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international news, comments, features and conference reports

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LEAD ARTICLES

BAYER OUTLINES STRATEGY FOR FUTURE GROWTH

Bayer CropScience's strategy for future business growth was presented by CEO Sandra E Peterson at the company's recent annual press conference in Monheim, Germany. One year after her appointment she spoke of the four pillars that would now drive the business. "Our entire organisation is relentlessly focused on meeting the rapidly changing needs of a planet hungry for agricultural resources," said Ms Peterson. "We will continue to meet these needs only through increased focus, improved efficiencies and accelerated innovation. These efforts are already delivering positive business results."

Restructuring and rejuvenating the crop protection business

The company is restructuring and rejuvenating its crop protection business by phasing out older products. "By the end of 2012, we will no longer have WHO class I insecticides in our portfolio. They will be replaced by modern, targeted and more environmentally friendly formulations," announced Ms Peterson. Bayer is also increasing its focus on key brand families, extending its geographic presence further into emerging markets and developing its supply chain operations. Ms Peterson pointed to the introduction of the company's new cereal fungicide *Xpro* (bixafen) which she said was a good example of how chemical innovation and engineering expertise could be translated into improved efficacy and efficiency. Bayer reported over €100 million sales of the fungicide in Europe in its first six months in the market in 2011.

The company is also strives to leverage customer-centricity across the value chain to deliver solutions from seed-to-shelf. This, she said, involves increased grower orientation and improved channel management practices as well as state-of-the-art customer relationship tools. Bayer intends to use its well known brands to broaden its already successful food chain partnership business model through cooperation with multinational food companies and retailers. "We are uniquely positioned to connect with everyone along the value chain from seed-to-shelf to create sustainable programmes," said Ms Peterson.

Increasing emphasis on BioScience

Bayer also intends to increase its emphasis on the BioScience business unit and new growth areas in agrochemical research. It will double its current spend of €200 million on bioscience R&D by 2015. Its total R&D budget is expected to rise by around 20% to more than €850 million by 2015. "With our knowledge of biology, genetics, biochemistry and life science chemistry, we are well placed to pursue holistic agronomy innovations", Ms Peterson stressed. Going forward, Bayer CropScience plans to further build its leading positions in cotton, oilseeds and vegetable seeds, areas where the company has outpaced the growth of the global seeds & traits market in 2010, and continues to do so in 2011. In addition, the company intends to build significant positions in soybeans, rice and wheat, which represent three out of the four global broad acre crops.

In soybeans, Bayer says it will establish a broad germplasm base, develop best-in-class breeding operations and a unique soy trait pipeline. In rice, the world's second largest staple crop, the company says it continues to drive hybrid rice adoption in Asia and supports farmers in the region to grow "Much More Rice" through an agronomic programme under this name. Wheat has also been designated a major strategic crop and the company is putting significant resources into research and development of new wheat varieties and traits. "When our global customers turned to us to find new ways to raise productivity of wheat cropping, we listened to them and built a world-class research platform for wheat genetics", Peterson said, referring to a series of alliances and cooperations the company has agreed on with leading partners in the industry. The first new wheat varieties resulting from this initiative are expected to reach the market by 2015.

Ms Peterson said that she sees many opportunities for Bayer CropScience to propel future growth. The fruits and vegetable segment offers particular good perspectives in this regard, she noted. The company plans to achieve sales of about €3 billion with seeds, traits and crop protection solutions for fruits and vegetables by 2020.

Improving business performance

Ms Peterson said she was pleased with business performance in 2011. In the first half of the year, the company delivered record results with sales reaching €4.2 billion. Adjusted for currency and portfolio effects, that is an 11% gain on last year. Despite adverse weather conditions in important growing regions, Bayer CropScience has seen strong performances in both its Crop Protection and BioScience segments in key markets. In Crop Protection the company realised a currency and portfolio-adjusted growth of 10% to €3.24 billion. The BioScience business delivered a 25% sales increase to €598 million. Sales at Environmental Science came in at €364 million. Bayer CropScience also delivered a 34% increase in earnings before interest, taxes, depreciation, and amortisation (EBITDA) which grew from €911 million in the first half of 2010 to €1.22 billion this year.

SYNGENTA BID FAILS

Syngenta has failed in its bid to temporarily force Bunge Ltd (**www.bunge.com**) to accept its *Agrisure Viptera* GM corn until a lawsuit over the issue is resolved. Syngenta sued Bunge last month (*August CPM*), claiming its decision not to accept the corn is unlawful. US District Judge Mark W Bennett in Sioux City, Iowa, ruled that Syngenta has "no likelihood of success on the merits of its claims" and denied the company's request for a preliminary injunction. "Bunge's decision to reject *Viptera* corn at all of its locations was a legitimate and reasonable business decision," said the judge. "The injunction would impose prodigious costs on Bunge for a situation that Bunge did not create," he added.

"The lawsuit is only part of Syngenta's determination to secure greater clarity for growers regarding industry marketing practices for newly approved technologies, enabling them to market their grain with confidence," Paul Minehart, a spokesman for Syngenta, said. "From this perspective, our determination is unchanged."

EUROPEAN NEWS AND MARKETS

DEFRA APPROVES TESTING OF GM WHEAT

The Department of Environment, Food and Rural Affairs (Defra) has approved the UK's first GM wheat trial, which will be conducted by the Rothamsted Research Institute in 2012 and 2013. The research will assess wheat that has been genetically modified to resist aphids. UK Ministers approved the trial after the independent Advisory Committee of Releases to the Environment (ACRE) advised Defra it was satisfied that it would not result in any adverse effect on human health or the environment. Defra said precautionary conditions have been attached to the statutory consent for the trial to ensure that no GM material will enter the food and feed chain.

The trial will feature wheat plants, which will carry two new genes that lead to the production of a 'volatile chemical', known as (E)-β–farnesene (EBF), naturally produced by many other plants. The chemical is known to repel aphids and to attract their natural enemies to the plant. The trial will examine whether the GM wheat plants are better able to resist aphids under field conditions. It will take place at Rothamsted's experimental farm at Harpenden, Hertfordshire and will start in March or April 2012, with the plants harvested in August or September. The process will be repeated in 2013.

Dr Tina Barsby, chief executive of the National Institute of Agricultural Botany (NIAB), welcomed the decision. She said: "This experiment will allow British scientists to properly evaluate resistance to an agricultural pest that is highly destructive to wheat stocks worldwide. It has been rigorously assessed for safety, and will permit testing under realistic field conditions."

The trial has been condemned as a 'big mistake' by anti-GM campaigners. Pete Riley of GM Freeze said the authorisation letter from ACRE showed it had concerns about the possibility of the GM wheat crossing with couch grass, a major arable weed, while there were also concerns about wild birds carrying the GM seeds off site. The consent, however, does include provisions to prevent the GM wheat crossing with couch grass and to stop wood pigeon feeding on the crop. Mr Riley went on to say: "The key question Ministers need to answer is why they are funding research into GM wheat for which there is no market in the UK, Europe or anywhere else when other areas of proven, less risky agricultural research, such as agroecology, are crying out for additional funds."

AGROVISTA AND OPENFIELD JOIN FORCES

The UK crop protection, amenity and agronomy business Agrovista (**www.agrovista.co.uk**) is entering a strategic alliance with the farmer owned grain marketing and arable inputs business Openfield (**www.openfield.co.uk**). The immediate benefit will be the establishment of joint trials and shared information. Through its 130 agronomists and its national network of distribution depots Agrovista will provide the agronomic and technical focus. Openfield`s national supply network for seed and fertiliser, detailed knowledge of end markets and experience in export and domestic markets will provide complete crop solutions for growers. Both companies say they share similar values and have a compatible management approach and vision for the marketplace, with business synergies in the UK and beyond. James Robertson, managing director and group chairman of Agrovista, said the alliance would offer an alternative, independent approach to the market based on technical excellence and expertise.

CERTIS AND FUTURECO FORM ALLIANCE IN IBERIAN COUNTRIES

Certis Europe and Futureco Bioscience (**www.futurecobioscience.com/en**) have reached agreement on a strategic alliance between the two companies in the Spanish and Portuguese markets. Certis Europe will be responsible in both countries for the commercial development of Futureco Bioscience's products through its normal distribution channels. The agreement includes bioinsecticide products, botanical extracts and plant defence activators (*Botanigard, BestCure, Rootgard*) and special bioactivators (*Bioradicante, Citogrower, Ecormon, Frutaliv*), as well as, in the near future, products currently in development or in the process of registration by Futureco Bioscience.

Pedro Juan Serna, country manager of Certis Spain, said: "This alliance enables us to expand the valuable portfolio of Certis Europe in Integrated Pest Management technologies and will contribute significantly to strengthening our offer in crop protection solutions available to growers in Spain and Portugal."

BAYER CROPSCIENCE AND VIB-UGENT COLLABORATE

Scientists from Bayer CropScience and the research institute VIB-UGent (**www.vib.be**), Belgium, are collaborating to develop crops with higher yields and improved tolerance to stresses such as drought or soil salinity. In a first project, researchers will look at epigenetic differences between different crop varieties as a basis for selection of new characteristics. In a second project, scientists will computationally analyse the genes that are involved in the response of plants to high-stress situations such as drought. Both research projects are supported financially by the IWT, the national agency for the promotion of innovation by science and technology in Flanders, Belgium. The study results are to be published in leading scientific journals.

Epigenetics is a natural phenomenon in plants and animals that regulates how hereditary material is read and used. Depending on external factors, such as long periods of drought, genes causing the plant response are activated to a greater or lesser extent from the DNA. These changes are passed on to progeny, even though they are not stored in the DNA sequence. “With the new joint research project, we aim to develop epigenetic control as a new molecular tool for the improvement of agricultural crops”, said Dr Johan Botterman, head of BioScience Product Research at Bayer CropScience.

AMERICAN NEWS AND MARKETS

ARYSTA RESTRUCTURES IN LATIN AMERICA

Arysta LifeScience is restructuring its Latin American business unit to include Mexico and Central America. Until now, the company's operations in these two countries have functioned as part of its North American business unit. When the restructuring is completed by the end of the year, the new Latin American business unit will be the largest of the six Arysta LifeScience business units worldwide, the others being North America, Europe, Africa Middle East, North Asia and South Asia.

"The acquisition of the Grupo Bioquímico Mexicano (GBM) business several years ago strengthened our overall presence in the high-value fruit and vegetable crop market in South America," said Flavio Prezzi, business unit head for Latin America. "The GBM portfolio of plant nutrients and growth stimulants is a natural fit with the Arysta LifeScience crop protection portfolio." Mr Prezzi has extensive experience in Mexico and Central America, having served as president and CEO for Syngenta in Mexico, as well as general manager for Syngenta in the Central America region, prior to joining Arysta LifeScience. Luis Villa, who played an important role in the 2007 acquisition of GBM, is the manager for Arysta LifeScience Mexico and Central America and will report to Mr Prezzi.

BAYER GRANTED LICENSE TO BRAZILIAN RICE BREEDING PROGRAMME

Bayer CropScience has been granted exclusive worldwide license rights to the rice breeding programme of the Brazilian company Fazenda Ana Paula. As a result the company will gain access to unique rice germplasm. The agreement will enable Bayer to enhance its breeding capability and development of hybrid rice for Brazil and further expand its global business. "Hybrid rice will play an important role in meeting the need for increased global rice production demanded by over half the world's population. We are already a world-wide leader in hybrid rice seed with *Arize*, and we intend to enhance our hybrids further – with superior genetics and a world-class hybrid seed operation", said Dr Mathias Kremer, head of the BioScience business unit at Bayer CropScience. "Fazenda Ana Paula started its hybrid rice breeding programme in 2000 when we brought a team of specialists from China to help us run the research project," said Haroldo Pimentel Stumpf, head of the research division of Fazenda Ana Paula.

FMC TO DEVELOP BIOFUNGICIDE IN LATIN AMERICA

FMC Corporation has signed an exclusive development and distribution agreement for Marrone Bio Innovation's (MBI) *Regalia Maxx* biofungicide in Latin America. The biological product, based on an extract from the giant knotweed, acts on the plant's immune system to control diseases, increase yields, stimulate roots and increase seed germination. "We believe *Regalia Maxx* is an outstanding biological product and are very excited about developing it for several of our growth markets in Latin America," said Antonio Zem, Latin America area director, FMC Agricultural Products Group. "The fungicide has an important fit in integrated pest management (IPM) programmes and potential applications for other crops that we look forward to developing with MBI."

Regalia Maxx has already received registration in Mexico where FMC tested the product with excellent results against powdery mildew and Botrytis gray mold/bunch rot in speciality crops. Sales are expected to begin in December of this year. FMC has also tested the product in Brazilian vegetable crops and plans to expand development to other South American territories. Under the agreement, FMC will also develop improved formulations and premix products in collaboration with MBI.

NEW USES FOR DOMARK

Valent USA and Isagro have announced that the fungicide *Domark* (tetraconazole) has received registration from the US Environmental Protection Agency (EPA) for use on field corn, popcorn and seed corn. *Domark* is a triazole and according to both companies, it is a unique option for a corn segment where strobilurin fungicides are predominant. As a triazole, *Domark* has preventive and curative activity, while strobilurins are limited to preventive control. According to Valent, tetraconazole is more effective than other triazoles against a broader range of diseases in soybeans and corn, including leaf spots (gray leaf spot, eyespot), rusts (common, southern) and leaf blights (anthracnose, southern corn leaf blight) in corn.

Gerald Holmes, Valent product development manager, also believes this alternative mode of action will be an important tool in growers' resistance management toolboxes. He said: "Resistance management is an important issue for many corn growers who are limited to mostly strobilurin products," Since its introduction in the US the fungicide has been an effective tool in the control and prevention of major soybean diseases such as white mold, frogeye leafspot and purple seed stain—without causing green stems at harvest. Mr Holmes said that in corn trials conducted in the 2011 season, results indicate that *Domark* effectively controls yield-robbing diseases which, in turn, protects yield potential.

PASTEURIA AND SYNGENTA STRENGTHEN PARTNERSHIP

Pasteuria Bioscience has strengthened its relationship with Syngenta by entering into a licensing and distribution agreement for its existing and future turf grass products. This agreement is in addition to and separate from its previous agreement that announced a global alliance for developing and commercialising bio-nematicide products based on *Pasteuria* spp in a broad variety of agricultural and speciality crops.

As a result of the new agreement, Syngenta will obtain the biological nematicide *Econem*, the first commmercialised product containing *Pasteuria*. Introduced in the southeastern US in 2010, the product provides an environmentally safe, cost effective and reliable approach for controlling sting nematodes in turf grass. In addition to *Econem*, Syngenta will also secure the rights for all new turf products in the Pasteuria Bioscience research and development pipeline. "This agreement strengthens our relationship with Syngenta and serves as further validation of our technology," said Dr David Duncan, CEO for Pasteuria Bioscience. "We are excited about Syngenta's plan to resource and fully realise the potential of these *Pasteuria*-based products in the golf course and other turf grass markets."

OTHER NEWS AND MARKETS

SYNTECH RECEIVES ACCREDITATION IN GERMANY AND JAPAN

SynTech Research (**www.syntechresearch.com**), the global contract research organisation (CRO), has been granted Good Experimental Practice (GEP) accreditation for its facilities in Germany. The company started operating there in 2009 and has established sites near Kiel in the north (Schleswig-Holstein) and near Munich in the south (Bavaria). Dr Colin Ruscoe, director for Europe and Africa, says "SynTech Research is now in a position to further expand its services within Germany. The company and its partners now have GEP licenses for all our operations in Europe (France, Italy, Spain, Hungary, Austria, Czech Republic, Portugal and the UK). In 2012 we will be expanding into Poland, initially as a satellite to our Hungarian operation."

In Japan, SynTech Research received Good Laboratory Practice (GLP) recognition following audits by the Food and Agricultural Materials Inspection Centre (FAMIC). Paul French, director for Asia Pacific, says "This is a significant achievement, as Field GLP is only just being introduced in the country. SynTech Research was the first international CRO to start operations in Japan, in 2008." In addition to its main site at Ibaraki, Honshu, SynTech Japan is able to work in all regions and crops throughout Japan, using its satellite sites in Hokkaido, Shikoku and Kyushu.

LONZA TO MANUFACTURE FOR PASTEURIA

Lonza has announced a new manufacturing agreement with Pasteuria Bioscience. The agreement secures a process transfer and manufacturing plan to produce *Pasteuria* spores in Lonza's biochemical plant in Kouřim, Czech Republic. The biological nematicide developed by Pasteuria Bioscience is based on the natural microbe, *Pasteuria* spp, found in soil and known to infect and kill harmful nematodes. Lonza will start manufacturing in late 2011. John McGrath, head of Lonza Biological Manufacturing, said: "The collaboration fits well with our existing technology and manufacturing expertise and is fully aligned to our biochemical strategy." Dr Kelly Smith, chief technical officer for Pasteuria Bioscience added: "We are pleased to be partnering Lonza as a manufacturer of our *Pasteuria* products. The company offers significant fermentation expertise as well as the ability to scale-up manufacturing in order to meet our global needs for bionematicides."

DOW TO COLLABORATE WITH HRZ WHEATS

Dow AgroSciences has entered into an agreement with HRZ Wheats, a wheat breeding company established in 2003 with the specific target of providing wheat farmers in the high rainfall zone of Australia with high yielding, milling quality varieties. Dow AgroSciences joins existing investors CSIRO, New Zealand Plant & Food Research, Landmark and the Grains Research & Development Corporation (GRDC). Under the agreement, Dow AgroSciences and HRZ will exchange wheat germplasm, and HRZ will gain access to advanced breeding services, technologies and funding to help accelerate the delivery of superior wheat varieties to Australian farmers. "Wheat breeders have not had the full benefit of the advanced breeding technologies that have been developed for use in high value row crops over the past 20 years, so the rate of increase in crop yield has not kept pace," said Peter Dryden, Dow AgroSciences' regional commercial unit leader for Australia and New Zealand. "At Dow AgroSciences, we see wheat as an important global crop so we are excited to be providing the HRZ breeding team with access to the knowledge and tools that we have developed in working with crops like corn, cotton, canola, soybeans and sunflowers. In essence, we hope this investment will mean better products come to the market more often."

BAYER USES PRECISION BIOSCIENCE'S TECHNOLOGY ON COTTON

Bayer CropScience and Precision BioSciences have successfully inserted a gene into a specific desired location in cotton using Precision's Directed Nuclease Editor (DNE) technology. This technical achievement will mean that Bayer can deliver more precise, innovative solutions sooner to farmers and has triggered a milestone payment to Precision. Scientists at Bayer CropScience used an enzyme known as a DNE engineered meganuclease produced by Precision to target the insertion of a transgene near an existing transgene in a plant line. This approach could reduce the time required to produce a new plant characteristic and removes the complexities associated with current product development methods. This is the first known report of a site-specific insertion using an engineered nuclease in cotton.

Precision's DNE technology, which is based on the production of DNA-cleaving enzymes called engineered meganucleases, enables crop researchers at Bayer to delete, insert, or otherwise modify genes at user-defined sites within plant genomes. By facilitating the direct introduction of value adding traits into plant species, the technology can streamline product development and reduce the time it takes to get a product ready for the market. Dr Johan Botterman, head of BioScience product research at Bayer CropScience, said: "This technology milestone is a world first and delivers enormous capacity for Bayer to precisely target and more efficiently deliver significant benefits in key crops to farmers globally. This is just the beginning."

BAYER AND EVOGENE REACH MILESTONE ON WHEAT

Bayer CropScience and Evogene have reached a milestone in their joint research collaboration in wheat. Utilising Evogene's proprietary tools, more than 200,000 single-nucleotide polymorphisms (SNPs) across the wheat genome were identified as part of the companies' efforts to improve wheat through the application of advanced breeding techniques. SNPs are single-nucleotide substitutions of one base in the genome and a powerful type of molecular marker for traits improvement. Identifying SNPs across the wheat genome is an essential step towards improving desired traits in wheat through advanced breeding. The wheat genome is approximately five times the size of the human genome and this creates a major challenge for breeders in implementing advanced breeding techniques. The identification of a significant number of SNP markers improves the overall understanding of the wheat genome, and therefore facilitates the utilisation of this knowledge to deliver desirable improvements in wheat.

In December, 2010, Bayer CropScience and Evogene entered into a five-year collaboration aimed at accelerating the development and introduction of improved wheat varieties. The collaboration is focusing on improving wheat yield, drought tolerance and fertiliser use efficiency. The successful creation of the genome-wide SNP dataset for wheat was obtained from a broad collection of wheat lines from multiple locations world-wide. This dataset is being integrated into Evogene's *EvoBreed* technology platform to broaden and accelerate the implementation of advanced breeding approaches for wheat. "We want to improve wheat to tackle issues like climate change and the decline of mineral resources used for fertiliser," said Mathias Kremer, head of Bayer's BioScience business group. "This research milestone is an important step towards that goal, and will enable Bayer CropScience to deliver improved wheat varieties to growers sooner."

BAYER CONDUCT JOINT RESEARCH ON OILSEED RAPE WITH CHINESE

Bayer CropScience and the Chinese Oil Crops Research Institute (OCRI) (**www.oilcrops.com.cn**) have entered an agreement to conduct a joint research in oilseed rape. The two organisations are seeking to increase seed oil content and to improve resistance against the fungal disease Sclerotinia. "We continue to intensify our research activities in Asia and we look forward to working with OCRI, a leading scientific institution with strong resources," said Dr Joachim Schneider, head of the BioScience business at Bayer. "By improving our high-yielding oilseed rape hybrids further and by strengthening disease resistance, we intend to help farmers more effectively tackle agronomic challenges and become more productive and profitable. Bayer is a market leader in North America with *InVigor* hybrids and our crop protection solutions. Our plans to further expand our business into other oilseed rape-growing regions such as Europe and Asia-Pacific, with countries like India and Australia, will give even more farmers greater choices in quality hybrid oilseeds," Dr Schneider continued.

Sclerotinia, a widespread fungal disease in oilseed rape, can cause yield losses up to 20%. Bayer CropScience and OCRI work will utilise molecular breeding and genetic engineering to better protect the crop. "At OCRI, we have made desirable progress in developing high-oil content and Sclerotinia-resistant oilseed rape lines and duplicating related genes using modern biotechnology techniques. Since around 60% of the edible oil consumed in China relies on imports, further cooperation with Bayer CropScience based on our progress is helpful to increase the global edible oil supplies. This cooperation will therefore contribute to improving the vegetable oil security of China in return," said Dr. Hanzhong Wang, director general of OCRI-CAAS.

The agreements build on a cooperation framework between Bayer CropScience and the Chinese Academy of Agricultural Sciences (CAAS) which was established in 2008. Under this framework, Bayer CropScience is engaged in establishing collaborations with CAAS-affiliated institutes such as the OCRI. The Institute is based in Wuhan, China. It is a national centre that specialises in research and development of oil crops including rapeseed, soybean, peanut, sesame and other minor oilseed plants, established in 1960 and sponsored by the Ministry of Agriculture (MOA).

MONSANTO AND GRASSROOTS EXTEND THEIR COLLABORATION

GrassRoots Biotechnology and Monsanto have agreed to extend their existing three-year research collaboration for an additional two years through to January 2014. The alliance will build upon the success of the current collaboration, focusing on the design and development of promoters that enable crops to express trait genes that enhance and protect yield. Promoters are segments of DNA that determine when and where a trait gene is expressed. Monsanto is expected to use expression elements sourced from GrassRoots to optimise an array of biotechnology traits in a broad range of crops including corn, soy, cotton, and canola. The agricultural biotechnology industry still relies heavily on a few promoters that were discovered 20-30 years ago. Monsanto says that these cannot confer the precise, tissue-specific control of gene expression that are necessary for the development of the next generation of biotechnology crops which will be better able to tolerate biotic and abiotic stresses.

GrassRoots employs a computational biology approach for promoter discovery that relies on the generation and analysis of high-resolution expression data sets from both model systems and commercial crops. Promoters are then characterised with the patented *RootArray* technology. *RootArray* enables researchers to monitor gene expression in the roots in 3D over time, and under different environmental conditions. "The goal of GrassRoots' expression element research and development is to produce a tool kit of different genetic elements that can be combined to predictably and reliably control gene expression," said Dr. Philip Benfey, GrassRoots' CEO and co-founder.

MONSANTO ACQUIRES BEEOLOGICS

Monsanto has acquired Beeologics (**www.beeologics.com**), an international company which researches and develops naturally-occurring processes to provide targeted pest and disease control. The company is focused on biological research and current projects in its pipeline include a product being developed to help protect bee health. Monsanto says biological products continue to play an increasingly important role in supporting the sustainability of many agricultural systems. The company will therefore use the base technology from Beeologics as a part of its continuing discovery and development pipeline. Both companies expect that their combined research will provide farmers with a number of novel approaches. Monsanto's proven expertise in managing a technology pipeline will be used to support the Beeologics team and its Technology Advisory Board in advancing its pipeline. Beeologics' work to promote bee health will continue under Monsanto's ownership and marketing expertise.

UNITED PHOSPHORUS TO WORK WITH ISK IN INDIA

United Phosphorus Ltd (UPL) has entered an agreement with Japan-based Ishihara Sangyo Kaisha (ISK) for the production of certain agrochemicals. The company also announced plans to form a joint venture with ISK and Mitsui & Co for the development, registration and distribution of ISK products in India. The companies are also exploring possible co-operation in countries other than India. ISK will continue to focus on R&D, especially the discovery of new novel molecules. Some 90% the company's total turnover for agrochemical sales, 41.0 billion Japanese Yen ($530 million), is coming from proprietary products.

ISK will be able to access UPLs manufacturing base as well as its Indian marketing network where it has an 8% market share. UPL currently has eight manufacturing facilities in India and one in both the UK and Argentina. It is considered to be one of the most competitive producers of agrochemicals in India and one of the fastest growing generic companies globally with a direct presence in 35 countries and sales in more than 80 countries.

ISK is strengthening the stability and global competitiveness of its production by establishing multi-production sites for technical materials. Its agrochemical products are already being produced in Europe, North America, Korea, China and Brazil as well as Japan.

CHEMINOVA AND CHEMIFERT FORM JOINT VENTURE

Cheminova and Chemifert SAL have signed a letter of intent to form a joint venture company, Agrinova SAL that will distribute crop protection products in the MENA region (Middle East and North Africa). Cheminova has established sales in the region in Algeria, Tunisia, Libya, Egypt, Sudan, Djibouti, Jordan, Syria, Lebanon, Turkey, Iran, Iraq, Qatar, Kuwait, Oman, Bahrain, UAE, Yemen, and Saudi Arabia. The new venture will ensure that the increasing demand for product support can be met by an experienced team that is located in the territory. "We have been facing a challenge in recent

years to sufficiently resource our existing portfolio in MENA region and as we look to the future, our development pipeline will ensure that even more support for our partner distributors will be required," said Monther Yacoub, business manager for Cheminova in Africa Middle East. The co-operation which became operational on 12 September 2011 will focus exclusively on the crop protection portfolio of Cheminova. Agrinova's headquarters is located in Beirut, with representation offices in key locations across the region.

NUFARM RESULTS REFLECT A REPOSITIONNING OF GLYPHOSATE

Nufarm Limited has reported that it has generated a statutory headline loss of $49.5 million for the 12 months to 31 July 2011. The company says that material items amounted to a net loss of $148 million and included a non-cash impairment charge of $70 million on the carrying value of Nufarm's Brazilian assets. However, excluding the impact of material items, the company reported an underlying net operating profit of $98.3 million. The company also announced on 12 September that it had executed a binding settlement agreement in relation to an ongoing receivables dispute. The settlement resulted in a partial recovery of proceeds associated with the receivable ($13.5 million) and the subsequent write down of unrecovered funds. The write down has been treated as a material impact in the 2011 accounts and resulted in an after tax loss of $28 million. Other one-offs included legal and consultancy costs, and restructuring charges, particularly those relating to a re-organisation of the sales force in Brazil. This compares to an underlying net operating profit of $58.6 million in the previous year.

Operating earnings before interest and tax (EBIT) – prior to the impact of material items – was $192 million, an increase of 42% on the $135 million recorded in the 2010 financial year. Group revenues decreased by 4% to $2.08 billion, with sales of glyphosate down 30%. The company says that the operating result, however, represents a considerable improvement on the previous year. It reflects a repositioning of glyphosate within the business and strong growth in higher value, non-glyphosate product segments, which is consistent with the strategic direction of the company.

Nufarm says that its business was exposed to a mix of climatic conditions during the 2011 financial year. Australia experienced generally positive conditions, while Nufarm's businesses in key northern hemisphere markets were negatively impacted by climatic factors. The company completed a comprehensive strategic review during the period, resulting in a stronger focus on growth in non-glyphosate product segments. Important progress was made during the year, with those segments generating a 6% increase in revenues and contributing to an improvement in overall gross margin to 28% (2010: 26%). As expected, the glyphosate segment remained very competitive. Raw material costs and finished product pricing were, however, less volatile than in the previous two years and this increased stability in the glyphosate segment contributed to more efficient purchasing and inventory management.

Nufarm elected not to participate in some glyphosate market segments where margins were unacceptable. Glyphosate sales represented 20% of total revenues (down from 28% in 2010) and generated an average gross margin of 15% (2010: 12%). Insecticide sales increased 24% year on year; fungicide sales were up by 18% and sales of non-glyphosate herbicides increased marginally. Seed and seed treatment sales were up strongly (57%), assisted by the first full year of earnings contributions from businesses acquired during the 2010 financial year.

Nufarm's Nuseed business achieved substantial growth in sales, margin and EBIT in the 2011 period. Seed segment sales were $65.7 million, compared to $41.9 million in the previous year. Segment profit was $18.8 million (2010:$5.4 million).

Sumitomo Chemical Company (Sumitomo) increased its shareholding in Nufarm during the 2011 financial year and now owns 23% of issued capital. Nufarm and Sumitomo completed a number of agreements to co-operate via product distribution arrangements and research and development projects; and in relation to toll manufacturing and logistics. These agreements provided Nufarm with the ability to distribute Sumitomo products in a number of markets around the world. The addition of these products helped Nufarm to diversify its product offerings and accelerate growth into higher value market segments. Both companies continue to investigate further areas of possible co-operation.

The company says that the general outlook for the agriculture sector remains positive over the short to medium term. Soft commodity prices are expected to remain relatively high, encouraging growers to maximise yields. Given favourable weather conditions, cropping activity in Nufarm's major markets should be strong. The company will continue to focus on diversification of its product portfolio and growth into higher value market segments in the 2012 financial year. Further growth is expected in

non-glyphosate segments, driven by additional marketing and sales focus, introduction of new products, and access to additional products via the strategic relationship with Sumitomo Chemical. Several insecticide products will be phased out in Brazil in the 2012 period, due to regulatory requirements. Replacement products are being introduced and the company is confident of being able to consolidate its much improved performance in that market in 2011.The glyphosate segment is forecast to remain very competitive and the company expects to generate an average gross margin on glyphosate sales generally in line with that achieved in the 2011 period.

MONSANTO REPORTS ON ANNUAL SALES

Monsanto has reported net sales of $2.2 billion for the fourth quarter of fiscal year 2011 and net sales for the fiscal year of $11.8 billion both better than the company had forecast. Chairman and CEO, Hugh Grant, said: "As we bring this year to a very successful close and look at what is to come, it is clear that we have turned a corner and returned to growth mode. We made a conscious effort to reconnect with our customers, and from that earned significant sales growth for seeds and traits and created positive momentum for 2012. Through the combination of advanced product platforms, a more balanced business and increasingly global opportunities, I believe we have the essential elements in place to achieve mid-teens growth in fiscal year 2012."

Seeds and Genomics net sales were $1.4 billion for the quarter, a 39% increase over the previous year. For the year, sales for the Seeds and Genomics segment reached $8.6 billion, a 13% increase over 2010 driven by strong global growth in corn and cotton. Latin America continues to be a significant driver for the company's Seeds and Genomics segment. Corn led the segment for the year, driven by growth in South America, with additional improvements in the US and Europe. In the US Monsanto's branded corn volume grew by the largest increment in three years and outpaced the market expansion. The company earned a 10 million acre (4 million ha) increase to reach 13 million planted US acres for its *Genuity Reduced Refuge* family. In 2012, it is the company's objective to earn 22 million to 24 million acres for the *Reduced Refuge* family

The Agricultural Productivity segment consists of crop protection products and lawn and garden herbicide products. Segment sales for the fourth quarter reached $896 million, with gross profit of $181 million. For the year, the segment delivered net sales of $3.2 billion with gross profit of $773 million.

Overall Monsanto reported a net loss of $112 million in the fourth quarter of fiscal year 2011 and a net income of $1.6 billion for the fiscal year with an EBIT of $2.4 billion.

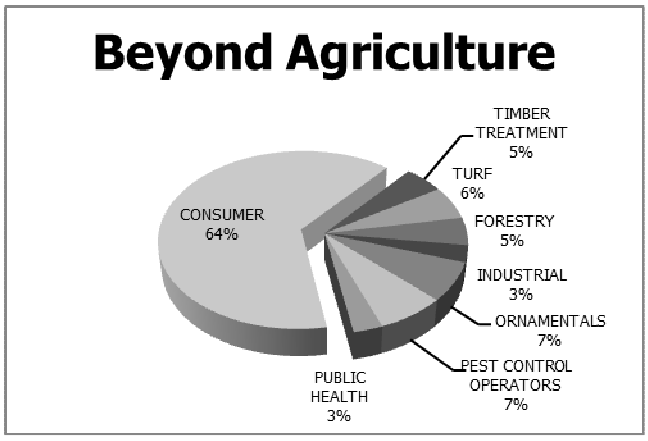
The Seeds and Genomics segment, which saw significant gross profit increase in 2011 and represents the growth area for Monsanto's business in fiscal year 2012 and beyond, is expected to deliver single digit percentage unit volume growth and continued mix improvement. The company expects Seeds and Genomics gross profit in the range of $5.7 billion to $5.85 billion for the coming year. Gross profit for the Agricultural Productivity segment is expected at around $800 million. The company's research and development spend is projected at $1.4 billion to $1.45 billion.

CONFERENCE AND FEATURES

NON-CROP PESTICIDES: STEADY GROWTH

*Twenty years ago the non-crop pesticide market was a peripheral appendage of the crop protection market. Today, Beyond Agriculture - the new name for non-crop - has developed into a strategically significant part of the overall pesticides business. Rod Parker of GfK Kynetec (**www.gfk.com/gfk-kynetec**) discusses his company's latest detailed global non-crop survey, the 7th in a series that began in 1992, which values the market at over $21 billion at end user level and rising.*

The survey shows that there has been growth across almost all established markets including Germany, Italy, Spain, Japan and Canada, as well as the more predictable emerging countries like Brazil, China, India and South Africa. It has also been recorded in all segments of the market from (pest control operators) PCO and turf, to ornamentals, public health, forestry, industrial vegetation control, timber treatment, and above all to the consumer over the counter (OTC) home and garden market which alone accounts for over 60% of the total.



Source: GfK Kynetec 2011

It was difficult in the past to persuade some in the industry that Beyond Agriculture would prove durable, but now there is a firm record of steady growth over 20 years and levels of profitability for manufacturers, distributors and retailers that often exceed the crop market. This has begun to draw in new investors, including some of the big names in consumer branded products, who join others like Scotts that have been there for many years.

The current economic recession, however, is impacting on a few markets, especially the US which contracted by 8% between 2006 and 2009 but is already showing signs of bouncing back – just as it did after the slowdown at the end of the 1990s.

If you add to this the continuing opposition of many governments and much of the media to pesticides in general, it leads one to ask what the drivers of demand are that have sustained a significant expansion over such a long period ? In the answer may lay a clue to where Beyond Agriculture will be five to 10 years hence.

The $21+ billion market is equivalent to an average per capita expenditure for the whole world of $3.00- $3.10. This compares to $26 in Canada, $19 in Japan, and just $1.30 in China and $0.50 in India. An increase of only $0.10 in China and India expands the world market by $250 million – exactly the level of growth that has been achieved in some recent years.

More importantly perhaps, the evidence of the last few years would suggest that once purchasers of home insecticides and rodenticides have got used to the benefits of fewer bugs and mice in their homes, they are very reluctant to give up the aerosols, coils and other devices that provide such significant enhancement to their quality of life – embracing as it does both the element of convenience but perhaps more significantly that of health.

Looking ahead, the possibilities are that with a world population expected to reach 7.25 billion by 2015 (according to the World Bank), the global Beyond Agriculture market could be worth $25-30 billion. It is

little surprise, therefore, that investors new and old are again examining this reliable and remunerative business. With price and income elasticities of demand expected to remain low, suppliers especially to the OTC home and garden market see a combination of factors that are rare and appealing for consumer products - steady growth, good profitability and consumers somewhat less resistant to price increases for improved products than in many other markets.

DEVELOPMENTS IN EU PESTICIDE REGULATIONS

Recent developments in the registration of plant protection products were discussed at the latest AgChem Forum *organised by Informa LifeSciences The event was held in Barcelona on 7/8 September. The conference was split into three main themes: regulatory frameworks, human safety, and environmental safety. Peter Chapman of the consultancy company, JSC International Ltd (**www.jsci.co.uk**) reports on some of the main topics presented in the EU regulatory frameworks stream; including feedback from EFSA, the transition between Directive 91/414 and Regulation 1107/2009, Annex I renewal and zonal authorisations.*

EFSA feedback

Herman Fontier, European Food Safety Authority (EFSA), reported on his organisations current workflows. The resubmission programme was almost finished involving a total of 85 substances. There is only one EFSA conclusion to be delivered by the end of 2011. As far as the backlog of new active substances was concerned there were 71 substances at various stages in the procedure. In addition EFSA has to deliver conclusions on the 59 'green track' active substances from Stage 4 of the EU review. Five conclusions have already been finalised. Peer review is ongoing for 45 substances, with 30 expected to be finalised in 2011.

Transition between Directive 91/414 and the new Regulation 1107/2009

The transition between Directive 91/414 and the new Regulation 1107/2009 was addressed by a regulator, Darren Flynn from the UK regulatory authority CRD, and Jean-Pierre Busnardo, DuPont's EU regulatory affairs manager, for industry. One of the key issues concerned timelines and whether all member states are applying the new Regulation in the same way.

As far as time lines were concerned these were set out in both the regulation and related guidance documents with separate time lines for the approval of active substances and the authorisation of products. As far as the application of the regulation was concerned there ought to be no scope for deviation. However, there have been indications that some member states have been making their own interpretations of the regulation based on what they considered to be the 'intention' discussed during negotiations on the legislation. It was also stressed that there had to be the political will to make the regulation work.

Detailed examination of the timelines for approval of active substances raised a number of concerns especially in relation to ensuring that MRLs were in place and that classification and labelling issues were resolved in parallel and did not delay final approval. Timelines for the authorisation of products were centred on the zonal assessment procedure and subsequent mutual recognition in other member states. The regulation provides for 12 months for zonal assessment, 120 days for following zonal authorisations and a further 120 days for mutual recognition. The guidance document expands on this by allowing eight months for zonal assessment plus a further six weeks for commenting and 10 weeks for completion and authorisation.

Zonal steering committees and an inter-zonal steering committee were now in place. Up until now it had been possible for the rapporteur member state (RMS) specified by the applicant to be allocated. However, there was a role seen for the steering committees if there is a resource issue for the member states in meeting the applicant preference. The quality of submissions and the ability of the RMS and timely commenting by other member states will be critical in meeting the timelines for granting zonal authorisations. With regard to mutual recognition some member states have indicated that they will not mutually recognise authorisations granted under 91/414, others have said that they will, provided that the application is supported by a transparent assessment report.

From the industry perspective there was a call for proper communication between all interested parties. Growers should collaborate with industry to make best use of the provision for minor use in the regulation. The regulatory authorities had a role to play in providing clear leadership, making adequate staffing and other resources available, respecting each others' evaluations and being pragmatic in their approach. Industry had to get better at rigorously planning its strategies, submitting applications to different member states across zones and taking an active role in agronomic research in order to provide alternative solutions for growers.

Annex I Renewal

Jeroen Meeusen from DG SANCO provided an update on progress being made with the EU active substance renewal programme. All decisions had now been taken on the substances included in the pilot project (AIR-1), with recommendations produced in a summary document. The regulation for the renewal of the second group of 31 substances had been published in December 2010 (Regulation 1141/2010). Dossiers for this second group of substances were due to be submitted in three batches in February, May and August, 2012. Two substances were not being supported under the procedure and would have their approval withdrawn. As far as the third group of renewals were concerned there are still a number of unresolved issues in relation to the feasibility of extending approval periods and when the revised data requirements would apply. In principle AIR-3 would cover 149 substances for which approval expires during the period 2013-2018, with all decisions being taken before the end of 2018. Submissions will be in batches over a three year period. The timelines are expected to be the same as those set for the second group of substances.

Zonal authorisation

Feedback on experience with zonal authorisation work sharing was given by a regulatory authority representative from each of the three zones. The main messages from the presentations given by Tove Jern from Finland, Maarten Trybou from Belgium and Hara Panagopoulou from Greece were that experience of operating under Regulation 1107/2009 was somewhat limited. It is, however, already becoming clear that the timelines are very demanding. As a consequence it was likely that the evaluation of the dossiers submitted for voluntary work sharing will be given a lower priority because they do not have strict regulatory timelines. Some steps had already been taken to get better harmonisation between member states. However, national differences in data requirements and risk mitigation on the basis of climatic conditions and tradition was causing some difficulty.

It was emphasised that early discussion between the applicant and the zonal rapporteur was extremely important as was discussion between zones in the interzonal steering committee and at RMS level. A worrying concern coming out of the discussion was that many of the major RMSs already had a full workload for 2012 and were now allocating slots for evaluations in 2013. Applicants were urged to make sure that they used the facilities of all the member states. A firm message was delivered that it was important that applicants read, understood and acted in accordance with published guidance documents. Applications should now always be submitted as a zonal dossier, the consequence being that non-zonal applications would be given a lower priority. A further concern was raised in respect of mutual recognition as some member states have stated that they would be unable to recognise authorisations granted under 91/414 and others stating that they could only recognise authorisations based on an up to date registration report.

REDUCING PESTICIDE USE AND RISK

Reducing pesticide use and risk remains high on the agenda of EU member states, and for the third time since 2007, a member state has taken advantage of its EU Presidency to organise a policy seminar on the issue. The latest seminar was staged earlier this month by Poland's Ministry of Agriculture and Rural Development, and focused on Sustainable use of pesticides and Integrated Pest Management (IPM) in East-Central Europe and the Baltics*. The event was held on 5-6 September at the Plant Breeding and Acclimatisation Institute, IHAR, in Radzików, Poland. It was attended by 104 participants from 12 countries. ENDURE (the European Network for the Durable Exploitation of Crop Protection Strategies) provided the scientific support for the seminar which was set up to provide delegates involved in agricultural research, policy and extension with the opportunity to share and strengthen links.*

Marek Sawicki, Poland's Minister of agriculture and rural development, opened the conference and stressed the important role that research plays in supporting the development of new approaches to crop protection that meet the demands of the public. He said that the use of biotechnology in crop protection was a currently a major diversion.

The meeting demonstrated that there was a certain level of regional coordination already in place. Examples given were the PesticideLife+ project which facilitates exchanges between Nordic and Baltic countries to promote the goals of the Framework Directive on the sustainable use of pesticides. The project Decision Support System (DSS) Herbicide has been set up to adapt a Danish online decision support system for weed management for use in Northern Germany and Poland. Nordic countries were regularly meeting to discuss pesticide resistance issues through the Nordic Baltic Pesticide Resistance Action Group (NORBARAG). Opportunities for cross-European exchange, however, are scarce, hence the interest in initiatives such as this one.

Representatives from the Polish government gave details about a proposed national action plan to reduce the risks associated with the use of plant protection products. The plan, which is currently undergoing public consultation, makes a number of references to IPM within the framework of Integrated Production. Emphasis is placed on the need for market incentives to favour IPM and the creation of an Integrated Production label is part of this approach.

The economics of IPM were addressed in several presentations. Speakers from Slovakia and Hungary, for example, explained that past IPM initiatives in those countries had been based on national programmes relying on farmer subsidies. In other countries, such as Lithuania, the introduction of training programmes were the main approach used to promote IPM.

Resistance to pesticides was also highlighted, in particular management approaches to monitor and prevent it. The issue of using doses lower than the manufacturers' recommended rate was also addressed, particularly the fear that this could favour the evolution of resistance. Current experimental evidence, however, shows that satisfactory control of weeds and diseases can frequently be obtained with less than the recommended dose without adding to the risk of resistance.

From Germany, the concept of 'necessary minimum' was explained to delegates. It is an original expert-based communication and evaluation tool whose baseline shifts every year. The 'necessary minimum' describes a level of pesticide use that combines efficacy and the minimum quantity necessary taking into account a diversity of parameters, including local circumstances and availability of non-chemical measures. The discussion brought to light the challenge of defining a necessary minimum quantity that would enjoy widespread acceptability.

Much attention was also given to the more technical dimension of crop protection, including realising the potential of biological control, implementing the Integrated Production guidelines produced by the International Organisation for Biological Control, further developing plant breeding and mitigating environmental impact with optimal pesticide use techniques.

The meeting showed that there is a demand and a need for cross-European interactions and that ENDURE, as a facilitator and as a source of tools and resources can play an important role in this respect.

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