

Rustic Dairies Limited

A South Waikato conversion providing flexibility for the owners



Waikato | Zach Mounsey

Farm Systems Change – 2016 Dairy Farm Case Study

Ministry for Primary Industries
Manatū Ahu Matua





Rustic Dairies Limited

At a glance

Rustic Dairies Limited

“We wanted to understand the land before we began the dairy conversion”

Zach Mounsey has big dreams about farming, with his passion for agriculture stemming from his family farming background. Together with his parents, he set up Rustic Dairies Limited, a recently converted, rolling 114 hectare farm near Otorohanga. They farm a herd of 257 Jersey cows producing 77,400kg of milk solids in the 2014/15 season. Zach brings his off-farm knowledge and skills as an economist to the everyday management of the dairy farm.

Season Ended	Total kgMS	FWE/kgMS
2014	67,830	\$5.67
2015	77,400	\$4.75
2016	99,094	No data

At a glance – 2014/15 Season



Farm Details

Milking platform	114 ha
Dairy support	-
Total	114 ha
Effective milking platform	90 ha
Est kgDM grown (per effective ha/year)	12,800
Cows (per effective ha)	2.9

Livestock Details



Breed Type	Jersey
Peak cows milked	257
Production per cow (kgMS)	301
Live weight per cow (estimated actual kg)	400

Other Details

People working on farm	1.3
Peak Production (kgMS/cow/day for top month)	1.6
Start of calving	23 Jul
Calved in 6 weeks	86%
Average pasture cover (kgDM/ha at calving)	2,100
Production (kgMS/effective ha)	860

Farming focus

“There’s never been a harder time to produce and reward the supplier. With today’s regulatory constraints and uncertainty, we face the issue of making New Zealand’s dairy industry prosper”.

– Zach Mounsey



A FARM CONVERSION WITH A FOCUS ON ECONOMICS AND BRINGING FLEXIBILITY

Zach Mounsey wanted to join his parents in a dairy farming business, building on his off-farm career as an economist. The family converted a drystock farm near Otorohanga, introduced once-a-day milking, and invested in soil fertility and pasture quality. Now heading into their fourth season, they have created a productive farming operation that provides flexibility to continue off-farm business and career interests.

[Read more on Page 5](#)



FOCUS ON HEALTH AND SAFETY

Getting health and safety right is critical to the long term success of farming businesses. Zach and his parents actively worked to build a culture of health and safety on their farm. Zach understood that building a culture is easier when it’s integrated into everything the farm team does and supported by clear and visible signage. At Rustic Dairies Limited signage provides constant health and safety reminders to those both working on, and visiting the farm.

[Read more on Page 11](#)



Rustic Dairies Limited

A closer look

A farm conversion with a focus on economics and bringing flexibility

Zach and his parents were looking for the right property in the Waikato where they could realise their goal of running a dairy farm together, leveraging and complementing their off-farm expertise and business activities.

The search for a dairy farm at the right price proved more challenging than expected. In many cases, the cost, after recognising the need for infrastructure investment, meant the potential for overcapitalisation was high.

As they looked, they began exploring the concept of a dairy conversion, which gave them the opportunity to start with a clean sheet and develop a farm for their future.

In 2011, they found 114 hectares just south of Otorohanga with the potential to fulfil their objective. The farm was bought and leased out for a year, allowing them to understand the way the land behaved during the seasons and how best to develop the farm. They learned the low-lying land, approximately 7 hectares, floods in the winter.

Zach continued with his off-farm career while planning the farm's development with his parents. Zach's off-farm experience broadened his knowledge and allowed him to bring new ideas to the conversion process. Zach's parents' experience in dairy farming and his father's contracting skills also enabled the conversion process.

The preparation of a clear plan for the conversion and supporting budgets began. As an economist, it was top of mind for Zach to develop the farm in a way that

enabled both effective farming and future profitability.

The farm plan placed the dairy shed in the centre of the farm meaning the herd has no more than a 0.5 kilometre walk from each paddock.

For efficiency, the effluent system design and location took advantage of the landscape, using gravity to minimise the use of pumps.

The decision to build a herringbone shed was based on the scale of the farm. An investment in a rotary shed could not be justified. The herringbone dairy shed is fitted with 32 cups, although the pit is built to a 40-cup capacity to future-proof growth in the herd size.

The hunt for the dairy herd led the family to Taranaki, where they bought a "once-a day-herd". This encouraged them to adopt once-a-day milking for part of the season. From December until drying off at the beginning of May, the Jersey herd is milked once a day, giving Zach and his parents the opportunity to continue with their off-farm business activities.

Production has increased from 67,830 kgMS in their first season (2013/2014) to 99,094 kgMS in 2015/2016. This reflects increases in:

- Peak cows milked, from 247 to 280.
- Average per cow production, from 274kgMS to 353kgMS.
- Lactation length, with days in milk up from 219 to 255.
- Peak production, from 1.4kgMS per cow per day to 1.7kgMS per cow per day over the three seasons.

These individual improvements collectively enabled the delivery of an additional 31,264kgMS. Zach attributes this to improvements made in the quality of soil and grasses, together with the heifers in the herd becoming more productive as three-year-old cows.

Spring production and mating is supported by a PKE blend fed through the shed and Summer production is supported by a chicory crop of 5-7.5 hectares. The blend is fed until Christmas and the chicory crop starts just before the switch is made to once-a-day milking, thus aiding the transition to once a day.

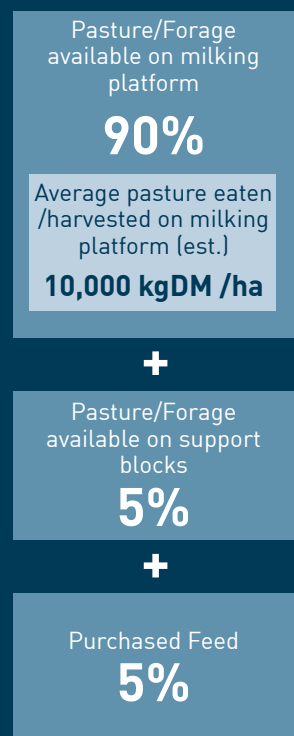
The pasture eaten is estimated at 9.3 to 10.5 tDM/ha. The milking platform provides 90 percent of herd feed, with a further 5 percent coming from feed grown on the leased support blocks and the remaining 5 percent from PKE.

Feed wastage has reduced over the three seasons since conversion, from 3.4kgDM/kgMS to 2.3 kgDM/kgMS. Zach believes this again reflects the investment in regressing and soil fertility. The consequent improvement in pasture quality has enabled the cows to eat more of better quality. In 2015/2016 an estimated 13.2kgDM was eaten per kgMS produced.

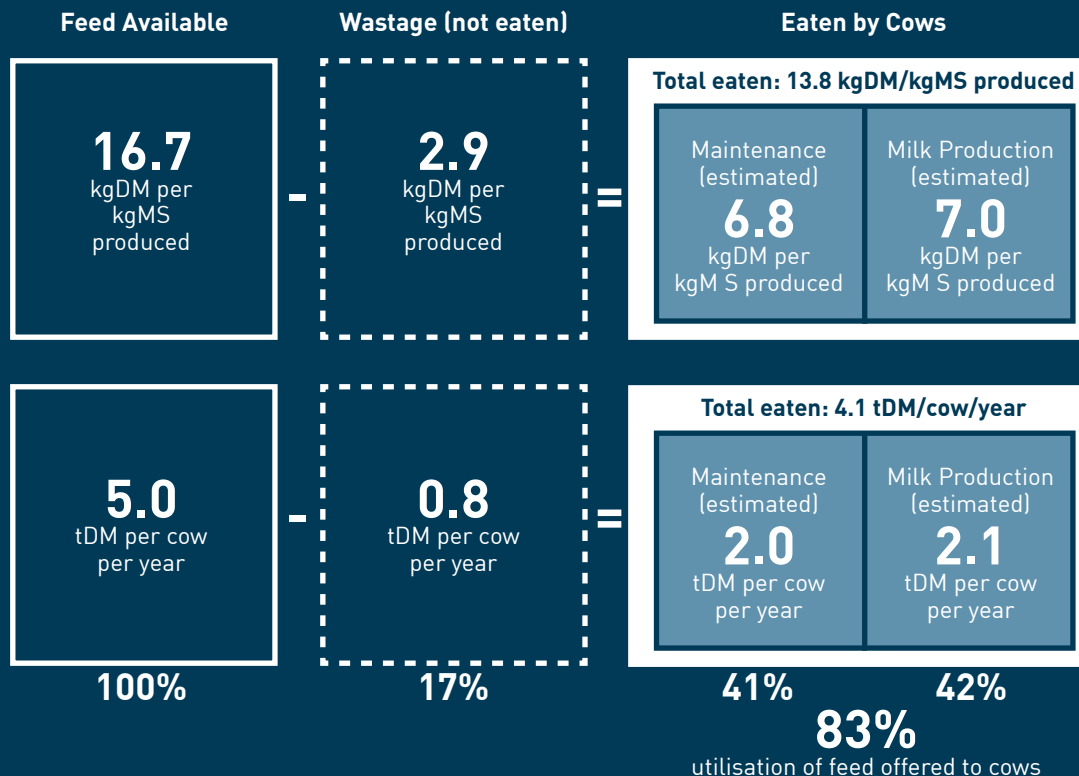
Having clearly defined farm objectives and a plan to follow has enabled Zach to have a sound basis for monitoring performance. For Zach, this has resulted in a farming operation that enables him to have the best of both worlds – building a farming asset in parallel to his off-farm economics career.

Feed to Milk Efficiency 2014/15 Season

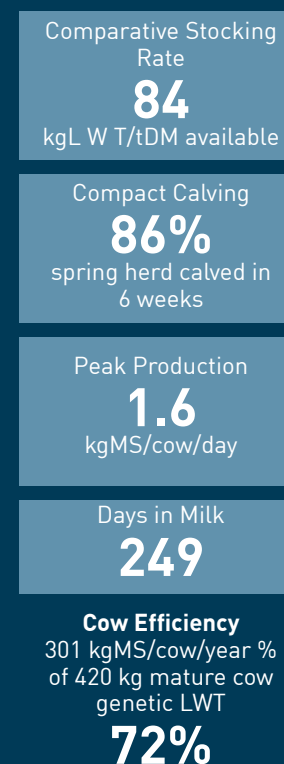
FEED SUPPLY



FEED UTILISATION



COW EFFICIENCY



What does this show?

Feed Supply

Rustic Dairies milking platform provides 90 percent of herd feed, with 5 percent from leased support land and 5 percent from PKE fed through in-shed feeders. A chicory crop is sown for summer feed as part of the re-grassing programme.

Feed Utilisation

Feed utilisation for milk production has improved from 40 percent in the first season to 42 percent as shown above for 2014/2015 and 45 percent in 2015/2016. The better

quality feed now available (including pasture) is more easily consumed, and well grown heifers and three year olds are able to convert more to milk as less is needed for growth.

Comparative stocking rate

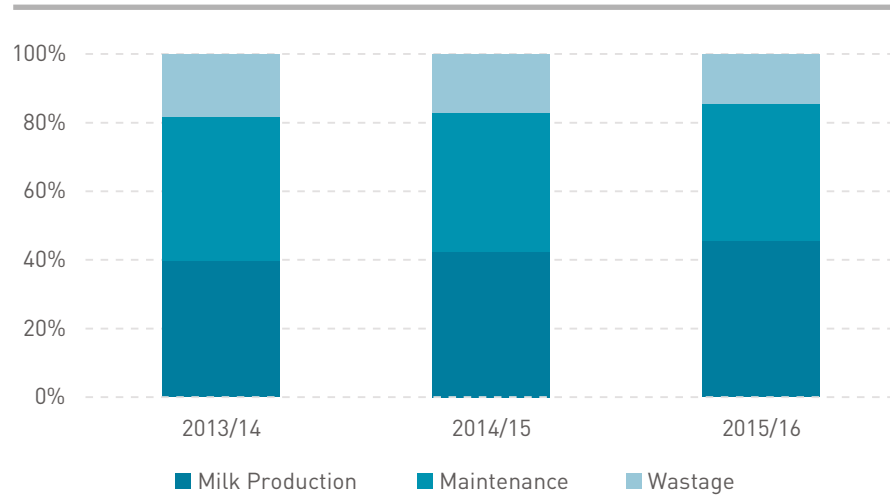
At 84kgLWT/tDM available, the stocking rate is relatively high for the 2014/2105 season, but lower than the 2013/2014 season rate of 87kgLWT/tDM. By the 2015/2016 season, the comparative stocking rate had decreased to 79kgLWT/tDM.

Cow Efficiency

Cow efficiency has increased from a base of 72 percent in the 2014/2015 season to 84 percent in 2015/2016. This increase is due to greater focus on pasture management (quality and quantity) enabling better feeding of cows appropriate to the stage of lactation.

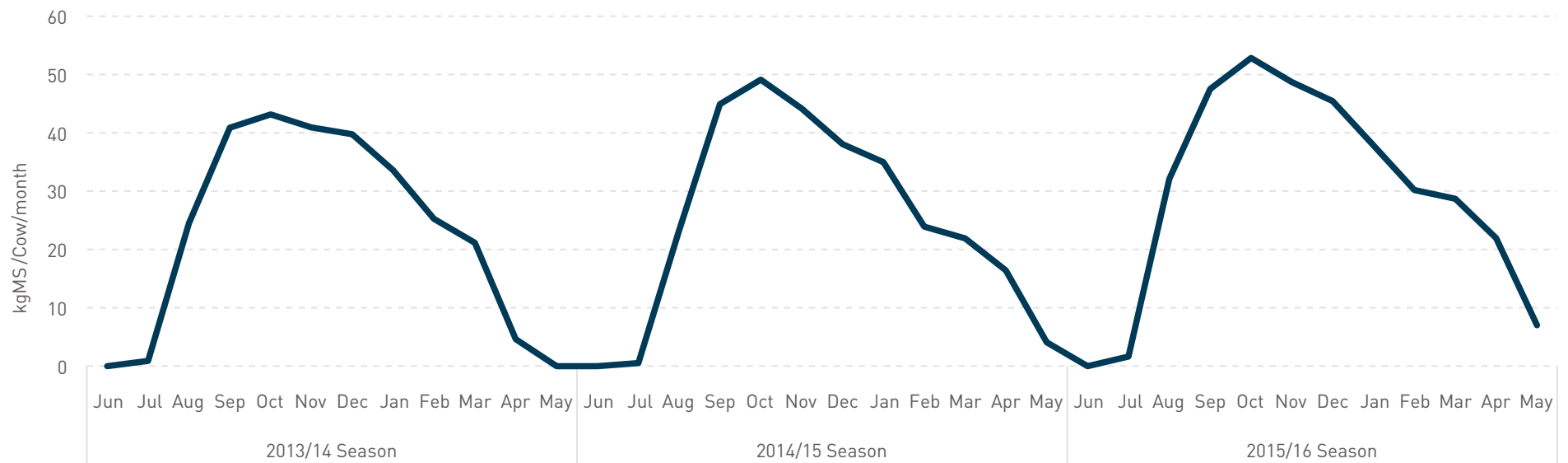
Feed to milk efficiency performance over time

Feed to Milk Efficiency

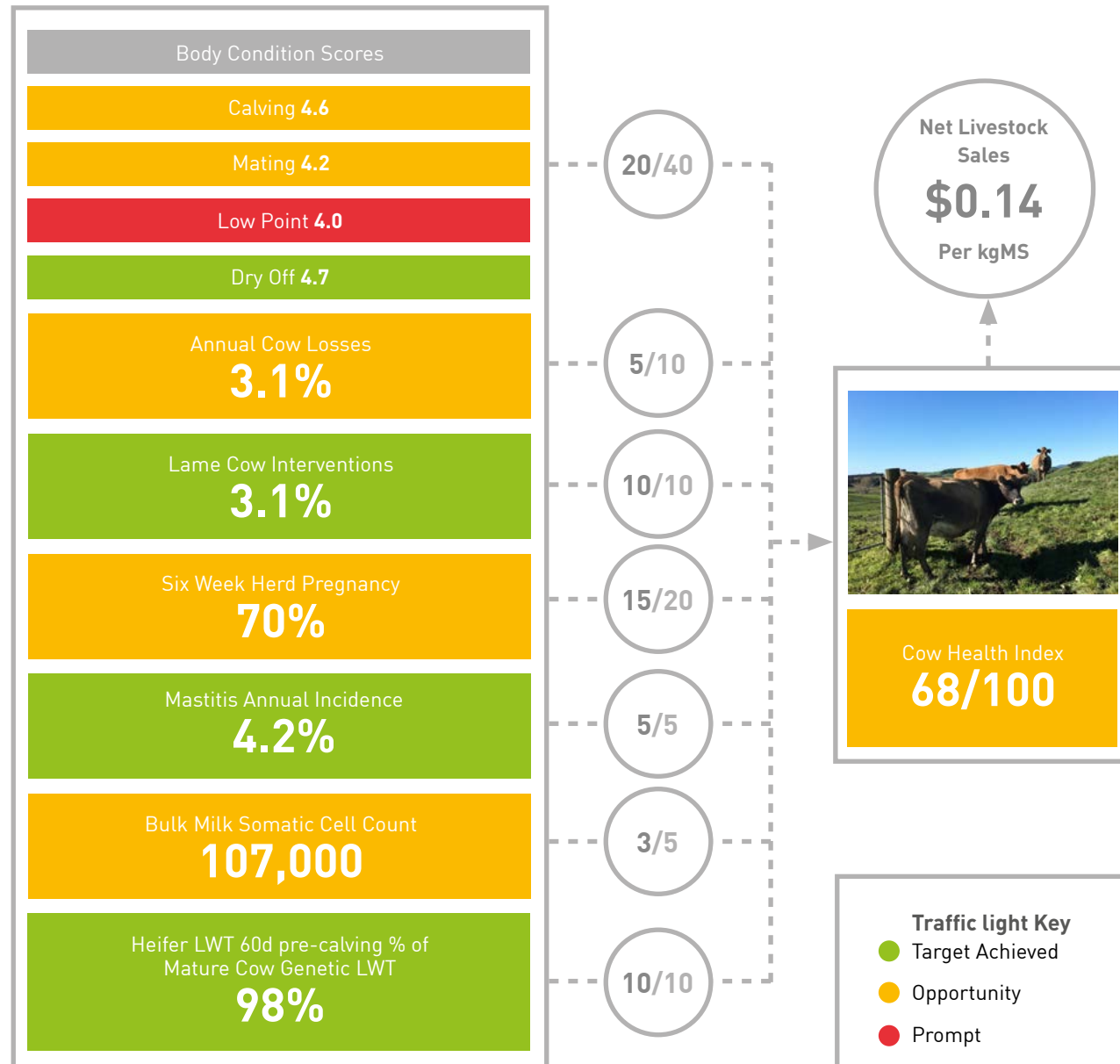


	Season Ended		
	2014	2015	2016
Comparative Stocking Rate			
kgLWT/tDM available	87	84	79
Farm Feed Conversion			
kgDM/kgMS produced	17.7	16.7	15.5
Cow Feed Conversion			
kgDM/kgMS produced	14.4	13.8	13.2
Feed Wasted			
kgDM/kgMS produced	3.4	2.9	2.3
Feed Grown			
% of feed available	97%	95%	95%
Feed Purchased			
% of feed available	3%	5%	5%

Per Cow Per Month 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.

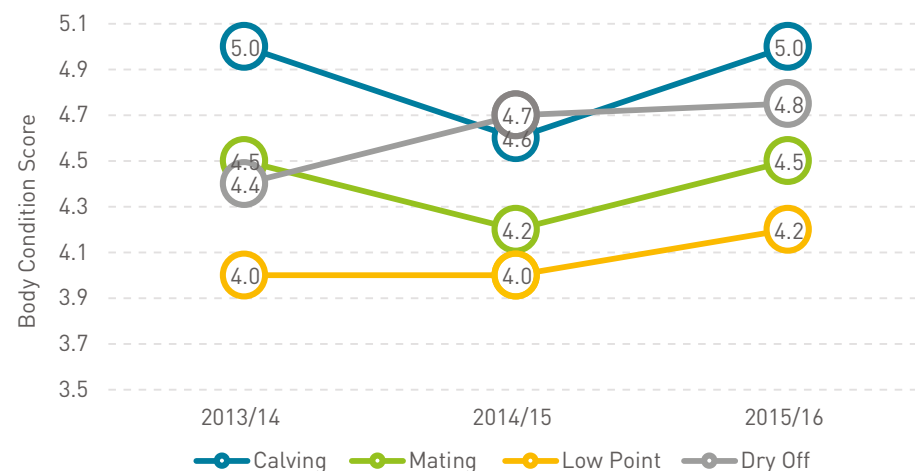
Herd Survivability Metrics

3 year-olds Retention Rate	89%
Replacement Rate at calving	18%
Heifer Mating LWT % Mature Cow LWT	No data
Herd Empty Rate	8%

The heifers are integral to the improving performance of the herd and comprise a significant proportion of the herd. The three-year-old retention rate at 89 percent reflects the focus by Zach and the team on feeding and caring for the heifers.

Animal health performance over time

Animal Health



	Season Ended		
	2014	2015	2016
Cow Health Index (Max 100)	55	68	71
Annual Cow Losses	3.6%	3.1%	3.1%
Lame Cow Interventions	4.4%	3.1%	1.4%
Six Week Herd Pregnancy	47%	70%	71%
Mastitis	9%	4%	12%
BMSCC (000s)	109	107	118
Heifer LWT 60d pre-calving % of Mature Cow Genetic LWT	98%	98%	98%

What does this show?

Overall cow condition is generally at target of 5.0 for calving and between 4.2 and 4.5 for mating. Good cow condition through autumn means the cows can be dried off between early April and early May, depending on climatic conditions, at a condition score between 4.4 and 4.8. They therefore don't need to put on much condition over the winter.

The bulk milk somatic cell count (BMSCC) is low at 107,000, even more significant when considering that the herd is milked once-a-day for half the

season. In a healthy well fed and managed herd with good mastitis management, BMSCC will remain low even on once-a-day milking. The addition of higher protein chicory through summer also helps.

The calving period is very compact with 82 percent to 92 percent of the herd calved within six weeks of planned start of calving on 23 July.

Herd Survivability Metrics

These metrics along with the Cow Health Index are key indicators of the drivers of farm performance.

The herd empty rate is low at between 5 percent and 8 percent, which enables decisions on culling to be made based on individual cow performance.

The replacement heifers are well grown by 1 May at 98 percent of their mature genetic live weight. Zach achieves this by feeding them well on the grazing block where they are a priority. The heifers are also grazed on the non-effective area of the milking platform ensuring they are always fed enough to reach daily weight gain targets.



Environmental Performance

The property is located south of Otorohanga, within the Waipa Zone of the greater Waikato River Catchment. In July 2016 the Waikato Regional Council recommended the “Healthy Rivers Plan for Change”. This plan is signalling a focus on Farm Environment Plans, land use change, a nitrogen reference point and stock exclusion.

The contour of the milking platform is flat to rolling with some steep sidlings. The soils are predominately of volcanic and ultic origin. Rainfall is 1,690 mm per annum, but summers can be dry.

All cows are spring calved. Young stock are grazed off the property.

The effluent area is 32 hectares (30 percent of the milking platform). Significant investment was made in the effluent system when the farm was converted, with the installation of a 120 day lined storage pond to store effluent during wet periods and maximise the use of the effluent during summer.

Rustic Dairies uses an integrated cropping and regrassing programme with chicory as a summer crop. This allows better pasture and animal performance in the dry summer months. Recent research indicates that pasture with diverse species and crops such as chicory can have a reduced nitrate loss.

Nitrogen fertiliser at a rate of approximately 75kg N/ha/year is applied strategically, with the outcome being that overall nitrogen use is low.

Health and Safety

“SHED = Safe Home Every Day”

Zach believes getting health and safety right is a critical part of successful dairy farming.

There are many ways of developing a health and safety culture and Zach took responsibility for designing the health and safety process at Rustic Dairies Limited.

Zach is a firm believer that health and safety is part of the way the farm operates, so should be integral to the day-to-day activities.

The novel approach to designing signage to increase visibility and raise awareness of health and safety is a stand out on the farm.

Clear and easy to read signage reminds everyone on the farm of the behaviours expected from the time you come through the farm gate to when you arrive at the dairy shed.

The farm hazard map in the cowshed uses colour coding to clearly indicate the flat, rolling and steep contours across the farm. Together with the summaries on each risk area – quad bikes, cattle handling, tractors – there are visual reminders for farm workers and other people visiting the property.

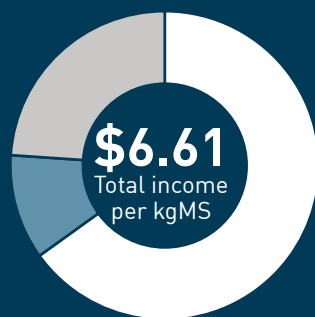
The focus on health and safety is reflected in the clean safety record for the team. A proactive approach to identifying potential hazards and taking action to fix problems is a key part of the management of the farm.

The attention to health and safety is evident no matter where you go, meaning that taking care of yourself and the safety of others remains top of mind while on the Rustic Dairies farm.



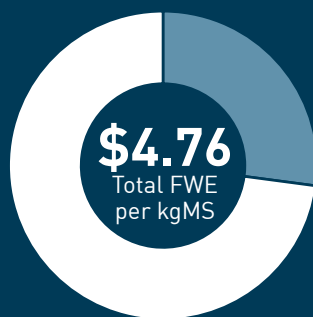
Financial Performance 2014/15 Season

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	333	\$1,295	\$4.30
Other Income	179	\$695	\$2.31
Total Income	512	\$1,990	\$6.61
Feed Costs	99	\$387	\$1.29
Other FWE	268	\$1,044	\$3.47
Total FWE	367	\$1,431	\$4.76
EBITDA	145	\$559	\$1.85

Breakeven Milk Price (per kgMS)

Feed Costs

\$1.29

+

Other FWE

\$3.47

=

Total FWE

\$4.76

-

Livestock Trading and Other Income

\$2.31

=

Breakeven Milk Price
Before debt servicing and depreciation

\$2.45

What does this show

From the outset, Zach and his parents planned for a dairy farm operation that delivered both flexibility and financial success. Part way on that journey, they have met their initial expectations in the management of the conversion costs.

They are now only into their fourth season following conversion and farm working expenses are budgeted to reduce to \$3.00 kgMS for the 2016/2017 season.

Zach's father does all the drilling, cultivation, fertiliser spreading, silage and hay for the farm.

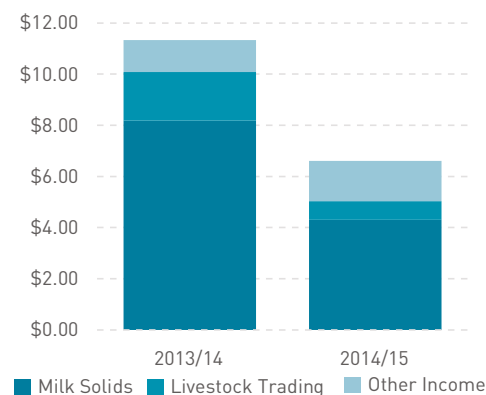
The Other Income shown above includes the sale of excess feed grown on farm, reflecting the family's ability to run the farm effectively to generate other income flows.

The Breakeven Milk Price before debt servicing and depreciation was \$2.52 per kgMS in 2013/2014 season and \$2.45 in 2014/2015. This demonstrates the effect of lifting production from 67,830kgMS to 77,400kgMS in those same periods. This is an important concept as understanding the marginal cost relationships in the farming business enables robust financial decisions to be made.

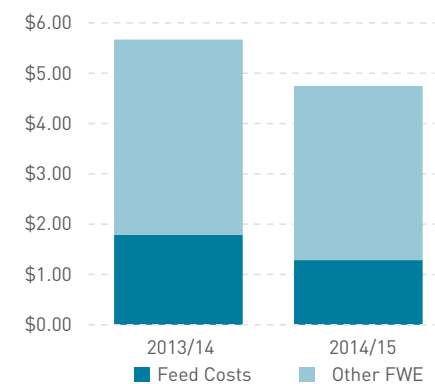
Financial Performance Over Time

Financial Efficiency	Season Ended	
	2014	2015
Feed cost per kgMS	\$1.79	\$1.29
Other FWE per kgMS	\$3.88	\$3.47
Breakeven Milk Price	\$2.52	\$2.44
Return On Assets %	7%	2%
Capital employed per kgMS	\$64	\$62
Milk Price	\$8.19	\$4.30

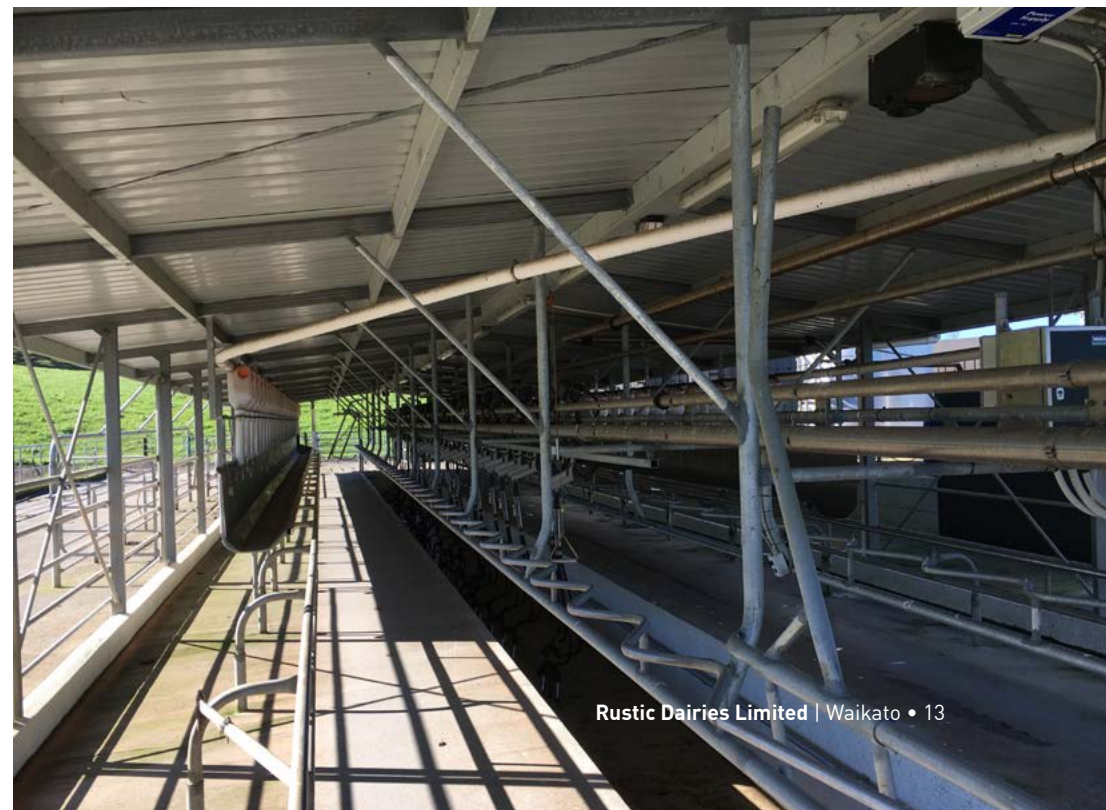
Income per kgMS



Expenses per kgMS



Profit and Loss to EBITDA (per kgMS)	Season Ended	
	2014	2015
Milk Income	\$8.19	\$4.30
Dividends	-	\$0.09
Livestock trading	\$1.90	\$0.73
Other operating income	\$1.26	\$1.49
Total income	\$11.34	\$6.61
Feed costs	\$1.79	\$1.29
Other FWE	\$3.88	\$3.47
Total FWE	\$5.67	\$4.75
EBITDA	\$5.67	\$1.86





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, euthanized, 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 LIC (modified by ancestry) for a fully grown mature cow (5 – 7 years) at Body Condition Score 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/kg DM) 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 N input (N input includes fertiliser, supplement and N 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.



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