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LEAD ARTICLES

SYNGENTA FILES COMPLAINT AGAINST BUNGE

Syngenta, North America has filed a complaint in the US District Court for the Northern District of Iowa against Bunge North America for having violated a number of Federal and State laws. Syngenta alleges Bunge is attempting to block the legal merchandising of the *Agrisure Viptera* trait for corn, which it says was launched in compliance with US regulatory requirements as well as industry guidelines for commercialisation.

Syngenta received deregulation from the USDA for the *Agrisure Viptera* trait in April 2010. Since then, the technology has been approved for cultivation in Canada, Argentina and Brazil, and for import in Australia, Brazil, Canada, Japan, Mexico, New Zealand, the Philippines, Korea and Taiwan. Approval of the trait in China is, however, pending and is expected in early 2012.

The trait became commercially available to US corn growers for planting in 2011. Chinese orders for US corn increased in July and recently began to include the 2011 crop. China has not previously represented a substantial portion of the US corn export market but according to the US Department of Agriculture is currently the seventh largest destination for US corn with imports expected to grow significantly this year.

Both Bunge and Consolidated Grain & Barge (CGB) have indicated they will not accept grain containing the *Agrisure Viptera* trait. President of Syngenta Seeds, David Morgan, said: "We are disappointed with Bunge's decision particularly as other major grain companies have told us that they will accept grain containing the trait. We are taking action to remove the illegal impediment imposed on growers by Bunge when they announced mid-season that they would not accept grain enhanced by the trait. When a product has been legally approved, growers should be able to use that technology without subsequently being subjected to arbitrary actions. Our first priority is the growers. We are working with farmers who are affected by this decision to help them find alternatives for delivering their grain."

Bunge says its decision not to accept *Agrisure Viptera* is consistent with the North American Export Grain Association's (NAEGA) policy to advocate that technology providers receive all major international approvals for a trait prior to seed sales. It went on to say that it is surprised and disappointed that Syngenta has taken an action which could put at risk a major export market for US corn producers.

In the statement Bunge claims to be a strong proponent of agricultural biotechnology and the benefits it offers to the entire value chain. It says it has communicated to Syngenta on several occasions that it looks forward to accepting *Agrisure Viptera* once approval from China is secured. Until that time it intends to protect the integrity of its export supply chain by not accepting *Agrisure Viptera* and other varieties that do not have major export market approval.

BAYER AMENDS ACTION AGAINST DOW

Bayer CropScience has amended its patent infringement lawsuit pending in the United States District Court for the District of Delaware against Dow AgroSciences (DAS) following the announcement by Dow that it has applied for approval to launch its three-gene herbicide tolerant soybean under the *Enlist* brand name.

Bayer's existing lawsuit asserts that Dow's previously announced *Enlist* brand corn, soybeans and cotton infringe Bayer's 2,4-D herbicide tolerance patents. In the amendment, Bayer claims that the new products also infringe several Bayer patents covering glyphosate-tolerant plants. "Respect for intellectual property is the foundation for any research-based business," said Margaret Keating, associate general counsel for Bayer CropScience, "and we intend to vigorously enforce our property rights."

NUFARM FACES LAWSUITS

Legal firms Maurice Blackburn and Slater & Gordon have launched two separate actions against Nufarm, which are seeking to recover losses from alleged material non-disclosures. They accuse Nufarm managing director Doug Rathbone of repeatedly misleading investors with optimistic forecasts.

Nufarm has denied any and all allegations of wrongdoing, and said it will “defend the proceedings vigorously.”

Maurice Blackburn has been instructed by a range of institutional and retail investors, with hundreds of claimants registered.The firm said|: “We can still see thousands more investors coming forward.” The claim centres on sales of glyphosate, which contribute a third of the Nufarm’s revenue. Maurice Blackburn alleges that Nufarm failed to adequately inform the market of the adverse effect on the profitability of its business of a falling international glyphosate market between 28 September 2009 and 31 August 2010. Nufarm told the market in September 2009 that 2009 glyphosate write-downs would lead to a profit in 2010. However, there was a loss of $28.4 million in glyphosate stocks between August and December 2009 which was not announced until March the following year.

EUROPEAN NEWS AND MARKETS

BAYER RECEIVES APPROVAL FOR NEW SEED TREATMENT

Bayer CropScience has received its first registration for its new fungicidal seed treatment product *Emesto* (penflufen) in the UK to be used on potatoes. According to Bayer the product has good efficacy against black scurf (*Rhizoctonia solani*), and significantly enhances quality and increases the marketable yield. The market launch in the UK is scheduled for the 2012 season. "The registration of *Emesto* is another milestone towards achieving a leading position in the global seed treatment market," said Martin Gruss, member of Bayer's seed treatment leadership team. "We are confident that we will obtain approvals for the product in more than 30 potato-producing countries both in and outside the EU, especially in the emerging seed treatment markets in Latin America and Asia," he added.

Penflufen belongs to a new generation of SDH (succinate dehydrogenase) inhibitors. Products based on this active substance have seed invigoration and root growth-promoting effects, offering farmers excellent disease control - not only against black scurf but also against silver scab and other diseases - at low application rates. The *Emesto* family of products is exclusively for use on potatoes. The company, however, plans to develop customer-oriented solutions based on penflufen to improve agricultural productivity in other economically important broad acre crops such as oilseed rape/canola.

DOW TO MARKET NEW GRASS WEED HERBICIDE

Dow AgroSciences is to market a new blackgrass herbicide in the UK for the 2011/12 season. The product, a unique blend of pyroxsulam and flupyrsulfuron-methyl, was approved in June this year. It will be marketed for the 2011/12 season under its code number GF-2070. Dow says the contact action of the two active ingredients will provide the widest range of grass weed control, including bromes, ryegrasses and canary grass. The product also controls a wide range of broadleaved weeds including speedwells, geraniums, volunteer beans and pansies. There are no following crop restrictions, which means oilseed rape can be drilled after a winter wheat crop treated with GF-2070 without the need for specific cultivations and any crop can be sown the following spring.

GF-2070, in common with other pyroxsulam-based products, is recommended only as part of a programme using cultural and chemical approaches. "A true pre-emergence spray is critical," says Dow AgroSciences' Stuart Jackson. "We recommend a flufenacet-based treatment, or similar. Growers cannot apply flupyrsulfuron-based treatments pre-emergence or the total permitted active will be exceeded. GF-2070 is then applied in the autumn at the 1-2 leaf stage of the crop. Where necessary, a residual partner can be applied as well." Dow says it is important to apply GF-2070 when weeds are actively growing to optimise its contact action. In addition to its autumn recommendation the herbicide can be applied in spring, provided the important pre-emergence treatments have been made.

INCOTEC LAUNCHS NEW COMPANY IN FRANCE

Incotec (**www.incotec.com**), the Netherlands-based seed technology company, has launched a new business in Angers to serve the French market. The company says it has a wide range of seed treatment and coating technologies which will benefit the French grower particularly on cereals, broad acre and forage crops. Incotec is currently offering a large range of high quality film coatings for field crops under the name *Disco AG*. These products are suitable for the application of dust-free seed treatments. Incotec has also recently introduced *ThermoSeed*, a disinfection method using hot humid air, and *GeniusCoa*t, a unique yield enhancer for crops such as wheat.

Henk Satter, general manager of field crops, commented: "We are very excited about the expansion into the French market. It means that we can now provide excellent sales support and service to our French customers." Incotec France started business on 1 August 2011, under the management of Pascal Parize, and expects to expand its activities in the future with local production and research.

HUNGARIAN GOVERNMENT DESTROYS GM MAIZE CROPS

A new regulation introduced in Hungary in March stipulates that all commercially traded seeds have to be checked for GMOs before they are introduced to the market. Earlier this year it was discovered that a small quantity of maize seed supplied by Monsanto and Pioneer contained some GM seed. Farmers

had planted it without realising the implications. Both companies argued that the seed was conventiona, and did not contain high levels of GM seed. However, the Hungarian Deputy State Secretary for Rural Development Lajos Bognar announced that the crops contained GM traces above the EU threshold level of 0.1%. Despite pressure from industry and EU officials the Hungarian Government authorised the destruction of 400 hectares of crop. This is probably the first example of a Government authorising such action. When the maize was destroyed it was too late to plant another crop. As a consequence the affected farmers are seeking compensation for loss of income.

AMERICAN NEWS AND MARKETS

FMC ANNOUNCES PLANS FOR ANTHEM

FMC has announced that it expects registration for its herbicide *Anthem* in early 2012. The product is based on a combination of pyroxasulfone and fluthiacet-methyl. FMC acquired the rights to pyroxasulfone, a new active ingredient, from the Japanese company Kumiai.

Anthem offers flexibility by being both a pre- and post-emergence product for both corn and soybeans. It controls difficult grasses and traditional grasses such as foxtail. It is also effective in controlling a wide range of broad leaved weeds. "The residual action of the new product lasts two to three weeks longer than the action of typical products for broadleaf and grass herbicides" reported Paul Stratman, FMC Midwest technical manager. A key benefit of *Anthem* will be the fact that it controls weeds showing resistance to glyphosate. Control of water hemp (*Amaranthus rudis*) which is an increasing problem in the mid-west due to its resistance to glyphosate is seen as a major benefit.

The company is also seeking registration for *Anthem ATZ* for use on corn. It contains atrazine to provide improved control of weeds like cocklebur and velvetleaf. Yemel Ortega, product manager for FMC Agricultural Products, said: "*Anthem* and *Anthem ATZ* will set a new standard for broad-spectrum long lasting weed control in corn and soybeans, providing growers outstanding convenience and application flexibility when they need it most."

US EPA ISSUES ORDER TO STOP SALE OF IMPRELIS

The US Environmental Protection Agency (EPA) has issued an order to DuPont directing the company to immediately halt the sale, use or distribution of the herbicide *Imprelis* that has been reported to be harming a large number of trees (*July CPM*). The order, issued under the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), requires DuPont to stop the sale and distribution of *Imprelis* in the US and outlines specific conditions to ensure that the removal of the herbicide from the market meets legal requirements. The action follows EPA's investigation into why a large number of evergreens and other trees have been harmed following the use of *Imprelis*. In its evaluation, EPA is investigating whether these incidents are the result of product misuse, inadequate warnings and use directions on the product's label, persistence in soil and plant material, uptake of the product through the root systems and absorption into the plant tissue, environmental factors, potential runoff issues or other possible causes.

DuPont had already issued a letter to professional applicators cautioning against the use of *Imprelis* where Norway spruce or white pine trees are present on, or in close proximity, to the property being treated. On 27 July 2011 DuPont acknowledged to the EPA that there had been damage to trees associated with the use of the herbicide and the company had developed an internet web page to provide information and updates concerning the use of the product. On 4 August 2011, the company voluntarily suspended sales and announced that it will soon conduct a product return and refund programme.

BAYER AND MONSANTO COMBINE SEED TREATMENTS FOR SOYBEANS

Bayer CropScience and Monsanto have entered an agreement that will give soybean growers access to a revolutionary biological mode of action to help protect their crop from nematodes and a range of insect pests. In combination with Monsanto's *Acceleron* seed treatment products for soybeans, Bayer's *Poncho/VOTiVO* seed treatment combines a seed-applied insecticide with a new living-barrier approach to nematode protection. *Poncho/VOTiVO* provides a biological mode of action that introduces a revolutionary way to protect soybean seedlings and roots against nematodes. It contains bacteria that live and grow with young soybean roots, protecting against a broad range of nematodes that feed on soybeans.

The combination also offers protection against white grubs, seed corn maggot, soybean aphids, and overwintering bean leaf beetles, as well as nematode protection, including soybean cyst nematodes. *Poncho/VOTiVO* also complements genetic resistance to nematodes in soybeans. "We look forward to this opportunity to provide growers with advanced technology that combines Bayer CropScience innovation in seed treatment with Monsanto seed," said Keith Vodrazka, product manager at Bayer

CropScience. "This combination will help ensure that soybean growers can have the best protection against yield-robbing nematodes and early season insects."

Under the agreement, Monsanto will have rights to commercialise *Poncho/VOTiVO* on its soybean brand *Asgrow*, the *Channel* brand, and regional brands, as well as to sell the product through its seed licensees, which include numerous independent seed companies across the US.

CORN ROOTWORMS DEVELOP RESISTANCE TO BT

The first report of a failure of *Bt* genetics to control corn rootworm has been reported in north eastern Iowa (**www.usagnet.com/story-national.php?Id=1691&yr=2011**).This has raised concerns amongst entomologists and growers elsewhere in the Corn Belt. Iowa State University entomologists reported that the problems were most significant in fields where Cry3Bb1 maize had been grown for three consecutive years. The researchers commented: "There was a significant positive correlation between the number of years Cry3Bb1 maize had been grown in a field and the survival of rootworm populations on Cry3Bb1 maize in bioassays." One theory on why resistance is occurring is that insufficient refuges are being planted. The Iowa State researchers report that only 50% of *Bt* corn being planted complies with refuge requirements, and the lack of refuges that control rootworms with conventional insecticide has resulted in the quick development of resistance.

While it appears that only a small amount of resistance has developed so far recent cases suggest a need to develop more integrated management solutions for pests targeted by *Bt* crops. A common pattern observed among problem fields in this study was the consecutive planting of the same type of *Bt* maize over several seasons, driven by the high price of corn. Even with resistance management plans in place, the entomologists are warning against the sole reliance on *Bt* crops. Although some instances of resistant corn rootworms have occurred in north eastern Iowa, where hybrids have more than one *Bt* toxin present the second toxin is generally controlling the pest. Mike Gray, entomologist at the University of Illinois, confirms that there is an enormous selection pressure applied to corn rootworm. The pressure comes in multiple forms: increasing use of *Bt* hybrids, neonicotinoid insecticidal seed treatments, and broadcast treatments to corn and soybean fields of pyrethroid insecticides that are frequently tank-mixed with fungicides.

BASF TO LAUNCH NEW FUNGICIDES

BASF presented its new fungicides *Merivon* and *Priaxor* at the recent American Phytopathological Society (APS) annual conference. Both products contain the active ingredient fluxapyroxad (*Xenium*) as well as pyraclostrobin (*F500*). *Merivon* contains a 1:1 ratio of the two active ingredients while *Priaxo*r contains a 2:1 ratio. Both control a wide variety of diseases. *Priaxor* has been developed primarily on row crops, including soybeans, wheat and corn, as well as on some speciality crops, such as potatoes and tomatoes. *Merivon* has been developed on speciality crops, specifically pome fruits, such as apples and pears, and stone fruits, including cherries and peaches. EPA registration for the products is expected in early 2012.

Both products were evaluated in field trials in 2009 and 2010 and results indicate that they will provide long-lasting preventative action as well as good coverage of the leaf surface and systemic distribution to ensure optimum coverage.

Trials with *Merivo*n demonstrated good control of diseases, such as powdery mildew in cherries, blossom blight and brown rot in peaches, and apple scab. "Research indicates that *Merivon* is effective at controlling several major speciality crop diseases, including powdery mildew and scab diseases, while also improving crop quality," said Dr Scott Walker, BASF Biology project manager for fungicides. "Apple scab and powdery mildew are two of the most economically devastating diseases for growers on the East and West coasts."

Priaxor results showed excellent control of a number of diseases, including *Septoria tritic*i and *S nodorum* in wheat, gray leaf spot and northern corn leaf spot in corn, and net blotch and scald in barley. In soybeans the fungicide also reduced the severity of frogeye leaf spot and Septoria brown spot. *Priaxor* was also found to be effective at controlling early blight in potato and tomato, powdery mildew and black mold in tomato, and black dot in potato trials.

SYNGENTA SIGNS COTTON SEEDS DISTRIBUTION CONTRACT IN BRAZIL

Syngenta and Mato Grosso Farming Research Support Foundation (Fundação MT) have entered a distribution agreement for cotton seeds in Brazil. The agreement establishes Syngenta as the exclusive supplier of high-quality cotton seeds outside the state of Mato Grosso, which is already served by companies licensed by Fundação MT. The partnership builds on Syngenta's portfolio of crop protection and seed care products.

"Brazilian cotton growers are increasingly looking for integrated solutions," said Laercio Giampani, head of Syngenta Brazil. "The highly productive cotton seed varieties offered by Fundação MT are adapted to the diverse needs of Brazilian cotton growers. By combining the cotton seed varieties with tailored Syngenta seed treatment and crop protection products, we can now offer an attractive integrated solution to growers through our extensive sales and distribution network. In addition, our barter system enhances the growers' flexibility, allowing them to benefit from future growth in cotton production." "This is a good example of how collaboration and partnership can support growers and their businesses," added Mark Bidwell, head of speciality crops.

In the past three years, the planted area of cotton in Brazil has doubled to 1.7 million hectares. Driven by new germplasm and traits, cotton production is set for further growth. Cotton is the second largest crop after potatoes in Syngenta's Speciality Crops portfolio, which covers 35 crops in a $12 billion market.

DOW EXPANDS CORN RESEARCH STATION

Dow AgroSciences is to expand and relocate its corn research station in Arlington, Wisconsin to accommodate a growing corn breeding programme. The new site includes approximately 31,000 square feet (2,880 square metres) of office buildings, seed processing and equipment storage. "The Arlington Research Facility's main focus is developing superior grain and silage corn hybrids for our seed affiliates associated with Dow AgroSciences," said Bruce Nagel, Dow AgroSciences research station site leader. "The site also does research with the trait introgression programme along with support for product characterisation, sales, production research and the agronomy service groups." "This new facility is one of many Dow AgroSciences' projects underway around the globe to bring farmers the best technologies and the best agronomic traits to meet their needs," said Dr Don Blackburn, North American field breeding and development leader at Dow AgroSciences.

CERTIS USA REGISTERS CYD-X FOR USE IN CANADA

Certis USA has selected Engage Agro, Ontario (www.engageagro.com) to distribute CYD-X, its insecticidal virus, in Canada. CYD-X is used by conventional and organic growers to control codling moth in apples and pears worldwide. The product which contains a naturally occurring virus that infects and kills the larvae of the codling moth (*Cydia pomonella*) is the first Certis USA product to be registered for use in Canada. The virus is host specific and it does not infect beneficial insects, fish, wildlife, livestock or humans. Tim Damico, vice president NAFTA for Certis USA said: "With Engage Agro, we have found an ideal partner and steward for our first Canadian product. CYD-X will e and provide the apple and pear grower with more options to control codling moth larvae. CYD-X also offers them a sound resistance management strategy, ability to manage residue limits, and preserve the environmental integrity often found in an integrated pest management system." Engage Agro was founded in 1995 to register and market crop protection and pest control products in Canada on behalf of multinational partners, with a focus on niche markets.

OTHER NEWS AND MARKETS

FMC TO ACCESS BIOLOGICAL PRODUCTS

FMC's Agricultural Products Group has entered into two exclusive agreements covering the global development and supply of Chr. Hansen's (**www.chr-hansen.com**) biological products for agricultural and ornamental markets. FMC will begin commercialisation this year of *Nemix* bacillus product in Brazil and will start development for new biological standalone and combination products in the Americas and key agricultural markets. Under the agreements, FMC will also access Chr. Hansen's large library of existing bacillus products to evaluate and develop other biological products for use in agriculture such as nematicides and plant health promoters. Chr. Hansen will supply biological materials for products that FMC commercialises under the agreements.

DELAYS TO DIURON WITHDAWAL IN AUSTRALIA

The Australian Pesticides and Veterinary Medicines Authority (APVMA) announced in July that as a result of a major environmental and health review it was planning to suspend the registration of all agricultural uses of the herbicide diuron on 12 August. The environmental assessment had found that the current diuron use rates presented a risk to aquatic ecosystems in most situations. In announcing the proposal the APVMA gave 28 days' notice for diuron product registrants to 'show cause' as to why the APVMA should not suspend the registration.

Diuron is an important active ingredient widely used in sugar cane in Queensland. The announcement prompted a strong reaction from growers. Cane growers chief executive Steve Greenwood said there was no ready alternative to diuron, and suspension of its use would drive up costs for cane growers when they were under pressure from rising fuel and irrigation costs. It was also pointed out that under the federally supported Great Barrier Reef Rescue programme, which commenced in 2008, tough new restrictions on the use of pesticides and grants for new equipment had changed the way growers used diuron. The concern was expressed that the APVMA had not taken new usage practices into account. It was reported that the average rate of application had fallen from 3.6kg per hectare to 1.8kg per hectare over that period.

Since announcing that it intended to suspend registration the APVMA has received feedback from both product registrants and grower groups. The registration holders pointed out that there were significant differences between the findings of the 2011 report and a report published in 2005. They also requested more time to assess whether it will be possible to address the concerns in the new report through the provision of data. Grower groups stressed that actual use patterns may differ from that on current registered diuron product labels.

On 2 August the APVMA extended the period for product registrants to show cause and invited user and grower groups to provide new information on actual diuron use patterns. The closing date for information to be submitted is now 30 September. The decision to delay the withdrawal created a swift response from environmental groups. World Wildlife Fund's (WWF) Australian national manager of freshwater issues Nick Heath stated that diuron should be banned, citing Queensland University and Queensland Health-sponsored research that found it is one of the major contributors to pressure on the Great Barrier Reef.

AUSTRALIAN AUTHORITIES PROPOSE TO SUSPEND DIMETHOATE

The APVMA has announced that it proposes to suspend dimethoate products as an interim regulatory action while it completes further assessments on the insecticide. The APVMA has already carried out a residues and dietary risk assessment. This indicated that some of the estimated exposures for consumers are above the health standard, reducing, but not breaching the margins of safety that are normally in place to protect consumers from short-term dietary risks (**www.apvma.gov.au/news_media/news/2011/2011-08-22_dimethoate_review.php**). The suspension would effectively prohibit the use of dimethoate on certain horticultural crops, including fruit fly treatments of many fruits and vegetables. The APVMA is asking dimethoate product registrants and permit approval holders to 'show cause' as to why the proposed action should not be taken. Industry and grower groups have also been invited to submit information or data that may change the outcome of the dietary risk assessment by 13 September 2011. Any regulatory action, including specific restrictions on use, will take effect by the end of September 2011, prior to the commencement of the main post-harvest dipping season.

Dimethoate is currently registered for use in the US, Canada, EU and New Zealand. In the US dimethoate is currently permitted in 35 food crops. The EPA commenced a review in 2009 which is due for finalisation in 2015. In the EU the insecticide is registered in 26 countries and this followed a review carried out in 2006 with agreement to include dimethoate in Annex 1.

AUSTRALIAN RESEARCHERS DISCOVER HOW VIRUSES CAUSE DISEASE

Australian plant scientists have thrown some light on a problem that has puzzled researchers since the first virus was discovered in 1892 which is how do they cause disease. In a major breakthrough Dr Ming-Bo Wang and Neil Smith of CSIRO Plant Industry have revealed a genetic mechanism that enables viral organisms to infect hosts and cause diseases. The research was funded by CSIRO and the Australian Research Council (ARC) and was presented at the International Botanical Congress in Melbourne in July.

“Cucumber Mosaic Virus (CMV) is a common, destructive virus that affects a wide range of food crops and ornamental plants,” Dr Wang said. “What we found was that CMV, accompanied by a special type of viral particle called a ‘satellite’, causes its distinctive yellowing symptoms in plants by slicing a gene that makes chlorophyll. By preventing the production of chlorophyll, the virus causes the leaves to become partially or entirely yellowed which dramatically affects growth and productivity.” Dr Wang and Mr Smith have also determined the exact gene affected by this virus, a gene called CHL1. “Pinpointing this gene represents a major step forward in understanding exactly how some viruses cause disease symptoms in susceptible organisms,” Dr Wang said.

Until recently, scientists did not fully understand why viruses only affected a small range of host organisms. This discovery shows that the accompanying satellite gene of CMV must directly match the host plant’s genes to cause the yellowing disease. When they do match, the satellite genes ‘lock’ onto and slice the host's genes, preventing the host from forming green chlorophyll pigment. "Think of it as like doing up a zipper on your jacket -- two opposing but different sections have to come together for it to work," Dr Wang said. "So one half of the ‘zipper’ genes come from the virus and the other half of the genes from the host, and when they match up the virus causes disease.” The finding means researchers can focus on locating genes in viruses that match known genetic sequences in plants, and this can help to reveal the cause of diseases by other viruses.

SCIENTISTS DEVELOP NOVEL APPROACHES TO PEST CONTROL IN MAIZE

A team of scientists from Africa and the UK have made a breakthrough that will help develop novel and ecologically sound approaches to controlling destructive insect pests in maize crops. Specifically targeted is the spotted stem borer (*Chile partellus*) which destroys the plant by tunneling into the stalk and disrupting the flow of nutrients. This insect pest occurs in eastern and southern Africa and South Asia, causing yield losses of up to 88%. Since its introduction into Africa early in the early 1900s it has spread to many different agroecological zones.

Scientists at the Kenya-based International Centre of Insect Physiology and Ecology, icipe, and UK-based Rothamsted Research, discovered that certain maize landraces obtained from South America (where maize originated) have sophisticated defence strategies against insect pests. These maize plants produce chemicals (herbivore induced plant volatiles) that attract parasitic wasps as soon as the stem borer moths lay their eggs. These parasitic wasps kill the stem borer eggs and caterpillars preventing the crops being damaged.

The research team's findings suggest that the release of these chemical attractants is absent from commercial hybrid maize varieties, possibly having become lost through conventional crop breeding, and could therefore be valuable in future breeding by reducing the need for certain insecticides.

This collaborative work, between icipe (**www.icipe.org**), which receives funding from EU and the UK’s Biotechnology and Biological Sciences Research Council (BBSRC), offers an alternative control option that makes use of natural plant defence responses and provides a cost effective and environmentally benign method of control for maize farmers. The immediate targets of this work are smallholder farmers in East Africa, but the findings are applicable to maize crops elsewhere in Africa and globally.

DOW AND MS TECHNOLOGIES COLLABORATE ON ENLIST

Dow AgroSciences and MS Technologies are collaborating on a submission to the US Department of Agriculture (USDA) for the approval of the first-ever, three-gene herbicide-tolerant soybean. The new soybean event developed by the companies includes three herbicide tolerance genes stacked as part of a single genetic event in the soybean genome. The genes provide tolerance to Dow AgroSciences' new 2,4-D product, glyphosate, and glufosinate which combined make-up the *Enlist* Weed Control System.

In addition to providing growers with a choice of glyphosate tolerant soybean products, the *Enlist* technology will give growers greater flexibility in using the new 2,4-D product. Growers will be able to plant immediately after product application, as compared to the delays currently required by 2,4-D labelling. *Enlist* will also offer growers a new tool to address glyphosate-resistant and hard-to-control weeds. "MS Technologies is excited to partner Dow AgroSciences on this innovative technology, which will set a new standard for weed control and yield performance in soybeans, allowing growers to maximize their profits," said Joseph H Merschman, president, MS Technologies. Pending regulatory approvals, the trait package is expected to be available by 2015 in Dow AgroSciences, MS Technologies and Mertec soybean varieties.

INTERNATIONAL SCIENTISTS SEQUENCE BRASSICA GENOME

An international team of scientists has sequenced the genome of a Chinese cabbage variety of *Brassica rapa*, a close relative of oilseed rape. The research, published in the journal *Nature Genetics,* could help improve the efficiency of oilseed rape breeding, as well as that of a host of other important food and oil crops. The international consortium involved researchers working across four continents, with the majority of the data generated in China.

The production of oilseed rape, an important source of vegetable oils for cooking and industrial applications, has doubled in the last 15 years. It is an unusual hybrid which contains the entire genomes of two other plants *Brassica rapa* and another closely related species *Brassica oleracea*. By sequencing *B rapa*, researchers are able to access half of oilseed rape's genes without having to wrestle with its large and complicated genome. Professor Ian Bancroft who led a team of researchers at the UK's John Innes Centre which receives strategic funding from BBSRC explained: "Oilseed rape is the second most important oil crop in the world and the most important in Europe. Sequencing its genes will provide breeders with the tools to improve the efficiency of developing new varieties, but this is difficult because it has a really complicated genome. Thankfully, because it is a hybrid, nature has already divided up the oilseed rape genome into two more manageable chunks, one of which we have now sequenced."

B rapa and oilseed rape accounts for more than 10% of the world's vegetable and vegetable oil production and, despite their apparent diversity, they are all closely related. This enables scientists to apply the insights they gain by sequencing one species, such as *B rapa* to improving the breeding efficiency of a range of crops essential to global food security. The *B rapa* sequence was produced using a technology which breaks the DNA into small segments before reassembling the complete genome.

TESSENDERLO ACQUIRES PURFRESH ASSETS

Tessenderlo Kerley, Inc. (TKI) and Purfresh have reached an agreement for TKI to acquire the global assets of the Purfresh crop protection sun screen business and the Purshade product line including the trademarks, formulation knowledge, registrations, pending patents, other intellectual property and customer lists. Purshade is approved for sale in over 40 countries. The business will now be managed and marketed by TKI's NovaSource (**www.novasource.com**) business unit and will complement the company's *Surround Crop Protectant* product line. NovaSource is responsible for developing and marketing registered pesticides for niche crop protection and speciality markets. Following the acquisition, TKI will dismiss its complaint against Purfresh. The complaint, filed in the US district court for the district of Delaware, asserted that Purfresh infringed certain TKI US patents.

TKI's *Surround* product line protects plants in three ways. Firstly the calcined kaolin particle film can protect fruit against direct sunburn and heat stress damage by up to 50%. Secondly, it promotes plant health, which leads to more efficient photosynthesis and higher yields under extreme light and heat growing conditions. Carefully timed treatments of *Surround* can also reduce insect activity, delaying or

even eliminating the need to apply conventional insecticides later. TKI says that no other sunscreen product provides the insect suppression capability.

ARYSTA RECEIVES NEW REGISTRATIONS FOR SOIL FUMIGANT

Arysta LifeScience has received registrations in Mexico and Guatemala for *Midas* (iodomethane), the broad spectrum soil fumigant that controls soil-borne diseases, nematodes, weed seeds and insects. Commercial launches are planned for 2012. Iodomethane was first developed as a replacement for methyl bromide by researchers in the US. "As countries around the world continue to phase out methyl bromide in accordance with the provisions of the Montreal Protocol, growers need an effective tool that provides a similar level of crop protection. *Midas* is a great fit for their needs, as demonstrated by the growing number of countries bringing the product to market," said Hildo Brilleman, Arysta's global marketing manager for fumigants and herbicides.

Midas has been registered for commercial use since 2007 and applied safely to more than 17,000 acres (7000ha) in the US. Commercial applications of *Yokafume*, the Japanese formulation of iodomethane, will begin this autumn in Japan. Arysta LifeScience has developed a stewardship and training programme there and more than 400 local technical advisers and 150 farmers have now been trained. In addition to Mexico, Guatemala and Japan iodomethane is registered in the US, Turkey, New Zealand, Uruguay and Morocco. Additional registrations are pending in Australia, Egypt, Israel and South Africa.

INSECTICIDES INDIA TO EXPAND

Insecticides India Ltd plans to invest about Rs 70 crore ($15.25 million) over the next two years on expansion, including setting up a new plant in Rajasthan. At present, the Delhi-based company has five plants in Rajasthan, Jammu and Gujarat, where it manufactures pesticide formulations and technicals. Under the expansion programme, the company would ramp up its formulations production capacity to 500,000 tonnes per annum from the current 350,000 tonnes, while its technicals production capacity would be increased to 22,000 tonnes from 12,000 tonnes at present.

Insecticides India's turnover grew by 20% to Rs 480 crore in the last fiscal year, while its net profit rose by 14%. About one-third of the company's revenues come from four products - *Monocil, Lethal, Victor* and *Thimet*. The company, who has recently acquired the systemic insecticide Monocil (monocrotophos) from Nocil Ltd, has some 95 brands and plans to launch at least seven new products in the next fiscal year.

MAKHTESHIM AGAN REPORTS ON SALES

The Makhteshim Agan Group has reported its financial results for the three-month and six-month periods ending 30 June 2011. Sales revenue for the second quarter of 2011 totalled $723.1 million, their highest level for a second quarter in the company's history, reflecting strong growth for each of the Group's regions. This represents a 20.6% increase when compared to the second quarter of 2010, reflecting a 15% rise in overall sales volumes including for the first time the Group's activities in Korea and Mexico. In addition, sales were enhanced by the weakening of the US dollar, which increased the value of the Group's European and Australian sales when expressed in US dollar terms. Sales for the first half of 2011 totalled $1,503.6 million, a 13.6% increase compared with $1,324.1 million for the first half of 2010.

Mr Ami Erel, Makhteshim Agan's chairman of the board, commented: "We are pleased to report strong revenues for the second quarter and first six months of 2011. These result from the effective measures the company has taken during the last 18 months, which have culminated in significantly improved profitability and record sales." Mr Erel continued: "Our business combination with ChemChina is progressing well. We expect the transaction to close before the end of October 2011."

Mr Erez Vigodman, president and CEO of Makhteshim Agan, said: "The results are clear reflection of the progress we have made with our streamlining initiative. Our change plan has been transforming the company, solidifying our competitive position in a growing market place, creating the platform for continued geographical expansion and profitable growth. The potential business combination with ChemChina, which we have been accommodating and progressing, will complement the overall strategic and operational transformation of Makhteshim Agan. Our top line growth was driven by strong performance of each of our regions enabling us to gain market share in key geographies while fully integrating our recent acquisitions in Mexico and Korea. We remain committed to deliver simple,

reliable and effective solutions to farmers around the world. During the last six months we have continued to expand and differentiate our offering through the acquisition of diuron, the launch of fipronil-based products in the US and of over 25 new products across the globe. By coupling solutions with continued focus on our operations we were able to improve our profitability."

In North America, despite challenging weather conditions, the Group's sales increased by 19.5% year on year, demonstrating the success of the Group's strategic initiatives, including its partnership with Monsanto and the launch of fipronil based products in the US. In Asia Pacific & Africa, sales grew by 33.5% driven by increased sales volumes in India and Australia, strong momentum in the activities of the newly-integrated Korean business, and the appreciation of the Australian currency.

Sales of the Group's European region grew by 20.9% driven by significant market share gains, higher volume sales and the strengthening of the Euro as compared to the dollar. This was offset partially by lower selling prices in Eastern Europe. In Latin America sales grew by 9.1% reflecting the integration of the Mexico acquisition, offset partially by the continued implementation of the Group's restructuring of its Brazilian operations, which led to more selective sales and therefore reduced overall sales volumes.

EBITDA (Earnings Before Interest, Taxes, Depreciation and Amortisation) for the second quarter of 2011 totaled $119.4 million, or 16.5% of sales, a 68.4% increase compared with $70.9 million, or 11.8% of sales, for the second quarter of 2010. For the first half of 2011, EBITDA totaled $262.7 million compared with $203.6 million for the first half of 2010.

CONFERENCES AND FEATURES

BIOPESTICIDE MARKET EXPANDING

The fast growing interest in biopesticides is currently being driven by the need to feed a rapidly increasing world population and the need to achieve sustainability in agriculture. Environmental concerns and consumer preference for chemical-free food crops are also adding to the momentum. New products, a growing confidence and end user acceptance of substitutes to conventional pesticides, and the withdrawal of the more harmful pesticides in many markets are also fuelling growth.

Researching the market

Several studies have been undertaken in recent years to establish the precise size of the biopesticides market. In many cases the findings have varied dramatically, largely because not all research uses the same criteria to define the market. However, there is a consistent message that confirms that there is good growth. In 2006, Arysta LifeScience estimated the worldwide biopesticide market at approximately $541 million. A 2008 study released by Global Industry Analysts, Inc. (GIA) estimated that biopesticides represented about 3% ($750 million) of the overall pesticides market and was likely to reach the $1 billion mark by 2010. The key factors contributing to this projected growth include a larger overall investment in biopesticide research and development, a more established application of the Integrated Pest Management (IPM) and Integrated Crop Management (ICM) concepts, and an increasing area coming under organic production. A 2009 report from research firm Frost & Sullivan says increasing demand for chemical-free crops and more organic farming has led to the augmented usage of biopesticides in North America and Western Europe. It put the value of biopesticides in those combined markets at $594.2 million in 2008 and forecast that the market would nearly double by 2015 to a market value of $1.02 billion.

Europe clearly lags behind the US in terms of registered biopesticides with far fewer active substances. Government support for capacity development of biopesticides places the US market ahead of any other region in the world with sales of about $300m. Asia-Pacific constitutes the other leading market, with biopesticides sales projected to reach $362 million in 2012. The EU is currently estimated at around $270 million and is seeing the most rapid growth at about 15% per annum. Much of the growth is coming as a result of the withdrawal of many of the more harmful products following the EU pesticide review and the introduction of the EU's Sustainable Use Directive which calls for new approaches to crop protection to be adopted by 2014., The latter includes national timelines, targets and measures to reduce the risk and impacts of pesticide use on human health and to reduce dependency on pesticides. The Directive also includes numerous provisions in support of 'non-chemical methods or alternatives' and 'biological pest control.'

Advancements in technology

Perhaps the single most important factor in the growth of the biopesticide market though is advancements in biopesticide technology. Extensive and systematic research has resulted in enhancements to formulation techniques, the ability to manufacture biopesticides through mass production, increased storage and shelf life capabilities, and improved application methods. Also by increasing the knowledge of end users the benefits of biopesticides have become better understood. As a result traditional chemicals farmers are becoming more receptive to trialing and implementing biopesticides. More and more growers of conventional crops are now using biopesticides within their production programmes. US-based biopesticides company AgraQuest estimates market demand for biopesticides and what they call 'low chem' solutions could reach $10–$13bn by 2020.

The growing interest in biopesticides technology was highlighted in 2010 by the number of deals between the agrochemical multinationals and biopesticide companies. AgraQuest partnered with Monsanto, for example, to develop biopesticides for seed treatments and formed a marketing deal with BASF to distribute the fungicide *Serenade* to worldwide markets. Bayer acquired the biopesticide technology and assets of Israel-based Agrogreen. Other major agrochemical companies like FMC, Arysta LifeScience, Syngenta and Makhtesim have all set up dedicated teams to focus on developing new products internally or through partnerships with smaller biopesticide companies.

Replacing conventional pesticides

In Europe France has launched Ecophyt 2018 seeking to reduce pesticides by 50% by 2018, the objective being to reduce the dependency of farmers on plant protection products while maintaining agricultural production at a high level in terms of quality and quantity. In Denmark the 'Green Growth' initiative set aside $2.3 million for the 2011-2015 period to provide grants to applicants seeking authorisation for placing alternative products on the Danish market.

In the UK a special Government scheme was introduced in 2006 to encourage more companies to register biopesticides. At the time there was optimistic talk of the UK leading Europe in this area of crop protection. The scheme cut approval costs and even appointed a 'biopesticide champion' to help guide applicants through the process. Five years down the line, however, progress seems extremely slow. According to a recent report by the Pesticides Forum, the number of biopesticide products gaining registration in any one year in the UK - which reached a low in 2003 - has only gradually risen since the new scheme began.

Retail chains such as Tesco and Walmart are, however, playing their part in the growth of biopesticides. They are coming under increasing pressure from consumers and shareholders to put in place sustainability programmes and are demanding reduced use of pesticides or in some situations chemical-free crops. In many cases, European food retailers are imposing even stricter pesticide limits on their suppliers of fresh produce than mandated by the regulators. This is often used as a point of competitive differentiation in the marketplace. Biopesticides can increasingly help to meet their needs.

Conferences – a measure of recent growth

A sign of the increasing importance of biopesticides is the number of conferences being held later this year which are addressing the subject. Informa Life Sciences is holding its inaugural Biopesticide conference in Amsterdam from 6-7 December. The organisers say that this will deliver a comprehensive review of the biopesticides market and that experts will be on hand at a workshop and seminar held on 5 and 6 December to give additional advice to those planning to enter this market (**www.informaglobalevents.com/event/biopesticides**).

THE IBMA (International Biocontrol Manufacturers Association) is holding its annual conference in Lucerne. The 6th Annual Biocontrol Industry Meeting (ABIM-Lucerne 2011) will be held from 24–26 October and this year runs over three days instead of two. As is usual a number of new products will be presented and there will be discussions around the current trends in the global market (**www.abim.ch**).

Another two international biopesticide conferences are being held in India and Thailand. The first is titled *Biopesticides and Naturalites Shaping World Agriculture, Public Health and the Environment*. This has been held every two or three years since 1996. The 6th conference organised for 11–16 December 2011 is in Chiangmai, Thailand. The purpose of this conference, says its organisers, is to bring together scientists and professionals from academia, industry and government to report on the discovery, development and proper use of biopesticides in agriculture, forestry and public health. The emphasis at the conference will be on fundamental and applied research. The second is the 3rd Biopesticide International Conference (BIOCICON 2011) held at St Xavier's College, Palayamkottai, Tamil Nadu, India on 28-30 November. This conference is aimed at promoting basic and applied research and development for ecofriendly pest and disease management in agriculture, horticulture and forestry (**www.jbiopest.com/users/LW8/page.php?intPageId=209**).

In the UK, the AAB (Association of Applied Biology) is holding two one day events both in Grantham. The first on 29 November is the 2011 Biopesticides Conference which will address current policy issues with particular reference to new European legislation and the Sustainable Use Directive. The programme will also explore technical developments and important factors relating to the successful implementation of biopesticides. This event will run back-to-back with the AAB Biocontrol Group's *Advances in Biological Control* conference. The organisers of this say it is their intention to create an annual gathering of the biocontrol community at which young scientists, experienced researchers and practitioners can meet and share their knowledge and expertise. They hope the interaction with 'like-minded' people will enhance thinking and promote more collaborative ventures (www.aab.org.uk).

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