On the growth path to profit

June 2009
Editor’s Note

“On the (growth) path to profit” is the fourth booklet for the beef industry from the Beef Cooperative Research Centre, following “Science for Quality Beef (2007)”, “Key Messages for Commercial Breeders in Southern Australia (2006)” and “Producing Quality Beef (2003 and 2004 editions)”. The purpose of this booklet is to identify the opportunities to profit from research carried out by the Beef CRC.

This booklet specifically examines the extensive research carried out in the area of growth paths of cattle. The booklet begins by looking at the effects of growth restrictions of pregnant and lactating cows through to the impacts of growth restrictions during backgrounding, finishing and, finally, just prior to slaughter.

This booklet also includes practical case studies, which demonstrates Beef CRC research in real situations.

The booklet concludes with a contact list of the beef extension network across Australia and New Zealand.

About the Beef CRC

Developed as a partnership between the Australian beef industry and prestigious national and international scientific institutions, the CRC for Beef Genetic Technologies aims to give cattle producers the knowledge they need to produce beef which consistently meets consumer expectations both domestically and in those 110 countries to which we export.

The Beef CRC focuses on world-class gene discovery and gene expression research to improve profitability, productivity (through improved reproductive performance and feed efficiency) and animal welfare.

Along with its partners in the United States of America, New Zealand and Korea and associate partners in Northern Ireland, the Irish Republic, France and South Africa, the Beef CRC aims to increase the value of the Australian beef industry by $179 million each year from 2012.

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Differences of more than $100 between otherwise identical carcases will be revealed when processors begin to introduce more specific payment for carcase yield and eating quality.
Liveweight gain remains the primary focus for many beef producers despite an increase in available knowledge on factors affecting carcase yield (the proportion of saleable beef in the carcase) and eating quality (particularly tenderness and marbling).

Growth restriction early in life, if severe enough, will reduce the potential of cattle to compensate and grow later during backgrounding and finishing.

The impact is greatest if growth is restricted in the early months and even before birth. Stunted calves are less profitable because they will take longer to finish and may exceed market age limits (dentition or ossification) before reaching target weights.

Fortunately, the eating quality of the beef from these cattle is not seriously affected by severe growth restriction early in life. We can be confident that cattle suffering even quite severe early growth restriction can recover and, provided they are suitably finished, will fit the mainstream market specifications. The quality of their beef will also be generally acceptable to consumers.

However, the Beef CRC has found growth rates during backgrounding and finishing can cause a difference in meat quality by affecting tenderness and marbling which are important in specific markets.

Importantly for producers, the economic significance of these differences is likely to increase as new technology enables processors to create tighter specifications and accurate payment for carcase yield and eating quality, adjusting payment as a result.

Differences of more than $100 between otherwise identical carcases will be revealed when processors begin to introduce more specific payments for these traits.

These changes will bring new opportunities to profit from having cattle with higher yield and better eating quality.

The Beef CRC has focussed on these elements to support the development of production systems for high quality Australian beef with improved yield, eating quality and/or marbling.
Because young cattle can undergo a wide range of nutritional conditions, it is important to know the likely outcomes of these conditions and how to adjust management systems so that the quality and consistency of Australian beef products can be assured.

**Experimental Design**

A large experiment was set up in Beef CRC II to examine the outcomes of early life effects that occur before birth and between birth and weaning. Key features of the experiment were:

- Hereford cows and heifers at Grafton NSW were joined to either Wagyu (high marbling) or Piedmontese (high yielding) genotype sires.
- Females were allocated to high or low nutrition during pregnancy following confirmation of pregnancy at 80 days gestation.
- By calving, heifer and mature cow liveweights diverged on average by more than 100kg (500 vs. 394kg after calving).
- After calving, cows were further split and allocated to high or low nutrition for 7 months until weaning. This created groups representing high nutrition during both periods (HH), high followed by low (HL), low followed by low (LL) and low followed by high (LH) groups.
- Cows for the main experiment were bred over two years (Year 2 and 3) with some adjustment of groups to minimise carryover effects and avoid low fertility.
- Cow fertility was a secondary consideration. The focus of the experiment was on the direct effects of the nutrition treatments on calves.
- After weaning at about seven months, all calves of that year’s drop (HH, HL, LH and LL) were grown out together on pasture at the Glen Innes Research Station to reach average feedlot entry weight of 450-500kg at around 26 months.
- Each year-drop was finished together at ‘Tullimba’ feedlot for 120 days.
- Full carcase specifications and yields were measured when slaughtered.
- Meat quality analysis included objective laboratory measurements and chemical analysis of intramuscular (marbling) fat.

Other features of the experiment included:

- Slaughter of Year 1 calves at various points from birth to finishing to establish carcase composition benchmarks.
- Biopsies of offspring during pregnancy and postnatal life to study the early cellular and later development of muscle and marbling, looking for genotype and nutritional effects.
- Links to other Beef CRC studies of the genes affecting marbling and muscling and factors affecting the expression of these genes.

**Experimental Design results in more detail**

a) **Pre-natal growth restriction**

**Low birth weight calves**

Severe growth restriction during pregnancy can reduce calf birth weight. In the Grafton experiment, severe restriction during pregnancy caused cows to be 100kg lighter than well-nourished cows by the time of calving, but only resulted in a 3.7kg difference in calf birth weight.

This level of restriction to cows is likely to affect their subsequent conception and this would have far more impact on herd profitability than any direct effect on the calves.

There are many other factors that affect birth weight, hence lighter calves are not caused by growth restriction alone. Generally, smaller-born calves will tend to perform differently to those born larger, no matter what caused them to be born lighter.

**Summary of birth weight effects**

Compared to high birth weight calves, and with all other factors equal, the low birth weight group:

- Grew more slowly to weaning (there was no compensation at all).
- Grew slightly slower and showed no compensation during backgrounding.
- Showed slightly reduced feedlot growth.
- Showed no difference in feed conversion or net feed intake (NFI) in the feedlot.
Had a lower weight-for-age at all stages.

Showed no adverse effects on carcase composition at same carcase weight, apart from small increase in ossification (indicating they may be maturing slightly earlier).

Showed no adverse effects on beef eating quality or marbling.

**Management implications**

Cow herd management should be driven by reproductive efficiency as this has been shown to be far more important than direct effects on the calf from conception to birth.

Nutrition during pregnancy:

- Good nutrition in late pregnancy is important for future lactation.

Calving ease is an issue for producers. There is a common belief that dystocia is aggravated by good nutrition in late pregnancy. Irrespective, sire genotypes that produce high birth weight calves increase calving difficulties in heifers.

Mature cows are particularly resilient and can buffer the calves well from extremes of nutrition during pregnancy.

**Heifer management:**

- Heifers are more sensitive than cows to reduced nutrition. Their calf birth weight will drop more than cows.

- Compared to cows, heifers are more likely not to go back in calf if their nutrition is restricted in late pregnancy.

- Heifers can limit the birth weight of calves more effectively than cows if they are overfed during late pregnancy.

- If birth weight is an important determinant of future growth there is, theoretically, potential to use it to draft calves according to their growth potential.

- Smaller-born calves have reduced lifetime potential for growth but drafting at weaning would be difficult for the following reasons:
  - At weaning, variation in age complicates the picture. Younger, heavier-born calves have much better potential than older lighter-born calves that weigh the same.
  - The cow’s milk production and its influence on calf growth from birth to weaning and hence weaning weight.
  - Selection of genetic outliers or “curve benders” - calves of low weight at birth but which grow more rapidly to weaning due to their genetics may defy the phenotypic trend.

A condensed calving period is important to help identify superior calves at weaning. The tighter the age range, the easier it is to separate growth rate from age.

Drought-related variation should also be assessed. BREEDPLAN may have records of actual birth weights to check for this. Anecdotally, birth weights were down in 2006 due to drought. Seedstock records may not represent the commercial situation accurately.

**b) Pre-weaning growth**

In the Beef CRC II experiment, cows rearing calves on low nutrition grew their calves at 0.55kg/day to reach 151kg at weaning (7 months). The high nutrition group’s calves grew at 0.88kg/day to wean at 221kg. The total of 240 calves included both Wagyu and Piedmontese cross genotypes and cows from both high and low prenatal nutrition treatments.

**Summary of pre-weaning effects**

Severe growth restriction between birth and weaning results in:

- Lower weaning weight.

- Some compensatory gain after weaning with calves growing faster, partly catching up.

- Smaller carcasses than from cattle grown rapidly to weaning when marketed at the same age.

- Little or no difference in carcase composition or beef quality when they are finished.

- It should also be noted there is a potential for significant effects on the reproduction of the lactating cows, in addition to the effects on growth and carcases of their offspring, due to effects on cow body condition and fatness.

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In this experiment, a growth check, followed by recovery, had no subsequent effect on future carcase composition (percentage yield) or marbling.
Smaller-born calves have reduced lifetime potential for growth, which can affect a producer’s profitability.

Backgrounders and lotfeeders are more likely to avoid smaller, older calves and this could come at the expense of younger calves of the same weight.

Younger, heavier-born calves have better growth potential than lighter-born, older calves that weigh the same.

It can be difficult to assess different ages at weaning but a condensed calving period can help identify superior calves as it is easier to separate growth rate from age with a tighter age range.

Condensed calving periods also have great benefits for management and profitability.

Boyd Hoare, manager of Great Southern’s King Island property in Tasmania, oversees a six week joining period. Last year he calved down 4800 Angus breeders.

The six-week joining period results in an eight week calving period.

He said the tight calving period enables him to more accurately assess weight for age in calves.

“We inspect the heifers up to three times a day and, if needed, the cows once a day and after two months it’s all over and done with and all calves are a similar weight,” Boyd said.

Boyd’s assistant Tim Schuuring drafts the calves into different mobs after weaning depending on their weight, highlighting the better performers and leaving more uniform lines of calves when marking at 3 months.

These calves have been sold through the AuctionsPlus online auction system, with buyers confident in the weight for age assessment.

The tighter period has also helped Boyd and his staff assess the non-performing breeders, which are then culled, improving the profitability of the herd.

Calving rates have been improved to 92 per cent in the cows and 85 per cent in the heifers. Heifer calving rates can be lifted to 90 per cent if the season is favourable.

All heifers are joined with the exception of 3-5%.
However, after severe early growth restriction, fast recovery for a prolonged period on a concentrate diet may result in a carcase with more fat and less muscle, which happened in an experiment by Tudor et al. (1980). The level of growth restriction in these experiments was extremely severe. The Tudor experiment held calves near their birth weight for 200 days, while the CRC 2 Grafton experiment had quite a few calves less than 100kg at weaning at 7 months.

Previous industry advice about growth path effects has said that severe pre-weaning restriction will eventually result in finished carcases which are lighter with more fat and less muscle. However, the Grafton study was conducted under conditions that were more typical of extremes within commercial production systems.

Other experiments, using quite severe pre-weaning restriction but a longer recovery period on pasture, do not support the findings of Tudor et al. (1980) and are consistent with the Grafton study. The difference appears to be related to the severity of the restriction, the use of pasture vs. high energy concentrates for prolonged periods, and the speed of growth during recovery immediately after the restriction is lifted.

On the basis of the Grafton experiment and a comprehensive review of other work in Australia and world-wide, the advice is now that early restriction, followed by recovery, is not likely to adversely affect future body composition, marbling or beef quality.

c) Growth restriction at weaning

An experiment at Rockhampton in Queensland in Beef CRC 2 studied Belmont Red calves weaned at 210kg at eight months. One group was restricted for 120 days, slipping to 183kg by 12 months of age. This is a very severe growth restriction for weaner calves and left them in very poor condition.

The normally-grown group by this time were 85kg heavier (235kg) and the severely restricted group 40kg lighter (183kg). Under a slow growth rate in the Rockhampton experiment, extra age could lead to problems meeting market age limits.

Apart from extra age at market weight, there were no adverse effects on meat quality caused by severe growth restriction for 4 months from weaning.

Early weaning

Early weaning is being increasingly practiced as it brings several benefits to beef herd management, including better cow fertility and improved drought management.

The existing basic recommendation is to ensure an average growth rate of 0.6kg/day. A Queensland experiment showed slower growth (0.4kg/day) resulted in more variable animals, with more “poor doers” who fail to meet specifications.

Weaning down to “100kg at 100 days” is achievable if management is good. If this represents the lightest/youngest calves then most are heavier and older and easier to feed.

The key point is to feed and manage the calves properly to ensure growth. Smaller weaners are harder and more expensive to feed and have higher protein requirements.

It is usually more economical to grow calves faster to 200kg when the ration cost can be reduced.
Stephen Reynolds, manager of the Elders Charlton Feedlot in central Victoria said cattle that have had early growth setbacks will likely be excluded from the feedlot trade.

Mr Reynolds said if producers don’t prepare cattle suitable for feedlots they effectively exclude themselves from added competition in the saleyards and most importantly an opportunity to sell direct from their paddocks.

“The feedlot sector is now an integral part of the beef industry and successful producers know that,” he said.

“In the last five years, producers have realised part of their marketing strategy has to include feedlots.”

More than 2.1 million cattle were turned off last year through the country’s feedlots – a sector that has expanded 11% over the past two years.

Charlton feedlot is licensed to hold 20,000 head at once.

It turned off 55,000 head in 2008 and is expected to turn off 60,000 head in 2009 for the domestic and export markets.

Twelve producers supply Charlton with about 15 per cent of its annual requirement.

Additional cattle are sourced by its network of buyers; 80 per cent coming from paddock sales and 20 per cent from the saleyards.

Mr Reynolds estimates 50 per cent of the cattle bought from saleyards are backgrounded but Charlton does not background any of the cattle it buys before entering them in the feedlot, preferring to buy them at feedlot entry weights.

Cattle for its domestic program must be 300kg at 12-14 months, which are then fed for 60-70 days. Cattle for the short-fed export markets of Japan and Korea must be 380-400kg at 16 months, which are then fed for 100 days. About one-third are finished for the short-fed market and two-thirds for the domestic market.

“We have someone look at the cattle in the paddock. That gives them a fair idea of how they will perform in the feedlot. If they are the right weight at the right age, you have half a chance. If they have plenty of weight on them then we’re happy.”

Beef CRC research has shown cattle that have been severely restricted before birth or in their first six months of life or before they have reached 200kg will make little compensatory gain once entered into a feedlot.

They will also show reduced feedlot growth compared to cattle that have had a normal development.

Mr Reynolds agrees with the research adding that it why Charlton does not buy them.

He said there is no assurance how cattle have been treated prior to assessment.

“We talk to the producer about the life history, when they were weaned, how they were weaned and what supplements they may have had,” Mr Reynolds said.

“Ultimately you don’t know if there is a ‘poor doer’ among them. It is very much an averages game. If the whole lot fail to perform, we will follow it up and won’t go back to that producer.”

Elders works closely with the dozen producers they buy cattle from each year and these producers are paid a premium accordingly.

Mr Reynolds says producers are working harder and smarter to meet industry specifications, which has dramatically reduced the number of ‘poor doers’ they receive.

“Cattle that are prepared well and better managed are better for all. There aren’t that many producers now that dump poor cattle in the saleyards.

“Receiving better cattle makes our job easier and more viable. Under the current economic conditions, if we were taking the cattle that we did 5-10 years ago, we wouldn’t be here.”
Beef CRC research has proven fast growth from birth to feedlot entry enhances beef eating quality.

And New South Wales backgrounder Robert Perkins maintains it also improves his profitability.

It is in Robert’s interests to select calves that can be turned off as quickly as possible.

Rob turns off between 1200 and 1500 steers each year for the feedlot trade from his property at Ebor, in northern New South Wales.

He buys cattle in at between 250-300kg at 8-9 months and turns them off at 480-520kg.

An extensive program of pasture renovation has helped him lift his herd’s daily weight gain average to 0.8kg and double his kilograms of beef produced per hectare.

Most steers are purchased during the Autumn weaner turn off and are sold mostly from January through to May.

A good season allows him to replace the first steers turned off in January and February with heavier steers (350kg), which are backgrounded for five months and sold for a premium in August.

To maximise his profit on his pasture investment, he cannot afford cattle that gain weight slowly. Robert estimated 1 per cent of the cattle he buys do not make feedlot specifications and 5 per cent take too long to meet them, often needing to be held through two winters.

Cattle that do not meet his target growth rates also means Robert cannot fully utilise the spring pasture flush.

“We need to get as many weaners through winter to utilise the spring flush as older cattle don’t put on enough weight on a per hectare basis,” Mr Perkins said.

“It’s easier to carry a 250kg weaner through spring than a 400kg animal as they eat one-third less food.”

He buys direct from other producers and also at calf sales, where he avoids cattle that appear to have been restricted in their growth.

“If there are a line of calves at the store market, I never buy the bottom pen, that’s often where the ‘poor doers’ are,” said Mr Perkins.

“If it is a good line of 100 calves, the poor doers will be in the bottom pens.”

He said he will buy lighter calves if he knows that they are young. But avoids cattle which are 200kg at nine to ten months of age.

“Their genetics are often OK but their growth has been stunted too much.”

“These cattle have big heads and big tails and some perform reasonably but when it comes to selling them, they still have an odd body shape and the buyers don’t want them as their bone structure has been affected too much.”

Beef CRC research shows rate of gain is directly related to feed quality.

Mr Perkins has proven this, improving his growth rates by installing high performance pasture.

He has replaced a lot of his cocksfoot with ryegrass & perennials, particularly fescue because of its longevity and its ability to stand longer when dry.

It has paid off. He produces 400kg/ha of beef on the cocksfoot country, which receives an application of single super, but 800-900kg/ha on the high performance fescue pastures, which receive double the amount of fertiliser. His paddocks of Italian ryegrass can produce 1200kg/ha in good seasons.

But he added these results are also reliant on having a good animal health program in place.

“Internal parasites and micro nutrient deficiencies will soon affect weight gains,” he said.
Spring-born calves are quite easy to wean at around five months, which helps ease the burden on cows in autumn. This has proven successful during recent unreliable autumn seasons. There is usually no need to wean autumn-born calves early because spring feed is plentiful.

**Backgrounding and Finishing**

There is now a large body of research within the Beef CRC on post-weaning growth and its impacts. All Beef CRC I southern pure-bred cattle (9000 head) were backgrounded on three different growth rate treatments providing effects of backgrounding growth on finishing growth, fatness, yield, marbling.

In CRC II, the ‘Regional Combinations’ experiments included various backgrounding growth treatments in New South Wales, Victoria, South Australia and Western Australia.

In all cases after backgrounding, cattle were finished (including both pasture and grain-based systems) and detailed measurements were taken of carcase composition and meat quality, mostly including Meat Standards Australia (MSA) taste panel evaluation.

**Summary of post-weaning growth effects**

- Slower backgrounding growth (around 0.5 to 0.6kg/day) resulted in faster (compensatory) growth in the feedlot.
- Cattle with a slower backgrounding growth rate entered the feedlot leaner and finished leaner (higher yielding carcases).
- Faster backgrounding growth (0.8kg/day) resulted in finished carcases with more fat and more marbling.
- Faster backgrounding growth resulted in bigger eye-muscle area (EMA) and more fat but no difference in carcase yield.
- Comparing fast and slow backgrounding rates, MSA-predicted eating quality differences were not significant in grain-fed carcases (NSW) but were significant in pasture-finished steers from Victoria. The latter had higher ossification scores, but the reason for this is unknown.
- Consumer taste panels preferred the fast growth treatments in every case.

**Buying weaners**

When buying weaners to grow out, backgrounders need to be aware that cattle that have had a severe growth restriction early in life will have a reduced potential for growth during backgrounding and also in the feedlot.

The earlier in life the severe restriction occurred, the greater the effect.

If they had not had an early growth restriction, slower growth during backgrounding would lead to faster compensatory growth in the feedlot.

**Selling feeder cattle**

The relationship you have with the next owner of your cattle is important and generally the better your cattle perform for him the more fruitful this relationship will become.

The benefits can be a higher status as a preferred supplier or a better price.

The basis of payment for your cattle may affect how you manage them before sale.

For example:

- If there is any financial incentive to you for faster feedlot gain (either by direct payment on their feedlot performance, or indirectly by building a better reputation) a slower backgrounding growth rate will add value.
- If marbling is important, either directly to your price or indirectly by building a reputation, a faster backgrounding growth rate will enhance marbling in the carcase after finishing in the feedlot.

Apart from trading decisions, the breeder or backgrnder who prepares steers from weaning to feedlot entry has many grazing management factors to balance in the quest to optimise his profit.

Most of these affect the growth rate of the cattle. Factors in the equation include:

- Kilograms of beef produced per hectare – a key profit indicator. You can usually increase it if you run more cattle and accept a lower growth rate per head.
- Individual rate of gain – faster gain means quicker turnoff, greater turnover and the potential to add value faster to the cattle you buy.
- Feed quality – rate of gain is directly related to feed quality. It is usually more expensive to provide higher quality feed, whether in the form of pasture, fodder crop or supplement, but growth of cattle is improved.

- Using the growing season – in areas where pasture growth is seasonal, it makes sense to time your peak grazing demand and turnoff to maximise use of available feed.
- Timing of turnoff – there may be opportunities for premiums by supplying cattle out of season (but make sure the costs are not higher than the benefits).

If maximum eating quality is (or will become) a key requirement, fast growth to feedlot entry is important.

The situation in the specialist long-fed markets (mainly Japan and Korea) is different.

Maximising marbling becomes the main concern and cattle should be backgrounded at a faster rate (say 0.8kg/day or better) before feedlot entry to achieve this.

Early-life nutrition appears to be less influential on marbling. Over the longer finishing period typical of these markets the benefit of compensatory gain is not so significant.

Cattle backgrounded at a faster rate tend to enter the feedlot fatter and this carries through to produce carcases with more waste fat and a lower retail yield.

These disadvantages are counterbalanced by the high value of extra marbling in these high quality markets.
Beef CRC research shows faster backgrounding rates before feedlot finishing helps produce heavily marbled beef and improves eating quality in long-fed feedlot programs.

It is research which suits operations like Rangers Valley Feedlot at Glen Innes, New South Wales. Rangers Valley was established in 1988 and has a carrying capacity of 32,000 head.

Rangers Valley utilises backgrounders to raise calves to feedlot entry weights before feeding them for their long-fed export program.

The latest research shows in order to maximise marbling in the feedlot cattle should be backgrounded at 0.8kg/day or better, especially around 10-14 months.

Rangers Valley purchases young Angus and Wagyu cattle with high marbling genetics and contracts backgrounders to raise calves to feedlot entry weights of 400-450kg at 15-16 months of age. The steers are then fed for 300 and 400 days respectively.

Under its vertically integrated production chain, cattle are then processed and the premium quality beef is sold in 13 countries, including Japan, South Korea, Taiwan, Hong Kong, Macau, Indonesia, the Philippines, Singapore and the USA.

About 3 to 5 per cent of its beef is sold on the domestic market.

Managing Director Malcolm Foster said high marbling is the most important characteristic of the beef they produce.

“Marbling is the key,” Mr Foster said. “It determines the price of the product.”

Cattle are fed naturally during their stay at Rangers Valley to help them carry the extra weight and stop them becoming over fat.

Slower growth during backgrounding can lead to faster compensatory growth in the feedlot but Mr Foster said particular backgrounding rates were not a pre-requisite at Rangers Valley.

Mr Foster said all cattle that enter the Rangers Valley feedlot are bought direct from producers.

“They must be in good condition and if they don’t perform on agistment they are not put into the feedlot.”

Backgrounding is used to ensure a supply of quality animals.

“To get the best cattle you sometimes have to get them younger and smaller if that’s when the producer wants to sell them,” he said.

When buying smaller cattle, Rangers Valley will only buy those that are the right weight for age, eliminating those that have had setbacks early in life.

The Beef CRC believes differences of more than $100 between otherwise identical carcases will be revealed when processors begin to introduce accurate payment for eating quality traits, using the likes of MSA grading.

Rangers Valley already has a database with every animal that has been through the feedlot and a system that enables them to rank each supplier.

It works closely with producers that supply productive cattle, giving these producers security of supply.

Compensatory gain is potentially still a big money-earner for the majority of feedlots aiming at the domestic and short-fed markets.

Cattle that have had a good start in life but have grown slower during backgrounding (say 0.5kg/day) will bound ahead when they are given good quality finishing feed, generally growing faster and more efficiently.

Their carcases will generally be leaner too, with more muscle and a higher retail beef yield.

Feedlots should be aware that compensatory gain may be reduced or absent if the cattle have been severely restricted before birth and/or in their first six months of life or before they have reached around 200kg.

These cattle will show:

- Less or no compensatory gain in backgrounding or the feedlot.
- Greater age, and be more likely to reach market age limits (teeth or ossification).
- Little effect on tenderness unless they are much older (~ 9 months or more), but they will be generally acceptable for most markets.
All sectors, the breeder, backgrounders, finishers and feedlots contribute to the economic production of a quality beef animal
Effects on growth in later life

- A severe setback very early in life results in slower potential growth rates during backgrounding and finishing.
- A severe setback up to, and including, weaning results in cattle that are lighter for their age but still capable of good growth. They will only partially express compensatory growth.
- If calves are well-grown early in life, slow growth after weaning is positive for feedlot growth, where compensatory gain makes them efficient and profitable.

Effects on retail beef yield in the finished carcase

- Early setbacks have minimal effect on retail yield once calves have had time to catch up to the same weight and are finished.
- Calves may only become fatter and produce carcases with a lower proportion of saleable meat if they are recovered on very high energy feed (such as a feedlot ration) immediately after severe early-life restriction.
- After a good start in life, slow growth after weaning means cattle are leaner at the same weight when they enter the finishing system. They will go on to produce leaner, higher yielding finished carcases.

Effects on eating quality and marbling

- Early growth restrictions, even if quite severe, have minimal effect on marbling or eating quality if cattle are recovered and finished in traditional grass- or grain-based production systems.
- After early setback and recovery, cattle are older at the same finished weight, with little effect on eating quality unless substantially older at market weight.
- In cattle with genetics favouring marbling, faster growth during backgrounding (especially around 10-14 months) is more likely to enhance it than any nutritional influences in early life.
- Faster backgrounding growth before feedlot finishing slightly improves eating quality.
- Small eating quality differences are usually not valued in the market until cattle exceed commercial age limits (dentition or ossification score) so for cattle meeting most commercial market specifications there are generally no price premiums or penalties for eating quality.
- And it depends on what you get paid for...
  - Most cattle are currently traded on the basis of their liveweight or carcase weight provided they fit broad market specifications for age, weight and fatness.
  - Under these conditions, differences in carcase yield and eating quality are “averaged” and don’t appear particularly important.
  - However, this is starting to change. More accurate systems of estimating the saleable meat content of carcases (retail yield) and eating quality of individual cuts (using MSA grading) are already available. Differences of more than $100 between otherwise identical carcases may be revealed when processors begin to introduce accurate payment for these traits.
  - The change will bring new opportunities to profit from cattle with higher yield and better eating quality. We already know how to identify and produce them – so why not start building the value into your cattle now and be ready to reap the rewards?

These are the key changes to consider:
Greater incentives for retail beef yield:

- More muscular cattle will be favoured.
- Cattle with European content will be favoured.
- Greater penalties for over-fat cattle.
- Penalties for lightly muscled cattle with uneven fat distribution.

Greater incentives for eating quality:

- Faster-grown cattle will be favoured.
- Larger genotypes will be favoured (younger at the same weight).
- British breeds expressing more marbling will be favoured.

- There will be greater penalties for being too lean.
- There will be greater emphasis on temperament and pre-slaughter handling.
There are a range of programs that producers can get involved in to learn more about beef production across Australia and New Zealand
Victoria

**BeefCheque**
BeefCheque is a program about growing more grass, utilising more grass, growing more beef (or lamb, mutton, wool) and, ultimately making more money. As well as looking at pastures and livestock, participants spend time looking at the financial results of their action. To make these discussions useful, participants are encouraged to participate in a financial and physical analysis of their farm businesses.

**Breeders for Profit**
Breeders for profit is designed to assist producers increase the profitability of their commercial cattle breeding operations by improving the breeding herd. Participants gain skills in identifying the influence females have on the profitability of their breeding enterprise as well as developing an understanding of the scope for genetic improvement within their herd. Practical structural assessment skills are also developed through yard activities.

**Effective Breeding**
This three day workshop aims to provide commercial beef producers with the information and skills to develop and implement a herd-specific breeding strategy, taking into account resources available and the physical and market environment that it operates in.

**Practical Beef Marketing**
Practical Beef Marketing is a course that aims to improve industry and on-farm profitability through an increased number of cattle meeting target market specifications. This is achieved through improving producer’s understanding of standard industry language, the varying markets and their requirements.

Producers also gain the skills and knowledge required for accurate live animal assessment, enabling more detailed and specific description for potential customers and therefore superior marketing opportunities.

Queensland

**Better Business, Better Profits through Better Bulls**
This is a one day workshop to assist beef producers in effective
bull selection practices by setting breeding objectives and applying bull breeding soundness evaluations to their selection decisions. Producers are provided with evidence of the financial benefits of using sound genetic differences in association with EBVs in their bull selection decisions.

**Breeding For Profit**

This is a one day workshop focussed on the opportunities afforded the beef producer with various breeding systems and tools at their disposal to better meet market specification through a planned breeding programme. It includes a practical component and utilises the outcomes of CRC I mating results across breeds to assist producers with their breeding decisions.

**Bull selection**

This one-day hands-on workshop shows participants how to improve their breeding program by evaluating a bull’s genetics and its ability to serve and reproduce. The workshops also examines the technology that can impact on a herd’s genetics.

**BREEDPLAN Workshops**

This one day workshop assists producers with the knowledge and skills to apply genetic differences in the form of EBVs in their selection decisions. Many producers appreciate the practical aspects of basic genetics and genetic progress to then understand the relevance of EBVs versus ‘raw data’. This activity links DNA marker technology with genetic differences as they apply to genetic progress in the herd.

**EDGE Grazing Land Management**

An area specific three day workshop for northern producers (with a follow up day) covering:
- maintenance of native and improved pasture systems;
- relationships between water, soil, woodlands, biodiversity, fires and weeds;
- climate variability management;
- meeting target markets while remaining sustainable in the long term; and,
- determining the financial implications of grazing management options.

**The Breeding EDGE**

This workshop is conducted over three days and focuses the northern beef producer on setting breeding objectives and includes such topics as understanding Bull Breeding Soundness Evaluations, Breeding Systems, Female selection and the basis of genetic progress in the herd. It includes a half day practical demonstrating EBVs and bull fertility.

**The Nutrition EDGE**

This three-day interactive workshop and practical session for northern producers covers all aspects of animal nutrition, including how nutrition affects animal growth rates, financial returns and market access. Participants will learn what nutrition and supplements are required to improve the health and growth of their stock, and will assess the level of nutrition provided by their pastures.

**EDGE Marketing**

The Marketing EDGE is a 2-day workshop is designed to assist producers to set their long-term direction and strategies for the marketing function of their livestock business. The workshop is designed to help producers discover the benefits their business can gain from adopting a greater marketing focus, rather than only a production focus. It aims to broaden producer’s understanding of marketing, rather than focus on selling only, to enable the development of longer-term marketing strategies and better marketing decisions. These long-term decisions will help improve overall business performance and therefore success.

**CRC Outcomes**

This one-day interactive workshop presents the latest research findings from the Beef Quality Cooperative Research Centre (CRC), Australia’s largest beef research facility. The workshop provides information on gene markers, temperament assessment, net feed efficiency, weaning and health and shows how producers can use this information to improve profitability.

**Beef options analysis**

During this four-day workshop, participants use a comprehensive herd simulation and economic model to describe and simulate
their existing enterprise, assess its performance, and compare options (profitability, performance, risks, cash flow). Expert presenters help participants translate complex financial data into user-friendly information that can be used to improve their business profitability.

**Enhanced property management**

During these two one-day workshops, participants analyse their current business situation. They are then introduced to innovative management techniques that will help improve their profitability by improving their herd base; analysing marketing decisions; benchmarking their business performance (relative to their district and industry); and identifying key production and profitability drivers. Management techniques are explained in terms of actions that can be undertaken on farm.

**Storelink**

This 2-day workshop examines the Australian supply chain. Participants will gain a better understanding of customer requirements and how they can alter their property management to better meet customer needs.

**New South Wales**

**Beef-N-Omics**

A three day program to assist commercial beef producers to improve the productivity and profitability of their beef enterprise.

The course uses the Beef-N-Omics computer program to deliver a total analysis of each beef herd integrating herd management, feed balances and economic variables, culminating in an assessment of options for improved profitability.

**Stockplan**

A three day training program backed by three computer based decision support programs that enable all sectors of the beef and sheep industries to develop least cost strategies to manage drought and the drought recovery periods.

**Prograze**

Eight workshops spread over 8 to 12 months, covering pasture and livestock assessment, fodder budgeting and species identification skills, and the integration of these into improved grazing management systems.

**Better Breeding – Beefing up your Business**

A three day course aimed at providing the skills and knowledge to develop a breeding plan for your beef herd. This course is based around example producers who show how they plan and manage their breeding herds. It covers which traits are important to different markets, and how to select these traits and the different breeding systems that can be used.

**Calculating Cost of Production**

A half-day workshop teaching beef producers how to use the Cost of Production calculator, demonstrating why cost of production is an important key performance indicator, and identifying opportunities to improve the business management of their enterprise.

**Stocksafe – Safe Cattle and Sheep Handling**

A two-day workshop which begins with routine husbandry, handling and health, before working through workplace OH&S, animal welfare, impact of handling on meat quality, and all aspects of correct handling in yards and paddocks.

**Better Bull Buying**

A practical workshop to help beef producers select, purchase and manage bulls appropriate to their beef enterprise and market objectives. This includes structural assessment, breeding soundness, understanding of Breedplan and EBVs, and interpretation of sale catalogues.

**StockAssess – Live Cattle Assessment and Marketing**

A two day hands-on workshop addressing cattle assessment to meet market criteria, selling systems, preparation for transport, quality assurance procedures and marketing options.

**Beef Care and Handling**

A one-day program mixing practical and discussion sessions including cattle husbandry, identification, handling, live animal assessment, yard design and health programs.
TopFodder Silage

A three day course covering all aspects of the production, storing and feeding of both bulk and baled silage.

Northern Territory

Nutrition EDGE

The Nutrition EDGE workshop gives you a comprehensive look at ruminant nutrition. It will assist you to better match your pasture and feed options to your livestock needs.

Breeding EDGE

The EDGEnetwork Breeding EDGE workshop is a comprehensive workshop designed to help you develop a cattle breeding program, or improve your existing one. You will see how to use reproductive and genetic knowledge and technologies to achieve your target production.

Grazing Land Management

The Grazing Land Management workshop will develop your understanding of the various factors that interact in the rangeland regions of Northern Australia to develop grazing management strategies to increase profit and sustainability.

Western Australia

Agribusiness Livestock Updates

The Agribusiness Livestock Updates replaces the Agribusiness Sheep Updates. With the addition of beef topics, the Agribusiness Livestock Updates is now the primary event in Western Australia for the meat and wool industries. This event provides the most up to date information on sheep and beef production and industry issues. It provides an excellent opportunity for the release of applicable research results and networking with other industry professionals.

Regional Livestock Updates

The one - day regional updates are held at ten locations within Western Australia. The updates provide producers and industry with relevant and up to date information on sheep and beef production.

Vasse Research Station Open Day

This is a one - day event that provides producers and industry professionals with information on current beef cattle research projects taking place at the Vasse Research Station.

South Australia

More Beef from Pastures

PIRSA Livestock Industries coordinates and manages the delivery of the More Beef from Pasture program in SA. There is a particular emphasis on help producers realise their potential to increase kilograms of beef produced and become more efficient with resource allocation.

Prograze

Prograze is a Edge Network course giving producers an understanding of pasture management and grazing techniques.

Cost of production workshops

These workshops give producers the opportunity to drill down into their beef enterprises and determine what the profit drivers are and what factors they have influence over.

Tasmania

Red Meat Targets

A program of research, development, marketing and extension projects for Tasmania’s red meat industry.

Within Red Meat Targets DPIW delivers on-farm, practical training courses in:

- Prograze (grazing management skills training).
- Better Fertiliser Decisions (nutrient management), and
- Species for Profit (selecting and managing the right pasture species).

“Red Meat Targets” development projects conduct field days on sites such as the Winnaleah Towards 2000 beef grazing trial, Cressy Arrotas management site, and the Circular Head and King Island grazing and nutrient trials.

DPIW also coordinates and conducts field-days and workshops as a part of MLA’s “More Beef From Pastures” program. These focus on key elements of beef producing enterprises, from pasture utilisation to managing cost of production and setting enterprise directions. These activities have a focus on practical tools and producer experiences.

New Zealand

- New Zealand is looking forward to receiving knowledge and information from Beef CRC.
- 2 Beef for Profit Partnerships have been established in New Zealand and they are using the messages from the Beef CRC on-farm.
### VICTORIA

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## NEW SOUTH WALES

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<tr>
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Beef CRC’s Beef Profit Partnerships

The Beef CRC’s “Sustainable Beef Profit Partnerships” (BPP) Project is a system of partnerships with beef businesses, value chains and the broader Australian beef industry. The system is designed to achieve and accelerate improvements, innovations and adoption for sustainable impact on business profit and industry growth. In June 2009 there were 28 BPPs in Australia and New Zealand, involving over 280 businesses.

### SOUTH AUSTRALIA

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<td><a href="mailto:Hebart.Ben@saugov.sa.gov.au">Hebart.Ben@saugov.sa.gov.au</a></td>
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### TASMANIA

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<tr>
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### NEW ZEALAND

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<tr>
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Beef Officer Contact Details (cont)
On the growth path to profit

www.beefcrc.com.au