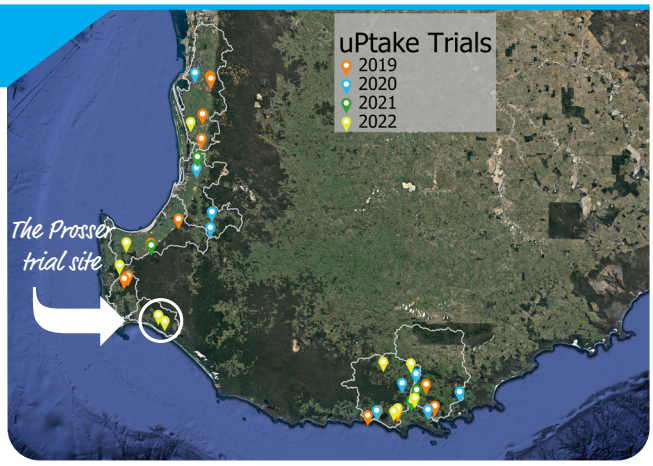
Department of **Water and Environmental Regulation**
Department of **Primary Industries and Regional Development**
GOVERNMENT OF WESTERN AUSTRALIA

uPtake
Trials - Innovation - Partnerships
Delivering better fertiliser outcomes

uPtake case study: Lower Blackwood catchment

The Prosser trial

Tim Prosser



The Prosser uPtake trial provided an opportunity to see the response of P on a recently cleared paddock with high capacity to retain P, and where the site had only been fertilised for a few years prior to the trial. In this trial, which ran over three years, the standard rate of P used in the uPtake trials was doubled because of the high P buffering index (PBI) and low P fertility index.

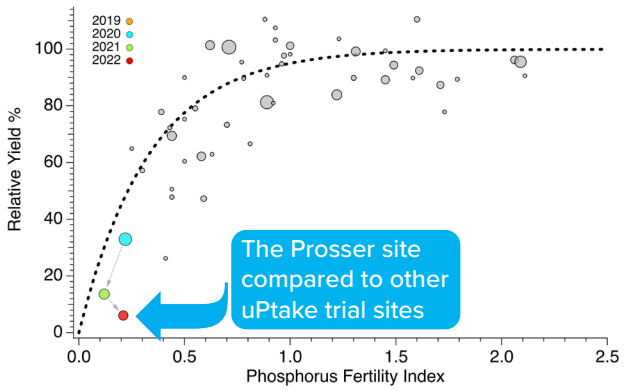
The award-winning uPtake project has increased farmer and industry confidence in the science behind phosphorus fertiliser recommendations by validating national critical soil test values for phosphorus (P) for south-west Western Australia (WA).

The Prosser family have been beef farming on the Scott Coastal Plain since 1968. Tim Prosser is a third-generation farmer with a strong interest in soil and plant nutrition. Tim was on the uPtake Technical Reference Group and hosted an uPtake trial on his farm.

"I wanted to be involved with the trials because I like to keep learning to be on the cutting edge of profitability and do the right thing by the environment." – Tim Prosser

Site characteristics

	2020	2021	2022
Phosphorus buffering index	348	254	220
P fertility index	0.22	0.12	0.21



Prosser site

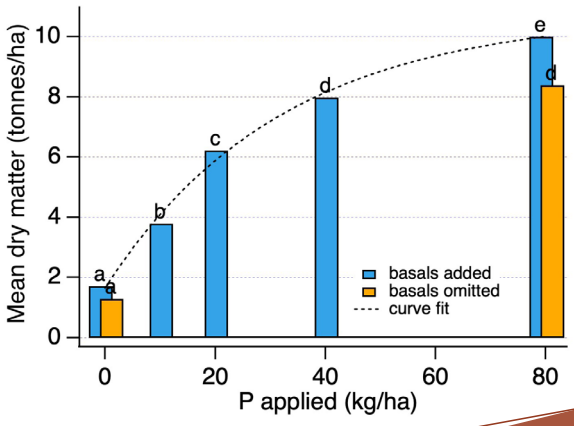
Key findings

Given the very low P levels in the recently cleared trial area, this site was expected to be P responsive. As expected, P application at the Prosser trial site resulted in large pasture responses over the three years, particularly at the highest rate of 80 kilograms per hectare (kg/ha) (blue bars below).

There was no pasture response to basal nutrients (nitrogen, potassium, sulphur, and some trace elements) without P and only a small response at the highest P rate of 80 kg/ha (orange bars without basal nutrients).

The high soil PBI and low P fertility index meant the site was highly P deficient and able to retain most of the P applied.

When P was applied at 80 kg/ha, the P fertility index for those treatments increased from 0.22 to 0.59 after three years of P application, but still had not reached the optimum P fertility index of 1.0. For high P buffering index soils with low P fertility, trials would need to be conducted for more than three consecutive years with double the standard trial rate of P to achieve optimum P fertility.



Key learnings

"The Prosser site highlighted the importance of P application for growing pasture when the land is first cleared. Many farmers remember seeing a P response like we saw at the Prosser's. Once the soil has reached the critical P levels, however that response doesn't occur anymore and applying more P only increases the risk to the environment whilst reducing return on fertiliser investment." – David Weaver, Principal Research Scientist, Department of Primary Industries and Regional Development

"I was surprised how much P was needed in the newly cleared heavy soils and the amount of pasture grown on the higher rates. The trials reinforced to me the importance of soil testing and monitoring P levels to make sure that the right amount of P is applied to grow the amount of grass we need, and that P is not running down the river. It's about farming correctly for the future." – Tim Prosser

More information

This trial was among 52 trials established over four years across south-west WA. Together, the results from the trials validated that national critical soil test values for P are relevant to south-west WA soils and contemporary pasture species.

Learn more at estuaries.dwer.wa.gov.au/uptake

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uPtake and Soil Wise are jointly funded through the State Government's Healthy Estuaries WA and the Australian Government's National Landcare Program.