Department of **Agriculture, Fisheries and Forestry**

Greenhills Station: improving grazing management and productivity through infrastructure development

Overview

Greenhills Station is owned by the Ryan family and lies approximately 25 km west of Georgetown in the Queensland Gulf region. The station is approximately 26,000 hectares (ha) and runs 1600 breeders. The average rainfall of Georgetown is 800 mm, falling in the summer monsoons from December to March.

There are several land types on *Greenhills*, with the main being frontages, black soils, Georgetown granites, red duplex and sand ridges. The average stocking rate across the property is 1 Adult Equivalent (AE) to 15–17 ha.

Greenhills is a breeding operation, with steers and cull heifers sold to live export, or southern backgrounding and finishing operations. Maximum age of turnoff is approximately 18 months.

The breeding herd is high grade Brahman, with some softer European breed bulls being used more recently to diversify available markets.

Over 5 years from 2007 to 2011, *Greenhills* implemented an infrastructure improvement program on the property. This has had many positive impacts on the business.

Greg and Carol Ryan

Infrastructure planning

During 2009, both fencing and water improvements were implemented on *Greenhills*. An existing paddock of 11,475 ha was divided into three paddocks of 4307 ha, 4710 ha and 1958 ha. Single strand electric fencing was used to divide the paddock with materials costing $430/kilometre. Total cost of this fencing was $3000/km compared to approximately $5000 for traditional 3 barb and steel picket fences. This has allowed the Ryan's to change their grazing management to include a wet season spell for one paddock each year.

All mustering on *Greenhills* is conducted with horses and no helicopters are used. This method places less strain on the single electric wire fencing and has contributed to its success over traditional barb wire fences. Electric fencing has meant some additional maintenance is required, e.g. for woody regrowth. However, the Ryan's feel the benefits outweigh any negatives and will continue to develop paddocks using electric fencing. Traditional 3-barb fencing is still used on property boundaries.

Single strand electric fencing on Greenhills

Installing water infrastructure on Greenhills, Oct 2009

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New water infrastructure was placed within these newly formed paddocks. A bore was put down that now pumps water 1.2 km into three 10,000 gallon tanks. From these tanks, the water is gravity fed 15 km into five water troughs. Two of the water troughs have 5000 gallon storage tanks attached. The water pump starts automatically at 8pm each night and pumps until the tanks are full. Benefits of the new waters to cattle management include clean water, no bogging of cattle in the dry season, and the ability to increase the number of water points per tank to offset initial installation costs. Water points still must be checked to ensure they are working effectively.

Herd/grazing management

In 2007, *Greenhills* consisted of two breeder paddocks, a bullock paddock and some smaller holding paddocks. Cattle were managed under a continuous grazing system and lack of paddock infrastructure meant that breeders, heifers and young steers were run as a single mob. Only weaners and older bullocks were managed separately. Bullocks were finished on a block at Mena Creek and sold at 3–4 years old. Mating was continuous, with many out of season calves and cows in poor body condition score as a result. Lactational anoestrus was a major problem with breeders. Despite *Greenhills* being conservatively stocked, the continuous grazing system resulted in patch grazing and poor pasture utilisation and subsequent decline in desirable pasture species. In addition, cattle were walking up to 4 km to water, increasing the grazing pressure around water points.

Through the use of fencing and waters, the Ryan family have been able to introduce a grazing rotation into the newly formed paddocks on the southern half of the property with 60% of this country now spelled each year. Cattle are moved twice per year, with the spelled paddock having six months rest period, including the wet season.

Breeders in the newly formed paddocks are run as a single mob, with heifers also run in this herd. In order to improve their heifer management, NLIS technology is now being used to record heifer weights, beginning at weaning. Managing weaner performance is now a higher priority as the Ryan's have moved from older bullocks to selling younger cattle, and agisting saleable cattle. Steers are currently sent away (as weaners) on agistment to Capella and will most likely be sold to southern feedlot markets. This arrangement has freed a paddock that will either be used to segregate heifers from the main breeding herd, or be used to segregate breeders based on foetal age. Breeders are currently being pregnancy tested for empties only. Controlled mating to reduce number of out of season claves has been implemented with bulls put into breeder paddocks in mid January and pulled out in June. Bulls currently used are mostly high grade Brahman but bulls with lower tropical content may be utilised more in future to aid marketing of cattle to southern markets.

In 2009, 10 photo monitoring sites (one site per land type) were established in conjunction with the infrastructure upgrades. These sites assess land condition and pasture quality and include indicators such as groundcover, species composition, pasture yield, soil condition and weed presence. They have also been used to assess the effects of the rotational grazing system on pasture composition. Early results have indicated that 3P (perennial, productive, palatable) species, such as giant speargrass and bluegrass, are retuning in

Breeders and heifers on Greenhills, Nov 2009

Breeders and heifers on Greenhills, May 2012

Greg Ryan in spelled paddock, May 2011

the spelled/rotated paddocks. The Ryan's will continue to use the monitoring sites to ensure they are achieving the desired land condition outcomes. As a result of the rotational grazing system, the Ryan's have observed that their carrying capacity has increased in recent years.

Supplementation and animal health

In 2007, breeders and heifers received wet season phosphorus lick, but no dry season lick. Two rounds of mustering were undertaken, the first in April/May, and the second in September/October. Weaners were supplemented on uramol blocks and were weaned down to 140 kg in 1st round and 120 kg in 2nd round, with the average weaner weighing approximately 175 kg.

Currently, the Ryan's continue to supplement wet season phosphorus to breeders and heifers and use no dry season licks. However, second round weaners are now being supplemented with either a straight M8U (larger weaners) or an M8U, rumensin and copra mix (smaller weaners) until the first rains, to improve weaner performance. HGPs are not being used on any cattle at *Greenhills*.

All bulls on *Greenhills* are given Vibriosis vaccinations each year prior to mating. Cows are given a three year botulism injection and weaners are given a botulism injection (either three year or one year to stay in line with cow booster injections). All cattle are dipped for ticks twice a year.

Business performance

BreedCow modelling showed that over the five years from 2007 to 2011, there has been an overall increase of 14% in gross margin. This resulted from increased carrying capacities and overall number of breeders mated. This was achieved through the fencing and water infrastructure, and the wet season spelling program. Female death rates have declined due to improved herd management practices (less out of season calves and better nutrition), which has resulted in higher female sales. Higher turnoff numbers for steers has also been achieved. Average prices received for cattle did not significantly differ over the five year period, showing that turnoff numbers and higher liveweight was the main driver of improved profitability.

	2007	2011
Total adult equivalents (AE)	2400	2750
Total cattle carried	3130	3392
Calves weaned	806	953
Breeder deaths	8.7%	3.6%
Steers and bullocks sold	360	452
Gross margin	14% increase	

Greenhouse gas emissions

Greenhouse gas modelling showed an overall increase in carbon emissions (due to higher numbers of cattle in 2011, compared to 2007). However, overall efficiency (t CO_2e/t LW sold) improved, showing that young animals have greater liveweight gains and lower age of turnoff in 2011 compared to 2007.

Greenhills 2nd round weaners on M8U, rumensin and copra, November 2011

2nd round 2011 supplemented weaner (left) and 1st round weaner 2012 (right)

	2007	2011
Total livestock emissions	3836	4381
per hectare	0.15	0.17
per AE (t CO_2e/AE)	1.60	1.59
per liveweight (t CO_2e/t LW sold)	17.14	14.22

Through the infrastructure development program, the Ryan family have been able to increase their productivity and profitability, and improve land condition in the newly formed paddocks on *Greenhills*. Productivity gains have also led to a more efficient herd in terms of greenhouse gas emissions. Overall, the investment in infrastructure has allowed the Ryan's to boost their herd performance and remain a resilient beef business in the Queensland Gulf region

For more information or enquiries contact

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Cows and calves, May 2011

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