



Using sheep pregnancy scanning and other AgTech tools in the pastoral zone

Focus Farm case study

At Mt Eba Station, sheep pregnancy scanning, remote monitoring and increasing the number of water points are all helping to build a more efficient and profitable business.

Enterprise Snapshot

Owner: Mt Eba Trading Pty Ltd

Managers and Co-owners: Peter and Margie Whittlesea, Paul and Michelle Cousins and Hayden and Michelle Whittlesea

Property name: Mt Eba Station

Size: 3370 square km

Location: Between Roxby Downs and Coober Pedy

Brief enterprise description: 10,000-13,000 Merinos and 150 Santa Gertrudis x Hereford cows joined to Angus bulls

Number of Employees: 4 full-time plus contractors at crutching, shearing and lamb marking

Average annual rainfall: 150-160 mm

Technology in use: Pregnancy scanning, eID, cameras to monitor water points

Background

Mt Eba Station is situated at the geographical centre of South Australia between Roxby Downs and Coober Pedy. Mt Eba Station is primarily a sheep enterprise, running a self-replacing flock of 10,000-13,000 Merino ewes. Sheep produce 21 micron wool and are bred with an emphasis on conformation and ability to survive in pastoral conditions. Wethers are also run in good years and then sold when feed supplies reduce. Most surplus stock (surplus ewe lambs and wethers, dry ewes or older ewes) are sold via Auctions Plus. The property also runs a herd of 150 Santa Gertrudis x Hereford cows joined to Angus bulls to produce store weaners which are sold via Auctions Plus.

This case study focusses on the use of sheep pregnancy scanning to maximise sheep production, as well as the use of water monitoring cameras to reduce labour associated with water runs and other best practice methods.

What improvements were sought at Mt Eba Station?

- Ability to cull unproductive ewes, and gain early insights into sheep conception rate, without extra mustering
- Recording via eID ram pedigree, performance and condition over the lifetime of rams on a property with hundreds of rams
- Increasing the number of water points to improve grazing efficiency while reducing labour associated with monitoring stock water infrastructure including: troughs, tanks, pumps and dams.

What have they adopted?

- Pregnancy scanning of all ewes for wet/dry and scanning for multiples in approximately 10% of ewes, with scanning timed to coincide with shearing
- Expansion of the number of water points from approximately 50 to 150
- Monitoring of tanks and troughs with cameras connected to the homestead via long range wireless networks
- eID in all rams for collection of individual animal data

Sheep pregnancy scanning in a pastoral production system

Sheep pregnancy scanning is not often performed on pastoral properties due to the extra mustering required, and the impracticality of giving preferential nutrition to multiple bearing ewes. However, Peter Whittlesea believes pregnancy scanning can still play a critical role in the pastoral environment. At Mt Eba, ewes are joined between Christmas and New Year, and each mob scanned in April either just before or just after they are shorn, averting the need for extra mustering. All mature ewes are scanned for wet/dry, with a small proportion (approximately 10% of each mob) scanned for longer to determine number of foetuses.

Dry ewes are drafted out at scanning but then are re-joined for an additional 3 weeks before scanning again 3 months later. In a typical year ~15% of ewes scan dry at first scanning, but 70% of these scan in lamb the second time they are scanned, such that only about 5% of the flock scans dry twice. Twice dry hoggets are generally kept, but twice dry mature ewes are sold as culls. Ewes that scan in lamb at the second scanning can either be kept to lamb in September in a good year, or sold 'scanned in lamb'.

The advantage of the system is that all ewes on the property carry a lamb each year and any that don't conceive are removed from the flock, leading to an overall increase in lambing rate. A further advantage of the system is that lambing periods are tighter. Separating out late-lambing ewes also allows them to be sold in late winter if feed stocks are low, and to sell these scanned in lamb ewes at a premium price. This flexibility avoids over-grazing on the property.

Scanning a few ewes in each mob for multiples provides an indication of conception rate each season, helping to improve the link between fecundity, management and ewe condition score. If ewes have scanned well (e.g. at 150%), they can be run in smaller mobs and at a lighter stocking rate than if they scan at a lower rate (e.g., a typical 120-130%). Running twin bearing ewes in their own small mobs has been trialled in the past but is not routinely done as there is little scope to give preferential treatment (better nutrition or better paddocks) to twin bearing ewes.

Water infrastructure and water monitoring technology

When Mt Eba Station was first purchased, there were approximately 50 water points servicing the 3370 square km. This had led to overgrazing of areas close to water, and underutilisation of feed further away from water points. Investment in water infrastructure was given a high priority.

A water plan was developed to expand the number of water points so that stock are never more than 3-4 km from water. The property is now 5 years into the 10-year plan and, through a combination of dam building, drilling bores and running poly pipe, have significantly increased the number of water points. According to Peter, this has led to increased feed use efficiency and improved feed utilisation. However, it also increased labour associated with water runs, to the point where twice weekly checks on all water points took 18 hrs and covered 680 km per week.

To reduce labour associated with water runs and improve water security, In2It telecommunications was engaged in 2016 to begin installing a Wi-Fi network across the Station, connected to cameras on troughs and tanks at water points.

This approach to water monitoring is a good fit for Mt Eba Station for the following reasons:

- There is good, satellite based internet at the homestead
- The system uses 'open source' equipment – mass-produced receivers and transmitters, cameras, switches, batteries, and solar panels, keeping hardware costs down
- The property has few low hills and only low vegetation allowing the Wi-Fi signal to be relayed long distances
- Wi-Fi network can also be used for internet phone calls and remote starting of pumps
- No ongoing costs or subscription fees (e.g. for access to phone networks, satellites or third-party software) as access to data occurs via Wi-Fi network and home internet.

The budget associated with improvements to water infrastructure has been significant, averaging \$10-15,000 per year over 5 years. To date a total of 28 cameras and two 'remote start' pump controllers have been installed. The average cost per waterpoint is approximately \$3,000-\$4,000 depending on whether Wi-Fi calling is included at the site and whether cameras are installed on both tank and trough or just the trough.

Live video streams from 28 cameras allow checking of water infrastructure – problems may include low or no water in troughs, water quality problems (e.g., contamination of trough), livestock gathering around a water point. With the remote start on two pumps, there is also less need to travel to dams/bores to start pumps.

With the telemetry so far installed, labour and wear and tear on vehicles has reduced by about 40%, an approximate cost saving of \$700 per week. However, it is still necessary to visit all troughs once per week to clean them.

Mt Eba plans to continue installing cameras until they have coverage of all waterpoints except those in holding yards near the homestead.

Telemetry has been a great investment for Mt Eba and Peter attests 'For us the telemetry is a no-brainer. Yes, the cameras cost more than other forms of water monitoring, but there are no ongoing subscriptions, and it has almost halved the labour required for water runs and starting pumps, plus we get the bonus of Wi-Fi calling from several places across the station which offers a huge safety benefit.'

Use of eID in sheep

All rams at Mt Eba Station are fitted with eID eartags, and data on ram birth year and stud of origin are recorded. Approximately 70 rams are bought each year with the ram flock numbering approximately 300.

Both before and after joining each year, rams are checked and health status recorded including any foot problems, and condition. Survival of rams is also recorded. Over time, this has allowed Mt Eba to keep track of which studs produce sheep that are hardy in pastoral conditions.

Mt Eba staff have found that keeping electronic records of ram performance is much easier than keeping paper records.

Use of gyrocopter

A gyrocopter has been used at Mt Eba Station since 2016. The gyrocopter is used once per week to check all water points from the air, taking approximately 1.5 hours saving what would normally take 9 hours in a Ute. Any leaks or problems identified in that run are recorded and dealt with later by staff on the ground.

The gyrocopter is also used to help spot sheep or cattle from the air at mustering, and for checking that sheep or cattle have found waterpoints when they are being settled into large paddocks.

The gyrocopter makes the whole operation much more labour efficient and is the most important piece of machinery on the property.

Further information

This case study is an initiative of Red Meat and Wool Growth Program from the Government of South Australia, supported by Meat and Livestock Australia, SA Sheep and Cattle Industry Funds and SheepConnect SA.

For more information visit pir.sa.gov.au/redmeatandwool or contact the Red Meat and Wool Growth Program at redmeatandwool@sa.gov.au.



Mt Eba Station viewed from the air



Peter and Margie Whittlesea with their gyrocopter



Paul Cousins classing Merino ewes at Mt Eba Station