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Information for rural business in Central Queensland

What's your outlook for winter?

Bull selection and management



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Welcome to CQ Beef 33

Welcome to the autumn issue of the *CQ Beef* feature for 2018.

Hi everyone,

We have a late wet season on our hands. And even if you have been under some good rain of late, your pasture may not yield as it would have had the rain been earlier. It might be a good idea to heed some of Carly Johnstone's advice (see Carly's article) and get out in the pasture and estimate how long you think it will last your herd so you can make timely management decisions this year.

In this issue, economist Fred Chudleigh has outlined his calculations on the return of

improving calving rates, growth rates and mortality rates. If you want to calculate your own gross margin and compare it to other scenarios, Department of Agriculture and Fisheries (DAF) staff can help you operate the Breedcow Dynama software.

If you're not one of the 2000 beef producers involved in the Grazing Best Management Practice program, do your business and your industry a favour and contact a DAF staff member listed here to enquire about your soonest opportunity.

The workshops of late have been distributing valuable information on occupational health and safety (OHS) paperwork, animal welfare legislation, Livestock Production Assurance (LPA) requirements, beef cattle nutrition and genetics. Likewise, if you'd like to reassess your modules or join more than 100 businesses who are now Grazing BMP accredited, please be in contact.

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All of us, at one stage or another, will be at the DAF site at Beef Australia 2018 from 6 to 12 May.

We hope you get something from this issue. We'd also love to hear your feedback. Please get in touch and let us know how we could improve CQ BEEF for your benefit.

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End of wet season planning- what's your outlook for winter?

Key points

- April is a good time to assess your pasture outlook for the dry season.
- Forage budgeting helps you estimate the amount of pasture you have available for grazing.
- Faecal NIRS testing is a simple tool which determines the diet quality of grazing cattle.
- DAF beef extension officers can help with forage budgeting and diet quality assessments.

With the end of the wet season upon us, it is time to start thinking about your pasture outlook for winter. Do you have enough grass? What diet quality will it provide for grazing cattle?

April is a good time to take a close look at your pastures to ensure you have enough grass until the start of the next growing season, which might not be until December or January. We can use a forage budget to estimate the quantity of pasture available in a paddock.

A forage budget for a paddock calculates:

- how much grass is currently available
- how many head it will carry
- for how long it will carry them.

The result will determine if you have enough pasture to carry the intended livestock through until the break of season, or if you need to make some early decisions to sell and or agist. It is important to maintain breeder body condition and good ground cover, as a decline in animal performance and land condition will have consequences for profitability.

Repeated overgrazing can reduce ground cover and impact the quantity and quality of pasture available for future grazing. When pastures are overgrazed, a grass plant's leaf (solar panels) and roots (energy reserves) are diminished. This reduces the ability of the grass to respond to rain and produce useful forage for grazing. A decline in ground cover increases the risk of soil erosion.

Overgrazing can also result in changes to pasture composition as preferred grasses can be selectively grazed out of a paddock. Undesirable species, such as Indian couch and parthenium weed, often invade bare ground and can drastically reduce land and livestock productivity. It is important to manage grazing so that the highly desirable 3P grasses (perennial, productive and palatable) dominate the pasture.

Another useful tool to aid in decision making is Faecal Near Infrared Reflectance Spectroscopy



End of wet season forage budgeting is useful for determining how much pasture you have until the break of season.

(Faecal NIRS), which is used to determine the diet quality of grazing cattle. Fresh dung samples are collected, dried and analysed to estimate the digestibility and crude protein content of the diet and in some situations phosphorus level. Diet quality data from NIRS testing can be used to make more timely decisions on supplementation and help determine the most appropriate supplement.

Forage budgeting and NIRS testing can aid in timely decision making coming into, and during, the dry season. Early action after an inadequate

growing season is necessary to ensure the sustainability of your grazing business.

So, do you know if you have enough good grass to get your cattle through the dry?

For more information and assistance in forage budgeting and Faecal NIRS testing, please contact your local DAF beef extension officer.

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Bull selection and management

Buying bulls for your herd is a critical decision. With five matings and daughters retained for 10 years, each bull is potentially driving the direction of your herd, and your profitability, for up to 15 years.

Bulls have the biggest genetic influence on your herd. A cow has the potential to produce six to eight calves assuming she has her first calf at two or three years of age and is culled at 10 years of age. On the other hand, a bull joined to 40 cows with an 80 per cent conception can sire 32 calves per year and potentially 160 calves over five years.

Breeding objectives

One of the first steps when selecting a bull is to come up with a purpose for his purchase other than needing a bull. This can be termed as breeding objectives.

Points to consider include:

- current herd performance—fertility (pregnancy and weaning percentages) and growth rates achieved by your herd
- requirements of your customer and target market—the general purpose of the bull e.g. seedstock or commercial cattle production
- environmental constraints of your property—are you breeding the right animal for your environment?

When considering your current herd performance, also give some thought to the following when selecting on traits:

- measurable e.g. weight gains
- heritable e.g. fertility
- trait with variation—do not select animals that are extreme in a trait e.g. extremely tall or extremely small
- economic importance e.g. the calving intervals between calves that the bull's mother has had throughout her life.

Reproductive soundness

BULLCHECK™ (veterinary bull breeding soundness evaluation—VBBSE) performed by an accredited vet provides a comprehensive evaluation of the bull's reproductive soundness. A BULLCHECK™ examination gives you peace of mind that the bull has a high probability of being fertile at the time of examination. As well

as a physical examination and measurement of scrotal circumference, two semen tests are undertaken. The crush-side semen test assesses semen motility and a sample is taken for sperm morphology testing at a laboratory. Sperm morphology identifies defects and determines the percentage normal sperm (PNS). Bulls should have a minimum of 70 per cent normal sperm.

BREEDPLAN estimated breeding values (EBVs) provide an estimate of the genetic merit of a bull and its potential value for your herd.

EBVs have the following components:

- EBVs are expressed in the unit of measurement of the trait e.g. kilograms, centimetres, days.
- The EBV can be positive, negative or zero.
- Breed averages for each trait are regularly updated as more data is collected.
- Each EBV has an accuracy value (%).

The critical EBVs for improving fertility are days to calving (DTC) and scrotal size (SS).

Another important aspect of buying bulls is checking the fertility of his mother. Use bulls out of dams that have at least three calves in a row naturally. Avoid bulls from dams that have missed at her first breed after calving. Also check out the dam's calving intervals and the age she was when she had her first calf. These traits can be highly heritable—you don't want to lower the fertility of your herd by putting in bulls that are lacking fertility.

Supplementary data

Most bull sales provide supplementary data comprising liveweight, scrotal circumference, eye muscle area (EMA) and P8 fat depth but, apart from the scrotal circumference data, this information is of relatively little value for bull selection. Valid comparisons cannot be made as the data will be biased by the age of the bull, land types it was raised on and, in particular, pre-sale feeding.

Scrotal circumference and weight data can be used to assess if a bull has adequate scrotal size

for his age to produce sufficient semen to be an effective sire. However, it does not indicate his ability to produce fertile daughters as the scrotal size EBV does. Scrotal circumference guidelines are available for all major breeds and can be obtained from your local beef extension officer or veterinarian.

Implementing a health management program

Once you have purchased your new bull, you should consider the health status of the bull and the herd that he is entering. Does this animal have the potential to introduce disease to the herd or does the herd have potential to infect the new sire?

It is critical to know what vaccinations a bull has had and when so you can then undertake those necessary to ensure protection against the risks on your property.

Tick fever and botulism vaccinations are required in many areas to prevent deaths. Vaccinations are also required to protect against fertility diseases.

Leptospirosis can cause late term abortions and the birth of weak calves. The disease is spread by urine on pastures, feed and water. Prevention is achieved with two initial vaccinations (6–8 weeks apart) and a yearly booster. Humans are frequently infected with leptospirosis so vaccinating bulls and breeding females is also critical for human health.

Vibriosis is an extremely common venereal disease that causes embryonic deaths and early abortions leading to delayed conceptions and lower pregnancy rates. Maiden heifers are most susceptible as most exposed animals recover and develop immunity. However, a percentage of animals will become persistently infected (PI) and, if retained, provide a disease reservoir in the herd. In most herds the disease can be controlled by bull vaccination. Bulls require two initial vaccinations (6–8 weeks apart) prior to joining and an annual booster. Many studs do not vaccinate bulls because reaction lumps can occur, hence the importance of checking the vaccination status of new bulls.

Bull management is also important for managing vibriosis. Bulls should be culled at seven years as older bulls are more likely to carry the disease and new bulls should be joined to maiden heifers where possible.

Bovine ephemeral fever (three day sickness) is caused by a virus spread by biting insects. The virus is more likely to occur in warmer months when insect populations are higher and more active. Symptoms include fever, lameness (in the front leg), loss of appetite, excessive thirst

and pregnant animals may abort. Larger, heavier animals such as bulls are more likely to die. The high fever affects sperm quality and, in some cases, the bull can become permanently infertile. Protection is provided with two initial vaccinations (2–24 weeks apart) and an annual booster. Ideally, bulls are vaccinated in late winter or early spring so they are protected for the wet season.

Pestivirus can also impact on herd fertility. The outcome of pestivirus is determined by the stage of the reproductive cycle when infection occurs and naive herds or breeder groups can experience significant reproductive losses.

Infection in the first trimester can result in the production of a PI calf. These animals continually shed the virus and are the principle source of infection in a herd. Classically, PIs are often smaller, unhealthy animals that die at a young age, however some are not and cannot be identified without testing.

Pestivirus is a complex disease and vaccination is expensive, so it is critical to assess the status of your herd with a vet to determine the best management strategy. Testing can identify naive and exposed groups and this can be used to plan if, and what, vaccination is required. When buying bulls the pestivirus status of the bulls should be determined to avoid introducing a PI animal.

Putting the bull to work

The next important step in your breeding program is determining when you want your calves to be born.

Controlled mating enables breeder requirements to be matched to likely seasonal conditions and provides better overall control and management of the herd.

The herd control provided by controlled mating assists pasture overall management and minimises supplementary feeding. With a joining period of December to March, the manager knows the calves will be born from September to December. When the calves are weaned from September to May, the cows are lactating. From May to August the manager knows that the cows are going to be dry and pregnant.

Controlled mating produces a more even calf drop to help manage growing cattle and marketing. It also enables easier identification of poor performing cows that should be culled from the herd. The best time to join your cows depends upon your location and management techniques.

Further information can also be found at futurebeef.com.au.

Matt Brown, Beef extension officer and Grazing BMP Co-ordinator



Grazing BMP at Beef Australia 2018

The Grazing BMP (best management practice) program has continued to make headway across the state and will be showcasing its success at Beef Australia 2018 to be held in Rockhampton from 6 to 12 May.

The property tour program is always a popular activity at Beef Australia and this year will feature three Grazing BMP accredited businesses. The tour program begins on Monday 7 May and one of the first properties to be showcased will be Barfield Station, Banana, home to Rob and Melinee Leather.

The Leathers became accredited in 2015 and have been strong supporters of the program. Rob and Melinee have consistently supported grazer peer learning by hosting producer groups and sharing their passion for growing a stronger beef industry.

Steve and Claire Farmer of SC Droughtmasters, Mt Elsa, will also be part of the tour program, providing visitors the opportunity to discuss the benefits of performance recording. SC Droughtmasters are industry leaders in this area and use a variety of genetic selection tools and herd recording practices. Becoming Grazing BMP accredited in 2016, Steve and Claire have since featured in a FutureBeef YouTube video on Bull Selection.

Belmont Station is the third Grazing BMP accredited property to make the property tour program.

Located 37km north of Rockhampton on the Fitzroy River, the 3260ha property is owned and managed by AgForce Queensland and delivers a unique, collaborative approach by providing a working cattle station with a focus on research and education.

Grazing BMP guest speakers will be focusing on sustainability themes within the seminar sessions at Beef Australia 2018. Our speakers include:

Nicole Johnson-Hoffman, Senior Vice President OSI Group LLC and President of the Global Roundtable for Sustainable Beef, will present on beef sustainability and how Australian Beef fits into the global supply chain.

James Bentley, Manager Natural Value, Corporate Responsibility NAB, will present on what natural capital is and why it is important to the finance sector, what NAB is doing to ensure natural capital informs banking decisions and what this means for graziers and the future of Grazing BMP.

For more information about the Grazing BMP program please contact Matt Brown, Grazing BMP Coordinator DAF Fitzroy on 0428 104 248 or Cass Heal, Grazing BMP Coordinator with AgForce on (07) 3236 3100.

Inaugural Calf Alive symposium a resounding success

The inaugural Calf Alive symposium was held on 24–25 November 2017 at Capella in Central Queensland.

The event was attended by more than 140 beef industry people with most attendees being beef producers from Queensland, the Northern Territory and New South Wales.

Specialist speakers from Australia, the United States of America and Indonesia inspired some excellent discussions and delivered the most up-to-date knowledge about the causes of calf loss. It was quite clear that we are not alone with this challenge as the speakers described very similar issues worldwide.

Calf loss from pregnancy through to weaning is often a bigger problem than you might think.

Professor Michael McGowan, project leader of the recent CashCow project, said that high numbers of beef producers in northern Australia experience calf wastage above expected levels on a regular basis.

Results from the CashCow project highlight the magnitude of the problem showing that 25 per cent of breeding mobs in the northern forest region of the study area had calf wastage of more than 19 per cent. The range of potential causes highlights the opportunity to develop and implement practical solutions that, mostly, have not been systematically evaluated in northern Australia.

Professor McGowan said the value of addressing the calf loss issue shouldn't be underestimated and that a five per cent reduction in calf loss in a herd size of 3000 adult equivalents (AE), would at least increase EBIT (earnings before interest and tax) by \$25,000.

The key messages from the symposium were:

- Calf loss is a major problem across northern Australia. Each calf lost reduces business income by more than \$400.
- The causes of calf loss are complex and many.
- The main risk factors for calf wastage are related to nutrition and the environment. Body condition and nutrition of the cow during pregnancy and early lactation have

a profound effect on calf viability and milk delivery.

- Dystocia (calving difficulties), which is most common in calving two-year-olds, is affected by genetics and nutrition, has a big impact on calf survival.
- Any factor reducing colostrum intake in the first eight hours post-partum or milk intake in the first days of life, threatens calf survival.
- Infectious disease can be a problem, particularly in more intensive systems. Accurate diagnosis and appropriate treatment is important.
- Effective predator control requires a sound understanding of fauna ecology. There is not a clear answer for excess calf wastage in many situations. Research to explore solutions to predators will be as complex as the problems.
- Many risk factors for calf wastage in northern Australia have been identified. Potential solutions include managing the feed base, lactation, health and stress, and herd genetics.
- Good information to define the problems and professional advice are necessary to reveal causes of calf loss and determine solutions for specific situations.
- Solutions for high calf wastage require analysis to identify critical control points along the pathway to loss, otherwise the strategy applied may be ineffective.
- The pathway to reducing calf loss is difficult, but rewarding. It requires constant awareness of all possible risk factors.

Future research in the field of calf wastage, particularly testing management options, is planned. These project proposals are currently under consideration with Meat & Livestock Australia.

The presentations from the Calf Alive symposium, will soon be available at futurebeef.com.au.

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BEEF AUSTRALIA 2018
 ROCKHAMPTON
 SUNDAY 6 MAY - SATURDAY 12 MAY



Grazing BMP accredited producers invited to networking event in June

Approximately 2000 businesses covering more than 28 million hectares of grazing land have completed a Grazing BMP (best management practices) self-assessment since the program began.

One hundred and five businesses have taken the option of becoming Grazing BMP accredited, passing a third-party audit by providing evidence to demonstrate they are operating at best practice.

Accredited Grazing BMP producers across Queensland will be invited to get together at a networking event to be held in Charters Towers on Wednesday, 6 June. This will be the first event of its kind, recognising the commitment of this growing group of producers, prepared to open their business to third-party scrutiny of management practices.

The event is an opportunity for accredited businesses to develop stronger connections and identify opportunities to work together to further their commitment to environmental sustainability and animal welfare. Discussion will also focus on adding value to the Grazing BMP certification, both in the marketplace and along the supply chain.

One business already making use of their Grazing BMP accreditation is the paddock to plate enterprise—Rangeland's Quality Meats, operated by the Hughes family. Using Grazing BMP as an underpinning certification to back up their product, the Hughes family are able to promote their commitment to best practice directly to their customers.

As guest speakers at the Grazing BMP networking event in Charters Towers, the Hughes family will share their insights into sustainable and profitable production.

For more information about the Grazing BMP program please contact Matt Brown, Grazing BMP Coordinator, Fitzroy on 0428 104 248 or Cass Heal, Grazing BMP Coordinator with AgForce on (07) 3236 3100.



Accreditation allows producers to focus on farm safety

Scott and Julianne Brown, who trade as Heart2J Cattle, own and operate four properties within the Fitzroy Basin and run approximately 5000 head of cattle with 3000 breeders.

They recently went through Grazing BMP accreditation to fine tune the farm safety aspects of their business with the development of occupational health and safety (OHS) procedures.

Eight Heart2J staff, including the two owners, are actively involved in the business. Staff live on the various properties and act as on-property managers. Regular staff meetings are held every month and one on one meetings are held regularly with individual staff members to discuss their professional development. They are also given the opportunity to run some of their own cattle on the properties.

While preparing for the BMP accreditation process the Browns developed a very comprehensive business plan. The plan covers all aspects of the business that includes policies about grazing management through to OHS. Heart2J also has an organisational structure that outlines all staff roles. A staff day is held every quarter where everyone goes through a policy from the business plan.

Heart2J have developed the procedures to ensure that accidents that occur within the business are kept to a minimum. There are now documented safety procedures that staff must follow, especially relating to quad bikes and horses. The Browns have purchased specific helmets that have shade protection that can be used on either horses or bikes.

These policies also extend to the handling of the company's cattle. Bos taurus bulls are bred over Brahman females to produce a crossbred female and lower Bos indicus content sale cattle. A small percentage of Brahman bulls are used to provide a supply of purebred replacement females.

Heart2J is EU accredited with steers supplied to that market. Another herd of Brangus females are joined to Wagyu bulls to produce F1 feeder steers. Several of the properties, including Maywin Park, act as the breeding



Heart2J owners and staff modelling their new shade-protected helmets.

hub of the operation with young cattle being dispersed to the other properties to grow out.

The herd is control mated with breeders joined for 100 days. Heifers are joined at two years with weighing at selection to ensure they are at a suitable weight. Breeders are vaccinated for leptospirosis and botulism with bulls also vaccinated for vibriosis and three day sickness.

The cattle are rotationally grazed on each of the properties, and pasture budgets are used to ensure cattle are offloaded before feed runs out. Heart2J have developed their own electronic grazing diary that tracks the number of cattle within paddocks, estimates feed ahead of the cattle, calculates the carrying capacity and records the actual number of cattle that were grazed in the paddock. The program then creates a graph that is a stocking rate verses carrying capacity comparison. Paddocks receive a 60 day rest period, with two feed budgets conducted each year—one for winter and one for summer—to ensure that pastures are not over-used and the groundcover is maintained.

The grazing system has produced good ground cover over the range of soil types on the properties. Ground cover has been more than

80 per cent on all land types over the past several years on several of the properties. A crocodile planter is used for pasture regeneration as well as herd impact and mulch as pasture-remediation measures.

"We want our grazing management to be an example of best management practice wherever the location," Julianne Brown said.

Off-stream watering points have been installed to minimise streambank erosion and reduce sediment entering water courses. Also, dams have been added to many parts of the properties to even out grazing pressure.

The Grazing BMP accreditation has allowed Heart2J to focus on all aspects of the business, such as soil and grass management, herd management and people management in the development of strategies and plans. All these aspects will assist the business to remain financially and ecologically sustainable into the future.

Matt Brown, Beef extension and Grazing BMP Co-ordinator
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Chasing beef herd performance

There has recently been conjecture as to which herd improvement strategy is likely to be best.

Some suggest improving reproduction efficiency (weaning rate) is better than improving the rate of growth. Others identify potential benefit in reducing foetal calf loss or reducing the mortality rate of stock post-weaning.

Data from the CashCow project was combined with data from the High Output Forages project to construct a herd model to represent the median performance of a breeding and fattening beef herd of 1500 adult equivalents in the Fitzroy catchment. The herd model was then used to test the relative value of each herd improvement strategy.

Data summarized from the CashCow project for the main factors that contribute to reproduction efficiency is shown below (see Table 1).

The model was adjusted to make the following improvements in herd performance:

- A 5 per cent improvement in annual pregnancy rates. This improved the weaners-per-100-cows-mated ratio from 77.43 per cent to 82.09 per cent (+4.66 per cent).
- A 5 per cent improvement in the post-weaning growth rate of all stock. This improved the sale weight of cull heifers, cows and bulls by 5 per cent and allowed the sale steers to be sold one month earlier on average.
- A 50 per cent reduction in foetal/calf loss. This improved the weaners-per-100-cows-mated ratio from 77.43 per cent to 82.29 per cent (+4.86 per cent)



- A 50 per cent reduction in mortality rates for all classes of stock post-weaning. This improved the weaners per 100 cows mated ratio from 77.43 per cent to 77.69 per cent (+0.26 per cent) and allowed nine more steers and 18 more cull females to be sold. Once the herd model was balanced to maintain the same grazing pressure on the property and the cow culling strategy optimized, the 'cost free' herd gross margin after imputed interest was calculated. In other words, the extra benefits available were identified without reference to the extra costs required to make the change (see Table 2).

It seems that chasing improved conception rates is likely to be no more effective than

chasing improved growth rates, even if both could be achieved immediately at no cost.

Targeting foetal calf loss may provide benefits but the indication is that less than \$4 per retained female per annum could be spent to achieve this level of improvement if profit was to be improved. Making a significant reduction in the rate of mortality in this median performance beef herd may be a strategy to consider, but, once again, the level of costs incurred would need to be considered.

Herd models are useful to stimulate discussion but they rely on access to relevant data. Median data for the catchment or region can be revealing but provides no real insight into the potential benefit of improving herd performance for your beef herd. You can only do these assessments properly if you know your conception rates, calculate your weaning rates, record your growth rates and your herd treatment costs. Keeping the right set of records for the herd and then using those records in the right framework to appropriately assess decisions can be time well spent.

These strategies were tested in the Breedcow and Dynama herd models. They are a useful framework to consider strategies to improve herd performance and can be downloaded from: daf.qld.gov.au/animal-industries/beef/breedcow-and-dynama-software.

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Eloise joins the Grazing BMP team

I grew up in the Biloela region before relocating to Brisbane for high school and university education. Upon graduation, the north called!



I completed seasons with Stanbroke Pastoral Company and a contract mustering crew working throughout Queensland and Western Australia.

I graduated with a Bachelor of Agribusiness from the University of Queensland in 2017 and managed a private feedlot in central Queensland while completing my final year externally. Working throughout the supply chain and seeing different management strategies has initiated my interest in improving management practices to increase productivity and sustainability.

I have recently joined the Biloela DAF team and am looking forward to using my practical and theoretical knowledge to assist producers while continuing to build my skills, understanding and experience. I am involved with the Grazing Best Management Practice program within the Fitzroy region and am happy to discuss any queries you may have.

Eloise Moir

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Table 1 Median reproduction efficiency data for the Central Forest country type

	Heifers	First lactation cows	Mature	Aged	Overall
Annual pregnancy	80%	78%	89%	86%	85%
Foetal/calf loss	10.20%	7.30%	5.90%	4.90%	6.70%
Contributed a weaner	67%	71%	80%	86%	77%
Pregnant females missing		11.80%	6.60%	6.30%	7.90%

Table 2 Herd improvement in performance for the Central Forest country type

	Base herd	+5% conception	+5% growth	-50% calf loss	-50% mortality
Total adult equivalents	1470	1470	1470	1470	1470
Total cattle carried	1533	1540	1517	1538	1523
Total breeders mated	560	531	554	547	548
Total calves weaned	433	436	429	440	426
Weaners/total cows mated	77.43%	82.09%	77.43%	80.29%	77.69%
GM after imputed interest	\$238,074	\$240,661	\$240,530	\$243,748	\$260,527
Extra profit at no costs		\$2,587	\$2,456	\$5,674	\$22,453

