CASE STUDY TEN

Natural approach to the adoption of PA tools

After pioneering no-till farming in the Mallee over 25 years ago, Allen Buckley is now looking to retire. However, PA adoption has always been an important part of his business.

Farm profile

Farming personnel: Allen and Jenny Buckley

Farm location: Waikerie, SA

Annual rainfall: 250 millimetres

Soil types: Sandy loam and shallow red loam

Farm area: 7000 hectares

Enterprises: Wheat, barley, triticale, multi-species cover crops

Feedlot: 1600 Lamb capacity, Merino self-replacing flock

Average wheat yield: 1.2 tonne per hectare

SPAA member: Yes

PA consultant: All in-house

Agronomy consultant: All in-house

PA timeline

Guidance –	**2000**
Yield mapping –	**2000**
Autosteer –	**2005**
Inter-row seeding –	**2005**
Variable rate –	**2007**
Multi-species cropping –	**2015**
On-farm trials –	**2015**

Top PA tips

- ***PA technology allows data to be collated in an easily accessible way***
- ***Adopt tools that work with the environment to increase soil productivity***
- ***Small changes that add 'whole-farm' benefits can add up to an improved bottom line***

Why did you choose to adopt precision farming technology?

There was an opportunity for improved collection of information. I'm one of those farmers with four or five small notebooks filled with data in my ute and those notebooks can be easily misplaced. PA technology can collate all data in an easily accessible way, so it doesn't get lost. The technology also opened up the opportunity to save on labour and help with long term productivity. PA technology is an investment in the farm for improving efficiencies and productivity.

Which technology tools or components have you adopted and (which do you) continue to adopt?

It all started with the adoption of no-till cropping more than 25 years ago, which saved our topsoil from erosion. We then moved to yield mapping and guidance in 2000, which led to autosteer and inter-row seeding in 2005 and then variable rate seeding in 2007. Inter-row seeding and autosteer with two-centimetre accuracy were introduced at the same time, however, this was not completely successful for inter-row seeding as it didn't line up properly. In 2010, a new tractor and header was purchased with autosteer while the tractor also operated the variable rate system.

All grain produced is sold directly from on-farm to domestic markets, saving transportation and freight costs and storage and handling costs. We have a protein meter on our grain storage which helps us measure test weight and protein. This enables us to better understand our grain quality before sale and provides more control over the grain we have available. We also have a protein meter on the header, which measures the protein of the grain as it is being harvested.

Four years ago we visited America where we were introduced to multi-species cropping and have been pursuing this concept ever since. In 2015 we began a small multi-species cropping on-farm trial, with a full trial beginning in 2019. We have a new air seeder cart, using the same variable rate control system, with several boxes for various seed which can handle a whole range of seed sizes to enhance mixing and distribution.

We have now introduced several PA tools into the livestock side of our business over the last three years. We began to talk about virtual fencing and were one of a few people in Australia talking about it. This concept gained traction and in 2018 there was a successful trial with sheep held at Waikerie. Virtual fencing gives you the ability to treat every square metre of land as a paddock of its own, to help manage stock and to

control rotational grazing. Our feedlot is fully computerised, which is particularly valuable when inducting animals as we can record and control sheep weight gains and feed intake.

Agriwebb (software) is currently used as our livestock management database, which has some tracking and crop recording capabilities. Prior to retirement, we were looking into adopting the AgWorld software platform, as this would help with our in-house agronomy control.

What are the factors that motivate you to adopt and use each of the different tools or PA components?

There must be a practical application on my property for the PA before I am interested in adopting the technology. It must be labour-saving and produce better results. Many PA options I have seen I haven't adopted, such as optical spot spraying technology. I just haven't seen the benefit of this for my property, so I have decided it's not worth the investment. There may be some savings to adopting that technology, however, if there are no 'whole farm' benefits then I won't adopt it. My focus was to try to move away from chemicals and spraying and towards a more 'natural' approach. That's why I looked into multi-species cropping and building up organic carbon in the soil, rather than spraying selectively. My aim has always been to continuously increase productivity, so I always look at alternatives.

What types of data and information are you collecting to guide your decision-making to adopt or not adopt each PA component?

The most valuable information usually comes from various people I meet that are already using the technology I am interested in. People that are interested in PA like to talk about the technology and the costs and benefits associated. Field days are also a good source of information, particularly talking to the companies that create the PA and the training they can provide. I don't usually seek out the information actively, I usually sit back and watch and then integrate what I think could be the most useful in my system. My friends and other farmers mention social media as a good source of information, but I prefer a conversation with someone or to see it first-hand.

Has the adoption of PA increased profitability on your farm? How?

It definitely has. With variable rate, for example, the benefits are not only from the fact you can map yield and set up VR zones for seeding to increase yield on-farm, but also the reduced labour and other factors. It's the overall package of everything together that helps on-farm. Labour and costs have been reduced and we now have better access to information. With on-farm auditing increasing and more laws to adhere to, having all our farm data at our fingertips really helps with those efficiencies. It's all of these one-percent gains that add up to an improved bottom line. People want a silver bullet for instant return, but these bullets are usually expensive and don't always perform.

How are you using the data generated by PA? Is it leading to further practice change? If so, what kind of practice change?

Farm and production data has been collated over time, which has helped us track any changes that are occurring and help us get ahead of the game on issues that occur each year. Spray data has been important for us to utilise due to all the chemicals involved. You need to know what you need to spray and where and when you can sow the crop, so you don't have problems with chemical damage. The more variety of crops you grow and the more species you have, the more you need to have that data available.

Yield data and protein testing has been valuable as on-farm storage can be managed effectively. I know what I have to sell and can sell into the right market. Yield data has also helped us to track manure spreading on paddocks and the benefits associated. I can get half a tonne per hectare return in yield from spreading manure, and we wouldn't have that information if it wasn't for the yield data. We have also noticed particular returns on PA in drought or tough years.

Who is influencing or assisting you with the adoption of PA?

Most of the adoption is completed in-house, however, the companies that supply the components and products are a great source of information. The companies have all the services available to you now, including training and data collection information, and these services are provided to you when you purchase the equipment. I tend to steer clear of equipment that doesn't come with these services, as I believe a good company that knows what they are doing would provide this information. Other farmers around me that are using the technology are also a great source of information.

Are you planning to adopt more or less of these various precision farming technology components in the future?

Due to health reasons, I am looking to move out of farming now however, PA has always been an important part of our business. It has helped grow and develop our business since the adoption of no-till over 20 years ago.

On the livestock side, we have continued to work with virtual fencing as I believe it could be a big game changer in farming in Australia.

We have also continued to look into multi-species cropping, as we are seeing great results. The project on yield and protein data collection will continue, as the data is invaluable to our system.

Cover cropping is something I have been interested in, as it follows the organic and natural path that I am interested in. Cover crops provide more living roots in the soil that can improve soil biology and crowd out weeds. No-till has been an environmental and production game changer. The benefits have now plateaued, so everyone is on the look-out for the next big thing and I believe that could be cover cropping.

Contact details

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