



ResilientEP
For a profitable farming future

FARMER CASE STUDY THEME: VARIABLE RATE INPUTS ON VARIABLE SOIL TYPES BASED ON YIELD POTENTIAL

Case study: variable rate technologies across variable soil types and sustainability impacts

Summary/Purpose

Todd Matthews first became involved with moisture probes in an earlier project in 2016 when the region first obtained grant funding for moisture probes and continued his interest through the current Eyre Peninsula project. In this case study he shares his experiences of with moisture probes and the importance of choosing the right technology to suit soil types. He also shares the value he has achieved as a result of his involvement as a focus paddock provider including gaining a better understanding of deep nitrogen (N) levels, soil constraints and variability across paddocks.

Context

Todd Matthew's property at Cootra on the central Eyre Peninsula is 6500 hectares. He runs a mixed enterprise cropping wheat, peas, lentils, canola and barley as well as running sheep. The Resilient Eyre Peninsula focus paddock is on 180 hectares where there is a high level of variation in yield across the paddock.



Approach and methodology

Initially Todd had little involvement in the focus paddock process, apart from providing details about fertiliser use and yield outcomes. It took a couple of years before data began to come in from the moisture probe. When EPAG Research agronomist Jacob Giles came on board, Todd installed a protein machine on his header. They started to use yield and protein data to build maps and test strips throughout his paddock to identify the paths where

they could achieve more reliable responses from varied N and P and inputs.

Todd was primarily focused on N input rates and improving his land use: looking at strategies to achieve “more bang” from his investment; by reducing risk and increasing profits. He has now built these maps and is collaborating with CSIRO on data processing.

As part of the trial, the project has completed soil sampling and deep N tests, gaining a better understanding of different zones, including reliable areas and non-reliable areas. Todd has gained considerable value in understanding his paddocks better. He has appreciated the support of researchers during the trial process, being able to talk about his soils, as well as the discussions he has had with other farmers, sharing what they are doing and trying to adapt new technologies to achieve better responses and improved gross margins across his enterprise.

Challenges: One of the biggest issues Todd encountered relates to the type of moisture probe installed. While the probe may have been appropriate in an irrigation scenario, unfortunately it was not suited to Todd’s soil type. This was a decision made in 2016 at the start of the project when Todd suggested there was less knowledge and understanding of what the best options. He said, there are “different probes available now that would have been better, but that was where the technology was in 2016.” He stressed the importance of being able to choose and install the right probe from the onset. The technology requires a commitment to a platform and service provider, where growers are locked into a telemetry unit, backend and software. If he was to install a different probe, this would require operating two different platforms.

Todd owns his probe and telemetry unit, and post calibration is not an option. Unfortunately, it has taken since 2016 to determine these issues, however he is now upgrading the probe technology.

Impacts/Benefits

The main value Todd has gained from his involvement in the project has been a result of the protein machine installed. While this was not the anticipated outcome, it has been worthwhile, and he has gained an added layer of data across his paddocks.

His involvement in the Resilient Eyre Peninsula project has also given him confidence to use variable rate technologies on his farm. According to Jacob Giles (EPAG Research), variable rate technology is “a practical way of optimizing inputs and increasing sustainability if done correctly.” Todd now has a better understanding of the impacts of stored soil moisture, how to account for deep N and ways to optimise inputs. From an environmental perspective he said this knowledge “helps in making more informed decisions and making sure we are efficient.” He is hopeful that as a result of his involvement he has locked in some higher yields.

Relevance to others

Todd believes this project is contributing to improved understanding about soil constraints, different soil types and variability within paddocks and across farms. He said most growers in the district have visited his paddock and had in paddock discussions about nitrogen, which he believes will impact their nitrogen decisions.



This case study was prepared by Coutts JR for the Resilient EP project, which has been funded with a grant from the Commonwealth Government's National Landcare Program.

For the full case study report go to www.airep.com.au