Peebles Siding Limited

Maximising profitability from pasture grown and harvested

Canterbury

Farm Systems Change – 2016 Dairy Farm Case Study

Ministry for Primary Industries
Manatū Ahu Matua

Peebles Siding Limited

At a glance

Dairy Holdings – Peebles Siding Limited

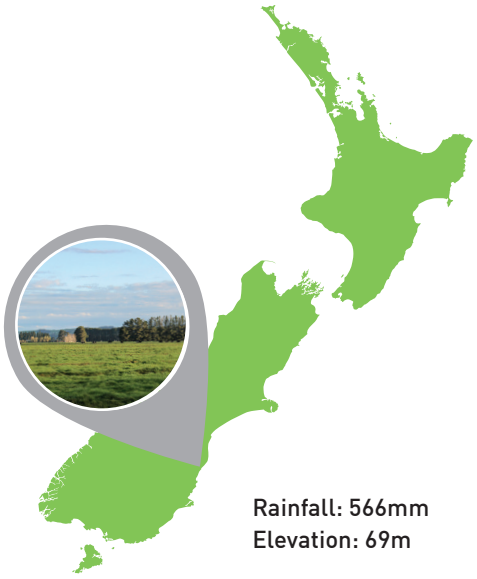
Plan for what you are going to achieve and then measure monthly where you are...

Dairy Holdings operates a system based approach to dairy farming. The farming company has an overarching objective to maximise profitability by adopting farm systems that increase the quantity of pasture grown and harvested. The company has 58 dairy farms located across Canterbury, North Otago, West Otago, Southland and Westland. Peebles Siding Limited is one of these dairy farms.

Peebles Siding Limited is a 195 hectare effective dairy farm peak milking 610 cows currently using border dyke irrigation. The farm production has progressively lifted over the past five seasons from 219,810kgMS in 2011/2012 to 248,815kgMS in 2015/2016.

Season Ended	Total kgMS	FWE/kgMS
2012	219,810	$3.57
2013	213,569	$3.55
2014	222,169	$3.76
2015	232,330	$3.70
2016	248,815	No data

At a glance – 2014/15 Season



Rainfall: 566mm
Elevation: 69m

Farm Details

Milking Platform	**195 ha**
Dairy support	**–**
Total	**195 ha**
Effective Milking Platform	**195 ha**
Est. kgDM grown (per effective ha/year)	**14,500**
Cows (per effective ha)	**3.1**

Livestock Details

Breed Type	**Crossbreed**
Peak cows milked	**610**
Production per cow (kgMS)	**381**
Live weight per cow (estimated actual kg)	**460**

Other Details

People working on farm	**3.0**
Peak Production (kgMS/ Cow/Day for top month)	**1.9**
Start of Calving	**28 Jul**
Calved in 6 weeks	**96%**
Average Pasture Cover (kgDM/ha at start of calving)	**2,450**
Production (kgMS/effective ha)	**1,191**

Farming focus

Dairy Holdings Limited's shareholders, directors and management are committed to achieving consistent and repeatable levels of profitability based on simple, pasture based management systems.

FARM TEAM

A key driver of the year-on-year performance is the ability of those on the farm to work effectively as a team. With a solid understanding of each other the team at Peebles support each other's learning and development. A strong ethos of "mentoring" at all levels exists.

Read more on Page 4

FARM MANAGEMENT

Underlying the success of Dairy Holdings Limited is a farm system which layers down through effective governance to strong day to day management. The focus is upon planning and then delivering to the plan with regular reporting and monitoring.

Read more on Page 9

Peebles Siding Limited

A closer look

People – the farm team

"We have similar set-ups across all our farms so the biggest variable we have is people" says Colin Glass, Dairy Holdings Limited CEO.

In the early days of the farming company, management identified that the farms that had the best human resource processes were productive and profitable. In the spirit of repeatable success, management sought external human resource expertise to develop processes that could be used across all the farms. They use an accreditation process with standards that cover farming planning, training and development, managing people and compliance. Dairy Holdings Limited wants to be an employer of choice and that includes keeping their employees safe by enforcing a drug and alcohol-free workplace.

At Dairy Holdings Limited career progression is a measure of team success and many have progressed through to 50/50 sharemilking and farm ownership.

The organisation structure is simple flowing from shareholders to directors to the CEO, then onto the farms with the Farm Supervisors to Farm Manager (or Sharemilker/Contract Milker) and to the farm team.

The team at Peebles comprises the Farm Manager with a team of two all of whom are supported by the Farm Supervisor, Bryson Hargreaves. There is clear communication of expectations for everyone in the farm team. The consistency of the farm performance in part reflects the close-knit team. Across the seasons there was little staff turnover.

The Farm Supervisor encourages the "mentoring of each other" and that is led by example. Although the learning and training focus is on farm management, the development of business and accounting knowledge complements understanding of the monthly reports.

Bryson is the farm owner representative for the farm. He delivers to an agreed plan. So if an expense is not budgeted, it is not incurred or alternatively the farm team have to find another way to deliver within the budget.

Monthly reporting of actual to budget is also provided to farm managers each month so they can review and learn. The quality of decision making by farm managers is improved by regular measurement and monitoring of key performance indicators such as body condition, average pasture covers and residuals.

With a number of dairy units being managed there are opportunities to compare and contrast performance, effectively learning from others experiences as a motivator to continually lift performance.

Repeatable performance both in terms of production achieved and business profitability is generated by having simple well set out systems. They focus on the basic key drivers such as maximising pasture eaten and preparing cows for mating and successful pregnancy.

There are ample opportunities for good farmers to progress through the system to farm ownership and this is a key performance indicator for Dairy Holdings Limited – measuring the success of progression to sharemilking and farm ownership of individuals from their farm teams.

As Dairy Holdings has a great business and governance structure, the staff have good business and financial acumen as a result. Peebles as a dairy business is a living example of this disciplined structure and its success is defined by it. It is able to consistently achieve this success because the staff understand the needs of the business.

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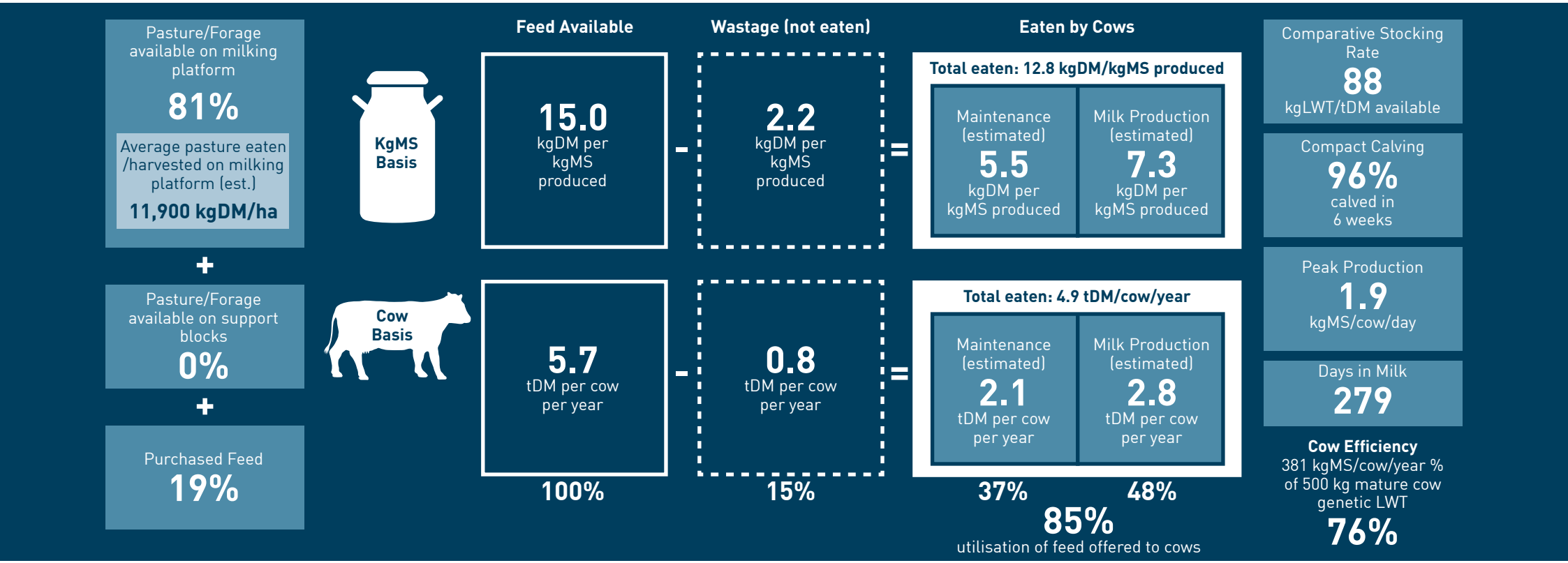
Feed to milk efficiency 2014/15 season



What does this show?

Feed Supply

At the core of the operation is the pasture based management system, which requires the Farm Manager to understand pasture growth and ensure it is effectively used. This is achieved by regular farm walks and the use of plate meters so the paddocks are ranked correctly and grazed in the optimal sequence.

The purchased feed includes baleage, grass silage, molasses and PKE. In addition, during the winter approximately 500 cows are wintered off farm.

Feed Utilisation

The pasture growth is estimated at 14.5t/ha with around 11.9t/ha eaten. The "repeatability" of the farm system has delivered a consistent 48 percent of the metabolic energy in feed consumed converted into milk production from 2012 to 2015.

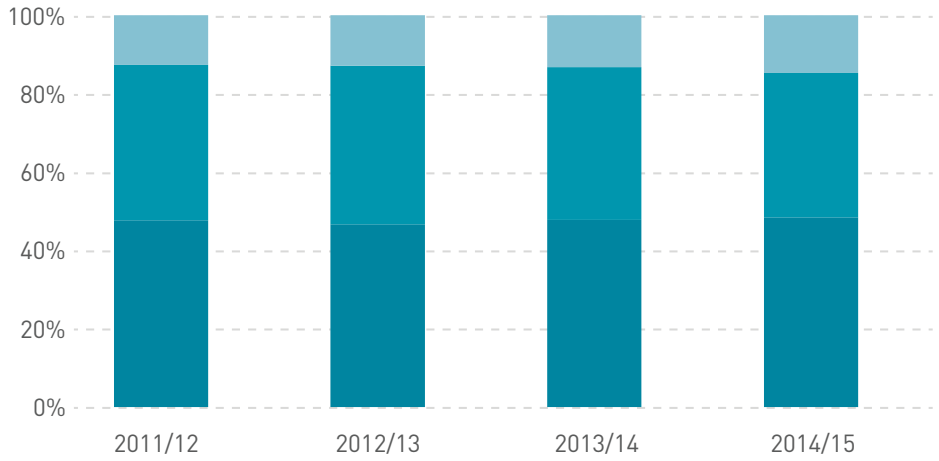
The increase in total milk production from 219,810kgMS to 248,815kgMS is a reflection of the focus on "just doing the little things better".

Cow Efficiency

The comparative stocking rate at 88 is down slightly on previous seasons. However, the aim is to keep it at a higher level and together with the compact calving at 96 percent maintains the focus on effective pasture management. The peak production of 1.9kgMS/cow/day is delivered in October. All of these contribute to average individual cow efficiency of 76 percent.

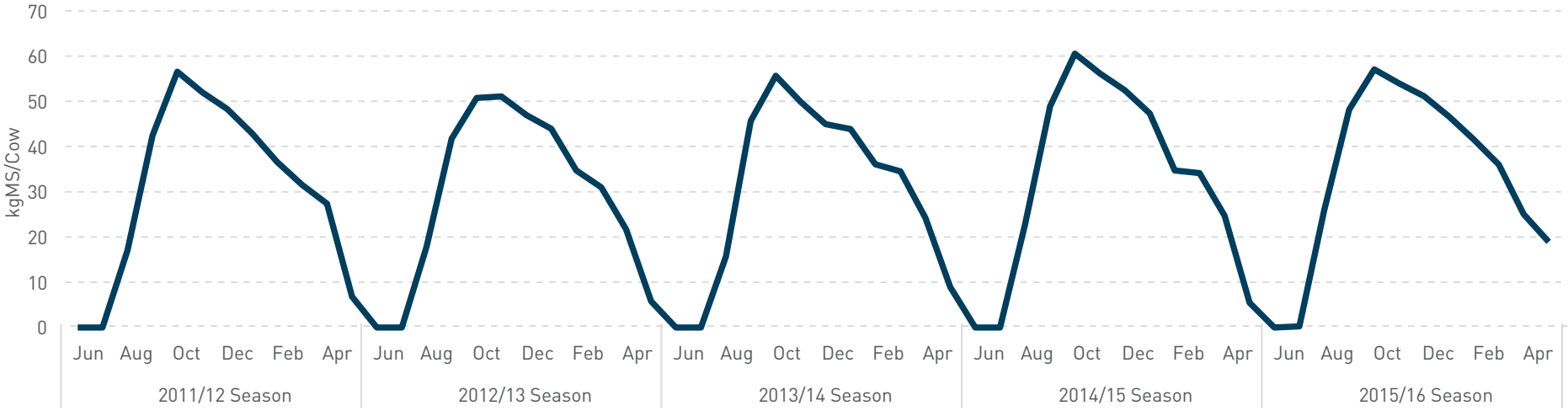
Feed to milk efficiency performance over time

Feed to Milk Efficiency

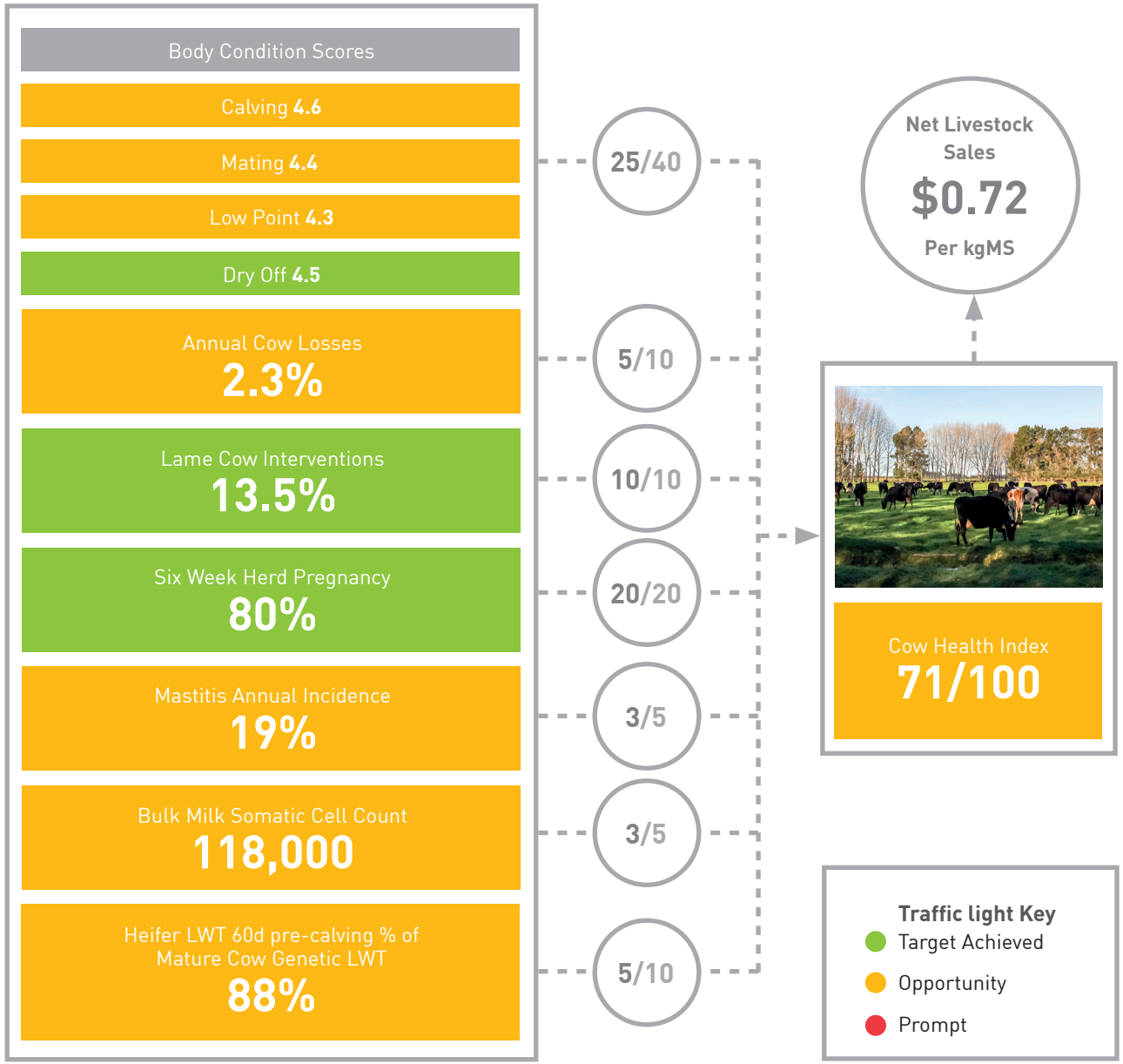


	Season Ended			
	2012	**2013**	**2014**	**2015**
Comparative Stocking Rate kgLWT/tDM available	94	95	93	88
Farm Feed Conversion kgDM/kgMS produced	15.2	15.4	15.2	15.0
Cow Feed Conversion kgDM/kgMS produced	13.3	13.6	13.2	12.8
Feed Wasted kgDM/kgMS produced	1.9	1.8	2.0	2.2
Feed Grown % of feed available	85%	86%	84%	81%
Feed Purchased % of feed available	15%	14%	16%	19%

Per Cow Milk Solids Production



Animal health 2014/15 season



What does this show?

The Cow Health Index is a weighted score out of 100 comprising body condition score, cow losses, lame cow interventions, herd pregnancy rate, mastitis, somatic cell count and heifer live weight.

The measures are coded using the traffic light system. Green indicates areas where targets have already been achieved, orange where there is opportunity to improve, and red where performance has been less than desired.

Herd Survivability Metrics

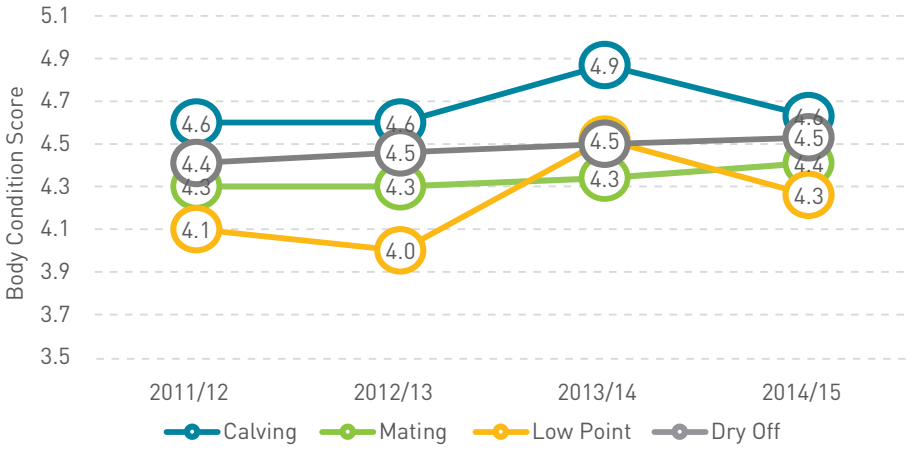
3 year-olds Retention Rate	90%
Replacement Rate at calving	22%
Heifer Mating LWT % Mature Cow LWT	60%
Herd Empty Rate	11%

The farm team on Peebles aim to consistently improve milk quality through proactive management of cows with mastitis and this contributed to lowering the bulk milk somatic cell count from 151,000 in 2012 to 118,000 in 2015.

A simple policy is applied to breeding, there is no intervention. A ten week mating period starts with four weeks AI (artificial insemination) before mating with bulls for six weeks. The replacement heifers are taken from the calves born in the first four weeks of calving, they are not focused on milk production rather the focus is on cows that get in calf easily, i.e. "bred to get in-calf." The herd empty rate has risen slightly from 9 percent in 2012 to 11 percent in 2015.

Animal health performance over time

Animal Health



	Season Ended			
	2012	**2013**	**2014**	**2015**
Cow Health Index (Max 100)	51	61	81	71
Annual Cow Losses	2.4%	1.9%	3.0%	2.3%
Lame Cow Interventions	15.6%	13.9%	12.5%	13.5%
Six Week Herd Pregnancy	70%	71%	84%	80%
Mastitis	19%	19%	19%	19%
BMSCC (000s)	151	125	116	118
Heifer LWT 60d pre-calving % of Mature Cow Genetic LWT	89%	89%	91%	88%

What does this show?

A focus for Dairy Holdings is the achievement and maintenance of body condition for their cows by managing things differently to deliver better outcomes. There has been a lift in body condition score at low point and dry off. although the season can impact the score, the management of the cows influences the outcome. By identifying those cows which are lighter and drafting them into a separate mob, the decision can be made as to whether the better long-term option is once-a-day milking or drying off. This is investing forward in caring for the cow now, so she is better prepared for calving and mating in the next season. With a focus on cow health the improvements in body condition assist to lift production from around 346 kgMS/cow in 2012/2013 to 381 kgMS/cow in 2014/2015.

At Peebles the farm team recognised the importance of achieving the target weaning weights as the first step in the development of quality heifers. The replacement calves once weaned move to a Dairy Holdings young stock rearing unit. As they arrive at the stock rearing unit they are weighed and given a health check. Based on their weight the calves are then assigned to a mob and then every four weeks they are weighed and health checked as the transaction between the dairy farm and the young stock rearing unit is based on weight gain rather than a flat grazing fee per-head per-week. Maintaining pasture quality is equally important on the young stock rearing unit as on the dairy farm to ensure the growing heifers get the highest-quality pasture to meet their daily needs and achieve their growth rate targets. All R2s are mated to bulls rather than artificially inseminated (AI). As with the cows the mating period is 10 weeks and scheduled so the heifers begin calving a week before the cows. The heifer replacements stay at the stock rearing unit for approximately 18 months, until it is time for them to return to the farm for calving as an R2 heifer.

Farm management

The governance and management structure of Dairy Holdings is designed to enable the success of the farming business. The farming systems are supported by the strength of the financial reporting systems.

For each farm there is a Farm Plan which explains the strategy for the farm including scheduled capital maintenance and future investment. In February each year the budgeting process begins for each farm.

At Peebles the Farm Manager works with the Farm Supervisor to develop the budget for the coming season based on what they want to achieve on the farm. The revenue being determined by the number of cows and the expected production multiplied by the anticipated milk processor payout. Then the expenses to enable achievement of the revenue are calculated along with scheduled capital maintenance and investment.

In working through this process the Farm Supervisor can cross-check the budget by comparison to prior years for Peebles and against similar Dairy Holdings dairy farms.

Then come 1 June the season begins and the farm financial performance is measured monthly against the budget. A detailed profit and loss statement is available by the 10th of each month to allow the Farm Manager and Farm Supervisor to monitor financial performance. However, there should be no surprises as a robust purchase order process ensures expenditure is approved based on the approved financial delegations and within the budget. In addition, regular communication throughout the month among the farm team ensures everyone stays abreast of what is happening on the farm. This communication supports the development of the financial skills and knowledge of the wider on-farm team.

The Farm Supervisor can "drill" into the detail of both income and expenditure within the financial reporting system. This allows access to both historical performance and forecasts to the end of the current season.

Dairy Holdings Limited has strong governance and business structures which enable repeatable performance. These business processes are supported by well trained staff who understand the philosophy of the business and expectations of performance through measurement of both financial and operational indicators.

Ultimately the focus is not on the top line, rather it is on the bottom line. Dairy Holdings shareholders, directors and management are committed to achieving consistent and repeatable levels of profitability based on simple, pasture based management systems.

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Environmental performance

Dairy Holdings – Peebles Siding Limited has been operated as an efficient and profitable border dyked dairy farming property for many years. The property is situated on free draining soils, has an average annual rainfall of approximately 566mm/yr and receives irrigation water from the Lower Waitaki irrigation scheme.

Whilst border dyke irrigation is extremely energy efficient (utilising the force of gravity rather than electricity), due to the large volumes of irrigation water utilised within a border dyked irrigation system, drainage volumes are also increased compared to spray systems. Traditionally border dyke irrigation has proved to be cost effective and profitable however with the recent focus on diffuse nutrient losses, the obvious opportunity to improve nitrogen losses from the bottom of the root zone is to upgrade the irrigation system to a predominantly pivot system.

The OVERSEER™ v6.2.3 nutrient budget for the 2015-16 season estimates a nitrogen loss of 148kgN/ha/yr from the property (assuming annual depth of irrigation of 1488mm/yr via border dyke). In order to demonstrate the improvement likely with the planned irrigation upgrade, a future scenario was run through the OVERSEER™ model. Assuming approximately 30 hectares of the property would be left in corners with irrigation other than the pivot system, the nitrogen lost from the bottom of the root zone in the planned system has been estimated to be 82kgN/ha/yr (assuming annual depth of irrigation of 450mm/yr).

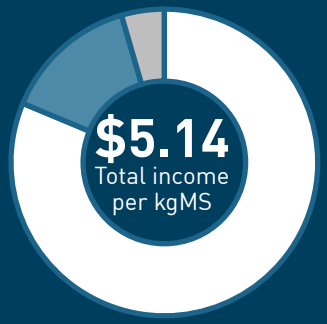
This scenario clearly demonstrates that irrigation water use efficiency is a major driver of nitrogen loss on the free draining Steward (Stew_1a.1) soils. The upgrade in irrigation system will also provide the opportunity to increase the area to which farm dairy effluent is applied on the property, allowing nutrients from the effluent to be utilised across a wider area of the farm. Further reductions may be possible in practice if soil moisture probes are incorporated with the upgrade and the resulting information was used on farm to make further improvements in irrigation timing and irrigation efficiency.

Due to the flat and free draining nature of the property, the risk of phosphate loss from the property is much less of an issue, particularly once the risk of outwash water from the borders is removed. The property is also well planted with shelter that provides protection to soil, plants and animals.

Dairy Holdings consider the environmental aspects within the overall sustainability of their dairy business and assess future investments accordingly.

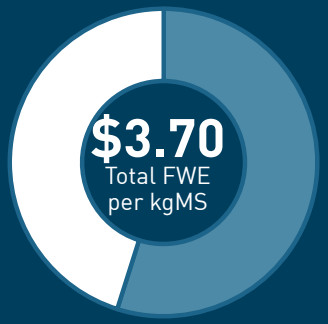
Financial performance 2014/15 season

Income per kgMS



- Milk Income per kgMS
- Livestock Trading per kgMS
- Other Income per kgMS

FWE per kgMS



- Feed Expenses per kgMS
- Other FWE per kgMS

Profit and Loss

	$000s	Per Cow	Per KgMS
Milk Income	1,020	$1,672	$4.39
Livestock Trading & Other Income	175	$287	$0.75
Total Income	1,195	$1,959	$5.14
Feed Costs	379	$621	$1.63
Other FWE	482	$789	$2.07
Total FWE	861	$1,410	$3.70
EBITDA	334	$549	$1.44

What does this show

Across Dairy Holdings there is a microscope on all costs however that is driven by understanding the difference between a 'want' and a 'need'. The annual budgeting process sets the financial expectations for the year.

The feed expenses at Peebles are relatively consistent at $1.63kgMS and are within $0.03kgMS across the four seasons. The farm working expenses have lifted from $1.90kgMS in 2012 to $2.07kgMS in 2015. The Fertiliser Policy has the whole farm soil tested every five years and in 2014 and 2015 the cost of fertiliser doubled as additional fertiliser was applied to remedy an identified shortfall and support pasture resilience. The soil testing program has now provided a large history enabling them to monitor the paddocks and manage fertiliser utilisation effectively.

As a result although the total milk production has increased from 219,810kgMS in 2012 to 232,330kgMS in 2015 the breakeven kgMS has increased from $2.60kgMS to $2.95kgMS.

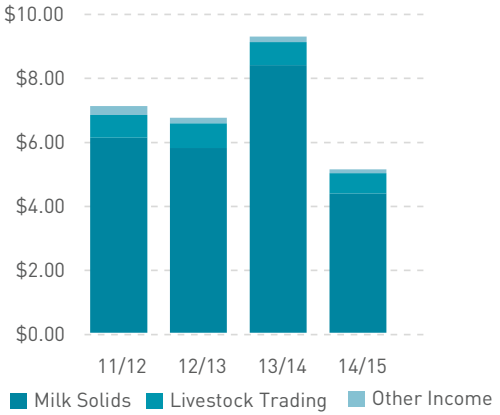
The low breakeven level is due to a focus on doing the basics correctly and not chasing marginal milk production. The farm infrastructure is kept to a minimum which lowers the capital base and also keeps ongoing capital replacement low together with minimising repairs and maintenance as there is less to maintain. The budgets and monthly reporting are provided to the Farm Manager who is accountable for monitoring expenditure within the approved budget. The breakeven is held at a low level because of cost control, it is variable just like production.

Breakeven Milk Price (per kgMS)

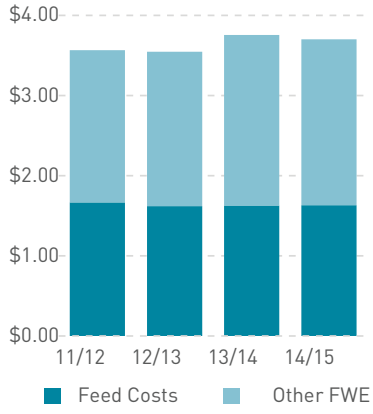
Financial performance over time

	Season Ended			
Financial Efficiency	**2012**	**2013**	**2014**	**2015**
Feed cost per kgMS	$1.67	$1.62	$1.63	$1.63
Other FWE per kgMS	$1.90	$1.92	$2.13	$2.07
Breakeven Milk Price	$2.56	$2.60	$2.86	$2.95
Return On Assets %	8%	8%	17%	4%
Capital employed per kgMS	$42	$42	$33	$38
Milk Price	$6.14	$5.82	$8.44	$4.39

Income per kgMS



Expenses per kgMS



	Season Ended			
Profit and Loss to EBITDA (per kgMS)	**2012**	**2013**	**2014**	**2015**
Milk income	$6.14	$5.82	$8.44	$4.39
Dividends	$0.28	$0.16	$0.17	$0.11
Livestock trading	$0.72	$0.78	$0.73	$0.64
Total income	**$7.14**	**$6.76**	**$9.34**	**$5.14**
Feed costs	$1.67	$1.62	$1.63	$1.63
Other FWE	$1.90	$1.92	$2.13	$2.07
Total FWE	**$3.57**	**$3.54**	**$3.76**	**$3.70**
EBITDA	**$3.57**	**$3.22**	**$5.58**	**$1.44**

Definitions

Definitions

General

kgDM	Kilograms of Dry Matter at 11MJ ME
kgMS	Kilograms of Milk Solids
MJ ME	Mega Joules of Metabolic Energy

Animal Health

Actual LWT (Live weight)	Actual live weight of mature cows (5 – 7 years) with Body Condition Score of 4.5 at 100 days in milk
Annual Cow Losses	All cows which died (died, euthanised, pet food) during the season divided by cows calved
BW (Breeding Worth)	The index used to rank cows and bulls based on how efficiently they convert feed into profit. This index measures the expected ability of the cow or bull to breed replacements that are efficient converters of feed into profit. BW ranks male and female animals for their genetic ability for breeding replacements. For example a BW68 cow is expected to breed daughters that are $34 more profitable than daughters of a BW0 cow.
BMSCC (Bulk Milk Somatic Cell Count)	Arithmetic average of Bulk Milk Somatic Cell Count for the season
BCS (Body Condition Score)	An assessment of a cow's body condition score (BCS) on a scale of 1-10 to give a visual estimate of her body fat/protein reserves
Cow Health Index	Weighted score out of 100 comprising BCS (40), Heifer LWT (10), Reproductive outcomes (20), Lameness (10) , Cow losses (10), Mastitis (5) and Bulk Milk Somatic Cell Count (5)
Genetic Mature Cow LWT (Live weight)	Live weight Breeding Value from Livestock Improvement Corporation (LIC) (modified by ancestry) for a fully grown mature cow (5 – 7 years) at BCS 4.5 at 100 days in milk
Lame Cow Interventions	The recorded incidence of new lame cow treatments per cows that have calved in the season (new being the same leg after 30 days or a new leg)
Mastitis	The recorded incidence of new cases per the number of cows, including heifers, calved for the season (new being the same quarter after 14 days or a new quarter)
PW (Production Worth)	An index used to measure the ability of the cow to convert feed into profit over her lifetime.
Recorded Ancestry	This is an "identified paternity" measure. The higher the level the more accurate the BW and PW information. It indicates the level of recording of an animal's dam and sire and includes all female relatives related through ancestry (ie sisters, nieces, etc) and is used when she is a calf. The evaluation of untested animals is based solely on ancestry records.
Reliability	A number on a scale of 0 to 99 which measures how much information has contributed to the trait evaluation for the animals, and how confident we can be that a Breeding Value is a good indication of the animal's true merit. The more herd testing data available the higher the score.
Replacement Rate	The number of heifers to calve divided by the total herd to calve for the season, expressed as a percentage

Feed Efficiency	
Comparative Stocking Rate	Total kilograms of mature cow genetic live weight of cows calved divided by tonnes of dry matter available
Cow Feed Efficiency – Eaten	Standardised (11 MJ ME/kgDM) kilograms of dry matter eaten per kilogram of milk solids produced
Farm feed Efficiency – Available	Standardised (11MJ ME/kgDM) or kilograms of dry matter per kilogram of milk solids produced
PKE	Palm Kernel Expeller
DDG	Dried Distillers' Grain
Environmental	
Green House Gas Emissions	Green house gases on a whole farm basis expressed as CO^2 equivalents
Nitrogen Conversion Efficiency	A ratio of product divided by Nitrogen input (Nitrogen input includes fertiliser, supplement and Nitrogen fixation), expressed as a percentage
N loss (Nitrogen loss)	An estimate of the Nitrogen that enters the soil beneath the root zone, expressed as kg N/ha/year
P loss (Phosphorus loss)	An estimate of the Phosphorus lost to water as surface and subsurface run off, expressed as kg P/ha/year
Financial	
Net Livestock Sales	Net Income from Livestock sales (sales less purchases)
Breakeven Milk Price	The breakeven milk price is the payout needed per kgMS to cover the direct costs of production
EBITDA	Earnings Before Interest, Tax, Depreciation and Amortisation and is the cash surplus available from the farming business
Feed Costs	All feed purchases, irrigation, nitrogen, grazing, silage/hay contracting, cropping costs, regrassing, pest and weed control, leases, related wages
FWE (Farm Working Expenses)	Direct farm working costs including owner operator remuneration before interest, taxation, depreciation, amortisation
Livestock Trading	The income from livestock trading including both Net Livestock Income and accounting adjustments for changes to both the number of cows and the value of cows on hand at year end.
Milk Price	Total milk income divided by total kgMS

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