

- May 2018 -

# Biosolutions for agriculture

Biosolutions represent a strong booming market. However, many technologic and regulatory challenges remain.

This newsletter has been developed to help you to:

- Detect new business opportunities
- Follow regulatory development
- Learn about technological evolutions
- Identify funding sources for your projects

This newsletter is structured around the three main product categories commonly called biosolutions:

- Biopesticides
- Biostimulants
- Biofertilizers

We very much hope you will find it helpful for your activities and remain at your disposal for any question.

If you like to continue receiving the newsletter, please fill in subscription form which you will find on the last page of the document and return it to [diximus@iar-pole.com](mailto:diximus@iar-pole.com)

Sincerely,

IAR – The French Bioeconomy Cluster

<b>1. Biopesticides .....</b>	<b>3</b>
1.1. NEWS .....	3
A. COMPANIES .....	3
B. PRODUCT LAUNCH.....	3
C. PRODUCT CERTIFICATION & HOMOLOGATION.....	4
D. PARTNERSHIP & ACQUISITION.....	4
E. ACADEMIC NEWS .....	5
1.2. REGULATION/SOFT LAW .....	6
A. SYNTHETIC PESTICIDE BANS AND RESTRICTION.....	6
B. BIOPESTICIDE REGULATION.....	7
C. PUBLIC & PRIVATE INCENTIVES.....	8
1.3. REPORTS.....	9
A. MARKET STUDIES.....	9
B. MARKET TRENDS .....	9
C. TECHNICAL TOPICS & REVIEWS.....	9
1.4. R&D PROJECTS .....	11
1.5. PATENTS.....	13
A. MICROBIALS – BACTERIA .....	13
B. MICROBIALS – FUNGI.....	15
C. MICROBIALS – VIRUS .....	17
D. BIOCHEMICALS – PLANT EXTRACT.....	17
E. BIOCHEMICALS – FORMULATION .....	18
F. MACROORGANISM.....	18
1.6. EVENTS .....	18
<b>2. Biostimulants.....</b>	<b>22</b>
2.1. NEWS .....	22
A. COMPANIES .....	22
B. PRODUCT LAUNCH.....	23
C. PRODUCT CERTIFICATION & HOMOLOGATION.....	23
D. ACADEMIC NEWS.....	23
2.2. REPORTS.....	23
A. MARKET TRENDS .....	23
2.3. PATENTS.....	24
A. MICROBIALS .....	24
B. PLANT EXTRACTS.....	25
2.4. EVENTS .....	25
<b>3. Biofertilizers.....</b>	<b>28</b>
3.1. NEWS .....	28
A. PRODUCT LAUNCH .....	28
B. PRODUCT CERTIFICATION & HOMOLOGATION.....	28
C. PARTNERSHIPS & ACQUISITION.....	28

D. START-UP NEWS .....	29
E. ACADEMIC NEWS .....	29
3.2. REGULATION/SOFT LAW .....	30
A. PUBLIC & PRIVATE INCENTIVES.....	30
3.3. REPORT .....	31
A. MARKET TRENDS.....	31
B. TECHNICAL TOPICS & REVIEWS.....	31
3.4. R&D PROJECTS.....	32
3.5. PATENTS .....	32
A. MICROBIAL – N FIXING.....	32
B. MICROBIAL – P2O5 SOLUBILIZING .....	33
C. NUTRIENTS RECOVERY .....	33
D. MEDIA GROWTH AND SOIL CONDITIONER .....	33
3.6. EVENTS .....	35
<b>Definitions.....</b>	<b>36</b>
<b>Subscription Form .....</b>	<b>37</b>

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

# 1. Biopesticides

## 1.1. News

### A. COMPANIES

#### **CVR Partners (UAN) and Marrone Bio Innovations (MBII) head-to-head survey | 29/05/2018**

CVR Partners (NYSE: UAN) and Marrone Bio Innovations (NASDAQ:MBII) are both small-cap basic materials companies, but which is the superior stock? We will compare the two companies based on the strength of their profitability, risk, valuation, earnings, institutional ownership, analyst recommendations and dividends.

Source : [MaconDaily](#)

#### **Monsanto's Grant will leave upon closing of Bayer acquisition | 07/05/2018**

Monsanto Company (NYSE: MON) Chairman and Chief Executive Officer Hugh Grant intends to leave Monsanto at the closing of the acquisition of Monsanto by Bayer AG. Grant will maintain his position as chairman and chief executive officer until closing, continuing to focus on leading the company on its top objectives of securing deal approval and delivering on its underlying business priorities.

Source : [VegetableGrowersNews](#)

### B. PRODUCT LAUNCH

#### **Biosafe Systems launches new biological fungicide | 24/05/2018**

BioSafe Systems announces the release of PVent Biological Fungicide. An enhancement in microbial fungicide technology, PVent provides growers with an easy-to-use, versatile IPM tool. This innovative development was spearheaded through a strategic partnership between two family-owned businesses: BioSafe Systems and Lallemand Plant Care.

Source : [CropLife](#)

#### **New strain to burrow in on rabbits | 19/05/2018**

RABBIT populations in the Wheatbelt and across the South West could be reduced by around 40 per cent in coming weeks as the calicivirus (Korean variant – RHDV1 K5) is released throughout the region. This follows the national release of the Korean strain of Rabbit Haemorrhagic Disease Virus, known as RHDV1 K5, that took place during the first week of March 2017. It was the first time in 20 years that a new rabbit biocontrol agent had been released into Australia. More than 600 release sites were selected nationally, with 117 sites across WA.

Source : [FarmWeekly](#)

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

## New natural systemic herbicide developed | 16/05/2018

Sierra Natural Sciences and MTC Horticulture Company have developed a systemic non-selective herbicide that kills weeds to the roots. This natural herbicide is Prop 25b exempt and is not required to carry an EPA registration number or a signal word. The natural herbicide product, named WEED ROT, first strips the weed's waxy cuticle allowing the natural chemistry to penetrate the leaves, stem and roots, killing the weed.

Source : [LawnAndLandscape](#)

## Embrapa launches bionematicide with higher effectiveness against Meloidogyne incognita | 14/05/2018

The department of Genetic Resources and Biotechnology at the Brazilian Agricultural Research Company (Embrapa) announced this week the launch of Embrapa-Carbom Brasil technology. It is a nematotoxic plant extract formulated by Embrapa with a biofertilizer.

Source : [AgroNews](#)

## C. PRODUCT CERTIFICATION & HOMOLOGATION

### Newly listed products, OMRI Products List | 21/05/2018

OMRI has determined the following products are allowed for use in accordance with National

Organic Program (NOP) standards, for the use indicated and in keeping with any applicable use - with their USDA-accredited certifying body before using any new products. This document lists products added in the past three months.

Source : [OMRI](#)

## D. PARTNERSHIP & ACQUISITION

### Evogene and Marrone Bio Innovations announce phase advancement in their insect control collaboration | 08/05/2018

The Collaboration, which was supported with funding from the Binational Industrial Research and Development (BIRD) Foundation, is based on the utilization of Evogene's Computational Predictive Biology (CPB) platform for the analysis of genetic potential of MBI's extensive and proprietary insecticidal microbial collection.

Source : [GlobeNewsWire](#)

### BASF signs agreement to acquire seeds and crop protection businesses and assets from Bayer | 07/05/2018

In addition to an agreement signed in October 2017, BASF has signed an agreement to purchase further businesses and assets from Bayer, which the latter offered to divest in the context of its planned acquisition of Monsanto.

Source : [GreenhouseManagement](#)

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

## E. ACADEMIC NEWS

### JCU scientists look at whether fungus can eliminate rust thrips in bananas. | 25/05/2018

Fungus could be the key to better looking bananas with scientists looking to use the naturally occurring organism to kill problematic insects. James Cook University scientists Dr Tobin Northfield and honours student Amy McGuire are undertaking a trial to use a fungus found in soil to combat rust thrips. Dr Northfield said they were looking to target rust thrips, tiny insects that feed on leaves and developing bananas that leaves a rush-coloured scarring on the fruit.

Source : [NorthQueenslandRegister](#)

### UF/IFAS researchers may use fungi to control deadly crop disease | 23/05/2018

A group of fungi might fight a disease that's dangerous to tomatoes and specialty crops. University of Florida scientists hope to develop this biological strategy as they add to growers' tools to help control Fusarium wilt.

Source : [VegetableGrowersNews](#)

### Researchers may use fungi to control deadly crop disease | 23/05/2018

A group of fungi might fight a disease that's dangerous to tomatoes and specialty crops. University of Florida scientists hope to develop this biological strategy as they add to growers' tools to help control Fusarium wilt.

Source : [UniversityOfFlorida](#)

### Ecophysiology insights aid in the biological control of Parthenium weed | 23/05/2018

Our research assessed the physiological responses of Parthenium to leaf-feeding by its biocontrol beetle *Z. bicolorata*. The study further investigated the mechanisms by which these beetles may reduce the photosynthesis of Parthenium, with a focus on microbial interactions. A variety of natural and simulated herbivory experiments, using gas exchange and microbial sampling, were performed to investigate this.

Source : [ScienceTrends](#)

### Improved biological control of Psa | 18/05/2018

For 3½ years, Lincoln-based PhD student Jessica Yardley, has been quietly working away on a biological control agent to help combat the bacterial kiwifruit pathogen *Pseudomonas syringae* pv. *actinidae* (Psa). Results showing an encouraging copper-resistant strain of *Trichoderma* that could be produced on a commercial scale. It may be suitable to use in an integrated pest-management programme to combat copper-resistant Psa.

Source : [Bioprotection](#)

### Selective flowers to attract and enhance *Telenomus laeviceps*: a released biocontrol agent of *Mamestra brassicae* | 10/05/2018

The egg parasitoid *Telenomus laeviceps* is a promising candidate for mass release as a biological control agent of the cabbage moth *Mamestra brassicae*. However, adult T.

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

laeviceps need a sugar-rich food source to increase their parasitism performance and produce a good amount of female offspring. Released biocontrol agents were shown to benefit from conservation biocontrol, which includes the provision of selected flowers as nectar resources for beneficial insects.

Source : [Cambridge](#)

### A biocontrol strain of *Bacillus subtilis* WXCDD105 used to control tomato *Botrytis cinerea* and *Cladosporium fulvum* Cooke and promote the growth of seedlings | 04/05/2018

In this study, a strain named WXCDD105, which has strong antagonistic effects on *Botrytis cinerea* and *Cladosporium fulvum* Cooke, was screened out from the rhizosphere of healthy tomato plants. The tomato plants had inhibition diameter zones of 5.00 mm during the dual culture for four days. Based on the morphological and physiological characteristics, the 16S rDNA sequence, and the gyrB gene sequence analysis, the strain WXCDD105 was identified as *Bacillus subtilis* suBap. subtilis. The results of the mycelial growth test showed that the sterile filtrate of the strain WXCDD105 could significantly inhibit mycelial growth of *Botrytis cinerea* and *Cladosporium fulvum* Cooke.

Source : [MDPI](#)

### Common pesticides may alter estrogen production | 01/05/2018

Now, new research published in the journal *Environmental Health Perspectives* reveals these pesticides may also be exerting a harmful

effect on humans by disrupting our hormonal systems, particularly the production of estrogen. The researchers have long been interested in the mechanisms of endocrine-disrupting chemicals and they wanted to determine whether neonicotinoids belong to this class of compounds.

Source : [PsychCentral](#)

## 1.2. Regulation/Soft law

### A. SYNTHETIC PESTICIDE BANS AND RESTRICTION

#### EU court upholds insecticide ban to protect bees |

17/05/2018

The court said the European Union's "precautionary principle" meant that the EU could take measures if there was scientific uncertainty about risks to human health or the environment, and did not have to wait until it was clear harm had been caused.

Source : [Reuters](#)

#### Switzerland to vote on pesticide ban 'in 3 years' |

16/05/2018

Swiss citizens will get the chance to vote on a complete ban on the use of synthetic pesticides after campaigners secured enough signatures to force a referendum. If the vote is passed,

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

Switzerland would become only the second country after Bhutan to implement a full ban.

Source : [BBC](#)

### UK: Neonicotinoid pesticide restrictions | 07/05/2018

Following conclusions delivered in a report by the European Food Safety Authority on 28 February, the committee voted to adopt restricting the three substances to greenhouse use only. All outdoor use, including seed-treatment, will be banned.

Source : [AgroNews](#)

### Hawaii becomes first state in the U.S. to ban the toxic pesticide chlorpyrifos | 02/05/2018

Tuesday Hawaii made history, as it became the first state in the U.S. to ban the pesticide chlorpyrifos, a highly toxic neurotoxin that causes significant damage to brain development in children. The pesticide's detrimental health effects led the U.S. Environmental Protection Agency (EPA) under the Obama administration to propose banning all of its agricultural uses, but the Pruitt-led EPA under the current administration reversed this pledge.

Source : [EcoWatch](#)

### Arkansas farmers again lose access to dicamba | 01/05/2018

Monday the Arkansas Supreme Court reinforced a ban on dicamba products in the state, halting another judge's ruling that would exempt some farmers from the ban. Justices stayed a Clay Country judge's order that

prohibited the state Plant Board from enforcing the dicamba ban, according to the Associated Press.

Source : [CropLife](#)

## B. BIOPESTICIDE REGULATION

### Brazil Anvisa approves bioinsecticide *Deladenus siricidicola* | 24/05/2018

The Board of Directors of National Health Surveillance Agency have included active ingredient D54 (*Deladenus siricidicola*) in the list of monographies of active ingredients used in agrochemicals, household cleaning products and wood preservatives. The decision was taken following a public consultation.

Source : [AgroNews](#)

### Breakthrough *Fusarium* control for protected ornamentals in Canada – ASPERELLO T34 Biocontrol | 16/05/2018

This breakthrough new biofungicide contains the unique, naturally occurring, beneficial fungus *Trichoderma asperellum* T34 at a high concentration (1012 CFU/kg). It rapidly colonises plant roots to form a protective barrier against pathogens to support healthy root growth.

Source : [BioBestGroup](#)

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

## Seipasa receives EPA registration for the biopesticide Seican | 15/05/2018

Seican is a new fungicide and insecticide for pest and disease control. Developed from a unique formulation based on substances of botanical origin, Seican provides a powerful knock-down effect against diseases such as powdery mildew and botrytis. It also acts against a wide range of insects.

Source : [Seipasa](#)

## C. PUBLIC & PRIVATE INCENTIVES

### Argentinians develop biological control of dichroplus maculipennis | 22/05/2018

The Ministry of Agribusiness of the Buenos Aires province, Argentina, signed a partnership agreement for collaboration between five municipalities for the development of a project on the biological control dichroplus maculipennis in the major endemic region of the province to reduce long-term incidence of the plague.

Source : [AgroNews](#)

### Kerala's making an ambitious pledge to go organic | 07/05/2018

Despite its congenial climate, the Indian state of Kerala is not agriculturally self-sufficient. Relying on produce from neighboring states wasn't a problem for Keralans, who have high

literacy rates and tend to choose better paying jobs over farm positions. But then chemicals on imported food were blamed for high cancer rates. This, in turn, has sparked a revolution: A push by the state government to ensure its agriculture is 100 percent organic by 2020.

Source : [PRI](#)

### Germany plans to toughen conditions for insecticide use | 02/05/2018

The ministry, led by the Social Democrats (SPD) who share power with Chancellor Angela Merkel's conservatives, also said it planned to increase the proportion of farmed land that would have to adhere to environmental stipulations. Conditions for fertilizer use should be extended, including making subsidies dependent on using insect-friendly chemicals, the ministry paper said.

Source : [Reuters](#)

### Scientists launch portal to promote use of non-chemical to control pests in Africa | 02/05/2018

Agricultural scientists on Wednesday launched a prototype biopesticide portal to help promote use of non-chemical alternatives in controlling pests and diseases in Africa.

Source : [NewsGhana](#)

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

## 1.3. Reports

### A. MARKET STUDIES

#### Global adjuvants company: adjuvants for use with bio control products and organic production | 10/05/2018

The potential and continuing growth of the Bio Control (Bioinsecticides, Biofungicides, Bioherbicides, Bionematicides) market has been widely reported and is projected to reach US\$6.60 billion by 2022, from \$3.22 billion in 2017.

Source : [AgroNews](#)

#### Bringing your biopesticides to market | 07/05/2018

The application of crop biotechnology in agriculture has permitted an enhanced level of income to farmers and environmental benefits, while also reducing cropland expansion. Insect-protected crops, such as corn, showed more than 10% increase in yield worldwide and insect-protected corn and cotton augmented farm income by >\$56 billion between 1996 and 2001.

Source : [GlobalEngage](#)

#### The overview of China's biopesticide market: opportunities are more than challenges | 04/05/2018

Global sales of biopesticides have exceeded \$3 billion and currently account for only 5% of the entire plant protection market. However, the market for biopesticides grows at a rate of nearly 15 - 20% per year and is expected to

reach \$5 billion by 2020. Synthetic pesticides are increasingly being replaced by biopesticides. Biopesticides are estimated to occupy half of the pesticide market in around 2050.

Source : [AgroNews](#)

### B. MARKET TRENDS

#### Less biological crop protection in greenhouse vegetable growth | 02/05/2018

Most vegetable greenhouses use biological pesticides such as predatory mites and ichneumon wasps to combat diseases and pathogens. In the period 2000-2016 the use of biological pesticides went down. In 2016 almost 7 in 10 vegetable greenhouses (2,700 ha) biological pesticides were used. In 2000 biological pesticides were used in almost every greenhouse. These are the preliminary results from a CBS poll about crop protection, 725 growers of greenhouse vegetables participated.

Source : [HortiDaily](#)

### C. TECHNICAL TOPICS & REVIEWS

#### A (surprisingly long) biopesticide timeline | 30/05/2018

The efficacy of biopesticides is - to a large extent - driven by inducible plant defense responses evolved over more than 100 million years. These defense responses have proven to be sufficiently effective to permit the evolution of a complex flora. Crop pests and diseases, as well as the activity of beneficial insects, have been known since the beginning of agriculture,

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

some 10 thousand years ago. In 1835, Agostino Maria Bassi identified the ascomycetes fungus *Beauveria bassiana* as a disease of silkworm. By the turn of the 19th century, scientists were reporting on the biology and pathology of entomopathogenic fungi.

Source : [\*AgriBusinessGlobal\*](#)

### Crop protection: edibles armoury | 30/05/2018

Despite a challenging regulatory environment, new products to tackle common fresh-produce pests and diseases are still being developed and launched. The latest EU decision to ban the use of certain neonicotinoid insecticides in open-grown crops, and the international media interest that this subject continues to generate, show that scrutiny of plant-protection products and their authorisation remains as tight as ever.

Source : [\*HortWeek\*](#)

### Borregaard Lignotech: How lignin-based solutions can help with formulation challenges | 23/05/2018

Formulation technology has a vital part to play in the development of efficacious and economical crop-protection products. This includes identifying regulatory-favorable and supply-secure co-formulants that can deliver performance through a wide-range of solid and liquid product types.

Source : [\*AgroNews\*](#)

### Professors describe a practical approach to biocontrols | 10/05/2018

For 20 years, Cornell University entomology professor Anthony Shelton has maintained and updated a website cataloging natural-born enemies of common agricultural pests. *Biological Control: A Guide to Natural Enemies in North America* contains more than 100 individual pages of natural controls, including parasitoids, pathogens, predators and weed feeders.

Source : [\*VegetableGrowersNews\*](#)

### Best tactics against fall armyworm outbreaks in Africa | 08/05/2018

Cereal farmers across Sub-Saharan Africa are experiencing heavy losses due to the devastation by an invasive pest: the Fall army worm - *Spodoptera frugiperda*. In Africa it has caused huge losses to staple cereals, especially maize and sorghum, affecting food security and trade. Damage to maize alone is estimated to be between USD\$ 2.5 - 6.2 billion per year.

Source : [\*TheStar\*](#)

### Using biocontrol in cut gerbera | 07/05/2018

Biological control in greenhouse ornamental crops has become more mainstream in the past 10 years and one of the crops that has led the way has been cut gerbera. Gerbera grown for cut flowers has many qualities that make it the poster child for biocontrol in ornamentals: Perennial crop, Great environment, Bridging canopy, Greater tolerance for pests.

Source : [\*GreenhouseCanada\*](#)

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

## How neem bio-pesticide can tackle deadly tomato disease | 06/05/2018

Mr Sani Bello, owner of Neem Agro Nigeria Limited, has been working on neem for more than 15 years. An electrical engineer by training, Bello in this interview, shares with us the benefits and prospects of neem production.

Source : [DailyTrust](#)

## Microbial and viral chitinases: Attractive biopesticides for integrated pest management | 01/05/2018

The negative impact of the massive use of synthetic pesticides on the environment and on human health has stimulated the search for environment-friendly practices for controlling plant diseases and pests. Among them, biocontrol, which relies on using beneficial organisms or their products (bioactive molecules and/or hydrolytic enzymes), holds the greatest promise and is considered a pillar of integrated pest management. Chitinases are particularly attractive to this purpose since they have fungicidal, insecticidal, and nematocidal activities. Here, current knowledge on the biopesticidal action of microbial and viral chitinases is reviewed, together with a critical analysis of their future development as biopesticides.

Source : [ScienceDirect](#)

## 1.4. R&D projects

### Linking plant-soil feedbacks to aboveground-belowground interactions for noxious weed control | 23/05/2018

Period : 01/04/2019 - 31/03/2021

Funder : EU

Budget : 165 598,80 €

Performing institution /coordinator : Universiteit Leiden

Recent research has proven that plant-soil feedbacks (PSF) can shape plant community composition, and that soil inoculation can be used to steer this. This provides the yet unexplored potential to target PSF for the control of noxious weeds, which are among the major threats to native plant diversity and forage yield. Recent studies showed that PSF-induced changes in plant chemistry can consecutively affect aboveground herbivory, a driver of plant performance that is used in weed biocontrol.

Source : [Cordis](#)

### Innovative tools for rational control of the most difficult-to-manage pests (super pests) and the diseases they transmit | 16/05/2018

Period : 01/09/2018 - 31/08/2022

Funder : EU

Budget : 3 095 900€

Performing institution /coordinator : Agricultural University of Athens

Among the most acute challenges that many producers of fruit and vegetable crops currently face are a subset of arthropod pest species - namely aphids, whiteflies, thrips and mites - that are extremely difficult to control (the "super pests"). These issues have been caused, in

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

part, by the over reliance on synthetic insecticides and novel methods of control are urgently required. The SuperPests project aims to meet this need by developing and evaluating a suite of innovative products, tools and concepts, and integrating these with existing approaches in data driven Integrated Pest Management (IPM) programs.

Source : [Cordis](#)

### A disruptive cost-efficient industrial technology using bioreactor to boost compounds yields in roots, shoots, leaves for agri-food, flavors, biopesticides | 14/02/2018

Period : 01/02/2018 - 30/06/2018

Funder : EU

Budget : 71 429€

Performing institution /coordinator : Alkion Bioinnovations

Food industry requires now innovative solutions to produce natural compounds at a competitive price with sustainable technologies but also to find natural solution to cope with obesity and diabetes for which they look responsible for. One of the most exciting solutions is in-vitro propagation of plants inside bioreactors. This field once too limited in yield or too expensive has reached new horizons thanks to Alkinov's technologies supported by a team of world renowned scientists and executed by a brilliant R&D team.

Source : [Cordis](#)

### Burkholderia species in sugarcane: the relationship among antifungal production, intrinsic antimicrobial resistance, and pest biocontrol | 01/04/2018

Period : April 2018 - March 2019

Funder : BBSRC

Budget : £66 928

Performing institution /coordinator : Queen's University of Belfast

The Burkholderiaceae comprises a family of environmental bacteria widespread around the planet, which reside in diverse environments and in association with plants, insects, animals, and humans and also display extraordinarily high multidrug, intrinsic antibiotic resistance. Intrinsic resistance means that these bacteria can tolerate large concentrations of many different classes of antibiotics. Burkholderia are very useful microorganisms for mankind.

Source : [Ukri](#)

### Combined biocontrol for economically-important diseases of mushrooms | 01/06/2018

Period : June 2018 - May 2021

Funder : Innovate UK

Budget : £502 653

Performing institution /coordinator : APS Biocontrol Ltd

There are five main mushroom disease organisms; one caused by bacteria, for which there is no effective control and four fungal pathogens; these are partly controlled by a chemical fungicide but its lifetime is limited by increasing resistance to it and health and safety

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

concerns. It is likely to be withdrawn by the EU by the end of 2017, with no replacement.

Source : [Ukri](#)

## Management of field crops insects in michigan | 01/06/2018

Period : 01/06/2018 - 31/05/2023

Performing institution /coordinator : Michigan State University

The over-arching theme of this project is to improve or develop integrated pest management strategies for insects and other arthropods in Michigan field crops, including new invasive species and current pests increasing in importance. Improving pest management involves 1) understanding the impact of insect pests by discovering the aspects of life history and ecology that contribute to their pest status and figuring out the interactions between the crop and pest that affect yield and quality and 2) mitigating the impact of insect pests by developing scouting practices, thresholds and control tactics, and integrating these approaches into current production practices.

Source : [Cris](#)

## Biological control of invasive arthropod pests affecting agricultural, urban, and wilderness areas | 01/05/2018

Period : 14/05/2018 - 30/09/2022

Performing institution /coordinator : University of California, Riverside

The objectives of this project are: (1) to examine the population biology and ecology of newly introduced pest species in California and determine occurrence, distribution, and economic impact. (2) To conduct foreign

exploration in the pest's home range for natural enemies, import into quarantine at UCR, assess safety in quarantine, and introduce as necessary host specific natural enemies to reduce population densities and economic damage of pests attacking plants in commercial (agriculture) and non-commercial (i.e., urban/natural) settings. (3) To examine the biology, demography, and behavior (host searching and reproductive behavior and potential) of newly introduced natural enemies attacking invasive pests. (4) To quantify the establishment, spread, and impact of natural enemies, both resident and recently introduced on invasive pests. (5) To quantify the economic benefits (increased yields and reduced pesticide use) of successful biological control on invasive crop pests. (6) Determine invasion pathways for invasive pest species and factors affecting establishment success and spread.

Source : [Cris](#)

## 1.5. Patents

### A. MICROBIALS – BACTERIA

#### WO2018094075 | Materials and methods for the control of nematodes | Locus Solutions, Llc | 24/05/2018

The invention provides materials and method for controlling pests, in particular, nematodes. The invention also provides compositions comprising biosurfactants as pesticides.

Source : [Wipo](#)

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

**US20180139968 | Use of proteins to control molluscs | Marrone Bio Innovations, Inc. | 24/05/2018**

The present disclosure includes proteins toxic to Zebra mussels, its method of production, and uses thereof. The protein was isolated from whole cell broth of *Pseudomonas protegens* CL145A via anion exchange chromatographic fractionation. The protein was found to be a secondary metabolite with highest expression at the fermentative production harvest stage.

Source : [Wipo](#)

**EP3320776 | Compositions and methods for controlling fungal and bacterial diseases in plants | Bayer Cropscience Lp | 16/05/2018**

The present invention provides a fungicidal composition comprising a strain of *Bacillus subtilis* or *Bacillus amyloliquefaciens* and one of several compounds in a synergistically effective amount. Also provided are methods of controlling fungal harmful organisms and/or bacterial harmful organisms in a plant, the method comprising applying an effective amount of a fungicidal composition to the plant, to a part of the plant and/or to a locus on which the plant or plant part grows.

Source : [Wipo](#)

**US20180127810 | Method of sequence amplification of bacterial strains for biological control against mosquitoes | Continental Automotive Gmbh, Merz Felix | 10/05/2018**

The present invention relates to novel bacteria strains that can be used in biological control against mosquito larvae (*Cules* spp.) and a method of sequence analysis for the strains. The sequence analysis method comprising genomic DNA extracting, 16S rDNA amplification, a PCR amplification of a 550 bp DNA segment and purifying and sequencing of the DNAs obtain via PCR. The protein obtained from a novel *Bacillus sphaericus* spp.

Source : [Wipo](#)

**EP3318128 | Composition comprising a biological control agent and a fungicide | Bayer Cropscience Ag | 09/05/2018**

The present invention relates to a composition comprising at least one biological control agent selected from the group consisting of *Bacillus pumilus* (NRRL Accession No. B-30087), *Bacillus subtilis* AQ713 (NRRL Accession No. B-21661) and *Bacillus subtilis* AQ30002 (NRRL Accession No. B-50421) and at least one fungicide (1) selected from the group consisting of fludioxonil and quinoxifen in a synergistically effective amount. Furthermore, the present invention relates to the use of this composition as well as a method for reducing overall damage of plants and plant parts.

Source : [Wipo](#)

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

**WO2018080596 | Compositions and methods to treat citrus greening disease | Marrone Bio Innovations, Inc., Marrone, Pamela | 03/05/2018**

The present disclosure includes the field of agricultural biologicals, and provides microorganism compositions for preventing and controlling citrus huanglongbing and their methods of use thereof.

Source : [Wipo](#)

**US20180116224 | Pesticidal compositions and related methods | Dow Agrosiences Llc | 03/05/2018**

A pesticidal composition comprises at least one soil conditioner selected from the group consisting of organic soil conditioners, microorganisms, activators, and combinations thereof and an active ingredient group alpha (AIGA) compound. The weight ratio of soil conditioner to AIGA compound is at least about 20:1. The pesticidal composition shows an enhanced residue activity of the AIGA compound in soil.

Source : [Wipo](#)

**B. MICROBIALS – FUNGI****WO2018086638 | Use of the coniothyrium minitans fungal strain for protection of cultivated plants from attacks by fungal pathogens, a preparation for protection of cultivated plants and a method for protection of cultivated plants | Bayer Ag | 17/05/2018**

The fungal strain Coniothyrium minitans NOC/M/91 -08 can be used for protection of cultivated plants against attacks by fungal pathogens Verticillium spp. and Phoma spp. This strain is present in a preparation for protection of cultivated plants against attacks by fungal pathogens Verticillium spp. and Phoma spp., where the strain is in the form of spores, conidia, hyphae or a combination thereof. The invention also concerns a method of protection of cultivated plants against attacks by fungal pathogens Verticillium spp. and Phoma spp., where the above-described preparation is applied to the root system of cultivated plants.

Source : [Wipo](#)

**WO2018084895 | Algicidal organisms | Marrone Bio Innovations, Inc. | 11/05/2018**

Provided are compositions derived from Beauveria bassiana, Brevibacillus brevis, Streptomyces spororaveus, Paenibacillus elgii, or Streptomyces sp. fermentation, having algicidal properties, and method of use thereof.

Source : [Wipo](#)

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

**US20180127707 | Aspergillus niger f22 strain having nematicidal activity against plant-parasitic nematodes, and use thereof | Schnittger Dirk, Festo Ag & Co. Kg, Roehner Marc Oliver, Kühbauch Heiko, Bartsch Andreas, Pantazis Sarantis | 10/05/2018**

The present invention relates to an *Aspergillus niger* F22 strain having a nematicidal activity against plant-parasitic nematodes; a nematicidal microorganism agent against plant-parasitic nematodes, containing, as an active ingredient, the strain, a spore, a fungal hyphal mass, or a culture liquid thereof; a method for controlling plant-parasitic nematodes, having a step of administering the microorganism agent to a crop, a crop seed, or a field; and a method for preparation of a nematicidal microorganism agent against plant-parasitic nematodes, having a step of culturing the strain.

Source : [Wipo](#)

**US20180127840 | Antifungal penicillium strains, fungicidal extrolites thereof, and their use | Hoffmann - Eitle Patent- Und Rechtsanwälte Partmbb | 10/05/2018**

The present invention relates to fungal strains, which are a member of the genus *Penicillium* and have antifungal activity, and to cell-free extracts of said strains, culture media obtainable by culturing said strains and extrolites produced by said strains, all of which have fungicidal activity. The present invention further relates to compositions comprising said

strains, extracts, culture media and extrolites, and their uses in the agrochemical field and the field of controlling phytopathogenic fungi in particular.

Source : [Wipo](#)

**EP3316691 | Coniothyrium minitans for use against moss growth | Bayer Cropscience Ag | 09/05/2018**

Source : [Wipo](#)

**EP3318129 | Method for pest control by applying a combination of *Paecilomyces lilacinus* and fluopyram | Bayer Cropscience Ag | 09/05/2018**

The present invention relates to a composition comprising at least one biological control agent selected which is *Paecilomyces lilacinus* strain 251 (AGAL No. 89/030550) and at least one fungicide (I) selected from the group consisting of inhibitors of the respiratory chain at complex I, II and III in a synergistically effective amount. Furthermore, the present invention relates to a method comprising applying said composition and the use of said composition.

Source : [Wipo](#)

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

## C. MICROBIALS – VIRUS

### **RU0002652879 | Strain xcm 22-a of nuclear polyhedrosis virus of cottonoverworm**

#### **Helicoverpa armigera hbn., used to obtain an insecticidal preparation | | 03/05/2018**

Invention relates to biotechnology, microbiology and agriculture and concerns a strain of the nuclear polyhedrosis virus. Strain of XCM 22-A of the nuclear polyhedrosis virus of cotton worm *Helicoverpa armigera* Hbn. deposited in the State Collection of the causative agents of viral infections and rickettsiosis of the Federal Service for Surveillance in the Sphere of Consumer Rights Protection and Human Welfare of the Federal State Research Center for the Vector VB Vector under the registration number V-710.

Source : [Wipo](#)

## D. BIOCHEMICALS – PLANT EXTRACT

### **US20180139918 | Compositions and their use for pest control and to induce plant hormone and gene regulation for improved plant production and defense | Beem Biologics Inc. | 24/05/2018**

The subject invention provides compositions and methods of using the same for improving plants' defense by employing naturally-derived chemicals. In a specific embodiment, the composition is from *Parthenium argentatum* Gray, also known as the guayule plant.

Preferred compositions can up-or downregulate growth genes responsible for the targeted plants' defense mechanisms in order to create physical and/or chemical barriers, and produce detouring exudates, antagonistic compounds, or fumigating compounds that prevent and treat damages from pests in agronomic or non-agronomic plants.

Source : [Wipo](#)

### **WO2018088707 | Bio-pesticide composition suspended in vegetable oil-based emulsion and method for preparing same | Liren Bio Co., Ltd. | 17/05/2018**

The present invention relates to a bio-pesticide composition in which an extract of herb medicine retaining fungicidal and insecticidal activities is suspended in a vegetable oil-based emulsion containing vegetable oil, an emulsifier, and water, and to a method for preparing the same. More specifically, the present invention relates to a bio-pesticide composition in which 1-20 parts by weight of an extract of at least one herb medicine retaining fungicidal and insecticidal activities, selected from *Phytolaccae Radix*, *Cinnamomi Cortex*, *Artemisiae Herba*, or *Sophorae Radix*, is added and suspended in 100 parts by weight of a vegetable oil-based emulsion, and to a method for preparing the same.

Source : [Wipo](#)

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

## E. BIOCHEMICALS – FORMULATION

### US20180132485 | Use of hydroxyapatite as a carrier of nutritional elements and vegetal extracts for treating plants | Ndg Natural Development Group S.R.L. | 17/05/2018

[...] The substituted hydroxyapatite is a carrier of a bioactive substance chosen among a metal ion selected from Mn, Mg, K, Fe, B, Mo, Se and/or an extract of vegetal origin. The invention relates also to the use of the carrier for the delivery of such a bioactive substance to plants in order to achieve the phytosanitary and/or nutritional treatment of the plant.

Source : [Wipo](#)

## F. MACROORGANISM

### DK2139339 | Formulation of the biological fight against insects pest damages | Nemos Horticultural Limited | 07/05/2018

A formulation for use in the biological control of insect pests comprises a cohort of infective juvenile insect-parasitic nematodes from at least three species, wherein at least two of the species are of a first genus, and at least one of the species are from a second genus, and wherein the number of species from the first genus is greater than the number of species from the second genus.

Source : [Wipo](#)

## 1.6. Events

### Biopesticides Europe 2018

Location : Amsterdam, Netherlands

Date : June 6-7 2018

The two day event will bring together key industry stakeholders from the biopesticides industry to discuss the challenges faced and the future opportunities. Conference will discuss the current overview of the markets, with highlights from experts on the progression of the biopesticides market and new insights and innovation of projects in pipeline.

Source : [WPLGroup](#)

### The Organic Farmers Fair

Location : Amsterdam, Netherlands

Date : June 12-14 2018

The Organic Farmers Fair is the good momentum for suppliers in seeds and seedlings, fertilizers, composting technology, biological pest control, weed control systems, GPS systems, soil cultivation, greenhouse horticulture, research and advice. These companies now have no suitable international trade fair to meet their customers.

Source : [GreenTech](#)

### United Fresh

Location : Chicago, Illinois

Date : June 25-28 2018

When fresh, healthy and better-for-you products align with the technologies and advancements in a streamlined global supply chain, your company wins! This June in Chicago, discover the newest fresh produce, floral, better-for-you products and the tech innovations that support

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

growth, development, promotion, transportation and expansion across the supply chain.

Source : [Unitedfreshshow](#)

## Biopesticides North America 2018

Location : Vancouver, Canada

Date : June 27-28 2018

This 2 day event will bring together key senior executives and experts from producers of biological control products, farming and agriculture supplies, technology providers, research institutes & government representatives to discuss the latest challenges and developments making an impact on the industry.

Source : [WPLGroup](#)

## AgBio Innovate

Location : San Francisco, California

Date : July 11-12 2018

Developing BioAg products brings with it various demands and challenges - for example complying with regulation, managing resistance, formulation compatibility of ingredients and scale up challenges. Agbio Innovate USA aims to address regulatory hurdles that directly impact the biopesticide and biostimulant sector in North America as well as explores formulation technology and R&D advances with insight from industry leaders.

Source : [kisacoresearch](#)

## 2018 China-Overseas Biopesticides & Biostimulants Business Exchange Congress

Location : Shanghai, China

Date : August 11-13 2018

China is a large agricultural country, also one of the biggest agri-product demanded countries. With the overuse of chemical pesticides and fertilizers in recent years, the harm to environment and human health receive more and more attention. Therefore, China has announced in 2015 that it's targeting zero growth in the use of chemical pesticides and fertilizers by 2020.

Source : [Agropages](#)

## Crop Innovations and Regulations

Location : Barcelona, Spain

Date : September 4-6 2018

Join the crop protection and nutrition community in Barcelona and gain insight into the latest regulatory policy and R&D advancements for effective Plant Protection Products, Biopesticides, Biostimulants and Agrochemical Formulations.

Source : [Lifesciences](#)

## AgBio Innovate Latam

Location : Sao Paulo, Brazil

Date : September 12-13 2018

AgBio Innovate explores the biopesticide and biostimulant markets in Latin America, addressing: How to overcome regulatory challenges, Innovative R&D advances, Formulation solutions; and Successful

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

commercial strategies, How AgTech is transforming agriculture in Latin America

Source : [kisacoresearch](#)

## Benefits and risks of exotic BCA

Location : Ponta Delgada, Azores

Date : September 12-14 2018

The meeting aims to address the following areas: [...] - Ongoing development of guidelines on assessing environmental benefits and risks of releasing exotic biological control agents to increase cogency of decision making on classical biological control initiatives.

Source : [Exoticbca](#)

## Organic Farming & Biological Treatment 2018

Location : Dallas, Texas

Date : September 19-20 2018

Organic farming may be defined as an integrated farming system that strives for sustainability, the enhancement of soil fertility, biological diversity with rare exceptions prohibiting synthetic pesticides, synthetic fertilizers, and genetically modified organisms & growth hormones.

Source : [Conference Series](#)

## Natural Products and Biocontrol Congres

Location : Perpignan, France

Date : September 25-28, 2018

This year the 3 main thematic lines proposed are: 1. Socio-economic approach to innovation in the biocontrol sector, 2. Restitution of the results of the research and development program of the Mixed Technological Network

Elicitra, 3. New concepts and advanced research

Source : [Biocontrol2018](#)

## International Conference on Biological Control

Location : Bengaluru, India

Date : September 27-29 2018

Globally, upto 30% of agricultural yields are affected by pests and diseases despite intensive chemical pesticide use. Biological control of insect pests and diseases is one of the major ecosystem services provided to agriculture worldwide. Natural enemies such as predators, parasitoids and pathogens play a major role in limiting damage caused by nature and exotic pests.

Source : [icbc2018bengaluru](#)

## Annual Biocontrol Industry Meeting

Location : Basel, Switzerland

Date : October 22-24 2018

During the three days of the 2017 conference, a record number of 1046 delegates from 54 countries representing 511 companies and organizations from all over the globe were present and exchanged experiences and obtained information on the latest products and developments on the world market.

Source : [abim](#)

1. BIOPESTICIDES

2. BIOSTIMULANTS

3. BIOFERTILIZERS

## 20th International Conference on Crop Protection and Control

*Location : Paris, France*

*Date : October 29-30 2018*

The ICCPC 2018: 20th International Conference on Crop Protection and Control aims to bring together leading academic scientists, researchers and research scholars to exchange and share their experiences and research results about all aspects of Crop Protection and Control.

*Source : [waset](#)*

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

## 2. Biostimulants

### 2.1. News

#### A. COMPANIES

##### **Plant nutrient company Inocucor changes name to Concentric Ag | 27/05/2018**

Inocucor Corp., a developer and producer of proprietary biological and essential plant nutrient inputs for specialty and broadacre crops, today announced it will change its name to Concentric Ag Corp.

Source : [VegetableGrowersNews](#)

##### **Valagro launches its “Valagro for Future Farming” project in India | 26/05/2018**

The event is part of the global Valagro for Future Farming project, under which the company intends to promote and strengthen its commitment to the main reference markets to shape the agriculture of tomorrow by developing and supplying increasingly innovative and sustainable solutions and technologies.

Source : [GulfAgriculture](#)

##### **Valagro to build first U.S. manufacturing plant for biostimulants | 25/05/2018**

The American plant will be built in Orangeburg County, South Carolina, as stated in the official note published yesterday by the South Carolina Department of Commerce, and will be created

with an investment of about \$14 million dollars and create 47 new jobs for a highly specialized local labor force.

Source : [AgriBusinessGlobal](#)

##### **Axter Agrosience Inc: results of farm testing of biostimulant exceed expectations | 22/05/2018**

The R&D team and management of Axter Agrosience Inc. ("Axter"), a company that specializes in the production and distribution of foliar nutrient solutions and biostimulants for major crops (wheat, soy, corn), are pleased to announce the results of 141 farm trials carried out from 2015 to 2017 at 94 farms located throughout Quebec and Ontario.

Source : [NewsWire](#)

##### **Pivot Bio reports significant growth and expansion of leadership team | 16/05/2018**

Pivot Bio, the leader in crop nutrition through nitrogen production, today announced that it has added three senior leaders to its team. Natalie Hubbard, vice president of regulatory and government affairs; Mark Reisinger, marketing director; and Tracy Willits, vice president of communications have all joined Pivot Bio to launch the world's first nitrogen-producing microbe for corn in 2019.

Source : [PivotBio](#)

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

## Q&A with ABM on biostimulants' evolution, distribution | 02/05/2018

We started ABM 18 years ago with biological products. We did soybean inoculants and a biopesticide at the time – the first one, a biopesticide called T-22. After that we did a lot of grant work with Dr. Gary Harman at Cornell University. Dr. Harman developed three strains of *Trichoderma viride* for us that we're marketing worldwide.

Source : [CropLife](#)

## B. PRODUCT LAUNCH

### ASL develops first of its kind bio-stimulants to raise agri output in India | 13/05/2018

Canadian company Acadian Seaplants Ltd (ASL) has developed first of its kind seaweed-based biostimulants to help farmers raise their agricultural output in India. Powered by Acadian BioSwitch™ technology, the stimulants help reduce the development of weeds in the field which helps multiply germination of plants and thereby yielding higher produce.

Source : [BusinessStandard](#)

## C. PRODUCT CERTIFICATION & HOMOLOGATION

### Newly listed products, OMRI Products List | 21/05/2018

OMRI has determined the following products are allowed for use in accordance with National Organic Program (NOP) standards, for the use indicated and in keeping with any applicable use - with their USDA-accredited certifying body

before using any new products. This document lists products added in the past three months.

Source : [OMRI](#)

## D. ACADEMIC NEWS

### Micro-algae biostimulant to increase the productivity and taste of melon | 22/05/2018

For the second year in a row, an independent study conducted by the iMiDRA has demonstrated the effectiveness of AlgaEnergy's micro-algae biostimulants in melon cultivation.

Source : [FreshPlaza](#)

### First lettuce harvested in Bio4safe biostimulant project | 21/05/2018

The Bio4safe biostimulant pilot project started off in August 2017. It's a collaboration between various partners from Belgium, France and the United Kingdom and is coordinated by the Belgian Test Center for Horticulture (PCS). They are researching the effects of biostimulants on nutrient use, tolerance against abiotic stress and crop quality. The aim of the project is to reduce water and fertilizer use by applying biostimulants in combination with innovative sensors.

Source : [HortiDaily](#)

## 2.2. Reports

### A. MARKET TRENDS

#### What's really behind the biostimulant boom | 24/05/2018

While biostimulants have been used for many decades, it was from 2010 that the industry

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

began to snowball due to a combination of: 1) new technologies being developed, 2) investors increasingly seeing it as a good area to invest, and 3) traditional agchem (pesticides and fertilizers) showing lower growth rates due to falling commodity prices.

Source : [\*AgriBusinessGlobal\*](#)

### How one farmer slashed his fertiliser and fungicide use in wheat | 16/05/2018

Unhappy with being dragged down this slippery slope, Kent grower Andrew Howard is moving away from a prescriptive chemical-reliant approach by adopting a system that focuses on soil health and plant nutrition to reduce the impact of disease. A UK wheat production system that relies heavily on bagged fertiliser and pesticides has produced some world record-breaking yields in recent years, most notably the 16.52t/ha achieved in Northumberland in September 2015.

Source : [\*FarmersWeekly\*](#)

### The crop protection product and plant health markets of Italy and Spain | 14/05/2018

The crop protection and biological products markets of Spain and Italy are critical to ensuring the rest of Europe has access to fresh fruits and vegetables, and the technology developed in those countries makes its way around the world. "Spain is the biggest purveyor of fresh fruits in Europe. That is our opportunity, also our challenge," says Adonay Obando, Director for Bayer CropScience S.L. "It's where northern Europe gets its fresh produce, mostly. That's where the challenges start. Northern Europe is by far the heaviest populated area in

Europe and has some of the most heavily populated areas in the world."

Source : [\*AgriBusinessGlobal\*](#)

## 2.3. Patents

### A. MICROBIALS

#### US20180141878 | Synergistic bacterial consortia for mobilizing soil phosphorus | Colorado State University Research Foundation | 24/05/2018

The present disclosure relates to consortia of bacteria strains and composition comprising one or more bacterial strains disclosed herein. These consortia of isolated bacteria cultures and compositions comprising said cultures, having greater activity than would be observed for the individual bacteria cultures and compositions. A composition of the disclosure may advantageously be used for enhancing the availability of soil phosphorus and other macronutrients and/or micronutrients to plants, and thereby enhancing their growth and yield.

Source : [\*Wipo\*](#)

#### US20180142230 | Microbial fermentation methods and compositions | Newleaf Symbiotics, Inc. | 24/05/2018

The present invention provides methods for the cultivation of the *Methylobacterium* genus of bacteria. In particular the method provides methods for the efficient and inexpensive cultivation of these bacteria. Additionally, the

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

invention provides methods for the utilization of these bacterial cultures to improve plant agriculture.

Source : [Wipo](#)

### **US20180139967 | Selection and use of cold-tolerant bacillus strains as biological phytostimulators | Abitep GmbH | 24/05/2018**

The invention relates to a biological product for increasing the yield of crop plants. The invention can be used in agriculture, horticulture and plant protection. The product for stimulating the growth of crop plants is characterized by containing a cold-tolerant Bacillus strain.

Source : [Wipo](#)

### **EP3319927 | Soil improver comprising silt with mycorrhizae therein, as well as method for the production of the soil improver | The Triple E Trust Holding B V | 16/05/2018**

Source : [Wipo](#)

### **WO2018081543 | Mutants of Bacillus and methods for their use | Bayer Cropscience Ip | 03/05/2018**

The present invention relates to a composition comprising a biologically pure culture of plant growth promoting mutants of Bacillus firmus strain I-1582. The present invention also provides a method of treating a seed to promote plant growth, wherein the method comprises

applying such mutants to the plant, to a part of the plant and/or to a locus of the plant.

Source : [Wipo](#)

## **B. PLANT EXTRACTS**

### **US20180125077 | Method for using mustard meal or an extract thereof | University Of Idaho | 10/05/2018**

Disclosed are embodiments of a method of using mustard meal or mustard meal extract. Certain embodiments concern controlling vegetable sprouting, such as potato sprouting. Vegetables, such as potatoes, may be exposed to products resulting from mustard meal, or an extract thereof, contacting water. Other embodiments concern a process for controlling plant pests, such as insects, nematodes, fungi, weeds, and combinations thereof, with specific embodiments being particularly useful for weed suppression.

Source : [Wipo](#)

## **2.4. Events**

### **Agri Biostimulants 2018**

Location : Milan, Italy

Date : June 13-14 2018

Agri Biostimulants 2018 taking place on the 13-14 June in Milan is an international conference which brings together agriculture experts. During 2 days of interactive presentations and networking sessions they will share their knowledge of the dynamically developing industry of biostimulants.

Source : [Agribiostimulants](#)

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

## United Fresh

*Location : Chicago, Illinois*

*Date : June 25-28 2018*

When fresh, healthy and better-for-you products align with the technologies and advancements in a streamlined global supply chain, your company wins! This June in Chicago, discover the newest fresh produce, floral, better-for-you products and the tech innovations that support growth, development, promotion, transportation and expansion across the supply chain.

*Source : [Unitedfreshshow](#)*

## US Biostimulants Summit 2018

*Location : Chicago, Illinois*

*Date : June 27-28 2018*

The conference will bring together the leading executives and experts from across the entire value chain (producers of biostimulant and plant nutrient products, farmers and agriculture suppliers, technology providers, research institutes & government representatives) for two days of informative presentations, interactive discussion & excellent networking opportunities.

*Source : [WPLGroup](#)*

## AgBio Innovate

*Location : San Francisco, California*

*Date : July 11-12 2018*

Developing BioAg products brings with it various demands and challenges - for example complying with regulation, managing resistance, formulation compatibility of ingredients and scale up challenges. Agbio Innovate USA aims to address regulatory hurdles that directly impact the biopesticide and biostimulant sector in North America as well as explores formulation technology and R&D advances with insight from industry leaders.

*Source : [kisacoresearch](#)*

## Biostimulant CommerceCon

*Location : Phoenix, Arizona*

*Date : July 30-31 2018*

Join us in Phoenix to learn the business of biostimulants throughout the global distribution chain. This one-and-a-half-day conference has been designed to help you drive expansion decisions, and figure out how to best explain and market biostimulants to your customers.

*Source : [biostimcommercecon](#)*

## 2018 China-Overseas Biopesticides & Biostimulants Business Exchange Congress

*Location : Shanghai, China*

*Date : August 11-13 2018*

China is a large agricultural country, also one of the biggest agri-product demanded countries. With the overuse of chemical pesticides and fertilizers in recent years, the harm to environment and human health receive more and more attention. Therefore, China has announced in 2015 that it's targeting zero growth in the use of chemical pesticides and fertilizers by 2020.

*Source : [Agropages](#)*

## Crop Innovations and Regulations

*Location : Barcelona, Spain*

*Date : September 4-6 2018*

Join the crop protection and nutrition community in Barcelona and gain insight into the latest regulatory policy and R&D advancements for effective Plant Protection Products, Biopesticides, Biostimulants and Agrochemical Formulations.

*Source : [Lifesciences](#)*

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

## International Conference On Biocontrol, Biostimulants & Microbiome

*Location : Zurich, Switzerland*

*Date : September 6-7 2018*

This prestigious conference will mainly focus on "Understanding and Improving Crop Cultivation". It intends to bring issues to light among agriculturalists, microbiologists, all through life in avoiding irresistible maladies in plants that are spread around the world.

*Source : [Meetings International](#)*

## AgBio Innovate Latam

*Location : Sao Paulo, Brazil*

*Date : September 12-13 2018*

AgBio Innovate explores the biopesticide and biostimulant markets in Latin America, addressing: How to overcome regulatory challenges, Innovative R&D advances, Formulation solutions; and Successful commercial strategies, How AgTech is transforming agriculture in Latin America.

*Source : [kisacoresearch](#)*

## Future of Surfactants Summit North America

*Location : Chicago, Illinois*

*Date : September 19-20 2018*

This year, the conference will explore the following topics & areas: feedstocks availability, trends for home & personal care products, other end-products for surfactants (industrial, paint & coatings, agricultural, EOR), bio-based and enzyme-based surfactants, innovation and development process of products, sustainability & green chemistry, news and updates on regulation, and transparency with consumers.

*Source : [WPLGroup](#)*

# 3. Biofertilizers

## 3.1. News

### A. PRODUCT LAUNCH

#### **Innovative process for environmentally friendly manure treatment comes onto the market | 03/05/2018**

The BioEcoSIM process for the treatment of liquid manure developed at the Fraunhofer Institute for Interfacial Engineering and Biotechnology IGB is being introduced to the market by SUEZ Germany as an operator of large-scale plants. This creates an opportunity for farms to dispose of surplus manure and digestate. Slurry treatment products are phosphate fertilizers, ammonium fertilizers and organic soil improvers. The partners will announce their cooperation for the market launch at IFAT from May 14 - 18 in Munich.

Source : [Phys](#)

### B. PRODUCT CERTIFICATION & HOMOLOGATION

#### **Breakthrough hydrolysis technology transforms animal by-products and food waste into organic fertilizer and green energy | 29/05/2018**

An innovative Canadian technology targeting global markets has successfully completed commercial scale processing of livestock carcass by-products into fertilizers at the

Lethbridge Biogas biorefining plant. This new thermal hydrolysis and fractionation process transforms animal by-products and food waste, including inedible meat and bones, into safe nutrient products for organic fertilizer and biogas production.

Source : [NewsWire](#)

#### **Newly listed products, OMRI Products List | 21/05/2018**

OMRI has determined the following products are allowed for use in accordance with National Organic Program (NOP) standards, for the use indicated and in keeping with any applicable use - with their USDA-accredited certifying body before using any new products. This document lists products added in the past three months.

Source : [OMRI](#)

### C. PARTNERSHIPS & ACQUISITION

#### **Smithfield Foods partners with Anuvia Plant Nutrients to create bio-based fertilizer | 10/05/2018**

The project reuses organic matter found in hog manure to create a commercial-grade fertilizer. Farmers can better manage nutrient ratios while using less fertilizer by applying precisely what they need for optimal plant growth, the companies say. According to Anuvia, its products contain organic matter designed to release nutrients in a more controlled manner,

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

resulting in reduced greenhouse gas emissions and a smaller environmental footprint.

Source : [WasteToday](#)

## D. START-UP NEWS

### Communities innovate to address sargassum seaweed on St Lucia's coasts |

09/05/2018

On the east coast of St Lucia, a local youth by the name of Johanan Dujon recognized an opportunity to capitalize on this freely available resource [sargassum] to create valuable organic agricultural inputs, which could in turn reduce and eventually replace the environmentally harmful synthetic chemicals used to grow food in St Lucia.

Source : [Caribbean360](#)

## E. ACADEMIC NEWS

### Mexican researchers propose algae as biofertilizer |

28/05/2018

Sargassum, a nutrient-rich algae which commonly washes up on the beaches of southeast Mexico's Yucatan Peninsula, may serve as an environmentally friendly fertilizer alternative, researcher Daniel Gonzalez told EFE on Thursday.

Source : [LAHT](#)

### Organic fertilizers can be dangerous for suburban areas – expert |

25/05/2018

The media and supporters of a healthy lifestyle was fearful of danger in nitrates and nitrites, which are found in vegetables and fruits, whose growth accelerated due to chemical fertilizers.

In fact, in reasonable proportions, these fertilizers are quite useful, but it is good to wash the fruit and soak the first berries and vegetables is desirable in any case.

Source : [TheSiverPost](#)

### Panchamrit a viable alternative to chemical, organic fertilisers: Gujarat University study |

24/05/2018

Panchamrit is a mixture of five food products — honey, milk, yogurt, ghee, and sugar (garnished with basil leaves), often used in Hindu rituals. The researchers conducted a field trial at the botanical garden of GU to assess the comparative effect of chemical and organic fertilisers and Panchamrit (a bio fertiliser).

Source : [DNAIndia](#)

### Manure's impact on yield, nitrogen, and carbon |

02/05/2018

Manure is often viewed by many as an environmental liability. However, if manure is applied at rates equal to or less than the nitrogen (N) requirement of a crop, can manure produce environmental benefits over commercial fertilizer? This was the focus of an Asian research group which summarized the results of 141 published studies from Asia, Europe, and the U.S. comparing manure substitution for fertilizer. This article summarizes the "Take Home Messages" from this research paper.

Source : [CornAndSoybeanDigest](#)

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

## Indian Scientists Find New Way To Recycle Organic Waste – Earthworm Guts! | 02/05/2018

Indian scientists have investigated the gut of earthworms to get an insight into why they are so efficient in helping decomposition. They have found that the gut of earthworms provides an ideal environment for nurturing a variety of cellulose-degrading bacteria because of which they are able to convert organic waste from plant sources into fertilizer or compost.

Source : [TheBetterIndia](#)

## Manure's impact on yield, nitrogen, and carbon | 01/05/2018

Manure is often viewed by many as an environmental liability. However, if manure is applied at rates equal to or less than the nitrogen (N) requirement of a crop, can manure produce environmental benefits over commercial fertilizer? This was the focus of an Asian research group which summarized the results of 141 published studies from Asia, Europe, and the U.S. comparing manure substitution for fertilizer.

Source : [SoilHealthNexus](#)

## 3.2. Regulation/Soft law

### A. PUBLIC & PRIVATE INCENTIVES

#### Cabinet nod to introduce a fertilizer subsidy scheme for organic paddy farmers | 27/05/2018

The government [of Sri Lanka] has received the cabinet approval to introduce a fertilizer subsidy scheme for paddy farmers using organic farming methods. The subsidy will be granted from the Yala season of this year.

Source : [ColomboPage](#)

#### Soil is the underrated issue of food waste challenge, says World Biogas Association boss | 22/05/2018

Food waste processed via anaerobic digestion can significantly improve nutrient recovery in the soil, and the process may have significant use in sustainable agriculture and in fighting climate change, David Newmann, president of the World Biogas Association, told EURACTIV.com in an interview.

Source : [Euractiv](#)

#### Kenyan Biotech firm receives Sh35m investment from WB fund | 17/05/2018

Through the Kenya Climate Ventures, Sistema.bio will now scale its hybrid reactor biodigesters, delivering sustainable renewable energy and agricultural solutions to more farmers in Kenya. Sistema.bio Country

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

Manager Raymond Chepkwony has said that the convertible debt investment will ensure residents in rural areas gain access to clean energy by profitably managing all the waste in their households while safeguarding their health.

Source : [CapitalFM](#)

### China pays farmers to utilize farm waste as 'clean' power source | 15/05/2018

China will continue to pay farmers to treat animal waste in the new year, the country's Ministry of Agriculture and Rural Affairs and the Ministry of Finance said in a joint document released late Tuesday. Beijing will subsidize third parties to build facilities for animal waste collection, storage and treatment, to turn the manure into organic fertilizer and power.

Source : [Agriculture](#)

### Madhya Pradesh to produce organic fertilizer from human hair | 09/05/2018

The Madhya Pradesh government will soon start production of amino acid from human hair and provide it to farmers at one-third of the market price to be used as organic fertilizer, government officials said. The government's environment department signed an agreement with an NGO named Sarthak on Monday to produce and market amino acid.

Source : [HindustanTimes](#)

### Cuba invests in improving its soils | 03/05/2018

Cuba is working to improve the efficiency of the National Soil Improvement and Conservation Program, which this year includes investments raised to 58.6 million pesos (equal in USD to the

official exchange rate), experts of the sector said here today.

Source : [PrensaLatina](#)

## 3.3. Report

### A. MARKET TRENDS

#### Algae-based fertiliser turns vegetable farming green | 14/05/2018

There is a growing demand for 'green' vegetables but farmers are reluctant to change to these revenue-generating practices. Researchers have made it easier for farmers to get their products labelled as green through sustainable, easy-to-adopt technology.

Source : [HortiDaily](#)

### B. TECHNICAL TOPICS & REVIEWS

#### Is tobacco the next 'miracle crop'? | 06/05/2018

The sight of green and healthy tobacco leaves under the noonday sun is enough to excite any tobacco farmer about high yields. But for agriculture researchers, tobacco could be so much more that is now becoming an emerging miracle crop and for good reason : Soil conditioner, Insecticide, Pond sterilizer, Molluscicide, Impacts on agriculture

Source : [SunStar](#)

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

## Magazine : Manure Manager, May/June 2018 | 01/05/2018

A Magazine about manure.

Source : [ManureManagerMagazine](#)

### 3.4. R&D projects

#### Innovative Manure Biofertilizers | 13/03/2018

Period : 01/03/2018 - 31/08/2018

Funder : EU

Budget : 71 429€

Performing institution /coordinator : Limited Liability Company Integro-SD

Increasing demand for organic fertilizers tells about the necessity of ramping up its production. IMBIO technology allows occupying empty market niche of high-quality organic fertilizers production in the segment of small and medium farm enterprises. The offered technology is highly-productive, waste-free, compact, easy to scale, non-hazardous for the environment and also has low construction budget. IMBIO allows reducing or totally refusing the usage of mineral fertilizers, increasing the yield of cultivated crops, getting added value by waste processing, organic products and new small-scale production, as well as creating closed production cycle for small farm enterprises, poultry plants and other representatives of the branch.

Source : [Cordis](#)

#### Identifying microbial allies in N retention with <sup>15</sup>N quantitative stable isotope probing | 15/05/2018

Period : 15/05/2018 - 14/05/2020

Budget : \$100 000

Performing institution /coordinator : West Virginia University

The goal of this project is to advance and validate a potentially transformative new technique, quantitative stable isotope probing (qSIP) with <sup>15</sup>N that may allow a mechanistic connection between microbial community composition and rates of N immobilization. This approach will permit the identification of microbial groups important for determining rates of N assimilation in soil (microbial allies). To validate <sup>15</sup>N qSIP, it will be compared to traditional approaches to measure N assimilation and immobilization.

Source : [Cris](#)

### 3.5. Patents

#### A. MICROBIAL – N FIXING

##### US20180135007 | Nitrogen fertilizer bio-catalyst for sustainable crop production | Nadia Adam | 17/05/2018

Endophytic microbial strains as biocatalysts isolated from fresh plant samples, compositions, and methods of use thereof to enhance the growth and/or yield of a plant in the presence of reduced synthetic nitrogen fertilizers are provided. Endophytic microbial strains serve as biocatalysts to solubilize organic (proteinaceous) nitrogen otherwise unavailable to plants for their nutritional needs.

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

Thus defined, biocatalysts will serve to replace synthetic nitrogen fertilizers. Also provided are materials and methods for inoculating plants with these biocatalysts at carefully selected inoculum densities to reliably reduce the amount of nitrogen fertilizer by 50% thus accomplishing optimal yields in technically and cost-effective manner.

Source : [Wipo](#)

## B. MICROBIAL – P2O5 SOLUBILIZING

### US20180118633 | Phosphorus fertilizer bio-catalyst for sustainable crop production | Nadia Adam | 03/05/2018

Endophytic microbial strains as biocatalysts isolated from fresh plant samples, compositions, and methods of use thereof to enhance the growth and/or yield of a plant in the presence of reduced synthetic phosphate fertilizers are provided. Endophytic microbial strains serve as biocatalysts to solubilize mineral-P and mineralize organic-P otherwise unavailable to plants for their nutritional phosphate needs.

Source : [Wipo](#)

## C. NUTRIENTS RECOVERY

### DK2938720 | Konsortium til rconsortium for reduction of amoniac and / or methan emission in fertilizer or soil | Rinagro B.V. | 22/05/2018

The invention is related to a new bacterium comprising a partial 16S rDNA nucleic acid sequence having more than 85% sequence

identity to the sequence presented as SEQ ID NO:1, or the complement thereof and a consortium of micro-organisms for improving manure or soil.

Source : [Wipo](#)

## D. MEDIA GROWTH AND SOIL CONDITIONER

### WO2018091728 | Soil conditioning agents | Oget Innovations Gmbh | 24/05/2018

The invention relates to a process for preparing a soil conditioning agent comprising an extract of a plant from the genus *Asclepias*, wherein the extraction is carried out using a multi-step extraction process and to the soil conditioning agent thereof. The invention further relates to a granulate comprising the soil conditioning agent. The use of the soil conditioning agent and a granulate comprising the soil conditioning agent to control pests on agricultural land is also part of the invention.

Source : [Wipo](#)

### EP3323290 | Soil conditioning agents | Oget Innovations Gmbh | 23/05/2018

The invention relates to a process for preparing a soil conditioning agent comprising an extract of a plant from the genus *Asclepias*, wherein the extraction is carried out using a multi-step extraction process and to the soil conditioning agent thereof. The invention further relates to a granulate comprising the soil conditioning agent. The use of the soil conditioning agent and a granulate comprising the soil conditioning agent to control pests on agricultural land is also part of the invention.

Source : [Wipo](#)

## 1. BIOPESTICIDES

## 2. BIOSTIMULANTS

## 3. BIOFERTILIZERS

**US20180134958 | Biopolymer composition for remediating degraded soils and for preventing soil erosion | Nadia Adam | 17/05/2018**

The said biopolymer is derived from corn cob waste. The said biopolymer is of specific charge, size, and length, to facilitate aggregation, and create, or improve soil structure, and thus reduce and/or prevent soil erosion, and remediate degraded soils. The said biopolymer is of equal, or better efficacy (for the same dose) as polyacrylamide.

Source : [Wipo](#)

**US20180119008 | Preparation and use of slow-release iron-based biochar soil heavy metal passivator | Guangdong Institute Of Eco-Environmental Science & Technology | 03/05/2018**

The invention discloses a method for the preparation and use of a slow-release iron-based biochar soil heavy metal passivator. The slow-release iron-based biochar soil heavy metal passivator of the present invention is prepared by an one-step method, wherein iron-based biochar, kaolin and a biological starch are mixed into a core material in a specific ratio; an acidic silica sol and a chitosan solution are prepared, under the effects of an alkaline catalyst and an emulsifier, as a chitosan and silica-sol composite material as a coating, and the iron-based biochar is coated with the alkaline coating material, with the core material and the coating material being controlled at a certain volume ratio.

Source : [Wipo](#)

**US20180118631 | Enhanced biochar | Cool Planet Energy Systems, Inc. | 03/05/2018**

Biochar is provided that is treated to have certain chemical and physical properties found to have the highest impact on plant growth and/or soil health. In particular, the following physical and/or chemical properties, among others, of a biochar have been identified as critical properties to control for in the selection of biomass feedstock, pyrolysis conditions, and/or enhancing treatment to increase biochar performance: [...]

Source : [Wipo](#)

**US20180119020 | System for producing biocoal and biochar using a rotary compression unit | Enginuity Worldwide, Llc | 03/05/2018**

A system for producing biocoal and biochar includes at least one rotary compression unit (RCU) having a barrel, a compression screw housed within the barrel, a feed for receiving biomass and at least one exit for releasing biochar and gasses formed in the RCU. A first exit stream is produced that includes biochar and a portion of the remaining gasses, and a second exit stream is produced that includes biocoal. A gas crossover is provided that connects the first and second exit stream having a mechanism for transporting gasses from the first exit stream to the second exit stream thereby condensing a portion of the remaining gasses into the biocoal. In one form two RCUs are included connected to two condensers.

Source : [Wipo](#)

## 3.6. Events

### 3th European Sustainable Phosphorus Conference 2018: „Call for posters“

*Location : Helsinki, Finland*

*Date : June 11-13 2018*

The third European Sustainable Phosphorus Conference (ESPC3) takes place from 11 to 13 June 2018 in Helsinki, Finland. Objectives of the conference are: Update on implementation of EU Commission Consultation on Sustainable Phosphorus, 2013, Ecological nutrient restoration & nutrient recovery from sediments and run-off water, Tomorrow's agricultural nutrient management and fertilisation, Policy tools for sustainable use of nutrients [...]

*Source : [DeutschePhosphorPlattform](#)*

### The Organic Farmers Fair

*Location : Amsterdam, Netherlands*

*Date : June 12-14 2018*

The Organic Farmers Fair is the good momentum for suppliers in seeds and seedlings, fertilizers, composting technology, biological pest control, weed control systems, GPS systems, soil cultivation, greenhouse horticulture, research and advice.

*Source : [GreenTech](#)*

### United Fresh

*Location : Chicago, Illinois*

*Date : June 25-28 2018*

When fresh, healthy and better-for-you products align with the technologies and advancements in a streamlined global supply chain, your company wins! This June in Chicago, discover the newest fresh produce, floral, better-for-you products and the tech innovations that support growth, development, promotion, transportation and expansion across the supply chain.

*Source : [Unitedfreshshow](#)*

### North America Manure Expo

*Location : Brookings, South Dakota*

*Date : August 15-16, 2018*

The Manure Expo has grown to an annual educational and demonstration event. The event has been hosted by Wisconsin, Michigan, Minnesota, Missouri, Ohio, Iowa, Nebraska, and Pennsylvania in the US and Guelph, Ontario, Canada.

*Source : [ManureExpo](#)*

## DEFINITIONS

The following definitions are the definitions used to classify information. They are commonly accepted definitions but have not a legal status. The clarification of legal definitions is a topic monitored through this newsletter.

**Biopesticide** (EPA, 2013): Biopesticides include naturally occurring substances that control pests (biochemical pesticides), microorganisms that control pests (microbial pesticides), and pesticidal substances produced by plants containing added genetic material (plant-incorporated protectants) or PIPs.

**Biostimulant** (Du Jardin, 2012): Plant biostimulants are substances and materials, with the exception of nutrients and pesticides, which, when applied to plants, seeds or growing substrates in specific formulations, have the capacity to modify physiological processes of plants in a way that provides potential benefits to growth, development and/or stress response.

**Organic fertilizer / Biofertilizer** (ECOFI): Fertilizer whose main function is to provide nutrients under organic forms from organic materials of plant and/or animal origin.

**Organic soil improver** (ECOFI): A soil improver containing carbonaceous materials of plant and/or animal origin, whose main function is to maintain or increase the soil organic matter content.

## Subscribe to our newsletter on "Biosolutions for agriculture"!

Subscribe today to the "Biosolutions for agriculture" newsletter and get access to all information: product launches, patents, partnerships and R&D projects, investments, market studies, events, etc.

**Normal rate: 1495€**

- 1 year, 12 letters
- 4 email addresses maximum

**Reduced price \*: 750€**

- 1 year, 12 letters
  - 4 email addresses maximum
- \*Only available for academics and startups (less than 15 employees or less than € 1M turnover)*

---

### IAR MEMBER?

Benefit from a 15% discount as a member of IAR (respectively €1270 for the normal rate and € 638 for the reduced price.)

### SUBSCRIPTION FORM

Entity:	<input type="text"/>	Email 1:	<input type="text"/>
First name:	<input type="text"/>	Email 2:	<input type="text"/>
Last name:	<input type="text"/>	Email 3:	<input type="text"/>
Email:	<input type="text"/>	Email 4:	<input type="text"/>
Phone:	<input type="text"/>		

#### Billing address

Mailing address:	<input type="text"/>
Mailing address 2:	<input type="text"/>
City:	<input type="text"/>
Postal code:	<input type="text"/>
Country:	<input type="text"/>

#### SUBSCRIPTION

- I subscribe for 12 months to the newsletter "Biosolutions for agriculture" (12 newsletters)
- I accept the general sales conditions

#### REDUCED PRICE

- I fulfill the terms to benefit from the reduced price of € 750 a year (see above)
- I am a member of IAR and benefit from a 15% discount

Signature

Date and place