

Submission to National Agricultural Workforce Strategy



1 INTRODUCTION

CropLife Australia is the national peak industry organisation representing the agricultural chemical and biotechnology (plant science) sector in Australia. CropLife represents the innovators, developers, manufacturers and formulators of crop protection and agricultural biotechnology products. CropLife's membership is made up of both patent-holding and generic, Australian and international, small and large companies. Accordingly, CropLife only advocates for policy positions that deliver whole of industry benefits. The plant science industry provides products to protect crops against pests, weeds and diseases, key to the nation's agricultural productivity, sustainability and food security.

CropLife welcomes the opportunity to provide comment on the *National Agricultural Workforce Strategy – Discussion Paper*. CropLife's submission focuses on the crucial role innovations, such as those the plant science sector delivers for farmers, play in the creation of a stronger, sustainable and more competitive agriculture sector in Australia.

A 2018 Deloitte Access Economics report estimates \$20.6 billion of Australian agricultural output (or 73 per cent of the total value) is attributable to the use of crop protection products¹. The same report found the plant science sector contributes 9,225 in full time equivalent employees. This consists of 1,725 directly in the manufacturing sector and 7,500 in the sectors that supply inputs to the industry.

Australian farmers produce almost 93 per cent of Australia's daily domestic food supply² with each farmer producing enough food to feed 600 people, 150 at home and 450 overseas. To continue to combat the threat of food and nutritional insecurity and the impacts of climate change and increasing costs, while remaining internationally competitive, farmers must be able to adopt the latest safe and proven agricultural technologies and innovations. This includes access to agricultural biotechnology innovations, as well as biological and chemical crop protection products. Crop protection and biotechnology solutions can assist farmers in producing high yields with fewer natural resources by reducing water consumption, increasing nutrient uptake and reducing the need for other inputs.

The agricultural sector at farm gate contributes three per cent to Australia's total gross domestic product (GDP). The gross value of Australian farm production in 2016-17 was \$60 billion. Australian farmers export around 77 per cent of what they grow and produce. Australian farm exports earned the country \$44.8 billion in 2016-17, up from \$32.5 billion in 2010-11.

1 https://www.croplife.org.au/wp-content/uploads/2018/04/Deloitte-Access-Economics-Economic-Activity-Attributable-to-Crop-Protection-Products_web.pdf

2 National Farmers Federation (2018). Food, Fibre and Forestry facts. A Summary of Australia's Agriculture Sector.

Australian farmers remain internationally competitive through efficiencies and productivity growth. The growth in the farm sector has increased steadily overtime, consistently outperforming other sectors.

There are over 300,000 people directly employed in agriculture. The complete agricultural supply chain, including the affiliated food and fibre industries, provide over 1.6 million jobs to the Australian economy.

Australian agriculture and its associated industries generate over \$155 billion each year and underpin 12.1 per cent of Australia's GDP. The plant science industry is an integral input driving this performance. Its workforce – including all critical input industries workers in the following list – must be well supported and considered in the development of the National Agricultural Workforce Strategy:

- Agricultural supply retail network stores
- Contract spray providers (aerial and ground)
- Crop protection equipment (sprayers) and spray equipment repairs and maintenance services
- Agricultural chemical product toll manufacturers
- Chemical testing and assessment laboratory services
- Chemical / Biological / Solvents raw material providers
- Chemical and seed product packaging suppliers
- Chemical and manufacturing waste management providers
- Agricultural chemical and seed product label suppliers
- Agronomic advice, research and development providers, including field activity to collect data and monitor trial sites
- Logistics providers (freight/warehousing)

2 A SKILLED AND AGILE WORKFORCE FOR AN EVER-EVOLVING SECTOR

The shortage of skilled agricultural graduates poses a serious threat to the sector. Recent data from the Office of the Chief Scientist shows that only seven to 10 per cent of the university and VET STEM qualified labor force studied agriculture and environmental science in 2016³. Between 2011 and 2016, agriculture and environmental science are the fields that have registered the smallest percentage increase in the university qualified population. This is a major concern as more managerial positions and complex work environments, like many jobs in the plant science industry, call for a skilled workforce. A shortage of trained workers would impact agriculture in both the short and longer terms.

The agricultural sector has often been described as lacking attractive career paths and having limited employment opportunities. However, between 2011 and 2014, there were five to six jobs available for every ag graduate⁴. Among people with STEM university qualifications, agriculture/environmental science graduates had the lowest unemployment rate (4.6%) between 2011 and 2016⁵. Eighty per cent of people with VET qualifications in agriculture or environmental science are in the labor force.

The recent COVID-19 crisis has had a tremendous impact on the Australian economy. The National Farmers' Federation's "Get Australia Growing" report highlights the importance of the agricultural sector on our path to recovery⁶. The COVID-19 crisis could, on a smaller scale, also represent an opportunity to attract a broader workforce. As housebound residents took up the opportunity of growing fresh produce in their backyards, they have found a renewed interest in agriculture in general. This interest, especially in urban areas, could be fostered through schools and community programs, to give families and young people a glimpse of potential career paths in agriculture.

To remain competitive and to face the challenges of a changing climate, the agricultural sector must attract a broader range of skilled employees. Better explaining agriculture, its challenges, achievements and opportunities will attract younger generations. Emphasis must be placed on sustainability practices and the positive impact of farmers when it comes to land care and management. An example is seen in the major role played by the plant science industry in maintaining and improving Australia's agricultural productivity and sustainability through crop protection and crop biotechnology advances and initiatives.

3 Office of the Chief Scientist, 2020. 'Australia's STEM Workforce'. Australian Government, Canberra.

4 Pratley J and Crawley N, 2018. 'Graduate Destinations in Agriculture'. *Agricultural Science* 29(2).

5 Office of the Chief Scientist, op. cit.

6 NFF 2020. 'Get Australia Growing', Canberra

Another focus must be to develop stronger links between fields of qualifications. For example, only three per cent of people with university qualifications in biological sciences, and four per cent in environmental sciences work in agriculture, forestry and fisheries, far behind education and training or public administration⁷. Attracting graduates from other STEM pathways would help develop a stronger, more agile agricultural workforce.

7 Office of the Chief Scientist, op. cit.

3 THE PLANT SCIENCE INDUSTRY PROVIDES SOLUTIONS TO CHALLENGES FACED BY THE AGRICULTURAL SECTOR

Increased innovation, productivity, investment and trade are not tenable without nationally consistent agricultural regulations that are efficient and effective. The world's population is predicted to increase to 9.7 billion by 2050, requiring an increase in global food production of 70 per cent. Providing enough food in the context of production constraints, volatile consumption patterns and a changing climate will be an unprecedented scientific, economic and public policy challenge. The situation provides an opportunity for Australian farmers and agricultural input industries to both assist in the global food security effort and to profit from increased demand for their products. By adopting innovative farming practices, such as the sustainable and efficient use of biological and chemical crop protection products and genetically modified (GM) crops, the Australian farming sector will be able to produce more sustainably and with greater productivity. These innovative farming practices must be promoted through education to the next generation of potential farmers.

Tackling the challenges presented by sustainably increasing food production to meet growing global demand will require science-based policies that support all production systems, including existing and future production tools and technologies. Sustainable production systems will include the conventional systems reliant on the timely, responsible and considered application of crop protection products in ways that maximise yield and manage pests, weeds and diseases. Crop protection products (including fungicides, herbicides and insecticides) are relied upon to increase global food production by between 30 and 50 per cent⁸. Supporting industries and their workforces to develop and introduce new crop protection products that are better targeted to Australian pests, climates and crops will help Australia play its part in addressing global food security.

The responsible use of agricultural chemicals must be supported by a regulatory scheme that maximises the benefits associated with their responsible use, while minimising the costs from excessive, inappropriate and ineffective regulation. Farmers need these products because of the benefits they provide to their businesses and consumers need these products to ensure they have access to safe, affordable and nutritional food. While it is important for governments to provide for appropriate and rigorous regulation of pesticides and biotechnologies, any regulation must be mindful of the effects that poorly considered and excessive regulation will have through increasing production costs, discouraging investment and innovation, while not delivering any improvement in safety, health or environmental outcomes. The regulatory workforce of the future must deliver this environment.

8 Deloitte Access Economics (2018). Economic Activity Attributable to Crop Protection Products, Canberra.

Crop protection products are crucial to modern integrated pest management techniques and systems used by farmers. Access to fewer crop protection tools would facilitate faster development of resistance among target pests, diminishing the efficacy of chemical options. The economic impact of weeds alone is estimated to be in excess of \$4.8 billion each year, or \$13 million per day⁹. It is imperative that the Australian Government maintain the primacy of science and facts in regulatory and policy decisions. There is a need for a paradigm shift in thinking from regulating the science (as it has been proven safe) to facilitating the growth of the Australian economy by driving the plant science industry and workforce (both in the public and private domain) to its full potential.

GM crops, an application of modern biotechnology, are just another step along the same path of technological innovation that led to Australian agricultural inventions such as the combine harvester and 'Federation' wheat varieties. Over 1 billion acres of GM crops have been cultivated since 1996 and over 1 trillion meals containing GM food ingredients have been consumed globally. GM crops are the most tested and regulated food product in history. There are no substantiated scientific reports of any food safety issues related to the consumption of genetically modified crops, nor any unexpected effects on ecosystems. The development, planting and consumption of an approved GM crop is safe. Every scientific and regulatory body that has examined the evidence has arrived at the conclusion that GM crops and the foods they produce are as safe as their conventional counterparts. This includes the World Health Organization, the Australian Academy of Science, the European Commission, the American National Academy of Sciences, the Royal Society of Medicine and many more.

GM crops are a necessary and important tool in meeting the global food and nutrition security challenge. Since being first commercially cultivated in 1996, GM crops have contributed to global food security, sustainability and helped farmers to adapt to and mitigate climate change by:

- Increasing the value of crop production by US\$186 billion¹⁰
- Improving the sustainability of pesticides by reducing usage (kg active ingredient) by 775 million kg¹¹
- Reducing CO₂ emissions in 2018 alone by 27.1 billion kg¹² (equivalent to taking 16.7 million cars off the road for one year, more than all the passenger vehicles registered in Australia; and 86% of all vehicles registered in Australia)

9 <https://invasives.com.au/wp-content/uploads/2019/01/Cost-of-weeds-report.pdf>

10 Brookes G and Barfoot P (2020) 'Environmental impacts of genetically modified (GM) crop use 1996-2018: impacts on pesticide use and carbon emissions'. *GM Crops and Food* **11** (4).

11 Brookes G and Barfoot P (2018) 'GM crops: global socio-economic and environmental impacts 1996-2016'. PG Economics, Dorchester, UK.

12 ISAAA (2019) 'Global Status of Commercialized Biotech/GM Crops in 2018: Biotech Crops Continue to Help Meet the Challenges of Increased Population and Climate Change. ISAAA Brief No. 54. ISAAA: Ithaca, NY.

- Increasing the incomes of more than 17 million small farmers and their families – some of the poorest people in the world, and thereby helping to alleviate poverty¹³

Globally, GM technology directly increased farm income by US\$18.2 billion in 2016¹⁴, with over half the gains going to farmers in developing countries¹⁵. According to the meta-analysis published by Klumper and Qaim, GM crops have reduced pesticide use by 37 per cent, while increasing crop yields by 22 per cent and increasing farmer profits by 68 per cent¹⁶.

Cultivation of GM crops has equally proven to be beneficial to the environment. Crop biotechnology is an important tool helping farmers become more sustainable by allowing them to produce more while using fewer natural resources and decreasing their usage of pesticides. Since GM crop cultivation started in 1996, more than 183 million hectares of land have been saved from ploughing and cultivation, leading to improved water storage, limited soil erosion and increased availability of land for other environmental uses.

GM crops currently under research and development in Australia will help our farmers address the unprecedented challenges they are facing in a changing climate. GM traits currently investigated at the national level will be crucial tools for farmers to combat drought, soil acidity and/or salinity, as well as emergent diseases. There is also considerable Australian research into GM traits that will bring health benefits to consumers, such as healthier starches and oils modified to be lower in saturated fats and with improved cooking qualities.

The agricultural biotechnology field is an especially attractive space for the future workforce given its innovation and environmental sustainability credentials.

13 Ibid.

14 Brookes and Barfoot (2018) Op. Cit.

15 ISAAA (2019) Op. Cit.

16 Klümpfer, W. and Qaim, M., (2014). 'A meta-analysis of the impacts of genetically modified crops'. PloS one, 9(11), p.e111629.

4 CONCLUSION

Key agricultural input industries like crop protection and crop biotechnology products are essential when considering the future agricultural workforce.

Maintaining the economic, environmental and social sustainability of agricultural production systems will not be achieved by limiting the options for farmers to manage their businesses. Each individual farm faces specific challenges in terms of climate, soil health, farming system, demography and economy. These circumstances all have an impact upon the choices available to farmers to manage their farms. Options must not be limited by workforce restraints.

As farmers face increasingly extreme and unpredictable climatic conditions, stressed natural resources and shrinking available arable land, they need access to the same safe, effective tools and technologies as their international competitors to meet food security challenges and maintain or increase yields into the future.

Agricultural chemicals and genetically modified crops are major contributors to the sustainability and productivity of Australia's food production systems. The benefits they generate for farmers, other users, consumers and the environment far outweigh any manageable or imagined risks associated with their adoption or use. These tools are vital to producing nutritious, healthy, affordable and disease-free food for Australian and overseas consumers. The shortage of skilled agricultural graduates poses a serious threat to the future development and innovation of these tools.

CropLife and its members are committed to supporting all farming systems in Australia by providing farmers with the innovations, technologies, tools and products they need to ensure sustainable and profitable farming practices. This commitment extends to fostering the future workforce.

APPENDIX 1: THE PLANT SCIENCE INDUSTRY

CropLife member companies are the innovators, developers, manufacturers and formulators of chemical and biological crop protection products, and agricultural biotechnologies for plant breeding, such as genetically modified crops.

The plant science industry's crop protection products include fungicides, herbicides and insecticides critical to maintaining and improving Australia's agricultural productivity to meet future global food security challenges. Each of these products is rigorously assessed by the Australian Pesticides and Veterinary Medicines Authority (APVMA) to ensure they present no unacceptable risk to users, consumers, the environment and the trade of agricultural produce.

In 1995 it took the assessment of 52,500 compounds to develop one effective crop protection chemical active constituent. It now requires the assessment of more than 140,000 compounds and expenditure of more than \$400 million over an 11-year period to bring just one successful crop protection product to the market. More than one-third of this cost directly relates to compliance with regulation and registration requirements. Without access to these tools, farmers could lose as much as 50 per cent of their annual production to pests, weeds and diseases. A Deloitte Access Economics report released in 2018, 'Economic activity attributable to crop protection products', estimates that up to \$20.6 billion of Australian agricultural output (or 73 per cent of the total value of crop production) is attributable to the use of crop protection products.¹⁷

Consumer safety is CropLife and our members' highest priority. We recognise the importance of gaining and maintaining community trust in our role in the food production supply chain. CropLife and our members are committed to the stewardship of their products throughout their lifecycle, ensuring human health and safety, and the responsible and sustainable management of the environment and trade issues associated with agricultural chemical use in Australia.

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 **drumMUSTER**, ChemClear®.

¹⁷ https://www.croplife.org.au/wp-content/uploads/2018/04/Deloitte-Access-Economics-Economic-Activity-Attributable-to-Crop-Protection-Products_web.pdf



Our member companies contribute millions of dollars a year to stewardship activities that ensure the safe and effective use of their products. CropLife ensures the responsible use of these products through its mandatory code of conduct and a suite of world leading industry stewardship initiatives and programs. Through our wholly-owned stewardship and safety organisation, Agsafe, CropLife has set a benchmark for industry stewardship through waste management and recycling programs such as **drumMUSTER**, ChemClear® and safety training programs.

Crop protection products are crucial to modern integrated pest management techniques and systems used by farmers. Access to fewer crop protection tools would facilitate faster development of resistance among targeted pests, diminishing the efficacy of remaining chemical options. The economic impact of weeds alone is estimated to be over \$4 billion each year, with an impact on the environment that is similar in magnitude.¹⁸

The current regulatory system for agricultural chemicals in Australia is scientifically competent, technically proficient and globally recognised. CropLife's only concerns with the current system relate to the APVMA's ability to regulate agricultural chemicals more efficiently. It is imperative that the regulation of crop protection products in Australia is efficient and effective to ensure Australian farmers have access to the innovative tools the plant science industry provides. This will improve the ability of Australian farmers to be internationally competitive and productive.

18 Australian Weeds Strategy – A national strategy for weed management in Australia. National Resource Management Council (2006), Australian Government Department of the Environment and Water Resources, Canberra, ACT