



# Using AgTech to improve beef production

## Focus Farm case study

The Higgins family runs a productive grass-fed beef enterprise but is updating key infrastructure and exploring the use of electronic identification (eID) and carcass feedback data to further boost production.

### Enterprise snapshot

**Owners:** Mark and Lynette, Philip and Kendall Higgins

**Property name:** Burnt Oak

**Location:** Mt Jagged, Fleurieu Peninsula, SA

**Size:** 380 ha

**Brief description:** 250 Angus breeders, turning off grass-fed young cattle at 500-600 kg

**Number of employees:** 1.3 full-time

**Average annual rainfall:** 700 mm

## Background

The Higgins family has been running cattle at Burnt Oak in the southern Mt Lofty Ranges since the mid-1800s. Mark and Lynette, together with son Philip and his wife Kendall, manage a herd of 250 mainly Angus breeders joined to Angus bulls. Production is focussed on the sale of young cattle at 18 to 22 months (500-600 kg liveweight) direct to processors, with some cattle traded in good seasons.

## What improvements are the Higginses focussing on?

- Optimal pasture production
- More efficient system for weighing cattle – preferably as a one-person operation
- Improvements in beef production per hectare
- Ability to link individual carcass feedback data to sire without labour-intensive record keeping.

## What have they adopted?

- Artificial insemination (AI) of most cows with carefully selected sires
- New crush and weighing system and eID panel reader
- Linking management tags with eID tags
- eID-based recording of live weight
- Ongoing pasture renovation
- Rotational grazing of small paddocks and optimal pasture production.

## Exploring technology in a beef enterprise

### Bull selection

AI is used on most cows and heifers in the herd. AI sires are selected based on estimated breeding values (EBVs), targeting fat cover (sufficient to meet minimum fat requirements for premium markets), fast growth, ease of calving and milking ability. For simplicity, the same sire is used across all cows for two consecutive years, before changing to avoid inbreeding. Cows that do not become pregnant through AI (about 40%) are joined to home-bred 'mop-up' bulls.

### Record keeping, marketing and use of carcass feedback

To date, the Higginses have relied on management (visual) tags for record keeping. To keep track of birth status, calves born as twins are given a numbered visual tag at birth. Soon after weaning, all remaining calves (singles) are also given a management tag. At the same time, all calves are given their compulsory eID eartag. Sire identity can be recorded against management tag as sires are either the AI sire or one of the mop-up bulls (which are used in single sire mobs). Year of birth is also recorded, and tag colours are changed each year.

Cattle are generally sold direct to the abattoir. The Higginses like working with processors that give individual carcass feedback with user-friendly grids (mostly Teys Australia). Mark enjoys working with data and studies carcass feedback sheets to see whether consignments meet premium carcass and meat quality standards.

"Different estimates of fat cover are important contributors to carcass pricing and if cattle do not meet fat requirements, there are large discounts in the price you are paid," Mark says.

However, to date, there has been no link between eID and management tags, meaning it has not been possible to follow the carcass traits of any given sire.

Cows that do not raise a calf are sold. Records are kept of cows that require assistance to calve, or that produce 'poor doing' calves, and these are also culled. Most heifers sired by AI are kept on as breeders. Heifer replacements are chosen based on weight and physical appearance at approximately 12 months of age.

### New crush and weighing system

Plans are underway to use eID to collect more data on individual animals and better use individual carcass feedback data. To support this, the Higginses have upgraded their cattle crush and bought a new eID panel reader, new weigh bars and a new scale head, providing the following advantages:

- weighing animals will be easier with the new scales, and animal weights will be recorded against eID automatically
- growth rates will be monitored more regularly, making it possible to class animals on growth rate
- AI and calf marking is likely to be more efficient and safer in the new crush, with less stress on animals.

As a general principle, cattle at Burnt Oak are handled in a 'low stress' manner with yarding kept to a minimum. The new set-up will be consistent with this approach.

## **Integration of eID into management**

The Higginses are planning to link eID tag with management tag in 2021. This will be done by manually entering the management tag number into the scale head at tagging or through the use of a 'bucket file' from the tag manufacturer.

This will mean:

- carcass feedback can be linked to individuals with known sire, revealing sire effects on carcass traits
- culling can be done by identifying either visual tag number or by reading tag number with a hand-held device and entering cull against that ID
- at sale time, eID can be used to identify which animals to draft out.

At this stage, it is unlikely any link will be made between progeny and dam for most calves due to the labour involved. Rather, the focus will remain on recording which cows produce obviously inferior calves.

## **Grazing management**

- All paddocks have been sown to pasture mixes comprising Phalaris, cocksfoot, fescues and subterranean clovers, with many of the perennial stands lasting for more than 30 years.
- The 380 ha farm is fenced into 8-10 ha paddocks, based on topography, soil type, water points and optimal stock movement.
- Internal fencing is based on two plain wires (one electric) and star pickets. Each paddock is divided in half by a temporary electric fence, creating 90 grazing paddocks. Water points are based on circular plastic troughs, dams and strategic use of natural waterways.
- Rotational grazing, close attention to feed on offer and opportunistic trading of cattle maintains feed quality, protects the pasture base from over-grazing and helps produce more beef per hectare.
- Paddocks are grazed in mobs of 50 to 100, with cattle moved every two to four days. Cattle are trained to come to a ute, avoiding the need to round them up each time they are shifted.
- According to Mark, "Pastures are the real engine room of our business, and a focus on pasture growth and utilisation has allowed us to produce more beef per hectare than many other enterprises with similar rainfall".
- A total of 50 ha has been removed from full-time production. Gullies have been fenced off and revegetated, reducing erosion, protecting water quality, providing shelter and conserving biodiversity. This conservation effort led to the farm being awarded the SA Ibis Landcare Award in 1998.
- Mark has found that by attending beef and dairy industry events and participating in benchmarking programs, his strategies for growing pasture and efficient conversion of pastures to beef have been refined.

## Contact

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**Fig. 1.** Mark Higgins has a strong background in pasture renovation, rotational grazing, management and maximising feed conversion on his Mt Jagged property.



**Fig. 2.** 'Burnt Oak' contains extensive remnant native vegetation, with many gullies revegetated over the past 30 years.