CropLife Australia

December 2022

Inquiry into food security in Australia

House of Representatives Standing Committee on Agriculture

1. INTRODUCTION

CropLife Australia is the national peak industry organisation representing the agricultural chemical and plant biotechnology (plant science) sector in Australia. CropLife represents the innovators, developers, manufacturers and formulators of crop protection (organic, synthetic and biologically based) and agricultural biotechnology products and innovations. CropLife's membership is made up of both large and small, patent holding and generic, and Australian and international companies and accordingly, CropLife only advocates for policy positions that deliver whole of industry and national benefit. The plant science industry provides products to protect both crops and Australia's vast, biodiverse natural spaces against damaging insects, invasive weeds and diseases that pose a serious threat to the nation's agricultural productivity, sustainability, food security and our beautiful natural environment and delicate biodiversity. The plant science industry enables more than $20 billion of agricultural production for Australia and directly employs thousands of people across the country[1].

CropLife welcomes the opportunity to provide comments regarding the Standing Committee on Agriculture Inquiry into food security in Australia. As a major international exporter, it is essential to ensure Australian farmers can be empowered to continue producing safe, healthy and nutritious food and fibre. This is important for both a growing Australian and global population.

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

2. THE PLANT SCIENCE INDUSTRY DELIVERS FOOD SECURITY

The United Nations estimates there will be 9.7 billion people on Earth by 2050, around 30 per cent more than in 2017[2]. On 15 November 2022, the population officially crossed 8 billion[3] en route to this milestone. This continued increase will require raising overall food production by up to 70 per cent by 2050 to meet this populations food and nutritional requirements.[4]

The tools and technology of the plant science industry are indispensable in anchoring both Australia's food security, as well as that of the global community and maintaining Australia's ability to remain a net exporter of agricultural commodities. The Deloitte Access Economics report released in 2018, '*Economic activity attributable to crop protection products*', illustrates that up to $20.6 billion of total Australian agricultural output (or 73 per cent of the total value of crop production) is attributable to the use of crop protection products[5]. Crop protection products (pesticides) are crucial to modern integrated pest management techniques and systems used by farmers. These tools include fungicides, herbicides and insecticides which are critical in maintaining and improving Australia's agricultural productivity to meet future global food security challenges.

CropLife's members are world-leading innovators, developers and manufacturers of pesticides derived from both natural and synthetic sources, as well as biologically based compounds and ingredients. Regardless of the source of the pesticide, all are rigorously assessed for safety, efficacy, and any potential harm to humans or the environment.

Herbicides - pesticides that kills unwanted plants (weeds) so crops can flourish. Weeds and other invasive plants are the most damaging pests for many agricultural crops because they compete for vital nutrients, space, water and sunlight and can seriously reduce both quantity and quality of food crops.

Insecticides - pesticides that control insects that could damage crops by eating them or infecting them with diseases. Fighting these pests is difficult in part because of the wide variety of insects and because new invasive species are continually being introduced, either as "hitchhikers" at the border or naturally through the environment. As climate change moves ecoregions and habitat into hitherto unfavorable climates, the natural incursions of these pests will continue, most recently with notable pests such as the fall armyworm and serpentine leafminer. Insecticides protect against insects like locusts, lawn-devouring grubs, tree-

[2] https://www.who.int/en/news-room/fact-sheets/detail/pesticide-residues-in-food
[3] https://www.un.org/en/dayof8billion
[4] http://www.fao.org/fileadmin/templates/wsfs/docs/Issues_papers/HLEF2050_Global_Agriculture.pdf
[5] https://www.croplife.org.au/wp-content/uploads/2018/04/Deloitte-Access-Economics-Economic-Activity-Attributable-to-Crop-Protection-Products_web.pdf

smothering caterpillars, maggots that tunnel through fruit crops and moths/aphids that can devastate grain crops.

Fungicides – pesticides that protect plants from disease-causing organisms called fungi, like the one that caused the infamous Irish potato famine of the 1800s. In people's home gardens, roses, tomatoes and peppers are particularly susceptible to fungi. On a farm, a fungus can spread quickly from one plant to destroy an entire field.

The total cost of weeds across Australia is estimated at over $5 billion[6] [7]. Chemical control across broad acre cropping enterprises and production loss costs among grain, beef and wool industries make up most of these expenditures, corresponding to a value of produce resulting directly from herbicide use at $8.3 billion per annum. Aggregated across the six major Australian grain crops in 2013, the estimated annual loss of food crop quantity and quality due to insect pests totaled $359.8 million annually[8]. Over $8 billion worth of food across all Australian crops is grown, harvested and consumed as a result of insecticides use to manage crop losses by insect pests[9]. Finally, losses of both quantity and quality of food crops due to infection by various fungal, bacterial and viral plant diseases in Australian grain crops are valued at between $920 million to $1 billion per annum – an $80 million increase since 2010[10]. Using fungicides to manage these diseases is estimated at generating $11.7 billion in food and grains annually[11].

The products of the plant science industry are crucial to maintaining and increasing food production in Australia. Pesticides have a double role in protecting Australia's biosecurity during containment and eradication of invasive species which could cause catastrophic implications for sustained food production. One recent example is the deployment of insecticide treated baits to eradicate potential infestations of varroa mite in New South Wales. Pesticides are also crucial in managing and mitigating established weeds, diseases and insect pests. The tools and technology of the plant science industry will continue to be indispensable in anchoring Australia's food security. These tools include the fungicides, herbicides and insecticides which are critical in maintaining and improving Australia's agricultural productivity to meet future global food security challenges.

A recent study by researchers at the CSIRO and Flinders University demonstrated that invasive plants are the costliest pests in Australia, costing $200 billion since 1960.[12] In 2021, the Invasive Species Council's report 'Glyphosate: A Chemical to Understand' highlighted that herbicides

[6] ibid
[7] Oerke E.C. Crop losses to pests. J. Agric. Sci. 2006;144:31–43.
[8] https://grdc.com.au/resources-and-publications/all-publications/bookshop/2013/02/the-current-and-potential-costs-of-invertebrate-pests-in-grain-crops
[9] Oerke E.C. Crop losses to pests. J. Agric. Sci. 2006;144:31–43.
[10] https://www.ccdm.com.au/about/
[11] Oerke E.C. Crop losses to pests. J. Agric. Sci. 2006;144:31–43
[12] Corey J A Bradshaw and others, 'Detailed Assessment of the Reported Economic Costs of Invasive Species in Australia', *NeoBiota*, 67 (29AD), 511–50 <https://doi.org/10.3897/neobiota.67.58834>.

offer the only truly effective option for removing invasive weeds from Australia's bushland reserves and that, without them, most of the remaining indigenous vegetation in Australia would decline in both quantity and quality[13]. The deployment of pesticides in safeguarding Australia's magnificent biodiversity also indirectly supports the long-term sustainability of food production in Australia. A biodiverse landscape is a resilient landscape, better able to absorb and mitigate pest outbreaks.

The current regulatory system for agricultural chemicals in Australia is scientifically competent, technically proficient and globally recognised. CropLife maintains that regulation of the registration and use of crop protection products in Australia must be efficient and effective so that famers, environmental land managers and municipalities across Australia have access to the innovative tools the plant science industry provides. Each of these products is rigorously assessed by the Australian Pesticides and Veterinary Medicines Authority (APVMA) to ensure they are safe to use and present no unacceptable risk to applicators, consumers, the community as a whole, the environment or Australia's domestic and international trade of agricultural produce. Access to fewer crop protection tools would facilitate faster development of resistance among targeted pests, diminishing the efficacy of remaining chemical options.

In 1995, it took the assessment of 52,500 compounds to develop one effective new pesticide chemical active constituent. It now requires the assessment of more than 160,000 compounds and expenditure of more than $400 million ($286m USD) over an eleven-year period to bring just one successful pesticide to the market[14]. 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, and environmental land managers would have no ability to prevent, eradicate and manage threats to the natural environment.

Ongoing research and development to identify new pesticides – and ensuring these new innovations will be accessible to Australia – is imperative for maintaining and increasing food production in Australia, which underpins both domestic and international food security.

CropLife maintains that the regulation of the use of pesticides must be efficient and effective so that stakeholders have access to the innovative tools the plant science industry provides to mitigate invasive alien species – be they plant, insect or pathogen. Above all, this requires an efficient, adaptive and science-based regulatory environment to encourage both continued innovation in next-generation tools, but also support for existing, proven, effective and safe solutions to be integrated with novel technologies that is then economical for Australian taxpayers, developing an increasingly efficacious and sustainable system.

13 https://invasives.org.au/wp-content/uploads/2020/11/Glyphosate-A-Chemical-to-Understand.pdf

14 https://www.agriculture.gov.au/sites/default/files/documents/agvet-chemicals-market-drivers-barriers.pdf

GM crops, an application of modern biotechnology, play a crucial part in food security. They are just the next natural stage in centuries of plant breeding innovation, a step along the same path of technological innovation that led to Australian agricultural inventions such as the combine harvester and 'Federation' wheat varieties. The utilisation of these innovations has delivered significant productivity and environmental sustainability improvements in farming. Over 400 million hectares of GM crops have been cultivated worldwide 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 and the Royal Society of Medicine.

Since being first commercially cultivated in Australia 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 billion[15]
- Reducing pesticide usage (kg active ingredient) by 671 million kg[16]
- Reducing CO_2 emissions in 2018 alone by 27.1 billion kg[17] (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)
- 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 poverty[18]

GM crops have also helped farmers financially. Globally, GM technology directly increased farm income by US$18.2 billion in 2016[19], with over half the gains going to farmers in developing countries[20]. According to the meta-analysis published by Klumper and Qaim,

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

16 *Ibid.*

17 *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.*

18 *Ibid.*

19 *Brookes and Barfoot (2018) Op. Cit.*

20 *ISAAA (2019) Op. Cit.*

GM crops have reduced pesticide use by 37 per cent (in turn, reducing emissions), while increasing crop yields by 22 per cent and increasing farmer profits by 68 per cent[21].

GM crops under research and development in Australia will help our farmers address the unprecedented challenges they are facing in a changing climate. GM traits being 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.

One threat to the potential success of this important agricultural innovation is the frustratingly slow implementation process following the Third Review of the National Gene Technology Scheme. As it stands, the National Gene Technology Scheme is not fit for purpose, as it does not cater to innovative technologies. An adaptive, future-oriented National Gene Technology Scheme is urgently needed. This future-proof Scheme needs to be informed by the accumulated knowledge and experience gained from previously assessed GMOs and applied to similar newly developed products. This will help achieve a better balance between regulating the process involved in creating products of gene technology and regulating the risks (if any) to human health and safety and the environment associated with the final products.

The recent removals of GM crop moratoriums in South Australia and New South Wales are best-practice examples of how crucial it is to base regulatory decisions on science. After being denied opportunities for over two decades, farmers in these states can choose which cropping systems best suit their business operations. To give the agricultural sector a chance to achieve its goals, science-based regulation must remain at the forefront of all government policies.

Without new, innovative agricultural products, Australian agriculture's productivity cannot grow, nor face the challenges of a changing climate. Crop protection and GM products are core components of agricultural innovation, enabling Australian farmers to be better equipped while facing unprecedented challenges, to remain competitive internationally, to benefit the Australian economy and to address global food security issues.

[21] *Klümper, W. and Qaim, M., (2014). 'A meta-analysis of the impacts of genetically modified crops'. PloS one, 9(11), p.e111629.*

What is counter-productive, however, is the application of unscientific, ideological concepts to the issue of food security.

Case study: Sri Lanka, pushed to the brink by an organic agenda

The Sri Lankan Government was recently coerced into a dogmatic and ideological agricultural policy by affluent foreign activists peddling failed philosophies. Following several years of consultation with and influence from prominent, well-funded international activists, Sri Lanka abruptly banned the importation and use of synthetic pesticides and synthetic fertilisers. Far from securing Sri Lanka's food supply into the 24th century, yields of staple and export crops (namely rice and tea) collapsed by nearly half. The catastrophic loss of revenue resulting from a failure of agricultural production hit every aspect of life in Sri Lanka: inflation exceeded 50 per cent, basic utilities become unavailable, supplies of critical medical goods and infrastructure dwindled to zero. Far from becoming the "all-natural utopia" conceived by aristocratic lecturers, $450 million (AUD) worth of rice needed to be imported to a nation which was previously self-sufficient in that commodity.

Domestic and international agricultural scientists and experts had warned the ban was unscientific, and potentially catastrophic. The most dire of these predictions came true, as global relationships between food production and pest infestation essentially mirrors the above data. Simply, the food demands of 8 billion people exceed the natural capacity of the land to provide it. Synthetic inputs including pesticides and fertiliser will be required to maintain and increase food production, as the effect of weeds, insects and diseases continue to compromise food quality and quantity.

3. THE ROLE OF BIOSECURITY IN FOOD SECURITY

Invasive, exotic weeds, insects and diseases would not only be catastrophic to Australia's food production, but also cause significant damage to Australia's unique and fragile environment if they become established. Vigilant monitoring for the arrival and introduction of these species is required to inform stakeholders of the threats they pose.

Both the Foot and Mouth Disease and Varroa destructor scenarios are currently looming threats in Australia. Between 2012 and 2017, the annual number of interceptions of biosecurity risk materials at Australian borders rose by almost 50%, to

37,014[22]. The NSW DPI notes that insect and disease introductions into Australia have quadrupled in the last five years, forming an increasing upward trend[23]. This underpins the need for the effective partnerships across government, industry, research bodies, the private sector and non-government organisations to intercept and mitigate these burgeoning threats, in a level appropriate to the risks they present.

The plant science industry is critical to meeting the challenges of the future and addressing emerging biosecurity and food safety threats. This includes developing disease and pest resistant crops, as well as new and novel pesticides, including biological control agents. This includes an ongoing commitment to stewarding existing products through understanding of antimicrobial and pesticide resistance and zoonotic pathways, as well as the development of resistance management strategies. This commitment to stewardship is expanded, below. These partnerships of industry technical experts in Australia and globally, as well as state department and university scientists, demonstrate the value of these partnerships, both ongoing and as a pillar of sustainable food security and production.

Vigilant monitoring for the arrival and introduction of invasive pests, including insects, weeds and diseases, as well as education, is required to inform stakeholders of the threats they pose. Investment in people, partnerships and knowledge and information systems to improve performance and meet current and emerging challenges will help build the capability and capacity prepare for and prevent novel pest incursions which threaten food security. It is important to note and utilise the APVMA's capacity to provide emergency permits and registrations to prepare for the predicted incursions of biosecurity threats. Many examples exist and are held by various national, state and territory departments, but also Research and Development Corporations and industry bodies to avoid regulatory delay in the deployment of chemical interventions to mitigate and manage new threats.

4. DOMESTIC MANUFACTURING CAPACITY AND SUPPLY CHAIN RESILIENCE

Given the crucial nature of crop protection products in securing and bolstering farming production and supply, the essential role of pesticides in achieving food security cannot be underestimated.

[22] https://www.igb.gov.au/sites/default/files/documents/qid52820_igb_interceptions_and_incursions_report_-_final_1.pdf
[23] https://www.dpi.nsw.gov.au/__data/assets/pdf_file/0020/1414505/Consultation-Draft-Biosecurity-and-Food-Safety-Strategy-2022-2030.pdf

The IBISWorld Australia 2020 report cited that imports of pesticides currently account for 52 per cent of the Australian market. It is further true that for the remaining amount, only a small amount of technical active ingredient is manufactured in Australia and that the domestic manufacture of pesticides is predominantly the formulation of imported ingredients. This means imports from a small number of nations – China, the United States, Japan, Thailand, India and Germany – account for the majority of the imports of important constituents of crop protection products.

However, this recognition does not demand a self-sufficient approach to the manufacture of vital crop protection products. Despite Australia's producers growing similar crops and facing similar pest and disease challenges to producers in other countries, the Australian crop protection market is less than five per cent of the Global Market compared to other OECD markets such as the US and EU, which are each around seven times larger.[24] This indicates that, from a food security perspective, it is important to recognise Australia's role in extensive and complicated global supply chains and this is a matter should be evaluated and prioritized to support existing production capability and capacity.

Recent crises, not limited to the COVID-19 pandemic, have caused the single greatest disruption to global food supply in generations. Throughout, the Australian agriculture sector has delivered continuity in supply of safe and nutritious food, feed and fibre to domestic and global markets, while managing the challenges associated with access to critical farm inputs. The supply chains for crop protection products are long, encompassing imports through various nations and means. The delivery of these products is extremely time sensitive. Owing to the biology of plant growth and development, crop programing by farmers, as well as the ecology of pest species such as weeds, pathogens and insect predators, even slight delays in the availability of these products could – and do – have catastrophic implications for crop yields.

To continue to combat the threat of not only food and nutritional insecurity but the impacts of climate change and increasing production costs, while remaining internationally competitive, farmers must have predictable, reliable and timely access to the latest safe and proven agricultural technologies and innovations. Maintaining and strengthening domestic supply chains, while promoting and incentivising diversification is critical in achieving Australian – and global – food security.

5. DEDICATION TO STEWARDSHIP

[24] Deloitte (2019) Agvet Chemicals – Market Drivers and Barriers

In CropLife members recognise they have an ongoing responsibility to ensure the safe and sustainable use of their products. For this reason, CropLife and our members support and adhere to the *International Code of Conduct on Pesticide Management* of the Food and Agriculture Organization and the World Health Organization of the United Nations. This Code specifies obligations about the stewardship of agricultural chemicals throughout their lifecycle, from innovation, discovery and development, through to ultimate disposal of waste. In addition, CropLife members are required to adhere to our mandatory code of conduct and a suite of world-leading industry stewardship initiatives and programs, StewardshipFirst, to ensure the responsible use of their products.

As both the strategy and comments above agree, modern and data-based resistance management strategies that deal with the changing status of pests are crucial to ensuring the longevity and viability of pesticides used to mitigate threats to biosecurity. Hence, CropLife's Resistance Management Strategies are reviewed and updated on an annual basis by expert scientific technical review committees, in consultation with relevant national and international experts. Climate change will be one of the biggest challenges to agricultural pest management and production over the coming decades, as changing temperatures and weather patterns are introducing changes in crop pests. Weeds, pest insects and diseases will continue to be major threats to the productivity, profitability and sustainability both of Australia's farming sector and human food security. Many pests that are detected upon arrival may bring with them existing or novel resistance mechanisms. Resistance management must be flexible and timely to anticipate and mitigate this risk.

The StewardshipFirst suite also include a Pollinator Protection Initiative (PPI), which recognises the importance of pollinators for Australian agriculture and the environment. The PPI is comprised of two components. The first component is the Seed Treatment Stewardship Strategy, which provides best practice guidance to ensure that modern, innovative crop protection products are used responsible and in a manner that minimise risk to pollinators. The second component of the PPI is BeeConnected, a world-first, user-driven smart-phone app and website that facilitates and encourages collaboration between the cropping and beekeeping industries. BeeConnected was launched in Australia in September 2014 and has since been launched internationally.

In addition to CropLife's Resistance Management Strategies and Pollination Protection Initiative, StewardshipFirst also includes stewardship programs delivered through Agsafe, CropLife Australia's internationally recognised and awarded not-for-profit stewardship organisation. CropLife's flagship environmental stewardship programs ***drum****MUSTER* and ChemClear® are managed and operated by Agsafe. These stewardship programs are fully-funded by industry. Since ***drum****MUSTER* started operations in 1999, more than 40,000 tonnes (almost 40 million

containers) of plant science industry product container plastics have been diverted from landfill sites into recycling programs. There are over 800 collection sites throughout Australia, with almost 250 in NSW alone, for farmers, environmental land managers and other pesticide users to return their drums, including over 350 local council sites.

The ChemClear® initiative further demonstrates the plant science industry's rigorous commitment to product stewardship. ChemClear® supports the removal of obsolete chemicals off farms and out of regional Australia, allowing farmers to safely dispose of these unwanted products. This is particularly pertinent during events such as floods and bushfires. ChemClear® has a successful history in partnering with state governments to conduct collections to safely capture, remove and dispose of unwanted or unknown pesticides from properties or surrounding public lands following natural disasters. These partnerships have diverted thousands of litres of pesticides from landfill, waterways and inadequate storage, which has minimised the risk of pollution events.

In demonstrating CropLife and Agsafe's proven track record of assisting farmers with crucial pesticide clean-ups resulting from natural disasters, following the recent flood events in NSW, Agsafe worked with NSW EPA to organise a cleanup run along the north coast. During flooding events, chemical containers can become damaged with labels often becoming unidentifiable. Even farmers who follow absolute best practice in storing their pesticides on farm will be at risk due to the scale of the weather events we have experienced recently.

6. CONCLUSION

CropLife is pleased to provide these comments to the Standing Committee on Agriculture. The essential role of pesticides in delivering Australia's long-term food security is incontrovertible. Smalholder farms employing niche, organic production cannot replace modern, science-based agriculture in supplying the every-increasing quantity of food demanded by a growing population. By this same token, however, all safe, sustainable and productive food systems have a role to play in anchoring food security. Organic and conventional production practices are not mutually exclusive; rather they are part of a broader spectrum of practices, procedures, and products. Pesticides, be they organic, synthetic, or biological in origin will continue to prevent large crop losses globally and support increased global food production to meet the needs of a hungry and growing world population. This is not limited to agricultural production; it includes environmental conservation and fostering human health through effective management of insects and diseases. CropLife will continue to work collaboratively with the all stakeholders - government, farmers, consumers, and environmental land managers – in delivering Australia's food security. The products and innovations of the plant science continue to foster and enable Australia's goal of producing $100 billion in farm gate output by 2030, which will be a crucial step in providing long-term global food security.