CropLife Australia

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Senate Select Committee on Productivity, Environmental Efficiency, Aviation and Biofuels Consultation

Submission



1 INTRODUCTION

CropLife Australia (CropLife) is the national peak industry organisation representing the agricultural chemical and plant biotechnology (plant science) sector in Australia. CropLife represents the innovators, developers, manufacturers, formulators and suppliers of crop protection products (organic, synthetic and biological based pesticides) and agricultural biotechnology innovations. CropLife's membership is made up of both large and small, patent holding and generic, Australian and international companies. Accordingly, CropLife advocates for policy positions that deliver whole of industry and national benefit. CropLife Australia is a member of CropLife Asia and part of the CropLife International Federation of 91 CropLife national associations globally. Our focus is specifically on sustainable environmental land management and an Australian farming sector that is internationally competitive through globally leading productivity and sustainability practices. Both of these outcomes are achieved through access to the world-class technological innovation and products of the plant science sector.

The plant science industry contributes to the nation's agricultural productivity, environmental sustainability and food security through innovation in plant breeding and pesticides that protect crops against pests, weeds and disease. More than $31 billion of the value of Australia's agricultural production is directly attributable to the responsible use of crop protection products, while the plant science industry itself directly employs thousands of people across the country.[1]

CropLife welcomes the opportunity to provide a submission to the Senate Select Committee on Productivity in Australia regarding environmental efficiency.

Environmental efficiency is achieved when Australia is able to produce more food, fibre and feedstock from fewer resources while reducing environmental impacts. Innovation in crop protection, plant breeding, and biotechnology has been central to improving the sustainability of Australian agriculture by increasing productivity, enhancing resource-use efficiency and reducing production losses.

As Australia seeks to strengthen domestic productivity, reduce emissions and improve national resilience, it is important that environmental efficiency policies recognise the contribution of agricultural innovation to food security, fuel security and sustainable economic development. This is particularly relevant to the development of sustainable

[1] Deloitte Access Economics, *Economic Contribution of Crop Protection Products in Australia* (Report, August 2023) <https://www.croplife.org.au/resources/reports/economic-contribution-of-crop-protection-products-in-australia/>.

aviation fuels (SAF), biofuels and other emerging bio-based industries that will rely heavily on a productive and sustainable agricultural system.

Australia has an opportunity to develop SAF and biofuel industries that contribute to emissions reduction, regional economic development and national fuel security. In collaboration with industry, CSIRO and Boeing Australia have identified Australia as being well positioned to establish a sovereign SAF industry based on domestic feedstocks and existing agricultural strengths. The roadmap, jointly released by CSIRO and Boeing, highlights opportunities to develop domestic SAF production using Australian feedstocks while strengthening fuel security and supporting regional economic development.[2]

The development and endurance of these industries will depend on access to reliable, sustainable and affordable feedstocks. Consequently, improving environmental efficiency should not be viewed solely as a question of fuel production technologies. It must also consider the agricultural systems that produce the feedstocks required to support those industries.

CropLife's position is that future demand for food, fibre and fuel should be met primarily through innovation, productivity growth and improved resource-use efficiency. Agricultural innovation enables Australia to increase production while reducing environmental impacts and avoiding unnecessary pressure on land resources.

[2] C A O'Sullivan et al, *Opportunities and Priorities for a Low Carbon Liquid Fuel Industry in Australia* (Report, CSIRO Towards Net Zero Mission, February 2025) 60, 64-65.
Boeing Australia and CSIRO, *Sustainable Aviation Fuel State of Play: One Year on from the Australian SAF Roadmap* (Report, November 2024).

2 AGRICULTURAL INNOVATION IMPROVES ENVIRONMENTAL EFFICIENCY

Recommendation 1: Environmental efficiency frameworks should recognise the contribution of agricultural innovation and assess performance based on measurable outcomes rather than specific technologies.

Environmental efficiency is not simply a function of how fuels are produced or consumed. It is also determined by the productivity and sustainability of the agricultural systems that supply the food, fibre and feedstocks required by the Australian economy.

Crop protection products, plant breeding and biotechnology have played a central role in improving the environmental efficiency of Australian agriculture by increasing productivity, reducing production losses and supporting more efficient use of land, water and other resources such as fertiliser. These technologies enable Australian farmers to produce more from existing agricultural land while reducing pressure for land-use expansion and supporting broader environmental objectives.

Crop protection products play a critical role in supporting the production of agricultural commodities that may serve as feedstocks for biofuels and sustainable aviation fuel. The Deloitte Access Economics report released in 2023, 'Economic Contribution of Crop Protection Products in Australia', illustrates that more than $31 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.[3] Crop protection products (pesticides) are crucial to modern integrated pest management techniques and systems used by farmers. These tools include fungicides, herbicides and insecticides underpinning the productivity and reliability of Australia's agricultural sector.

Crop protection products also contribute to climate and environmental outcomes. Herbicide use has enabled Australia's world-leading adoption of no-till and reduced-tillage farming systems, reducing soil disturbance, improving moisture retention and supporting carbon sequestration. The widespread adoption of these systems has been estimated to sequester approximately 5 million tonnes of CO_2-e annually.[4] Research has also demonstrated that crop protection products can improve lifecycle greenhouse gas, land use, water efficiency and biodiversity outcomes.[5]

[3] Deloitte Access Economics, Economic Contribution of Crop Protection Products in Australia (Report, August 2023) <https://www.croplife.org.au/resources/reports/economic-contribution-of-crop-protection-products-in-australia/>.
[4] Macintosh A et al, Improving Carbon Markets to Increase Farmer Participation (Report, July 2019, AgriFutures Australia) <https://agrifutures.com.au/wp-content/uploads/2019/07/19-026-Digital-1.pdf>.
[5] Grains Research and Development Corporation, *Greenhouse Gas Emissions* (Web Page) <https://grdc.com.au/about/our-industry/greenhouse-gas-emissions>.

The effective management of invasive species is also an important contributor to environmental efficiency. Invasive weeds, pests and diseases reduce agricultural productivity and increase the resources required to produce food, fibre and feedstocks. Science-based biosecurity, invasive species management and access to effective and innovative crop protection and biotechnology tools can therefore improve environmental outcomes by reducing production losses and improving resource-use efficiency.

Environmental efficiency assessments should adopt a whole-of-lifecycle approach that considers impacts and benefits across the entire value chain, from agricultural production through to processing, transport and end use. Focusing on a single stage of production could overlook sustainability gains achieved through innovation and productivity improvements. A lifecycle approach provides a more comprehensive assessment of environmental performance by recognising reductions in greenhouse gas emissions, land-use, water use and other demands across connected agricultural and industrial systems. Such an approach is particularly important for sustainable aviation fuels and biofuels, where feedstock production and supply-chain efficiency play a significant role in determining overall environmental outcomes.

Plant breeding and biotechnology innovation such as new breeding techniques (NBTs) similarly contribute to environmental efficiency by improving crop performance and enabling agricultural production systems to produce more using fewer inputs. Emerging technologies, including gene editing, offer opportunities to develop crops with improved yields, enhanced resilience to environmental stresses, improved feedstock characteristics and greater input-use efficiency. These technologies also create opportunities to develop feedstocks specifically suited to biofuel and sustainable aviation fuel production, including crops with higher oil content and improved processing characteristics.[6]

CropLife supports policy settings that recognise the contribution of crop protection products, plant breeding and biotechnology to environmental efficiency outcomes. Environmental efficiency frameworks should be science-based, technology-neutral and focused on measurable outcomes rather than the technologies used to achieve them. Assessment methodologies should enable the use of verified farm, regional and supply-

Matlock M et al, 'Estimating the Theoretical Impacts of Pesticide Removal on the Top Three US Commodity Crops' (Research Highlight, Arkansas Agricultural Experiment Station, University of Arkansas, 2024) <https://aaes.uada.edu/research-highlights/life-cycle-assessment-of-pesticides/>.

[6] Deepak Kumar and Vijay Singh, 'Dry-Grind Processing Using Amylase Corn and Superior Yeast to Reduce the Exogenous Enzyme Requirements in Bioethanol Production' (2016) 9 *Biotechnology for Biofuels* 228; Bruno Galveas Laviola *et al*, 'Breeding Strategies to Consolidate Canola among the Main Crops for Biofuels' (2022) 141 *Euphytica* 1; SHO Safflower, Commonwealth Scientific and Industrial Research Organisation (Web Page, 12 March 2021); Super-High Oleic Safflower, Commonwealth Scientific and Industrial Research Organisation (Web Page, 15 September 2026); Oil Crops, Commonwealth Scientific and Industrial Research Organisation (Web Page, 3 July 2020)

chain data where available, allowing recognition of outcomes achieved through crop protection products, plant breeding, reduced-tillage systems and biotechnology innovations.

Policies that focus on outcomes rather than technologies will provide a more accurate assessment of environmental performance and encourage continued investment in innovation across the agricultural value chain.

3 FOOD SECURITY, FUEL SECURITY AND ECONOMIC RESILIENCE

Recommendation 2: Government policy should support agricultural productivity and innovation, enabling simultaneous growth in food, fibre and biofuel feedstock production while strengthening fuel security and regional economic development.

Australia currently relies on imported liquid fuels, with up to 79 per cent of refined petroleum products imported in 2023-2024, exposing the economy to international supply chain disruptions and geopolitical risks.[7] At the same time, Australia possesses significant natural advantages in agricultural production and is well placed to supply feedstocks for emerging biofuel and sustainable aviation fuel industries.

Australia already exports substantial quantities of feedstocks suitable for biofuel and SAF production, including more than 76 per cent of domestically produced canola.[8] This is equivalent to approximately six million tonnes of canola annually.[9] Greater than 70 per cent of Australia's canola exports are shipped to Europe, where much of the crop is processed into biodiesel.[10] At current export prices, this represents approximately $4.8 billion in feedstock exports.[11] Recent industry analysis suggests this volume could theoretically produce more than two billion litres of renewable diesel.[12] This highlights the opportunity to capture a greater share of the crushing, refining and fuel production value chain domestically while strengthening fuel security and regional economic development. The Sustainable Aviation Fuel Roadmap developed by CSIRO and Boeing identifies vegetable oils and agricultural feedstocks as key contributors to Australia's SAF opportunity. [13] The Sustainable Aviation Fuel Roadmap also highlights that industry is

[7] M Smith, *Australia's Liquid Fuel Security: Budget Update* (FlagPost, Parliamentary Library, Parliament of Australia, 4 June 2026) 1-2 <https://parlinfo.aph.gov.au/parlInfo/download/library/prspub/10882459/upload_binary/10882459.pdf>. Department of Climate Change, Energy, the Environment and Water, *Australia's Fuel Security* (Web Page) <https://www.dcceew.gov.au/energy/security/australias-fuel-security>.
[8] Department of Agriculture, Fisheries and Forestry (Cth), National Bioenergy Feedstock Strategy (Strategy, 2026) Page 3.
[9] Vítor Caçula Pistoia, *Fueling the Future: How the New Biofuel Demand Wave Could Reshape Australia's Canola Sector?* (Report, Rabobank, 2 April 2026).
[10] Australian Oilseeds Federation, *Australian Canola and the EU Biodiesel Market* (Fact Sheet, October 2022); Commonwealth Scientific and Industrial Research Organisation (CSIRO), *Canola EU Markets* (Impact Case Study, 22 April 2026)
[11] Department of Agriculture, Fisheries and Forestry, *Weekly Commodity Price Update* (Web Page, 24 September 2026) (reporting canola FOB Kwinana price of A$806/t); Pistoia (n 1).
[12] Vítor Caçula Pistoia, *Fueling the Future: How the New Biofuel Demand Wave Could Reshape Australia's Canola Sector?* (Report, Rabobank, 2 April 2026)
[13] C A O'Sullivan et al, *Opportunities and Priorities for a Low Carbon Liquid Fuel Industry in Australia* (Report, CSIRO Towards Net Zero Mission, February 2025) 60, 64-65.

already pursuing proposals to produce aviation fuel using Australian-grown canola. The development of domestic biofuel and sustainable aviation fuel industries therefore presents an opportunity to strengthen fuel security, support regional value-adding and create new opportunities for Australian agriculture.

The Australian Government has acknowledged the importance of ensuring feedstock production complements food and fibre production through both the National Bioenergy Feedstock Strategy and Feeding Australia: A National Food Security Strategy.[14] Supporting growth in feedstock production through productivity gains, innovation and improved resource-use efficiency will be critical to achieving these objectives simultaneously. Emerging feedstock crops may also create opportunities to utilise marginal land and to be incorporated as rotational, intermediate or complementary crops within existing farming systems, helping to expand feedstock production while continuing to support food and fibre production. Therefore, Australian farmers require access to the full suite of available technologies to maintain productivity, sustainability and international competitiveness.

Agricultural innovation provides a pathway to increase production while reducing environmental impacts and maintaining the competitiveness of Australian agriculture. By enabling Australia to produce more food, fibre and fuel from existing agricultural systems, innovation can strengthen both economic resilience and sovereign capability while supporting regional communities and domestic manufacturing opportunities.

International experience has demonstrated the importance of maintaining access to diverse and sustainable feedstock sources and how agricultural production can support domestic fuel security objectives. Brazil has adopted E30 (30 per cent ethanol) and B15 (15 per cent biodiesel) fuel blending mandates, while Indonesia has implemented a B50 biodiesel mandate. These policies use agricultural production to reduce reliance on imported fossil fuels, support regional industries and create domestic value-adding opportunities.

The European Union renewable fuel policy framework recognise a range of feedstocks and production pathways for biofuels and SAF, including agricultural crops, agricultural residues, waste streams and other bio-based feedstocks.[15] The rapid growth of European

Boeing Australia and CSIRO, *Sustainable Aviation Fuel State of Play: One Year on from the Australian SAF Roadmap* (Report, November 2024).

[14] Department of Agriculture, Fisheries and Forestry (Cth), *National Bioenergy Feedstock Strategy* (Strategy, 2026) <https://www.agriculture.gov.au/sites/default/files/documents/national-bioenergy-feedstock-strategy.pdf>. Department of Agriculture, Fisheries and Forestry (Cth), *Feeding Australia: A National Food Security Strategy* (Web Page, 24 March 2026) <https://www.agriculture.gov.au/agriculture-land/farm-food-drought/food/national-food-security-strategy>.

[15] European Commission, *Renewable Energy Directive* (Web Page) <https://energy.ec.europa.eu/topics/renewable-energy/renewable-energy-directive-targets-and-rules/renewable-energy-directive_en>

SAF and biofuel markets highlights the strategic value of renewable carbon derived sources from biological feedstocks as an alternative to fossil-based carbon sources. As global demand for low-carbon liquid fuels increases, Australia has an opportunity to leverage its agricultural production strengths to participate in these emerging value chains and supply sustainably produced renewable feedstocks to domestic and international markets.

CropLife supports policy settings that encourage investment in agricultural innovation and domestic value-adding, ensuring that growth in biofuel and sustainable aviation fuel industries creates genuine opportunities for Australian growers, regional communities and the broader economy.

Australia's food security and fuel security objectives should not be viewed as competing priorities. Rather, both depend on productive, resilient and innovative agricultural systems capable of efficiently producing food, fibre and feedstocks from a finite natural resource base.

European Commission, *ReFuelEU Aviation* (Web Page) <https://transport.ec.europa.eu/transport-modes/air/environment/refueleu-aviation_en>.

4 SCIENCE-BASED AND TECHNOLOGY-NEUTRAL POLICY FRAMEWORKS

Recommendation 3: Environmental efficiency policies should remain science-based, technology-neutral and focused on measurable environmental and economic outcomes.

Environmental efficiency policies should be designed to encourage innovation and reward measurable outcomes. Policies that prescribe particular technologies or production pathways risk limiting opportunities to innovate and improve productivity, sustainability and environmental performance.

CropLife supports science-based and technology-neutral approaches to environmental policy. The contribution of agricultural systems to environmental efficiency should be assessed according to measurable outcomes, including productivity improvements, resource-use efficiency, emissions reductions and sustainability performance, rather than the specific technologies used to achieve those outcomes.

This principle is particularly relevant to agricultural innovation. Crop protection products, conventional plant breeding, biotechnology and new breeding techniques all have the potential to contribute to environmental efficiency by increasing productivity, reducing losses and improving resilience. Environmental efficiency frameworks should therefore enable access to innovation and avoid creating unintended barriers to the adoption of technologies that can deliver environmental and productivity benefits.

Environmental efficiency assessment frameworks should also recognise that innovation has a cumulative effect. Continued improvements in crop genetics, crop protection products, digital agriculture and farm management practices have enabled Australian agriculture to produce more output from existing land and resources over time. Future productivity gains are likely to be similarly dependent on continued access to innovation across the agricultural value chain.

CropLife encourages the Committee to support policy and regulatory settings that:

- are science-based and technology-neutral and consider impacts and benefits across the full product lifecycle;
- recognise productivity as a key contributor to environmental efficiency;
- support innovation across the agricultural sector; and
- focus on measurable environmental and economic outcomes.

5 CONCLUSION

Agricultural innovation plays a critical role in enabling Australian farmers to produce more food, fibre and fuel from fewer inputs while reducing environmental impacts. Crop protection products, plant breeding and biotechnology continue to improve productivity, resource-use efficiency and sustainability across Australian agriculture. These innovations are essential in supporting and maintaining future domestic biofuel and sustainable aviation fuel industries.

As Australia seeks to develop new opportunities in sustainable aviation fuels, biofuels and other bio-based industries, environmental efficiency frameworks should recognise the contribution of innovation to productivity, emissions reduction and resource-use efficiency. Policies should remain science-based, technology-neutral and focused on measurable outcomes rather than the technologies used to achieve them.

CropLife encourages the Committee to support policy settings that:

- recognise productivity growth as a key driver of environmental efficiency;
- support continued investment in the innovation of crop protection, plant breeding and biotechnology;
- encourage domestic feedstock production, value-adding and regional economic development;
- maintain science-based and technology-neutral regulatory frameworks; and
- promote environmental assessment methodologies that recognise measurable outcomes achieved through agricultural innovation.

By enabling Australia to produce more food, fibre and fuel from existing agricultural systems, innovation can strengthen environmental outcomes, support regional communities, improve fuel security and food security, and enhance Australia's broader economic resilience and sovereign capability.