



# PRECISION AG A USEFUL TOOL, NOT A MAGIC BULLET

IT IS UNLIKELY THAT ANY SINGLE PIECE OF PRECISION FARMING TECHNOLOGY WILL PROVIDE A MAGIC BULLET THAT WILL DRAMATICALLY INCREASE YIELDS. BUT COMBINING MULTIPLE TYPES OF DATA CAN GIVE FARMERS THE ABILITY TO IMPROVE THEIR PERFORMANCE AND PROFITABILITY.

This is the view of Carrfields Technology senior agricultural technology specialist, Travis Ryan-Salter. Travis recently completed a PhD in agronomy from Lincoln University, and before that he was a precision farming specialist with Landpower.

He says that the data provided by new technologies need to be kept in perspective and that it will only be useful if it is applied practically.

“Most data will require some logical interpretation by farmers and specialists. The data won’t solve problems on their own but they are a very useful way for farmers to interpret what is happening in their crops. Once

they do this they can use their machinery to address the issues they face,” Travis says.

“It is important that agronomists understand what machinery and technology can do so they can apply their knowledge and experience to modern equipment. It is about understanding what can make a difference on-farm and how it can increase the bottom line.

“If we understand what machinery can do and we know some of the factors that are driving yields, then we can apply that to save money or get bigger returns.”

One of the key tools available to farmers is the normal-

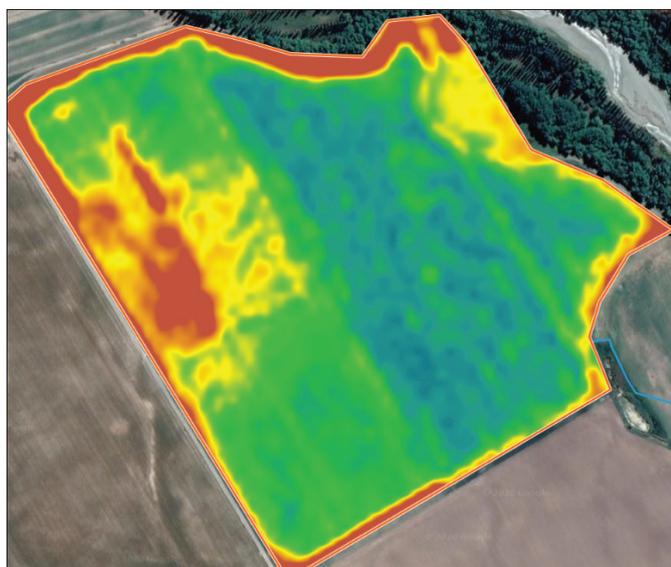
ized difference vegetation index (NDVI). NDVI gives an idea of the amount of vegetation present in a paddock by measuring the difference between near-infrared light (which vegetation strongly reflects) and red light (which vegetation absorbs).

Satellites or drones can take NDVI readings of paddocks and Travis says the canopy cover this detects can be useful for assessing variation or crop development.

“With NDVI you can get an idea of the crop’s green leaf area. The colour and density of the crop is a key determinant of yield. The denser the canopy and earlier and longer its stays green, the better the yield.

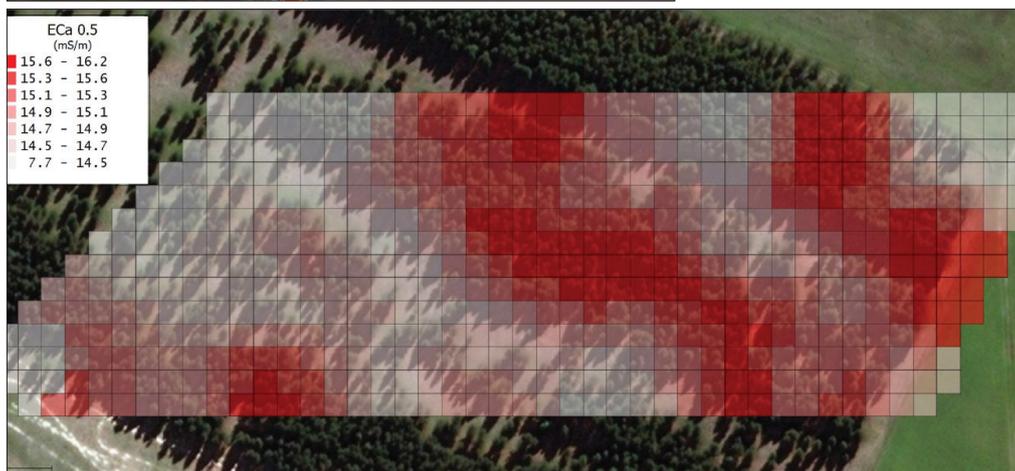
“Nitrogen and water are big drivers of canopy development, so if the NDVI shows a crop that has a light colour, it could be because of a shortage of these. Or it could be because of disease.

“NDVI is not the be-all and end-all but it is useful. It gives farmers and agronomists clues about where to look to get their heads



AN NDVI IMAGE OF WHEAT THAT SHOWS AN AREA OF POOR CANOPY DEVELOPMENT IN EARLY SEPTEMBER.

IMAGE COURTESY OF DATAFARMING.COM.AU.



around a problem or to improve yields.”

For example, a light crop might indicate fertilisation rates need to be adjusted. NDVI can also pick up striping in a crop caused by a fertiliser spreader set incorrectly and attempting to spread at widths that are greater than it can achieve accurately.

Yield maps are another source of data that can help tease out problems.

Travis cites the case of a farm that had a big area that showed less green in May according to an NDVI reading, but it went on to deliver higher yields than the rest of the farm.

It turns out the farmer had gone away on a rugby trip and that section was planted two weeks later than the rest of the farm. During the intervening two weeks, the earlier sown areas were damaged by rain. The area that was sown late escaped the damage and was more successful.

Soil maps are another tool that is available to farmers. Travis says soil maps are more useful in areas where there is a lot of variability within paddocks. They can be particularly useful in dryland farming regions because irrigation can even out yields and overcome a lot of soil variability.

“Soil mapping can provide a base on which other maps can be overlaid. It can also reveal where compaction is a problem.

“If water flows and ponding are a problem, then combining soil maps with RTK GPS can show elevations and, therefore, the best way to mitigate it.”

Travis says the big challenge today is for farmers to get the support they need to adopt new technology. He says those who supply the technology need to understand how the technology integrates into each unique farming operation, and they also need to show farmers the value of the data the technology supplies.

If farmers don’t get on-going support, then it is unlikely that the data will become a crucial part of their daily operations. **RC**

SOIL CONDUCTIVITY MAP THAT ILLUSTRATES PADDOCK VARIATIONS AND THEIR HISTORICAL EFFECTS ON TREE SURVIVAL.

BACKGROUND IMAGE: GOOGLE, 2020 MAXAR TECHNOLOGIES.