Media Release

Liquid enzyme saves MAP without yield loss

April 2022

Applying 80% of the standard rate of MAP, plus the liquid enzyme Lumen, has produced wheat yields, plant-counts, biomass and grain-quality equivalent to the 100% MAP rate in soils where phosphorus fertilisers are recommended.

This result, from two-and-a-half-years of replicated field trials by Elemental Enzymes in Australia, supports and backs more than six years and 100 trials in the US.

The launch of Lumen liquid enzyme in Australia comes at a crucial time, with farmers facing enormous fertiliser price hikes and potential supply shortages as they make their 2022 winter-crop planting decisions.

Elemental Enzymes Australia sales and marketing manager Chris Ramsey said cereal growing is one of the top five industries most impacted by the escalating domestic price of fertiliser.

"The estimated tonnes of wheat Australian farmers needed to sell to cover the purchase of MAP fertiliser rose from one tonne in late 2020 to 2.5 tonnes in 2021, with further rises in 2022.

"One option growers are likely to be considering is to reduce the amount of fertiliser they apply to their 2022 winter crop, potentially leading to a shortfall in crop yield and income."

Mr Ramsey said the liquid enzyme Lumen now offers them a way to maintain yield at a lower rate of MAP.

He estimates Lumen could save Australian grain farmers $20–$45/ha in MAP fertiliser costs in 2022, allowing them to stretch their available MAP supplies across 20 per cent more hectares, without sacrificing yield.

What is Lumen and how does it work?

Lumen is a patented liquid additive for improving phosphorous fertiliser efficiency.

It contains enzymes that are naturally secreted by both plants and microbes to convert complex soil-borne molecules into smaller, easily absorbed nutrients. These enzymes provide plants with greater access to soil nutrients and the ability to absorb them.

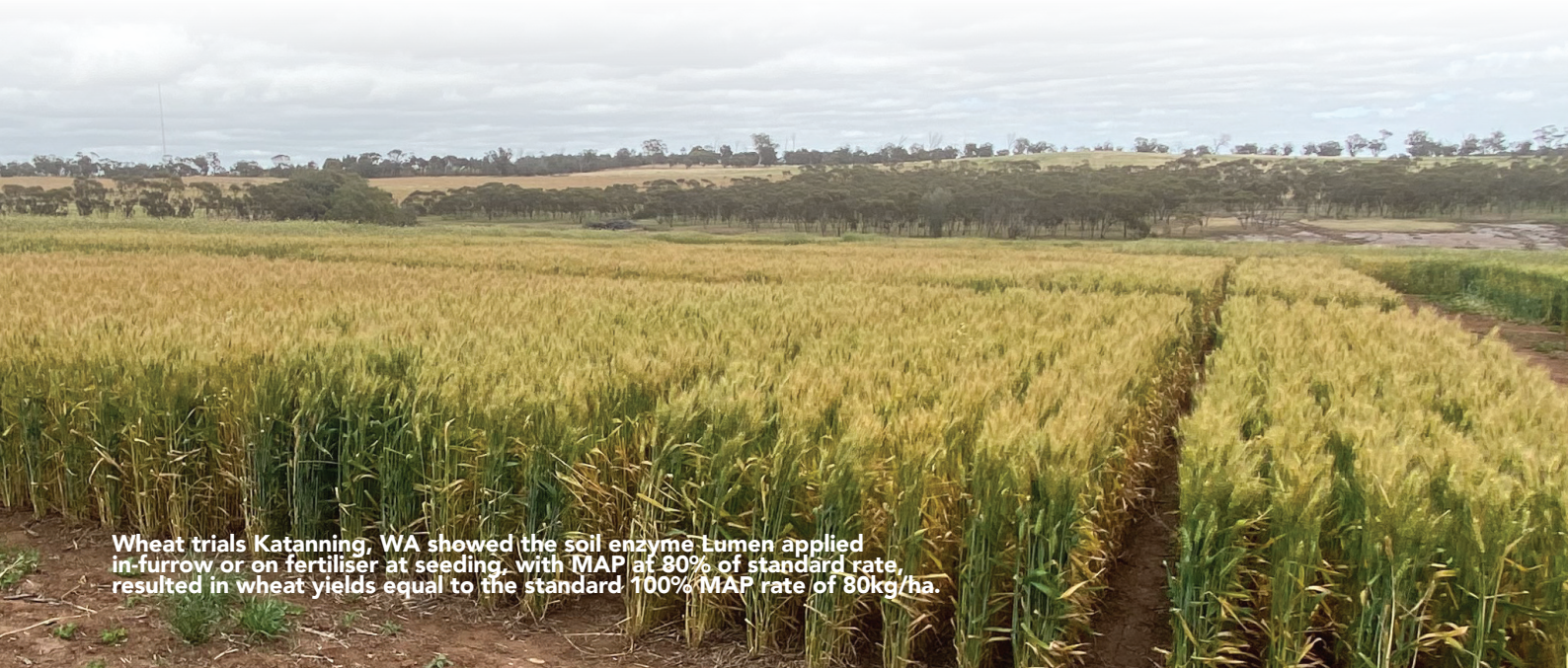
Mr Ramsey said Lumen contains a blend of two enzymes, lipase and mannanase. Lipase converts lipids in soil organic matter, allowing release of bio-available nutrients for the plant, and stimulating native microbial soil activity. Mannanase breaks down exudates around the outer layers of root tips, making it easier for them to absorb extra nutrient.

"Adding these enzymes in a higher concentration and distributing them more widely in the soil improves the use of nutrients applied in fertiliser, plus nutrients already present in soil organic matter," he said.

Australian trial results

In 2020 and 2021, large, replicated trials conducted by independent agricultural research companies in NSW, Western Australia, South Australia and Victoria, plus large-scale farmer demonstration trials, have proven the ability to reduce fertiliser rates without yield loss, by adding Lumen liquid enzyme.

Trials were typically run with MAP, which is used extensively in cropping systems in Australia, with its low level of nitrogen and no free ammonia making it a useful 'starter' fertiliser with minimal risk to germinating seeds.



Wheat trials Katanning, WA showed the soil enzyme Lumen applied in-furrow or on fertiliser at seeding, with MAP at 80% of standard rate, resulted in wheat yields equal to the standard 100% MAP rate of 80kg/ha.

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Mr Ramsey said that as well as getting more out of the applied fertiliser before it is tied up, the data has also shown improved utilisation of N, P and K, with the enzymes making these nutrients more available to the plant.

The bar charts summarise the impact of Lumen on wheat crops in South Australia's Eyre Peninsula and at Katanning in West Australia.

Mr Ramsey said the replicated trials conducted by an independent trial company at Katanning were a good example of the positive results.

The company reported that the addition of Elemental Enzymes soil enzyme product Lumen applied in-furrow or on granular fertiliser at seeding, with MAP at 80% of standard rate resulted in:

- Wheat plant counts, biomass, yield and grain quality equal to the standard 100% MAP rate of 80kg/ha.

They also reported that:

- Lumen proved safe to wheat, when applied in-furrow or on fertiliser at seeding
- Lumen could improve phosphate fertiliser efficiency for wheat farmers
- Lumen could save $20 to $45/ha MAP fertiliser cost in 2022
- Lumen could allow available MAP to be stretched across 20 per cent more hectares.

Lumen has also been trialled in canola and grain legume crops such as chickpeas and lentils in Australia, with equally promising results.

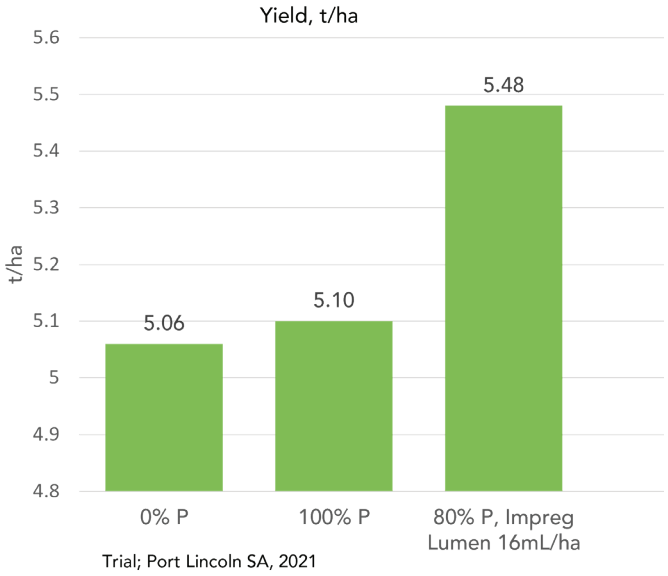
Dealing with climbing fertiliser prices

Mr Ramsey said global prices for fertiliser neared record highs last year and are still climbing, with prices likely to remain high and volatile in 2022.

"Recent reports of P-based fertiliser prices at port were around A$1500 per metric tonne (1000kg).

"At that price ($1.50/kg), using MAP at 64 kg/ha (80% of the recommended rate), with the addition of Lumen liquid enzymes, would translate to a fertiliser saving of around $24/ ha for an equivalent crop yield.

Wheat impregnated granular fertiliser application

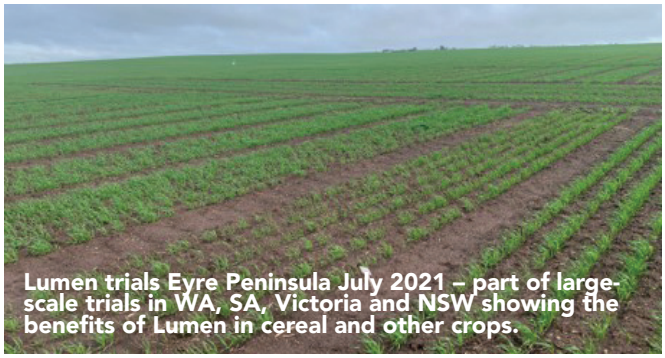


Lumen trial results in wheat (yield, tonnes/ha), Port Lincoln, SA – impregnated fertiliser application.

"Growers can make the most of expensive fertiliser applications this season by supplying the right amount of soil enzyme, right where and when it's needed – by adding Lumen to improve both nutrient availability in the soil, and nutrient absorption by plant roots."

Lumen is available in a 1L pack and treats 62.5ha at the recommended rate of 16 ml/ha.

Supplies of Lumen are now available across Australia for the 2022 autumn-planting season and can be ordered through usual rural supply outlets.



Lumen trials Eyre Peninsula July 2021 – part of large-scale trials in WA, SA, Victoria and NSW showing the benefits of Lumen in cereal and other crops.

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