

# gro

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the scene for success

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first SPRAY

**R&D Investment:**  
Bring on the revolution

# Welcome

Syngenta is one of the world's leading companies with more than 24,000 employees in over 90 countries dedicated to the purpose of Bringing plant potential to life. Through world-class science, global reach and commitment to customers, Syngenta helps to increase crop productivity, protect the environment and improve health and quality of life. For more information visit [www.syngenta.com](http://www.syngenta.com).

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As we find 2010 somewhat suddenly upon us, it is hard to believe just how quickly the last decade has passed and how much has changed in the world of agriculture during that time.

In Australia, farmers have endured drought (and floods) – just as they always have – and despite years of hardship for many, our country remains one of the world's leading agricultural exporters.

This is testament to the resilience of our growers and their passion for providing food, feed and fuel for both local and global markets.

Australian agricultural researchers are leading the world. Perhaps it is the challenge of finding ways to improve yields despite adversity that has given them the drive to succeed. As a result, Australian growers are also world-leaders in the uptake of technology and farming practices that can improve both the productivity and sustainability of our farming systems.

Whether it is input technology such as seeds and crop protection products, mechanical technology such as GPS guidance and robotic packing systems, or agronomic practices such as IPM, IWM and minimum tillage, growers are seeing the genuine benefits of public and private investments in research and development.

It seems somewhat counter-intuitive that despite growing global awareness of population growth, changing diets and the critical need to raise world food supplies, both public and private R&D investments have declined in recent years.

In this edition of Gro, investment in R&D is a recurring theme. Our cover story focuses on the role of technology in agriculture and, worryingly, identifies a clear correlation between the reduction of R&D investment and the decline of yield increases, which has been seen over the last two decades.

It appears that after the success of Norman Borlaug's Green Revolution of the 1960s and '70s, complacency crept in. Investment in agricultural technology was not a priority – in fact it was barely on the agenda.

There is no doubt that break-through agricultural R&D requires serious and sustained investment, and while the lag time between spending on R&D and getting a return can be off-putting, we can no longer fail to act.

Syngenta continues its investment in R&D and is even increasing its funding of local development projects, global extension programs and production capacity growth to ensure farmers all over the world can gain access to the technology and knowledge that will enable them to maximise yield potential.

Access to technology is one of four key interrelated themes at the heart of Syngenta. Water efficiency, resourceful land use and biodiversity are the other three. Every Syngenta team member, in every country in which the company operates, contributes in an important way to dealing with these issues.

Check out [www.growmorefromless.com](http://www.growmorefromless.com) to learn more about how Syngenta is working to enable farmers to sustainably increase yields and protect valuable resources.

I hope you enjoy the Summer 2010 edition of Gro and continue to provide your story ideas and feedback. It was a pleasure getting out in the field and meeting you in 2009 and I look forward to doing it again in 2010.

Wishing you a safe and prosperous beginning to the new year,

Paul Luxton  
General Manager

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## We value your feedback

Tell us what you think of Gro, suggest a topic for a future issue or simply voice your opinion on a subject that affects you.

The best letters will be published, with permission, on our Reader Feedback page that can be found on Page 4.

Send your comments, along with your name, address and telephone number to:

Editor: Gro Magazine  
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Or email [gro.magazine@syngenta.com](mailto:gro.magazine@syngenta.com)

# From our readers

Thank you to all the readers who provided their opinions and feedback on our last edition. Here are some of the letters we received:

## Why isn't everybody doing Controlled Traffic Farming?

Australian Bureau of Statistics data shows 88 per cent of crop farmers in Australia do not use CTF practices – yet many growers and researchers recognise the proven benefits and massive changes to farm productivity, sustainability and resilience to climate variability that CTF brings.

CTF is a farming system approach that optimises the management of natural and purchased resources as the fundamental first step.

The three basic components are controlled traffic (permanent wheel tracks and matching machinery widths), zero or reduced tillage and residue retention, and farm planning to manage runoff and farm efficiencies.

These components cannot be disputed as best practice – they are just common sense – but combining them within the farming system is rare.

On-farm performance has shown high and increasing benefits to productivity, water use efficiency, soil and landscape improvement, and farmer capabilities and lifestyles.

It is also easy, effective and efficient to build on the CTF basics with zero-tillage, precision agriculture and new GPS-based technologies.

Most growers recognise CTF offers multiple benefits and are keen to do it, but for many reasons seem to think it is all too hard –

machinery, layout, contour banks, soils, environments, industry, and over-arching all of these, the cost.

There are now many proven on-farm examples of successful adoption in response to all technical and resources issues. These are no longer constraints. But, for it to happen, growers have to make the decision to change.

It's a farming system change, a relatively complex series of interactive decisions during a period of time, which require clear planning and consistent, appropriate advice.

The Australian Controlled Traffic Farming Association (ACTFA) has asked for Federal Government funding to develop a leadership team and specified funding to be allocated for CTF adoption support, training for service industry personnel, and research and development for established systems and new applications, such as in the vegetable and fodder industries.

ACTFA believes CTF has the capacity to double productivity and that, with targeted funding, 50 percent adoption across the farming sector is achievable within 10 years.

The doubling of productivity would bring benefits to the national economy, the vitality of rural industries, and the vibrancy of rural communities.

**Dr Don Yule**  
**Director – CTF Solutions**  
[www.ctfsolutions.com.au](http://www.ctfsolutions.com.au)



## Q-biotype whitefly poses challenges

Thanks again for another great read (Winter 2009).

In particular the update on Q-biotype whitefly was well thought through and posed some real challenges for Queensland irrigated industries, particularly our Horticulture enterprises.

I am aware of the great job Dr Silva Subramaniam has done for Bowen growers as well as the greater industry in Queensland and was wondering about the likelihood of this pest ever being endemic in Southern horticultural markets.

Do we have nature working for us in keeping this pest geographically restricted, or is it a matter of time until our growers and agronomist have to battle it in our Southern crops?

**Andrew Meurant**  
**Horticulture Segment Manager – Elders**

**Please send your feedback, story ideas and opinions on topics that interest you to:**  
**Editor – Gro Magazine**  
**PO Box 886, North Ryde NSW 1670**  
**Or email: [gro.magazine@syngenta.com](mailto:gro.magazine@syngenta.com)**

## Share your views

Share your views on the articles and topics we cover each edition, and if your letter is published in the next issue of Gro, you will be eligible to receive a \$50 R.M. Williams gift card.

The opinions expressed in letters and reader feedback may not necessarily represent the views of Syngenta. All letters published in this magazine are done so with permission of the authors.

# Fresh innovations taste sweet

GARRISON sweet corn

Australian growers are eagerly awaiting the wealth of new varieties of fresh market beans and sweet corn from Syngenta.

Syngenta's Product Manager for Large Vegetable Seeds in Australia and New Zealand, Steve Muldoon, said three new lines of beans; INSPIRATION, PREVAIL and RENEGADE, have come from a strong pipeline continuing out of Syngenta's breeding program in the United States.

"The breeding teams in the US have done their homework on getting the best genetics from our current assortment, and reworking them to improve yields and disease resistance," Steve said.

"The strengths of all three are in their enhanced packed-out yields, dark green colour, and improved shipping and handling ability.

"Shelf life and field holding ability has been a key focus for our assortment, with varied environments to deal with," Steve added.

Queensland fresh market integrated process packer, Greg Price from Price Farming, knows a good bean when he sees one.

"The conditions up here in Bowen over winter can get real tough with winter rain and gusty winds," he said.

"As a consequence, wind rub and blemishes can downgrade my crop and the price I receive, which is a big concern for me and the other growers.

"Steve has trialled three new fresh market varieties with me over the past two seasons, and the likes of INSPIRATION and PREVAIL really stood up in these conditions.



(L to R) Greg Price, Paul Centofanti — Syngenta North QLD Vegetable Specialist, and Steve Muldoon — Product Manager Large Vegetable Seeds Australia/New Zealand, in a field of PREVAIL

"The improved storage and pack-out weights were what got me to really take notice. The high set position on the plant and even flowering all the way through the season, even under these tough conditions, will see me introduce these Syngenta lines into our program next year."

Sweet corn growers have also reaped the benefits of Syngenta's improved breeding genetics with the recent release of fresh market variety GARRISON. The new variety features a comprehensive disease resistance package for the Southeast US shipper market, so should adapt well to Australia's northern conditions.

This sweet corn offers strong husk protection, a uniform shipping ear, and excellent tip fill for the fresh market.

Growers looking for a high yielding variety with a strong plant, straight rowing, and a wide area of adaptation should choose GARRISON. Its strong disease package includes high resistance to most strains of rust, Northern Corn Leaf Blight and Maize Dwarf Mosaic Virus, as well as intermediate resistance to Stewart's Wilt and Southern Corn Leaf Blight.

According to Steve Muldoon, the key advantages of GARRISON in Australia are robust seed vigour, early and even plant stands, and overall higher yields.

"The fresh market varieties have, in the past, been much more refined than processing lines, and as such need to have improved tip fill, tighter husk cover and disease resistance—which is what we are seeing with GARRISON," Steve said.

"To date Syngenta hasn't introduced tropical varieties into the Australian market due to their lower quality with generally low sugar levels and lack of taste.

"The beauty of GARRISON is that it has a very strong plant habit. Couple this with good yields that produce nice tasting corn and you're onto a winner!"

# Technology a key to being a SPRAY

When Darren Schreurs first began learning about IPM practices, he believed it would reduce chemical, labour and fuel costs on his vegetable farm in Victoria.

Little did he know that one day his implementation of new technologies and farming practices would be a leading factor in being named Australia's first Sustainable, Productive, Responsible Applicator of the Year (SPRAY).

"Technology is very important on our farm," Darren said. "For example, the new crop protection products that are IPM compatible are a very important tool for us to control pests and maximise beneficial insect populations.

"Machinery such as our Househam sprayer is state-of-the-art when it comes to sprayers and makes the job much more efficient and comfortable.

"All our other machines, packing lines, washers and up-to-date seed varieties keep us on top of the game," he added.

Peter Schreurs & Sons is a family run vegetable farm in Devon Meadows, about 50km south east of Melbourne.

The farm grows a number of vegetable lines including leeks (their main crop), baby cos lettuce, baby endive, baby wombok, radicchio, parsnips and kohlrabi. Approximately 140 of their 160 hectares are sprayed each year.

The SPRAY Awards judges were impressed by the way Darren was always seeking ways to do things better. Against some tough competition, Darren won the top award because he displayed good knowledge of IPM principles, risk management, OH&S, and application technology, and showed excellent record keeping and safety procedures.



Darren Schreurs celebrates winning the national SPRAY Awards with his wife Anne-Maree

"I have always tried to do the best I can and before the SPRAY Awards I had no idea how I compared to other spray operators," Darren explained.

"It's made me realise what level I'm at compared to others in the industry.

"By winning the award I hope other spray operators will take note of my safe, sustainable spraying and crop maintenance practices.

"We are always looking at new technology and practices such as IPM to improve efficiencies, reduce costs and contribute to producing safer vegetables. By planting better varieties, our yields have also improved.

"Overall our produce is harvested, packed and pressure-cooled much more efficiently than in the past and we are constantly improving our efficiency by adopting the latest technology—or even old technology—if it improves our operation."

Darren uses lots of different means to learn about new technology and farming practices – from

industry magazines to the internet, as well as taking advice from crop input and machinery reps. He even keeps in touch with other growers around the world via email.

"I like to meet farmers who grow the same crops we do and find out their methods of weed and disease control," Darren said.

"My prize for the SPRAY Awards is a study tour to the UK, and I'm hoping to meet some vegetable growers while I'm over there and learn even more about IPM, spraying machinery and any other new technology for vegetable growing that is relevant to us.

"To those who want to enter the SPRAY Awards next year I would say: look carefully at your whole operation and ask yourself – is it safe, are your spray practices sustainable and is your spray unit calibrated and in the best possible condition?"

"For me, winning the 2009 title was fantastic, but I learnt so much from the judges and other entrants, just being part of the competition was a very rewarding experience."



**Richard Price**  
Managing Director Kondinin Group

# An intelligent approach to R&D

By Richard Price

Research and development (R&D) has shifted during recent years and we are now looking at a declining public budget combined at the same time as a growing diversity of R&D and market demands.

In the past, much of the focus has been on productivity gains, but now we have to deal with broader matters such as climate change, global food supply and consumer sentiment.

To add to the complexity, annual productivity gains are slowing at a time when fiscal policies are tightening and demands are spreading.

Greater collaboration nationally and internationally, between public and private sectors will be critical to reduce duplication and ensure relevant outcomes.

Successful R&D in the future will involve joint partnerships and a shift in focus that will see private investment and the levy-funded system consolidate and flourish – and everyone needs to be very clear about what they need to deliver.

R&D requires the right kind of methodology to measure performance in front of growers, while growers need to see the right outcomes to ensure they support the levy process and outcomes from the private sector.

## Intelligent approach

This approach is particularly pertinent to government departments who will need to shift thinking and strategies more from an institutional focus, to one of economic development taking a lead in market intelligence. There is nothing like a commercial imperative to push an outcome.

The future will see players focus on their specific area of expertise then come together to deliver a more holistic outcome to producers and the wider market.

This may take the form of identifying which part of the process each party has the skills to deliver, with a final integration of the results – for example: seed production through to marketing and extension to deliver producers a complete supply chain package.

## Delivering the message

The uptake of any new technology stemming from R&D will start with strengthened networks and between R&D community and growers.

Grower-driven networks, such as Kondinin Group at a national level and local grower groups on a regional level, have an increasingly important role to play.

The R&D community needs to improve the way they engage with producers to understand their longer-term needs and to determine whether or not they are delivering value back to the farm gate with any new technology.

This network provides a foundation for knowledge transfer to drive adoption, monitoring and feedback – which is needed in copious amounts.

Faster, smarter decision making will be part and parcel of the new delivery of extension.

Ensuring the grower group networks are in the loop (and recognising the input they have on R&D spending) will increase the potential for adoption.

With this greater collaboration between all stakeholders, the needs and roles will be well-defined. The road to (and the adoption of) new technology can be fast-tracked, market-focused and cost-effective.

**Richard Price is a United Kingdom Nuffield Scholar and has an impressive track record in farming and business start-ups that spans several countries. Before Kondinin Group, Richard operated a large-scale farm in the UK, producing commercial and stud livestock, cropping and organic commodities. He also engaged in livestock exporting and trading with major cooperatives in France.**

**Kondinin Group is a leading provider of independent information for Australian agriculture, facilitating the knowledge transfer of research outcomes to primary producers and advancing their farming operations. Kondinin Group has a reputation in the industry for its unique ability to communicate high-level technical information in a format which encourages adoption of research and development initiatives and new technologies.**  
[www.kondinigroup.com.au](http://www.kondinigroup.com.au)



The R&D community needs to improve the way they engage with producers to understand their longer-term needs.

# R&D investment:

Bring on the revolution



As the world's population swells during the next few decades, producers around the globe face an unprecedented challenge to meet burgeoning global food requirements.

Optimists would say we've seen such a challenge before and we can again take it in our stride. The Green Revolution back in the 60s and 70s dramatically increased our ability to grow and produce food around the globe. The time has come to do it again.

However, as Executive Director of the Syngenta Foundation for Sustainable Agriculture, Dr Marco Ferroni pointed out during his recent visit to Australia\*, the next revolution will need to be greener than ever.

"The order of the day at the time of the first green revolution was to intensify," Dr Ferroni said.

"The only other way is to extend the land frontier which would require cutting down forests and that is just not sustainable."

"Now we have to intensify more sustainably. In other words, we have to watch out for land and water resources in particular, which have to be used wisely. This requires a new intensity in technology for raising yields per hectare."

Paradoxically, the yield gains achieved as a result of the Green Revolution have all but petered out and in some cases the rate of increase of crop yields has stagnated or started to decline (see Figure 1). On a local scale, this is not only a concern in term of future food supply, but also in terms of dollar returns per hectare at the farm gate, particularly as input costs continue to rise.

The answer, history tells us, lies in more productive crop varieties, with greater resistance to a range of stresses such as pests, disease and drought combined with increased management savvy supported by novel production technology such as that achieved through precision agriculture.

"Agricultural technology, such as traits, seed treatments and crop protection products, is risk management to protect yields," Dr Ferroni said.

But herein lies the challenge—behind any new technology lies an investment into research and development (R&D) and because both the science and the task of feeding a growing and increasingly affluent population are getting more complicated, the required investment is going to be massive in comparison to what was spent to develop the Green Revolution.

### Rates of return

Declining investment could be a result of perceived low rates of return.

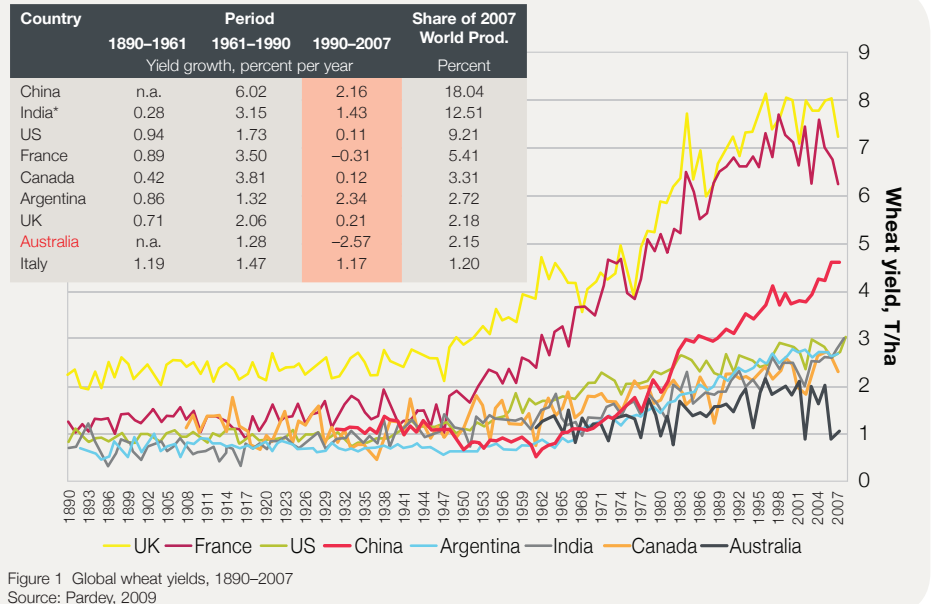
Professor Philip Pardey\*\*, specialises in the economic impacts of global research and development and he believes the return on investment in agricultural R&D is clear and widespread.



Technology holds the key to meeting burgeoning global demand for food through sustainable farming practices

"For every dollar spent on research in the United States, each State gets about \$20 (USD) back," Prof. Pardey said. "However the US as a whole gets something like \$30 (USD) back for each dollar invested."

Prof. Pardey believes the same holds true in other countries and on a global scale investment in one country will often benefit agricultural production in other countries.



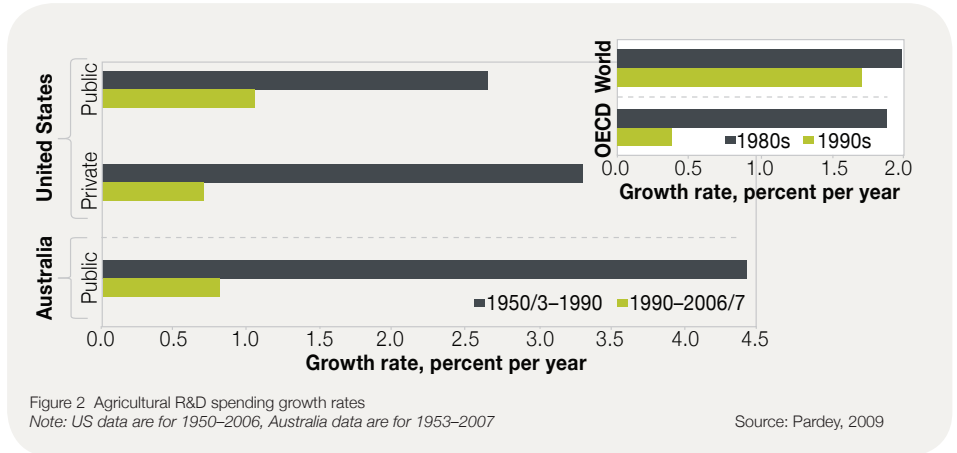
In a study conducted by the Rural R&D Corporations in 2008, it was found that in Australia, there is an average return of \$11(AUD) for every one dollar invested by the country's 15 Rural R&D Corporations (RDCs).

But even though the returns are clear, public spending on R&D on a global scale has levelled off during recent years (see Figure 2).

### Joining forces

The days of relying largely on public sector funding for production-based R&D are a thing of the past. It is the private sector that is now increasingly rising to meet the challenge of global food security through stepped-up investment in R&D and joint ventures, according to the Syngenta Foundation's Dr Ferroni.

"During the past decade or two, the leading edge in R&D capacity in agriculture has in large measure shifted from the public to the private sector," he said. "The private sector has enormous capacity in terms of modern genetics, plant breeding and agricultural chemistry. It has now become a matter of developing joint ventures to help ensure global food security."



According to Development Manager Australasia, Andrew Aubert, Syngenta is one of the few private players that demonstrates continued investment in R&D.

"Globally, Syngenta's goal is to create value through innovative research and technology that raises productivity in an environmentally sustainable way," Andrew said.

"In 2008, the company invested \$969 million (USD) in R&D, again placing us among the

industry leaders. With projects spanning crop protection, seeds and biotechnology, Syngenta has a uniquely diverse platform. This enables us to co-operate across traditional business lines and provide combinations of genetic and chemical solutions to meet the challenge of raising growers' productivity."

"This requires outstanding people, world-class science, production and supply and a constant focus on health and safety. Our understanding of plants is based on many decades of research

## Robotic farming – the way of the future?

Precision agriculture is about to take the next step and see robots planting, spraying and harvesting crops... or is it?

Grain grower, James Hassall, was keen to find the answer, as part of a GRDC-sponsored Nuffield Australia Farming Scholarship.

During the past 12 months, James has visited Europe and America discovering what is actually possible with current computer technology and how it might be adapted to Australian conditions.

"So much of precision agriculture is driven by GPS, so understanding developments in that area was a key part of the trip," James said.

"A great deal of effort is going into increasing the accuracy of GPS and to set up independent testing for the accuracy of auto-steer vehicles. In the not-too-distant future, the location of vehicles could be available in real time over the internet."

This leads to the question of what other information could be available at the same time, and James has said agricultural equipment manufacturers have pledged to standardise their electronic communication systems.

"This means complete compatibility regardless of the brand of tractor, auto-steer software or variable-rate air seeder," James said.

"It is generally accepted that implementation should happen within five years, and when it does, it should be relatively simple to send all the data together via the internet."

Advances in spray technology are promising to dramatically cut input costs too.

"In Denmark, they are in the early stages of developing a system that uses a commercial bubble jet printer to 'print' chemical directly onto the leaves of weeds.

"They are getting effective control using only 1-5 percent of the label rate, which makes a big difference to the cost even compared to Weedseeker technology. It also means, potentially, the end of spray drift.

"On top of that, though, is the concept of cameras and a video detection system that can identify the species and match the application rate to the weed."

James said some of the automation techniques being investigated by the European Union's Future Farm research project make the mind boggle with opportunity, if you can put them all together.

"Imagine a small, solar powered device about the size of a ride-on lawnmower to avoid compaction issues.

"When fitted with a microspray unit, it could spend all summer searching for, monitoring and controlling weeds. As well, it could map the species and densities and send them to the office computer and your mobile phone.

"It could send you a text when it ran out of chemical, which wouldn't be often using the Danish technique, and then meet you at the gate," James said.

**More information about James' trip will shortly be available on the 'reports' section of the website: [www.nuffield.com.au](http://www.nuffield.com.au)**

## New computing tool could lead to better crops and pesticides

Researchers in the United Kingdom are developing a new tool that could help predict how plants will react to different environmental conditions.

Scientists are keen to develop new strains of crops, such as drought-resistant wheat, and more environmentally friendly pesticides. To do this, they need to predict how plant genes will react when subjected to different chemicals or environmental conditions.

Professor Stephen Muggleton, Director of the new Syngenta University Centre from the Department of Computing at Imperial College London, said “We believe our computing tool will revolutionise agricultural research by making the process much faster than is currently possible using conventional techniques.” “We hope our new technology will ultimately help growers produce hardier, longer-lasting and more nutritious crops.”

Researchers are currently testing a prototype of the new tool. It can analyse in a matter of

minutes (rather than months) which genes are responsible for different internal plant processes, and how different genes work together. It uses a type of computer programming that relies on ‘machine learning’ – a set of sophisticated algorithms that allows a computer to ‘learn’ based on data it is analysing.

Researchers have said the tool will recognise complex patterns in the data to find ‘nuggets’ of information about plant biology that might previously have taken months or years to find.

The ‘machine learning’ ability means researchers can develop an understanding of different plants even when they lack information about some aspects of their inner workings.

Previously, modelling of plant behaviour has been time consuming and difficult because without all the information, the models have been imprecise.

### Taking tomatoes

The first project using the tool will look at how different genes affect the way a tomato’s flesh hardens and tastes, and how the skin changes colour from green to red.

Researchers hope this will enable them to develop tastier tomato strains that ripen earlier



and soften later so they can be transported more easily to market. Another project will see researchers test the safety of crop protection products Syngenta is developing before they reach the manufacturing stage. The tool will allow them to construct models that reveal, for example, whether a proposed product might affect the metabolites responsible for processing energy inside a plant.

All software developed by researchers at Imperial College is intended to be made publicly available over the next four years.

and development. About 4000 employees at five main R&D centres and numerous field stations around the world are dedicated to raising crop yields and improving quality.”

### Looking locally

While global food supply is probably not yet at the forefront of most Australian growers’ minds, crop yields and efficient production in an uncertain economic and geographic climate certainly are.

Syngenta has a proven track record of introducing new products to the Australian market such as DIVIDEND®, BOXER® GOLD, TOPIK®, AXIAL® and AMISTAR®, to name a few.

“During 2010, we will invest an additional \$1.5 million (USD) into R&D in Australia. This will fund more local projects, principally to bring new active ingredients to market, and will broaden our portfolio and customer offer.”

From the public sector perspective, Grains Research and Development Corporation (GRDC)

Chief Executive Officer, Peter Reading, is supportive of a collaborative approach.

“Local R&D efforts must focus on the maximum returns on investment for stakeholders,” Peter said. “Increasingly R&D across the board is operating in an environment of co-existence between public and private investment.”

“The driver across all areas is to focus skills and expertise where they are best utilised to fast-track key R&D outcomes and the on farm adoption of technologies that will provide the highest returns to industry.”

“We are also seeing greater involvement from private companies, such as Syngenta, in pre-breeding (trait selection) and variety development, which – will contribute to the development and release of better grain varieties for grain growers.”

Peter explained that investment in grains R&D and extension continues to evolve. The GRDC is working with other rural R&D corporations including Horticulture Australia Limited, the State

agencies, CSIRO, universities and the Australian Government to develop a national approach to research development and extension.

The national framework will help ensure that collective investments in R&D are focusing on the key regional and national priorities to deliver maximum benefits to stakeholders.

In the meantime, Syngenta will remain dedicated to delivering new technologies to meet the global challenges growers continue to face.

“We have a very strong pipeline of new products and will further increase our investment in Australia in the future. This makes us Australia’s leading agri-science business,” Andrew said.

\* Dr Marco Ferroni recently visited Australia to attend the Crawford Fund conference on World Food Security. Presentations from the conference can be downloaded from [www.crawfordfund.org](http://www.crawfordfund.org)

\*\* Professor Phil Pardey is Professor of Science and Technology Policy, at the Department of Applied Economics and Director of the University of Minnesota’s International Science and Technology Practice and Policy Center

# Seed technology — setting the scene for success

Whether it's cereals, vegetables or even flowers, growing crops is no longer as simple as putting seeds in the ground.

Recent advances in seed technology are set to provide growers with the best possible start for their crops through a combination of genetic improvement backed by seed treatments and crop protection.

Syngenta Seeds' Sales and Marketing Manager – Vegetables, Mark Atkinson, explained that Syngenta's approach to seed technology is holistic and fits within a total crop performance package, including seed treatments and crop protection products.

"Breeding technology is all about maximising the existing genetic potential to allow seeds to survive and thrive in the environmental conditions they face," Mark said.

"Seed treatment and crop protection technology are all about protecting that genetic base to allow crops to achieve their genetic potential."

## Better breeding

Mark said that Syngenta's breeding programs now focus primarily on variety trials and collaboration with growers.

"Growers always want to talk to breeders who are armed with the best choice of genetics for their environment and markets," Mark said.

According to Mark, this approach has not always been the case, particularly in cereal breeding programs.

Mark said that up until now Australian wheat breeding centres have focused on qualities such as disease resistance – at the expense of yield.

"The focus has been on using genetics for crop protection in isolation of other tools," Mark said. "This kind of approach leads to trade-offs in productivity traits such as yield and time to maturity, which can have significant impacts on harvest across different geographic zones.

"What we are looking for is a holistic approach that encompasses all the management tools that are available. We call these crop solutions," Mark said.

## Advances

In addition to working hand-in-hand with seed treatment technology, Syngenta has invested heavily in biotechnology laboratories, hardware and staff. This has allowed the use of genetic markers to help speed up the breeding process.

"Instead of having to breed, grow out and observe, as with traditional breeding methods, we now enhance traditional breeding using genetic markers to identify desirable traits," Mark explained.

Breeders use genetic technology to identify markers and incorporate these through the traditional breeding process, thereby accelerating the process. They can screen lines without having to grow them out as they would have in the past.

One of Syngenta's key breeding technologies is currently proving successful in the tomato industry.

"In horticultural terms, tomatoes are one of the biggest crops – they are up there with potatoes and lettuces," Mark said.

"Our TANGO™ technology identifies genes that improve evenness and consistency of germination and also aid in seed repair.

"There is a high correlation between these characteristics and field performance," Mark said.

"As part of the priming process, breeders expose the seed to a high-nutrient solution to encourage germination.

"They then halt the process to even out the variability to ensure the seeds will have a more even germination rate."

## Community collaboration

Collaboration from grower through to breeder is critical in this process.

"After discussions with growers we articulate the minimum 'must haves' and 'like to haves'," Mark said.

"Varieties are monitored according to a scale for continued relevance in the marketplace.

"This validation process can take at least two or three seasons to gain momentum, exposing the varieties to a greater number of observers each time.

"This allows us to develop not only varieties but other technology, such as crop protection, that will deliver a crop solution that maximises yield and quality at the same time as meeting needs such as plant maturity timing and disease and insect tolerance," Mark said.

## Protecting potential

Seed treatment technology forms the next part of the total package, as Syngenta's Seed Care Business Unit Manager, Peter Holmes explained.

"Seed treatments for cereal crops have been around for decades," Peter said. "Initially they were used to protect seeds from seed-borne diseases such as smuts and bunts.

"However, our focus now is more towards maximising genetic potential, not just through protection but through chemistry that works with the seed at the critical stage of germination."

One of Syngenta's star performers in the arena of crop performance is DIVIDEND®. DIVIDEND still protects wheat and barley seed from smuts and bunts but is also the only product registered for control of Pythium Root Rot and suppression of Rhizoctonia, with the added benefit of being safe on the crop – in fact it's downright supportive.



Breeding technology is all about maximising a crop's genetic potential

"Trials have shown that seed treated with DIVIDEND gets out of the ground quicker than non-treated seed or seed treated with other products," Peter said.

"Where other products can have a negative impact on coleoptile length, DIVIDEND enhances the quick and even development of the seedlings, supporting maximum crop yield potential."

The difference is not only above-ground, Peter attested.

"When you dig the seedlings up, the roots of treated seedlings are more developed than control seedlings," he said.

DIVIDEND has been in the market for about five years, and across more than 250 commercial demonstrations the average yield increases across wheat and barley are about seven percent.

DIVIDEND has now reached a market leading position.

### It just gets better

According to Peter, there are even more exciting developments on the horizon.

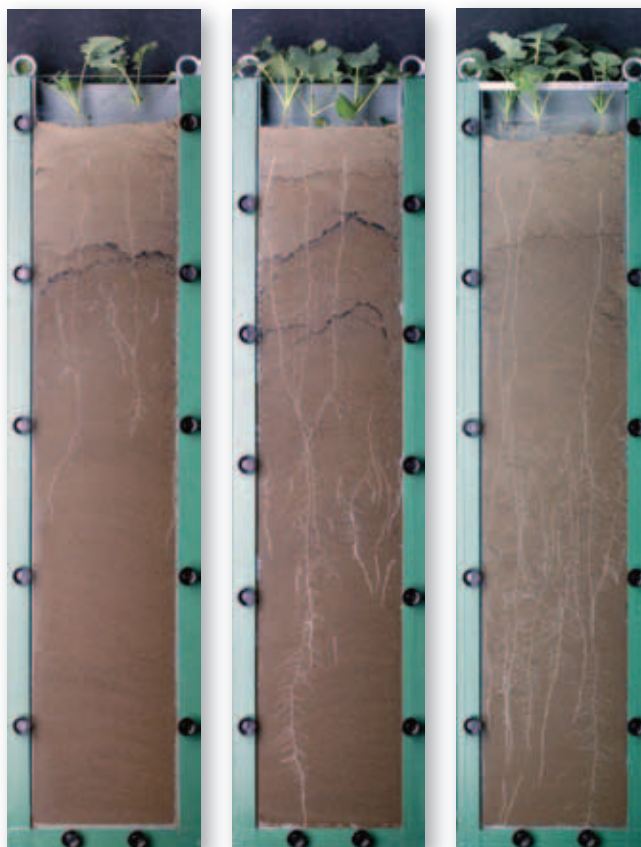
"We launched a new insecticide product this year, EMERGE®, that not only protects cereals, but provides protection for canola as well.

"It uses advanced chemistry designed not only to control insect pests but also provide greater seedling vigour," Peter said.

"It improves the activity of specific proteins within the plant that also allow it to better cope under tough growing conditions.

"As well as having a vigour effect, especially when used in conjunction with DIVIDEND, EMERGE is also registered for aphid control.

"Some growers using the treatment didn't even need to spray for aphids this season," Peter said.



Rhizotrones: showing the effect of seed treatments on root growth

### More than just insurance

Peter explained that in the early days growers viewed seed treatment as an insurance package, but that is set to change.

"Now we are trying to demonstrate seed treatments as a way of setting maximum crop performance from the start," Peter said.

"One of the challenges we have is that while growers in more reliable areas see the benefits and justify the spend, those in marginal areas sometimes look at seed treatments as something they can get away with not using," Peter explained.

"However, in these areas it is even more critical that root protection, and thus growth, are maximised because they simply need all the

moisture and nutrients they can extract in difficult environments.

"Some of the best responses in terms of percentage yield increase have come from more marginal cropping areas. That improvement in yield is vital in these areas."

What is even more exciting, according to Peter, is that during the next five years, particularly in cereals, Syngenta has a series of new seed treatment products coming on line.

"These products will allow us to take what we are doing with DIVIDEND and EMERGE through the next steps of increased performance potential."

# Innovation and speed – new formulation robot a breakthrough

At seven metres long, seven tons in weight, and requiring a dedicated building to house it, the new Syngenta formulation robot has kicked into gear at the Jealott's Hill International Research Centre in the UK. .

It will be used by Syngenta Formulation Chemists across the globe.

The robot is the culmination of a five year project bringing together scientists, engineers and software specialists. The robot can make almost any liquid agrochemical formulation in small amounts, and perform a basic series of tests to see if those formulations are of interest for further research.

The robot, which is unique in the agricultural sector, is a breakthrough in innovation and speed of delivery. It will formulate and test hundreds of potential crop protection products each day.

It can do this at speeds that bench scientists can only dream of, helping those same scientists to be more innovative and productive than ever before when creating new products.

The robot is the latest part of an additional £35 million investment (equivalent to over \$62 million Australian dollars) in Jealott's Hill, Europe's largest agricultural research and development centre.

Princess Anne, daughter of the Queen, recently visited Jealott's Hill to officially launch the new robot and help it carry out its first experiments.

The Princess spoke enthusiastically about the role played by science in feeding the growing global population and protecting biodiversity.

"What you do here is to ensure that food is grown safely and well, and understanding the



Left: Detail of Syngenta's new formulation robot at Jealott's Hill International Research Centre  
Right: Princess Anne admires the robot at its official launch

biodiversity in which it grows. That needs a lot of skilled and talented people to ensure that what is done here is the best that science can provide," she said.

David Sadler, Syngenta's Head of Formulation – Europe, spoke about this robotic innovation leap.

"It's one of the biggest step-changes in formulation innovation I've seen in 25 years. And it comes at a time when complex mixtures are more and more important to our business and our farmer customers," he said.

"At the beginning of our projects we'll be able to look broadly and innovatively at a very wide range of formulation options," David explained.

"Closer to developing the final product we can optimise for costs and robustness. And should

there are be problems in the field we can bring it in and look at options to correct it really quickly."

Jealott's Hill site head, Mike Bushell, said, "This is a major investment in crop protection technology that will greatly speed up our development program to bring products to market and enhance our ability to feed a global population growing at 100 million a year."

Jealott's Hill International Research Centre is at the heart of the global food supply chain. 800 people work on the site which concentrates on herbicide development but is also the main chemistry discovery site for the company. Without crop protection products such as herbicides 40% of the world's food would be lost to pests, diseases or weeds.

**To watch a video of the robot launch, visit:**  
[http://www.syngenta.com/en/media/eventsandpresentations\\_royalvisit.html](http://www.syngenta.com/en/media/eventsandpresentations_royalvisit.html)

# Pest ants get a taste of new gel bait



With summer knocking on our doors, many homes and businesses will be faced with the pesky problem of invading ants.

Syngenta has just announced the registration of its newest product, OPTIGARD® Ant Bait Gel. This ready to use bait formulation provides precision control and results in complete colony elimination.

OPTIGARD is part of Syngenta's wide Professional Products range that includes seed treatments such as DIVIDEND®, turf care products such as PRIMO MAXX® and HERITAGE MAXX®, and home and garden products such as TALON®.

OPTIGARD Ant Bait Gel offers unparalleled control of a broad spectrum of ants, including Argentine Ant, Black House Ant, Sugar Ant, White Footed Ant and other pest ant species, by ingestion and transfer of the bait, targeting the whole colony and not just the workers.

The new gel formulation is clear and non-staining, with low odour. It maintains its gel integrity at higher than normal temperatures and won't run.

OPTIGARD Ant Bait Gel uses the non-repellent chemistry of thiamethoxam which controls the entire colony via transfer and trophallaxis (regurgitation). Additionally, OPTIGARD Ant Bait Gel provides a longer window of palatability so as it ages, ants continue to feed on the bait without any loss of attraction.

"The clear gel formulation of the ant bait is easily applied and offers strong, proven efficacy both indoors and out," said Angela Pearce, Syngenta Business Manager – Home and Garden.

"For added convenience and precision control, OPTIGARD Ant Bait Gel is packaged in ready-to-use 30g syringes with individual plungers. The convenient small tubes feature replaceable caps to ensure less mess and less wasted product.

OPTIGARD Ant Bait Gel is highly effective on its own for routine service and maintenance. It will not contaminate other control methods, and can be used as part of an integrated pest management program with other treatments in the Syngenta portfolio of products.

OPTIGARD will be available from suppliers of professional pest control products such as Globe, AgServ and Garrards.

**For more information call the Syngenta Advice Line on 1800 067 108 or visit [www.syngenta.com.au](http://www.syngenta.com.au)**



# A world of opportunities coming down the pipeline

Syngenta is one of the few crop protection companies in Australia that can genuinely hang its hat on its investment in research and development.

Over the years the company has brought many new products to market, creating opportunities for growers across all crop types to increase yields, improve quality and maximise their return on investment.

Between now and 2014, Syngenta will be looking to bring at least 20 new products to market.

As well as protecting crops from weeds, pests and disease, Syngenta is working on crop enhancement solutions that can help deal with issues such as sustainable land use, biodiversity and water use efficiency.

The company has just announced an additional investment of more than \$1.5 million (USD) in local R&D projects to ensure that new active ingredients can be more quickly brought to the Australian market.

By also investing in increased production capacity and industry relationships, Syngenta can ensure that growers receive the benefits of the new technology that will soon be on offer.

While there are exciting new product developments across many types of farming, there are a number of new horticulture crop protection products that will be coming on-line in 2010.

## Exciting horticulture pipeline

Stewart Kerr, Commercial Lead – Horticulture, has stated that four new horticultural products will be registered in 2010, setting new industry standards for bringing new products to market.

“It will be a big year for Syngenta across the board, but in particular for the fruit and vegetable segments,” he said.

“These new products will benefit Australian growers by not only protecting their crops, but in many instances enhancing them, therefore increasing marketable yields.

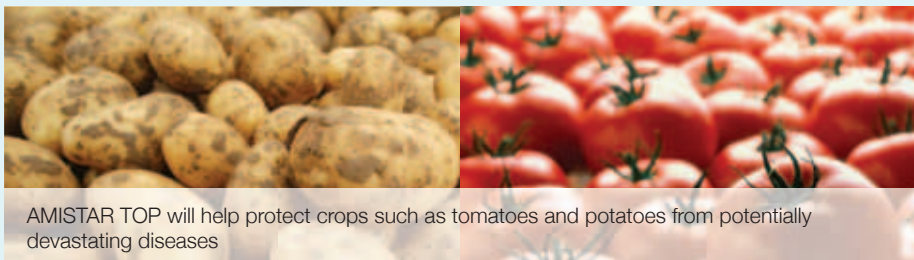
“Bringing four new products to market proves Syngenta’s commitment to Australian horticulture.

“While four products are being launched in 2010, it is only really the beginning as many more products and label extensions will follow in 2011.”



## AMISTAR® TOP

This flexible and effective tool, using a unique combination of chemistries, protects potato and tomato crops at critical growth stages from a range of foliar diseases. AMISTAR TOP is a unique combination of trusted active ingredients that will provide broad spectrum disease prevention with early curative activity especially on Target Spot. Importantly, AMISTAR TOP will be a



AMISTAR TOP will help protect crops such as tomatoes and potatoes from potentially devastating diseases

new product for control of Powdery Mildew in tomatoes for which there are currently limited control options for this potentially devastating

disease in susceptible cultivars. Registration is expected in early 2010\*.

## SCHOLAR®

This new post-harvest disease prevention chemistry is an exciting development for fruit growers and packers. With a unique mode of action and broad-spectrum disease control, it is an excellent risk management option in terms of disease resistance. Post-harvest disease control will give Australian exporters the confidence that their fruit will remain



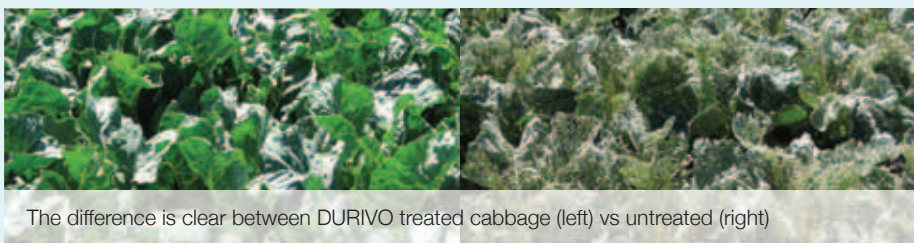
Post-harvest disease control in pears: SCHOLAR vs control

disease-free in storage for varying lengths of time. Registration in Australia is planned for early

in the year for citrus, pome, stone and kiwi fruit\*.

## DURIVO®

A series of commercial demonstration trials and technical evaluations have been underway for the last 18 months on this revolutionary new product. This broad-spectrum systemic insecticide, with innovative application technology, will control key *Lepidoptera*, chewing and sucking pests in brassicas, fruiting vegetables and leafy vegetables. The ability of DURIVO to provide



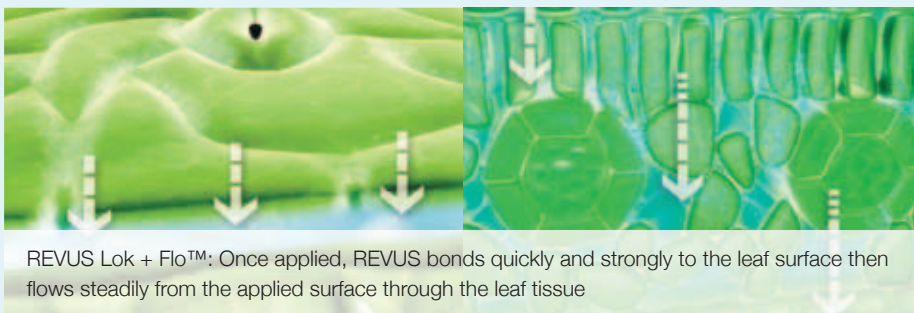
The difference is clear between DURIVO treated cabbage (left) vs untreated (right)

sustained protection to seedlings will reduce the reliance upon additional crop protection products as the seedling matures. Registration is currently

being assessed by the APVMA, with a launch planned for mid-2010\*.

## REVUS®

REVUS fits into a complete Downy Mildew offer from Syngenta including BRAVO® WEATHERSTIK, AMISTAR®, RIDOMIL® GOLD MZ and RIDIMOL® GOLD PLUS, delivering a sound resistance management program for wine grape growers. Unlike other commonly used protectant fungicides, REVUS offers up to 21 days protection, delivering efficiency in spray application management in the vineyard. The strong



REVUS Lok + Flo™: Once applied, REVUS bonds quickly and strongly to the leaf surface then flows steadily from the applied surface through the leaf tissue

binding activity provides excellent rainfastness for protection against Downy Mildew outbreaks no

matter what the weather. Registration in wine grapes is expected in September 2010\*.

\* Registrations and timelines are subject to APVMA approval.

# Night spraying widens the window



As many growers in northern cropping regions will attest, there are never enough hours in the day. Spraying at night can offer significant benefits, particularly during summer when daytime conditions can prove unsuitable.

Spraying weeds in fallow paddocks during summer can prove challenging because of the narrow spray window during the long hot days.

Farmer and farm consultant, Alan Umbers, has suggested that growers in southern regions can benefit from a tactic long employed by their northern counterparts to overcome the challenges of spraying during summer.

“Problems arising from moisture stress and high temperatures often make spraying at the optimal time difficult during summer,” Alan said.

“However, it is now well-accepted that night-time application of herbicides for weed control during summer is successful.

“Growers spraying summer weeds at night report that they use the same water volumes with the herbicide, they use the same spray nozzles, spray pressure and speed.

“They give the weeds time to get over the heat of the day, start spraying at about midnight and keep going till about midday.”

## Science behind the strategy

As Syngenta Technical Services Lead Garth Wickson explains, many herbicides commonly used for summer weed control, such as a TOUCHDOWN® HITECH, are absorbed and transported within the plant.

“The droplet coverage on the leaf surface and the plant’s health have a significant effect on determining how well such products are absorbed,” Garth said.

“Hot, dry days can reduce chemical coverage on leaves and stress plants, resulting in poor chemical absorption.

“During summer, weeds often suffer from the greatest heat stress during the middle of the day through to late evening.

“As the temperature drops, plants recover from the heat and their ability to absorb chemical through the cuticles increases.

“As a result, spray efficacy is often greatest between midnight and midday—as long as conditions are suitable for spraying.”

## Beware of the risks

Although effective, the strategy of spraying at night needs to be employed with care. Spray expert and consultant, Bill Gordon, has advised that night-time spraying has led to an increase in the number and severity of spray drift events in northern areas. Such events also are being observed in southern areas such as the Clare Valley in South Australia.

Bill has warned that growers need to be aware that night-time spraying carries its own significant risks due to the greater prominence of inversion layers at night.

“During daylight hours the ground is heated and wind movement mixes the air, diluting any airborne chemical that has drifted off target,” Bill said.

“At night, the wind speed is often lower or nil, and the air closest to the ground cools quickly, forming conditions for an inversion.

“When an inversion is present, the air in contact with the ground can behave like water, moving to the lowest point and carrying with it any small, airborne droplets of chemical.

“These droplets can be carried several kilometres downwind or downslope, with sensitive crops in lower parts of the catchment or landscape at greatest risk.”

## Proactive prevention

Bill has suggested that growers can reduce drift by changing nozzles to get a coarser droplet size, provided that the spray quality used suits the products being applied.

Other factors such as minimising boom height, avoiding excessive speeds and carefully selecting adjuvants to avoid increasing the production of fine droplets should all be considered if spraying at night.

A common rule and legal requirement on many product labels is to stop spraying if wind speed drops below three kilometres per hour. Regularly checking the weather conditions with a mobile weather station or hand-held anemometer is essential.

The most dangerous time for creating spray drift is during the hours leading up to sunrise, when inversions will be at their lowest and strongest point. Bill encourages all operators to avoid spraying during those hours, especially when wind speed is low.



Spraying at night can also be rendered ineffective if followed by rain, frost or heavy dew the next morning. Chemical labels provide a rainfall period, which indicates susceptibility to dilution by moisture on the plant leaf. Some plants also require light before they will actively absorb chemicals so if moisture from rain, frost or dew occurs early in the daylight hours, the herbicide can be diluted or lost.

As Syngenta's Garth Wickson points out, no grower can afford to be throwing good money after bad when it comes to herbicides.

"Through adopting smart spray strategies, farmers can optimise their investment in crop protection inputs, maintain good relationships with their neighbours and regulators, and maximise the prospects of successful crop establishment," Garth said.



Regularly checking the weather conditions is essential when spraying at night

## Timing it right

Growers are increasingly using Delta T as a standard indicator of acceptable spraying conditions. It is an indicative measure of evaporation rate and or spray droplet lifetime.

Delta T is calculated by subtracting the wet bulb thermometer temperature from the dry bulb thermometer temperature.

Optimum spraying conditions for fine spray qualities occur when Delta T is between two and eight (see Figure 1).

Increasing droplet size increases droplet survival, hence using a coarse spray quality can allow the Delta T to be increased from 2-8 to 2-10, provided the target weeds are not stressed.

Spraying outside these conditions can result in spray droplets evaporating before plants can absorb the chemical.

During summer, Delta T is often more favourable at night and early in the morning but these are typically the times of highest risk for spray drift.

The key is to have air movement or wind above 3km/hr.

For more information on suitable spraying conditions go to [www.bom.gov.au/info/leaflets/Pesticide-Spraying.pdf](http://www.bom.gov.au/info/leaflets/Pesticide-Spraying.pdf)

Agricast, Syngenta's online weather forecasting tool, also provides information on ideal spraying conditions. To access Agricast, simply register on the Syngenta website: [www.syngenta.com.au](http://www.syngenta.com.au)

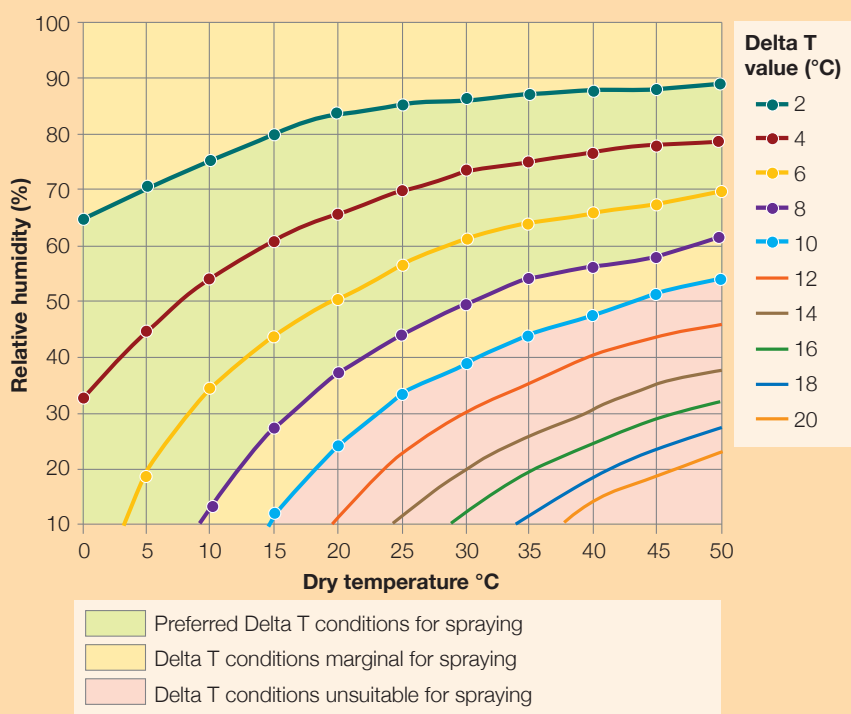
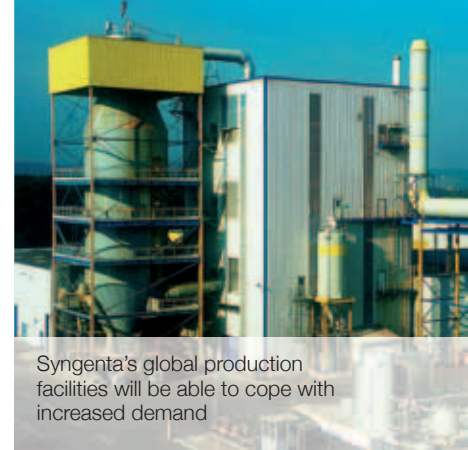


Figure 1 Air temperature and relative humidity in relation to Delta T values  
Source: BOM

# Increased global demand warrants investment



Syngenta's global production facilities will be able to cope with increased demand

In an economic climate where some global corporations are cutting back, Syngenta is bucking the trend and investing heavily in its supply chain.

This year Syngenta announced a \$600 million (USD) investment in its production capacity. According to Gordon Barrett, Syngenta's Australian Supply Manager, this is equal to six times Syngenta's normal annual investment in facility development.

"We are investing an extraordinary amount of money to ensure the supply of 26 key active ingredients to the global market," Gordon said.

"For our region, this includes azoxystrobin, thiamethoxam, glyphosate, paraquat and triazines – the active ingredients required to make products such as AMISTAR®, CRUISER®, ACTARA®, TOUCHDOWN®, GRAMOXONE®, SPRAY, SEED®, GESATOP® and GESAPRIM®.

"This will help to ensure that in Australia we have an adequate supply of the right products when we need them, benefiting our distribution network and ultimately the growers who depend on our products."

2008 was a challenging year for Syngenta's supply chain. Following significant growth across all regions (including a 22 percent increase in demand across Asia Pacific from 2007 to 2008), Syngenta's active ingredient manufacturing plants were running at full capacity. Global supplies were strained, owing to a significant reduction in working inventory levels.

"The increase in demand for food, feed and fuel is a long term trend, resulting in an increased demand for technology that can help boost yields," Gordon explained.

"We believe that being proactive in increasing our production capacity is essential – we see it as an investment in the future."

Within Australia, Syngenta has changed its distribution model to more closely match its

customers' needs. There are now 10 strategically located distribution locations across the country which are able to fulfil the distribution network's orders more efficiently.

"In the past we considered reducing our number of warehouses as a cost cutting measure. Instead, we listened to our customers and aligned ourselves with their needs," Gordon said.

"We have also changed to a single provider for freight and warehousing services, streamlining the ordering process.

"The end result is that we have been able to increase our level of service, while ensuring we are doing it at the right cost.

"Growers can be assured that we have a team in Australia that understands the needs of our local market, but that we are connected to a global organisation that continues to invest in both increased production and R&D."

## Cereal herbicides flown in due to unprecedented demand

In 2009 Syngenta went to extraordinary lengths to increase supplies of two of its selective herbicides, AXIAL® and TOPIK®, after experiencing unprecedented demand for the products as a result of very favourable growing conditions across major cereal growing regions this season, and the outstanding performance of these products last year.

Jock Leys, Business Manager – Cereal Herbicides, said that while it is fantastic for both growers and suppliers to be experiencing such a good season, the substantially increased demand for herbicides that control major grass weeds in cereals such as Annual Ryegrass, Wild Oats and Phalaris, has created some challenges on the supply front.

"Syngenta experienced the biggest sales year ever for AXIAL," Jock said. "We were selling both TOPIK and AXIAL at over 130% of forecast."

"We had to air-freight in additional stocks of both formulations to meet this increased demand, which was a challenge in itself. A lot of factors came into play so we could fly in additional herbicide at short notice.

"In the case of AXIAL, we were able to get hold of additional product both from the Czech Republic and Poland, and get it over here and in farmers' hands within three weeks of making the decision to do so," Jock explained.

"Syngenta's ability to respond to upsides in demand really sets us apart from some of the other suppliers in the market – it's a credit to Syngenta's supply team that they were able to respond quickly like this."

In addition to improvements within the supply chain, Syngenta's field force has recently been realigned to better service the company's customers.

Instead of the previous state based structure, Australia has now been divided into three regions, which are more aligned with the reporting structure of Syngenta's major distributors.

The three regions are "Northern" – encompassing Queensland and northern NSW (including Dubbo), as well as the Northern Territory; "Southern" – covering the territory south of Dubbo in NSW, Victoria, Tasmania and South Australia; and "Western" – the whole of Western Australia.

Each of these regions will be headed up by a Regional Sales Manager, while Key Account Managers will service major distributor networks; Area Sales Managers (in Queensland, NSW and Victoria) will provide support to the Regional Sales Managers with planning and implementation at a territory level; and an extensive team of Territory Sales Managers will continue to provide expert knowledge and advice to local distributor staff, consultants and growers.

# Overcoming the challenges of Etihad Stadium's retractable roof

Innovative turf management practices have helped Gavin Darby, Arena Manager at Melbourne's multipurpose Etihad Stadium, to change the image of the playing surface at the retractable-roofed venue.

Etihad Stadium is Australia's only completely enclosed 50,000-plus seat multi-use sports complex. Its playing surface was the subject of constant public scrutiny as a series of Arena Managers grappled with large shadow patterns caused by the stadium's unique configuration.

The venue is home to up to 50 AFL fixtures a year, which regularly attract crowds of up to 50,000 during the football season.

In recognition of the grass growth problems associated with retractable roof stadia – lack of sunlight and air circulation – and to meet the stadium owner's increasing demands for more revenue-generating events, Gavin turned to Syngenta.

Syngenta's Turf Technical Manager, Dr Henk Smith, designed a turf management program which incorporated the grass growth regulator PRIMO® MAXX. In the two years since being introduced, the condition of the field has been transformed and regular costly pitch replacements are a thing of the past.

Nowadays the turf surface is performing well and able to withstand the wear and tear of a packed event calendar – in 2008, 81 events were staged at Etihad Stadium.

The venue also plays host to a number of A-League soccer events and regularly hosts rugby and rugby league internationals. The stadium has hosted cricket, concerts and events such as Sensation, billed as the world's biggest dance party and featuring 40,000 revellers in the stands and on the pitch.



The stadium was also the first in Australia to introduce the European-developed 'Stadium Grow Light Concept'. Gavin has attributed much of the success of the turf to the introduction of the new lights.

Gavin has credited PRIMO MAXX with offsetting the turf growth problems caused by the extensive shade conditions in the stadium.

The product works by slowing cell elongation in the grass plant, with the energy instead diverted down into the roots, boosting cell structure and increasing tillering to create a dense healthy turf. The strengthened root structure should offer better drought tolerance and greater stress resistance and ensure the grass is able to recover quickly from intensive use through the long AFL season. It also means the pitch can be maintained in top condition for other events.

"It's almost like taking the roof off. The turf now reacts in a similar way to how it would in an outdoor environment," Gavin said.

PRIMO MAXX has also impressed the stadium's management team and owners, who are continually finding new ways to maximise stadium use to grow revenues.

Just around the corner is a series of concerts, including the New Year's Eve Sensation event. Despite the myriad of paraphernalia on the field for the event, Gavin isn't worried, even though afterwards he's responsible for getting the pitch back into premier condition for four sports events, all within 21 days.

Last year a soccer match was played at the stadium just 12 hours after Sensation concluded.

"PRIMO MAXX has played a key role in our improved event management which has enabled us to expand our non-sports events," Gavin said. "It's given us a lot more confidence."

#### Editor's note:

*This article was adapted from an article that first appeared in Stadia magazine, October 2009.*



Etihad Stadium can be transformed from sporting ground to party venue

# Feeding the world by extending technology and knowledge



## Food aid is not the solution to feeding the world's growing population.

While donations of food do have an important role to play in natural disasters and humanitarian crises, developing countries must be able to provide their own food supplies if we are to succeed in halting increases to world hunger.

The United Nations has estimated that over one billion people had inadequate access to food in 2009—an increase of 150 million people over just four years.

The impacts of population growth on global food security have been debated at length, but what is clear is that simply raising yields in successful agricultural countries, such as Australia, is not enough.

Grain from the world's top eight exporters only makes up 20 percent of total consumption. The rest comes from local markets.

Dr Marco Ferroni is the Executive Director of the Syngenta Foundation for Sustainable Agriculture. He visited Australia in late 2009 to discuss world food security.

The Syngenta Foundation is an independent, non-profit organisation, funded by Syngenta, which supports farmers in resource-poor settings in developing countries and emerging markets through the development and provision of technology, on-farm support and policy advocacy.

"To feed the world we must raise the productivity of all farmers, but especially smallholders in developing countries where the yield gap is the greatest," Dr Ferroni said.

"There will not be food security without yield growth in lagging regions such as Sub-Saharan Africa and South Asia.

"In developing countries, smallholders [farming properties under two hectares] make up the largest proportion of agricultural businesses.

"If we only increase production in developed countries, the result will be food aid forever—and that is just not sustainable," he argued.

In order to increase yields sustainably, Dr Ferroni said that farmers in lagging regions need the same things as farmers in highly successful agricultural countries such as Australia—access to technology and services.

"Agricultural technology, such as traits, seed treatments and crop protection products, is risk management to protect yields," Dr Ferroni said.

"However investment in R&D alone is of little use if the technology is not adopted by farmers.

"In countries like Australia, technology uptake is higher because there is a greater level of knowledge and expertise on things like agronomy and input systems, as well as better infrastructure and access to markets.

"The challenge in lagging regions is not just to deliver the technology that can improve yields, but to share the knowledge, build infrastructure and link farmers with markets so that they can sustainably increase their profitability.

"Just like successful farmers in Australia, modest farmers in poorer countries will invest in technology if they can see a return on investment.

"By increasing the profitability of these farmers we will empower them to become more productive. Closing the yield gap is feasible," Dr Ferroni said.

"Despite issues such as years of drought, Australian farmers have managed to continue to contribute to local and global food supplies, even on land that is less fertile than some of the land being farmed in other parts of the world," he said.

"This is testament to the knowledge and experience of Australian farmers and researchers—many of whom are amongst the most highly-respected in the world.

"Australian agriculturalists can contribute to improving global food supplies not just by increasing their own yields, but by sharing their research and practical knowledge with farmers in lagging regions."

## Public-private partnership to develop wheat varieties resistant to Ug99 Stem Rust

In 1999, a virulent new strain of stem rust that can cause devastating crop losses was detected in Uganda. This became known as Ug99. While Australia is well-placed to deal with this strain, other countries are not as fortunate.

The risk zone, which spans across Africa, Asia and the Middle East, covers one billion people. Within it, 117 million tonnes of wheat (19% of the world's production) could be affected.

The Syngenta Foundation for Sustainable Agriculture recently launched a wheat Ug99 stem rust resistance research partnership with the International Maize and Wheat Improvement Centre (CIMMYT) to rapidly identify and map genetic markers for use in wheat resistance breeding against Ug99.

Australian researchers such as Dr Robert Park, GRDC Chair of Cereal Rust Research at the Plant Breeding Institute, University of Sydney, are involved in the project.

Syngenta's plant genetic profiling expertise will be combined with the strengths of CIMMYT's extensive field research to develop a genetic map of wheat stem rust resistance. This will culminate in the development of wheat varieties that can better resist the disease.

# Sydney's green bridge



It was an early start for 6000 Sydney-siders who won the opportunity to have breakfast on the Sydney Harbour Bridge in October.

It was an even earlier start for the staff from Evergreen Turf, along with Syngenta's NSW Turf Sales Manager, Patrick Madden, who helped turn part of the city into the country by laying 10,620 square metres of Kikuyu turf along the length of the bridge.

After traffic to the bridge was stopped, turf trucks and buses carrying 100 workers rolled up to start laying the turf from

pylon to pylon across all six lanes of the world-famous landmark. The first rolls went down at 2am.

Wet weather managed to hold off for the duration of the picnic, and the turf looked like a green carpet in the morning sun.

According to Patrick, the turf was specially selected for the event, not just for its looks, but for its ability to withstand the unusual conditions.

"Like the surfaces of many famous sporting fields, the turf used on the bridge was treated with PRIMO MAXX® to regulate its growth and make sure it was thick and soft underfoot, as well as being resilient," he said.

Graeme Colless from Evergreen Turf said they use Syngenta products such as PRIMO

MAXX and MERIDIAN® to keep their turf looking good.

"Our turf has to be of the utmost quality for events like this," he said.

"Due to PRIMO MAXX, it was evident that the turf had a very tight thatch which resulted in no damage from the patrons."

After the event, forty percent of the turf was laid on parkland at Sydney Olympic Park, while the rest was sold to the community.

Ticket holders were offered complimentary NSW produce including fresh fruits, breads and yoghurt and were treated to a live milking display with 15 cows on the bridge – an even more unusual sight for city-dwellers.

## Top of the crops!

Sandy Middleton from Charles Sturt University, Wagga Wagga, has taken out the inaugural Australian University Crops Competition (AUCC) held in Temora NSW.

Twenty two students, representing seven universities from across Australia, went head-to-head in the classroom and the paddock to test their knowledge.

Competitors' skills were tested in the areas of seed identification and analysis, pulses and grain grading, live crop identification, weed and foliar disease identification, yield potential and production practices.

The top five competitors will attend a four-day cropping industry study tour to New Zealand.

La Trobe University won the University Team Challenge, determined by combining the top three scores from each university.

Syngenta was the founding sponsor of the competition, which was run by Grain Growers' Association and supported by the Department of Agriculture, Fisheries & Forestry under its Australia's Farming Future Program.

Syngenta Technical Services Lead, Garth Wickson, judged the in-field component of the competition, which was held at the Syngenta Learning Centre in Temora.

"I was very impressed by the skills and knowledge the competitors displayed," Garth

### The top five students were:

- Winner: Sandy Middleton, Charles Sturt University
- Runner Up: Michael Noble, University of Adelaide
- Third: Anniika Paridaen, La Trobe University
- Fourth: Denielle Kilby, University of New England
- Fifth: Alexander Byrne, La Trobe University

said. "It is good to know these young people will be shaping our industry in the future."

GGA Chairman, John Eastburn, said the spirit in which the students competed was a credit to the individuals and their universities.

"For the first time ever, this competition has brought together a group of students from across Australia who want to further their knowledge of the cropping industry outside of the existing curriculum," Mr Eastburn said.

**The AUCC will be held again in 2010.**  
For more information visit [www.unicropscomp.com.au](http://www.unicropscomp.com.au)



# A solutions-focused partnership for Australian vegetable growers

In exciting news for the Australian vegetable industry, Syngenta has recently entered into a strategic partnership with AUSVEG, the national peak industry body representing Australian vegetable and potato growers.

In launching the partnership at a recent function with the AUSVEG Board in Sydney, Syngenta's Commercial Lead for Speciality Crops, Stewart Kerr, noted that the strategic partnership signified the deepening of the longstanding relationship between Syngenta and AUSVEG and the start of a truly "solutions-focused" partnership for the benefit of Australian vegetable growers.

During 2010, Syngenta and AUSVEG will be partnering to deliver a range of exciting events, including a major VIP industry event profiling new innovations in Syngenta's vegetable portfolio at the AUSVEG National Conference

and a series of regional seminars to assist growers to implement best practice on their farms.

"With an annual R&D investment of nearly \$1 billion (USD), and an unrivalled combined strength in vegetable chemistry, genetics and breeding, Syngenta's resources and expertise will deliver AUSVEG members with immense benefits," said AUSVEG CEO, Richard Mulcahy.

The strategic partnership will result in close collaboration between both organisations, working together to overcome shared challenges facing the industry, including ensuring Australian growers have timely access to new crop protection innovations and dealing with emerging market demands around the production of fresh produce.

"It is through strategic partnerships such as this that AUSVEG can help ensure Australian growers have access to the kind of world-leading technologies that will help ensure the productivity, competitiveness and sustainability of the Australian vegetable industry over the next decade and beyond," Mr Mulcahy said.



The strategic partnership between Syngenta and AUSVEG will help provide growers, such as SPRAY Awards winner, Darren Schreurs, with access to world-leading technology



*Bringing plant potential to life*

## New Syngenta Seeds Australasian headquarters

**After 20 years at its Keysborough site, the Syngenta Seeds Australasian Head Office has moved location to Lynbrook, an outer South Eastern suburb of Melbourne, Victoria.**

The business has invested in a fantastic new facility which has a custom built, state of the art coolroom and packing area, a large warehouse and a bright open plan office space.

The move will keep Syngenta Seeds at the leading edge of storage technology and ensure the highest standards in seed quality and handling.

The administrative, warehousing and distribution activities are now all operating from the new site.

The new address is 9 Business Park Drive, Lynbrook, Victoria 3975, and the new phone number is (03) 8773 6300.



This publication is printed using vegetable based inks, green electricity and paper that is produced from plantation grown timber. Both paper manufacturer and printer are certified to the highest environmental standards.

