

MEET YOUR COTTON RESEARCHER

Dr Peter Thorburn

Chief Research Scientist, Digital Innovation Research Group Lead
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PROFILE

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RESEARCH AREA

Cropping systems

CRDC Research Project
**De-risking nitrogen (N)
management in cotton farming
systems**



WHAT'S YOUR BACKGROUND?

I trained as a soil physicist looking at soil salinity, then joined CSIRO to work on soil carbon and nitrogen cycling. I see modelling as an essential tool to provide understanding about cropping systems that are not possible from experiments alone. I apply my skills to the sustainability of cropping.

This has led me to study the factors influencing farmers' management, and from that to tools such as market-based instruments (e.g. carbon pricing mechanisms) and more recently financial instruments like insurance. I see these "instruments" playing a role in changing the environment in which farmers make decisions – changing the risk/reward dimensions of farm management.

HOW DID YOU END UP IN COTTON?

I have led projects looking at whether insurance can compensate the yield risk of lower nitrogen fertiliser applications in sugarcane. This work has been picked up by the insurance industry.

The basic agronomy that makes this insurance "sensible" is the unpredictable nature of the optimum nitrogen fertiliser rate for a crop. We have both demonstrated and explained the cause of that unpredictability in sugarcane in Australia and maize in the US corn belt.



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Cotton  **Info**

This is quite a different way of looking at nitrogen management. Yield risk is an important aspect of nitrogen management of all high value crops, and I have had various conversation over the years with different people in the cotton industry about our work in sugarcane. This led to the opportunity for the current research project.

EXPLAIN YOUR CURRENT RESEARCH

We are starting by trying to understand the important factors influencing cotton growers' decision about nitrogen fertiliser management. This work is being led by a couple of great social scientists from CSIRO, Michelle Miller and Zelalem Motti.

In parallel we are also looking to quantify the variability in optimum nitrogen rates in cotton crops – is that variability similar to that we've found in sugarcane and corn maize? That will shed insights into what tools or program might help cotton growers optimise their nitrogen management reducing greenhouse gas footprints. We have an excellent economist on the team – Anthea Coggan from CSIRO – who will help us understand the pros and cons of different possible tools or programs.

This might show that insurance is potentially useful, in which case we will turn our focus to developing a prototype product. That is a pretty complex process. However, it may well be that there is a better path forward which will need to be developed in another project.

Whatever we discover, the cotton industry will have increased clarity about the different ways growers could be supported to optimise their nitrogen management and take advantage of the resultant reduced greenhouse footprint. The industry might also get a prototype insurance concept!

WHAT DO YOU LIKE TO DO WHEN YOU'RE NOT RESEARCHING?

Trying to maintain some form of fitness – I spend too many hours at a desk! I do that through some cycling – off road when possible – and other things. I also have an interest in wine, family and friends.

WHAT EXCITES YOU ABOUT WORKING IN THE COTTON INDUSTRY?

The cotton industry has a strong reputation for innovation. It, like many agricultural industries, sees opportunities in reducing its greenhouse gas footprint. Nitrogen fertiliser management is an important part of that. It will be exciting to see if we can bring some new insights into this problem and have those insights interact with the established appetite for innovation in the cotton industry.



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