# crop protection monthly

international news, comments, features and conference reports

*31 March 2012 – Issue 268*

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## LEAD ARTICLES

# NEW BEE STUDIES RAISE MORE CONCERNS

Two new bee studies published recently in *Science* suggest that neonicotinoid insecticides could be contributing to colony collapse disorder, the mysterious phenomenon which has hit large numbers of hives in Europe and North America in recent years. In one study, bumble bees exposed to a neonicotinoid produced fewer queens, while honey bees in the other study had trouble finding their way home. The researchers say that the side effects of pesticide exposure could play a role in colony collapse disorder and that further tests should be carried out.

A French study looked at the effect of the neonicotinoid thiamethoxam on honey bee navigation. The bees were tagged with tiny radio-frequency identification microchips and tracked. Those exposed to thiamethoxam returned less often and were more likely to die away from the hive, suggesting they had trouble navigating home. A computer simulation of hive dynamics showed that adding these parameters caused the populations to plummet. One of the researchers Mickaël Henry from the French National Institute for Agricultural Research (INRA) in Avignon said: "To date toxicity tests mostly require that the doses found in nature do not kill bees. They ignore possible consequences for the behaviour of bees."

Researchers at Stirling University also found exposure even to low levels of neonicotinoid pesticides had a serious impact on the health of bumblebees. Of particular concern was an 85% drop in the number of queens. The research found bumblebee colony growth slowed after exposure to the chemicals and this may partly be to blame for colony collapse disorder. Professor Dave Goulson, who led the Stirling research, said: "Some bumblebee species have declined hugely. For example in North America, several bumblebee species which used to be common have more or less disappeared from the entire continent. In the UK, three species have become extinct."

France, Germany, Italy, and Slovenia have already banned or limited the use of the neonicotinoid insecticides. The US EPA considered taking action back in 2010, but has so far declined to do so. It is understood that France's Agriculture Ministry has asked the country's food security and environment agency to look at revoking the approval of Syngenta's insecticide *Cruiser* (thiamethoxam). It wants INRA and the Association of Agricultural Technical Coordination to speed up field research to assess whether the results of the study can be replicated in real-life conditions. France will also ask the European Commission and the European Food Safety Authority to look into the studies and if appropriate adjust the framework for evaluating pesticides' effect on bees.

Syngenta say that *Cruiser* has been used on millions of hectares of corn and rapeseed in Europe in the past four years without reported incidents of bee mortality. "If used correctly, no bee mortality is reported," said a spokesperson for the company. "The INRA study appears to have exposed bees to a concentration level 30 times greater than the average concentration of thiamethoxam measured in nectar in the field of rapeseed treated with thiamethoxam."

Officials at Bayer CropScience, manufacturers of the neonictotinoid insecticide imidaclorid, say they are confident that research will continue to prove the product is safe for bees when used appropriately. They say they welcome all new research involving bee health. However, they stressed that care should be taken in drawing conclusions based on relatively artificially generated results, particularly when compared to the weight of evidence from previous studies. The study on bumblebee colonies in the UK provides useful information. However, the doses are higher than would typically be found in the environment and they are not consistent with previous studies, which showed no adverse effects on bees at field-relevant concentrations.

Bayer CropScience says it and independent researchers have conducted dozens of intensive laboratory and field trials on imidacloprid over the past 10 years and have confirmed that it may be used without impacting honey bee populations. These studies have investigated the effects on bee mortality, weight gain, worker longevity, brood development, honey yield and overwintering survival.

Bayer CropScience has recently launched a new bee health component to its US website, highlighting the important role bees play in agriculture and reinforcing Bayer's ongoing commitment to ensuring honey bee health (**www.bayercropscience.us/our-commitment/bee-health).** "As a company, Bayer has been committed to supporting bee health for over 25 years," said Iain Kelly, Bayer CropScience

Bee Health lead. “As part of this commitment, we continue to collaborate with all stakeholders to develop products and strategies to fight those parasites and diseases affecting bees.”

To further promote bee health, Bayer also recently announced the initiation of its global Bee Care Programme. As part of this initiative, two dedicated Bayer Bee Care Centres will be established. In Europe, one centre is scheduled to open in mid-summer in Monheim, Germany, with a second – which will focus on North America – planned for later this year in North Carolina. The Bee Care Programme and the establishment of the Bee Care Centres will bring Bayer`s extensive experience and knowledge in bee health under one roof and will ensure that dedicated resources for bee health are available. “At Bayer we take our responsibility for bee health very seriously,” said Sandra Peterson, CEO of Bayer CropScience.

# EUROPEAN NEWS AND MARKETS

## BASF TO CONDUCT GM POTATO TRIALS IN EUROPE

BASF Plant Science will conduct field trials again this year with GM potatoes which are going through the EU approval process. The field trials will take place at various sites in Germany, Sweden and the Netherlands. In addition to the starch potato *Modena*, the company will also be planting its late blight resistant variety *Fortuna*. As potatoes can only be stored for short periods, they are usually multiplied every year. Besides multiplication, the aim of the trials is to test and document the performance of the potato varieties under different environmental conditions as well as the resistance characteristics of the *Fortuna* potato. The field trials will be conducted in Sachsen-Anhalt in Germany, in Skåne and Halland in Sweden, as well as in Gelderland, Drenthe and Noord-Brabant in the Netherlands. The GM potatoes will be grown on an area of less than one hectare.

BASF says it still believes that genetic modification is a technology of the future. However, in the mid-term, the company does not see any opportunities for the commercial cultivation of GM crops in Europe. As reported previously (*January CPM),* BASF intends to focus its activities on the main markets in North and South America as well as the growing markets in Asia and will halt the development and commercialisation of all products that are targeted solely for cultivation in Europe. However, to keep its strategic options open, all ongoing approval applications and variety protection processes for the *Amadea*, *Modena* and *Fortuna* potato projects are being continued. “To maintain all options for our potato varieties, we will continue the approval processes already underway and the multiplication of seed material for that purpose. As in previous years, we will cooperate with the competent authorities while conducting the field trials,” said Dr Peter Eckes, president of BASF Plant Science.

## MAKHTESHIM AGAN TO FUND UK LED SEPTORIA RESISTANCE RESEARCH

Funding of research into resistance shifts and changes in the sensitivity of Septoria populations to strobilurins, triazoles and the succinate dehydrogenase inhibitors (SDHIs) has been announced by agrochemical manufacturer Makhteshim Agan Industries (MAI). Mike Barrett, managing director of Makhteshim Agan UK (MAUK), says his company, now a major player in the industry following the recent merger with what was state-owned ChemChina, has a strategy of investing in crop protection solutions. The group is to invest £250,000 ($400,000) in an eight month research project carried out by a number of national research establishments. The UK’s Rothamsted Research and ADAS will lead a two part project which will also involve Cambridge-based NIAB TAG and Scottish Agricultural College (SAC) Research as well as Teagasc in Ireland and the Department of Integrated Pest Management at Aarhus University in Denmark. UK agrochemical distributor Agrii (**www.agrii.co.uk**) will also be involved to help connect the agri-science with British farming.

According to Stuart Hill, technical and development manager for MAUK, the research has been set up to investigate the benefit of multi-site protectant fungicides in preventing the decline in performance of existing chemistry, such as triazoles and the SDHIs. He said: “This has become particularly relevant to MAI since the introduction of our multi-site protectant *Phoenix* (folpet), the only protectant fungicide which does not impact on the uptake of partner chemistry. *Septoria tritici* is capable of reducing wheat yields on susceptible varieties in severe disease seasons by as much as 3 tonnes/ha (1.3 tons/acre). Resistance to single site chemistry is a growing problem for agrochemical manufacturers, agronomists and growers in UK and continental Europe, where Septoria is a major burden on yields and the economics of wheat production. We are intent on managing the problem as part of our drive to make agriculture simpler for those involved.”

Mr Hill says that the aim of the research will be to unlock the reasons behind resistance development and to manage the process to delay further build-up of resistance to key single site triazole chemistry. “For strobilurins it is too late regarding Septoria as they have broken down to resistance already. We need to learn the lesson for the new SDHI products and prevent resistance affecting this chemistry.” The research will allow the company, backed by independent research, to demonstrate the value of including the multi-site active ingredient folpet at the key fungicide timings.

Folpet, a protective leaf fungicide, has been used in vines in France for 40 years without any reports of resistance, explains Mr Hill, who was part of the team that brought the active ingredient to Britain and Ireland. “Resistance developed to the benzimidazoles fungicides in the 1980s and to strobilurins starting in 2001. Neither of these groups now gives effective control of *Septoria tritici* because sensitivity shifts or breakdown to resistance are all affected by their single site mode of action,”

explains Mr Hill. “Triazole chemistry has been around for several decades and shifts in resistance and decline in performance have been observed. New generation SDHI chemistry is now entering the market, again with single site action, so there is now a risk to this family of products.”

The research being undertaken is designed to help the industry and agronomists more fully understand the mode of action of folpet. Researchers will examine *Septoria tritici* populations over the last ten years as well as looking at dose responses. They will monitor populations through the 2012 growing season and examine how tank mixes containing folpet can be used to greater effect. “Mid-term results from the research are expected in July, with full first-year outcomes published later this year,” explains Mr Hill. “The outcomes will apply across Europe and will have implications for crop protection worldwide.”

## DOW DIVESTS EUROPEAN DITHANE BUSINESS TO INDOFIL

Dow AgroSciences has divested its European *Dithane* (mancozeb) fungicide business to Indofil Industries of Mumbai, India. Indofil, part of India's K K Modi Group, has purchased the rights and associated trademarks of *Dithane*, exclusive rights to use the patented Neo Tec (NT) technology and related trademarks in Europe, *Dithane* registrations and data to support these, and the customer contracts which can be reassigned. “This is an exciting time for Indofil Industries in Europe and consolidates our position in the European mancozeb market segment,” says K K Modi, group chairman of the K K Modi Group. “Dow AgroSciences remains committed to the *Dithane* business in other parts of the world where we have production assets and are better able to compete over time,” says David Hindes, global fungicide business leader. “This divestment will allow us to focus our European investment on new novel chemistries in the future” Both the companies are working together to ensure a seamless transition of the business and minimal impact to customers, distributors and dealers.

## SIPCAM FORMS ALLIANCE WITH JAPANESE PARTNERS

Sipcam, Nihon Nohyaku Co (NNC) and Sumitomo Corporation’s subsidiary, Sumi Agro Europe (SAE), are forming a new strategic alliance in Europe. Sipcam has established a holding company, Sipcam Europe to market, distribute and develop agrochemicals, speciality fertilisers and seeds in Italy, Spain, Portugal, Greece, UK and Benelux. NNC and SAE have acquired minority stakes in Sipcam Europe as strategic alliance partners. SAE has established a holding company, Sumi Agro Limited covering its operations in France, Poland, Hungary, Czech Republic/Slovakia Republic, Romania, Bulgaria and Germany with minority stakes acquired by Sipcam. The new alliance starts with the 2012 season. It aims to create a common platform for the development, marketing and distribution of the three companies’ plant protection products. The new alliance will also have a much stronger product portfolio and will strengthen the companies’ sales activities in the European market.

## TIME FOR EU POLICY MAKERS TO RECOGNISE SCIENCE

Dominic Dyer, chief executive of the UK Crop Protection Association, spoke recently to a major gathering of health professionals, teachers, dieticians and caterers in Glasgow at Food Safety and Nutrition Live sponsored by the Food Standards Agency, Scotland. He told delegates that access to the latest advances in plant science - in crop genetics, agro-chemistry and agronomy - will be needed to help keep the lid on food price inflation by ensuring food supplies keep pace with the demands of population growth.

Mr Dyer said: “As the world population exceeds seven billion we are facing an unprecedented demand for water, land and energy resources which will continue to push up the price of food. As millions of low income families across Britain struggle to meet their weekly food shopping bills and local authorities come under increasing pressure to cut expenditure for food in schools, hospitals and care homes, we are already seeing how these increasing costs are having a major social and economic impact in the UK. At the same time, our expanding knowledge base in plant genetics is opening up major opportunities to improve food quality and nutrition. UK scientists, for example, are at the forefront of crop-based research to help tackle obesity and heart disease, to raise levels of essential vitamins and minerals, and to provide renewable, plant-based sources of healthy Omega 3 oils.”

However, Mr Dyer warned that an anti-science policy agenda in Brussels threatened progress in plant science by blocking developments in crop protection and biotechnology. “Arbitrary restrictions on EU pesticide approvals and a near total block on GM crop development are threatening to deter investment and stifle research. It is time for Europe's policy-makers to stand up for sound science and to recognise the vital role of modern, science-based agriculture in meeting our future food needs," he concluded.

# AMERICAN NEWS AND MARKETS

## ARYSTA SUSPENDS MIDAS SALES IN THE US

Arysta LifeScience Corporation has suspended sales of all formulations of the fumigant *Midas* (iodomethane) in the US following an internal review. Iodomethane was widely seen as a replacement for another fumigant, methyl bromide, which is being phased out under an international treaty. The company said the decision is based on the product's economic viability. California regulators approved the use of the fumigant in December 2010 despite opposition from scientists and environmental and farmworker groups who claimed it was highly toxic and could cause cancer. Environmentalists and public health advocates have since been pressuring the administration to reconsider the decision.

In California, *Midas* was primarily targeted for use by the strawberry industry. However, the product never really took off. Only five applications, all under five acres, have taken place since the state registered the pesticide. That included a single strawberry farmer using the chemical on a small test site. Arysta will continue to maintain the federal *Midas* label registered with the EPA. It will also assess whether to maintain registration with 48 US states. The company will, however, continue to support the use of iodomethane outside of the US where the product remains economically viable.

## ARGENTINA PLANS INTRODUCTION OF VIRUS RESISTANT GM POTATOES

Argentina's Institute of Investigations in Genetic Engineering and Molecular Biology, (CONICET) Buenos Aires, has recently completed six years of trials aiming to develop a genetically modified potato that is resistant to potato virus Y (PVY). In Argentina, the variety *Spunta* accounts for about 60% of the national production of potatoes. PVY infections can cause losses of up to 80% of the tuber yield. CONICET scientist Fernando Bravo-Almonacid has led the work to develop a transgenic potato, based on *Spunta*.

Over 100 candidate lines were tested in the field and two were identified as genetically stable PVY-resistant lines. The two lines, SY230 and SY233, were further evaluated. The trials demonstrated that no, or only negligible, PVY infection was observed in the two transgenic lines. In comparison control plants showed consistently high, 70-80%, infection levels. It has also been reported that the agronomic characteristics, biochemical composition and yield performance of the transgenic lines are similar to conventionally bred *Spunta* cultivars. Mr Bravo-Almonacid believes that the GM crops will boost production and increase incomes for farmers: “Producers from whom we leased the land for the field trials were delighted with the results, because these plants were very productive and not susceptible to PVY.” The GM crops have now been submitted for approval for commercialisation. Argentina produces about 2-2.5 million tonnes of potatoes a year, grown on up to 70,000 hectares, mainly for the domestic market.

## SYNGENTA’S QUADRUPLE CORN STACK IS APPROVED IN ARGENTINA

The Secretary of Agriculture in Argentina has approved Syngenta’s MIR604 trait and quadruple corn stack Bt11 x MIR162 x GA21x MIR604 (*Agrisure Viptera 4*) for cultivation. “This new stack sets new standards in insect control by combining Syngenta’s corn rootworm trait with the outstanding performance of *Agrisure Viptera* against lepidopteran pests,” said John Atkin, Syngenta’s chief operating officer. “This approval shows that we are at the forefront in the introduction of innovative technologies to corn growers in Argentina. These technologies will play an important role in the development of an integrated offer including seed care and crop protection.” Syngenta’s triple stack corn seed with herbicide tolerance and above-ground insect control was approved in November 2011. The addition of the MIR604 trait will represent an important tool for growers as the incidence of corn rootworm in Argentina increases.

## BAYER ACQUIRES SOYBEAN GERMPLASM FROM PROSOY GENETICS

Bayer CropScience has acquired the germplasm assets of ProSoy Genetics, the soybean breeding division of Thompson Agronomics based in Leland, Iowa, US. Bayer says the acquisition reflects its strategic commitment to developing superior germplasm. Since 1975, ProSoy and Thompson have built a reputation for breeding excellence as one of the Midwest’s last remaining independent seed breeding programmes. ProSoy is well-known for its high-yielding, highly diverse germplasm that is well adapted to the broad, Midwest growing region. The company focuses on germplasm in maturities that are appropriate for much of the US and Canadian soybean acreage. Bayer’s acquisition broadens the maturity range of soybean germplasm available to its existing breeding efforts, and also provides a vehicle for delivering its *LibertyLink* and other desirable traits into the Midwest marketplace. The

company has a robust research and development pipeline including herbicide-tolerance and insect- and nematode resistance programmes specific to soybeans.

"Bayer CropScience is pleased about the opportunity to bring ProSoy's germplasm assets into its expanding soybean breeding programme," said Dr Mathias Kremer, head of BioScience business unit of Bayer CropScience. "This move strengthens our position as a provider of both soybean germplasm and traits, and helps us to deliver tailored, high-performance solutions to farmers across the soybean growing regions of the US that help them address the critical productivity challenges facing them today and into the future." Soybean is a strategically important crop for Bayer CropScience. The company is committed to delivering integrated solutions targeting higher yield through germplasm, traits and crop protection solutions. In recent years, the company has made significant investments to expand its soy business, including the acquisition of Hornbeck Seeds.

## BIO-FERM BACTERICIDE REGISTERED IN THE US

*Blossom Protect*, produced by Austrian company bio-ferm, has been registered in the US. It will be distributed exclusively by Westbridge Agricultural Products (**www.westbridge.com**). The bactericide, based on *Aureobasdium pullulans* is used against fire blight (*Erwinia amylovora*), one of the most dangerous threats for pome fruit worldwide. Between 16,000 and 24,000 ha have to be protected in the US each year, and more than 5% of this area will be treated this season with the new product. Fire blight has a long history in the US and has been treated over the years with antibiotics which lead to an increase in resistant strains.

*Blossom Protect* contains highly efficient microorganisms, isolated from nature, which stop the fire blight pathogen from colonising the blossom. The product works through the natural competition for space and nutrients between pathogens and antagonists on the blossom. As *Blossom Protect* acts competitively and does not attack the metabolism of bacterial pathogens, there is no risk of resistance development even with frequent applications. Efficacy of the product is similar to antibiotics and there is no risk to humans or the environment.

The company, bio-ferm Biotechnologische Entwicklung und Produktion GmbH (**www.bio-ferm.com**), was founded in 2004 as a spin-off company of the University of Natural Resources and Life Sciences (Vienna). Together with its R&D department in Constance (Germany) bio-ferm works on international product registration and marketing of innovative biocontrol products. The company is now established in some 20 markets worldwide. Its products are currently used in fruit-, grape- and vegetable-production. "The EPA approval is another big milestone for our very young company," said Werner Fischer CEO.

## BASF TO SUPPLY FUNGICIDE FOR MONSANTO SEED TREATMENTS

BASF has reached an exclusive supply agreement with Monsanto for fungicide seed treatments for cotton and soybeans in North America. Monsanto's next generation *Acceleron* seed treatment products for soybeans and cotton will contain the fungicides *F500* (pyraclostrobin) and *Xemium* (fluxapyroxad), which is expected to be registered by the US Environmental Protection Agency (EPA) in 2012. Under the agreement, Monsanto will have exclusive rights to commercialise the new seed treatments. Monsanto says its global seed treatment platform will complement the company's seed and trait strategy, as well as its investments in breeding and biotechnology.

"Growers know that yields can suffer without successful early-season crop development," said Bob Yaklich, market manager for Seed Solutions for BASF in North America. "The combination of BASF fungicides, Xemium and F500, provides a new level of disease control, as well as healthier plants and improved crop quality, which can improve yield potential. This new agreement with Monsanto will give growers the opportunity to give seedlings a stronger start and their growing seasons a stronger finish."

## NEW MINOR USES FOR SYNGENTA FUNGICIDE IN CANADA

Syngenta Canada has received Minor Use Registration for its fungicide *Quadris* (azoxystrobin) for the suppression of Alternaria leaf (*Alternaria brassicae*) on cabbage, suppression of blossom blight (*Ascochyta* spp and *Alternaria* spp) on cumin and suppression of black root rot (*Rhizoctonia fragariae*) on strawberries. "These minor use registrations were added to the *Quadris* label at the request of Canadian growers," said Eric Phillips, asset lead, fungicides and insecticides for Syngenta Canada. *Quadris* is a broad-spectrum, preventative fungicide with systemic properties. Optimum disease control is obtained when *Quadris* is used as a protective treatment prior to disease establishment. "We continue to listen to our customers and work with them and government agencies to pursue

registrations for those smaller crops that are sometimes overlooked yet still need to be protected from disease if they are to provide returns to the producers," concluded Mr Phillips.

## SYNGENTA RECEIVES REGISTRATION FOR PGR IN US

Syngenta has received registration for its plant growth regulator (PGR) *Palisade 2EC* (triexapac-ethyl) for use on cereal crops in the US. The product increases stem thickness and diameter and reduce crop height to help decrease lodging. Syngenta says some state registrations may still be pending. "Lodging can reduce yield up to 40%," said Bernd Druebbisch, fungicide asset lead, Syngenta. "Lodging management using a PGR like *Palisade 2EC* helps protect cereal growers' valuable crop investments in seed, fertiliser and other inputs to maximise yield and profit potential." *Palisade 2EC* has the potential to significantly increase potential in lodging-prone areas. Syngenta trial results have shown an average yield increase of 5-6 bushels/acre (300-400kg/ha) in high lodging situations. "Trinexapac-ethyl shortens internodes to reduce crop height and lower the centre of gravity," explained Allison Tally, fungicide technical asset lead, Syngenta. "This mitigates risk from strong winds. Additionally, *Palisade 2EC* offers an early and wide application window to help growers optimise spray programmes for cost efficiency and flexibility under adverse weather conditions." Syngenta says that *Palisade 2EC* offers tank-mix flexibility with most fertilisers, herbicides, insecticides and fungicides and helps maximise yield potential in lodging-prone areas where growers would like to use higher levels of nitrogen fertilisation.

# OTHER NEWS AND MARKETS

## SUMITOMO AND NUFARM ANNOUNCE NEW DISTRIBUTION ARRANGEMENTS

Since Sumitomo Chemical's strategic investment in Nufarm in April 2010, the two companies have continued efforts to create a synergy effect in their various business activities. They have now put in place new distribution arrangements for Canada and three European countries, Hungary, Romania and Ukraine. In Canada, Nufarm Agriculture has become a distributor for the crop protection and speciality products of Valent USA and Valent BioSciences (VBC), both companies in the Sumitomo Chemical Group. Nufarm Agriculture now distributes a wide variety of Valent and VBC product lines incorporating a portfolio of agricultural, horticultural, industrial vegetation management and biorational products in Canada. This arrangement builds on and augments the successful distribution arrangement commenced in 2011 when Nufarm Agriculture began distributing Valent's herbicide *Valtera* (flumioxazin).

In Hungary, Romania and Ukraine, Nufarm has also become a distributor for Sumitomo Chemical. Nufarm's local group companies in these countries will distribute Sumitomo Chemical's insecticides including esfenvalerate and pyriproxyfen. In Ukraine, fenitrothion, which is marketed globally as *Sumithion*, will also be distributed through Nufarm. General manager of Nufarm Agriculture, Canada Yvonnick Jambon, said: "The addition of Valent products which includes a number of proprietary active ingredients will strengthen Nufarm's position in a number of key market segments in Canada." Nufarm's general manager for North East Europe, Peter van Sloun, said: "The addition of the Sumitomo portfolio will strengthen Nufarm's insecticide position and allow the company to target a number of higher value segments."

The new distribution arrangements now allow Sumitomo Chemical products to be distributed through Nufarm to 15 countries, including Brazil, Indonesia and the European region. Nufarm products are distributed via Sumitomo Chemical Group companies in six countries including France, Spain and Italy. Both companies will continue to assess additional opportunities for future cooperation.

## NUFARM REPORTS AN IMPROVING FINANCIAL POSITION

Nufarm has reported a net profit after tax of $18 million for the half year of 2012 (ended 31January 2012). This compares with a profit of $4 million reported in the corresponding period of the previous year. Excluding material items, operating profit after tax was $23.9 million, an increase of 5.3% on the 2011 first half. Operating EBIT was up 11.8% to $37.8 million. Nufarm managing director Doug Rathbone said the half year results demonstrated continued improvement in earnings and discipline around capital management. He added: "While a global agricultural business will always be subject to seasonal and business swings, we are building a much stronger base from which we can secure profitable growth well into the future.

Highlights for the period were the strong performance of Nufarm's operations in Australia and Brazil, where positive seasonal conditions have driven strong demand for crop protection products. The Australian operations benefited from more consistent and widespread rainfalls during the period and from increased efficiencies, including lower input costs due to a relatively high Australian dollar. The New Zealand business also contributed a stronger sales and profit result for the period.

The business in Brazil has continued to strengthen following restructuring initiatives implemented in 2011. Nufarm has a more diverse product offering in Brazil and is capitalising on strong cropping activity and growth in a number of market segments. Mr Rathbone said despite a poor season for fungicide sales, Nufarm generated increased revenues and a higher margin in Brazil, with market share gains in the cotton, sugar cane and pasture segments. "Our broader product offering and exposure to additional crop segments in Brazil helps take risk out of the business and is building a durable platform for continued sales and profit growth."

Mr Rathbone said Nufarm's first half performance was in line with expectations in most of the company's regional markets, but that the European business was behind budget and faced some challenges over the balance of the year. "Seasonal conditions in Europe are very mixed and there is increased business risk associated with economic pressures in a number of European countries. We will step away from business in those markets where we judge those risks to be unacceptable. We believe any downside in Europe will be balanced by average or generally positive seasonal and trading conditions in most other regions over the remaining months of our financial year. Australia is well placed to see large winter cereal crop plantings, given the best subsoil moisture profiles we have

seen across many cropping regions in a number of years. There are also very strong planting forecasts for the US and a relatively early spring should be helpful for our business. And, while the major season is behind us in Brazil, we are seeing continued sales activity in South America which is very encouraging."

## VALENT COLLABORATES WITH PACE ON BIORATIONAL FUNGICIDES

Valent BioSciences Corporation (VBC) has signed a joint testing agreement with Pace International (**www.paceint.com**) that will expand a screening and evaluation collaboration between the two companies into the area of biorational fungicides. The agreement brings together the core competencies of the two companies to address unmet post-harvest needs in fruit and vegetable protection. VBC purchased a minority interest in Pace International a global marketer of products, technologies, and services in the post-harvest marketplace in October 2007.

"As the foremost developer of biorational products in the world, we are aware there is a tremendous amount of demand for new and effective biorational fungicides, particularly in the post-harvest arena," said Mike Donaldson, president and CEO of Valent BioSciences. "Our agreement with Pace brings together the intellectual property and the technical expertise of two highly respected companies." As part of the agreement, VBC will provide Pace with a range of candidate materials, some from its strategic partners, to screen and evaluate in its post-harvest assay systems. Both companies expect to develop and commercialise new products for the post-harvest fungicide market.

## MARRONE BIO RECEIVES REGISTRATION FOR REGALIA MAXX IN CANADA

Marrone Bio Innovation (MBI), a leading global provider of natural products for the agricultural and water treatment markets, has announced that Health Canada's Pest Management Regulatory Agency has approved the biofungicide *Regalia Maxx* for outdoor and greenhouse use on a variety of fruits and vegetables, as well as on wheat and ornamentals. The company has also signed an exclusive distribution agreement with Engage Agro, a leading Canadian distributor specialising in high-value fruit and vegetable crops. "The approval of *Regalia Maxx* brings Canadian growers an environmentally responsible and effective solution for managing pests in conventional and organic crops," said MBI CEO Pam Marrone. "We believe that Engage Agro's expertise in high-value fruit and vegetable crops, coupled with its breadth of experience in the Canadian market, puts us in a good position to expand sales of *Regalia Maxx* in North America."

The fungicide is a product derived from a natural plant extract of *Reynoutria sachalinensis* which triggers plants' natural defense systems to combat several bacterial and fungal diseases. It will be sold in Canada for use in fields and greenhouses to protect tomatoes, grapes, strawberries, cucurbits, ornamental plants and wheat. "*Regalia Maxx* is particularly important to growers because it offers another weapon to combat the increasing threat of pest resistance to chemical treatments," said Engage Agro President Ray Chyc. "We look forward to expanding the label for additional uses in the future."

Used in tank mixes, in resistance management programmes and as a stand-alone product, *Regalia Maxx* is proven to control diseases such as powdery mildew, botrytis bunch rot and grey mould, bacterial blight, and Septoria leaf spot. The product can be applied up to and including the day of harvest. In addition, its exemption from the requirement of a food tolerance is particularly important for crops that are subject to maximum residue levels. Syngenta Crop Protection distributes *Regalia Maxx* in Turkey, and the product is distributed in Mexico by FMC Corp.

## MARRONE'S BIOFUNGICIDE IS INCLUDED IN THE 2012 FRAC LIST

Marrone Bio Innovations (MBI) has announced that the active ingredient in its *Regalia* biofungicide, *Reynoutria sachalinensis*, has been included in the Fungicide Resistance Action Committee's (FRAC) 2012 code list, following an extensive technical review. FRAC, a technical group of CropLife International, is a global association of crop protection and agricultural biotechnology companies that provides fungicide resistance management guidelines to growers and crop consultants in order to prolong the effectiveness of fungicides and to limit crop losses caused by fungicide resistance. "*Regalia* offers growers a powerful tool in resistance management programmes. We are pleased, that FRAC has decided to include it in its code list," said Russell Blair, director of product management for MBI's agricultural products. "As resistance to synthetic chemicals increases and resistance management becomes a critical component of crop protection, *Regalia* brings a low-risk and flexible solution."

The active ingredient in the fungicide was added to the FRAC code list because of its Induced Systemic Resistance (ISR) mode of action. Because this is unique, a new FRAC code was created for the active ingredient and designated as P5. When treated with *Regalia*, the natural defence systems of crops are 'switched on' to protect against attacking diseases. Research shows that plants treated with *Regalia* produce and accumulate elevated levels of specialised proteins and other compounds known to inhibit fungal and bacterial diseases. Field trial data also shows that the ISR mode of action improves plant health and yield in row crops such as soybeans and corn.

## GM DEVELOPMENTS IN THE PHILIPPINES

Five more biotechnology products being developed in the Philippines by local research institutions are expected to be commercially released soon. According to Dr Clive James, chairman of the International Service for the Acquisition of Agri-Biotechnology Applications (ISAAA), the GM crops – are Golden Rice, *Bt* (*Bacillus thuringiensis*) cotton, *Bt* eggplant, *Bt* camote, and *Bt* abaca. Speaking at a recent 2012 seminar on biotechnology held in Manila Dr James said that the first-generation Golden Rice (GR) being developed by the Department of Agriculture-Philippine Rice Research Institute (DA-PhilRice) and the International Rice Research Institute (IRRI) was tested in field trials at IRRI in 2008. The second-generation (GR2) introgressed (transferred through breeding) into selected mega varieties and was field-tested during the wet season in 2010. Field trials of GR2 were also conducted during the dry season last year at PhilRice in Nueva Ecija. "It is expected that succeeding field trials of GR2 being developed by IRRI and PhilRice will be undertaken in 2012 and can generate the required data for possible full regulatory submission in 2013," added Dr James. The biotech rice being developed at PhilRice, also referred to as '3-in-1,' incorporates the traits for pro-Vitamin A and resistance to tungro virus and bacterial leaf blight.

The *Bt* eggplant project being undertaken by the UP Los Baños-Institute of Plant Breeding (UPLB-IPB) was evaluated in 2010 and 2011 in multi-location trials in Luzon. More trials were programmed for 2011 and 2012 to generate additional regulatory data. Initial results indicated that the *Bt* talong (eggplant) is resistant to fruit and shoot borer, the most destructive pests attacking eggplants in the Philippines and other Asian countries. Biotech papaya with delayed ripening traits and resistance to the destructive papaya ring spot virus is also being developed by UPLB-IPB and has been tested in field trials. *Bt* cotton was tested in field trials in 2010 and was programmed for multi-location trials in late 2011 and early 2012. The virus-resistant sweet potato is being developed by the Visayas State University in Baybay City, Leyte and UPLB-IPB. The DA-Fiber Industry Development Authority and UPLB have also been developing transgenic lines of virus-resistant abaca.

## CIMMYT INTRODUCES RESISTANT WHEAT IN BANGLADESH

The International Maize and Wheat Improvement Centre (CIMMYT), based in Mexico, has introduced a wheat variety in Bangladesh which is tolerant to the Ug99 strain of stem-rust fungus. The new wheat variety, *Francolin*, has good resistance to all varieties of Ug99 as well as yields that are about 10% higher than the most commonly grown wheat variety in Bangladesh, *El Batan*. Wheat is the second-most grown cereal in Bangladesh after rice, with an area of 380,000 hectares (938,980 acres), according to CIMMYT. *Francolin* seed is being multiplied on 55 hectares, and about 150 metric tons of seed is expected to be available for the next planting season. CIMMYT said it is working with the Bangladesh Agricultural Research Institute on the new wheat variety. According to the research centre the introduction of *Francolin* was helped in part by a USAID seed-multiplication programme. The first Ug99-resistant wheat introduced into Bangladesh in 2010 was called *Hashi*. The two new varieties are expected to cover more than 5% of the total wheat area in 2012-13.

## BASF APPOINTS NEW HEAD FOR ASIA PACIFIC REGION

BASF has appointed Dr Raman Ramachandran to lead the company's Crop Protection division for the Asia Pacific region. Dr Ramachandran, who received a PhD in Agriculture from the Waite Agricultural Research Institute, University of Adelaide, Australia, joined BASF in 2000 and has held various senior management positions in the Asia Pacific region. "Raman has made enormous contributions to BASF since he joined in 2000," said Markus Heldt, president of BASF Crop Protection. "He was instrumental in putting together our growth strategy for India and subsequently for the entire Asia Pacific region." In 2011, BASF announced a new annual sales target of $1.3 billion by 2020 for the Asia Pacific region. One integral part of this growth strategy has been its Samruddhi farmer training and business programme. The Samruddhi programme, launched in 2007 in the province of Madhya Pradesh, India, connected BASF agronomists with 30,000 soybean growers to boost their yields and profitability sustainably. Five years later, the programme now involves over 225,000 soybean, onion and potato farmers across India, Sri Lanka and Indonesia. According to BASF It serves as a blueprint for business growth throughout the Asia Pacific region and other emerging markets.

## ROSETTA GREEN AND BAYER TO JOINTLY DEVELOP NEW TRAITS

Israeli-based Rosetta Green (**www.rosettagreen.com**), a company that develops improved crop traits for the agriculture and alternative fuel industries, and Bayer CropScience have signed a licensing agreement that relates to a joint project in the discovery and characterisation of microRNA genes that have potential to provide drought tolerance and improved yield in cotton. Extreme climate damage such as drought or long periods between rain showers causing abiotic stress in plants, are among the toughest problems farmers encounter while growing crops. Every year less rain or rain delay cause losses in the range of billions of dollars to farmers across the world. Bayer and Rosetta Green will attempt to develop new cotton varieties that could produce better yields under difficult environmental conditions.

Bayer will have an exclusive license for targets identified during this collaboration toward yield improvement in cotton. In return Bayer has committed to pay Rosetta Green milestone payments if certain steps are achieved in the development and commercialisation of the products and royalties on future revenues from sales which could amount to tens of millions of dollars. The cotton industry is facing challenges, such as ensuring higher yields in difficult climatic conditions. “We are pleased to initiate a research collaboration with Rosetta Green as a partner in developing cotton with improved yield,” said Frank Schmidt, head of bioscience research for Bayer CropScience. “We aim to become the partner of choice to offer farmers superior integrated solutions to improve cotton production in a sustainable way. We anticipate that Rosetta Green’s innovative technology platform can contribute to further strengthening our leadership position in the global cotton market.”

## MONSANTO REPORTS BIG INCREASES IN SALES

Monsanto has reported that its net sales increased $617 million or 15% for the second quarter of its fiscal year 2012 when compared to 2011.Second quarter gross profit rose 17% to $2.7 billion compared to the prior year second quarter. For the first six months, gross profit is up 21% or $667 million. “Our strong US selling season and growth from Latin America during the first six months have come together to set us up for a great 2012," said Hugh Grant, chairman, president and CEO for Monsanto. “We have seen contributions from growth across crops and geographies, which position us well to deliver high-teens ongoing earnings growth this year. We are also pleased growers have recognised the value of our product portfolio and given us the opportunity to earn their business.” Operating expenses were up in the second quarter compared to the prior year, but were in line with the increases the company would expect as it grows its business. R&D expenses increased to $353 million for the quarter based on investments to support future growth opportunities.

Sales in the Seeds and Genomics segment for the second quarter were $3.9 billion, representing an increase of $503 million over the same period last year and reaffirming the company's seeds and traits business as its central driver for growth in 2012. Gross profit in the second quarter was up $360 million or approximately 17% compared to the prior year second quarter. For the first six months, gross profit is up 21% over the same period last year. Second quarter growth was led by the strength of Monsanto's corn business, with the strongest contributor being the US. The strong start to the US season reinforces the company's confidence in its product and pricing strategy and its ability to build on the branded corn volume increase achieved in 2011. The company also saw higher corn sales in Latin America in the quarter.

The soy and cotton businesses continue to perform well year-to-date. In soybeans, second quarter seeds and traits sales were up 12% driven by an increased trait mix of *Genuity Roundup Ready 2 Yield* soybeans in the US. Vegetable sales were down compared to the same quarter in 2011 due primarily to current market conditions in Europe. Vegetable gross profit was also down compared to the same quarter of the prior year reflecting the European market decrease, as well as an inventory write-off that will also help support the company's vegetable business growth strategy. Sales in the second quarter for Monsanto's Agricultural Productivity segment, consisting of the crop protection products and lawn-and-garden herbicide products, increased $114 million over the same period last year due to a strong volume and mix benefit.

## NEW EURO PROJECT SET TO REVOLUTIONISE PLANT BREEDING

A five-year,€3 million project is set to revolutionise the way in which new plant varieties are produced. Molecular and computational techniques will be used to identify processes associated with the way drought and disease combine to make matters much worse than either alone. The project will also identify novel genes and biochemical pathways that improve plant resistance to these stresses. The work is being led by The Food and Environment Research Agency (Fera), based in York, UK, and

involves 12 national and international partners. Dr Adrian Charlton, project leader and head of Chemical & Biochemical profiling at Fera said: “This project brings together the very best expertise in plant-based molecular biology and biochemistry in Europe and should lead to groundbreaking improvements in the techniques used for crop breeding. Fera scientists will be studying the biochemical profiles from the best performing plants and linking these back to the genes responsible using advanced computational techniques.”

The approach will be developed using a clover-like plant as a model. Under laboratory conditions, hundreds of these plants will be subjected to drought and/or infection with Fusarium. The soil fungus is being used as an example of disease stress because this type of infection affects the way in which plants can mobilise water and so the damage it causes is compounded during drought conditions. The prevalence of this economically devastating fungal disease is predicted to increase due to climate change.

The latest high throughput imaging technology will be used to monitor the performance of the plants without disturbing them. The information obtained from studying the model plant will then be applied to breeding new pea varieties. These new varieties will be compared with existing commercial crops, identifying those which perform better when challenged with a combination of Fusarium and drought. The best of the plants will undergo field trials at different sites across Europe.

Researchers aim to develop principles and techniques that can be rolled out for crop breeding generally. Small to medium sized businesses should be able to use these to develop business opportunities. This should significantly reduce the time taken to breed new crop varieties that are more able to withstand the challenges commonly associated with climate change, such as extreme weather and changing incidence of pests and diseases.

## ORGANIC CROPS YIELD 20% LOWER THAN CONVENTIONAL CROPS

Research workers at Wageningen University, Netherlands have reported on a meta-study based on an exhaustive review of published papers which report on yield comparisons. They say that on a global basis yields from crops grown organically were, on average, 20% lower than from crops grown by conventional methods. All the relevant literature databases compiled over the past 25 years were studied. This identified more than a thousand scientific publications. After thorough screening for data quality, 362 crop yield comparisons in organic and conventional farming remained. The data covered 68 different crops and came from 43 different countries.

Data selected were specific to yields. No attempt was made to take into account the environmental comparisons. The study, which was published in the March issue of *Agricultural Systems*, is claimed to be the first large scale study which reports only on data of the highest quality. Many studies have been reported on before but the findings have been variable ranging from organic crop yields 50% lower to 20% higher. Although the research shows that on a global basis average organic crop yields are 20% lower, in countries where conventional agriculture is well-developed, such as the Netherlands and Denmark, this figure is higher, 26%.

The researchers stress that there are other factors which favour adoption of organic farming methods. These include reducing the burden on the local environment, the exhaustibility of natural resources and biodiversity and ethical reasons relating to animal welfare and genetically modified organisms. For the developing countries the relative scarcity or affordability of artificial fertilisers and crop protection agents is a factor in favour of organic agriculture. In conclusion, however, the researchers concede that if organic farming methods are used, more land is needed to produce the same amount of food.

# SYNGENTA PRESENTS GLOBAL CEREAL STRATEGY

*Syngenta intends to transform cereals production worldwide by creating innovative solutions that set new standards for yield, quality and sustainability. This new vision was outlined by members of the Syngenta cereals leadership team during a recent winter customer conference in the US.*

"Syngenta is uniquely positioned to create value for cereal growers around the globe," said Karsten Neuffer, head, Syngenta Cereals Global. "We have the global reach, downstream connectivity and proximity with growers to intimately understand and address their needs. And we have unique portfolio breadth and a leading footprint – across seeds, seed care, and crop protection – that enables us to innovate and deliver integrated solutions."

To successfully meet these needs and achieve these goals, Syngenta says it has made a strategic decision to combine its commercial operations worldwide, while refocusing research and development efforts around crop and grower needs. This new, integrated approach it says enables the company to think like a grower and better serve customer needs.

"In this new strategy, our seeds, seed care and crop protection businesses will be working closely together to develop solutions for growers using our various technologies in a more integrated way," said Norm Dreger, head, Syngenta Cereals North America. "We are now taking a crop- and grower-centric view on value creation. We will be innovating across product categories, agronomy and business models to deliver integrated and sustainable solutions that are tailored to the complex needs of growers around the world."

"Syngenta is committed to providing total crop solutions – from seeds through crop protection and beyond – to help produce more from fewer inputs and less land," said Corey Huck, head, Syngenta key account management. "We are also dedicated to sharing knowledge and exploring new partnerships to raise agronomy skills and expertise for our growers." The company will continue to collaborate with a broad network of seed associates throughout North America who are dedicated to producing high quality, certified seed to meet the growing global wheat demand. "These associates operate across different geographies and will help produce wheat varieties with characteristics that address regional needs, including disease and insect tolerance," explained Paul Morano, head, cereals key account management, Syngenta.

To help with this process Syngenta has accelerated its investment in cereals research, making it a priority crop for the company. "We have tripled our investments in marker and doubled haploid technologies in the US," explained Rollie Sears, North American cereals R&D manager for Syngenta. "Syngenta is the first company to market a wheat variety developed through doubled haploid breeding, which cuts the breeding cycle in half from 10-12 years to six to seven years. We are also leading the industry with technology that includes marker assisted recurrent selection, native trait stacks, hybridisation and biotechnology. Growers are already seeing benefits of this effort with 13 new wheat varieties introduced this year and 19 more in pre-commercial traits." In addition, Syngenta says it offers cereal growers a vast portfolio of seed treatment and crop protection products in North America and localised technical support from a knowledgeable agronomy and sales team. "Through this new, integrated strategy, we are focused on approaching grower challenges with comprehensive know-how in agronomy, chemicals, seeds and adjacent technologies – all focused on meeting grower needs," concluded David Morgan, president, Syngenta Seeds.

# 60 YEARS OF IPPC

*FAO recently marked the 60th anniversary of the International Plant Protection Convention (IPPC), a treaty established in 1952 to help prevent plant pests and diseases from spreading across international boundaries via international trade. The origins of the convention can be traced back to 1865, when a French wine merchant imported a case of American vines infected with an alien species of aphid that nearly wiped France's wine industry off the map. Frightened Italian farmers ripped up kilometres of newly installed railroad tracks to prevent the invading pest from moving south. The convention now consists of 177 member countries, each of which maintains a National Plant Protection Organisation. A group of ten regional Plant Protection Organisations then provide a way for countries to operate jointly at the regional level to prevent plant pests from crossing borders. An FAO-based Secretariat provides overall coordination.*

Today, the FAO says that with global trade in agriculture products booming plant pests and diseases remain a significant challenge for food production and security. As people and agricultural products move from country to country and region to region, pests move with them. Plant pests and diseases have a serious effect on food production, as much as 20 to 40% according to the estimates of the FAO-based IPPC Secretariat.

Pests are a problem for farmers everywhere, but for small-scale growers in the developing world, decreased yield or the loss of a crop can mean the difference between survival and starvation. FAO gives the example of the larger grain borer which ravaged Eastern Africa in the 1980s after being introduced from Central America, destroying up to 80% of stored grains and causing widespread localised food shortages.

FAO estimates that the world will need to produce 60% more food to feed an expanded world population by 2050 and crop production is expected to continue to account for 80% of the world's food. It says that reducing losses of food due to crop pests will therefore play an important part in meeting the world's food needs. "In today's globalised era, the task of preventing plant pests and diseases from spreading while facilitating rather than impeding trade is both more complex and more important than ever," said FAO director-general José Graziano da Silva, "especially since warmer temperatures due to climate change are expected to both encourage the spread of pests into new areas as well as render some plants more susceptible to their effects." He added that preventing the introduction of new pests, including invasive plants, into a country is far more cost effective than trying to eradicate or manage an outbreak after-the-fact. He noted that prevention also means that we can avoid overusing chemical pesticides, reducing financial burdens on farmers and safeguarding the environment and productive ecosystems.

One of the IPPC's main activities is to establish and promote the use of science-based, internationally-agreed standards governing how plants and plant products should be handled during international trade or their movement across international boundaries, known as International Standards for Phytosanitary Measures (ISPMs). ISPMs cover a range of issues, from how products or product packing materials must be treated prior to export to procedures and methodologies used by agricultural inspectors in importing nations. The IPPC also acts as an information exchange hub, promoting information sharing and transparency in international pest management and allowing participating countries to stay on top of important export requirements. The status of agricultural pests and new developments in plant protection and risk management are also critical components.

Additionally, a new and growing focus for the IPPC secretariat is providing developing countries with technical assistance to support their ability to implement the Convention and the ISPMs. This support often includes the Phytosanitary Capacity Evaluation, a low-cost, comprehensive evaluation of a country's phytosanitary system that can be used to focus on the most immediate phytosanitary development needs.

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Publisher: Market Scope Europe Ltd ISSN 1366-5634
Website: **www.crop-protection-monthly.co.uk**
Editor: Martin Redbond E-mail: mredbond@aol.com
Deputy Editor: Bruce Knight E-mail: innovationmanagement@btopenworld.com
Contributors: Elaine Warrell
Editorial and Subscription Enquiries to:
Crop Protection Monthly
Blacksmiths Cottage
Ashbocking Road
Henley,
Ipswich,
Suffolk
IP6 0QX
UK
Tel: +44 (0) 1473 831645
E-mail: **Cpmsubs@aol.com**