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international news, comments, features and conference reports

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LEAD ARTICLES

EXPERTS DEBATE FOOD SECURITY AT CONGRESS

One of the most interesting sessions at this year's CropWorld Global Congress was the contentious food security debate on the first day with representatives from Rabobank, Oxfam, AHDB (the UK's Agriculture and Horticulture Development Board), the Millennium Institute and IFOAM ((the International Federation of Organic Agriculture Movements) all tackling the issue of how we can feed the world in a sustainable way.

Professor Ian Crute, chief scientist of AHDB (**www.ahdb.org.uk**), said there had been 30 years of complacency because of stable food prices and because the world had been awash with food. The goal now, however, was to produce 50% more food in the next two or three decades to feed nine billion people using the smallest footprint of land. Sustainable intensification was the right solution. However, there was no one formula, he said, and no technology should be ruled out. We must focus on outcomes and increase production efficiency by utilising a mixture of technologies and approaches. Land spared could be used for carbon capture and storage, bioenergy and for the conservation of biodiversity. Professor Crute also called for a higher level of skills, more research and improved knowledge exchange. He said that extension capabilities had been eroded and must be replaced.

Phil Bloomer, director of Campaigns and Policies at Oxfam, said the global food system was broken and needs mending. He said that it will take intensive food production to achieve food security but it must be sustainable and equitable. There must be investment to improve the productivity of the 500,000 smallholders that feed over two billion people as well as in large scale agriculture. He said that the Brazilian and Vietnamese governments had made gigantic progress towards eradicating hunger in the last decade. Vietnam had halved hunger in nine years, Brazil in five. Vietnam did it by investing in agriculture and land reform over the previous 12 years. Brazil's Zero Hunger campaign provided support for small farmers and cash for poor mothers to purchase food.

He also raised the issue of land. In the last 10 years private companies and foreign governments have bought up to 80 million hectares of land across the developing world – an area more than twice the size of Germany – often over the heads of the poor communities who rely on it for food. This he said must stop. Prior and informed consent should be required before land is taken away.

Hans Herren, president of the Millennium Institute (**www.millennium-institute.org**), insisted that the challenge was not necessarily to produce more food but to 'nourish the planet'. He said: "We have too much food already, including in India, where there is more food than people but the people who need it do not have access to it. So do we need to produce more or do we need to change the system?" Dr Herren is a leading advocate of agro-ecology, a holistic farming model based on organic principles, where food is produced by small family farms using green methods which nourish soils for future generations.

He said that business as usual was not an option. He is on a mission to promote what he insists is a better alternative to the current global 'industrial' food production system, which he described as 'bankrupt'. "We need to change it to a more modern, advanced system, which will create energy, rather than consume it, and one which is not dependent on fossil energy, but more on people and better science."

Markus Arbenz, executive director of IFOAM (**www.ifoam.org**), also claimed that the present food system had failed. He said there are one billion people who cannot afford to feed themselves and the number is increasing rather than decreasing. He also called for sustainable agriculture based on agro-ecology that mimicked nature rather than industrial production. He said access to food was a basic human right.

Independent consultant, former NFU (National Farmers Union) economist Sean Rickard tackled the issue head on in another Congress session. He claimed the organic movement, which accounts for 1.4% of food sales in the UK, was having a disproportionate and damaging influence over how farmers operate in the UK and Europe. "In the UK we consume as much cat food as organic food. Yet a small minority are holding back science and technology, which is surely what the whole industry

depends on. Morally it is impossible to defend organic farming in a world that is short of food. We would have mass starvation if we were pushed down that route," he added.

Mr Rickard went on to say that the EU's failure to adopt biotechnology was the cause of 'huge regret'. He restated his belief that the Common Agricultural Policy (CAP) is a 'waste of money' that supports 'inefficient farmers who have no hope of investing in new technologies or of meeting extra demand for food' and is holding back more efficient farmers. He called for direct CAP payments to be scrapped in favour of increasing investment in agricultural research and development but said the prospects of this happening in the current political climate were negligible.

The closing address at the congress was given by Sir John Beddington, chief scientific advisor to the UK Government. In referring to the probability of a global population exceeding nine billion, he stated that there is now a consensus that beyond 2050 the population will stabilise or even decline. But this, however, does not diminish the challenge up to 2050. Of particular significance is the fact that forecasters suggest that in Africa, the continent least able to cope and under most threat from climate change, the population will double. In Europe it is expected that the population will marginally decline. Sir John Beddington went on to paint a rather grim picture of the potential impact of climate change. It has to be recognised, he said, that there was only a consensus of actions in place and that the targets set to keep global average temperature rise within 2°C will not be achieved. However, the impact on human activity if an increase of 4°C occurred would be disastrous.

His message was that there has to be increased but sustainable agricultural production. An example of an innovation with potential in developing countries is the use of urea fertiliser supergranules in rice, which can deliver up to 30% yield increases.

At the forthcoming climate change forum in Durban in December, COP-17, Sir John Beddington and the UK team will be pushing to include agriculture as a workshop subject, aiming to set out specific targets and mitigation actions.

In a brief question time Sir John Beddington expressed his disapproval of the EC policy on the new agrochemical regulations and of the direction that the CAP reforms were taking. He was, however, more satisfied that what influence the UK Government has was in the right direction.

EUROPEAN NEWS AND MARKETS

DUPONT TO MARKET AGRAQUEST'S BIOFUNGICIDE IN FRANCE

DuPont and US biopesticide company AgraQuest have signed an agreement for the development and distribution of a new biopesticide DPX RNP31 based on AgraQuest's patented microbial active ingredient, *Bacillus pumilus* QST 2808. DPX RNP31, to be developed exclusively by DuPont, controls Sclerotinia and other diseases of oilseed rape. Tested for several years in research trials it will be commercialised by DuPont in France as a component of its range of broad-acre crop fungicides.

"We are delighted to form partnerships with leading innovation company like DuPont to bring our products to growers of important crops like oilseed rape," said Ashish Malik, senior VP of Global Marketing at AgraQuest. "DPX RNP31 will help to reduce the impact of pesticides on the environment as laid out in the EU's Sustainable Use Directive and France's Ecophyto 2018 action plan."

Bacillus pumilus QST 2808 has been submitted by AgraQuest for inclusion in EU's Annex 1. Although this is the first European agreement regarding this active ingredient, products based on *Bacillus pumilus* QST 2808 are already commercially available in key countries in the Americas, including the US, Mexico and Brazil**.**

BASF RECEIVES APPROVAL FOR XEMIUM IN EUROPE

BASF Crop Protection has received approval from the registration authorities in France, Germany and the UK for products to be used on cereals containing the new fungicidal active ingredient *Xemium* (fluxapyroxad). 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 and says that *Xenium* has the potential to generate peak sales of more than €200 million per annum.

The new active ingredient belongs to the carboxamide group which was first commercialised in the 1970s. They work through the SDHI mode of action (Succinate Dehydrogenase Inhibitor). According to BASF *Xemium* is distinguished by its high level of efficacy and outstanding distribution in the plant. It also produces an increase in harvest yield and improves harvest quality. "We are pleased to be able to provide farmers in Europe with an improved solution for fighting fungal infections in cereals in time for the current season," pointed out Jürgen Oldeweme, head of the Global Product Safety and Registration Unit at BASF's Crop Protection Division. One of the first products to contain fluxapyroxad is *Adexar*, a combination with the active ingredient epoxiconazole.

A new production plant for *Xemium* was opened recently by BASF in Ludwigshafen. The manufacturing process, for which a patent is pending, focuses on resource conservation and will make a positive contribution to the environment. The new production plant, which will create 23 new full-time jobs, has been designed so that other active ingredients besides *Xemium* can also be produced. "The flexible plant design means that we are able to react better to fluctuating demand in different growing regions", said Harald Rang, senior VP Operations Crop Protection.

BASF APPLIES FOR APPROVAL OF DISEASE RESISTANT POTATO

BASF Plant Science has applied for EU approval for *Fortuna*, its 'genetically optimised' potato. *Fortuna* contains genes from a wild potato that confer natural protection to late blight. The application for approval covers commercial cultivation as well as use as food and feed within the EU. In the next step of the approval process, the European Food Safety Authority (EFSA) will assess safety to humans, animals and the environment. BASF Plant Science first started its research efforts on the disease-resistant potato in 2003. *Fortuna* has been tested in field trials for six years and has been subjected to extensive safety assessments. Market introduction is expected for 2014/15.

"*Fortuna* provides decisive benefits for agriculture", says Peter Eckes, president of BASF Plant Science. "The processing characteristics of *Fortuna* are as good as the parent variety. In addition, it offers complete protection from one of the world's most persistent potato diseases. By coupling *Fortuna* with modern plant protection measures, we are now in a position to offer a food which is produced with a highly sustainable method. Consumers ultimately stand to benefit from this too." The two resistance genes transferred to *Fortuna* come from a South American wild potato and were originally discovered by Dutch scientists. Despite more than five decades of intensive effort, plant

breeders using conventional methods have not managed to cross both resistance genes jointly and successfully into a high-performance potato variety.

KOPPERT TO MARKET BAYER'S BIOFUNGICDE ON FRUIT AND VEGETABLES

Bayer CropScience has reached an agreement with Koppert Biological Systems, the Netherlands, to grant exclusive worldwide rights on the marketing, registration and production of the new product *Shemer*, a biological fungicidal product based on the yeast strain *Metschnikowia fructicola*. *Shemer* is an antagonist that protects fruit and vegetables against diseases caused by fungal pathogens. It also supplements and complements pre-harvest and/or post-harvest applications and is ideal for use as a part of resistance management and IPM (integrated pest management) programmes.

Frank Terhorst, head of Fruits & Vegetables and Insecticides at Bayer CropScience said: "By reaching this agreement, we are convinced that we have chosen the right partner to finalise the development of *Shemer* and to exploit the full market potential of this promising biological fungicide in pre-harvest and post-harvest applications." Henri Oosthoek, Koppert's director of global marketing and sales, added: "The acquisition of this product fits in well with our strategy of broadening our product portfolio and developing new markets. It will strengthen our position within the growing industry of biocontrol agents. It expands our microbial ambitions for sustainable crop protection."

BAYER GAINS ACCESS TO WHEAT GERMPLASM FROM ROMANIA

Bayer CropScience and the National Agricultural Research and Development Institute (NARDI) in Romania have signed a license agreement. This gives Bayer access to winter wheat germplasm from the leading Romanian agricultural research institution. This germplasm pool is renowned world-wide for its winter hardiness, high tolerance against drought, broad disease resistance and good milling and baking quality.

"Improving the productivity of wheat will be critical to achieving global food security. We intend to build a world-class research platform for wheat genetics. Our agreement with NARDI is another key building block in this strategy," said Hartmut van Lengerich, head of Cereals and Fungicides at Bayer CropScience. "To speed up development of new varieties, Bayer has entered into collaborations with a number of partners in wheat research and breeding based in Australia, Israel, France, the Ukraine and the US, and now Romania."

BAYER ACQUIRES OILSEED RAPE BUSINESS IN GERMANY

Bayer CropScience has completed the acquisition of the oilseed rape business from the seed company Raps GbR, headquartered in Schleswig-Holstein, Germany. The deal includes varieties that are already on the market and the company's breeding material. Bayer has for a number of years pursued its own breeding programme for winter oilseed rape and In North America is a market leader in seed, plant traits and crop protection products for canola.

The company is now expanding its business to include other oilseed rape-growing areas such as Europe and some countries in Southeast Asia. Bayer CropScience aims to launch the first oilseed rape varieties onto the European market in 2012 initially in the Czech Republic. "The agreement with Raps GbR, which has more than 20 years of breeding experience, a broad portfolio of varieties and an experienced workforce, is an important step for our oilseed rape strategy," said Bayer CropScience CEO Sandra E Peterson. "It will further accelerate Bayer CropScience's entry into the European oilseed rape market."

AMERICAN NEWS AND MARKETS

SYNGENTA'S TRIPLE STACKED CORN APPROVED IN ARGENTINA

The Ministry of Agriculture in Argentina has approved Syngenta's triple corn stack Bt11 x MIR162 x GA21 for cultivation in the country. The triple stack, which has already been successfully launched in Brazil, will be available to Argentine growers for the 2012/2013 season. "The approval of our triple stack corn seed confirms our leading offer for insect control in Argentina," said John Atkin, Syngenta chief operating officer. "It adds to the array of technology we are now bringing to corn growers as an integrated offer, including market-leading seed care and crop protection. Triple stack corn will be just one component contributing to the significant sales growth and market share gains which we expect to achieve in coming years." The triple corn stack Bt11 x MIR162 x GA21 combines herbicide tolerance and insect resistance. The MIR162 trait (*Agrisure Viptera*) offers outstanding control of fall army worm, sugarcane borer and corn earworm, the main insect threats to corn in Argentina, and of other damaging lepidopteran pests.

EPA APPROVES MARRONE'S BIOINSECTICIDE

Marrone Bio Innovations (MBI) has announced that the Environmental Protection Agency (EPA) has approved its latest product, MBI-203, which will be branded as *Grandevo*. The product is a broad spectrum, natural insecticide for use on agricultural and ornamental crops. It is initially being launched in Florida for insects such as citrus psyllid, following approval by the Florida Department of Agriculture and Consumer Services. MBI intends to launch *Grandevo* nationally in 2012, and will market the product to growers and pest control advisors through its existing distribution channels.

"*Grandevo* represents a significant achievement for MBI, as we now provide both fungicide and insecticide solutions for our customers," said CEO Pam Marrone. "The commercialisation of the insecticide demonstrates our ability to bring multiple, effective products to market. With two more products awaiting EPA approval and several others at an earlier stage of development, our pipeline continues to address growing customer demand."

Field trials conducted by leading universities and crop consultants have shown *Grandevo* has equivalent or better performance to chemical pesticides. The company says that not only does the product address a broad spectrum of insects, both chewing and sucking species, but its complex mode of action - ingestion, contact and repellency - makes it more difficult for insects to develop resistance versus the single-site products predominantly used today.

"*Grandevo* is the first new microbial insecticide offered in nearly 50 years," said Chris Hildreth, senior vice president of commercial operations at MBI. "Like its predecessor, *Bacillus thuringiensis*, we believe it has the potential to gain wide acceptance and become a standard insecticide in pest management programmes.

MARRONE AND SCOTTS TO DEVELOP GREEN PESTICIDES

Marrone Bio Innovations has signed an exclusive research and development deal with Scotts Miracle-Gro to develop green pesticides for the consumer lawn and garden market. Marrone Bio Innovations will manufacture and supply biopesticides that are developed by the partnership, while Scotts Miracle-Gro will retain worldwide marketing rights. "Having the marketing muscle of a company like Scotts is significant for us and brings us credibility," said Pam Marrone, the company's CEO.

Scotts currently has its own line of nature-based products, as do competitors Central Garden & Pet and Bayer Advanced. Jon Andersen, analyst with William Blair & Co in Chicago, said consumer demand has pushed the lawn and garden industry and the packaged goods industry as a whole toward more environmentally safe practices.

AMVAC ACQUIRES TRIBUFOS FROM BAYER

Amvac Chemical Corporation has acquired the international assets of the cotton defoliant product tribufos, sold under the trade name *Def*, from Bayer CropScience. The acquisition of this segment completes Amvac's July 2010 purchase of Bayer's domestic tribufos product line and complements the company's existing tribufos product *Folex*, which it has marketed since 2002. The recently acquired product is registered for use in Mexico, Argentina, Costa Rica and Colombia.

Alfredo Pelaez, Amvac's director of International Sales, commented: "This acquisition strengthens our access to the international cotton market particularly in the Central and South American regions. We will be increasing our direct selling efforts in Mexico, expanding our distribution in Argentina, and beginning to develop our involvement in the substantial cotton growing market of Brazil." Glen Johnson, Amvac's senior VP and director of Business & Product Development, added: "The addition of this product to our portfolio is another example of our continuing effort to broaden our product offering and expand our geographic footprint. We will also benefit from manufacturing this product in our Axis, Alabama plant.

AMVAC ACQUIRES RIGHTS TO SUMMERDALE PRODUCTS

AMVAC Chemical Corporation has acquired the rights to two recently issued US patents from Wisconcin-based Summerdale Incorporated. This exclusive agreement grants AMVAC worldwide rights to develop patented products for pre-harvest and post-harvest commercial crop protection uses. One of the lead candidates, AMV4024, has been in development for more than three years, and shows good potential as a broad-spectrum biofungicide. Another candidate, AMV5680 is also being tested as a crop desiccant aid. Other lead compounds may be evaluated for further development as sanitisers or for other post-harvest uses.

Glen Johnson, AMVAC's senior VP and director of Business & Product Development, commented: "Securing these valuable licensing rights allows us to develop a broad range of products in different market segments and will continue to expand our biopesticide product range into the future. AMVAC's green portfolio began with the acquisition of exclusive marketing rights in 1999 to develop and launch azadirachtin-based products with unique formulation technology and continued to grow with the licensing of patented potato sprout inhibitor technology from Washington State University in 2005." Since obtaining the latter AMVAC has successfully developed and globally tested the active ingredient 3-decen-2-one (*SmartBlock* coded as AMV1018) and is awaiting US and Canadian registrations. "Pursuing such new green technology avenues together with our proven success in marketing conventional crop protection chemicals will further broaden our portfolio," added Mr Johnson.

OTHER NEWS AND MARKETS

MAKHTESHIM AND CHEMCHINA MERGER FINALISED

Makhteshim Agan Group (MAI) has announced that 60% of its shares have now been acquired by China National Agrochemical Corporation, a full subsidiary of China National Chemical Corporation (ChemChina). ChemChina is one of the top 500 companies in the world and the largest chemical producer in China. Several conditions, including approval of the transaction by MAI shareholders and European, US and Brazilian anti-trust authorities, had to be met prior to the closing. MAI now becomes a private company, 60% of which is owned by ChemChina and 40% by Koor Industries Ltd.

The merger between MAI and ChemChina is the largest transaction ever concluded between a Chinese and an Israeli company, and represents a significant milestone in MAI's 66-year history. Based on the desire of both sets of shareholders, MAI's existing management team will continue to lead the company, and its headquarters will remain in Israel. MAI intends to continue operating all of its existing global manufacturing facilities.

Mr Erez Vigodman, MAI's president & CEO, said|: "The completion of our merger with ChemChina is first and foremost a vote of confidence in the people of MAI and of the strong platform we have created. The merger will serve as an engine for MAI's continued growth, securing its position as a major provider of market-driven off-patent crop protection solutions to farmers in more than 120 countries. In addition, it will give us a strong presence in markets throughout China and the entire Asia/Pacific region.

MAKHTESHIM AGAN ESTABLISHES NEW TECHNOLOGY DIVISION

Makhteshim Agan Group (MAI) has announced that it is establishing a new division that will focus on innovative technologies for the agricultural market. The new Agricultural Technologies division will be headed by Professor Uri Shani. He is understood to have had a diverse and broad professional background in the agricultural arena having served in key positions in the academia, business and public arenas. Most recently, he served as chairman and general manager of Israel's Governmental Water and Sewage Authority. He is also chairman of Israel's Steering Committee for the Red Sea-Dead Sea Channel project, as well as Professor of Soil and Water Sciences at The Hebrew University in Jerusalem. Previously he served as General Manager of Arava agricultural growers and General Manager of Yotvata dairies.

Mr Erez Vigodman, president & CEO of MAI, said, "Israeli research and science has long-enjoyed a record of success in creating innovative offerings for farmers that help them to achieve greater yields and better crops in challenging environments. We intend to leverage innovative agro-technologies by bringing into play our global resources, strong customer relationships and knowledge of agro markets."

SYNGENTA LAUNCHES NEW WEBSITE TO ENCOURAGE INNOVATION

Syngenta has launched a new website to stimulate and accelerate collaborations with external parties for the development of new, integrated solutions for agriculture. The website (**www.Syngenta Thoughtseeders.com**) has been created to bring together fresh ideas and concepts and novel technologies from around the world. The company says the platform will support its commitment to develop new and sustainable solutions for growers across all geographies facing crop productivity and environmental challenges.

Syngenta is particularly interested in discovering crop solutions for growers which comprise genetics, chemistry or novel technologies that could help in the areas of weed control, disease control, insect control, nematode control, environmental stress tolerance, breakthrough yield and crop output quality. Website visitors may submit ideas for novel technologies as well as offer solutions and lend their expertise to the global food security challenge. "Open innovation has always been an important part of our R&D strategy. We believe the future relies on maximising the use of new technologies and combining technologies to discover and develop innovative value added products for agriculture," said Sandro Aruffo, Syngenta head of Research and Development. "External collaboration is one of the key ways we will deliver crop-focused solutions to our customers."

The website will serve as a central destination for individuals, private organisations and research and academic institutions with cutting-edge technologies, ideas and knowledge who wish to seek out

collaboration with Syngenta. The company says it already has over 400 active research collaborations.

JAPANESE INVEST IN BRAZIL

Three Japanese agrochemical companies have bought shares in the Brazilian manufacturer Iharabras S.A. Industries Quimicas, from its parent company Agroinvest Kayatani. The stake purchased by Kumiai Chemical Industry, Mitsui Chemicals and Nissan Chemical Industries is aimed at expanding their operations in Brazil, where the pesticide market is growing significantly. Kumiai's acquisition of an additional 3.15% will increase its stake in Iharabras to 22%, making the Brazilian company based in Sorocaba, Sao Paulo, into an equity method affiliate. Mitsui Chemicals acquired an 11.89% stake in Iharabras, while Nissan Chemical purchased 3%.

INDIAN SCIENTISTS TO WORK ON WHEAT GENOME

Indian scientists have joined 15 other nations - the US, the UK, France, Italy, Switzerland, Germany, Czech Republic, Norway, Israel, Turkey, Russia, China, Japan, Australia and Argentina - in the initiative to decode the wheat genome. The Department of Biotechnology (DBT) has sanctioned some Rs 34 crore ($7.3 million) for over four years to three institutes, Punjab Agriculture University, ICAR (Indian Council of Agricultural Research) and Delhi University, to work on the project. Professor Nagendra Kumar Singh from ICAR's National Research Centre on Plant Biotechnology in New Delhi said: “The project is likely to be completed in within three years.” Wheat has 21 chromosomes of which one will be decoded by the 21 Indian scientists. The wheat genome is 42 times bigger than the rice genome.

“India had bumper wheat production of 84 million tons this year. Once we have decoded the genome we can develop disease-resistant wheat faster. Brown and yellow rust diseases are a big threat to wheat,” said Professor Singh. Experts say in the past decade, global wheat production has dipped by 3.6% due to drought. It is also being threatened by signs of climate change like rise in temperatures, less availability of water and reduced soil fertility.

Indian scientists have already decoded the genome of arhar (pigeonpea), the second most important pulse crop in India. The scientists have identified 47,004 protein coding genes in the arhar genome, of which 1,213 genes are for disease resistance and 152 genes for tolerance to drought, heat and salinity that make it a hardy crop. This is the first plant genome sequenced entirely through a network of Indian institutions. It will enable researchers to quickly develop high yielding, disease and insect-resistant varieties of arhar that will improve the crop’s productivity.

CARGILL AND BASF TO CO-DEVELOP NEW GENERATION CANOLA OIL

Cargill and BASF Plant Science are to co-develop a new dietary source of EPA/DHA (eicosapentaenoic acid/docosahexaenoic acid) that will make it easier for consumers globally to achieve optimal intakes of EPA- and DHA-rich omega-3 polyunsaturated fatty acids. This next generation canola oil containing EPA/DHA will enable food, pharmaceutical and nutritional supplement manufacturers to deliver the potential health benefits of omega-3 fatty acids in a wide variety of new, cost-effective consumer products available by the end of the decade. Although the research is ongoing, a growing body of scientific evidence links dietary intake of omega-3 fatty acids with benefits for heart and brain health. However, humans on average are currently not consuming enough of these healthy fatty acids. In fact, according to the National Health and Nutrition Examination Survey (NHANES) EPA/DHA consumption in the US is less than 185 mg per day. Health experts in various countries recommend intake of 250-500 mg per day for positive health benefits from EPA/DHA.

Growing consumer awareness of the health benefits of omega-3 is fueling double-digit growth for omega-3 products. According to a recent report by Prepared Foods (**www.preparedfoods.com**), the global market for foods, beverages and supplements incorporating omega-3s was worth nearly $7.5 billion in 2010, and is predicted to grow 15-20% annually through to 2015. The products generated through the Cargill / BASF Plant Science collaboration will address two key issues facing companies seeking to broadly deliver omega-3s to global consumers: shelf stability and cost. “Both BASF Plant Science and Cargill believe that the market for omega-3s is very attractive long-term and that this co-development and commercialisation partnership will create value for our customers and both companies,” said Marc Ehrhardt, senior vice president, BASF Plant Science. “The combination of BASF’s innovative technology and Cargill’s leading position in the global supply chain for canola oil will make EPA/DHA canola oil-based products broadly accessible to consumers globally.”

CONFERENCE AND FEATURES

THIRD QUARTER SALES ROUNDUP

Syngenta reports double digit growth

Syngenta has reported that sales in the third quarter of 2011 increased by 16% at constant exchange rates. Volume expanded by 13%, representing the sixth consecutive quarter of double digit growth for the company, and prices rose 3%. In the first nine months of the year, sales were up 13% at constant exchange rates to $10.4 billion.

In Latin America there was 27% growth across the portfolio. A robust soybean crop price and the expectation of lower production in the US are leading to increased investment by soybean growers in Brazil and Argentina. Corn sales were also up with rapid adoption of both herbicides and traits. In Europe, Africa and the Middle East, sales increased by 10% led by France and the CIS. Expansion of the range is also reinforcing the company's positions in both Russia and Ukraine. In North America, sales increased by 10% with broad-based volume growth in crop protection and slightly higher pricing. In Asia Pacific sales in crop protection increased by 13%.

Strong growth in selective herbicides was driven by Latin America and by early orders in the US, where solutions for weed resistance in corn and soybean are increasingly in demand. Non-selective herbicides sales increased reflecting higher *Touchdown* sales in Latin America and the expansion of *Reglone* in the CIS. In fungicides, the largest contribution came from the rapid expansion of usage in the emerging markets of Asia Pacific; in the US, recognition of crop enhancement effects led to strong growth. Insecticide growth was led by *Actara* and by the *Durivo* family, which is expanding rapidly in Latin America and is now launched on vegetables in China. Sales of Professional Products increased by 4%, with market share gains in Asia Pacific and in the consumer segment in Europe. Combined sales of new Crop Protection products reached $484 million in the first nine months, an increase of 39%.

Growth in Corn & Soybean seeds was driven by Latin America, where investment in corn is increasing. Syngenta says it is seeing strong acceptance of its enhanced portfolio, including the *Viptera* trait. Sales of soybean seeds in Latin America more than doubled with the launch of new varieties and integrated solutions. Diverse Field Crops continued to show strong growth driven by sunflower in Argentina, with the acquisition of Maribo in sugar beet contributing 2%. Vegetables continued their track record of strong growth with expansion in all key crops.

Mike Mack, Syngenta's CEO, said: "In the third quarter of 2011, positive volume momentum continued and crop protection pricing improved as a result of the actions we have implemented. Our performance reflects the breadth of our portfolio, augmented by rapid growth in new crop protection products and the expansion of our corn trait coverage. In addition we expect the launch of integrated offers, such as our solutions for soybean in Latin America, to further reinforce our market positions.

Bayer reports on its Q3 sales

Bayer's CropScience subgroup raised sales by 2.8% (Foreign exchange and portfolio adjusted 9.4%) to €1,379 million in the third quarter of 2011. While business at Crop Protection expanded due to substantially higher volumes, sales were down at BioScience and Environmental Science. A positive factor was the favourable market environment, with high prices for agricultural raw materials. The subgroup posted substantial growth in sales in the Latin America/Africa/Middle East and Asia/Pacific regions, where business expanded by 13.8% and 12.5%, respectively, on a currency-adjusted basis. CropScience also made modest gains in Europe and North America, where sales rose by 2.3% and 2.2%, respectively.

In the Crop Protection segment, all product groups delivered encouraging growth. The seed treatment business in particular advanced substantially, with sales up by 35.1% (Fx & portfolio adj). Despite the cessation of marketing for older products such as *Temik*, the insecticides business also registered a significant improvement of 10% (Fx & portfolio adj). Sales of fungicides and herbicides grew by 10.5 and 6.2%, respectively (Fx & portfolio adj).

By contrast, the BioScience business unit, which specialises in seed and traits, experienced a considerable drop in sales, 20.9%. Business in the third quarter was weak particularly for canola and

cotton seed in North America. However, double-digit growth rates were recorded for both crops over the first nine months. Sales of the Environmental Science business unit moved back by 3.2% (Fx adj) in the third quarter.

EBITDA (earnings before interest, tax and amortisation) before special items of CropScience was up by 47.3% to €165 million. This increase resulted largely from significantly higher volumes and improved capacity utilisation. The underlying EBITDA margin advanced to 12.0% from 8.4% in Q3 2010.

The CropScience business has continued to trend positively. In terms of sales, the subgroup aims, as before, to grow by a high single digit percentage (Fx & portfolio adj) in 2011. In light of the good business performance in 2011 to date, it is planned to expand EBITDA before special items by more than 20% compared to the weak prior year.

BASF posts 9% increase in 3rd quarter sales

BASF's Agricultural Solutions division posted a 9% increase in sales to €908 million in the third quarter of 2011. The very good start to the season in South America made a significant contribution to this improvement. Stronger volume growth of 12% in all regions and 3% higher sales prices more than offset negative currency effects. EBITA increased 23% to €137 million.

In Europe the third quarter began successfully. There was a strong demand for canola herbicides in France and Eastern Europe which led to sales growth. Weather related factors in North America pushed the application period for corn and soybean fungicides into the third quarter and helped the company to achieve higher sales than in the same quarter of the previous year. BASF posted high sales growth in Asia with the development of the fungicide business in India contributing to the success. The company also had a very good start to the growing season in South America. There was an especially strong demand for the newly launched *AgCelence* production system as well as for insecticides. Sales growth was also supported by the rapid expansion of the business with the herbicide tolerance technology *Clearfield*.

Nine months sales were up by 5% to €3,343 with EBITA up 50% over the same period.

Dow Chemical's Agricultural Sciences reported record third quarter sales

Dow Chemical's Agricultural Sciences reported record third quarter sales of $1.205 billion, up 27% compared with the same period last year. Volume increased 18% and price rose 9%. EBITDA for the segment was $75 million, compared with a loss of $12 million last year. Sales for the first nine months of the year were up by 20% to $4,311 million compared with the same period in 2010. Double digit sales and volume gains were reported in all geographic areas, led by Latin America. The company says that the business continues to benefit from solid industry fundamentals, with elevated farm income levels providing strong incentive for farmers to maximise yields.

Agricultural Chemicals reported demand growth of more than 20% driven by continued adoption of new products and increased sales of range and pasture herbicides in Latin America, cereal herbicides in Europe, and corn and soybean herbicides in the US. In Seeds, Traits and Oils, corn seed volume grew more than 15% versus the same period last year. Year to date, Seeds, Traits and Oils has reported demand growth of more than 25%, with significant gains in key crops, including corn and cotton. The business finished a solid cotton season in the US, having grown its market share over the last two seasons to nearly 20% in 2011, helped by an increase in US planted acres and continued penetration of *PhytoGen* cottonseeds. In corn, the business continued to report good adoption of *SmartStax* hybrids in North America.

DuPont's agriculture segment sales up 41% in Q3

DuPont's agriculture segment, which includes both agrochemicals and seed business, posted a 41% increase in sales to $1.368 billion in the third quarter of 2011. Volumes were up by 26% and selling prices up by 15%. DuPont say that sales boomed due to a strong, early start to the Latin American season.

For DuPont's seed subsidiary Pioneer, volume and price growth was delivered in both corn and soybeans. Crop protection sales increased across all regions and market segments, led by continued strong demand for *Rynaxypyr* insecticide. Sales rose by 18.5% to $7.869 billion in the first nine months of this year. The agriculture segment recorded a PTOI (pre-tax operating income) of $1.743

billion, up 18% compared with the same nine month period last year. Given the strong performance in the third quarter, the company has raised its expectations for full-year 2011 earnings. Expectations for the fourth quarter include slowing global growth, some destocking, and the recognition that a portion of Agriculture sales in Latin America was shifted to the third quarter by the early start of the planting season.

FMC agricultural products grow by 24% in Q3

Sales gains in all regions boosted FMC's agricultural products' revenue by 24% to $382.1 million in the third quarter of 2011. Earnings increased 7.7% to $80.9 million, driven by the broad-based sales growth, partially offset by higher raw material costs, less favourable product and geographic mix and increased spending on focused growth initiatives. In addition, earnings were unfavourably impacted by a currency-related adjustment due to the rapid devaluation of the Brazilian Real at the very end of the quarter. Sales for the first nine months of the year rose by 16.3% to $1,055 million, and earnings were up by 11.4% to $275.7 million.

The highest growth was realised in Latin America, particularly Brazil, driven by continued strong market conditions in key crops such as sugarcane, cotton and soybeans. In Asia, sales were also up significantly, as a result of newly launched products, market access initiatives and favourable market conditions in most key countries, including India, Pakistan, China and Thailand. In North America, higher insecticide volumes drove the sales gain. In Europe, the sales increase was driven by strong herbicide volumes.

Agricultural Products is expected to deliver its eighth consecutive year of record earnings, up approximately 10%. The company says: "Consistent with our Vision 2015 objectives, we are making focused investments that raise our growth trajectory. In Agricultural Products, we have established Ruralco Soluciones, a joint venture in Argentina to directly access the country's large and growing agrochemicals market and formed collaborations with Chr. Hansen and Marrone Bio Innovations in agricultural biologicals."

Chemtura AgroSolutions sales up 13%

The recovery in European demand continued to benefit Chemtura's AgroSolutions segment. Net sales increased by $12 million or 13% to $105 million in the third quarter of 2011, due to increased sales volume. Sales improved in all regions, except Asia Pacific. The first nine months sales were up 14.2% to $290 million, and operating profit jumped by 108% to $25 million.

EXOSECT FOCUSES ON COLLABORATIVE LICENSING

*Exosect (**www.exosect.com**), the Winchester, UK, based biological control company, is moving into a new phase of its commercial development. Since its establishment in 2001, the business has been developing and marketing novel products for the control of specific pests and diseases in different market sectors and across four continents. Bruce Knight visited the company recently to learn how its strategy is evolving.*

Exosect started as a spin out from developments at Southampton University. Since its formation and expansion it has attracted around £13m of investment mainly from venture capital companies. The main investors include WHEB ventures, Oxford Capital Partners, Entrepreneurs Fund, MTI Partners and Hygea.

What singles out Exosect's technology from other biopesticide companies is the delivery system based on Carnauba wax. The wax is obtained from the leaves of a species of palm, *Copernica cerifera*, which grows in the northeastern regions of Brazil. It is referred to as the 'Tree of Life' and has a number of applications in many industries, including cosmetics and pharmaceuticals. However, the Southampton scientists showed that the wax when micronised becomes electrostatic and sticks to insects, and to plants and seeds which themselves are also electrostatically charged. The micronised wax, known as *Entostat,* when formulated together with biological controls or conventional chemistry provides a highly efficient delivery system for pest and disease management. The technology is protected by a significant IP portfolio, with 41 patents granted and over 50 more pending.

A diverse product range

The first commercial product, *Exosex CM*, was introduced in 2005 and is based on pheromones for the control of codling moth, *Cydia pomonella*, in apple and pear orchards. The product is dispensed via traps, and causes mating disruption, but the targeted delivery of pheromone to the pest via the *Entostat* platform means that far fewer traps are required through the season. This makes maintenance for the grower much easier. Exosect does not try to promote its biological pesticides as total replacements for synthetic agrochemicals and works alongside agrochemical companies in developing integrated pest management (IPM) strategies.

Exosex CM can play an important part in keeping control of codling moth late in the season when agrochemical usage has to be limited to avoid exceeding permitted residue levels in the harvested fruit. The product is manufactured at the Winchester facility and marketed mainly in the UK and Western Europe. The company has built up a distributor network for *Exosex CM* in important fruit growing countries of the EU. The US, however, presents a more difficult market to penetrate, requiring critical in-market presence. So for the US, Exosect are currently seeking a commercialisation partner for registered and approved products.

Most of the products marketed to date by Exosect are based on *Entostat* technology and pheromones. Pipeline projects are now expanding the versatility of *Entostat*, as a platform technology capable of delivering an increasing array of bio-conventional ingredients. The Yellow Stem Borer moth, *Scirpophaga incertulas*, is a serious pest of rice crops in Asia. Working with a distributor in India, Exosect has successfully introduced *Exosex YSBTab* into the Agriculture Technology Management Agency (ATMA) farmer education programme. By adopting IPM, based on the placement of 80 dispensers per hectare, control of the pest has been maintained and increases in the population of beneficials achieved.

Aside from the products developed for agriculture, Exosect has achieved success in introducing products for the control of stored product pests and for cockroach control, applied via pest control operators (PCOs). *Exosex* relies on the *Entostat* pheromone system to create mating disruption for a wide range of moth pests in food related industries. Non-food applications include a product for the control of the clothes moth, *Tineola bisselliella*, *Exosex CLTab* which is currently used to protect textiles in historic locations such as the UK's Hampton Court Palace and the Royal Opera House. Also introduced by PCOs, *Exoroach* is a cockroach trap using the *Entostat* powder as the trapping system. Exosect have established specialist distributors for the PCO sector in most markets of western Europe as well as Japan and, in the case of *Exoroach*, India and the US.

The new strategy

Exosect's strengths lie in its R & D capability and specifically its formulation skills. The company has ensured that each new product idea meets a market need although some markets are quite small and specialised. But in a competitive environment, and faced with increasingly complex regulatory hurdles to overcome, the resources needed to service the product range internationally are considerable. So since the beginning of 2011 the strategy has changed to embrace the licensing out of new technologies. Existing products will still be sold through the established distribution network and where opportunities exist new sales distributors will be sought. However, for new developments the focus will be on licensing.

An important precedent in the licensing out of new technologies was established in November 2010. Bayer CropScience acquired the rights for the marketing of an *Entostat* based system for the control of varroa mites, *Varroa destructor*, in bees. The varroa mite is a relatively new parasite of the honey bee but is understood to be a crucial factor in the decreasing number of honey bee colonies in Europe and North America. Bayer's product will be based on the miticidal activity of thymol spread amongst bee colonies through the *Entostat* system. In announcing the acquisition last November, Bayer CropScience stated that the first commercial introduction would be in the US with registrations to follow in major European countries.

Martin Brown, Exosect's CEO, described how the company business plan had been restructured over the last year. Now a team of 21 people are actively working towards developing more collaborative arrangements based on *Entostat* and other novel developments. He sees the benefits of developing relationships with multinational organisations which can offer the scale necessary for registering and commercialising products internationally. Martin Brown summarised the dual approach now being adopted: "We will still be working hard to build on our existing product range through our established distribution network. However, through new relationships with large multinational companies, and through licensing arrangements, we will have the flexibility to build on our R & D skills and to apply our technologies to different markets along the food chain. The collaboration with Bayer CropScience has been our first success in following this strategy."

Exosect is making much of the fact that its technologies have potential right across the food supply chain, from seed treatment, to crop production, post-harvest storage, food manufacturing and in to retail outlets.

While the *Entostat* platform technology, and particularly the inclusion of pheromones, has been core to the company's progress so far, investigations are underway looking at the opportunity for combining naturally occurring fungal products with the micronised Carnauba wax. Primary applications for this technology will be in the protection of stored grain pre and post-harvest from damage caused by beetle infestations, as well as novel seed treatment applications.

CROPWORLD GLOBAL

*CropWorld Global 2011 (**www.cropworld-global.com**) took place on 31 October to 2 November 2011 at the London Excel. The congress provided another opportunity for international delegates from over 75 countries to discuss the key issues facing the crop production industry. It featured some 120 expert speakers and 70 exhibitors who were showcasing their products and services. In this month's issue of* Crop Protection Monthly *we report from some of the important plenary sessions. There will be further coverage from the topic-based modules in the November issue.*

The Field to Fork debate

This session offered contributions from across the breadth of the food chain. Dominic Dyer, CEO of the UK's Crop Protection Association (CPA), sounded a note of some optimism that the public were beginning to understand the food security issues affecting all of us as the global population rises. A survey among UK consumers conducted by the CPA showed that consumers did relate the risks to food availability to shortage of water, the high price of oil, and terrorism. Mr Dyer said: "They are also beginning to understand the importance of crop protection. This is important, because as the world's population reaches seven billion, the stark reality is that without access to the most advanced farming methods, food prices will continue to rise and production will fall short of food security goals." His observation on organic production, however, was that while it had a part to play it should not dominate policy.

Also representing the input end of the chain was Pierre Lahutte, director of global marketing for the agricultural machinery company New Holland Agriculture. He described some developments in grape harvesting designed to improve efficiency and minimise the carbon footprint. In vineyards by generating a harvest map it is possible to determine the best parts of the field and the worst. Then the grapes can be loaded into one of two hoppers, one for high quality grapes and one for lower quality. It is also possible to regulate nitrogen fertiliser rates spatially and to reduce the carbon footprint by up to 40%.

Andrew Opie, food director of the British Retail Consortium (BRC), outlined how the UK supermarkets were addressing responsible sourcing and marketing of food in order to minimise the environmental impact. He argued that, to a degree, supermarkets can influence both suppliers and consumers. In sourcing produce consideration is given to the impact on carbon footprint, water requirements and land use. The responsible purchase of palm oil is a good example. Issues that the BRC and the supermarkets are addressing through dialogue with suppliers and farmer organisations are animal welfare and sustainability. A major effort is also being directed towards establishing policy guidelines and communication programmes to reduce food waste.

During the discussion that followed Andrew Opie explained that more rapid changes were generally achieved through dialogue with private sector organisations. Public sector bodies were not as nimble. This was the case with its work on palm oil. During the discussion it was pointed out that the import of food into the EU was equivalent to the production capability of Germany. Mr Lahutte made the point that for Europe to improve productivity it could take five to 10 years to restore the soil of agricultural land to its true potential.

Biotech and beyond

The plenary session entitled *Biotech and beyond* aimed to look beyond the impact of the current developments in biotechnology. Dr Roger Beachy was the founding president of the Donald Danforth Plant Science Centre, St Louis, and is now affiliated as an Emeritus Professor. While recognising the value of current crop biotechnology developments, Dr Beachy listed a number of areas of future research that deserve attention. Improvements in crop seeds capable of withstanding stresses such as drought and temperature extremes are urgently needed. He gave the example of canola and pointed to the fact that existing varieties cannot generally be grown effectively where temperatures exceed 23-25°C.

Dr Beachy sees the need to harness the discoveries of smaller companies and to link these with public sector science. However he recognises that science and technology alone is not enough. There is still a big investment gap compared with other industries.

Dr Felix M'mboyi, from Kenya, is deputy director of the African Biotechnology Stakeholders Forum. His message was that Africa is now at a crossroads. The continent had missed out on the green revolution and so now needs to develop its own strategy for the adoption of GM crops and not be led too much by the attitudes and regulatory rules applying in the EU. Dr M'mboyi, listed those countries which were on course, through R&D effort, to catch up and progress the technology: Ghana, Mauritius, Namibia, Kenya, Nigeria, Uganda, Zambia, Zimbabwe, and Malawi. Crops under evaluation are maize, cotton, sweet potatoes, sorghum and cassava. Kenya has turned the corner and is now importing GM maize.

Dr Macy Merriman, Senior Government and Biotech Affairs manager for Europe at DuPont Agriculture & Nutrition, Pioneer Hi-Bred, described some of the work being undertaken by Du Pont/Pioneer. The introduction of drought tolerance traits has been an on-going objective for many years for Pioneer, through conventional breeding. Now it has the opportunity to take advantage of modern methods but the approach is to bring about improvements through a holistic approach rather than focusing on single traits.

Among the priorities is work on enhanced oilseed crops such as soya. Dr Merriman said there were one billion people in the world living a food challenged existence and at the same time there were more than one billion people categorised as obese. He said a high oleic soya with 20% less saturated fat was in the pipeline. The oil quality will be close to that of olive oil. Improvements in the digestability of sorghum, consumed by 300 million people in Africa, is also being advanced through a consortium based on funding from the Gates Foundation, Warren Buffet and Du Pont.

Mike Bushell, principle scientific advisor at Syngenta, outlined some collaborative research programmes in the UK relevant to plant varieties and crop protection. One is looking at system biology via the whole cell system and the processes involved in root development and growth. Better understanding of root growth mechanisms will lead to improved possibilities in crop design. Imperial College London and Nottingham University are Syngenta's partners in this project.

Dr Hans Kast, a biotech advisor to BASF, tackled the political issues. He said that worldwide 150 GM crops have been approved for cultivation. Yet the EU, in the face of fierce public opposition and a strict regulatory regime, has approved just two – an insect resistant maize and a potato grown for starch - which he said represents a 'huge disparity'. He blamed the EU regulatory regime, which is making it impossible for biotech companies to produce new products. "The politicians do not allow the consumers to have choice. This means at the end of the day EU farmers and EU consumers will suffer because farmers will not be able to compete with global agriculture and the consumer will pay too high a price for food." He welcomed the approach taken by the UK towards biotechnology, driven by the findings of the Foresight report, but said the EU's rejection of GM crops was forcing the biotech industry to target other markets.

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