



Could your herd be more productive?

An introduction to understanding your herd's productivity and possible causes of poor performance

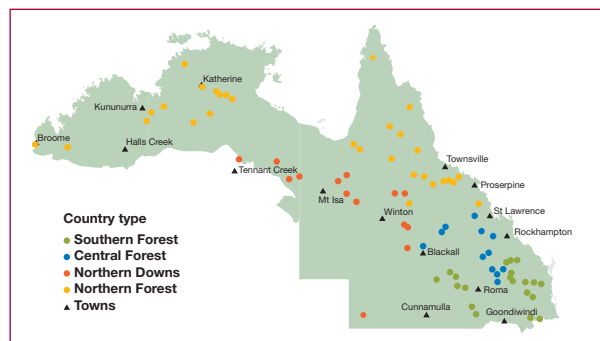
The CashCow project

CashCow was an MLA-funded project that collected data from commercial beef breeding herds across northern Australia to gain insights into their performance and productivity.

Its findings can help you to evaluate the productivity of your cow herd and, if it is low, help you to identify problems and provide ways to address them.

The project involved about 78,000 cows in 142 breeding mobs across some 72 properties between 2008 and 2011. The results were grouped into four broad country types based on perceived potential performance i.e. estimated weight gains of steers if they grazed the cow paddocks (see Table 1), geographical location and vegetation type (see Figure 1).

Figure 1. Locations of herds assessed by the CashCow project and their country types



Measuring production and performance

CashCow assessed those indicators that define the productivity of the breeding herd and the critical factors affecting performance.

It described the range of values for two **key production indicators**:

- annual weaner production – kg of weaner per cow retained
- annual liveweight production – total kg (weaner weight + cow weight change) produced per cow.

It also identified the **key performance indicators** for cow herd performance as:

- pregnancy rate within four months of calving (now abbreviated to P4M)
- annual pregnancy rate

- calf losses (between pregnancy test and weaning)
- pregnant cows missing (as an estimate of mortality rate).

For each of the four performance indicators, some 83 factors covering management, environment, nutrition and reproductive disease were examined. The major factors that were found to limit performance are listed in Table 4.

Four steps to cow herd productivity

There are four critical steps to evaluating, and then improving, the productivity of your cow herd. These are to:

1. Record the right information
2. Understand what is achievable for your environment
3. Identify the causes of low productivity
4. Assess management options.

1. Record the right information

Evaluating the performance of your cow herd starts with gathering and analysing a targeted number of data records.

Most of the production and performance indicators can be derived from your mob-based records, annual livestock schedule, and from accurate pregnancy diagnosis with foetal ageing.

An annual livestock schedule can be as basic as recording each year:

- cattle numbers by class (branders, weaners, heifers, first lactation cows, older cows) with their average weight
- number of stock sold and purchased by class and average weight.

This system can be enhanced by including pregnancy testing with foetal ageing, lactation status (wet/dry) to calculate calf loss, and body condition score at pregnancy testing.

Even if you feel you have insufficient records to accurately measure the CashCow production and performance indicators (five years recommended), you can still integrate CashCow outputs into decision making.

Data collection tips

1. Where there is more than one round of mustering a year, the calculations should be made at the end of the last muster for the season. Bang-tailing at the first-round muster will help indicate mustering efficiency (missing cows).
2. If all weaners cannot be weighed, weigh a random sample of about 30 for an average weaner weight.
3. Often cows are pregnancy tested at the weaning muster for an annual pregnancy rate. Foetal ageing of individual cows is needed to predict the time of birth and the time to reconceive after birth at the next pregnancy diagnosis.
4. Cow mortality rates can be calculated from the annual livestock schedule.

You can compare current productivity to any previous results or to annual steer growth rates (see Table 1) where no other valid indicators exist.

Use the data you have collected to calculate weaner production:

(calves weaned/retained cows) x average calf weaning weight

This practical indicator for reproductive efficiency:

- is closely correlated with total liveweight production per cow retained
- encapsulates performance indicators: pregnancy within four months of calving, annual conception rate, calf loss between pregnancy testing and weaning
- captures cow mortality/missing rates if cow numbers are accurate and mustering efficiency is high
- can be calculated readily from an accurate livestock schedule
- can be assessed at a mob level where no animal identification is required.

At the end of this step, you should have the data for:

- **pregnancy rate within four months of calving (if cows undergo foetal ageing)**

- **annual pregnancy rate**
- **weaner production**
- **calf loss (between pregnancy test and weaning)**
- **pregnant cows missing (as an estimate of mortality rate).**

2. Understand what is achievable for your environment

It is preferable to compare productivity based on your own historical records or on annual steer growth on your breeder paddocks. In the absence of good data, compare your calculations against the CashCow land types.

The four broad country-type categories are described as:

- **Southern Forest** – productive woodland country south of Rockhampton with a range of soil types and landforms
- **Central Forest** – highly productive mixed country types within and around the Queensland Brigalow Belt
- **Northern Downs** – moderately productive downs or open plains on heavy clay soils
- **Northern Forest** – generally low productivity eucalypt forest in northern Australia.

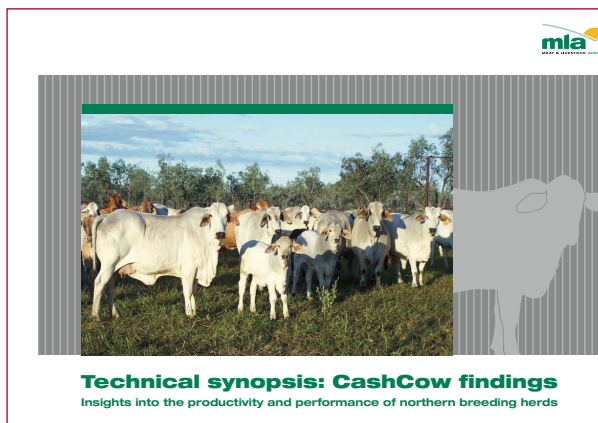
Within these broad categories are obviously a range of land types with their associated potential levels of productivity, and you might prefer to select a more suitable land type in which to class your property from Table 1.

Table 1. Typical annual weight gains of steers in different country types

Country type	Average (kg)	Typical range (kg)
Southern Forest	190	180–200
Central Forest	180	150–200
Northern Downs	170	155–190
Northern Forest	100	90–130

Now you can compare your production (see Table 2) and performance data (see Table 3) with those for your country type as a guide until you build up your own property's data as a reference base.

The ranges of performance for important productivity indicators for the country types can be found in the MLA publication *Technical synopsis: CashCow findings*.



Technical synopsis: CashCow findings – Insights into the productivity and performance of northern breeding herds

This publication, available at www.mla.com.au/cashcow, gives more detail on the calculation of production and performance indicators.

Table 2. Weaner production in different country types

Country type	Weaner production (kg/cow retained)		
	25% were below	Median	25% were above
Southern Forest	164	191	240
Central Forest	161	195	220
Northern Downs	135	163	183
Northern Forest	74	93	112

Table 3. Summary of median cow performance in different country types

Performance	South'n Forest	Central Forest	North'n Downs	North'n Forest
Preg. within four months	74%	77%	68%	17%
An. preg. rate	87%	88%	82%	66%
Foetal/calf loss	5%	6%	7%	14%
Preg. cows missing	8%	6%	7%	12%

Results as percentiles

The production and performance indicators in CashCow are described in terms of percentiles. Mob results in any measure are ranged from lowest to highest and split into three groups – the lowest 25%, a middle group and the highest 25%.

The median is the middle value.

It is suggested that being in the top 25% (above the 75th percentile) could be 'achievable' for production – with below the 25th percentile as achievable for animal losses; however, these levels are only a guide. They may not necessarily represent the most profitable system for your herd. Every business is unique and requires its own economic analysis to evaluate practice change.

At the end of this step, you should know whether your herd is above, below or similar to your country-type average for the production and performance indicators.

3. Identify the causes of low productivity

If your weaner production is lower than expected or below the regional median benchmark, you should examine the three inputs to the weaner production formula:

(calves weaned/retained cows) x average calf weaning weight

- *Number of weaners:* Are there fewer weaners than expected? Weaner numbers lower than the pregnancy test indicate either abortion or neonatal calf losses.
- *Average calf weaning weight:* Are your weaner weights lighter than expected? If so, other than in a drought, you could be looking at failure to reconceive within four months of birth so calves are being born later in the dry season.
- *Number of cows retained:* Are the number of cows mustered similar to the number retained last year? If not, mortality rates could be higher than expected.

CashCow determined that the three factors in the weaner production formula above are influenced by the four performance indicators previously listed:

- pregnancy rate within four months of calving (P4M)
- annual pregnancy rate
- calf loss
- pregnant cows missing.

A diagnostic flow chart (Figure 2) incorporating these indicators may help you to narrow down the cause, or causes, of the lack of performance of your cow herd.

At the end of this step, you should have identified possible causes of low performance in your herd.

You can decide which have the most impact and what options you have to reduce their impact (Table 4).

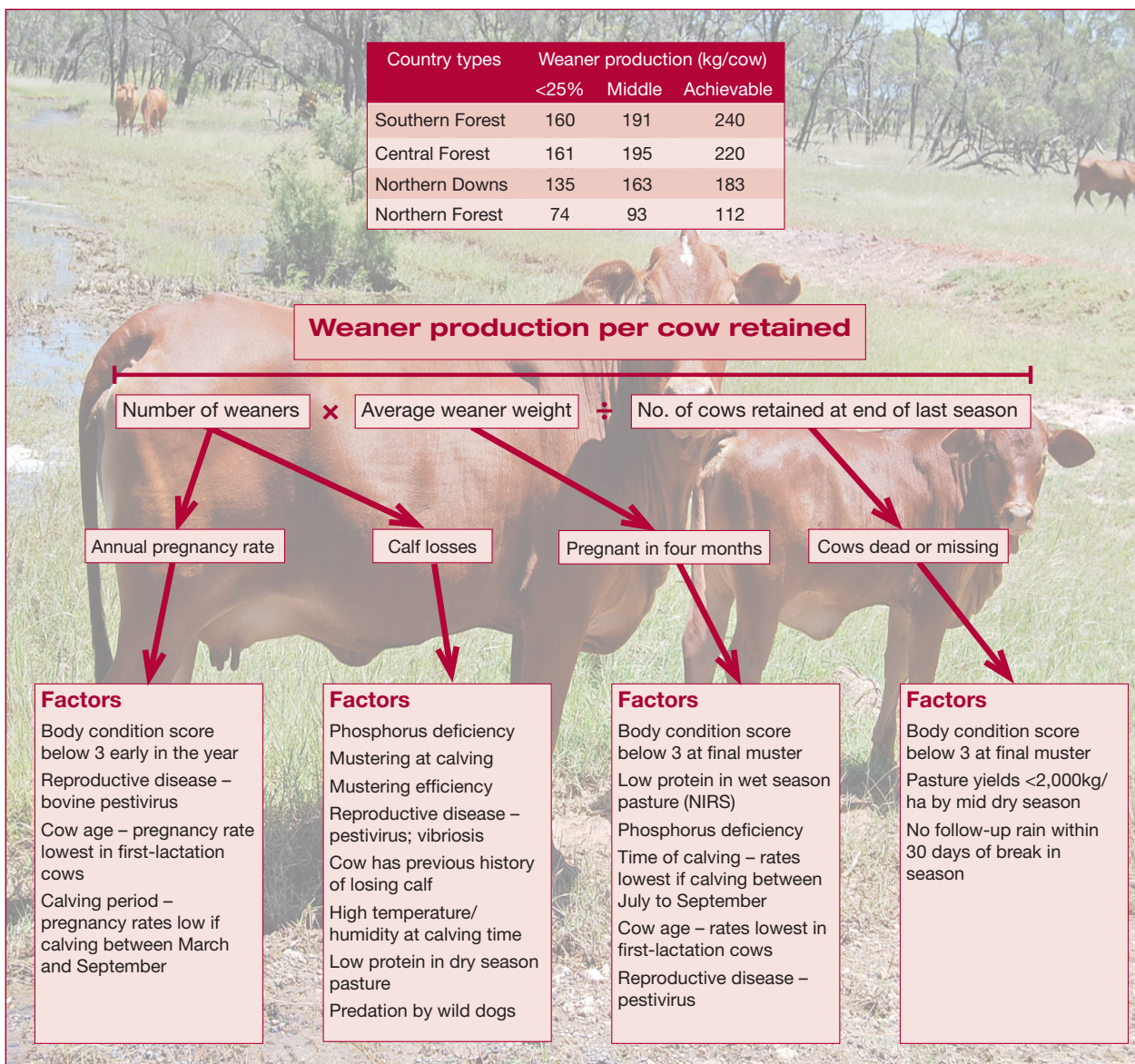
4. Assess management options

Table 4, on the next page, shows the impact of various factors on herd performance and then suggests possible management options.

These management actions are classified as:

- managing the feedbase
- managing lactation
- managing health, stress and predators
- managing breeding.

Figure 2. Diagnostic flow chart to help identify performance problems from CashCow data



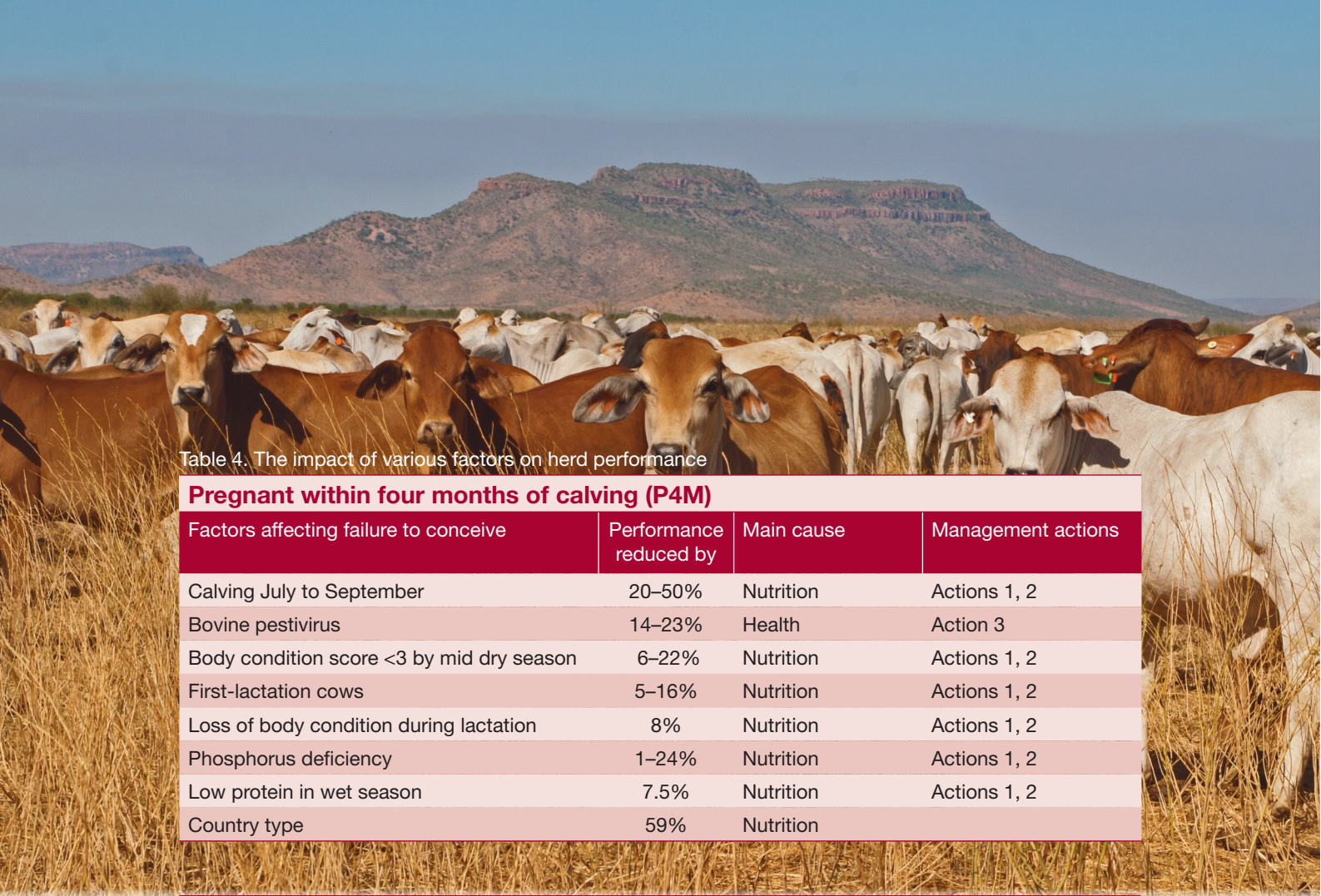


Table 4. The impact of various factors on herd performance

Pregnant within four months of calving (P4M)			
Factors affecting failure to conceive	Performance reduced by	Main cause	Management actions
Calving July to September	20–50%	Nutrition	Actions 1, 2
Bovine pestivirus	14–23%	Health	Action 3
Body condition score <3 by mid dry season	6–22%	Nutrition	Actions 1, 2
First-lactation cows	5–16%	Nutrition	Actions 1, 2
Loss of body condition during lactation	8%	Nutrition	Actions 1, 2
Phosphorus deficiency	1–24%	Nutrition	Actions 1, 2
Low protein in wet season	7.5%	Nutrition	Actions 1, 2
Country type	59%	Nutrition	

Calf losses			
Factors affecting loss	Performance reduced by	Main cause	Management actions
Phosphorus deficiency	10%	Nutrition	Actions 1, 2
Mustering at calving time	9%	Management	Action 3
Mustering efficiency	9%	Management	Action 3
Bovine pestivirus	8%	Health	Action 3
Vibriosis	7%	Health	Action 3
Did not raise calf in previous year	4–8%	Breeding/genetics	Action 4
High temp and humidity around calving	4–7%	Environment	Action 3
Predation by wild dogs	4.5%	Management	Action 3
Low dry season pasture protein	4%	Nutrition	Actions 1, 2

Cows dead or missing			
Factors affecting cow mortality	Performance reduced by	Main cause	Management actions
Body condition score <3 in mid dry season	3–8%	Nutrition	Actions 1, 2
<2t/ha of pasture in mid dry season	6%	Nutrition	Actions 1, 2
>30-day delay in follow-up rains	4%	Nutrition	Actions 1, 2



Management actions

Action 1. Manage the feedbase

- Budget available feed to cattle production to reduce supplementation and to protect pasture.
- Periodically spell pasture during the wet season to allow grasses to recover.
- Rehabilitate or develop pasture.
- Increase waters so grazing distance is less than 2.5km.
- Use supplements when they provide an economic benefit.

Action 2. Manage lactation

- Wean earlier to conserve body condition of cows.
- Use foetal ageing to segregate cattle for different nutrition and more efficient weaning.
- Control mating with 2.5% bulls to synchronise lactation with the best feed.
- If your aim is to maximise pregnancy within four months of calving, identify options for cows calving between July and September.

Action 3. Manage health, stress and predation

- Provide protection from environmental extremes, especially for young cows and their calves.
- Avoid mustering or handling calves less than one month of age.
- Take advice on suitable vibriosis and pestivirus control.
- Control predators.

Action 4. Manage breeding

- Use bulls that have passed a BBSE (Bull Breeding Soundness Evaluation).
- Mate at no more than 2.5% sound bulls.
- Select bulls with good scrotal circumference for breed and liveweight, and with high percentage of normal sperm.
- Select bulls from dams that have weaned a calf from their first two mating opportunities.
- Cull cows with abnormal teats or udders.

Will it pay?

Producers can use the results of the CashCow project to compare their breeder herd performance with that attained by properties on a similar country type. However, the project did not include any economic analysis.

Factors such as costs, prices and markets can differ greatly while each individual beef enterprise is unique in terms of land type and fertility, size, present pasture condition, and financial status.

Productivity and profit are not synonymous. Existing herd management with a lower production level *might* currently be the most profitable but, equally, changes in management could give worthwhile financial benefits.

Therefore each enterprise must assess any economic benefit from management changes to raise productivity.

Tools for business analysis include BRICK and Breedcow/Dynama.

BRICK – Beef Rough Indicator and Calculator of Key performance indicators

BRICK is a business analysis spreadsheet to assess key performance indicators and profit from your current production system. It uses management accounting principles and results from CashCow to help you identify areas that may be underperforming.

Enter '**BRICK FutureBeef**' in your search engine to download the spreadsheet.

Breedcow/Dynama

Breedcow allows you to compare the likely profitability of your herd under different management or turnoff systems.

Dynama makes forward projections of stock numbers, sales, cash flow, net income, debt and net worth associated with the proposed change.

Enter '**Breedcow/Dynama**' in your search engine for this herd budgeting software.



Cow performance is greatly influenced by body condition at calving.



*Weaner production = (calves weaned/retained cows)
x average calf weaning weight*

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