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Cheap, effective and dangerous: how Australian farmers came to depend on the toxic weedkiller paraquat



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It is illegal to use paraquat in at least 74 jurisdictions worldwide, including the European Union, China, Malaysia, Brazil and, most recently, the US state of Vermont.

But today, Australia's chemical regulator gave this effective but highly toxic herbicide the green light.

After a nearly 30-year review, the Australian Pesticides and Veterinary Medicines Authority (APVMA) finally decided paraquat can continue to be used on Australian farms.

It will have to be used at reduced rates and can no longer be applied with backpack sprayers, only in enclosed systems.

There's no doubt paraquat is dangerous. It's a Schedule 7 poison that is acutely toxic to humans if touched, swallowed or inhaled. Farmers have to be exceptionally careful in how they handle it.

Health advocacy groups and neurologists called for an outright ban on paraquat over concerns longer-term exposure could be linked to Parkinson's disease.

Why is Australia so dependent on this chemical? As our recent research shows, the reasons are simple. Generic imported paraquat is cheap and effective, and there are few alternatives given the way we currently farm. Ironically, paraquat is largely imported from China, where its domestic use is banned.

How did Australia get here?

For broadacre Australian farmers who grow crops such as wheat, oats, chickpeas, canola and soybeans, paraquat is an essential tool. It is used to kill broadleaf and grassy weeds on no-till farms. No-till practices have been widely adopted in Australia to minimise soil disturbance, but require chemical weed control.

Paraquat also works on weeds that have become resistant to other major herbicides, such as glyphosate. Farmers often use these two herbicides together to effectively manage weeds.

This reliance is partly due to developments in the pesticide industry (a term covering herbicides, insecticides and fungicides). Until recently, this industry was dominated by large multinational European and American companies who sold patented (more expensive) and off-patent products.

But in the last two decades, Chinese manufacturers have ramped up cheap generic products. The global industry is now dominated by Chinese state-owned and private enterprises producing off-patent and far cheaper pesticides.

Tax rebates and other government incentives have helped companies such as Rainbow, Wynca, Adama, Yangnong and Syngenta China to become the world's leading agrochemical companies. In 2006, Australia imported around 10% of its pesticides (by value) from China; by 2025 that figure was almost 50%.

The rise in generic pesticides has led to more product availability. The 2015 China-Australia Free Trade Agreement removed tariffs on pesticide imports, making imports easier. Australia's regulatory agency doesn't require a full assessment to register new products with approved active ingredients.

As a result, there are now 121 products containing paraquat registered in Australia, sold under names such as Rainquat, Gramoxone and Spraytop. While individual supply chains are difficult to trace, our research shows the chemicals in these products appear to be almost exclusively produced in China. The two leading agricultural chemical retailers in Australia, Nutrien and Elders, now have their own low-cost generic labels, sourcing generic formulations from China.

As one of the interviewees for our research told us: "there are less and less commercially attractive options outside of China these days... when I was in the business 20 years ago, we had a lot of material coming out of Europe. There's almost nothing in Australia that comes out of Europe."



Australian farmers rely heavily on herbicides such as paraquat. Charles G/Unsplash, CC BY-NC-ND

What would happen if paraquat was banned?

Prior to the APVMA's announcement, many Australian farmers and agronomists were worried about a total ban on paraquat given the lack of readily available, affordable and effective replacement herbicides.

If paraquat was off the table, Australian farmers would have had to rely more heavily on non-chemical strategies, such as rotating crops and growing crops more densely to crowd out weeds.

A change like this would likely cause significant short-term disruption as farmers grapple with how to make it work. It could reduce yield and make food more expensive, though a lot of these crops are produced for export.

With heightened attention on the APVMA's decision, now is a chance to rethink our deep dependence on pesticides to grow our food – especially those which can severely damage our health.

It is worth thinking about how we could farm without paraquat. Supplies of cheap, generic chemicals are not guaranteed. Chinese authorities have been reducing production volume in recent years. When faced with external crises, Chinese authorities tighten fertiliser export controls to protect Chinese farmers from price rises. They could decide to do the same for pesticides.

For now paraquat will continue to be used on Australian farms. But with an uncertain future, it is worth figuring out how we can best farm without it.

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