

ARABLE FARMING CASE STUDIES

A deeper look at how small businesses use digital technology to have a positive impact on the way they run their business.



AQUALINC RESEARCH

Starting out in 2004, Aqualinc Research Limited is an independent provider of research-based consulting services for water and land management.

Over the years, the research and development team have seen significant improvements in the sophistication of their data modelling with the introduction of the latest technologies. The large data set manipulations and resulting models are now created in days, instead of months. Stephen Barbarics, CEO, says that many of the models they now produce simply would not have been possible in the past.

The team uses purpose-built software, with in-house developers working on customisations. They are able to produce large, complex data sets, such as weather data, climate time series data, rainfall and data on snowfall leading into lakes. These outputs make a positive difference to environmental quality and the economic well-being of communities, with this information being provided to power generation companies, water companies, farmers and regional councils among others.

For example, the company places digital moisture sensors in the ground which are linked to a telemetry system, with the data going straight to the Aqualinc website and made available to customers via smartphone apps. This data tells farmers whether or not there is enough water for plant growth or if the farm is at a stress point. The data can inform farmers of moisture deficits of 20mm, alerting them to when they have to activate their irrigation systems. This results in an efficient use of both water and power, saving the farmers money.

The Aqualinc team also uses neutron probes (via a tube in ground), which measure soil moisture. In the past, the data output from these probes was manually added to the reporting system resulting in delays in receipt of the information and the possibility for human error. By employing the latest technology the data is automatically collected and immediately uploaded to the website.

Using custom-built software, Aqualinc produces groundwater models that are used to represent the natural groundwater flow in the environment. Looking at source protection zones, the team utilises information to determine what is happening with aquifers where safe drinking water can be found. Data modelling includes building a picture of what's happening in an aquifer, extraction rates and what happens when there's rainfall.

With the data modelling that the team is now using they can develop solutions for environmental protection and resource allocation, provide tools to improve the efficiency of water use, plan and design sustainable developments and look at the impact of long term climate change and sea level changes.



RANGIORA VET CENTRE

Rangiora Vet Centre was first founded around 50 years ago, as the original vet in the township. Starting out with five vets, they now have 20 (and 43 support staff), operating out of a purpose built facility.

Two years ago, the team set out to create an online vet store, setting themselves the ambitious goal of being in the top three or four online vet stores in New Zealand. They invested in in-depth research in order to reach their target and within two years, not only met their goal, but doubled their sales expectations.

Their online customer base is growing every month. Two thirds of their products are delivered to the North Island and the remaining one third to South Island customers. Director Ben Davidson says that in the process of developing their online store, the team have learnt a lot about online shopping. He says working in a strategic partnership and getting advice from experts in this area has been integral to their success.

With the aim of experimenting with customer experience and purchasing behaviour, the team have two separate versions of their online store running concurrently. Slight differences, such as colours and button placement throughout the store, help to indicate customer browsing behaviour and preferences. As a result, they can update the store in response to clear customer preferences.

The team are able to review detailed daily and monthly site analytics in order to improve the customer experience, according to what works and what doesn't. The directors continue to set quarterly ambitious goals for the online store, which include looking at markers such as conversion rates, driving people to the site and average transaction values.

Other technology focus areas for Rangiora Vet Centre have been business intelligence, targeting areas of increasing customer engagement and improving efficiencies in managing their sales inventory.

Specifically, the team has looked for areas that can be improved with automation and Artificial Intelligence (AI). This includes identifying opportunities where their machines could complete activities more accurately, efficiently and more cost effectively than humans.

Until recently, the in-store sales inventory was managed by staff eye-balling shelves and reordering to ensure there was "4 of everything". Sales inventory reviews are now conducted through algorithms that generate automatic orders, based on sales in the same period during the previous year. The team can now produce detailed reporting, remove expired stock, cease ordering products that are not needed and provide customers with what they actually want and need in-store. Daily sales analytics are displayed on a dashboard, specific to each team, empowering team leaders to easily see how their teams are tracking that week.

The Centre's purpose built customer engagement system contains a detailed database of owners and their pets. Automatic reminders are sent via email or text for appointments, pet birthdays and for antibiotic and flea treatments. Automatic recommendations for adult and geriatric check-ups are sent at the relevant time and are triggered according to animal breed.



Next to launch will be the online management of health and safety procedures and training information. Content is currently stored in several different folders, making it difficult to find the latest procedures and confirm who has been trained in what. Procedures will soon be easily tracked, reminding staff when reviews are due and will also provide the ability to easily see current training and skills information for all staff. Moving these important records online will mean an increase in both accountability and compliance.



CASE STUDY

PRODUCTIONWISE AND FOUNDATION FOR ARABLE RESEARCH (FAR)

ProductionWise is a cloud based farm management tool freely available to New Zealand arable growers through the Foundation for Arable Research (FAR). The application (app) provides growers and their staff with a tool that can be referred to and updated while out and about on the farm, all in real time.

Farmers have used the app to collect data on their farm and to help them understand how they run their business and how it is performing. Steven and Freda Bierema from Somerton Station Farm Ltd find the tool easy to use and that “it keeps you sharp on what you’re doing and helps make decisions. . . apart from having a benchmark for your own crops it is really good to compare (anonymously) your results with other farmers in the district”.

How has ProductionWise made a difference to these arable farming small businesses?

Brian & Rachael Leadley, Ashburton

We have been using ProductionWise for a number of years for all of our paddock records diary. The ability . . . to record all our activities via my mobile device and also review our agronomic inputs with our agronomist while out in the crops is one of the many strengths of ProductionWise.

Other great attributes are the ability to record values for inputs and harvest, so we can run crop by crop and paddock by paddock gross margin comparisons. This is so valuable when planning future crop rotations.

The records are a great reference to look back on when planning future crop rotations. They help with things like planning for minimum isolation periods for crop certification, identifying the risk of any soil borne disease that can carry over between crops and checking chemical application for any residual issues that may arise in future crops.

Also, of course, the ability to help meet our compliance requirements is another benefit, both for regulatory requirements such as Farm Environment Plans and Overseer Reports to comply with our Farm Consents, and also for Quality Assurance requirements from our various markets.

David Birkett - Birkett Farming Ltd Leeston

ProductionWise has given us a recording programme that is designed for the complex needs of our arable operation as well as the ability to benchmark our system with others of similar crops and operations. We have used the satellite imagery features within ProductionWise for many more crop management decisions than I initially expected, and I’m sure more uses will be found in the future. ProductionWise has saved us significant time in farm recording, and helped us to make better management decisions.



ProductionWise features include:

Mobile app – ability to update data in field, record grain/seed storage and manage chemical shed inventory with on and off-line mode.

Advisor tool – receive recommendations from approved advisors.

Satellite imagery – see a comprehensive picture of a crop's health or ground and weather conditions. It can also show a weed infestation or pest damage and locate the crop stress area so it can be more efficiently reached on the ground.

PA Hub - within ProductionWise, it can set up Variable Rate Zoning with the use of satellite images.

Industry benchmarking - ProductionWise also assists the industry by anonymously capturing regional cropping data for use in FAR seasonal benchmarking and reporting.

ProductionWise is a tool for the modern grower.

