CropLinks
THE LATEST PLANT SCIENCE INDUSTRY NEWS
AUTUMN EDITION 2019

Time to build on the success of AgVet chemical initiative

The Federal Government grants program aimed at improving access to AgVet chemicals is delivering important results, however ongoing bipartisan support for the scheme is crucial to give farmers certainty.

The AgVet Chemical Grants program is a great example of public and private investment working together, in a coordinated way, to deliver real beneficial outcomes for farming.

The small size of the Australian market and a costly mandatory registration system often means that many crop protection products for specialty crops or emerging pests and diseases are not available to Australia's farmers. This remains the case even though it is crucial for Australia's farming sector to have access to these tools. Since 2015 the AgVet Chemical Grants program has started to address this issue by improving farmer access to a wider range of approved safe products that their overseas competitors have had for years.

In just the few years it has been operating the program has delivered an effective treatment for coffee green scale and grasses and broadleaf weeds in coffee, annual rye grass in chickpea, lupin and pea crops, root rot in tomatoes, and mealy bug and pineapple scale in pineapples. This has all been done with only a few million dollars of investment each year for the last four years.

The similar, but significantly greater funded, program in the United States has been in operation for over 50 years. US Treasury modelling has confirmed that every dollar invested in the minor use program creates a US$500 return to the economy through increased agricultural production.

To date the Australian program has received bipartisan support, but with funding due to end in 2020, it's crucial for all political parties to commit to ongoing support ahead of the Federal election. This will allow the program to build on its success and give the farming and plant science sectors the certainty to continue delivering on this important initiative.

INSIDE THIS ISSUE

Matthew Cossey
Chief Executive Officer, CropLife Australia

From the CEO

Good public policy initiatives and efficient regulatory systems are complicated by nature and not easily developed, let alone effectively implemented. However, occasionally an example comes along which represents the very best of such initiatives, where government and private sector have come together in a coordinated and cooperative manner to develop and co-invest in an initiative that delivers real and significant results for the nation. The AgVet Chemical Grants program is one such example.

While the billion-dollar announcements in health, education and national security will no doubt dominate the Federal election, this small targeted agricultural initiative of only a few million dollars each year will have billion-dollar ramifications in farming over the coming decades.

Continuing funding for programs like the AgVet Chemical Grants program is crucial if we are to make agriculture the nation's next $100 billion industry and make farming even more sustainable and profitable.

While the US essentially had a half a century head start on Australia in this area, and their farmers have reaped the benefits from it, Australian farmers now have the chance to have a step change catch up with their North American counterparts. It simply requires political parties of all persuasions to commit to ongoing funding of the AgVet Chemical Grants program so the great success of its first few years can continue.

With the research and development of each new crop protection innovation now taking more than 11 years and costing more than US$286 million, it is essential that governments recognise the importance of supporting the efforts of the plant science sector in delivering even more important innovations to Australia's farmers.

Here's hoping that a small, inexpensive and highly successful public policy initiative that is directly assisting those who are growing the nation's food, feed and fibre might just get enough attention this upcoming election that we see it funded for the future.

South Australia GM moratorium review released

The South Australian Government has released the independent review into the State's moratorium on the cultivation of genetically modified crops.

The report's findings confirm that South Australian farmers have been held back by the moratorium, which is estimated to have cost the State's canola industry alone $33 million since 2004.

Evidence provided to the review, and reflected in its findings, shows the moratorium delivers no price premium or additional market access and has discouraged investment in public and private research and development. The review also found the cultivation of GM crops would increase productivity and provide environmental benefits for South Australia.

During a recent visit to Australia, the scientific case to end the moratorium was made by Dr Stuart Smyth, Assistant Professor in the Department of Agricultural and Resource Economics at the University of Saskatchewan, Canada.

CropLife Australia @CropLifeOz

#dyk: GM crops enable the reduction of carbon dioxide emissions by 28 billion kg a year. That's the equivalent of removing 12.4 million cars from the road.

Dr Smyth attended the Growing SA conference in Hahndorf as a guest of the Agricultural Biotechnology Council of Australia and Grain Producers SA. Dr Smyth said that research showed GM crops were good for the environment and human health and improved farmers' productivity.

In the 14 years the moratorium has been in place, economic analyses have unequivocally shown there is no non-GM marketing premium for South Australian produce delivered by the moratorium.

The moratorium is not delivering a competitive advantage and it is costing South Australia economically. GM canola growers in Victoria, NSW and Western Australia gained an average net farm gate benefit of nearly $50/ha from the technology denied to South Australian farmers.

The GM moratorium denies farmers the opportunity to choose innovative technologies to improve the economic growth of the State's agricultural sector and the environmental sustainability of their farms. Without farmers having the choice to cultivate GM crops, South Australia risks falling further behind its mainland and international competitors.

Invasive species: The greatest threat to Australia's endangered wildlife

Endangered species face numerous threats, including development, pollution and climate change. Recent research released by the University of Queensland for the Threatened Species Recovery Hub has now established invasive species as the number one risk to threatened native wildlife.

With invasive species also posing a serious threat to Australian agriculture, the study found that intensive landscape management is needed to reduce the impact of numerous risks. Crop protection is one of the crucial tools for environmental land managers in protecting Australia's endangered species by appropriately managing invasive weeds and pests.

The research concludes that while well-managed protected areas would remove one or more threats to all threatened species and remove all threats to 48 per cent of threatened species, half of all protected species require additional management that protected areas alone cannot provide.

The plant science industry continues to significantly invest in research and development to provide Australia's environmental land managers with new and innovative products. These products are crucial to controlling invasive weeds and insects throughout Australia's world-renowned national parks as well as in public parks and gardens, and on golf courses and roadsides.

Without the use of a range of specialised crop protection products and the hard work of park rangers, spray contractors and other environmental land managers, ecosystems such as those in the Kosciuszko National Park would succumb to the significant threat of invasive species.

The research is echoed in recent data from the United States showing the threat of invasive species is increasing by ten million acres each year. The study has prompted land managers and conservationists to warn against any restrictions on the use of glyphosate, which is one of the most important tools for fighting invasive plants.

Kosciuszko National Park

Plant science innovations putting more food on the world's plate

The significant impact of crop protection products has been clearly demonstrated in a new report by market analysts Phillips McDougall. The international report shows that while the rate of new product approvals has decreased slightly in recent years, industry investment in research and development remains high.

Crop protection products continue to be developed to improve their efficacy and ensure the highest levels of safety. This is vital in ensuring they meet regulatory standards, so farmers have access to the best possible tools to provide nutritious, safe and affordable food.

As crop protection products have been improved, application rates have been able to be decreased significantly. In the 1950s farmers were using up to 2,400 grams of active ingredient per hectare to control pests, weeds and diseases. They now need only around 70 grams to treat the same area. This improvement is the result of significant innovations in chemistry through major investment in research and development over many decades.

Did you know

Farmers in the 1950s used up to 2,400 grams of active ingredient per hectare to control pests, weeds and diseases. Farmers today need only 70 grams to treat the same area.

Farmers are now applying 95 per cent less pesticide per hectare to achieve the same level of control. Food produced per tonne of active ingredient has increased by more than 10 per cent in the last 40 years.

Regulatory requirements have become more stringent since the 1960s and now involve the development of more data than ever before. To register one new active chemical ingredient, over 150 studies need to be conducted. Chemical regulators need to be confident in not only the efficacy of a product, but also its safety to users, consumers and the environment.

Globally, regulatory standards are becoming more demanding and at the same time, crop protection products are becoming even safer for users, consumers and the environment. Pesticides are among the most regulated products in the world.

Crop Biotechnology

HOW CROPS ARE GENETICALLY MODIFIED

TYPE OF MODIFICATION	TRADITIONAL BREEDING	MUTAGENESIS	RNA INTERFERENCE	TRANSGENICS	GENE EDITING
METHOD	Crossing plants and selecting offspring 	Exposing seeds to chemicals or radiation 	Switching off selected genes with RNA 	Inserting selected genes using recombinant DNA methods 	Deleting genes using engineered nucleases (CRISPR, TALENs, ZFNs, etc.) 
RESULT	Desired gene(s) inserted with other genetic material	Random changes in genome, usually unpredictable	Targeted gene(s) switched off or 'silenced'	Only gene(s) inserted at desired locations	Desired gene(s) deleted only at known locations
CROP TYPE	ALMOST ALL CROPS				
NUMBER OF GENES AFFECTED	FEW GENES – WHOLE GENOMES	100S – 1,000	1 – DOZENS	1 – 8	1 OR MORE
TESTING + REGULATION	No safety testing required Unregulated	No safety testing required Unregulated	Safety testing required Highly regulated	Safety testing required Highly regulated	Safety testing required depending on jurisdiction Mixed regulations

Adapted from the Genetic Literacy Project infographic 'How crops are genetically modified' by Kayleen Schreiber, PhD + advisor Wayne Parrott, PhD.

Undesirable, unintended effects rarely occur in the final product of any crop, regardless of which process is used

The challenge of communicating the benefits of GM

Consumer acceptance of new plant technologies is crucial to the world embracing the benefits of genetic modification. However, new research in Australia and internationally has shown a widespread lack of understanding on the subject.

In 2018 research was undertaken by the Australian Gene Technology Standing Committee of the Legislative and Governance Forum on Gene Technology. The results showed 40 per cent of those surveyed were unfamiliar with genetic modification and the majority of those questioned believed there isn't enough information available.

The strongest concern reported was that GM products were being imported with little or no regulation, highlighting a considerable lack of awareness of how the GM crop and food regulatory system works.

Internationally, Assistant Professors Brandon McFadden and Stuart Smyth have researched perceptions of genetically engineered technology and made similar findings. In the United States and Canada, a high proportion consider themselves to be knowledgeable about GM crops, but knowledge about plant breeding appears to be low.

The research highlighted that nearly half of Canadians lack the knowledge or confidence to make a decision about GM crops, reinforcing the finding that consumers know very little about plant breeding.

The communication challenge is further demonstrated by recent public surveys in the United States, France and Germany that found the most extreme opponents of genetically modified food know the least about science, but believe they know the most.

Locally there is a need to better inform the public about genetic modification. This has been further identified through a recommendation in the *Third Review of the National Gene Technology Scheme*, released in October 2018. The final report recommended developing communications to aid public understanding and confidence in the Gene Technology Scheme.

Advances in plant gene editing and genetic modification are the next natural and safe steps in plant breeding. These innovations will be a vital part of producing enough food, feed and fibre for a growing world population. The challenge ahead for governments and the agriculture and science sectors is communicating that clearly.

Five ways farmers are responding to climate change

Here in Australia, and around the world, climate change is impacting farmers and the agricultural industry. It is causing significant environmental and economic impacts, including increasing temperatures and bushfires, and affecting food security.

Plant science is playing an important part with crop protection combatting pests and diseases and biotechnology research developing drought tolerant crops.

In this challenging time for agriculture, here are five ways farmers across the globe are responding to climate change.

1 No-till farming — preventing soil disturbance

This one's a win all around. No-till keeps moisture and nutrients in soil making ***farm fields more fertile*** while allowing farmers to reduce their use of ***farm equipment and fossil fuels***. No-till also moderates the effects of climate change, ***something we can all benefit from***.

2 Heat-tolerant crops — coping with increased temperature

Global warming puts our crops and food security at risk. Plant scientists are fighting this by formulating new crop varieties with traits that boost the ***heat tolerance*** of crops. Researchers have developed heat-tolerant crops that maintain and ***increase yields*** in unusually hot conditions in wheat, rice and corn.

3 Drought-tolerant corn — providing resilience in Africa

Agriculture requires more water than any other industry in the world, making drought the single greatest threat to farms globally. The UN Food and Agriculture Organization estimated that ***480 million people*** in Africa could be living in areas of ***water scarcity by 2025***. Preparing for this harsh reality, scientists are researching drought tolerant varieties through plant biotechnology.

4 Crop protection — helping farmers beat pests

Climate change is pushing pests and diseases into new geographic areas, where they are attacking crops and threatening food supply. Up to ***40 per cent of the world's crops*** are lost to insects, diseases and weeds, but without crop protection, these ***losses would double***.

5 Nitrogen use efficiency — making better use of resources

Nitrogen fertilisers contribute to high crop yields. However, if too much fertiliser is used in a field, the excess run off flows into surrounding land and water. To protect the environment, plant scientists are developing nitrogen use efficiency traits, so farmers can apply ***less fertilisers without sacrificing yields***.

CROPLIFE LEADING PESTICIDE CONTAINER MANAGEMENT ACROSS THE **WORLD**

In 58 countries the crop protection industry is leading the safe and responsible management and recycling of empty pesticide containers.

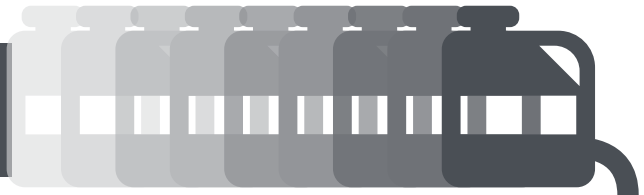
Here in Australia CropLife's stewardship organisation, Agsafe, has a world-leading container collection program called ***drum**MUSTER*.

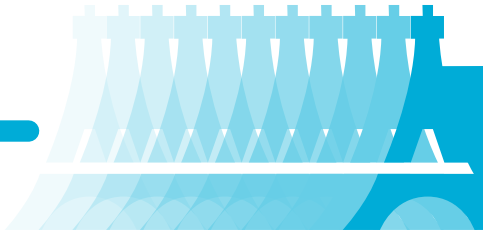
***drum**MUSTER*

ARGENTINA
AUSTRALIA BELGIUM
BOLIVIA **BRAZIL** BULGARIA
CANADA **CHILE** COLOMBIA **COSTA RICA**
CROATIA **CYPRUS** DOMINICAN REPUBLIC
ECUADOR EGYPT **EL SALVADOR** ETHIOPIA
FRANCE GERMANY **GHANA** GREECE **GUATEMALA**
HONDURAS **HUNGARY** INDIA **ITALY** KENYA **KOREA**
LITHUANIA **LUXEMBOURG** MADAGASCAR **MALAYSIA**
MAURITIUS **MEXICO** MOZAMBIQUE **NAMIBIA**
NEW ZEALAND **NICARAGUA** PANAMA **PARAGUAY**
PERU **PHILIPPINES** POLAND **PORTUGAL** ROMANIA
RUSSIA SERBIA **SLOVAKIA** SLOVENIA **SPAIN**
SRI LANKA **SOUTH AFRICA** SWAZILAND
SWEDEN URUGUAY **USA** VENEZUELA
ZAMBIA

BETWEEN **2005** AND **2017**

781,429 TOTAL METRIC TONNES OF **PLASTIC COLLECTED**





WHICH IS EQUIVALENT TO THE WEIGHT OF **110 EIFFEL TOWERS**

THIS PLASTIC IS RECYCLED INTO A VARIETY OF USEFUL PRODUCTS

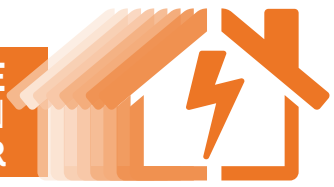
CAR BATTERY CASES

AGRICULTURAL FENCE POSTS

SEWERAGE PIPES

EVERY TONNE OF RECYCLED PLASTIC **SAVES AROUND 6,000** KILOWATT-HOURS OF ENERGY

THAT'S **MORE THAN THE AVERAGE ELECTRICITY** USED BY HOUSEHOLDS IN MAINLAND **AUSTRALIAN STATES EACH YEAR**



To learn more about container management, please visit **www.drummuster.org.au**

Agsafe

Improving and making *drumMUSTER* more sustainable

Australia is fortunate to have one of the world's leading agricultural chemical container recycling programs in *drum*MUSTER. Agsafe will be working with state and national farming organisations to improve community awareness of *drum*MUSTER and ChemClear to identify future opportunities for increasing collections.

The ACCC authorisation for the ***drum***MUSTER program levy has been renewed, with an increase due to come into effect from 1 July 2019, so that the program can continue to meet the needs and expectations of Australia's farmers, growers and producers.

The levy increase from four cents per litre to six cents per litre is the first since the program's inception in 1998. The increase will see more containers collected across Australia.

To improve and extend the reach of the program, Agsafe is completing a gap analysis of collections across Australia, as well as developing a plan to address increased collections.

In 20 years, almost **33,000,000** containers have been collected across Australia.

AgBytes online training

AgBytes are short, accessible online training modules developed with industry input to assist with Agsafe re-accreditation. Three to four new modules will be developed each year to ensure training remains relevant and reflective of industry needs.

AgBytes are a mix of short videos, animations, interactive quizzes and assessments. All designed to keep the learning process engaging.

Find out more! Visit agsafe.org.au/training/agbytes to try the first two modules.

Plant Science Facts

THE POWER OF PLANT BREEDING

It seems impossible that kale, broccoli, cauliflower, cabbage and Brussels sprouts all come from the same plant species, but it's true.

Over 2,500 years of artificial selection *Brassica oleracea*, which is still grown as wild cabbage, has been cultivated to become many of the vegetables you eat today. Throughout that time farmers have planted seeds with particular traits to create leafier plants, or larger buds.

Next time you're eating broccoli or kale, remember they represent the remarkable power of plant breeding and artificial selection!

CropLife Australia 2019 Board leadership team

The CropLife Board has re-elected Syngenta's Territory Head ANZ and Managing Director, Mr Paul Luxton, to serve as President for 2019.

Mr Luxton is joined on the CropLife Executive Committee by Mr Damien Ryan, Managing Director, Sipcam Pacific Australia, Mr Joerg Ellmanns, Chairman and Managing Director, Bayer Group ANZ and Mr Gavin Jackson, Head of Agriculture Solutions — Australia and New Zealand, BASF Australia.

Joining Executive Committee members on the CropLife Australia Board are Mr Darrin Hines, Chief Executive Officer, Adama Australia, Mr Rob Kaan, Managing Director — Australia/New Zealand, Corteva Agriscience, Ms Kristina Hermanson, Country Head, FMC Australasia Pty Ltd, Mr Peter O'Keefe, ANZ Regional General Mananger, Nufarm Australia Limited and Mr Tony Brookes, Managing Director, Sumitomo Chemical Australia Pty Limited.

Over the past five years, $750,000 has been awarded to community organisations in cotton regions through the Aussie Cotton Farmers Growing Communities grants program. Each year the program, which is supported by the Monsanto Fund, a philanthropic arm of Bayer, provides 30 grants of $5,000 for projects including those supporting rural education, health and community infrastructure.

Recipients have included the Collie NSW branch of the Country Women's Association who in 2015 used a grant to make safety upgrades to their hall.

Members of the Collie NSW branch of the Country Women's Association

Nufarm's extensive local field team have been active in their local communities educating farmers and spray applicators on best practice tools and techniques that reduce the risk of off-target spray drift. More than 50 sessions engaging an estimated 1,200 applicators have been hosted throughout Australia in recent months underpinned by Nufarm's industry recognised SprayWise stewardship program.

Nufarm's Frank Taylor hosting a SprayWise workshop with farmers in Meandarra, Qld

The winners of the Syngenta 2018 Growth Awards prove that consumers can have more pride than ever in how their nation's food and fibre are produced. Judges from across agriculture and the recruitment, media and environmental industries picked eight winners from a competitive field of 26 regional winners, in the categories of productivity, sustainability, and community and people. The winners from Australia and New Zealand are leaders in agricultural innovation, and demonstrate a tremendous capacity to do more with less, while caring for the land and each other. Read more at **www.syngenta.com.au**

Syngenta 2018 Growth Awards winners

E. E. Muir & Sons Regional Manager, Danny Thornton, said the company was thrilled to receive the Environmental Respect Award, sponsored by Corteva Agriscience, in recognition of their work with the grower network. "Grower education is enormously important. We work closely with Matt Strimska, of Adaptiv, to run spray application training workshops." Corteva Agriscience is standing by the drought affected farming community by providing financial aid through Aussie Helpers, volunteering time at foodbanks and donating product to local initiatives.

CropLife Australia

*Representing **the best** of the plant science industry*

CropLife Australia is the national peak organisation representing **the best** of the plant science industry in Australia. CropLife's members are the world-leading innovators, developers, manufacturers and formulators of crop protection and crop biotechnology products.

CropLife ensures the responsible use of these products through its mandatory industry code of conduct and has set a benchmark for industry stewardship through programs such as its Pollinator Protection Initiative, including the world-first BeeConnected app, and successful Agsafe programs, ***drum**MUSTER* and ChemClear®.

The plant science industry, worth more than **$20 billion a year** to Australian agricultural production, provides products to protect crops against pests, weeds and diseases, as well as developing crop biotechnologies key to the nation's agricultural productivity, profitability and sustainability.

CropLife is part of the plant science industry's 91 country international federation.

accensi · ADAMA · Arysta LifeScience · BASF We create chemistry · BAYER · CORTEVA agriscience Agriculture Division of DowDuPont · FMC · LANDMARK · Nufarm · SIPCAM Innovation Not Imitation · SUMITOMO CHEMICAL · syngenta · AgNova Technologies · ISK · eurofins · PHILSTIC Label Specialists

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