

# crop protection monthly

international news, comments, features and conference reports

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### BOOK DISCOUNTS

## LEAD ARTICLE

### BASF EXPECTS €6 BILLION SALES BY 2020

BASF expects sales for its crop protection business to increase by 50% to €6 billion by 2020. That is what the company told delegates at the recent press conference held in Ludwigshafen on 8 November. While mature markets in Europe, North America and Japan remain a key driver for the business the company expects even stronger growth from emerging markets. Latin America plays a major role in this growth strategy. The company also named India a core strategic market. Sales in Asia are expected to increase to €1 billion by 2020 from €400 million in 2010, with the company's successful Indian Samruddhi advisory programme serving as a blueprint for other Asian countries.

BASF also used the conference, which was shown live as a webcast, as an opportunity to give an update on its integrated farmer-focused approach to agricultural sustainability first announced in September 2009. The company says it has already achieved a number of milestones which include a new method for the comparative assessment of sustainability in agriculture, the creation of a new business pillar charged with developing solutions for crop resource and stress management and the introduction of integrated solutions to meet growers' needs. BASF also gave a progress report on its plant biotechnology trait pipeline.

"Our new strategic approach looks at the complex challenges farmers face and offers integrated solutions for greater productivity and profitability on the one hand and environmental as well as social compatibility on the other," said Dr Stefan Marcinowski, member of the board of executive directors. "These solutions come from both our crop protection and plant biotechnology pipelines."

Dr Marcinowski said that after two years in development its holistic method for assessing sustainability in agriculture, AgBalance, has recently received independent certification this autumn from three global agencies TÜV SÜD, DNV Business Assurance and NSF International. BASF describes AgBalance as a comparative lifecycle analysis that assesses sustainability in three dimensions - economic, ecology and social. With AgBalance, the company says it has developed a unique method that can calculate scenarios and offer potential solutions that will increase sustainability in farming.

Markus Heldt, president of BASF Crop Protection, said one of the first major initiatives following the introduction of its integrated farmer approach was a new global unit dedicated solely to sustainability and product stewardship. The unit is responsible for creating and maintaining a network that can drive sustainability and product stewardship concepts throughout the organisation. To improve marketable yield and agricultural sustainability even further, BASF is also looking beyond the boundaries of traditional crop protection products and methods. A new unit, called Functional Crop Care, has been tasked with developing new and better ways to help farmers manage resources and reduce crop stress, bringing clear environmental and yield benefits. This new global unit, which builds on BASF's work in the area of plant health, expects to bring forward innovative solutions that will make a positive contribution to profitability by 2015.

Peter Eckes, president of Plant Science, said BASF expects to become the first company to bring products with yield traits partners to market, jointly with its partners, thus further contributing to the sustainability of agriculture. BASF Plant Science is also involved in trait development for products with an enhanced nutritional value. The most recent example focuses on heart healthy EPA/DHA omega 3 long chained fatty-acids in canola plants. An agreement signed with US-based Cargill, the market leader in vegetable oil, trading and application, will open up new applications to provide customers with a convenient and easily available source of EPA/DHA. First products containing oils from EPA/DHA omega 3 canola plants are expected to hit the market by the end of the decade.

BASF Plant Science's unique technology platform is a key feature that enables it to join forces with other market leaders like Monsanto, Bayer CropScience and KWS and cover the major crops. This platform is based on phenotyping and metabolite profiling of plants, and has delivered many promising lead genes for various yield and stress pipeline projects.

The company has also conducted a Farm Perspectives Study, which surveyed 1,800 farmers and 6,000 consumers. The study was carried out in Brazil, India, the US, Germany, Spain and France in cooperation with the global market research firm, Synovate GmbH, and Professor Dr Ulrich Oevermann, professor for Sociology at the University of Frankfurt.

The survey established that consumers' interest in agriculture and respect for farmers is high, even in countries where less than 2% of the population works in agriculture. However, both farmers and consumers agree that the reputation of farmers remains low. Many consumers still blame farmers for environmental problems, with concerns strongest in Brazil, India and France (38-43%), the US and Germany (23%).

While around 80% of farmers and consumers from all countries surveyed agree that farming's primary objective is to feed the world the majority of farmers believe that consumers do not fully understand the food supply challenge or the reality of farming. Many farmers take consumer concerns seriously and say they should do more to meet consumers' expectations. However, they also believe that industry and consumers should do more to support agriculture. "This a signal to us all - industry, consumers and policymakers - that we need to bridge the farm-knowledge gap and give farmers broader support in the future," concluded Dr Marcinowski.

## EUROPEAN NEWS AND MARKETS

### CERTIS EUROPE TO DISTRIBUTE JAPICA IN SPAIN

Certis Europe has been appointed distributor for Kumiai's fungicide *Japica* in Spain. The product will be included in the company's crop protection portfolio from next season. *Japica* contains the active ingredient mepanipyrim and is registered by the Spanish Ministry of Environment, Rural and Marine Affairs. It is included in Annex 1 of Directive 91/414 for the control of botrytis in strawberries, vines, aubergines and tomatoes. Certis Europe aims to become a leading company in Spain and this will be achieved through carefully implemented strategies that are fully endorsed by its shareholders, Mitsui, Nisso, Chemtura and Kumiai.

### BAYER ESTABLISHS EUROPEAN WHEAT BREEDING CENTRE

Bayer CropScience has established a European Wheat Breeding Centre in the Gatersleben Biotechpark in Germany. Besides developing new wheat varieties with higher yields and improved properties for the Central European market, the new centre will also coordinate all of Bayer's wheat-breeding activities in Europe. The Centre will be part of Bayer CropScience's global network of wheat-breeding stations and there will be up to 40 full-time employees working there in the future.

Another centre focused on North America is currently being set up in Nebraska, US. Additional stations are planned in Europe and Australia with further expansion in Asia and Latin America in the medium term. A network of alliances with leading international research institutions is also currently being formed to apply the latest advancements in plant biotechnology to wheat research and breeding and to thus accelerate the variety development process.

Dr Mathias Kremer, head of BioScience at Bayer CropScience, said: "Bayer CropScience recognises that wheat farmers need to improve yields to stay competitive and meet global demands. Our experienced team at the new centre will be able to deliver first-class varieties of wheat adapted to European growing conditions. These new varieties coupled with our leading crop protection portfolio will enable us to provide solutions that support sustainable wheat production from seed to harvest."

The Biotechpark in Gatersleben is one of the most important international centres of crop research in Europe. It is part of a biotechnology initiative launched by the German state of Saxony-Anhalt and shares a campus with the Leibniz Institute of Plant Genetics and Crop Plant Research (IPK).

### BCPC REVIEWS UK WEED CONTROL

Over 60 delegates attended the 48th BCPC (British Crop Production Council) Annual Weed Review held in Peterborough, UK on 9 November. Chaired by Dr Gordon Anderson-Taylor, Bayer CropScience, it addressed a wide range of issues affecting weed control in the UK today.

Grass weeds are one of the biggest weed control challenges in arable crops – the vertical nature of these weeds means that the target area is more difficult to hit with sprays. In her presentation, Dr Clare Butler-Ellis from NIAB/TAG (National Institute of Agricultural Botany/The Arable Group) outlined recent advances in application that offer improved weed control especially on grass weeds. Getting a good deposition on a vertical target can be achieved by a slight wind, a forward speed and angling nozzles forward to give the droplets a horizontal velocity. The effect of volume is also important. Surprisingly, higher volumes reduce the quantity of active ingredients impacting on the grass weed target in cereal canopies. There seems to be no advantage in applying more than 100l/ha.

EU pesticide legislation and Directives continue to hit the headlines and Ingrid den Hoed from the UK's pesticide regulators CRD highlighted the impact it was having on the availability of herbicides. Some 74% of actives have been lost under EU91/414 with 67% removed from the market and a further 7% not approved after review. The EU Thematic Strategy now offers, for the first time, legislation and directives that cover all stages of the pesticide life cycle, including pre-marketing authorisation with Regulation 1107/2009 replacing Directive 91/414, the use stage including the Sustainable Use Directive and post-use monitoring with the Water Framework Directive (WFD). The potential impact of greater reliance on fewer actives includes the increased likelihood of resistance developing. Grass and broad-leaved weed control, especially in oilseed rape, will become increasingly difficult. New solutions need to be found, both chemical and non-chemical, and a more whole farm integrated approach to crop production adopted.

A key impact of losing herbicides is the cost to the industry. Sarah Wynn, Farm Systems Consultant with ADAS ([www.adas.co.uk](http://www.adas.co.uk)) explained that where there are black-grass (*Alopecurus myosuroides*) problems, oilseed rape yields could be reduced by up to 1.2t/ha due to loss from competition and increased herbicide costs resulting in £390/ha (\$248/acre) lost in gross margin. If glyphosate were to be lost severe financial losses to UK agriculture would result, especially in pre-planting use. Without glyphosate (vulnerable under the WFD), the loss of gross margin in wheat production in the UK could be up to 17%, oats up to 20% and oilseed rape up to 15%.

## THE VOLUNTARY INITIATIVE CELEBRATES 10 YEARS

The UK's Crop Protection Association has hosted an event to mark the tenth anniversary of the Voluntary Initiative (VI). The VI was set up in 2001 when the Government accepted proposals put forward by the farming and crop protection industry to minimise the environmental impacts from pesticides. The VI programme was developed as an alternative to a pesticide tax which had been under consideration by the Government.

At the event the UK's Agriculture Minister Jim Paice praised the Voluntary Initiative for its achievements over the past ten years. He said: "Under VI leadership, industry has stepped up to the mark and shown what can be delivered voluntarily without regulation. It is an excellent example of industry taking responsibility and earning trust. The VI has been subject to close scrutiny since it was set up and it continues to stand up well." The event saw the launch of a brochure marking the tenth anniversary and the VI's 2010/11 Annual Report. Jim Paice also took the opportunity to thank outgoing independent chairman Professor Barry Dent, who has stood down after chairing the VI Steering Group from its start in 2001, and welcomed his successor Wiltshire farmer Richard Butler who said he was particularly pleased about the VI's track record for meeting or exceeding major targets for training and sprayer testing because it demonstrated the farming industry's commitment to responsible pesticide use.

## ECPA UNVEILS NEW STRATEGY FOR SUSTAINABLE AGRICULTURE

The European Crop Protection Association (ECPA) held its conference and exhibition in Brussels on 10 November. Called *Hungry for Change* ([www.hungry4change.eu](http://www.hungry4change.eu)) the conference featured a number of keynote speakers that included John Dalli, European Commissioner for Health and Consumers, and Warren Jones, head of Trade and Agriculture at OECD. The association's president Vincent Gros, BASF, said that the crop protection industry would continue to make a huge contribution to sustainable agriculture in Europe. "We must, however, recognise that we are not always seen as a partner in that pursuit. It is clear that we need to engage in a different way and we need to be more open and transparent. We, therefore, intend set up measurements to prove that we are moving in the right direction."

After extensive critical evaluation of its performance and contribution, the industry is embarking on a new initiative which aims to deliver measurable results in four thematic areas - safeguarding water, the enhancement of biodiversity, the provision of safe and affordable food and the protection of health. ECPA projects will in future be measured against key performance indicators. John Parr of Syngenta told the delegates that to ensure total transparency and to facilitate stakeholder involvement the association intends to establish an Advisory Board made up of growers and farmers, manufacturers, water managers, retailers, consumers, authorities, epidemiologists, academics and NGOs. ECPA director Dr Friedhelm Schmider added: "Industry understands society is concerned about the potential impact of crop protection products. Our goal is to ensure best practice in the use of pesticides for sustainable productivity that protects human and environmental health. We are open to any ideas that help us deliver a truly sustainable agriculture."

## AMERICAN NEWS AND MARKETS

### US EPA APPROVAL FOR CERTIS USA'S MICROBIAL INSECTICIDE

Certis USA has announced that *PFR-97* microbial insecticide has been registered by the US Environmental Protection Agency (EPA) to control thrips, psyllids, whiteflies, mealybugs and spider mites on fruit and vegetable crops. The registration gives US growers access to a product that has been widely available to growers in Europe where it is used to control whiteflies and thrips. Certis say that the introduction of *PFR-97* in the US coincides with growers' needs to effectively control invasive pest species, insects that have become resistant to currently available pesticides, and to effectively manage residue limits and worker re-entry intervals.

Speciality sales manager Jeremy Briscoe said: "Certis USA has a widely diversified portfolio of products with biological and novel modes of action. It is an important offering because, to manage insecticide resistance, growers need to employ multiple modes of action. We recommend that our technologies, with their differing modes of action, should be used in integrated pest management (IPM) programmes. As an example, *PFR-97*, an insecticidal fungus, can be used with our *Javelin* larvicide, *DES-X* insecticidal soap and *Neemix* insect growth regulator."

The active component in *PFR-97* is a naturally occurring soil fungus (*Isaria fumosorosea*). The Apopka 97 strain of the fungus was discovered by University of Florida researchers and licensed by WR Grace Biopesticides, a predecessor of Certis USA. It has long been used in Japan, Korea and Europe to control difficult pests in IPM systems that require products that are soft on beneficial insects and mites. The insecticide infects and kills all phases of the target pest - eggs, nymphs and adults - by two routes of infection. The fungus can penetrate the host through direct contact with germinating spores applied to the crop or soil. It can also grow on plant surfaces or in the soil and parasitise hosts that come into contact with it. Regardless of the entry mode, infected insects soon stop feeding and die as the fungus completely fills their bodies, eventually emerging from the dead host to release more infective spores.

### AMVAC TO REINTRODUCE PCNB

The US EPA has approved certain registrations for Amvac's pentachloronitrobenzene (PCNB) product line for major commercial uses. As a result of this action the company is once again permitted to sell PCNB into the golf course turf, potato, cotton, ornamental bulb and cole crop markets domestically. Amvac is also working with the EPA on labelling for other uses.

PCNB is a fungicide manufactured, marketed and sold by Amvac. It was the subject of a Stop Sale, Use or Removal Order (SSURO) issued by the US EPA in August 2010. On 17 August 2011, the chief judge of the US District Court granted the company's motion for summary judgment and rescinded the SSURO. Since the court's order was issued, the company has worked with the EPA to amend product registrations to ensure they continue to meet current requirements.

Eric Wintemute, chairman and CEO, commented: "Our technical, legal and customer service teams have worked for over a year to ensure our PCNB product line meets EPA's standards to re-enter the market. We are pleased by today's actions as it restores this highly effective product to a marketplace that truly values its importance."

### BAYER TO ACCESS WHEAT GERMLASM FROM US UNIVERSITY

Bayer CropScience and South Dakota State University (SDSU) in the US, have signed a non-exclusive agreement for wheat breeding and germplasm access. The University is the leading provider of spring wheat varieties in South Dakota and varieties from SDSU are also grown on significant acreage in North Dakota and Minnesota. The agreement enables both parties to further improve their respective wheat breeding programmes. Bayer gains access to a selection of outstanding spring wheat germplasm from SDSU, thereby increasing the available genetic resources to improve wheat varieties. The University will gain resources for advanced education in the field of wheat breeding through the establishment of an endowed chair in wheat breeding and genetics.

The new agreement will further complement other agreements and collaborations that Bayer has in wheat with other organisations including NARDI (Romania), RAGT (France), University of Nebraska-Lincoln (USA), Evogene (Israel), Sort/EuroSort (Ukraine) and CSIRO (Australia).

## **BAYER FILES ADDITIONAL LAWSUIT AGAINST DOW**

Bayer CropScience announced that it has filed a patent infringement lawsuit in the US District Court against Dow AgroSciences based on that company's submission to the US Department of Agriculture (USDA) for approval to commercialise a three-gene herbicide tolerant soybean under the Dow *Enlist* brand name. As part of the lawsuit, Bayer has requested a permanent injunction against Dow's unauthorised use of seven of Bayer's glyphosate tolerance patents. "This additional patent infringement complaint filed against Dow AgroSciences serves as another example of our ongoing commitment to enforce our intellectual property rights," said Margaret Keating, associate general counsel for Bayer CropScience. The patent infringement claims had been previously included as an amendment to the company's existing suit asserting that Dow's *Enlist* brand corn, soybeans and cotton infringe Bayer's 2,4-D herbicide tolerance patent.

## **VALENT US APPOINTS NEW COO**

Valent USA has appointed Andy Lee as its new executive vice president and chief operating officer. He will assume his new role on 12 December. Mike Donaldson, president and chief executive officer of Valent USA Corporation, Valent BioSciences Corporation and Sumitomo Chemical Latin America said: "Andy is extremely well respected in the industry and has had an impressive career with a number of crop protection companies marketing traditional and biorational products."

In his new position, Mr Lee will oversee day-to-day operations for the company's growing agricultural, professional and consumer products business units in the US, Canada and Mexico. He will be based in Walnut Creek, California working closely with Mr Donaldson and both the Valent de Mexico and Valent USA leadership teams. He joins, says the company, at a time when it is poised to launch several new agricultural and seed treatment products.

"Valent is uniquely positioned in the industry, offering innovative biorational and traditional solutions that deliver proven results," said Mr Lee. "I look forward to helping transform the ongoing Valent investment in research, development and talent into an even stronger return on investment for our customers." Prior to joining Valent Mr Lee held a number of operational, marketing and technical leadership positions with several major global crop protection companies. He served most recently as chief executive officer of Sipcam Agro USA and ADVAN. He was also operations director of BASF's US crop protection business following roles in its global marketing group.

## OTHER NEWS AND MARKETS

### SUMITOMO CHEMICALS TO ACQUIRE ETHABOXAM

Sumitomo Chemical Company is to acquire the ethaboxam fungicide business from the South Korea-based LG Life Sciences. The fungicide is effective on a wide range of diseases, such as downy mildew, late blight and Pythium on grapes, vegetables, potatoes, corn and other row crops. It was developed by LG and has been on the market in various countries since 2005, mainly for foliar and soil treatment. Because of its highly systemic and preventive activities, ethaboxam also exhibits good fungicidal performance as a seed treatment.

Sumitomo Chemicals says that the seed treatment sector is one of its strategically important business segments. It is working to establish a stronger product portfolio around its insecticide clothianidin. The company says that the ethaboxam business acquisition will make its product portfolio even more attractive to farmers. The Sumitomo group has so far developed ethaboxam under license from LG in a number of countries, including the US, mainly for seed treatment. Sumitomo's US subsidiary, Valent USA Corporation, submitted product registration applications in the US and Canada in September this year. Under the agreement LG will undertake toll manufacturing of the product's technical grade for supply to Sumitomo.

### NUFARM AUSTRALIA LAUNCHES NEW HERBICIDES

Nufarm will market three new herbicides in Australia early next year. One is a fast action formulation of glyphosate, *Roundup Attack*, jointly developed by Nufarm and Monsanto. Another is a 2,4-D herbicide *Nufarm Amicide Advance 700*, the first 700g/litre amine dual salt formulation. The third is a fast acting weedkiller *Sharpen* based on *Kixor* (saflufenacil) and made under licence from BASF. Nufarm recently launched the products to 120 merchants and farmers at its Laverton manufacturing and distribution plant. The company's national sales manager, Warren Ramsay, said: "The three products represent a \$10 million investment by Nufarm to develop new formulations, including testing, field trials, user reliability trials and finally, delivery to market."

*Roundup Attack with IQ Inside* will replace *Roundup PowerMax* in February. Nufarm national business manager for *Roundup* and glyphosate, Damian Deckert, said *Roundup Attack* gave a quicker and better kill of weeds and was more robust on difficult to control weeds. He said it was also rain-fast in 20 minutes. Mr Deckert said the 'IQ Inside' was a patented penetrator that broke down the waxy coating of a plant leaf to allow the herbicide to enter the plant quicker. "It pushes the glyphosate molecule to the site of action much quicker." Nufarm's new 2,4-D product was developed by Nufarm to replace the in-crop uses of *Amicide 625* and the fallow applications of *Surpass 475*. The stronger formulation means greater efficiencies in storage, handling and transport. Both *Roundup Attack* and *Amicide Advance 700* will be available in Nufarm's *QuikPour* packs.

*QuikPour* is Nufarm's new patented packaging solution. According to the company the easy to open, 15 litre container has a large mouth and a collapsible internal liner which are designed to reduce spillage. The pack uses 80% less plastic than rigid plastic containers and is 25% lighter. Nufarm says that *QuikPour* has won two medals at the Packaging Council of Australia's (PCA) Packaging Design Awards.

### NUFARM ACQUIRES SUNFLOWER BUSINESS

Nufarm has expanded its involvement in seeds by buying Seeds 2000 for \$A53.83 million (\$55.2 million). The Minnesota-based Seeds 2000 is a sunflower seed research and production company with annual revenues of about \$20 million. It has significantly expanded its international activities in recent years and conducts development and sales activities in the US, Canada, China, Argentina and a number of European markets.

Nufarm's subsidiary Nuseed develops canola, sunflower and sorghum products. It has sunflower breeding and marketing operations based in California, Argentina and Australia, and recently secured the breeding and germplasm assets of the Super Seeds sunflower business in Serbia. Nufarm's chief executive, Doug Rathbone, said the Seeds 2000 acquisition would complement his company's position in sunflower and its strong confectionary sunflower operations. He said sunflower was an important oilseed and snack food crop, occupying 24 million hectares of land globally and producing 32 million metric tonnes of grain annually.

## **DOW RECEIVES FIRST REGISTRATION FOR SULFOXAFLOR**

Dow AgroSciences has received its first registration for sulfoxaflor. The Korean regulatory agency has announced its decision to register the product for use on apples, pears and red peppers. This follows the recent scientific review of sulfoxaflor at the Joint FAO/WHO Meeting on Pesticide Residues (JMPR). The company says that this important first registration keeps the global sulfoxaflor molecule on-track for launch during the first half of 2012. "Sulfoxaflor will provide farmers with an effective solution against sap-feeding insects that are destructive to a wide range of crops, including cotton, tree fruits, vegetables and rice," said Tim Hassinger, global leader, Agricultural Chemicals, Dow AgroSciences. Sulfoxaflor is the first molecule to be commercialised from the new sulfoximine class of insecticides developed by Dow AgroSciences. It is effective at low use rates with fast-acting control and according to the company addresses a \$2 billion global market segment where needs are currently unmet with existing technologies.

## **DUPONT AND BIOLEAP RESEARCH COLLABORATION**

DuPont Crop Protection and BioLeap ([www.bioleap.com](http://www.bioleap.com)) have entered into a research collaboration that will use novel molecular design technology developed at BioLeap to discover proprietary compounds for crop protection. Julia R Wheeler, director, DuPont Crop Protection R&D says: "This collaboration with BioLeap will add proprietary molecular design to our product development efforts that are focused on meeting future demands for greater agricultural productivity." Under the agreement, BioLeap will use its proprietary technology in computational fragment-based design to identify compounds aimed at biological targets of interest to DuPont. A team of technical experts from both DuPont and BioLeap will then select compounds for synthesis and in vitro and in vivo evaluation by DuPont.

## **DUPONT AND EVOGENE TO COLLABORATE TO FIGHT SOYBEAN RUST**

DuPont and Evogene have announced a multiyear collaboration to improve resistance to soybean rust. Rust is one of the most devastating fungal diseases in soybean and yield losses are estimated to exceed \$1.5 billion annually. Under the agreement, DuPont's seed business Pioneer Hi-Bred and Evogene will collaborate to develop soybean varieties displaying in-plant resistance to rust. They will jointly generate a genomic database tailored to soybean rust resistance. Evogene will utilise its computational genomic technology, *Athlete*, to identify novel genes predicted to improve soybean rust resistance. Pioneer will use the proprietary technologies to evaluate the genes in transgenic soybeans, and may advance leads for further development and commercialisation.

"In addition to our well-established and leading position providing novel genes for improving crop yields under normal and abiotic stress conditions, such as drought and reduced fertiliser utilisation, we are now increasing our efforts with respect to biotic stress conditions, where the crops are attacked by insects, fungi and other stresses," said Ofer Haviv, Evogene's president and CEO. "We are pleased to be able to enter into this collaboration with Pioneer, one of the world's largest seed businesses and a leading provider of soybean seeds, to utilise our advanced trait discovery technologies to address the important biotic stress condition of soybean rust."

Pioneer and Evogene have received an approval in principle for partial funding of the project from the BIRD Foundation, a bi-national foundation funded by the Israeli and American governments, which supports and encourages cooperation between Israeli and American companies in various areas of technology, and provides assistance in locating strategic partners from both countries for developing joint products.

## **SCIENTISTS CALL FOR MORE R&D INVESTMENT ON WHEAT**

Public and private institutions will need to invest more in research and development worldwide if production of wheat is to be boosted in the future. This is the conclusion drawn at a recent international conference organised by Bayer in Monheim and attended by 150 scientists, breeders, merchants and farmers from all over the world. Productivity in wheat-growing, the world's most important staple food alongside rice, is currently increasing at a rate of less than 1% annually. Global demand for wheat is growing twice as fast.

The situation is being exacerbated by climate change and the decreasing availability of minerals for use in fertilisers. Against this background, the current challenges are the need to increase yields by using improved seed, and the need for new approaches in crop protection and optimised cultivation methods. "We want to make an important contribution to coping with these challenges," said Dr Rüdiger Scheitza, a member of the Bayer CropScience Board of Management. "We are already the

world leader in crop protection solutions for wheat," he continued. "In addition we are in the process of establishing a research platform that will lead efforts to breed improved wheat." New varieties should be available from 2015.

Professor Stephen Baenziger from the University of Nebraska explained that the challenges facing breeders have never been greater. "The major tasks include the development of hybrid wheat and the appropriate use of green genetic engineering," he said. Professor Martin Parry from the UK's Rothamsted Research added: "There is an urgent need for sustainable solutions capable of boosting the yield of wheat on the available land and for ways of using inputs such as fertilisers and water as efficiently as possible."

## CONFERENCE AND FEATURES

### CROPWORLD GLOBAL

*In the October issue of Crop Protection Monthly we covered some of the important plenary sessions at the CropWorld Global conference held in London on 30 October - 2 November. Days two and three of the congress featured 17 topic-focused modules and included a number of interesting presentations.*

#### New products and approaches

Steve Waterhouse of BASF presented the company's new fungicide *Xenium*. He said the active ingredient fluropyroxad was a new carboxide, a group first commercialised in 1974 with the introduction of *Calirus* (beodanil). *Xenium*, recently approved in Europe in mixture with epoxiconazole, will be marketed as *Adexar* on cereals in 2012 in the UK and Germany. The new active ingredient works through the SDHI mode of action (Succinate Dehydrogenase Inhibitor). According to BASF *Xenium* is distinguished by its high level of efficacy and outstanding distribution in the plant. The company claims that disease control and yield responses are superior to other recently introduced SDHI fungicides. It says that the fungicide has a good fit at the T2 timing following an application of *Tracker* (epoxiconazole + boscalid). In addition to European application in cereals, approvals for soybeans, corn as well as grapevines, fruit and vegetables are also expected. In fact BASF will be targeting 64 diseases on 29 crops.

Andrew Plant, head of Research Chemistry at Syngenta, presented *Vibrance* the company's new fungicide based on sedaxane, also an SDHI. Sedaxane has unique physical and chemical properties which result in good bioavailability. The fungicide is taken up by the seed and roots. It is well distributed in the plant and there is good movement in the soil too. *Vibrance* has been tailored specifically for the seed treatment market. It protects major crops against a wide range of diseases carried in soil and air as well as against seed infection. Its properties also result in outstanding protection of the entire plant root system a term referred to as 'Rooting Power' by the company. Syngenta launched *Vibrance* in Argentina in the second quarter of 2011.

Professor Derek Stewart of the James Hutton Institute ([www.hutton.ac.uk](http://www.hutton.ac.uk)) in Scotland spoke about the expanding functional food markets. He said it was possible to add functionality to existing foods and possible to improve health. Beta glucan which reduces blood cholesterol is present in barley and wheat and can be used as a fat replacer in mayonnaise, spreads and dips. Adding beta glucan to burger buns, for example, can improve blood flow in the brain and can improve general health and well-being.

Food waste, he said, had real value and gave the example of potatoes. Instead of burning off potato haulms with acid he suggested that the haulms could be collected and be used to produce solanesol, an important raw material for high value drugs that are used in the treatment of heart disease, cancer and ulcers. Spoiled and green tubers produce tropane alkaloids which are anti-cholinergis and stimulants. Minor crops also have major value. Blackcurrant pulp is rich in anthocyanin and can be used as a feedstock for food or pharmaceuticals. All crops, he said, can be more significantly utilised.

#### Water and irrigation

The significance of improved water management as a vital means of improving crop productivity was covered in a session dedicated to water as a resource. John Lawton, Agricultural Technology, Saudi Arabia, showed some fascinating examples of how centre pivot irrigation is operating in Saudi Arabia and how the high tech irrigation management systems are being introduced into neighbouring countries such as Sudan. In Saudi Arabia with only 0.9% of the land used for agriculture, irrigation is the prime issue. Circles, each covering about 70 hectares, are located where there are aquifers. Wheat is grown on around 140,000 to 150,000 hectares and yields of up to 9.5 tonnes per hectare can be achieved. Double cropping is possible with crops such as alfalfa, onions, potatoes, but only by harvesting the wheat early, at 30% moisture, and artificially drying. This allows enough time for the following crop to be planted and harvested within the year.

The relevance of water in the food chain was described by Dr Jerry Knox, Cranfield Institute for Water Science. The term of embedded water was defined, meaning the volume of water needed to grow, process and cook the food. The water footprint is another term used. The water footprint for different diets was compared. A typical UK diet required 3400 litres of water per person per day, A US diet is in

excess of 5400 litres and a vegetarian diet over 2400 litres. Cranfield has calculated that a survival diet requires 986 litres.

The challenge is how to optimise the use of water in agriculture and food production. Increasing the supply of water or land is generally not possible, importing the water in the form of food passes the problem to the country where the crop is grown so the ideal way forward is to improve the yield gap under drought conditions through plant breeding and improved agronomy.

## Seeds

Mark Buckingham, Monsanto, Public Affairs Europe, quoted FAO data showing how average yields of maize and canola had increased by 2.5 to 3% per year over the period 1995 to 2009 in North America. However, in France maize yields had risen by just 0.7% per year and oilseed rape in the UK by 0.5%. The difference is at least partly attributed to the impact of GM technology in North America. Mark Buckingham described how improvements in plant breeding techniques, not necessarily GM technology, are having an impact.

He said that historically breeders would look at a few thousand lines a year. Using the information from plots such as agronomic observations during the year, harvested yields and based on their personal experience they would make selections on which seeds to keep for further selection trials. With the advent of DNA analysis methods the selection process can be speeded up but the DNA analysis has had to be carried out from leaf samples, so the selected seeds have to be allowed to germinate and grow before the analysis and selection can be carried out.

Monsanto has developed the Seed Chipper which mechanically slices off a chip from the seed, removing enough tissue on which to carry out the DNA analysis but without destroying the seed. In this way the selected seed can go straight into breeding trials, saving time and space.

## Biotech and GM

Julian Little of Bayer CropScience is the current chairman of the UK Agricultural Biotechnology Council. He reported on the lessons learnt when trying to introduce GM crops into Europe. He listed five things not to do when introducing new technology into agriculture.

- Do not introduce technology that increases productivity when food security is not an issue. This was the case in the mid-1990s, and yet there are now close to 150 million hectares of GM crops grown globally.
- Do not presume that the technology is better suited to larger farmers. Some 14 million of the 15 million farmers growing GM crops in 2010 are categorised as small farmers.
- Do not ignore the fact that there could be more than one reason for adopting the GM crops. Agronomic benefits, yield increases, soil moisture retention and reduced cost of production have all been listed by farmers as important - over and above the prime benefit of improved weed or insect control.
- In areas of likely tension about technology introduction do not attempt to get the media on your side by effectively explaining what you are attempting to do. In 2003 the media looked for controversy which was reflected in the headlines. The 2011 Foresight report on the Future of Food and Farming hardly mentions GM technology but that is still what hit the headlines, although in a much more positive light.
- Never give people, including politicians, time to acclimatise to what you are trying to do. After 15 years there are still only 100,000 hectares of GM crops grown in the EU and on only two crops - the consequence of an impossibly complex regulatory system.

Julian Little came forward with a telling statistic to end on. Globally people have eaten two trillion meals containing GM ingredients over the last 15 years with no recorded illnesses or substantial food issues. By contrast every year 2,600 people in the US are hospitalised through the misuse of air fresheners.

Dr Sante Villiers, ICRISAT, the International Crops Research Institute for the Semi-Arid Tropics (headquartered in India), described how cases of resistance to *Bt* are occurring more widely. Since 2005 reports of resistance to *Bt* include western corn rootworm (*Diabrotica virgifera*) in the US, army worm (*Spodoptera frugiperda*) in maize in Puerto Rico, cotton bollworm (*Helicoverpa zea*) in both cotton and maize crops in the US and laboratory evidence of resistance to tobacco bud worm (*Heliothis virescens*).

The introduction of multiple resistance genes will, it is anticipated, slow the advent of insect resistance. The existing insecticidal activity is based on just three domains, consequently the introduction of insecticidal proteins which operate in a wider range of domains will slow the onset of resistance. Novel insecticidal proteins include one derived from a bacterium which is symbiotic with nematodes. The commercial development of these alternatives is, however, restricted due to the regulatory hurdles that have to be overcome and the cost of introduction.

Steve Moore, director of the United Soybean Board, USB, is a practicing farmer in Maryland, US. He has grown herbicide tolerant (HT) soya since 1997 and listed many benefits which he and the Soybean Board can promote. An important benefit of HT soya is the opportunity to operate a reduced or no-till system. Benefits listed by Steve Moore included saving labour, saving fuel, improving soil condition and reducing soil erosion. In emphasising the advantages of minimum tillage he quoted a report published in 2010 by the Conservation Technology Information Centre, CTIC, on behalf of the USB. This showed that where conservation tillage was adopted the average erosion of crop land reduced from 2.78 to 1.5 tons/year over the period from 1982 to 2007. Where there is a 60% residue cover of soil, losses due to wind erosion dropped by 90%. There is also a significant saving in the cost of clearing waterways from soil deposits. The benefit to the carbon footprint is also significant both in terms of the improved sequestration of carbon leading to lower carbon dioxide emissions into the atmosphere and reduced use of fossil fuels in tillage activities.

The main issues facing the further development of GM soya bean crops in the US are the fact that weed resistance to glyphosate is becoming more widespread and the paucity of new varieties which are not GM. He also expressed concern that there are so few providers of the technology. The fact that approvals and import tolerance levels of GM crops are not uniform around the globe is also a major issue, leading to serious disruption in trade. The most telling argument given by Steve Moore, in favour of GM technology, was in his closing comments: "We run a family farm. If the GM technology did not work we would not use it."

## ANNUAL BIOCONTROL INDUSTRY MEETING

*The 6th Annual Biocontrol Industry Meeting (ABIM-Lucerne 2011) organised by the International Biocontrol Manufacturers Association (IBMA) and the Research Institute of Organic Agriculture (FiBL) was held in Luzern, Switzerland on 24 - 26 October 2011. The meeting had been extended to three days from two the previous year as a result of the increasing interest in biocontrol. The focus of the international meeting was on the need for sustainable and novel biological crop protection products to meet the challenging demand for global food production. During the conference, over 500 delegates representing more than 260 companies and organisations from all over the globe exchanged experiences, visited the exhibition and listened to some 35 presentations. Mike Neale, principal regulatory expert with LKC Switzerland ([www.lkc-ltd.com](http://www.lkc-ltd.com)) reports.*

The scientific programme covered the latest aspects of market development, regulatory affairs and novel products for plant protection. One of the keynote speakers was Antoine Herth (a member of the French National Assembly with responsibility for reporting to the government on the biocontrol industry in France). He is also a farmer whose main crops include cereals, sugar beets and walnuts. He informed the audience that while only 2-3% of farming is currently organic it is foreseen that this will increase to 20% by 2018 in line with the French policy of sustainable agriculture and 'Ecophyto 2018' which proposes to reduce pesticide inputs in French agriculture to 50% of current usage without impacting on yields. With regard to biocontrol Mr Herth admitted that there are still many questions concerning the impact of micro and macroorganisms on the environment, the acceptance of mating disruption techniques, the issue of field efficacy compared to efficacy in the glasshouse, the need for farmers to be competitive, and the lack of a good regulatory process to support biocontrol products. He presented a number of activities that are planned in France to overcome some of these issues and said there was clearly a need for more input from the private sector and farmers.

### Sustainable production

Jacco Vooijs of Copa Cogeca, who represent European farmers and agri-cooperatives, discussed the need to increase food production to feed the nine billion people that will populate the globe in 2050. He said that while farmers in the EU are willing to implement biocontrol methods, they must be included in any future discussions or proposals on the subject. They must also have simple and practical solutions to use, be economically competitive in the world market and not be disadvantaged by imports of food from outside of the EU which are not using the same techniques. Currently 65% of EU farmers are unable to cover all their production costs and the CAP support represents two thirds of farmer's income. He said it is not feasible to expect farmers to wait for even the slightest visual damage before spraying because it reduces crop value. It is the market that dictates the requirements which in turn limit the farmers' options. He called upon the IBMA to provide a range of options with different modes of action to deal with resistance. These he said must be cost effective and easy to apply. They must work in open fields and on protected crops and take into account both north and south EU climates.

### The implementation of the Sustainable Use Directive

The IBMA's Bernard Blum gave his presentation on the implementation of the Sustainable Use Directive and National Action Plans (NAPs). The EU directive 2009/128/EU establishes a framework for achieving the sustainable use of pesticides and NAPs should be in place by the end of 2012. The framework includes the need for risk reduction using integrated pest management (IPM) as well as alternative approaches to pesticide use. Mr Blum reported that there was a lack of harmonisation across the EU member states. He said clear definitions were needed for low risk pesticides, minor use definitions, critical areas and zonal separations as well as farmer training related to non-chemical use. France and Germany are well advanced, however, other countries and even the Commissions Expert Group have neither the time nor resources to achieve the objectives. The IBMA is setting up a partnership UNIP (Unified Innovative National Plans) which intends to hold discussions with the national authorities about a uniform approach to achieving harmonisation on these issues within the EU.

### Crop protection companies

Concerns were raised in the panel discussions over the acceptance of biocontrol products by the crop protection companies. There still seems to be a strong line drawn between conventional chemical control and biological control. BASF's Antonio Meyer representing ECPA tried to explain the industry's need to integrate biocontrol and chemical control across Europe, to provide the right tools to enable farmers to maintain their yields. He said the chemical industry is also facing the same regulatory

challenges with their own biocontrol compounds. Lively debates on biological versus chemical control are still ongoing. It was pointed out that large retailers and supermarkets need to be actively involved.

Several new biocontrol products and non-chemical approaches were presented at the meeting. These included the development and assessment of the sterile insect technology, RIDL, to control olive fly, *Acinovate* a new biofungicide undergoing EU registration and used for the control of damping off and a wide range of root rot fungi as well as some foliar diseases, and new uses for Marrone Bio's *Regalia* in soil and cereals.

## BAYER TO HELP SMALLHOLDERS IMPROVE YIELDS

*Bayer CropScience was the lead sponsor for the three day World Agricultural Forum (WAF) conference held in Brussels, 28 November - 1 December. Titled Rethinking Agriculture, it brought together over 170 delegates from across the globe. Participants included Clayton Yeutter, former US Secretary of Agriculture in the Bush administration, Franz Fischler, former EC Commissioner of Agriculture, and Dr Ren Wang, vice president, Chinese Academy of Agricultural Sciences. Professor Paolo De Castro, the current chairman of the Agricultural and Rural Development Committee of the European Parliament, delivered a keynote address, via video. Chair for the first day was James Bolger, Prime Minister of New Zealand, 1990 to 1997, and chairman of the advisory board to WAF. Bruce Knight reports on the keynote address given by Sandra Peterson, CEO of Bayer CropScience.*

Sandra Peterson stated that more support for smallholder farming is the key to any long-term effort to ensure global food security. In her presentation Ms Petersen explained that having the current technologies is not in itself a panacea. For the smallholder the technology has to be personalised. There is a need for a 'localised toolbox'. The economies of scale might be a major benefit to farmers in the US but this does not mean that such approaches apply in Asia. In India, for example, there are 120 million families living off the land and 98 million manage less than two hectares. The support for such growers has to be tailored to their needs and the environment. Support could cover training in best agricultural practice, access to modern agricultural input technologies, financing schemes, improvements in water management, power supply and post-harvest storage.

Ms Peterson is encouraging all of her staff at Bayer CropScience to improve their understanding of farmer's needs. She wants to see everyone, whatever their job, spending time on a farm. She also stressed that partnership and collaboration were integral to addressing the global challenge of food security for all. "These challenges can only be solved by connecting the dots and working across the entire food value chain," she said.

Bayer CropScience has identified two crops of global importance in which the company can claim technical superiority and which will continue to receive priority for development. These are rice and wheat. With rice the company offers a unique combination of crop protection solutions and high performing hybrids, and holds the leading rice market position in the Asia Pacific region. Collaborations with commercial organisations and institutes such as the International Rice Research Institute (IRRI) are well established with yield enhancement the key target. However, there is a need for rice production toolboxes for the smallholder.

Wheat is grown on around 25% of agricultural land globally and is a vital source of protein in the developing world. However, for the most part it is not well developed for production in the developing world or by the smallholder. It is also the case that productivity of the crop is increasing at around 1% per year while demand is increasing at double that rate. Bayer CropScience is heavily committed to wheat. It is market leader in herbicides and gaining prominence in fungicides. Investment in wheat seeds and traits is aimed at enhancing yields, introducing disease resistance and improved tolerance to stress. The developments are based on marker assisted and GM technologies and through commercial partnerships and public-private partnerships.

Ms Peterson noted that these innovations can make a substantial contribution to addressing global challenges to food security, but only with the appropriate regulatory and political frameworks in place. "Our industry is not concerned that we might run out of innovative ideas to safeguard crops, but we are concerned about the regulatory and political obstacles on the last mile to the market." She also made it plain that for industry to meet the diverse needs of the market: "It must listen and learn."

In responding to how Bayer CropScience would seek an industry wide approach to addressing the problems of bringing new technologies to the developing world and to the smallholder, Ms Peterson told *Crop Protection Monthly*: "We embrace new options and partners, roll up our sleeves together, and combine the tried and tested with new opportunities brought by advances in technology. With our 'Much More Rice' project in Vietnam, for example, we've formed partnerships with farmers and representatives of local government. We help them safeguard their rice harvests, and at the same time improve rice yield and quality by offering complete solutions comprising our *Arize* hybrid rice seeds, quality crop protection products, as well as training courses on good agricultural practices."

## GENERIC PRODUCTS CONFERENCE

*Informa Life Science's Crop Protection: Off Patent Products and Generics conference took place in Brussels from 8-9 November 2011. The main part of the conference discussed the impact of the new pesticide Regulation 1107/2009 on generic and off patent registrations. Nine presentations were followed by a member state discussion panel at the end of the day. Peter Chapman of JSCI ([www.jsci.co.uk](http://www.jsci.co.uk)) reports.*

### Data protection

Tracy Roberts for the UK regulatory authority, CRD, independent consultant Terry Tooby, Garth Drury, head of regulatory affairs at Rotam, and Claudio Mereu of Field Fisher Waterhouse addressed the subject of data sharing. According to Mr Mereu the EU data protection/sharing rules remain complex and uncertain under the new Regulation. However, it was said that under Directive 91/414 there was no clear or uniform data sharing system in place, leading to legal challenges, while under Regulation 1107/2009 the principle of data sharing replaces exclusive use of data by the data owner. The authorisation holder must claim protection for studies and confirm that they have not been protected previously and justify why the studies have been submitted. Member states will have to provide lists of studies used in support of both active substance approvals and product authorisation to anybody who makes a request. In addition member states will identify and alert any third party interest to the original data owner. This will provide the prompt for data sharing negotiations to begin.

As far as vertebrate data sharing is concerned the general principles are similar between Directive 91/414 and Regulation 1107/2009. The difference lies in how the principles are applied. Vertebrate tests must only be undertaken where no other methods are available – repetition of tests is not possible. Member states will not accept repeated studies and applicants must provide justification if vertebrate studies are carried out. In addition the applicant and data holder must make efforts to share costs of vertebrate studies.

Under 1107/2009 the applicant and data holder must make 'every effort' to share the vertebrate data and importantly if no agreement can be reached then the member state can proceed with the authorisation on the basis that there is a relevant study available. What constitutes 'every effort' has not been fully defined. However evidence of dialogue between the applicant and data owner will be required in reaching a decision. The Commission will be producing a guidance document to clarify this. Member states, however, will not get directly involved in commercial discussions between companies. Where companies fail to reach agreement they can be directed to enter into arbitration. At the present time there is no harmonised EU arbitration procedure, so the matter will have to be taken up on an individual member state basis. As far as vertebrate studies are concerned there are no transitional arrangements in place. It will be important therefore for suitable guidance to be put in place as soon as possible.

The UK's CRD applicant enquiries desk will offer a service to provide lists of studies used, identifying those that are protected. Enquiries can be made to [applicant.enquiries@hse.gsi.gov.uk](mailto:applicant.enquiries@hse.gsi.gov.uk) giving the relevant details of the active substance, product name and registration number.

Industry expressed concern that problems of poor and patchy member state enforcement of data protection rules has up until now enabled free riders to continue to profit. The point was also made that the EU could usefully take lessons from the data compensation and arbitration procedures that currently operate in the USA and Canada. There was also discussion on who should provide guidance on arbitration, industry or authorities. It is anticipated that this will be made clear in the guidance document that is being prepared.

Under the new regulation 10 years protection is granted for the first authorisation, 13 years for 'low risk' plant protection products. Up to an additional three years can be gained based on minor crop recommendations, each minor crop earning three months additional data protection. There is 30 months protection for data used in support of the renewal of authorisations.

### Renewal of approvals

Anne Marie Dillon for the Irish regulatory authority, Pesticide Control Service, gave a presentation on the progress being made with the renewal programme for active substances. She confirmed that a new regulation on the procedures for the third list of substances (AIR-3) was expected in early 2012. In addition there would be a regulation extending the approval period for certain substances and a

guidance document for implementing the procedures set out in the regulation. In all 149 active substances were involved with submissions expected to be required in batches over a three year period. It was not yet clear how many active substances would need to have their inclusion periods extended, as this would depend on whether the Commission was minded to prioritise certain substances which were considered as candidates for substitution. Any candidates for substitution that were subsequently renewed would then be subject to comparative assessment under Regulation 1107/2009.

### **Zonal authorisations**

Zonal authorisation issues were discussed by speakers from the EU central and southern zones, Maarten Trybou, head of the Pesticide and Fertiliser Service in Belgium, and Maria Gaspari, registration manager from the Department of Pesticides in Greece. Both speakers made impassioned pleas for industry to improve the quality of the dossiers that were being submitted. They said that incomplete dossiers and inaccurate cross references within dossiers caused considerable delays in the evaluation procedure. Mr Trybou said that member states would have to take a stricter approach in rejecting dossiers that were not up to standard and that there would be more attention paid to the completeness check. In addition he also stated that there were issues within the regulatory authorities with specialists trying to interpret dossiers rather than referring them back to the applicant.

Maria Gaspari also raised the issue that sometimes there were no clearly identifiable contact points in companies and that there were inconsistencies and lack of agreement about the GAP (Good Agricultural Practice) being supported between the main applicant and its distributor companies. Member states had very little available resources to deal with the increasing workload and were now booking application slots into late 2012 and into 2013. In the discussion that followed it was suggested that one way of overcoming the workload for member states would be to drop the biological assessment of pesticides in order to free up more time. However this suggestion was not taken up by the member state representatives present.

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