the UK in soil organic carbon, but there's a difficulty to convert this into a price farmers will pay. This may evolve as **the UK is considering including soil health as a criteria in its future farm subsidy programme**.

Quality of materials delivered to farmers is essential to develop trust and requires to ensure consistency of materials and **traceability**.

Challenges include emissions in storage and application, and questions around contaminants and perception of secondary materials, with particular difficulties related to plastics, still present in organic recycling streams and visible enough to cause market perception barriers. Objectives are currently focused on upstream responsibility for packaging, including for supermarkets, and to improve consistency and quality of waste collection and sorting.



Biolan: renewable sourcing

Hannamaija Fontell, Director of R&D and Business Development, Biolan Oy, Finland, presented the group: 9 companies in 5 European countries, producing 100 000 t/y of organic fertilising products and exporting to 50 countries worldwide, since 1974.

The main input material was initially chicken manure, but today Biolan also



The company sells to a range of markets, in particular hobby gardeners, professional horticulture and certified Organic Farming.

Development is driven by the increase in certified Organic Farming, and by opportunities to valorise secondary raw materials, processing to provide products adapted to farmers' requirements (in particular granulation, to allow farmers to use existing equipment) and to transform local nutrient concentrations into transportable products. Cooperation with the food industry enables valorisation of new secondary raw material streams.

Funding for SME innovation is important to enable product development and field testing. For example, Biolan has successfully developed a liquid organic fertiliser produced by using lactic acid to remove ammonia emissions from chicken manure composting.

Soilfood: direct to the field



Eljas Jokinen, CEO, Soilfood Oy, Finland, explained that the company produces organic fertilisers, recycled limes and amendments, and provides an accompanying service to farmers, including ensuring field application of products and preparing farm and crop fertilisation plans.

The company, launched in 2016, today has 30 staff and manufactures, distributes and applies to fields around 145 000 t/y of soil amendments, from

secondary raw materials from forestry, bio-energy and food industry.

Current product developments include nutrient-rich organic pellet fertilisers and a soil improver based on paper industry fibres, which can reduce phosphorus losses from soils.

The company's added value is based on minimising processing and application costs and on providing quality and advice to farmers.

Industry visions of opportunities and challenges



Fertilizers Europe

Tiffanie Stephani, Fertilizers Europe, underlined that the mineral fertiliser industry considers that organic and inorganic fertilisers are clearly complementary, offering different functions to farmers. Both types of fertiliser can work as allies to ensure optimal fertilisation of crops and soil, contribute to food security and to address environmental challenges

including water resources, Nutrient Use Efficiency, air



quality and climate change. Leading mineral fertiliser companies are actively engaging with organic amendments, for example Yara (present) who have launched a nutrient circular economy initiative with Veolia.

Growing Media Europe



Stefaan Vandaele, Agaris, Belgium and Poland, and President Growing Media Europe (GME), explained that growing media need nutrients and generally use organic fertilisers at 2 -7 kg/m², with some 14 million km² of growing media are sold annually in Europe. The industry has evolved from a 'waste treatment' approach to providing performance products, adapted to specific crops and conditions. Key objectives are

improving sustainability of horticulture, and contributing to food security. Challenges are cost and availability of labour on farms, pressures on resources (nutrients, water) and climate change.

ECOFI



Chiara Manoli, Vice President of ECOFI (European Consortium of the **Organic-Based** Fertilizer-**Industry) and Regulatory Affairs** Officer at ILSA, Italy, explained ECOFI's vision of the sector, based credibility (traceability on of components, standardized processes, scientific evidences) and clarity (harmonized rules at European level) which will lead to products with high added-value being placed on the market.

EUROFEMA

carbon-based

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they will now have a European and not just a national market. The FPR also provides quality safeguards, and will help build trust. For these reasons, he expects many companies will adopt the new FPR CE-Mark for their products.

PFCs

amendments

(Product

European Compost Network



Irmgard Leifert, **European** Compost Network (ECN), welcomes that the new EU Fertilising Products Regulation (FPR) will allow appropriate compost and digestates from biowastes to be placed on the EU market as organic fertilisers, soil improvers and growing media. The new regulation, for the first time, provides EU-wide end-of-waste criteria for compost and digestate.

ECN underlined the importance of biowaste for the EU Circular Economy for nutrients and organic, estimating a potential of about 90 million t/y of biowaste, which can be recycled to about 36 million t/y of composts / digestates (containing nearly 82.000 t of phosphorus). The recycling rate is expected to increase with the obligation of separate collection of biowaste (by 2024) set by the new EU Waste Regulation.

ECN however considers that the temperature/time profiles for composts (CMC3) in the EU FPR should be reconsidered to take account of state-of-the-art sanitisation processes.

European Biogas Association



Gregory Reuland, European Biogas Association (EBA), anticipates significant development of use of digestate as a fertilising material. Anaerobic digestion, as a proved and tested technology, has the potential to turn environmental issues associated with manure surpluses and other organic was streams into an opportunity. In Europe, bio-methane has already grown, but the further potential for energy recovery, GHG

reduction and efficient nutrient recycling from the abundant waste streams is considerable (manure, municipal solid waste, agricultural crop residues, sewage sludge). Processing of digestate will develop and improve: producing a new range of liquid fertilising products, feedstocks for algae, recovery of mineral salts, processing to solid organic fertilisers and soil amendments.

Agronomic trials using organic amendments

John Williams, ADAS UK, summarised agronomic science knowledge on organic amendments, such as manures, sewage biosolids, digestate and compost.

He emphasised the wide variation in nutrient content for "the same" organic secondary materials, e.g. chicken manure nitrogen content can vary from 15 to 30 kgN/tonne fresh weight.



Significant losses of nitrogen can occur in processing, storage and application. For example, over a third of nitrogen in digestate can be emitted to air with surface application, but this can be reduced below 15% if injected. Up to 20% of manure nitrogen is lost to groundwater by leaching from autumn applications of high available N manures.



A difficulty is that plant availability of nutrients depends on the rate of mineralisation of organic forms, and this can vary with temperature and soil moisture.

Phosphorus is conservative, but plant availability will depend on interactions with soil, and can be reduced by presence of iron or aluminium, in particular in sewage biosolids.

Organic secondary raw materials can also bring other useful plant nutrients, such as **sulphur**.

Need for better understanding

Key questions posed by farmers and for the environment are:

- What is the nutrient content? How available are these nutrients to plants? And so, how to integrate organic amendments into nutrient management plans?
- How can accuracy and evenness of application be ensured?
- Limitation of **atmospheric nitrogen emissions during processing** (e.g. loss of nitrogen during composting). how can such nitrogen emissions be recovered and recycled?

Positive soil impacts



David Powlson, Rothamsted Research UK, outlined information from a field tests on impacts of organic amendments on soils. Data includes several long-term field studies of more than one hundred years (UK, Denmark, Germany) and meta-analysis of data from 20 field test sites across Europe.

Conclusions are that **organic amendments can provide nutrients and improve crop nutrient uptake**,

improve physical soil conditions (e.g. soil pores which are important for water retention and root development) and **provide an energy source for soil micro-organisms**. Soils with higher organic carbon levels require a lower level of Olsen-P to achieve the same yield. Compost and manure have also been shown to increase earthworm density, which is related to soil health.

A small increase in soil organic carbon can have a rapid and significant effect. Although increasing soil carbon does not always lead to increased crop yields, it tends to contribute to the resilience of yields.



Impact on crop yield shows to be different for different crops. **Organic amendments are more beneficial to spring barley than to winter wheat.** This seems to be because the organic amendment increases soil porosity, facilitating rapid root development, which is more important for the spring crop. Also, organic amendments are particularly beneficial on crops which are sensitive to soil conditions (e.g. potatoes).

Soil carbon storage: is it significant?

Long-term organic amendment application, at high rates, combined with return of crop offcuts (stubble) to soil, have shown to **increase soil carbon (nearly doubling soil carbon)**, whereas use of mineral fertiliser (with stubble return to soil) resulted in a small increase in soil carbon, compared to a stable carbon content with no fertiliser use (Rothamsted Broadbalk field trials since 1843). However, the largest impact on soil carbon comes from changing land use from grassland to arable (soil carbon loss) or arable to grassland or woodland (soil carbon increase).

However, soil storage of carbon related to organic amendment application can only be considered to contribute to net carbon (greenhouse gas) sequestration if the carbon in the secondary material would otherwise have been "lost" to the atmosphere (e.g. landfilling without methane trapping), not used for energy recovery.

Organic carbon in Mediterranean soils



Claudio Ciavatta, University of Bologna, Italy, explained the importance of organic carbon inputs to Mediterranean soils, referencing a number of scientific publications.

In many Mediterranean regions, soil organic carbon levels are very low, e.g. <1% in some parts of Veneto and Po Valley.

Soil organic carbon is inversely correlated to **soil erosion**, which is an important problem in the

Mediterranean region, and is important for **soil fertility**, contributing to soil biological activity and soil structure. Soil organic carbon also stimulates **root development**, so contributing to soil structure and to crop drought resilience, even at low levels.

Phosphorus in organic fertilisers is protected from immobilisation by iron or aluminium cations in the soil, or as insoluble tricalcium phosphate (soils pH > 7.5). Organic nitrogen forms are slowly available to plants, which can correspond to crop needs. Micronutrients are in complexed and chelated forms, often with good bioavailability.

Organic fertilisers today are produced from a wide range of secondary materials, offering different nutrient to organic carbon ratios, with processed products adapted to specific crops, soils and uses, including for precision placement next to the crop roots.



Maria Pilar Bernal, CEBAS-CSIC, Murcia, Spain, explained how organic fertilisers today enable recycling of nutrients and organic carbon from a range of secondary raw materials. Constraints include ensuring quality and food safety (pollutants in some by-products and wastes, pathogens) and avoiding nutrient loss in use.

She summarised data on different organic amendments, advantages and issues for use on farms, and **achievements and challenges** for increasing nutrient recycling through organic fertilising products.

Development is moving from 1st generation products (such as compost or dried manure solids) towards **processed organic fertiliser products adapted to specific Mediterranean needs:** intensive cropping (often several crops per year), water scarcity, high value crops (fruit, vegetables). Processing can include thermal treatment (biochar, ashes), concentration, pelletising and conditioning, recovery of mineral products (e.g. struvite, ammonium salts) and combination with biostimulants to improve nutrient use efficiency.

Regulatory context and the EU Fertilising Products Regulation (FPR)



Mariano Alessio Verni, SILC Fertilizzanti, presented an overview of regulatory developments in Europe impacting carbon-based fertilisers: REACH, Plant Protection Products, Animal By-Products and the new EU Fertilising Products Regulation.

REACH (EU chemical regulation) exemptions need to be considered carefully, because exemptions are only applicable under specific conditions

for e.g. recovered substances, natural substances, polymers. Concerning digestate, he indicates that the EU Member States (CARACAL) have finally approved on 17th May 2019 the **addition of digestates to the Annex V list of REACH exemptions***, but this is not yet formally modified in the regulation.

* http://ec.europa.eu/growth/tools-

databases/tbt/en/search/?tbtaction=search.detail&Country_ID=EU&num=630

It is also important to note that for several CMCs (component material categories - CMCs), the new EU Fertilising Products Regulation (FRP) requires REACH regulation, with all the annexes (irrespective of the tonnage) and "for use as a fertilising product": CMC1, CMC3 for composting additives, CMC4 and CMC5 for digestion additives, CMC6 food industry by-products, CMC11 by-products (other than ABPs).

Some organic fertilising products or biostimulants may also potentially be concerned by the **Plant Protection Products** (**PPP**) **regulation**, (e.g. attractants, plant growth regulators, fungicides



Need for industry input on ABPs

Animal By-Products (ABPs) are a critical outstanding question in the new EU Fertilising Products Regulation. CMC10 addressing ABPs is currently an empty box (!) and manures cannot be used as inputs to CE-Mark composts or digestates until this is resolved. The European Commission must engage assessment of which animal by-products to include in CMC10 by December 2019, and will then specify ABP End Points for these, which will be integrated into the ABP Regulations and into CMC10 of the new FPR.

Mr. Alessio Verni introduced some suggestions concerning the practical approach to allow that some ABP derivatives reach an End Point.

Discussion with participants confirmed the importance of materials derived from animal by-products (ABPs), which are very widely used as inputs for organic fertilisers (including manures).

The list of eligible ABP materials, the definition of ABP End Points (e.g. acceptable sanitisation conditions) and of how the ABP End Point fits into ABP processing and organic fertiliser production, will be essential for enabling producers to access the new CE-Mark.

Organic fertiliser producers and other stakeholders are recommended to input (via ESPP info@phosphorusplatform.eu) information about any ABPs they use as input materials and which are not included in the 'positive list' already included in the new FRP regulation art. 46(4).

Opening new markets



Johanna Bernsel, European Commission DG GROW, informed that **the new EU Fertilising Products Regulation has been formally adopted on 5th June**, and is expected to be published in the European Journal on 25th June 2019.

This new regulation will radically modify the **market in Europe for recycled fertilisers, organic fertilisers, organominerals, biostimulants, soil improvers and for growing media**. At present, these are sold under national legislations, making it difficult to export from one EU Member State to another. The new regulation and the CE-Mark for these products will open up the entire European market (as a 'single market'), for both the products and for processing technologies.

Importantly, the new regulation brings **End-of-Waste status**, obtained by achieving the CE-Mark on a product.

She reminds that the **CE-Mark will be optional**: companies can choose to continue to sell on national markets under national regulations as at present.

Also this is a "product" regulation, and does not regulate use and application. In particular, **the Nitrates Directive remains applicable**.



An important aspect of the regulation is Annex IV, which describes the '**Conformity Assessment procedures'**, which must be implemented to achieve the CE-Mark. The "minimum" Module required depends on the product function category (PFC) and component materials used (CMC), see diagram, but a more demanding Module can always be voluntarily applied.

Theodora Nikolakopoulou, European Commission DG GROW, outlined the actions the Commission is now engaging for implementation of the new Fertilising Products Regulation:

- definition of **criteria for use of "By-Products" as component materials (CMC11).** JRC will be involved in this process, which must be completed by July 2022.
- guidance document for labelling
- standardisation request to CEN (see below)
- assessment of criteria for **biodegradability for polymers**, and evaluation of whether or not mulches will be covered
- assessment of products derived from Animal By-Products and definition of End Points (see above), for implementation into the ABP Regulations, CMC10 (and directly applicable in CMC3 compost and CMC4 digestate)
- implementation of **STRUBIAS** (struvite and phosphate salts, biochars and pyrolysis materials, ash based materials). Proposed CMC criteria will probably be presented to the EU Fertilisers Working Group in November 2019, based on the JRC report (to be published soon)
- "Frequently Asked Questions" (FAQ) document, underway



Leon Fock, Culterra and Eurofema, explained how to obtain the new CE-Mark for organic fertilising products in five steps

- 1) **Decide if your product needs a CE-Mark**, given that national regulations will continue to apply within national markets. Is it already covered by national authorisation? Do you intend to export to other countries?
- 2) **Identify under which "product category" (PFC)** of the new EU FPR your product can fit, and if several choose under which one you wish to apply for the CE-Mark. Then identify all the raw materials used in production, and classify **under which FPR CMC** (Component Material Category) they fit.
- 3) Identify **which Conformity Assessment module** is applicable. The minimum requirement depends on the PFC and the CMCs (see the European Commission slide above), but you are free to choose a more demanding module.
- 4) Assess and document conformity, for both CMCs and PFC. This should cover product 'design', analysis/testing results, track record (respect of tolerance limits), and identification of required labelling information. It is recommended to start soon, because proving track record will require demonstrating the reliability of data over time. If Module D1, then a quality system must be established.
- 5) **Obtain approval and place on the market**, with the CE-Mark and the necessary labelling information. This can be by self-assessment or may require verification by a Notified Body, or may also require that the Notified Body audit the quality system, depending on the Module.

Eurofema has already engaged a **first pilot Module D1 quality system audit** with a candidate Notified Body. The results will be shared to support industry learning.

New testing method standards



Laurent Largant, AFAÏA (French federation for manufacturers of soil improvers, growing media, organic and organo-mineral fertilisers, mulches and biostimulants), and chairman of CEN/TC223, explained that the Commission has prepared a list of some 240 new European standards which are needed to accompany the new Fertilising Products Regulation, that is new testing methods needed for different criteria specified in the CMCs and

PFCs of the new Regulation. These cover testing of product characteristics (e.g. nutrient content) or measurement of safety specifications (contaminants, pathogens).

Many of these new standards consist of adapting an existing EU standard (e.g. application to a wider range of materials), but others are completely new (e.g. validation of effect claims for biostimulants) or very specific (e.g. "self-heating factor" for compost, "residual biogas potential" for digestate,

Work will engage **three CEN technical committees**, working in collaboration: TC223 Soil Improvers and Growing Media, TC260 Fertilisers and Liming Materials, TC455 Plant Biostimulants.

"final degradation products" for nutrient polymers).

Currently, the mandate to CEN is pending finalisation by the European Commission, and timing, budget and funding of work need to be clarified.

Mr Largant reminds that, as indicated above by the European Commission, **the use of harmonised CEN testing methods is always optional**. Companies are free to use other testing methods to demonstrate conformity, but will in that case have to justify the validity of this to their Notified Body, which can be problematic.





Slides and programme of this First Summit of the Organic Fertiliser Industry in Europe), 6-7 June 2019, can be found here www.phosphorusplatform.eu/SOFIE2019

