

# SESSIONS

DAY ONE - 08/03/2022

New AG International Annual

Delivered as a Hybrid Event  
Live In-Person & Digital Experiences: 8 - 10 March 2022  
Hilton Warsaw City, Warsaw | Poland

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## Registration Opens

12:00 - 13:20

Plant Nutrition & Health: Market Dynamics & The Impact on Industry

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## Opening Remarks

13:20 - 13:30

Plant Nutrition & Health: Market Dynamics & The Impact on Industry

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## Keynote: How we have changed as an industry and where we are heading?

13:30 - 14:00

Plant Nutrition & Health: Market Dynamics & The Impact on Industry

1. Insight into the economics of the fertilizer sector : economics of production and manufacturing
2. How are we meeting the needs of farmers and linking in technology ?
3. The retailer challenge: how retailers are influencing fertilizer and plant nutrition innovations
4. How the fertilizer industry has changed over the past 20 years: the rise of start ups and agtech

## Participants

**Luc Maene** - Former Director General IFA, International Consultant

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## Understanding market dynamics for the foliar fertilizer and biostimulant in Europe with insight into Central & Eastern Europe

14:00 - 14:30

Plant Nutrition & Health: Market Dynamics & The Impact on Industry

- Market trends for the fertilizer and biostimulant sector in Europe with insight into Eastern & Central Europe
- Distribution structure evolution in Eastern & Central Europe – consolidation versus regionalization and specialization
- Our experience to date working in Eastern & Central Europe markets and other regions- what have we learnt and where do we see most opportunity?
- What goals did we have for 2020 and 2021 and how did we go about achieving them?
- What challenges did we face? Did COVID19 stop us in our tracks? What has changed due to COVID19.
- What are our 2022 and future goals and ambitions and how can we work together more as a sector?

## Participants

**Hubert Kardasz** - CEO, InterMag

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## Higher shipping costs in containers – is this the new normal?' Impact for specialty fertilizer and bio-ag inputs market.

14:30 - 15:00

Plant Nutrition & Health: Market Dynamics & The Impact on Industry

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## Networking Break

15:00 - 16:00

Plant Nutrition & Health: Market Dynamics & The Impact on Industry

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## Understanding Eastern European Markets for Agribusiness Opportunity

16:00 - 16:30

Plant Nutrition & Health: Market Dynamics & The Impact on Industry

## Participants

**Dimitris Drisis** - Agri Expert & Board Member, Various Agri Organisations

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## Sustainable Agriculture Panel :how can plant nutrition agri inputs play a key role for sustainable farming for the next generation?

16:30 - 17:00

Plant Nutrition & Health: Market Dynamics & The Impact on Industry

## Participants

**Brian Wade** - Head of Crop Science and Solution Development, Anglo American

**Marc Fischer** - CEO & Co Founder, OmniCult FarmConcept

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## Welcome Cocktail Reception

17:00 - 18:00

Plant Nutrition & Health: Market Dynamics & The Impact on Industry

# SCHEDULE

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TIME	PLANT NUTRITION & HEALTH: MARKET DYNAMICS & THE IMPACT ON INDUSTRY
12:00	12:00 - Registration Opens
13:00	13:20 - Opening Remarks 13:30 - Keynote: How we have changed as an industry and where we are heading?
14:00	14:00 - Understanding market dynamics for the foliar fertilizer and biostimulant in Europe with insight into Central & Eastern Europe 14:30 - Higher shipping costs in containers – is this the new normal? Impact for specialty fertilizer and bio-ag inputs market.
15:00	15:00 - Networking Break
16:00	16:00 - Understanding Eastern European Markets for Agribusiness Opportunity 16:30 - Sustainable Agriculture Panel :how can plant nutrition agri inputs play a key role for sustainable farming for the next generation?
17:00	17:00 - Welcome Cocktail Reception

### Answers to the challenges of ecologically sustainable agriculture

09:00 - 09:30

Plant Nutrition Scientific Research: The latest breakthroughs, research results & future opportunities for product development

The transit to organic farming rises a number of issues about the fertility of the soils, especially those undergone intensive use. Decline of the amount of organic matter, impoverishment of biocenoses, soil compaction and pollution, salts accumulation: all these and other problems need to be tackled effectively and specifically. The unique complex of saprotrophic fungi and PGPR bacteria in Ecostern®<sup>®</sup>, a microbiological product for soil recovery, quickly colonizes soil and plant residues, restores the balance of microorganisms, reverses the loss of humus compounds by decomposing and transforming plant residues. Intensive farming can be environmentally friendly or at least neutral, if appropriate solutions are used. PGPR bacteria are known to improve plants' ability to consume nutrients, thus decreasing the need for mineral fertilizing. BTU-CENTER's bacterial complex GROUNDFIX®<sup>®</sup> reduces the application of mineral fertilizers by up to 30% for the same yield by prolonging bioavailability of the nutrients used and by increasing the mobility of phosphorus and potassium, which are usually available in soils. Tools, such as adjuvants, require biologization as well. As opposed to the potentially harmful chemical adjuvants, biological adhesive LIPOSAM®<sup>®</sup> contains the exopolysaccharides produced by PGPR bacteria *Paenibacillus polymyxa*. It provides a safe way to fix active substances on the surface of the plant or in the top layer of soil and prevent them from washing off. Besides, bacterial exopolysaccharides demonstrate the ability to act as protector against various stress factors - freezing, high temperatures or drought.

#### Participants

**Dmytro Yakovenko**, - Head of International Sales, BTU-CENTER Group of Companies

### Market for stabilized nitrogen fertilizers in Europe: What drives the adoption?

09:00 - 09:30

Slow Controlled Release & Stabilized Fertilizers : Trends & New Products

- What are the differences in current adoption rates of stabilized nitrogen fertilizers in EU-27 and GB?
- How could existing and new upcoming environmental policies of the new EU commission drive the adoption of these fertilizers further?
- How is the situation in outside of Europe?
- How stabilized nitrogen fertilizers can contribute to reach the environmental targets

#### Participants

**Gregor Pasda** - Global Technical Marketing - Nitrogen Management, BASF

### Combining nutrients, organic substance, and fertilizers to achieve ultimate productivity of fertilizers and land

09:30 - 10:00

Plant Nutrition Scientific Research: The latest breakthroughs, research results & future opportunities for product development

The Yield Response Curve showing the law of the decreasing marginal yield, explains why low nitrogen inputs show higher Nutrient Use Efficiency, but low land productivity, while NUE is decreasing with growing yields. The starting point of the YRC gives an indication on soil fertility status. Further nitrogen supply leads to higher yields if no other growth limitations are present. Lack of soil fertility, however, results in lower buffer capacity of negative impacts. This is often tried to be compensated by increasing application rates of chemical inputs. This results into a dilemma, as the highest land productivity rates are obtained by chemical inputs, at their least efficient utilization. One of the functions of biostimulants is to support nutrient uptake by plants. This leads to a misunderstanding of their use: If they are used to extract residual amounts of nutrients only, this might adversely lead to further loss of soil fertility through soil exploitation. This study demonstrates that biostimulants applied in combination with nutrients and organic substance can rise soil fertility and can contribute to higher productivity of fertilizers and land.

#### Participants

**Thomas Mannheim** - Head of Agronomy, Advocacy and Regulatory Affairs, Ductor

### New slow-release fertilizers –what farmers need and require - insight from ICL

09:30 - 10:00

Slow Controlled Release & Stabilized Fertilizers : Trends & New Products

This session is on hold for ICL

### Networking Break

10:00 - 10:45

### Corn Yield Response to Combined Application of Reduced Phosphorus Rates and RhizoSorb® in Neutral Soils

10:45 - 11:15

Mode of Action, Formulation & Application To Improve Product Efficiency

Phosphorus (P) fertility strategies intentionally buildup soil solid phase P to overcome limited diffusion of P in soils and increase solution phase P. Recently, RhizoSorb® has received increased attention for its potential contribution to sustainable agricultural production by buffering P concentrations in soil solution thus reducing the amount of P fertilizer needed. We present data from field experiments in two locations (JRO and PEM) consisting of thirteen treatments set up in a completely randomized block design with six replicates to evaluate the effect of combined applications of reduced P rates and RhizoSorb® on yield performance of corn (*Zea mays* L.). Treatments were tested in a full factorial design and included: (i) four P2O5 rates (representing 100%, 75%, 50%, and 25% of the recommended P rates) and (ii) four RhizoSorb® rates (200 lb/A, 100 lb/A, 50 lb/A, and 0 lb/A). At the JRO location, yields increased in treatments receiving 75% P + RhizoSorb® and 50% P + RhizoSorb® by 13 to 15% and 3 to 8%, respectively, compared with 100% P controls without RhizoSorb®. The increment in yield could have occurred due to RhizoSorb® mediated changes in P availability that resulted in increased P uptake (3 – 14%). Differences in yield and P uptake were minimal among treatments at the PEM location. Our results suggest that application of RhizoSorb® could allow for the reduction of recommended P rates without compromising corn yields. Further research is required to determine the influence of pH and soil test P (low, optimum, or high) on RhizoSorb® effects.

#### Participants

**Pauline Welikhe** - Research Scientist, Phospholutions, Inc.

### Urease inhibitors formulations as strategy to improve nitrogen use efficiency in corn crop

10:45 - 11:15

Controlled Release Fertilizers : Agronomic Performance: Trials & Technology for New Products

The use of new technologies for fertilizers has provided a significant increase in the productivity and sustainability of agricultural crops in Brazil. This gain is due to the integration of different innovations and technologies. To mitigate ammonia losses several techniques can be used. Among them, one of the most promising technologies is the use of stabilized urea containing urease inhibitors such as: NBPT, NPPT and Duromide. In Brazil and another several countries around the world, the efficacy of urease inhibitors in urea has already been proven to reduce NH<sub>3</sub> volatilization. However, to achieve success in the adoption of these technologies, it is necessary to understand that for it to be efficient, it depends on some factors, which are: urease activity in soil, temperature, soil moisture and, especially, the local climatic conditions that are decisive for a greater or lesser reduction of N losses. Analyzing this whole issue, it is noteworthy that studies and adoptions by commercial farmers involving the application of urease inhibitors in urea are being improved over the years. Currently, there are other approaches in research involving the storage conditions of the inhibitor to different temperature and when stored in contact with phosphate fertilizers over time. In this scope, we hope to present a compilation of researches to analyze the behavior of urease inhibitors formulations to urea after storage with conventional and coated phosphate fertilizers, and, furthermore, to determine their half-life during storage. We also evaluate agronomic performance of different urease inhibitors technologies applied in the field corn trials to quantify.

#### Participants

**Douglas Guelfi** - Professor, Federal University of Lavras

### The Use of Polyaspartic Acid (PAA) in Fertilizer Products

11:15 - 11:45

Mode of Action, Formulation & Application To Improve Product Efficiency

Polyaspartic Acid (PAA) is a polymer amino acid, consisting of several aspartic acid subunits, forming salts with cations such as potassium (K) or calcium (Ca). For agricultural purposes, K-PAA or Ca-PAA salts are used. PAA and its salts have manifold industrial uses, such as an anti-scaling agent (cleaning of metal surfaces) and corrosion inhibitor. However, in crop production PAA is still rarely used despite some promising test results showing crop growth stimulation and improved stress tolerance. Currently, there is an increasing number of scientific papers on the beneficial effects of PAA on crops. In this study we present some effects of K-PAA and combinations of K-PAA with nutrients and nitrification inhibitors on growth and stress resistance of several crop species such as tomatoes and herbal plants. PAA treatment on plant had two major effects: (1) The content of macro and micro nutrients was raised and (2) the tolerance against abiotic stress like water deficiency and salinity was improved. These effects are supposed to be partially due to the enhanced uptake of nutrients and also to a better development of root system. In addition to its direct effect on plants we found out that K-PAA is a valuable component of fertilizer products containing organic substances, thus making the mixtures more stable and effective over a longer time. These results show that PAA as a component of mineral fertilizers act as a nutrient uptake promoter as well as a biostimulant protecting plant from abiotic stress.

#### Participants

**Lu Yin-Bandur** - Head of Research & Development, DeltaChem GmbH

### Assessment of urease inhibitor in improving the efficiency and reliability of urea containing fertilizers applied on topsoil in Poland

11:15 - 11:45

Controlled Release Fertilizers : Agronomic Performance: Trials & Technology for New Products

There has been very little field experimental work in Poland on the use of urea treated with urease inhibitors, in either tillage cropping systems or on established grassland. The potential beneficial effects of the inhibitor NBPT (N-(n-butyl)-thiophosphoric triamide have been reported by many authors and reviewed by Bhogal et al. (2003). According to these authors, the use of the urease inhibitor is the only practically realistic method of mitigation ammonia emissions following urea use. To check these findings, in 2011- and 2012-year field experiments were carried out over two vegetation seasons to assess the effectiveness of the NBPT urease inhibitor in the process of reducing ammonia emissions from UAN. Direct quantitative measurements of ammonia volatilization from UAN have been executed by means of a micrometeorological integrated horizontal flux method. (Marcinkowski, T.; Kierończyk, M. (2015)). Next, in years 2012 to 2015, using replicated small plots response of winter cereals: wheat, barley and maize crops to ammonium nitrate, NBPT stabilized urea (trade name moNolith46®) and urea at a limited range of N rates has been tested. In total there were 11 experimental sites covering various soil types and crops. A randomized block design at each site with 4 replicate blocks was used. This 5 years study demonstrates that adding urease inhibitor NBPT (trade name moNolith46®\_Yellow) to urea contained fertilizers significantly reduce ammonia emissions thus helping to achieve environment protection without sacrificing crop yields.

#### Participants

**Zbigniew Potrzuski** - CEO, Phoenix Sp. z o.o. Sp.k.

### The latest coating technologies

11:45 - 12:15

Mode of Action, Formulation & Application To Improve Product Efficiency

### This session is on hold for a leading sponsor

11:45 - 12:15

Controlled Release Fertilizers : Agronomic Performance: Trials & Technology for New Products

### Lunch & Networking Break

12:15 - 13:55

### How microbes could be pillar of plant nutrition of tomorrow

13:55 - 14:25

Plant Nutrition: Agronomic Performance: Trials & Technology for New Products

In the current agroecological transition, a main challenge is to preserve production levels and environmental health while using less conventional inputs from chemical origin, and natural products based or derived from microorganisms have a major role to play. Agrauxine has for five years been developing a new range of biosolutions for optimizing crop nutrition by improving biological, chemical and physical interactions between plants and soils. These aid in fertilizer use efficiency, a key element in the performance and sustainability of cropping systems. Agrauxine is selecting the best microbial based technologies, yeasts, yeast derivatives, bacteria and fungi, using its AgBiotech platform. This process combines diverse screening and characterization methods based on in silico, in vitro and in planta assessments. Applied to soil or seed, or in mix with fertilizers, these new bionutrition technologies offer many tools to growers. Some examples: (i) stimulating the activity and diversity of microorganisms, naturally living or inoculated in the soil, which play a beneficial role in nutrient cycles, (ii) facilitating the availability of nutrients (e.g. nitrogen, phosphorus), improving the use-efficiency of fertilizers (through fixation, mineralization or solubilization), promoting their assimilation by the plant, (iii) conditioning the rhizosphere to provide the plant with the optimum environment for its growth and development. Agrauxine's scientists and agronomists are bridging the gap between exploring and managing the plant-soil microbiome from the lab to the field. The potential for commercially available innovation that microbes offer as AgBiologicals is just at its beginning.

#### Participants

**Benjamin Albert** - R&D Biostimulants Project Leader, Agrauxine

### Nutrient Enhanced Technologies: the key for environmental-friendly food production

13:55 - 14:25

Sustainability of ag production systems with SCRSFs

Agricultural systems are increasingly under pressure to ensure high crop yields with significantly lower input of nutrients and plant protection products, and in this way reduce the eutrophication of soil and water and the emission of Greenhouse Gases (GHG). With both the Farm2Fork and Biodiversity strategies as key elements of the European Green Deal, growers will be obliged to use significantly less fertilizers in the crop systems even if scientific studies already indicate risks of lower agricultural yields and the need for additional farmland outside the EU as eminent consequences. In general, these political and strategic developments raise the relevance of technologies that support higher nutrient use efficiency by the crops. Fertilizers treated with Urease Inhibitors (UI) or Nitrification Inhibitors (NI), as well as Slow and Controlled Release Fertilizers, are getting into the center of attention. While their characteristics and advantages are well-known inside their traditional application fields, in many crops as well as in several geographic regions, this knowledge has to be spread and refreshed. Through different modes-of-action UIs, NIs, CRFs and SRFs contribute for a more environmental friendly food production. In this presentation the mechanisms behind each technology, their technical and agronomic advantages, and the evaluation in terms of nutrient delivery and environmental impact will be highlighted. Trial results from different crops and production systems will be shown to underline the agronomic and environmental benefits. As final tool in the box, the rational combination of the above mentioned NET technologies with high-quality biostimulants opens many formulation possibilities to target diverse crop and production-specific challenges.

#### Participants

**Mauricio Hunsche** - Head of R&D, Compo Expert

### Water Soluble Fertilizers: Product development : Scientific developments with technologies that improve plant nutrition

14:25 - 14:55

Plant Nutrition: Agronomic Performance: Trials & Technology for New Products

- Agronomic & fertilizer technology information (mode of action & benefits)
- Field Trial Results: Performance review and analysis on field trials · Market insight – where is this product used?
- Product development: what were some of the core challenges encountered during product development?

### A recovered sustainable slow-release fertiliser

14:25 - 14:55

Sustainability of ag production systems with SCRSFs

EasyMining has developed a process for the recovery of clean phosphate from sewage sludge ash (SSA) which is patented and registered under the brand Ash2Phos. This process is based on the wet chemical treatment of sewage sludge ash from mono-incineration or similar wastes. Phosphorus is initially recovered in the form of clean precipitated calcium phosphate (PCP) already fulfilling all the requirements set for the EU Fertilizing Product Regulation (FPR, Regulation (EU) 2019/1009). The PCP contain about 17% Phosphorus and has a low solubility in water. It is fully soluble in citric acid and about 80% soluble in neutral ammonium citrate. This product has been produced in pilot scale and results from ryegrass tests show that the PCP works efficient as a slow-release fertilizer in acid soils. Overall, this sustainable recovered product has great potential to reduce CO2 emissions and contribute to closing the phosphorus cycle. The first plant is planned to be up and running in 2023.

#### Participants

**Yariv Cohen** - Head of Research and Development, EasyMining

### Polyphosphates increase yield potential in cotton

14:55 - 15:25

Plant Nutrition: Agronomic Performance: Trials & Technology for New Products

Nutrient availability is directly impacted by soil pH. The optimum soil pH range for cotton (*Gossypium hirsutum* L.) is between 6.0 and 7.0. However, many regions are dealing with more alkaline conditions limiting the availability of phosphates and iron and possibly reducing the maximum yield potential. The limited uptake of phosphorus by cotton grown in alkaline soils may result in growth delay and lower biomass accumulation. Polyphosphates on the other hand, resist better these alkaline soil conditions and remain more available for plants that suffer from high pH. Especially in combination with urea, the uptake of phosphorus by the roots is more guaranteed. Besides the increased availability of phosphorus itself, polyphosphates show complexing properties towards bivalent cations like iron. The formed complex with iron ensures the availability of iron for plants and helps preventing interveinal yellowing of young leaves. Furthermore, yellowing of the young leaves because of iron deficiency can also be prevented and cured by foliar application of Fe-polyphosphates as an alternative to Fe-chelates. Fe-polyphosphates don't stain and are not sensitive to ultraviolet light from the sun giving them unique properties and opportunities in the production of cotton.

#### Participants

**David Pinxteren** - Development & Application Manager, Prayon

### Microencapsulation technology for sustainable agriculture and SCRSFs

14:55 - 15:25

Sustainability of ag production systems with SCRSFs

During the last years, the demand for organic agriculture has led to a boost in development of technologies complying with regulatory guidelines. We have created a new way of formulating and delivering active principles to crops, including bacteria, fungi, biopolymers and pheromones. Our technology, based on microfluidic-generated microcapsules has a suitable size for agricultural purposes as well as a resistant composition for field applications. Experimentation on *Trichoderma* sp., shows that encapsulation of 1x10<sup>9</sup> spores/ml leads to a capsule conformity (roundness and shape index) of 98% in the wet product, which translates in higher concentrations of active principles in the field at lesser dose. With our model bacterial strains we have also shown diffusion of nutrients and gas between the capsule and the outside, which facilitates metabolism activation, for the production of rhizobial exopolysaccharides with potential drought stress applications. Greenhouse experiments using such encapsulated polymer-producing strains shows a 43% higher fruit yield as compared to the non-treated controls in tomato and higher biomass in corn, both plants under water stress. Stability surveying of encapsulated formulations show that viability of the dry product is reduced only in 53.66% after 35 days of accelerated degradation (for fungi) and only reduced in from 1x10<sup>7</sup> to 1x10<sup>5</sup> CFU/g dry product after 40 days of accelerated degradation (for bacteria). This technology is a promising tool for revolutionizing agriculture. Our tests confirm the incredible potential of our biodegradable and resistant microcapsules.

#### Participants

**Sebastian Lopez** - Head of microbiology and bioprocesses, Kapsera

### The circular economy: Exploring Organic Fertilizer and /or Waste Products as Fertilizer: Converting to a high value solution for farmers case Study

15:25 - 15:55

Plant Nutrition: Agronomic Performance: Trials & Technology for New Products

- The organic environment within Agriculture
- Reviewing an organic approach to food production
- Developing organic products and exploring methodologies
- Matching up the organic world with traditional conventional: The integration between organic farming and conventional farming

### Multiple protection on nitrogen and enhanced nutrient uptake all-in-one product. Is it feasible?

15:25 - 15:55

Sustainability of ag production systems with SCRSFs

World civilizations have steadily demanded more food production and the fertilizer industry has always being a key component to reach those goals. There is no doubt "The Green Revolution" would not be possible without the huge milestone for the industry; "The Haber-Bosch Process" created more than 100 years ago. The fixation of Nitrogen from the air for the first time made possible the development of conventional fertilizers still in use. Nevertheless agriculture systems have fertilization efficiencies below 50% for the majority of the nutrients. Value-added technologies appeared at certain point to tackle that issue and can be found in every corner of global nutrient markets. Fast forwarding to 2021 modern agriculture requests a fertilizer with adequate agronomical performance, reliability, easy handling, safety, sustainability and practicality. In this presentation we will touch the hurdles of agricultural operations and show new products that carry superior nitrogen inhibitors, microorganisms promoters in the soil and NPK uptake enhancers all combines into one single product. New food production thresholds will be easily achieved and in a more sustainable way if this type of new technologies become widespread into the main agriculture geographies. Luciano Lucero, President of Sales, INNOVAR AG,USA

#### Participants

**Luciano Lucero** - President Sales, Innovar Ag

### Networking Break & Exhibition Viewing

15:55 - 16:40

### The Fertilizer Regulation in Europe

16:40 - 17:10

Fertilizer Regulation & Policy : Updates and Considerations for Commercialisation

### A review on application of controlled released fertilizers influencing the sustainable agricultural production: A Cleaner production process

16:40 - 17:10

Formulation & Application Technology for Slow Controlled Release & Stabilized Fertilizers

### Fertilizer Regulation Country Spotlight : Regulation of fertilizers in the Czech Republic - from the prospective of a state authority

17:10 - 17:40

Fertilizer Regulation & Policy : Updates and Considerations for Commercialisation

#### Participants

**Jaroslav Houček** - Head of Fertilizers Department, Central Institute for Supervising and Testing in Agriculture (ÚKZÚZ)

### Closing Remarks

17:10 - 17:40

Formulation & Application Technology for Slow Controlled Release & Stabilized Fertilizers

### Data Protection for Biostimulants Under the EU Fertilizer Regulation: Have You Thought About This Yet?

17:40 - 18:10

Fertilizer Regulation & Policy : Updates and Considerations for Commercialisation

On July 16, 2022, the new EU Fertilising Products Regulation No 2019/1009 ("FPR") comes into effect and introduces a new category for plant biostimulants, which have been borderline products under the framework of its predecessor, Regulation 2003/2003. The FPR incorporates plant biostimulants under its regulation, and exempts them from the purview of the Plant Protection Products Regulation ("PPPR"). Biopesticides, however, remain under the scope of PPPR, and both products remain within the scope of Regulation (EC) No 1907/2006 ("REACH"). FPR will not affect the application to biostimulants of REACH, which requires the registration of all substances incorporated in EU fertilising products. FPR also introduces the 'fertilising product' definition and seven Product Function Categories ("PFCs") which expand the application of the fertiliser regime. FPR distinguishes between non-microbial plant biostimulants and microbial plant biostimulants, and includes a list with recognised micro-organisms. The list can be expanded through a delegated act of the European Commission to include more micro-organisms, while products with micro-organisms not mentioned in FPR can also be categorised under a different PFC. Products authorised as plant protection products before 15 July 2019 will retain their authorisation until expiry, after which they may seek authorisation under FPR, if eligible. FPR does not establish a data protection mechanism. Data protection is nevertheless relevant for biostimulants, as data may be obtained by other applicants for product certification or other purposes. Manufacturers are therefore advised to explore the protection models of REACH, PPPR or the Biocidal Product Regulation.

### Networking Drinks in the Exhibition

18:10 - 19:10

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09:00					<p>09:00 - Answers to the challenges of ecologically sustainable agriculture</p> <p>09:30 - Combining nutrients, organic substance, and fertilizers to achieve ultimate productivity of fertilizers and land</p>		<p>09:00 - Market for stabilized nitrogen fertilizers in Europe: What drives the adoption?</p> <p>09:30 - New slow-release fertilizers –what farmers need and require - insight from ICL</p>	
10:00	<p>10:00 - Networking Break</p> <p>10:45 - Urease inhibitors formulations as strategy to improve nitrogen use efficiency in corn crop</p>	10:00 - Networking Break	10:00 - Networking Break	<p>10:00 - Networking Break</p> <p>10:45 - Corn Yield Response to Combined Application of Reduced Phosphorus Rates and Rhi-zoSorb® in Neutral Soils</p>	10:00 - Networking Break	10:00 - Networking Break	10:00 - Networking Break	10:00 - Networking Break

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11:00	<p>11:15 - Assessment of urease inhibitor in improving the efficiency and reliability of urea containing fertilizers applied on topsoil in Poland</p> <p>11:45 - This session is on hold for a leading sponsor</p>			<p>11:15 - The Use of Polyaspartic Acid (PAA) in Fertilizer Products</p> <p>11:45 - The latest coating technologies</p>				
12:00	12:15 - Lunch & Networking Break	12:15 - Lunch & Networking Break	12:15 - Lunch & Networking Break	12:15 - Lunch & Networking Break	12:15 - Lunch & Networking Break	12:15 - Lunch & Networking Break	12:15 - Lunch & Networking Break	12:15 - Lunch & Networking Break
13:00						13:55 - How microbes could be pillar of plant nutrition of tomorrow		13:55 - Nutrient Enhanced Technologies: the key for environmental-friendly food production

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TIME	CONTROLLED RELEASE FERTILIZERS : AGRO-NOMIC PERFORMANCE: TRIALS & TECHNOLOGY FOR NEW PRODUCTS	FERTILIZER REGULATION & POLICY : UPDATES AND CONSIDERATIONS FOR COMMERCIALISATION	FORMULATION & APPLICATION TECHNOLOGY FOR SLOW CONTROLLED RELEASE & STABILIZED FERTILIZERS	MODE OF ACTION, FORMULATION & APPLICATION TO IMPROVE PRODUCT EFFICIENCY	PLANT NUTRITION SCIENTIFIC RESEARCH: THE LATEST BREAKTHROUGHS, RESEARCH RESULTS & FUTURE OPPORTUNITIES FOR PRODUCT DEVELOPMENT	PLANT NUTRITION: AGRONOMIC PERFORMANCE: TRIALS & TECHNOLOGY FOR NEW PRODUCTS	SLOW CONTROLLED RELEASE & STABILIZED FERTILIZERS : TRENDS & NEW PRODUCTS	SUSTAINABILITY OF AG PRODUCTION SYSTEMS WITH SCRSFS
14:00						<p>14:25 - Water Soluble Fertilizers: Product development : Scientific developments with technologies that improve plant nutrition</p> <p>14:55 - Polyphosphates increase yield potential in cotton</p>		<p>14:25 - A recovered sustainable slow-release fertiliser</p> <p>14:55 - Microencapsulation technology for sustainable agriculture and SCRSFs</p>
15:00	15:55 - Networking Break & Exhibition Viewing	15:55 - Networking Break & Exhibition Viewing	15:55 - Networking Break & Exhibition Viewing	15:55 - Networking Break & Exhibition Viewing	15:55 - Networking Break & Exhibition Viewing	<p>15:25 - The circular economy: Exploring Organic Fertilizer and /or Waste Products as Fertilizer: Converting to a high value solution for farmers case Study</p> <p>15:55 - Networking Break &amp; Exhibition Viewing</p>	15:55 - Networking Break & Exhibition Viewing	<p>15:25 - Multiple protection on nitrogen and enhanced nutrient uptake all-in-one product. Is it feasible?</p> <p>15:55 - Networking Break &amp; Exhibition Viewing</p>

# SCHEDULE

DAY TWO - 09/03/2022

New AG International Annual

Delivered as a Hybrid Event  
Live In-Person & Digital Experiences: 8 - 10 March 2022  
Hilton Warsaw City, Warsaw | Poland

TIME	CONTROLLED RELEASE FERTILIZERS : AGRONOMIC PERFORMANCE: TRIALS & TECHNOLOGY FOR NEW PRODUCTS	FERTILIZER REGULATION & POLICY : UPDATES AND CONSIDERATIONS FOR COMMERCIALISATION	FORMULATION & APPLICATION TECHNOLOGY FOR SLOW CONTROLLED RELEASE & STABILIZED FERTILIZERS	MODE OF ACTION, FORMULATION & APPLICATION TO IMPROVE PRODUCT EFFICIENCY	PLANT NUTRITION SCIENTIFIC RESEARCH: THE LATEST BREAKTHROUGHS, RESEARCH RESULTS & FUTURE OPPORTUNITIES FOR PRODUCT DEVELOPMENT	PLANT NUTRITION: AGRONOMIC PERFORMANCE: TRIALS & TECHNOLOGY FOR NEW PRODUCTS	SLOW CONTROLLED RELEASE & STABILIZED FERTILIZERS : TRENDS & NEW PRODUCTS	SUSTAINABILITY OF AG PRODUCTION SYSTEMS WITH SCRSFS
16:00		16:40 - The Fertilizer Regulation in Europe	16:40 - A review on application of controlled released fertilizers influencing the sustainable agricultural production: A Cleaner production process					
17:00		17:10 - Fertilizer Regulation Country Spotlight : Regulation of fertilizers in the Czech Republic - from the prospective of a state authority  17:40 - Data Protection for Biostimulants Under the EU Fertilizer Regulation: Have You Thought About This Yet?	17:10 - Closing Remarks					
18:00	18:10 - Networking Drinks in the Exhibition	18:10 - Networking Drinks in the Exhibition	18:10 - Networking Drinks in the Exhibition	18:10 - Networking Drinks in the Exhibition	18:10 - Networking Drinks in the Exhibition	18:10 - Networking Drinks in the Exhibition	18:10 - Networking Drinks in the Exhibition	18:10 - Networking Drinks in the Exhibition

### Vertical farming and the new supply chain revolution

09:00 - 09:30

Vertical Farming, Irrigation Systems & Hydroponics:  
Exploring new opportunities for the plant nutrition industry

- The growing trend of vertical farming- the market and various technologies
- Learning about Vertical Field and our geponic solution
- Reshaping the supply chain
- Vertical Field's unique on-site model

#### Participants

**Guy Elitzur** - CEO, Vertical Field

### Organic and microbial biostimulants for improving circularity and yield in hydroponic crop cultivation

09:30 - 10:00

Vertical Farming, Irrigation Systems & Hydroponics:  
Exploring new opportunities for the plant nutrition industry

- We have developed strategies to identify new organic by-product and microbial biostimulants for the improvement of production and resilience of hydroponic cultivation systems. A survey of local food processing and non-harvested crop biomass has revealed a wealth of various biostimulant and biopesticide activities which have prompted further investigations into the bioactivity guided purification of active ingredients and the analyses of the rhizosphere microbiomes of growth stimulating isolates. In a hydroponic cultivation context, the conditions for interactions between the crop and organic and microbial biostimulants is quite different from that in soil conditions. In hydroponics environmental conditions are better controllable than for plants grown in soil in the field. Indeed, the 'hardware' material such as substrate type, water quality, and nutrient composition are all selected based on experience and the 'software' including water and air temperature, humidity and light conditions are to some extent controlled. Therefore, the assumption is that hydroponics will generate more reliable results in determining the efficacy of biostimulants and biopesticides. However, despite the standardized conditions, a lot of variation in growth and yield is being observed under varying conditions, suggesting that hydroponic cultivation is not taking place at a stable equilibrium. Hydroponic cultivation is for most crops an artificial setup and the breeding specialized crops adapted to such conditions has only been started. My current view is that new varieties and improved cultivation conditions will benefit the growers by increasing yield and resilience. However, in view of the widening range of crops grown in hydroponics and the rapid changes in crop processing and consumers taste, these approaches are too elaborate. The goal of our research is to investigate the interactions between crop and the rhizosphere microbiome, in order to create conditions that will help the crop to acquire an optimal physiological status that is beneficial to yield and resilience. Our current results show that the composition of substrate is highly important to the crop yet is not a major determinant of the rhizosphere microbiome promoting growth. Second, the use of biofertilizer has a major impact on rhizosphere microbiome. These data and how they can be used to shape hydroponic cultivation conditions will be discussed.

#### Participants

**Danny Geelen** - Professor at the department of Plant Production, Faculty of Bioscience Engineering, at Ghent University, Ghent University

### Networking Break

10:00 - 10:30

### Resilience to salinity in tomato (ROOT): the role of biostimulants in improving salt stress tolerance

10:30 - 11:00

Biostimulants: The Science Behind the Product

Salinity is an increasing problem, in particular in coastal or irrigated areas and can strongly compromise plant productivity. For plants to be resilient to abiotic stresses like salinity, the root system is of vital importance, since its performance not only is fundamental to recruit nutrients and water, but roots may play a pivotal role in abiotic stress tolerance.

The ROOT project aims to improve the resilience of tomato towards salinity by using complementary approaches all focused on the root system. Phenotyping facilities, omics technologies (genomics, transcriptomics, metabolomics), genetic and systems biology tools are used to unravel the molecular mechanisms underlying root architecture under salinity. The final goal is to prepare tomato as a field crop for the increasing brackish soil surface by controlling the performance of the root system. In particular, the key aspects addressed by ROOT are: control root architecture by identifying key regulating genes; identify QTLs and markers for root adaptability to salinity in order to select salt tolerant varieties; understand the mechanism by which biostimulants contribute to tomato resilience under salinity and understand their mode of action. Regarding this last aspect, transcriptomics (RNA-Seq) and metabolomics (LC-MS) analyses were performed on control and salt-stressed tomato plants treated with a tannin-based biostimulant. The overall results suggested that this biostimulant was able not only to restore root development in salty soils, but also to provide the adequate plant nourishment by regulating the expression of transcription factors and stress-related genes and modulate the synthesis of key metabolites involved in salt tolerance

#### Participants

**Cinzia Berteà** - Professor, University of Torino

### On hold for leading biostimulant producer

11:00 - 11:30

Biostimulants: The Science Behind the Product

### Ascophyllum nodosum extract (Sealicit™) enhances the resistance of crops to pod shatter resulting in more harvested yield

11:30 - 12:00

Biostimulants: The Science Behind the Product

The yield of podded crops such as oilseed rape (canola) and soybean is limited by an evolutionary conserved trait that allows more efficient and successful seed dispersal and reproduction, namely pod shattering. For the growers unfortunately that fact means sizable seed losses and slimer yield. Different approaches including breeding, genetic modifications and pod glue/sealants were employed to mitigate the impact of pod shatter with limited success. To decrease yield/seed losses and retain high production efficiency current strategies are required to meet global demand, however in a sustainable manner [1]. Specifically engineered *Ascophyllum nodosum* extract (ANE) biostimulant containing PSI-759 complex provides natural solution to natural process of pod shattering. Data generated over 5 years of intensive research and field trialling in oilseed rape and soybean across different global geographies, demonstrate the relationship between crop cultivar genetics, biostimulant modulation of plant signalling and pod shatter [2, 3]. Although, the genes determining sensitivity to shattering differ between plant species, PSI-759-mediated gene expression dysregulation resulted in improved pod firmness followed by higher yield on average (6,73% in soybean and 4,6% in oilseed rape). Moreover, biostimulant dose rate had a significant effect on shatter and crop yield, emphasising the need for range finding for maximising yield benefits (in best case increasing yield up to 9,8% for soybean and 16% for oilseed rape). Our research demonstrates that well characterised biostimulants with defined molecular function relationships and modes of action will define the next generation of biostimulants that offer more specificity of function and concomitant performance.

#### Participants

Shane O'Connell - R&D Manager, Brandon Bioscience

### Lunch & Networking Break

12:00 - 13:00

Biostimulants: The Science Behind the Product

### Lessons learned: Introduction of Biostimulants to the German cereal market

13:00 - 13:30

Biostimulants: The Science Behind the Product

#### Participants

Felix Thürwächter - Founder & Managing Director, STG CropCare

### Modified starch as a novel biostimulant to enhance plant tolerance to abiotic and pesticide-induced stress: an approach to its mode of action.

13:30 - 14:00

Biostimulants: The Science Behind the Product

Abiotic stress factors adversely affect germination, plant establishment, growth, and finally crop yield, whereas temperature stress and water deficit are one of the most limiting variables today. Biostimulants help to reduce abiotic stress, but no one has such beneficial properties as modified starch. Using modified starch gives farmers the advantage to use it as an adjuvant that can play additional roles as a biostimulant. Due to its rare use in agriculture, modified starch is nearly unknown as a biostimulant.

A lot of unique properties have brought modified starch into focus as a biostimulant. High water-holding capacity [WHC], reverse water solubility, very high wash-off resistance, excellent film-forming properties, and a natural slow-release matrix are just some of the many advantages of modified starch. Modified starch has a promising potential as a biostimulant because of its ability to enhance germination, seedling growth, plant growth, as well as crop productivity, especially under environmental stress conditions. Especially the WHC and the slow-release matrix play a fundamental role as a biostimulant. Advantages of a slow-release matrix may include a less active ingredient and fewer applications, more effective control of the target organism, reduced toxicity to nontarget organisms, and reduced environmental pollution.

Being an adjuvant and biostimulant at the same time, reducing plant stress and protecting the environment, modified starch is increasingly coming into focus. The efficiency of other biostimulants can be improved too by mixing with modified starch, proven in GEP-trials combining humic acid and modified starch as a seed treatment as well as soil applications.

#### Participants

Steffen Mueller - Head of Agronomy, Amynova polymers GmbH

### On hold for a leading sponsor

14:00 - 14:30

Biostimulants: The Science Behind the Product

### Kelpak - a biostimulator of flowering and setting processes

14:30 - 15:00

Biostimulants: The Science Behind the Product

In recent years, unfavorable weather conditions and increasing consumer expectations force producers to search for new solutions that can guarantee the stability of producing commercial crops. As a result, various types of biostimulants supporting the proper development of plants and the use of their maximum yield potential are more widely used in the cultivation technology. Plant hormones such as auxins and cytokinins, but also polyamines and brassinosteroids have stimulating properties. The source of these compounds are marine algae, among others *Ascophyllum nodosum* and *Ecklonia maxima*. Depending on the type of algae used in the technological process, different proportions between the phytohormones can be obtained leading to creating products of various uses and applications.

Kelpak, which is one of the best products currently available on the market, is made from *Ecklonia maxima* algae. It has the highest auxin content and the best auxin to cytokinin ratio (360:1) compared to other similar formulations. Kelpak, due to its patented method of production, known as Cold Cellular-Burst Technology using high pressure, contains highly reactive plant hormones.

Scientific research confirms the positive influence of Kelpak on the development of root system, flowering and fruit setting. Furthermore, Kelpak application around the flowering period improves the yield quality and quantity.

In Poland, after application of Kelpak, a significant increase of yield in the cultivation of numerous crops was observed: corn 25%, wheat and barley 10%, rapeseed up to 40% (depending on the variety), ground tomato 6%, pumpkin plants up to 17-37%, cruciferous plants 14-16%, carrots 23%, onions 19%, cherries and strawberries by up to 23%, apples, raspberries by 10%, and many others.

#### Participants

Wojciech Kukuła - CropManager, PUH "Chemiroł" sp. z o.o.

### Closing Remarks

15:00 - 15:20

# SCHEDULE

DAY THREE - 10/03/2022

New AG International Annual

Delivered as a Hybrid Event  
Live In-Person & Digital Experiences: 8 - 10 March 2022  
Hilton Warsaw City, Warsaw | Poland

TIME	BIOSTIMULANTS: THE SCIENCE BEHIND THE PRODUCT	VERTICAL FARMING, IRRIGATION SYSTEMS & HYDRPONICS: EXPLORING NEW OPPORTUNITIES FOR THE PLANT NUTRITION INDUSTRY
09:00		09:00 - Vertical farming and the new supply chain revolution 09:30 - Organic and microbial biostimulants for improving circularity and yield in hydroponic crop cultivation
10:00	10:00 - Networking Break 10:30 - Resilience to salinity in tomato (ROOT): the role of biostimulants in improving salt stress tolerance	10:00 - Networking Break
11:00	11:00 - On hold for leading biostimulant producer 11:30 - Ascophyllum nodosum extract (Sealicit TM) enhances the resistance of crops to pod shatter resulting in more harvested yield	
12:00	12:00 - Lunch & Networking Break	
13:00	13:00 - Lessons learned: Introduction of Biostimulants to the German cereal market 13:30 - Modified starch as a novel biostimulant to enhance plant tolerance to abiotic and pesticide-induced stress: an approach to its mode of action.	
14:00	14:00 - On hold for a leading sponsor 14:30 - Kelpak - a biostimulator of flowering and setting processes	
15:00	15:00 - Closing Remarks	15:00 - Closing Remarks