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TWO B MONTHLY

The Global Biocontrol & Biostimulants E-Newsletter

A DunhamTrimmer and New Ag International Publication
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Welcome!

The 2BMonthly Team is delighted to bring our subscribers the latest news in both the biocontrol and the biostimulant industries. Please stop by to say hello to the entire 2B Team at Booth 39 during ABIM next week!

The 2BMonthly Team

Trending Now

Éléphant Vert and Marrone Bio Innovations sign a distribution agreement.

Read more on page 1.

Bayer CropScience and Gikgo Bioworks have partnered to create new startup

Read more on page 1.

IBMA announced three finalist products for the Bernard Blum Award

Read more on page 2.

Koppert Biological and Biobest both celebrate major anniversaries

Read more on page 2.

Indigo Ag announces closing on \$156 million in Series D financing

Read more on page 3.

Agrauxine announces launch plans for Romeo in France, Italy, and Spain

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Executives Speak: Mr. David Cary, Executive Director & Dr. Willem Ravensberg, President of IBMA

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Mergers, Acquisitions and Partnerships

Éléphant Vert and Marrone Bio Innovations announced their agreement to distribute two biopesticides, REYSANA™ Biofungicide and MAJESTENE® Bionematicide in North Africa. Éléphant Vert will develop and distribute the two products in Morocco, Tunisia, and Algeria. The biofungicide REYSANA™ is currently labeled for use by growers of tomatoes, peppers, grapes and cucurbits. Reysana contains the same ingredients as MBI's Regalia® Maxx Biofungicide, which is already marketed and sold in more than 10 countries worldwide. The bionematicide MAJESTENE®, which protects crops from yield-robbing nematodes. The product is in the process of registration. Vincent Theyre, Products & Solutions Development Director of Éléphant Vert, said: "Integrating biopesticides into crop protection programs benefits all production, and is increasingly important for exporters of vegetables in the region." Dr. Pamela Marrone, CEO and Founder of MBI, said: "We are delighted by this partnership that is part of our international development strategy; this agreement enables MBI to expand to new markets in North Africa while meeting farmers' needs with innovation-driven biological products." Sébastien Couasnet, CEO of Éléphant Vert, added, "This agreement opens up new promising development opportunities to provide North-African farmers with a wider range of natural, efficient and innovative solutions."

Bayer CropScience and Ginkgo Bioworks have partnered with hedge fund Viking Global Investors



to invest US\$100 million in an unnamed agtech startup. The new company will focus on manufacturing microbial products to help with nitrogen fixation and minimizing agricultural impact by decreasing chemical fertilizer requirements for crops. The endophytic microbes targeted by the company aim to deliver new agronomic benefits. The new company will be located at Bayer Biologicals R&D headquarters in Sacramento. Mike Miille, former CEO of AgraQuest and current VP of Strategy in Bayer's biologicals division will be interim CEO for the new company. According to a Ginkgo spokesperson, the new company will not compete with Bayer's existing biologicals business.

Company News

Andermatt Biocontrol is developing LITTOVIR for control of fall armyworm (*Spodoptera frugiperda*) in Africa. Fall armyworm has recently been introduced from America to Africa resulting in enormous crop losses, particularly in staple food such as maize, sorghum and rice, thus leading to a severe crisis in African food security. The use of chemical pesticides against FAW quickly leads to the development of resistance and therefore integrated or biological control strategies are highly recommended. Andermatt Biocontrol developed LITTOVIR, a baculovirus product for the control of a closely related pest, *Spodoptera littoralis*. LITTOVIR demonstrated a two to ten times greater activity than known virus isolates from *Spodoptera frugiperda*. Field trials in Cameroon showed that damage caused by FAW in the plots treated with LITTOVIR was only 30% as compared to 80% in the untreated control. LITTOVIR has already been approved in Europe against *S. littoralis*, and represents a potential answer to the urgent need for a solution to control the invasive pest in Africa.

IBMA announced three finalist products for the 2017 Bernard Blum Award.

- **CBC Europe** for the product TREMOS
- **Certis USA** for the product LifeGard
- **Koppert Biological Systems** for the product Ulti-Mite Swirski

The IBMA Bernard Blum Award Winner will be presented by Owen Jones during the ABIM opening session to be held on October 23 between 17:00 and 17:45 in Basel. **2BMonthly** wishes all finalists best of luck!

Bayer Crop Sciences Biologics Group in Sacramento has launched a "CoLaborator" space to serve as a startup lab and incubator space for new biotech and microbial companies. A total of 3000 square feet (279 square meters) of lab space is available and Bayer is already starting to solicit possible tenants for the space. The space combines offices as well as wet labs (biochemistry and cell biology). The goal is to provide the startups with the opportunity to conduct proof of concept studies and to interact with Bayer at an early stage.

Biobest celebrated 30 year anniversary on 8-10 September sparking a lot of enthusiasm with a series of events around its Westerlo headquarters. More than 1500 people participated in the celebration weekend, and shared the drive to make Biobest even stronger to keep advancing towards a more sustainable agriculture. Biobest's international distributors gathered for international distributor days in Antwerp for an event combining information exchange with time for networking and leisure activities. The group included a number of

representatives from Biobest affiliates in various countries where Biobest has set up direct distribution activities. This group joined the Biobest employees for a huge birthday party in a festive tent, set-up at the site of the Biobest headquarters in Westerlo. Activities continued on Sunday, with an event for customers, employees and their families attended by nearly 1.000 people. A company tour, with supporting video presentations, a lot of activities for children, and of course, food and drinks were some of the key ingredients of a highly appreciated closing day.

Evogene Ltd. and Rahan Meristem announced positive results in 2nd year field trials in banana demonstrating efficacy against Black Sigatoka disease. The parties also announced their agreement to utilize genome editing technology to leverage knowledge gained from the field trials for the joint development of a potentially safer and healthier product, for both growers and consumers. The end product is targeted to be classified as non-GMO, which significantly reduces regulatory barriers and improve market access. Utilizing its predictive biology computational platform, Evogene has successfully identified a number of genes, mostly of wild banana origin, predicted to have high efficacy against Black Sigatoka. Following these predictive results, Rahan validated the efficacy of several genes in two field trials, both of which exhibited an effective reduction of disease symptoms on banana trees. Rahan is continuing with gene validation, with 3rd year field trial results anticipated late next year. In parallel, this proprietary information will be the "blue-print" for the parties genomic editing efforts, with Evogene identifying specific genome edits expected to impact disease resistance against Black Sigatoka, and Rahan performing the genome editing and field validation.

Biobest Sistemas Biológicos SL has developed in Spain a novel strategy based on providing Nutrimite™ as a food supplement for the predatory mite *Amblyseius swirskii* to accelerate and improve its installation in sweet pepper crops. It can also be applied to crops that do not produce pollen, such as cucumber. Nutrimite™, based on Typha pollen, is a food supplement developed for generalist predatory mites such as *A. swirskii*. Nutrimite™ fulfils all the nutritional requirements of *A. swirskii* females allowing to make her eggs fertile, increasing its productivity. It is important to point out that the application of Nutrimite™ also improves the distribution of *A. swirskii* in the crop. Juan Luis Pérez, Managing Director of Biobest Sistemas Biológicos, says: "The application of Nutrimite™ before flowering facilitates the early introduction and rapid establishment of *A. swirskii* in the crop. It improves the control of whitefly in the early stages of the crop and hence avoids chemical treatments and their negative effect on beneficial insects. It is an important advantage compared to the traditional practice in the production of sweet pepper in Almería, where *A. swirskii*, due to its ability to feed on pollen of the crop itself, is traditionally introduced coincidentally with the appearance of the first flowers, usually around the fourth or fifth week after planting.

Dutch King Willem-Alexander opened the new information centre as part of Koppert Biological Systems' jubilee anniversary. The Dutch family company this year celebrates 50 years as a leading force in biological crop protection and sustainable cultivation. Following the opening ceremony, directors Paul Koppert and Henri Oosthoek led the King through the Experience Centre and the displays of insects, mites, and microbiological solutions

that the company produces and deploys in agriculture and horticulture. 'We have been working hand-in-hand with nature for 50 years to make agriculture and horticulture healthier and more sustainable. Our people continuously contribute towards making cultivation practices more sustainable. The 200 m² information centre that was opened by the King informs visitors about biological crop protection. Here growers, research institutes, students, and authorities from the Netherlands and abroad can find out more about the vision of the family company, research and development of biological crop protection, and production processes at Koppert, in an interactive way. It gives visitors the opportunity to experience how products are developed and how they work. People also have the opportunity of viewing the natural enemies, bumblebees and microbiological solutions close up

Indigo Ag, Inc. announced closing of \$156 million in Series D financing, doubling the company's total capital raised to over \$300 million. In August, Indigo announced its intention to contract with farmers to produce 10.5million bushels of Indigo Wheat™ for a 43 cent per bushel premium. This significant premium represents buyer willingness to pay more for high-quality and transparently sourced wheat. In addition to the premium price, growers can also expect yield improvements of up to 16 percent based on recently announced data from Indigo. Adding to Indigo's momentum, the company has recently opened its first international offices in Argentina and Australia. As growers around the world turn to Indigo's seed treatments and digital technologies, the company intends to establish itself in key agricultural regions, acting as an in-market resource. In the coming months, Indigo plans to grow these teams, developing local expertise and accelerating overseas business.

Plant Impact announced preliminary results for year ending 31 July 2017. Revenue increased 17% to £8.5 million (US\$11.28 million), primarily reflecting Veritas® sales in Brazil. Gross profit increased 19% to £6.7 million (US\$8.89 million). Total R&D investment increased 43% to £4.2 million (US\$5.57 million) with novel new compounds identified and pipeline progress goals achieved. Cash on hand on 31 July was £7.2 million (US\$9.55 million).

Plater Bio has announced development of a manufacturing process for chitosan based upon

fungi, claiming to be the only manufacturer of fungal chitosan outside of China. The majority of chitosan is made from seafood waste (prawn and crab shells). Plater Bio's chitosan is produced from fungi, therefore suitable when vegetarian ingredients are required. The benefits of chitosan are not restricted to protecting crops from fungi and bacterial diseases, it can also be used for clarifying real ale and cleaning polluted water. Dr Russell Sharp, Plater Bio Technical Director stated "At Plater Bio we are very excited about the benefits this revolutionary product can offer to farmers and the brewing industry."

Vegenov is employing a new tool to evaluate the mode of action of elicitors acquired through a license from INRA in June 2017. Called qPFD, the molecular tool enables the study of plant defense elicitors by quickly assessing the level of expression of genes involved in defense pathways after the application of a product on the plant. The "qPFD" micro-array is a molecular diagnostic tool that allows the evaluation, at a given time point, of a set of 28 target genes involved in different defense pathways. The expression of these genes, alone or in combination, provides information on the activation level of the defenses of the tested plants. Vegenov has currently a qPFD® license for apple, tomato and potato and also plans to purchase the wheat license in the coming months.

Rizobacter has introduced a new and more efficient technology using a new production model, named "microbiolization." Under this project, the company aims to expand the use of micro-organisms and their metabolites that are present in the soil while combining their crop protection products and fertilizers, to obtain maximum yields. The benefits of the project include reducing environmental damage caused by using chemical synthesis products and improving the biological process, the metabolic cycles, the physiological cycles of biocontrol and the biofertilization of crops. Biotechnologies can provide balanced nutrition and efficiently manage abiotic stresses, such as lack of water, cold and heat, during the growth and development of various crops. "The Microbiolizar project has already completed its first stages, through using biological nitrogen fixing bacteria and various formulations of osmoprotectants and bioinduction that were developed in our laboratories, ensuring adequate nitrogen nutrition for legumes," added Anta. Anta stressed that the company has worked on micro-biological tools for

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greater vegetable growth and phosphate nutrition, using the microbes, PGPM (Plant Growth Promoter Microorganisms), while developing other micro-organisms that utilize potassium, sulfur and zinc. Regarding microbiology, the company also developed cure seeds that can control the multiple pathogens of wheat seeds and other winter cereals, such as *Trichoderma harzianum*.

Russell IPM has launched its flagship product, Optiroll Super Plus in the USA market during the Biocontrol East exhibition in Orlando, Florida and announced the inauguration of its USA operation. Optiroll Super plus promises to be a key non-chemical instrument in the management of Western Flower Thrips (WFT). It can be an important tool in managing resistance to pesticides and integrates well with biological pest management programs. Optiroll Super plus is a unique, season-long sticky tape with optimized color (wave length), treated with non-drying glue, printed with special patterns and incorporating a microencapsulated Western Flower Thrips aggregation pheromone for enhanced attraction. Russell IPM is also announcing the launch of its US subsidiary Russell IPM Inc. and its logistics and customer service center in Yazoo City, Mississippi. "It is an exciting major first step into this dynamic and fast-evolving market which will enable us to support our partners promptly and also to lay the foundation to expand our collaborative efforts in both non-chemical pest management in Horticulture, and smart pest monitoring and forecasting technology," said Dr Shakir Al-Zaidi, Managing Director of Russell IPM.

Premier Tech announced a major investment in one of its production plants. To get closer to its markets and better serve its customer base with its product offer, Premier Tech has reconfigured its 16,800-square foot (1561 square meter) plant located in Minnesota, United States. That investment is essential to meet the growing demand for the active ingredients developed and marketed by the company, including its mycorrhizal and rhizobium inoculant. Historically, these formulations were produced in Rivière-du-Loup (QC), Canada, and then shipped to Western Canada. Started in 2016, the works led to the creation of a production line dedicated to the AGTIV® inoculants, which adds to the growing media bagging lines already present. "With the addition of state-of-the-art equipment, we can better support the sales growth we have been experiencing for several years," says Jacques Blanchet, Operations Director at Premier Tech. "With the first phase of the project, over 800 tons of agricultural products were delivered during the 2017 season. Another phase is currently in progress and will result in the construction of a 10,500 square foot (975 square meter) warehouse," stated Mr. Blanchet.

Regulatory

Australia has approved Consume em Verde's A polypeptide based biofungicide, Problad Plus. Problad Plus™ contains 20% of the active ingredient, BLAD (Banda de Lupinas albus doce). The product is registered as a new biofungicide for the control and suppression of several fungal diseases in various crops and ornamentals. It delays the development of resistance, without chemical residues. Problad Plus can be used as a foliar spray stand-alone, in alternating spray programs or in tank mixes with other registered pesticides using conventional spray equipment.

Romeo, the first systemic resistance inducer derived from yeast, from Agrauxine, will be launched in France, Italy, and Spain in 2017/2018 season.

Registered as a biofungicide against foliar diseases in grape and vegetables, the active substance in Romeo is cerevisane a specific fraction of the yeast strain LAS 117 - *Saccharomyces cerevisiae*, this discovery has been patented in 2006 by Lesaffre. Romeo has been tested across eight countries by Agrauxine, demonstrating synergy with traditional chemical products in tank mixes. Agrauxine is currently working on its registration strategy in other European countries, in the USA and also in South America with the objective of finding the best partners along the value chain to develop ROMEO® together.

Mevalone, the biofungicide from Eden Research has been approved in Portugal for the control of botrytis in grapes. Mevalone is a terpene-based fungicide that targets botrytis and was previously approved in France, Italy, and Spain for use in grapes. Mevalone will be marketed in Portugal by Eden's partner, K. & N. Efthymiadis S.A.

Representatives from the Biological Products Industry Alliance (BPIA) gathered on Capitol Hill for a meeting with U.S. House and Senate senior staff members to discuss agricultural biostimulants. The biostimulant industry and BPIA are requesting that Congress acknowledge the benefits biostimulants can bring to agricultural production and further encourage their use. They are also requesting the development of regulatory standards and a specific regulatory path for bringing agricultural biostimulants to market. "Defining biostimulants and establishing a clear regulatory path for their commercialization is crucial for continued innovation, development and adoption of these valuable inputs," said Terry Stone, Agrinos vice president of regulatory affairs and sustainability, who is also chairman of the BPIA Biostimulant Integration Committee.

Certis Europe announce an expanded label for Delfin, a Bt based bioinsecticide. Delfin's label now includes more than 90 crops, making it the broadest label on the market. In addition, Delfin is now unclassified with respect to honeybees. The re-entry interval has also been reduced to just 8 hours for protected crops and no time limit for field grown crops.

Koppert announces registration of seven biocontrol products in Saudi Arabia. With seven newly registered products in Saudi Arabia, Koppert has introduced its sustainable solutions at the international Saudi Agriculture trade exhibition in Riyadh from 8 to 11 October. "The registration of Nesibug, Ercal, Spical, Spidex, Aphipar, Miglyphus and Swirski-Mite represents a major breakthrough in biocontrol for this region and we can't wait to introduce them to the Saudi market," says Sadek Al-Ramadan, CEO of local distributor Alyaseen Agri. "Koppert Biological Systems has a proven track record with these seven products and we are here to give growers the best advice on how to use them in their greenhouses and outdoor crops." Local distributor Alyaseen Agri and Koppert signed a partnership deal in the Netherlands four years ago and have invested in the development of the IPM market in Saudi Arabia ever since.

Executives Speak

Dr. Willem Ravensberg, President & Mr. David Cary, Executive Director of IBMA

This year marks the 12th annual ABIM conference, having grown from modest beginnings in 2006 to nearly 900 delegates last year. How do you judge success of the event? Is it by numbers of attendees only, or some other measure?

DC: ABIM is constantly being evaluated as to whether it continues to meet its objectives and whether changes need to be made to either the objectives or the event in order to deliver these objectives. We see ABIM as the Premier Industry Biocontrol event. We therefore need to have participation from across our industry, R&D people, regulatory people, marketing people, sales people and the people who make the decisions. We also need to engage stakeholders in our meeting. It is keeping all these people interested and engaged that is important to us. This can only occur if the numbers show healthy growth reflecting the healthy growth in our industry. So far expectations are being met but we continue to be self-critical and make improvements if and where it can enhance the experience for a sector of our participants.

In February 2017, the European Parliament adopted a Resolution on faster European market access for biological low risk pesticides. Can you provide an update on progress by the Commissioner for Health in drafting legislation to amend EC 1107/2009 to execute this Resolution?

WR: "Progress is a snail" someone told me lately. This is certainly the case when we look at the actions taken by the European Commission, DG Sante, after the resolution was adopted by a near unanimity across all political groups in the European Parliament. The Commissioner has just said at a number of occasions, that he supports our conclusion on the necessity of "the fastest possible introduction of biological low risk pesticides into the European market", but he keeps referring to existing measures that DG Sante has taken and refers to the REFIT process (evaluation of functioning of Reg. 1107/2009 only) that is currently

underway. It will take years before actions will have been developed based on REFIT. He is not willing to make a small amendment in Reg. 1007/2009 for low risk products now, as asked for in the Resolution. IBMA attempts to put pressure on the Commission through the Member States and has organized a couple events for this purpose. We held a workshop on low risk products in June, with the Commissioner and representatives from the EP present, two weeks ago a working dinner with the SCOPAFF (Standing Committee for Food Chain and Animal Health with representatives of member States) and the new head of the Pesticide Unit of DG Sante. The current European Presidency is held by Estonia and contacts with the relevant Ministry there has resulted in a positive response to the Resolution and an attempt to have the subject on the agenda in EU Council meetings with all member States. We are attempting to influence the Member States in order to find support in the European Council. Until today, the Commission remains by its position that it will not start execute the resolution at this time. But IBMA is determined, together with the EP, to find support for our goal and to have the regulation amended.

Biocontrol conferences continue to arise from a number of organizers, both in Europe and elsewhere. What actions have you taken and are continuing to take in order to evolve and maintain your biocontrol conference leadership position for your members and the biocontrol industry?

WR: we, as the Steering Committee of ABIM, keep a close eye on such developments. Our current model of the conference with exhibition at the same location and a fixed time each year is very successful. It has created a meeting that anyone active in biocontrol at a global level cannot afford to miss. Our unique feature is the combination of a B to B meeting with the exhibition and conference where we focus on regulatory issues and new product innovations. We leave the science to other conferences, there are plenty of those and they are not really competing with us. Some others do, and we try to communicate with them to avoid overlap in subjects, time and location. This year we have more attendees and exhibitors than before, and we hope to be able to welcome the number 1000 visitor at the 12th ABIM.

Agricultural biologicals are a growing market, products of natural origin that are sold as biopesticides and biostimulants.

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The Biological Products Industry Alliance (BPIA) expanded its membership in 2017 to include biostimulant companies with a goal “to be the single voice for the entire biological products industry”. Do you see a similar evolution of IBMA on the horizon? Where do you stand in your discussions with EBIC?

WR: this year we have started with a number of talks between the two boards of IBMA and EBIC to discuss a possible closer collaboration of the two associations representing biocontrol products and plant biostimulants. We have established that joining forces would have a number of benefits, and having more influence at decision makers is a key aspect. There are also concerns and challenges and both organizations have started a dialogue with their respective members. Next week IBMA has its Annual General meeting and EBIC two weeks later. We will both inform the members on our progress so far, and ask our membership to vote for a continuation of these talks exploring a potential merger further. If the majority of the members approve this, then we will start working on the details of such a process and have members involved herein.

Since its formation in October 2014 with 5 founding members, BioProtection Global has continued to grow. Can you update readers on current membership status and plans for BPG to gain visibility?

DC: BPG are proud to have added 3 new associations to the membership since foundation in the Japan Biocontrol Association, ASOBIOCOL from Columbia and PMFAI of India. BPG are open to gaining further members to enhance global coverage of the federation. Willem Ravensberg, Rick Melnick, myself and others have been promoting the activity of the association in various meetings. A key objective of the federation has been to avoid duplication of member association activities and this is vital as the work will still be done by the same people but have more relevance and engagement of like-minded sister associations. Players on the international stage such as OECD are being introduced to the association. Recently Nina Wilson of BPIA and myself attended a Global Minor Uses Summit and BPG was on the program and was seen as the voice of our industry. Leaflets are being finalized, a website being developed and progress made.

The “Bernard Blum Award” will be presented for the third time at this conference. How many entries did you receive this year and are you pleased with the diversity of innovation they represent?

DC: The Bernard Blum Award attracted great interest this year with 12 nominations. It was not an easy task for our judging panel as the entries covered all areas of our industry and were novel. In fact, this year the categories we say are the areas our industry cover were deemed to be unable to cover all nominations. This backs the statement I have always used of “the areas our industry cover are currently segmented as...” We will have to expand or alter our description for the future. I was particularly pleased that I believe many of the innovations have a real commercial application and we should see some real commercial contribution for the future.

Have the criteria used to judge the “Bernard Blum Award” evolved since its inception in 2015? Do you foresee expanding the award to include additional categories?

DC: The criteria to judge the award have been maintained since the 1st award in 2015. The nominated entries are judged against 3 criteria: scientific value, innovativeness and the likelihood of commercial success. These 3 criteria cover what Bernard himself would have been interested in and also allow a wide range of entries covering both innovative products and services for the biocontrol sector. As this is quite broad I see no need either now or in the future to add other categories as we effectively have no categories. It is up to the applicant to demonstrate to our judging panel why their nomination is innovative, scientifically sound and has real commercial applicability. I think we have futureproofed the award by having no categories and solid criteria on which it is judged but like with ABIM it is constantly looked at for being fit for purpose. I believe this has been further empathized by the consistency in scoring across our judging panel.

In 2018, 2BMonthly and New Ag International will be organizing two biocontrol conferences in conjunction with IBMA – BioControl Africa in March 2018 in Kenya and BioControl LatAm in November 2018 in Colombia. Do you see events like these as key to fostering development of biocontrol technologies in emerging markets?

WR: such events are very important to foster biocontrol in general. Not all players in biocontrol attend ABIM, and regional events similar to the ABIM model are needed to attract and involve the relevant stakeholders. We try to have the biocontrol companies present but also regulators and other governmental authorities. We see biocontrol increasing in North America, Europe and Brazil, but in other regions there is a still need to promote biocontrol more. By bringing global players together with local ones and introducing solutions from all around the globe to the local level boosts developments everywhere. And in a global trading market with food it is essential to have biocontrol solutions approved and used in emerging markets as well.

New Products

BIOCONTROL

Bionema launched a new nematicide, NemaTrident based on beneficial entomopathogenic nematodes from the Heterorhabditis and Steinernema genera. Developed in response to the restriction of use of chemical pesticides, Bionema have spent years developing their Integrated Pest Management system which can be fine-tuned to target a wider series of horticultural insect pests. NemaTrident is a unique Tri-Component biological pest control system combining beneficial nematodes, a soil conditioner, and technical training and advice. Bionema claims this combination provides 20-30% more efficiency and up to 95% kill rates for vine weevil in horticultural crops.

BioNovelus launched its new biofungicide CR-10 in Guatemala for control of coffee rust. The biofungicide CR-10 is a biodegradable, non-toxic solution that kills bacteria, fungi, and spores rapidly, safely and effectively. It is a new generation of biofungicide with a unique mode of action. BioNovelus management believes that CR-10 has a broad range of uses in crop protection

before harvest, as well as in post-harvest protection, and food security. Agrinco is distributing the product in Guatemala.

Syngenta has received US EPA approval for their new bionematicide seed treatment, Clariva Elite Beans. Clariva Elite Beans combines the active ingredients of Clariva pn (*Pasteuria nishizawae* Pn1) and CruiserMaxx® Vibrance® (sedaxane, thiamethoxam, fludioxonil, and mefenoxam) seed treatment into a convenient premix formulation. Some state registrations may be pending. Clariva pn offers season-long protection from the soybean pest, soybean cyst nematode (SCN), by reducing its feeding and reproduction. It reduces the impact from sudden death syndrome and other SCN-related diseases and provides an average yield increase of 2.7 bushels per acre compared to an insecticide/fungicide seed treatment alone. Clariva Elite Beans contains uniquely chosen crop-specific polymers that bind the active ingredients to the seed coat. While the active ingredients of the product will continue to provide proven SCN protection, the ease and flexibility of handling Clariva Elite Beans as a premix will make treating seed more efficient.

News of Interest

BPIA (Biological Products Industry Alliance) set another attendance record at their fall meeting held in Orlando, Florida on 9-11 October. Total membership in BPIA has now grown to 122 companies. Natalie Hubbard, Regulatory Affairs Director at DuPont, was awarded the 2017 BPIA Volunteer of the Year Award for her tremendous efforts on behalf of the biological products industry. BPIA's Membership Committee expanded its annual awards program this year with the first ever BPIA Member of the Year Award which went to the One, Four Group for its company-wide commitment to advancing the mission of BPIA and its service to the association. The theme of the meeting was sustainability with speakers approaching the topic from a wide variety of angles. Dr. Tamika Sims of the International Food Information Council provided insight into how her organization assesses the public's views on food and health. A panel including representatives from USDA, IR-4, University of California, and Red Tomato, a non profit organization that markets produce for a network of farms in the Northeast USA discussed the relationship of IPM to sustainability. Building credibility was the topic for a panel on the biostimulant industry. Kristin Sukalac of EBIC shared her experience in both helping to develop a regulatory framework for biostimulants and establishing a self imposed code of conduct for the industry in Europe to build a solid base for credibility with both farmers and consumers. Food company sustainability goals and how biopesticides and biostimulants integrate with them was a panel topic with representatives including Coca-Cola and Gerber. Clearly, there are opportunities for biological products to provide solutions to these companies and the growers who produce food for them. Increased dialogue between the biological ag industry and these companies would be beneficial to both groups. Finally, Rick Kelgwin, Director of the Office of Pesticide Programs at the EPA provided an update to the group. On the subject of biostimulants, Rick commented the EPA has drafted a guidance document on biostimulant product regulation and claims, but indicated this would not be released for public comment until sometime later this year. The next BPIA meeting will be held 5-7 March, 2018 at the Sheraton Carlsbad Resort in San Diego, CA.

Scientific Findings

Symbiotic relationships with fungi allow plants to become more tolerant to disease and help contribute to sustainable agricultural practices. Most crops can form symbiosis with fungi to gain key nutrients while the fungi in turn gain carbohydrates generated through the plant's photosynthesis. This type of symbiosis is called arbuscular mycorrhizas and is of key importance to sustainable agriculture since it helps crops utilize better the phosphate in fertilizers. Researchers evaluating the symbiotic process identified one mechanism through which the fungi increase the plant's levels of several hormones in both its roots and shoots. Abscisic acid increases make the plant more drought tolerant by reducing evaporation through stomata while jasmonate increases the production of secondary metabolites that improve plant tolerance to stress and diseases. These secondary substances, flavonoids and terpenoids, rise in the shoots in response to increased hormonal levels.

Identification of plants that are used for pesticidal effects in Africa is the goal of a new project, Knomana (Knowledge Management on Pesticide Plants in Africa), conducted under the umbrella of the INRA-CIRAD Glofoods metaprogram. Certain farmers in the South have always opted to use plant extracts or essential oils to protect their crops or stored food against pests and diseases. There have been several studies in English-speaking African countries that have identified the plants concerned and the techniques used, but much remains to be done for French-speaking countries. This is why the Knomana project launched in June 2017, set out to identify the plants concerned, their uses, how they work, the organisms they target, and their unintentional effects, for instance on non-target organisms. Eleven countries are the first participants in the project: Benin, Burkina Faso, Cameroon, Democratic Republic of Congo, Gabon, Ivory Coast, Madagascar, Mali, Niger, Senegal and Togo.

Indian plant scientists have discovered a new baculovirus with activity against black loopers (*Hyposidra talaca*) which are responsible for loss of as much as 40 percent of tea crops annually. The researchers of North Bengal Regional R&D Centre of Tea Research Association, have found a nucleopolyhedrovirus, which belongs to Baculoviridae family, which is very active in infecting tea loopers under field conditions. The scientists have decided to produce the virus commercially and use it as bio-pesticide. With the help of SGRF, they have developed a technology for formulation of the bio-pesticide. They report pilot phase products has been completed and field verified and they have a goal of commercial production by 2019.

Texas A&M AgriLife Research scientists have discovered an RNA that can increase thale cress plant's resistance to stress from drought and salt. The discovery could help illuminate a new pathway to engineering drought- and salt-tolerant plants, including food crops, said Dr. Liming Xiong, AgriLife Research associate professor. "This is the first finding of a long non-coding RNA, or lncRNA, that regulates plant tolerance to adverse, non-physiological external factors," Xiong said. The lncRNA his team discovered in thale cress plants existed in low numbers under non-stress conditions, but levels increased when the plants encountered drought or salt stress, he said. Manually increasing the level of the lncRNA showed corresponding increases in drought and salt

tolerance compared with plants where the lncRNA level was unaltered. "Most of the current work on improving plant stress tolerance does not focus on lncRNA but on the genes that code protein production," he said. "However, manipulation of those protein-encoding genes often impairs plant growth and development." But the lncRNA studied by Xiong's team can be tweaked without any apparent detriment to the plant's health, he said. "Our next step will be to engineer the lncRNA levels in plants other than thale cress and to test whether it might improve drought and salt tolerance across a broader spectrum."

Country Report

NEW ZEALAND

Rust fungi introduced two years ago to control *Lantana camara* are showing positive impact on this pest in New Zealand. The New Zealand Environmental Protection Authority (EPA) approved the release of *Puccinia lantanae* and *Prospodium tuberculatum* to control lantana in April 2012, with both subsequently released in Northland in 2015. The rusts work by reducing the growth rate and fruit and leaf production of lantana plants, one of the world's most invasive weeds. While *Puccinia lantanae* (a blister rust) did not appear to have established itself in Northland yet, in contrast the leaf rust *Prospodium tuberculatum* was beginning to have a big impact on local lantana populations, as evidenced by the number of lantana with dead and dying branches.

New biocontrol parasitoid wasp, *Tamarixia trioaze*, which attacks tomato potato psyllids has been released in New Zealand. These initial releases are the start of a wider planned release and monitoring programme that is being supported with funding through the government's Sustainable Farming Fund. *Tamarixia*, a tiny wasp that lays its eggs on the psyllid, which then hatch and eat the psyllid, is a biological control option. *Tamarixia* is found in the USA and Mexico as a naturally occurring parasitoid of Tomato Potato Psyllid. The industry groups involved are now looking at ways of ensuring a supply of *Tamarixia* will be available for release by commercial growers this summer.

Personnel

DunhamTrimmer is pleased to announce that **Manel Cervera Comabella** has joined its team as International Business Director. Manel has over 15 years' experience in marketing and sales of specialty fertilizers and biostimulants, with prior roles at Sustainable Agro Solutions as Export Manager and most recently Biovert, where he served as Commercial and Marketing Director and Assistant Manager. Based in Lleida, Spain, Manel will provide DunhamTrimmer with a presence near key European and North African markets. DunhamTrimmer looks forward to working with Manel and bringing his knowledge and understanding of Europe and biostimulants to serve even better our many European and global clients.

Tradecorp announced the addition of **Alejandro Ledo** as Global Business Manager in the amenity business unit. He will also be in charge of directing the commercial relationship with transnational companies and promoting synergies with the rest of the Tradecorp business units. Alejandro joined Tradecorp in 2008, where he was initially responsible for developing the Asia Pacific

area and, subsequently, the Latin American markets, where he worked for the past 8 years where he established Tradecorp Colombia.

Biobest announced that **Jean-François Bonal** has joined Biobest as General Manager Biobest Canada Ltd. and Biobest USA Inc. This key hire at the helm of the leadership team in North America will enable Biobest to continue its rapid growth and to further strengthen its contribution to sustainable horticulture in North-America. Jean-François, studied agronomy and obtained an MBA in France. He held various positions in agricultural businesses in Europe and Africa. After moving to North America in 1998, he held progressive leadership positions in the food industry in Canada and the USA.

PlantResponse announced two additions to the global leadership team. **Rad Page** joins as Chief Commercial Officer and **John Kruse** as Director of Global Agronomy. As chief commercial officer, Page will be responsible for driving business growth through marketing, sales and customer interface development. Page brings 34 years of agricultural expertise, having held leadership positions within HydroBio, United Agri Products, Crop Production Services, FMC and Pinnacle Ag. Raised in South Carolina, Page obtained his bachelor of science in agricultural economics from Clemson University. In the role of director of global agronomy, Kruse will lead field research and the validation of developing technologies, as well as provide science-based support to the business and customers. Kruse brings his prior experience as an assistant professor and crop specialist for Louisiana State University's Agricultural Center, as well as director of agronomy – biologicals for Koch Biological Solutions. Kruse earned his doctorate in agronomy from the University of Georgia.

Job Vacancies

Andermatt USA, a subsidiary of **Andermatt Biocontrol AG, Switzerland**, is seeking a general manager. As a general manager, the ideal candidate would be responsible for the strategic market development, identification of best suited sales channels and for the US EPA and state registration of our line of biocontrol products, biostimulants and humane and toxic-free rodent control solutions etc. The ideal candidate will have a background in agronomy, entomology, plant pathology or related training with a MBA or similar qualification and/or experience in the agribusiness. Experience in the U.S market is essential. The successful candidate will be in charge of managing and developing this subsidiary company of Andermatt Biocontrol AG. **Contact:** Andermatt Biocontrol AG, Switzerland Daniel Zingg (CEO) jobsUSA@biocontrol.ch

Upcoming Events

OCTOBER 23-25, 2017: The Annual Biocontrol Industry Meeting ABIM will take place at the Congress Center Basel in Basel, Switzerland. For more information, please visit, <http://www.abim.ch/>

NOVEMBER 14-17, 2017: Association of Natural Biocontrol Producers Annual Fall Meeting held jointly with IOBC-MRQA (Mass Rearing and Quality Assurance workshop) and the Sociedad Mexicana de Control Biológico, in Mérida, Mexico. For more information visit <http://www.anbp.org/>

NOVEMBER 27-30, 2017: The Third International Congress on the Use of Biostimulants in Agriculture.



Organized by New Ag International. It will take place in Miami, USA, at the Hyatt Regency Hotel and Conference Center. The speakers' program has been published. It comprises of close to 40 speakers and a poster display of more than 160 posters will be added. The full exhibition floor has been booked (106 stands) but some meetings rooms are still available on first come first serve basis. As of 18 October, more than 950 participants representing 550 companies and organizations from 58 countries had already registered. For more information, please browse <http://www.biostimulantsworldcongress.com/>.

MARCH 19-23, 2018: New Ag International will host in Kenya, two international conferences covering the



world of High Tech Agriculture. One of them will be fully dedicated to Biocontrol (Biocontrol Africa), while the other one will cover, among others, the novelties in biostimulants products and technologies. The conferences will feature speakers from academic, government and industry circles, whose aim will be to promote products and technologies that fit African conditions. Presenters will speak about the currently available solutions. For more information, please visit newaginternational.com.

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