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From beer bottles to broadacre: the glass fertiliser that could change your yield



By [Bella Hanson](#)

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uDo



This silicon product manufactured from recycled glass in Brisbane is increasing bioavailability and reducing the need for urea fertilisers. Picture supplied.

With urea prices surging and supply tightening at a critical time in the season for growers, a fertiliser derived from recycled glass could be one option and there are others in the pipeline.

Industry data from CSIRO suggests up to 40 per cent of surface-applied urea can be lost before crops can access it, raising serious

questions about how much value farmers are actually getting from every application.

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With global supply chains under strain and Australia heavily reliant on imports, the push is now on to make every kilogram count.

From silicon-based fertilisers to water-delivered supplementation and changes in crop genetics, producers are being forced to rethink how nutrients are managed not just this season, but into the future.

Agronomist and MaxSil founder David Archer said growers could no longer afford to rely on traditional fertiliser strategies alone.

"With fertiliser supply constrained, farmers can't afford to waste inputs," he said.

Mr Archer said silicon-based fertilisers made from ultra-fine, plant-available silica derived from recycled glass in a Brisbane facility were showing strong results in improving nutrient uptake.

Unlike conventional fertilisers that supply nutrients directly, he said the silicon works within the plant and soil system to make existing nutrients more accessible.

"It encourages uptake efficiency and helps access nutrients that are already there but not normally available," he said.

He said Australian soils already contained large reserves of nutrients, particularly phosphorus, but much of it remained chemically locked and unavailable to crops.

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"We're seeing the potential to displace up to 50 per cent of urea use in some systems," he said.

"At the same time, we're reducing phosphate inputs and still maintaining yield – that's where the real value is."

Victorian producer Tony Donovan, who runs a large-scale grazing, cropping and dairy operation near Warrnambool, said the shift toward silicon-based fertiliser had been driven by a need to get more out of soils already under pressure.

"We're a pretty intensive operation, about 14,000 hectares with five dairy farms, so getting as much natural help out of the soil as we can is really important to us," he said.

Mr Donovan said high iron and aluminium levels in his soils had historically locked up key nutrients like phosphorus and potassium,

forcing the business to rely heavily on synthetic fertiliser inputs.

"What the silicon is doing is tying up that iron and aluminium, which in turn releases phosphorus, potassium and trace elements that were already there but unavailable," he said.

"We've measured it – we've got tonnes of phosphorus sitting in the soil that we just couldn't access before."

After introducing silicon into the system, he said the business had been able to significantly reduce its reliance on applied fertiliser.

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"In some paddocks, we're releasing the equivalent of about 200 kilos of DAP (Di-Ammonium Phosphate)," he said.

"At today's prices, that's extremely valuable. It has a huge economic impact on us."

Mr Donovan said the benefits were not just financial, but also reflected in plant and livestock performance.

"Our plant health, our production and our stock health are all lifting," he said.

"And when you're seeing that across both pasture and crops, that's when you start to take it seriously."

At the same time, global factors continue to tighten supply.

China – one of the world's largest urea producers – has effectively restricted exports over the past year, while instability in the Middle East has added further pressure to supply chains.

DIT AgTech founder and CEO Mark Peart said the situation had forced producers to rethink not just what they use, but how they deliver it.

"Instead of relying on those traditional supply chains, we've taken a different approach," he said.

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He said the company was sourcing alternative nutrient inputs, such as urea phosphate, blending them offshore and importing a finished liquid supplement, avoiding the raw urea bottleneck driving prices higher.

"We're effectively bypassing the bottlenecks that are driving prices higher," he said.

Mr Peart said the biggest gains, however, were coming from improving how supplements were delivered on-farm.

The company's system, known as uDose, connects directly into existing water infrastructure and automatically doses nutrients into troughs.

"Every time cattle come to drink, they receive a controlled amount of supplement automatically," he said.

Instead of relying on lick blocks or loose lick, which require regular runs across paddocks, the system ensures consistent intake without the need for frequent manual feeding.

"It removes the need for constant runs to roll out lick, which cuts diesel use, labour and kilometres travelled across large stations," he said.

He said the system also added a layer of precision many grazing operations had never had.

"Farmers can adjust nutrition levels in real time without needing to be on site," he said.

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"And for the first time, they're getting data around what animals are actually consuming and when."

Emerging research is also pointing to longer-term changes in how crops themselves access nutrients.

A study from the University of Queensland found traditional sorghum varieties were significantly better at accessing less available phosphorus than modern crops.

Rather than relying on readily available fertiliser, these older varieties were able to draw nutrients from harder-to-access sources in the soil.

Lead researcher Dr Michael Walsh said the difference was happening below the surface.

"We found some root exudates act like pickaxes, unlocking phosphorus so the crop can grow," he said.

These root exudates – natural chemicals released by plant roots – interact with the soil to free up nutrients that would otherwise remain locked away.

"Modern crops have been bred in high-input systems, so when nutrients become harder to access, they can struggle," he said.

Sustainable Concrete Group co-founder Oscar Ledlin said the current fertiliser squeeze could accelerate adoption of alternative approaches.

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"Recycled inputs, local manufacturing and efficiency gains aren't just sustainability ideas anymore," he said.

"They're becoming essential tools for maintaining productivity."

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