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international news, comments, features and conference reports

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LEAD ARTICLES

OXFAM LAUNCHES CAMPAIGN AGAINST HUNGER

A broken food system and environmental crises are now reversing decades of progress against hunger according to a new Oxfam analysis. It says that spiralling food prices and endless cycles of regional food crises will create millions more hungry people unless we transform the way we grow and share food. Oxfam has launched a new global campaign to ensure everyone has enough to eat always. The GROW campaign is backed by high profile supporters including former President Lula of Brazil, Archbishop Emeritus Tutu and actress Scarlett Johansson.

A new report, *Growing a Better Future* (**www.oxfam.org/en/grow/reports/growing-better-future**) catalogues the symptoms of what Oxfam describes as today's broken food system: growing hunger, flat-lining yields, a scramble for fertile land and water and rising food prices. It warns that we have entered a new age of crisis where depletion of the earth's natural resources and increasingly severe climate change impacts will create millions more hungry people. New research predicts that the price of staple foods such as maize, already at an all time high, will more than double in the next 20 years. Up to half of this increase will be due to climate change. The world's poorest people who spend up to 80% of their income on food will be hardest hit.

The report goes onto say that eight million people face chronic food shortages in East Africa today. Increasing numbers of regional and local crises could see demand for food aid double in the next 10 years. By 2050 demand for food will rise 70% yet our capacity to increase food production is declining. The average growth rate in agricultural yields has almost halved since 1990 and is set to decline to a fraction of one percent in the next decade.

Jeremy Hobbs, executive director of Oxfam, said: "Our world is capable of feeding all of humanity yet one in seven of us are hungry today. In this new age of crisis, as climate change impacts become increasingly severe and fertile land and fresh water supplies become increasingly scarce, feeding the world will get harder still. Millions more men, women and children will go hungry unless we transform our broken food system."

Oxfam's GROW campaign intends to expose the governments whose failed policies are propping up the broken food system and the powerful companies who benefit from and lobby hard to maintain it. It says that four global companies control the movement of most of the world's food. Three companies, Archer Daniels Midland, Bunge and Cargill, control an estimated 90% of the world's grain trade. Oxfam says their activities help drive volatile food prices and they profit from them. In the first quarter of 2008, at the height of a global food price crisis, Cargill's profits were up 86% and the company is now heading for its most profitable year yet on the back of further disruptions to global food supplies.

Oxfam says it has been responding to food crises for 70 years. Now it is calling on governments, especially the powerful G20, to lead the transformation to a fairer more sustainable food system by investing in agriculture, valuing the world's natural resources, managing the food system better and delivering equality for women who produce much of the world's food. It is calling on the private sector to shift to a business model where profit does not come at the expense of poor producers, consumers and the environment.

Jeremy Hobbs says: "For too long governments have put the interests of big business and powerful elites above the interests of the seven billion of us who produce and consume food. G20 Governments meeting in France this year must now kick start the transformation of our global food system. The G20 must invest in the 500 million small scale farms in developing countries which offer the greatest potential for increasing global yields and they must help them adapt to a changing climate. They must also regulate commodity markets and reform flawed biofuels policies to keep food prices in check.

"Governments must also ensure that women, who produce much of the world's food, have the same rights to land, resources and opportunities as men. It says that with equal rights women producers could feed themselves, their families, and up to 150 million additional people."

The UK's Crop Protection Association (CPA) welcomes Oxfam's focus on the global food security challenge, but warned against discounting the role of intensive, large-scale farming systems in

meeting the world's future food needs. The CPA expressed concern that the Oxfam report was quick to dismiss the role of large-scale, 'industrialised' agriculture in meeting future food needs, instead focusing almost exclusively on efforts to increase the productive potential of small-scale producers in developing countries. CPA's chief executive Dominic Dyer said: "The recent Foresight report called for the 'sustainable intensification' of global agriculture, highlighting the potential for new and existing technologies and practices to boost farm productivity in both developed and developing regions of the world. The Oxfam report, by contrast, suggests that 'modern agro-industrial farming is running faster and faster just to stand still' and calls instead for a renewed focus on the productive potential of smallholder agriculture in developing countries. In doing so Oxfam risks missing vital parts of the food security challenge and the solution. All farmers, large and small, need to find sustainable ways to increase their production. We also need to reduce waste, improve information systems, trade policy and many other aspects, but the key lies in raising global agricultural productivity."

EUROPEAN NEWS AND MARKETS

BAYER ENFORCES ITS EUROPEAN IMIDACLOPRID PATENT

Bayer CropScience has successfully enforced its European patent for imidacloprid against a number of agrochemical suppliers within the EU and against a generic manufacturer based in China. Action was taken by Bayer against Agropharm Limited (UK), Roots Ingenieros (Spain) and Eastsun Chemical Co. Limited (China). The infringers, who unlawfully sold imidacloprid produced in China to customers within the EU and elsewhere, all settled out of court.

The case reinforces Bayer CropScience's commitment to defend its intellectual property rights and sends a strong signal to infringers. The company says it was successful in penetrating the entire supply chain from the manufacturer of the infringing product in China through its distribution chain in the EU and on to the actual end customers and individual users. Bayer says that strong patent protection is the basis for its high level of innovation. It is, therefore, on constant alert for any activities that infringe its intellectual property rights including patents, trademarks and copyrights.

EXOSECT COLLABORATES WITH SYLVAN BIO

Exosect has signed a collaborative agreement with Sylvan Bio (**www.sylvaninc.com**), a company specialising in fungal based solid substrate fermentation. The agreement covers the development of a formulation of an isolate of the entomopathogenic fungi, *Beauveria bassiana (Bb*), and Exosect's delivery system *Entostat*, initially for the control of grain store pests. The deal follows five years of government funded research on *The grain store project*, an Exosect led consortium researching into alternative insecticides for the control of pests in stored grain, along with Sylvan Bio, the not for profit organisation CABI and the UK's Food and Environment Research Agency (FERA).

Martin Brown, managing director at Exosect, commented: "We are extremely pleased to be working with Sylvan Bio on this collaboration as it is one of the few companies capable of producing fungal isolates using solid substrate fermentation to a commercial scale. The agreement is very timely for the grain store industry. While regulators continue to remove traditional chemistry from this market sector, modern, effective and environmentally acceptable technology is in huge demand. This type of technology is completely new to the grain store market sector and will greatly benefit post harvest residue reduction targets." Exosect and Sylvan Bio intend to have a regulatory dossier in place in the EU and the US in 2013.

DANISH SCIENTISTS DEVELOP AN INTELLIGENT SPRAYING BOOM

The amount of pesticides applied by farmers can be reduced significantly by using new technology that Danish scientists are developing with support from the Danish National Advanced Technology Foundation. Senior scientist Peter Kryger Jensen from the Department of Integrated Pest Management at Aarhus University said: "We expect that by using an intelligent spraying boom with an integrated camera, a vision system and a module for treating the photographs, as well as individual control of the closing and opening of each nozzle, the farmer can reduce the use of herbicides by over 50%.

Mr Jensen says the idea is to spray only when there are weeds present. In a previous project supported by the Environmental Protection Agency the scientists developed a robotic spraying machine that could self-drive and spray in the field. Now the task is to get the robot to 'think' so that it only opens the nozzles when there are actual weeds to be found in cell areas measuring only a few square centimetres. "In the earlier project we developed a sprayer that could drive on its own and spray very small cells," says Mr Jensen. "The next step is to produce a prototype for an intelligent spraying boom that can register the need to spray and, if there is a need, then to carry out the task within a very short space of time."

The system takes an image of the crop and any weeds in the area. It must then differentiate between crop and weed, identify the weed species and decide which nozzles on the spraying boom to open. Since the driving speed in the field is typically 2-3 metres per second, there is only a very short time span from when the image is taken until the nozzles open and the weed is treated. "We have found a valve that can react within six milliseconds," says Mr Jensen. Studies will be carried out with the intelligent spraying boom in the maize fields during the next growing season. The three-year project is a collaboration between Aarhus University, University of Southern Denmark, University of

Copenhagen, Claas Agrosystems and T&O Stelelectric Development. The University of Southern Denmark is leading the project that is funded by the Danish National Advanced Technology Foundation.

CROP PROTECTION HAS VITAL ROLE IN EUROPEAN FOOD PRODUCTION

A vibrant, innovative and well-regulated crop protection sector is essential to underpin socio-economic growth and development in Europe. That was the message delivered by Dominic Dyer, chief executive of the UK Crop Protection Association at the Informa Life Sciences' *Research and Development for Crop Protection* conference held on 24-25 May in Barcelona. He said that that by protecting against harvest losses and securing raw material supplies for the EU's food and drink industry, crop protection products have a vital role to play in protecting key economic activities and keeping the lid on food price inflation.

"European farmers are dependent on crop protection products to provide a reliable source of high quality raw materials for use throughout the food chain. In the UK alone the food supply chain is worth in excess of £170 billion ($280 billion), employing over four million people and accounting for almost 10% of the nation's GDP," said Mr Dyer. "Without access to effective crop protection tools, food production across Europe could decline by as much as 50%, adding a huge £750 billion a year to the cost of food. Such an increase would not only put enormous pressure on consumers' pockets, but could also seriously undermine a critical part of the European economy. "As the era of cheap food comes to an end, Europe needs to boost its agricultural productivity to ensure we are not left reliant on importing more food from increasingly volatile international markets," he warned. "If this is to be achieved, policy-makers must place more value on modern, science-based agriculture, including the contribution of a thriving and competitive crop protection industry in Europe." Mr Dyer called on EU decision-makers to develop a regulatory framework which encourages investment in the research, development and innovation needed to provide Europe's farmers with the most effective means of dealing with pests and diseases to protect future food supplies.

"For too long pesticide policy in Europe has been based on poor science and dominated by the prejudiced views of NGOs and campaign groups who seek to demonise pesticide use," said Mr Dyer. "In a world where population growth, climate change and increasing competition for land, water and energy are rapidly driving up food costs, we can no longer allow this trend to continue. The time has come to recognise and promote the true value of crop protection to the economic and social development of Europe."

NEW PROPOSAL FOR EU ENDOCRINE DISRUPTOR DEFINITION

There is increasing concern about the use of endocrine disrupters as pesticides. These chemicals, which may cause harm to the body by interfering with hormones, may have widespread uses and should be regulated appropriately. The new EU Plant Protection (PPP) Regulation (1107/2009) includes an exclusion criterion for approval for any substance, safener or synergist that has endocrine disrupting properties that might have adverse effects in humans unless exposure under proposed conditions of use is negligible. A similar exclusion criterion has been introduced in the proposed new Biocidal Products Regulation (5604//1/11) and the REACH Regulation (1907/2006).

The UK and German regulatory authorities have now developed a proposal for the criteria used to identify endocrine disrupters of very high concern. They have been working together to voice their views on these provisions and in order to initiate a debate with other relevant stakeholders, including, other member states, the European Food Safety Authority, and the European Commission.

They propose that a substance be regarded as an endocrine disrupter of very high regulatory concern when it alters the functions of the endocrine system and consequently causes adverse effects in an intact organism, or its offspring. And in doing so satisfies the following criteria:

- adverse effects to have been seen in one or more toxicity studies of acceptable quality, in which the substance was administered by a route relevant to human exposure;

- a plausible mode of action/mechanistic link between the toxic effects of concern and endocrine disruption to have been inferred;

- the effects seen in experimental animals to be judged to be of potential relevance to human health;

- serious adverse effects related to endocrine disruption to have been produced at a dose at or below the relevant guidance value for the application of Category 1 "Specific Target Organ Toxicity-Repeated Exposure, STOT-RE" classification and labelling.

Critics argue that the UK and Germany are proposing to turn the 'cut-off' regime back into the traditional risk assessment regime. They say that a risk assessment regime is not very science-based and makes use of many assumptions and theoretical calculations and rarely leads to a ban. They say that the two countries are undermining the Commission's position before it has started to develop a proposal for criteria, due to be published in 2013.

PAN Europe is urging the European Commission to stick to the 'cut-off' regime and not allow any change in the text of the Regulation. It proposes a test system for endocrine properties together with independent, actively publishing scientists to be sure the system is science-based and the public protected. It says a strong steer from the Commission is needed to change the traditional evaluation methods and to withstand the fierce opposition by member states such as the UK and Germany which are more worried about commercial consequences than human health.

Crop Protection Monthly's regulatory affairs correspondent, Peter Chapman says that the proposal developed jointly by the UK and Germany provides a sound basis for identifying potential endocrine disrupting substances of high concern. It will be key in providing a focus for the further debate required in order for the Commission to develop the necessary criteria for defining potential endocrine disrupting substances.

AMERICAN NEWS AND MARKETS

BAYER OPENS NEW SEED TREATMENT FACILITY IN BRAZIL

Bayer CropScience has opened its new Seed Treatment Application Centre (STAC) in Paulínia, São Paulo, Brazil. Sandra E Peterson, chairman and CEO said: "To further strengthen our business in Brazil, we plan to double our seed treatment revenues by 2016 and are aiming to be a leader in the seed treatment market in Brazil. We are sharpening the company's focus in key areas such as portfolio enhancement in crop protection, investments in seed treatment, new solutions in our seeds and traits business and operational excellence. The excellent agro climatic conditions and significant acreage reserves, coupled with rising prices for agricultural commodities and an increasing demand for renewable raw materials mean that Brazil is a very important agricultural market for us".

Marc Reichardt, head of business operations Latin America Region at Bayer CropScience, said that the STAC will serve as a centre for the transfer of knowledge and technology, and will primarily aim to provide training to seed companies and breeders in soybean, corn, cereals and cotton producing regions. He added that the STAC is focused on products, coating solutions, support and expertise in equipment as well as providing training, qualification and consultancy services. Specialists will work on optimising new formulations and adapting the seed treatments to local conditions."

SYNGENTA TO INVEST IN NEW US BIOTECH RESEARCH FACILITY

Syngenta plans to construct a new state-of-the-art biotechnology research facility adjacent to its existing research campus in Research Triangle Park, North Carolina. The $71 million investment, which is scheduled to begin in June 2011, will focus on discovering and developing new agronomic traits. "This investment demonstrates our commitment to R&D and to remain at the forefront of plant genetics research," said Sandro Aruffo, Syngenta head of Research and Development. Research at the site will focus on traits that can better tolerate climate variability, combat plant stresses such as drought, and enhance crop productivity and plant performance. In addition to the current focus on corn and soybean, research will be expanded to incorporate other crops such as sugar cane, cereals, rice and vegetables. The facility will feature research laboratories and sophisticated growth environments including climate controlled greenhouses and precision growth chambers. It is expected to be fully operational in the second half of 2012.

DUPONT AND BIOTIQUE IN RESEARCH ALLIANCE

DuPont and Biotique Systems (**www.biotiquesystems.com**) have entered into a research alliance to accelerate genetic discovery in agricultural crops globally. Under the agreement, Biotique will provide knowledge and access to its proprietary TITAN solution for next-generation sequence management, market analysis and genotype to phenotype association. DuPont's business Pioneer Hi-Bred will have access to the platform for agricultural applications and will retain all intellectual property for its genetic information and crops produced as a result of the alliance. "Pioneer's sophisticated deployment of new sequencing technologies is bringing new value-added seed technologies to market faster," said John Soper, vice president of Pioneer Crop Genetics Research and Development. "Our work with sequencing the genes in corn plants is helping us improve the crop faster than ever. This alliance will help us bring those advancements to other crops much quicker."

PLANT IMPACT AND ARYSTA FORM NEW RELATIONSHIP

Plant Impact (**www.plantimpact.com**) has reinforced its relationship with Arysta LifeSciences by entering into two new commercial agreements. The first agreement covers the commercial development of the Company's *PiNT* technology in the turf and ornamental markets in the US, including the large US professional golf market. The second covers the commercial development of the Company's *InCa* and *PiNT* technologies for use in horticulture in Brazil. Plant Impact also plans to work with Arysta Lifescience evaluating opportunities in a number of emerging markets such as Africa, Asia and Latin America.

Arysta is also taking a 9.08% stake in Plant Impact through the acquisition of subscription shares. Peter Blezard, Plant Impact's CEO said: "I am delighted that Arysta Lifescience has chosen to invest in Plant Impact so that we can implement this growth strategy together. We feel that this shows industry confidence after several years of successful trials. The proceeds from the subscription will give us the financial strength to continue the growth of other parts of our business." Plant Impact's *PiNT* products use a nitrogen-based technology that is eco-friendly and improves plant growth. *InCa,*

the company's biggest selling product last year, is a calcium delivery system that enables plants to absorb and retain calcium in tissues where it is most needed.

In a trading update Plant Impact has also announced that although revenues from the sale of its crop nutrients were in line with expectations, the ongoing regulatory approval review in the US of its *BugOil* insecticide means that the firm did not receive a £0.5 million milestone payment during the year ended 31 March 2011.

MAKHTESHIM AGAN LAUNCHES FIPRONIL

Makhteshim Agan Industries (MAI) has launched a number of products containing the active ingredient fipronil, a broad spectrum insecticide and the world's leading product against termites in structural pest control and fleas and tick control on companion animals. The launch follows the granting of EPA registrations. MAI says this is the first major generic version of fipronil in the US.

MAI says the launch represents its success in developing and implementing a novel manufacturing process, which is the subject of pending patent applications. Erez Vigodman, president and CEO of MAI, commented: "The development of a significant product such as fipronil, without infringement of existing patents, is a major accomplishment for Makhteshim Agan. The introduction of fipronil strengthens our portfolio and provides us with another opportunity for profitable growth."

MAI's affiliate, Control Solutions, in the US will launch the active ingredient under the brand name *Taurus* for use in the professional pest control market and *Prefurred* for companion animal use. MAI's subsidiary QualiPro will launch a fipronil granule product for use in the professional turf and lawn care markets. "The launch clearly advances our market position in the US; we are especially excited about this portfolio expansion for our environmental solutions segment, which is consistent with our strategy to provide effective solutions to our customers in the Americas region", added Mr Shaul Friedland, head of MAI's Americas region. Following the launch, the company expects to introduce fipronil based products in additional markets worldwide.

In addition to termite prevention and treatment, flea and tick control, fipronil is used as a broad-spectrum insecticide for crop markets in a variety of branded products throughout the world. The active ingredient is used in crop protection mainly for treatment of cotton, potatoes, rice and seed treatment in addition to broad uses for non-crop applications.

US EPA APPROVE DUPONT'S INSECTICIDE PREVATHON

The US Environmental Protection Agency (EPA) has granted registration for DuPont's insecticide *Prevathon* pending state approvals for growers across the cotton and corn belts. DuPont says that cotton and corn growers now have the ability to achieve maximum yield potential and profitability while maintaining effective worm control. The mode of action offered by the product powered by *Rynaxypyr* provides superior protection against a broad range of the most yield damaging worms, including European corn borer, cotton bollworm, beet armyworm, fall armyworm, saltmarsh caterpillar, southern armyworm, corn earworm, and western yellowstriped armyworm.

John Chrosniak, regional director, North America for DuPont Crop Protection, said: "Field trials have proven that *Prevathon* provides outstanding worm control in conventional cotton and corn crops including seed corn production, even under heavy pest pressure, resulting in quality crops that yield greater value at market." Due to its long lasting residual activity the insecticide also improves grower profitability by replacing the multiple spray applications required with other insecticide programmes.

MARRONE BIO RAISES NEW FUNDS

US-based Marrone Bio Innovation (**www.marronebioinnovation.com**) has announced that it closed a $25.4 million private round of financing with three new investors and re-investment by its existing investors. The new investors are Syngenta Ventures, Mitsui Global Investment, and a family investment trust. Existing investors include Stuart Mill Venture Partners, Contrarian Group, Saffron Hill Ventures, One Earth Capital, Clean Pacific Ventures, and Calvert Social Ventures, in addition to several individuals. The financing is being used for expanding global sales of the company's biofungicide *Regalia,* the launch of *Zequanox* (*Pseudomonas fluorescens*) and other pipeline products upon EPA approval and for development of new nematicides, herbicides and fungicides from the discovery screen. "We are very pleased to receive new investment and to have the support of our existing investors. Their size and prominence as well as the amount funded recognise our rapid

progress in the marketplace and unique discovery capability," said Dr Pam Marrone, MBI's founder and CEO.

ARGENTINA APPROVES AGRISURE VIPTERA TRAIT

Syngenta has received approval for the cultivation of its MIR162 trait, Agrisure Viptera, from the Ministry of Agriculture in Argentina. MIR162 offers good control of key insects such as fall armyworm, sugarcane borer and corn earworm as well as other damaging lepidopteran pests. The trait will broaden Syngenta's corn offer in Argentina and will be available to Argentine growers for the 2011/2012 season. MIR162 has already been approved for cultivation in the US, Canada and Brazil.

SUMITOMO APPOINT NEW VP FOR LATIN AMERICA

Gustavo Vasques has been named vice president of Crop Protection for Sumitomo Chemical Latin America (SCLA). In his new role, Mr Vasques will oversee all development, commercial and operational functions for the SCLA business operation. "This new appointment reinforces our commitment to this important region. Mr Vasques brings us strong perspectives from a number of industries and is highly experienced in understanding the distinctive needs and challenges of the Latin American grower," said Mike Donaldson, president and chief executive officer for Sumitomo's Region Americas operations. "I look forward to working closely with him as we provide our unique portfolio of products and active ingredients to Latin America growers, helping them grow more marketable and profitable crops."

Mr Vasques has a long history with Brazilian and Latin American–focused corporations across a variety of business sectors. He spent more than a decade with Monsanto in Brazil. He also held a number of positions within the organisation's food, forage and crop protection divisions. Most recently, Mr Vasques served as general manager for the Brazilian affiliate of Georgia-Pacific, a US-based pulp and paper company.

OTHER NEWS AND MARKETS

COROMANDEL TO ACQUIRE SABERO ORGANICS

The Indian fertiliser manufacturer Coromandel International, part of the $3.8 billion Murugappa Group, is acquiring a 42% stake in the crop protection company, Sabero Organics, for about Rs 250 crore ($56 million). Coromandel will make an open offer to acquire another 31% stake from shareholders of Sabero, taking the total deal to between Rs 400 and Rs 450 crore. "We agreed to pay a premium as, after detailed analysis, we concluded that the acquisition will put us among the top five or six players in the Indian plant protection products market. It will also give us the opportunity to strengthen our formulations business," said Mr Kapil Mehan, managing director of Coromandel International.

With the acquisition, Coromandel will be competing with major players such as Bayer and United Phosphorous in the Rs 8,000 crore domestic crop protection market in India, which is growing at 10-12% annually. The combined turnover of Coromandel in the plant protection products segment will be Rs 1,000 crore, after the acquisition. "More importantly, the acquisition will give us broader access to the $40 billion global market as Sabero exports about 60% of its production and has four subsidiaries in Brazil, Argentina, Australia and Europe. It also has 240 registrations for its key products in 50 countries," Mr Mehan added. Sabero had a turnover of Rs 413 crore in the last fiscal year, with exports contributing Rs 220 crore. It is also setting up a Rs 75 crore plant in Dahej for production of synthetic pyrethroids that have strong export potential**.**

NUFARM TO RECOVER LOST REVENUE FROM MONSANTO

According to the Australian *Financial Review* a long running dispute between Nufarm and Monsanto could finally be drawing to a close. At stake is about $58.9 million, which is what Nufarm believes it is owed by Monsanto, although it never names the US company, always referring to the matter as a dispute with a major supplier. Nufarm is so confident it can extract the sum from Monsanto that the disputed amount has been recorded as a receivable. If it goes the other way its accounts will need some reworking. The dispute centres on sales of glyphosate under a deal struck between the two companies back in 2002. Costs and proceeds associated with Nufarm's sales were to be shared. Glyphosate prices dropped dramatically in 2009, leaving Nufarm with high-cost product it had to sell for much less. Nufarm believes those loses should be shared.

BAYER'S THREE NEW SEED TREATMENT SOLUTIONS

Dr Helmut Schramm, head of Bayer CropScience's seed treatment business, speaking at the recent International Seed Federation (ISF) Congress in Belfast, Northern Ireland said: "We offer our customers comprehensive service packages when giving them access to our new technologies." He spoke about three innovative product solutions *Poncho/Votivo, CropStar* and *Emesto.*

Poncho/Votivo, which was recently launched in the US, combines the efficacy of an established insecticidal seed treatment agent, clothianidin, with innovative nematode protection. This combination product contains a special strain of bacterium *(Bacillus firmus*) which sets up a protective biological barrier around the roots to halt nematodes. *Poncho/Votivo* is available to US farmers in corn, cotton and soybean seed. In addition to combating nematodes the product also prevents infestation by insect pests such as wireworms, black cutworm, seed corn maggots and other yield robbing insects. To support the market launch of *Poncho/Votivo* in soybeans, Bayer CropScience is offering seed dealers a special application system. *On Demand* is a computer-based system that allows customer-specific applications. The ideal combination of insecticidal, fungicidal, nematode protection products, colourants and film coatings can be mixed on the basis of certified recipes according to the customer or seed company's requirements, thus ensuring highly accurate seed treatments.

In Brazil, Bayer CropScience's *CropStar* protects soybeans and corn against a broad spectrum of pests such as nematodes. In addition, it also confers the *StressShield* effect, strengthening the plant's resistance to stress factors such as drought or strong rainfall. *CropStar* also stimulates plant growth. Brazilian farmers benefit from practical advantages like improved root formation, more plant mass and higher yields.

The market launch of *Emesto* in Europe is scheduled for 2012. This new fungicidal seed treatment from Bayer will be used in potato cultivation to combat Rhizoctonia rot. In addition to higher yields, *Emesto* also has a positive effect on potato quality and improves storage stability. The active

ingredient contained in the product will also be used in new products for crops such as corn, soybeans, canola, rice and cotton as of 2012.

In addition to innovative products, Dr Schramm said that Bayer CropScience also offers its customers the opportunity to receive advice and training from the company's experts at its Seed Treatment Application Centres (STAC). Joining the three existing centres in Monheim (Germany), Research Triangle Park (North Carolina, USA) and Melbourne (Australia) this year are two new facilities that have opened in Argentina and Brazil.

SUMITOMO TO EXPAND FLUMIOAZIN PRODUCTION

Sumitomo Chemical is to build a new production line for its herbicide flumioxazin in Oita, Japan. The line is due to commence operation in the third quarter of 2012. Flumioxazin has long lasting activity and is used mostly on soybeans, cotton and sugar cane. It is also effective against glyphosate resistant weeds. Sumitomo has been developing the US market for the herbicide and expanding sales through its subsidiary Valent USA. The company has also entered into a long term weed management collaboration with Monsanto. It is anticipated that the incorporation of flumioxazin into Monsanto's *Roundup* (glyphosate) weed management programme will significantly increase sales

MITSUI ACQUIRES STAKE IN THAI MANUFACTURER

Mitsui Chemicals Agro has acquired a 10% stake in Sotus International, an agrochemical business based in Thailand. Mitsui says the two companies have had a good business relationship since 1997 with Sotus distributing its proprietary products in Thailand. Mitsui recognises the growing Asian market, including India, as strategically important and is seeking to establish a base to support its business expansion there. The business tie up will, it says, strengthen the relationship, and enable it to use Sotus' manufacturing capability as a formulation base for Asian markets.

CHEMINOVA SALES UP 14%

Cheminova has reported that the continued transformation of its product portfolio and a more normal beginning to the year than in 2010 resulted in a satisfactory growth in revenue and earnings. Revenue for Q1 2011 totalled DKK 1,393 million ($231 million), up 14% and 12% in local currencies. New products accounted for an increasing share of revenue, while glyphosate sales are declining, as expected. Earnings before income tax, amortisation and depreciation (EBITDA) was up at DKK 124 million, corresponding to an EBITDA margin of 8.9% (4.0% in 2010).

Cheminova says that high crop prices have created good market conditions for the industry and the beginning of the year was more normal than last year's long and hard winter in the northern hemisphere. Consequently market growth of approximately 10% was seen in Q1 2011 after a good start to the year in Europe and North America. Latin America also saw a strong end to the season. Growth was mainly driven by increasing volume while prices stabilised and in a few cases increased. The transformation of the group's portfolio will be completed in 2011 and as a consequence glyphosate sales accounted for 11% of total revenue in Q1 compared to 18% in 2010. Growth for new products continued with a 20% increase in sales. Cheminova says that the market for crop protection products is still expected to grow in 2011 despite climatic challenges in some markets. It is anticipating revenue of around DKK 5,800 million for the year with an EBITDA margin of 8-10%.

CABI LAUNCHES GLOBAL INITIATIVE TO IMPROVE FOOD SECURITY

The UK-based not for profit organisation CABI (**www.cabi.org**) has launched*, Plantwise*, a new global initiative aimed at improving food security and the lives of the rural poor by reducing crop losses. The programme is broadly composed of a network of plant clinics to be established internationally, and a knowledge bank comprised of worldwide data on crops and crop pests including insects, weeds and, pathogens/diseases. Partial funding of $9.3 million, over a five-year period, will be provided by the Swiss Agency for Development and Co-operation.

Plantwise is designed to generate immediate positive impacts for the globe's smallholder farmers said to be "the backbone of rural economies," and to fill current production voids until additional scientific pest management research becomes available. The clinics will be run as "doctor style clinics for plants," according to CABI. It is anticipated that hundreds of community-based clinics in developing regions will be established. Currently there are clinics operating in 14 countries and the goal it to expand this to 40 nations during the next three years.

The *Plantwise* knowledge bank will be a repository for high-quality information, both historical and current, and is seen as underpinning the plant clinics. A wide range of international sources will provide material, augmented by validated observations from the clinics. The information gathered is to be digitised, aggregated, structured, updated, and made searchable. CABI says that it is hoped that the bank will become a "comprehensive source of plant health intelligence."

THAI INITIATIVE TO CONTROL BROWN PLANTHOPPER IN RICE

Brown planthopper (*Nilaparvata lugens*) outbreaks are currently affecting nearly 11% of the Thai rice crop. They are expected to cause losses of about 840 million baht ($25 million) and are likely to have a devastating effect on both the lives of rice farmers and the country's rice exports. The brown planthopper is one of the most serious insect pests of rice throughout Asia. Even light infestations of the insect can reduce plant height, crop vigour and yield. Thailand's Rice Department has developed an integrated pest management initiative to reduce brown planthopper damage. This is based on best management practice, which includes restricting the use of insecticides such as abamectin and cypermethrin that can significantly contribute to brown planthopper as they kill natural predators and can cause the build up of resistance when misused.

The International Rice Research Institute (IRRI) is supporting the Thai Sustainable Planthopper initiative. "It is of international significance that Thailand will undertake this initiative because, as the world's largest exporter of rice, it is recognised as a global leader in the rice industry," said Robert Zeigler, director general at IRRI. "Brown planthoppers are a problem across many other rice growing nations and, if Thailand is successful in its battle against the pest, others can confidently follow suit and implement similar measures." The $12.8 million initiative is supported by Thailand's Minister of Agriculture and was announced at Thailand's National Rice Conference. It aims to multiply the seed of brown planthopper-resistant rice varieties and distribute this seed to Thai rice farmers. Additionally in 20 provinces it will establish giant light traps that attract and catch the pests. It will also manage 300 brown planthopper community centres and communication campaigns across the country and will establish mobile units that will visit villages to promote best management practices.

IRRI is advocating that rice farmers use environmentally friendly approaches to pest management, such as integrated pest management that control pests through the use of resistant varieties, a smarter understanding and management of ecology, and the elimination of ineffective and problematic insecticides. The Thai Agro Business Association, Thailand's pesticide industry association, also supports the restricted use of abamectin and cypermethrin in rice due to their ineffectiveness in controlling brown planthoppers.

CONFERENCES AND FEATURES

DENMARK INTRODUCING NEW NATIONAL TARGETS

*Denmark is reshaping its agricultural and environmental policies and intends changing the way pesticides will be used in the country. It is introducing a new national target based on environmental impact, a new tax on pesticides and a raft of measures to support the greater use of Integrated Pest Management (IPM), including subsidised advice on IPM. Jens Erik Jensen and Rolf Thostrup Poulsen of the Knowledge Centre for Agriculture, a partner in the Danish Agricultural Advisory Service, recently examined the status of IPM implementation in Denmark and the National Action Plan in the ENDURE Network of Advisers Newsletter (**www.endure-network.eu**).*

Denmark's 'Green Growth' programme 'Grøn Vækst' is an ambitious and long-term plan introduced by the Danish government. It defines the country's environmental policies and the agricultural industry's growth conditions through to 2020. The plan was published in 2009, with the purpose of ensuring that a high level of environmental, nature and climate protection goes hand in hand with a modern and competitive agricultural industry. The Danish government is investing 13.5 billion DKK (around €1.8 billion) in the plan. Over the duration of the Green Growth programme there should be a "substantial reduction in the harmful effects of pesticides on human beings, animals and nature." In order to reach this goal, a number of initiatives are being launched by the various ministries involved.

New pesticide impact index

A new 'pesticide impact index' is to replace the Treatment Frequency Index (TFI). Pesticide usage in Denmark has been measured by volume and by the TFI. The original target was an index of 2.0 and then 1.7. The new index also includes non-sprayed areas and calculations on the pesticide burden on health and the environment. The objective is to achieve an index of 1.4 by 2013. Currently, the new index is under development so the TFI is still in use.

Restructuring the pesticide tax

A restructured pesticide tax is designed to place the highest tax on the products which are potentially the most harmful. The level of the tax will consist of four components: a basic tax based on the content of the active ingredients in the product; a component for health, based on the classification of the formulated product; a component for the effect on non-target organisms, based on the properties of the active ingredients in the product; and finally a component for the environmental fate of the products, also based on the properties of the active ingredients in the products. A key element of the tax is that it should not lead to the smaller or specialised crops, such as potatoes and lettuce, being produced outside Denmark and this poses a significant challenge.

The new taxes are expected to generate extra revenue of 150 million DKK (around €20 million) compared to the present taxes. The revenue will be returned to the agricultural sector by reducing land tax. It will mean that the average price for crop protection will increase by around €10 per hectare. Initially, the law on the restructured pesticide tax was due to be submitted in the autumn of 2009. So far, this has not happened and latest reports suggest that the tax will, at the earliest, now be implemented on January 1st 2012.

Buffer zones

Permanent buffer zones along watercourses and lakes in which no spraying, fertiliser use or cultivation is allowed, are being broadened from two to 10 metres. The enlarged buffer zones will cover an area of 50,000 hectares. The purpose is to minimise run-off and leaching of pesticides and plant nutrients from fields. The existing variable buffer zones for pesticides will be maintained; these range in size from two to 50 metres depending on the pesticide being applied. The fate of this requirement is currently unclear and there is ongoing discussion.

Increased spray-free buffer zones around public water supplies are being increased from 10 to 25 metres to protect the quality of public water. The proposal has been launched and discussions are currently ongoing regarding how farmers should be compensated.

Framework for plant production in accordance with principles of IPM

The framework covering the implementation of IPM in arable farming, horticulture and fruit includes the development of crop-specific guidelines, monitoring and warning systems, setting up seven demonstration farms, the establishment of a points system for ranking and substitution of pesticides, as well as increased efforts targeting the approval of alternative plant protection products. The Danish Ministry of the Environment has so far initiated two IPM projects in relation to this initiative and the Knowledge Centre for Agriculture has been chosen as project leader. A Danish IPM website has been created in connection with the two projects (**www.danskipm.dk)**.

To increase the focus on IPM in practice, it was decided to establish seven demonstration farms. The project was initiated in 2010 and runs until 2015. In the autumn of 2010, seven farms representative of Danish agriculture were chosen (five concerned with arable crops and two with horticulture and fruits) from a large number of applicants. From 2011, the goal is to try various IPM elements on-farm. Each farm has a main IPM theme, based on the needs and wishes of the farmer (for example, weed mapping and other monitoring systems, advanced spraying techniques, crop rotation and grass weeds). For every farm, there is a local adviser who offers focused advice on all the IPM tools being used daily. There is also a specialist adviser from the Knowledge Centre for Agriculture linked to each farm. While the farmer receives financial support for hosting the demonstration, it is he who makes the decisions on the farm. Each farmer is obliged to hold at least four events every year in order to inform other farmers, advisers, policy makers, members of the public and other stakeholders about IPM in practice.

The second project up and running concerns focused advice for Danish farmers supplied by local agricultural advisers who must participate in IPM courses run by the Knowledge Centre for Agriculture. The advice is heavily subsidised with up to 80% of the costs being covered by the programme. Currently, 450 farmers have signed up and will receive around 12 hours of advice over two years. If there are special challenges on their farm, the project may be extended by a further year. The objective is to reduce dependence on chemical crop protection. A second and third opportunity to sign up for subsidised IPM advice will be available in 2012 and 2014, meaning that a total of 1,350 farmers will have been involved.

BIOTECH CROPS PROVIDE SIGNIFICANT BENEFITS

*The latest annual update report of global biotech crop impacts shows the technology continues to provide important economic and environmental benefits and is making positive contributions to global food production and food security. According to Graham Brookes, director of PG Economics (**www.pgeconomics.co.uk**), co-author of the report, biotech crop adoption continues to contribute to reducing the release of greenhouse gas emissions from agriculture, decreasing pesticide spraying and significantly boosting farmers' incomes, especially in developing countries.*

The report says that biotech crops have contributed significantly to reducing the release of greenhouse gas emissions from agricultural practices. This results from less fuel use and additional soil carbon storage from reduced tillage with biotech crops. In 2009, this was equivalent to removing 17.7 billion kg of carbon dioxide from the atmosphere or equal to removing 7.8 million cars from the road for one year. Biotech crops have also reduced pesticide spraying (1996-2009) by 393 million kg (-8.7%) and as a result decreased the environmental impact associated with herbicide and insecticide use on the area planted to biotech crops by 17.1%. In addition herbicide tolerant biotech crops have facilitated the adoption of no/reduced tillage production systems in many regions, especially South America. This has made important contributions to reducing soil erosion and improving soil moisture levels.

Farm income gains

There have been substantial net economic benefits at the farm level amounting to $10.8 billion in 2009 and $64.7 billion for the 14 year period. The farm income gain in 2009 is equivalent to adding 4.1% to the value of global production of the four main biotech crops of soybeans, corn, canola and cotton. Of the total farm income benefit, 57% ($36.6 billion) has been due to yield gains, with the balance arising from reductions in the cost of production. Two thirds of the yield gain derives from adoption of insect resistant crops and the balance from herbicide tolerant crops. The share of the farm income gains, both in 2009 and cumulatively (1996-2009), has been about 50% each for farmers in developing and developed countries.

Cost of accessing GM technology

The cost farmers overall paid for accessing GM technology in 2009 was equal to 30% of the total technology gains, a total of $15.3 billion inclusive of farm income gains ($10.8 billion) plus cost of the technology payable to the seed supply chain ($4.5 billion). For farmers in developing countries the total cost of accessing the technology in 2009 was equal to 18% of total technology gains, whilst for farmers in developed countries the cost was 39% of the total technology gains. While circumstances vary between countries, the higher share of total technology gains accounted for by farm income gains in developing countries relative to the farm income share in developed countries reflects factors such as weaker provision and enforcement of intellectual property rights coupled with higher average levels of benefits in developing countries.

Global production

Since 1996, biotech traits have added 83.5 million tonnes and 130.5 million tonnes respectively to global production of soybeans and corn. The technology has also contributed an extra 10.5 million tonnes of cotton lint and 5.5 million tonnes of canola. If GM technology had not been available to the 14 million farmers in 2009, maintaining global production levels at the 2009 levels would have required additional plantings of 3.8 million ha of soybeans, 5.6 million ha of corn, 2.6 million ha of cotton and 0.3 million ha of canola. This total area requirement is equivalent to about 7% of the arable land in the US, or 24% of the arable land in Brazil.

PROJECT TO CONTROL PARASITIC WEEDS IN AFRICA

Scientists based in Nigeria and Kenya have begun a major push against parasitic weeds that have spread across much of sub-Saharan Africa, causing up over a billion dollars in damage every year to the maize (corn) and cowpea crops of tens of millions of small farmers. The project, co-ordinated by the Nigeria-based International Institute of Tropical Agriculture (IITA), will introduce proven technologies for fighting Striga (witchweed).

Striga attaches itself to the roots of plants like maize and cowpea and sucks out nutrients, reducing yields and destroying entire harvests. It affects smallholder farmers who cannot afford costly herbicides. The most widespread Striga species is estimated to have infested up to four million hectares of land under maize production in sub-Saharan Africa, causing yield losses of up to 80%. According to researchers at IITA, this represents up to $1.2 billion in losses for farmers and affects approximately 100 million people in sub-Saharan Africa.

The parasitic weeds have spread widely in Africa in recent decades; their prolific seeds germinate in response to substances released by the roots of crop plants. Because crop plants have more difficulty competing with witchweed in poor soils, intensive farming and the expansion of farming into marginal soils have encouraged their spread. Furthermore, witchweed is difficult to control because each plant produces up to half a million seeds that can remain dormant in the soil for decades.

The $9.0 million Striga project is supported by a $6.75 million grant from the Bill & Melinda Gates Foundation to IITA. Its goal is to help 200,000 maize farmers and 50,000 cowpea farmers who work in areas with high rates of Striga infestation in Kenya and Nigeria. By the time the project ends in 2014, organisers estimate that over 250,000 individual farmers will potentially see up to 50% higher maize yields and 100% higher cowpea yields.

The four-year project will focus on improving and expanding access to methods of Striga control, while supporting research to identify the most effective means of controlling the parasitic weed under varying conditions. The project will evaluate and implement four approaches: using Striga-resistant crop varieties; using a “push-pull” technology that involves intercropping with specific forage legumes that inhibit the germination of Striga; using herbicide-coated seeds; and deploying biocontrol of Striga. After a two-year evaluation period, the project will scale up the most effective approaches. Project partners include the International Maize and Wheat Improvement Centre, African Agricultural Technology Foundation, International Centre of Insect Physiology and Ecology, and BASF Crop Protection.

Scientists expect that the integrated witchweed control interventions will generate an estimated $8.6 million worth of additional grain (maize and legumes) annually at the project locations resulting in increased incomes, better nutrition and reduced poverty, as well as employment opportunities from grain production to food markets.

The project will work with farmers, seed companies, community-based organizations, extension workers, policymakers and researchers. In pilot areas, it will supply witchweed-resistant maize and legume seed and chemically treated seed to private seed companies and community-based seed producers for production and distribution. It will also research new management techniques such as use of a biological control method

.

In addition, the project will provide lessons and strategies for scaling up in other areas of sub-Saharan Africa where witchweed is a major problem for maize and cowpea production. The project will also generate scientific data on the biology of witchweed, including the plant’s relationship with different hosts and methods for rapid screening for resistance to the weed in maize and other crops.

Each of the approaches to control Striga holds promise, especially when two or more options are employed at the same time. For example, in West Africa, IITA and partners have tested the combined use of Striga-resistant maize varieties in rotation with legumes that cause witchweed seeds to germinate but fail to latch on to the host. This approach increased crop productivity by an average of 88%.

In East Africa, the International Centre of Insect Physiology and Ecology (icipe) and partners have developed a novel cropping system known as “push-pull.” It is an environmentally-friendly, economical

approach that inhibits witchweed and attracts insect pests to trap plants (pull) while driving them away from the main crop using a repellent intercrop (push).

“Increased uncertainty about the continent’s vulnerability to climate change and its spin-off effects on parasitic weeds like Striga have created more demand for ‘push-pull.’ Farmers need more weapons in the fight against these threats,” said Christian Borgemeister, director general of icipe. “Our partnership is a good example of donors and researchers responding to the needs of farmers by enabling their ability to withstand the increasingly adverse and highly-variable weather and other constraints at the farm level.”

Approximately 80% of the population in sub-Saharan Africa depends on agriculture for food, income, and employment. However, average yields of maize and cowpea are very low. Approximately 300 million people live below the poverty line in the region, and in rural areas, roughly half the population encounters hunger and malnutrition.

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