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Gray Case Study

Executive Summary

The Gray's Hauraki Plains dairy farm is a testament to how thoughtful integration of technology can enhance operational efficiency and productivity. The dairy farm is a 173-hectare (ha) operation, supported by a 90ha run-off. This farm has long been known for its excellent pasture management, animal care and drive to innovate.

With no major operational systems to resolve, the decision to adopt Halter was driven by the aim to improve work-life balance and create a more flexible, future-proof system. Halter was first introduced to the farm in 2022. Two of the three seasons with Halter were very challenging due to adverse climatic conditions. However, once these conditions improved in the most recent season the true improvements to the system could finally be displayed.

The 2022/23 season was a transition year when the farm first introduced the technology to the system. The first operational impacts began to emerge in the 2023/24 season, but due to challenging climatic conditions, the full extent of these impacts could not be accurately measured, even though some improvements were still evident. The latest 2024/25 data have been used when comparing to pre-Halter averages, as this is the most up to date year and is the only available season which truly reflects the impacts of Halter.

Pasture eaten has increased by 0.9 t DM/ha. An increase in cow numbers and increased pasture intake of individual cows has set a new farm production record. Halter has also delivered unexpected impacts to the farm. The Gray's have found that soil structure has improved, and pugging has reduced. Reproductive performance has lifted, with 6 week in-calf rate improving from 76 to 80% and clinical ketosis has been eliminated from the system through better transition management.

Importantly, all of this was achieved without increasing staff or stress. Instead, the adoption of Halter has freed up time for decision making, planning and taking jobs back in house that previously had been done by contractors. "We didn't look to fix a problem. We wanted to achieve a good work-life balance, and for that reason alone, we wouldn't want to be without Halter again."

This case study shows how Halter has enabled a well-performing operation to become more resilient, more data driven and more cow-centred, all while working smarter, not harder.

Table 1: Gray Farm Performance Before and Post Implementation of Halter

Season	Pre-Halter: 2020/21, 2021/22	Halter: 2023/24 *(Significant Adverse Climatic Impacts Observed)**	Halter: 2024/25	Percentage Change (Pre-Halter to 2024/25 Season)
Pasture Eaten – kgDM/ha (Grazed Hectares)	11,600	10,900	12,500	7.8%
Kilograms of Milk Solids per Cow – kgMS/cow	365	335	370	1.4%
Kilograms of Milk Solids per Hectare – kgMS/ha (Total Hectares)	1005	932	1,069	6.4%
Nitrogen Fertiliser -kg N/ha (Total Hectares)	76.5	106	77	0.7%
6 Week in Calf Rate - ICR	76%	80%	80%	4.0%
Not in Calf (Empty) rate	11.5%	9%	12%	0.5%
Cows/FTE	241	244	252.5	4.8%
Earnings Before Interest and Taxes (EBIT) Per Hectare	$3,688	$2,518	$3,799	3.0%

**Second Year of Halter, Changes are excluded for this season because changes from Halter did not have the potential to be observed.*

Farm Background

The 173-hectare property, owned by Neil and Glenda Gray, is located in the heart of the Hauraki Plains. Not far from the banks of the Waihou River, the predominant soil type across the farm is Hauraki clay. The soils were formed from marine sediment and are strongly affected by waterlogging in the winter and spring.

The operation is locally recognized as a progressive and productive farm, built on a strong foundation of pasture management, animal care and profitability. Teagan Gray, 5th generation on the land, manages the day-to-day operation with the support of one full-time staff member and relief staff as required. They operate a hybrid milking system - approximately 40% of cows are milked once-a-day all season, while the remainder are milked twice daily until Christmas.

The farm is supported by a 90 hectare of run-off, used for young stock grazing and silage production. Each spring, 6 to 7 hectares of turnips and 8 hectares of chicory are planted on the dairy platform to ensure summer feed supply. A covered feed pad is used to fill feed deficits in winter and spring, while having the added benefit of reducing heat stress over summer.

The Why

When considering the introduction of cow wearables on their farm, the Gray's were not looking to fix a burning problem but rather approached the decision with a future focused mindset. The system was working well, but the team felt it could work even better while achieving an improved work-life balance. "We didn't look to fix a problem. We wanted to achieve a good work-life balance, and for that reason alone, we wouldn't want to be without Halter again," says Glenda.

Following the decision that virtual fencing would bring significant benefit to their operation, Halter was deployed in March 2022. The decision was driven by the desire to reduce time

pressure of routine tasks, enhance flexibility, give more time for decision making and created a workplace that future-proofed the operation if the team changed. “Now I can take up off-farm commitments and make sure key tasks still happen on farm at the right time, like shifting cows on or off the summer crop,” Teagan mentions.

There was also a recognition that the role of technology in the dairy industry is changing – not just for the day-to-day running of the farm but for compliance, reporting and environmental expectations. “Halter manages our data well; in future this may make reporting and compliance easier as legislation changes.” For the team adopting Halter was not about keeping up. It was about staying ahead on their own terms.

Management Changes Made

The adoption of Halter has reshaped how the farm team works, with a constant focus on what common tasks and practices can be done in a smarter, more responsive way. “The more you put in, the more you get out of Halter. You have to invest time thinking about which jobs can change and where to find the next efficiencies,” says Teagan.

➢ Pasture and Crop Management

Pasture management has always been a strong focus of the system. The frequency of pasture walks and monitoring of residuals has not changed with the adoption of Halter, what has changed is the accuracy of pasture and crop allocation as well as the time required for break fencing. Within seconds shifts are pre-scheduled to maximize pasture intake. Over summer, crop break fences are done consistently every day, allocating the correct amount of feed. On the chicory, the cows are back fenced consistently with ease.

➢ Animal Health and Herd Management

Teagan pays close attention to individual cow data. Daily rumination and resting time are monitored to ensure they are balanced well with eating time to not compromise milk production. When cows calve, the team turns the collar off. This allows the cow to access fresh feed without any delay, once they are ready to eat. Over calving, rumination recovery is the deciding factor of when a cow is ready to move from the colostrums to the milking herd. Once enough cows have calved to form a second milking herd, the groups are separated based on rumination minutes. Only cows with a rolling average of 380 to 400 rumination minutes per day for 7 days or more are changed onto twice a day milking. Historically, the herds were split mostly based on age. Now the herds are split into low and high rumination groups, effectively grouping them by their ability to eat, the Gray’s have found that the body condition is more even amongst each herd.

The Numbers

The impact which the adoption of Halter has had on this Hauraki Plains farm is both measurable and visible. The first two seasons with Halter were difficult, due to challenging climatic conditions, including the disruption caused by cyclone Gabrielle. Halter made the two years more manageable for the team. With the cows no longer associating people with the lifting of break fences and no longer waiting in the corner of the paddock for the reel to be wound up, the Gray’s found that the herds were calmer in adverse conditions, and that pugging damage was significantly reduced. The noticeable improvement in soil structure and change in herd behaviour means that the cows are being stood off less during winter and spring, improving animal wellbeing.

While the improvements in farm performance through the use of Halter were overwritten by weather impacts for the first two seasons, year three set the standard for the new normal. Pasture eaten has increased by 0.9 t DM/ha/year and total production set a new farm record. Per cow production lifted marginally to 370 kg MS/cow through an increase in total feed eaten. This was driven by an increased intake of pasture, the amount of supplements offered did not change. The team peak milked 23 more cows compared to the pre-halter average, allowing them to harvest the extra pasture grown.

The accurate and immediate allocation of feed following calving and all the way through the transition period is resulting in significantly improved animal health outcomes. Ketosis in the early part of lactation used to be a regular occurrence on the farm. Since the adoption of Halter and the focus on calving recovery there has not been a clinical case of ketosis in the herd.

The improved energy balance and feed intake is showing in reproductive performance too. The team has been doing all AB for eight seasons. Relying on Halter data has made mating much easier and has also improved conception rates. In the first year of Halter the 6 week in-calf rate lifted to 80% and the not-in-calf rate dropped to 9%, all while reducing the use of intervention. In the second year of Halter the not in calf rate increased up to 12%, a 0.5% increase from pre-Halter.

The workflow for the team has shifted. Their day now begins when the herd arrives at the cow shed, reducing petrol use for quad bikes and focusing energy on productive tasks. While work-life balance is a strong focus, the team has found that the adoption of Halter has freed up enough time to take a lot of maintenance and contractor work back 'in house'. The Gray's have had a reliable team for a number of years, and Halter has not changed staffing structure or labour costs at this stage. However, if there was to be a change in the team, Halter is giving them more flexibility to consider different staffing structures. The greater flexibility and efficiency of routine jobs is also giving more time for planning and trialling new ways of using Halter as part of the system.

Financial

Financial results are modelled using a standardised approach across all case studies. The overall change in EBIT between the 2020/21 and 2021/22 season (pre-halter) and the 2024/25 season (with halter) showed an increase in Earnings Before Interest and Tax (EBIT) of 3%. Pre-Halter EBIT was $3688 per hectare while post implementation of Halter saw an increase to $3799 per hectare.

Conclusion

The Gray's farm performance shows that Halter is not just a tool for fixing inefficiencies or reducing reliance on staff. For them it has raised the bar of what is possible.

By adding the technology to an already well-run farm, they have gained time, lifted performance, improved herd health and reduced environmental impact. The message to other farmers is clear, success with technology is not just about reacting to a problem. It is about being proactive, intentional and always looking for improvement opportunities.

Appendix: Farmax Modelling Summaries

Pasture Eaten per Grazed Hectares

FARMAX

Compare Physical Summary

Jun 23 - May 24

		Basefile 2020/ 21 no Halter	Basefile 2021/ 22 no Halter	Basefile 2023/ 24 with Halter	Basefile 2024/ 25 with Halter	
Farm	Effective Area	173	173	173	173	ha
	Stocking Rate	2.7	2.8	2.8	2.9	cows/ha
	Comparative Stocking Rate	96.3	97.4	99.0	99.8	kg Lwt/t DM eaten
	Potential Pasture Growth	14.3	14.9	13.7	16.0	t DM/ha
	Nitrogen Use per graze ha	84	80	114	82	kg N/ha
	Feed Conversion Efficiency (eaten)	13.6	13.6	14.0	13.2	kg DM eaten/kg MS
Herd	Cow Numbers (1st July)	480	484	487	505	cows
	Peak Cows Milked	475	479	482	500	cows
	Days in Milk	261	261	261	262	days
	Avg. BCS at calving	5.0	5.0	5.0	5.2	BCS
	Liveweight per graze ha	1,404	1,436	1,387	1,517	kg/ha
Production	Milk Solids total	172,470	175,143	161,314	184,943	kg
(to Factory)	Milk Solids per graze ha	1,071	1,088	1,002	1,149	kg/ha
	Milk Solids per cow	363	366	335	370	kg/cow
	Peak Milk Solids production	1.94	1.93	1.74	2.03	kg/cow/day
	Milk Solids as % of live weight	76.3	75.8	72.3	75.7	%
Feeding	Pasture Eaten per cow *	3.9	3.9	3.6	4.0	t DM/cow
	Supplements Eaten per cow *	1.0	0.9	0.9	0.9	t DM/cow
	Off-farm Grazing Eaten per cow *	0.1	0.1	0.1		t DM/cow
	Total Feed Eaten per cow *	4.9	5.0	4.7	4.9	t DM/cow
	Pasture Eaten per graze ha	11.5	11.7	10.9	12.5	t DM/ha
	Supplements Eaten per graze ha	3.4	3.3	3.4	3.3	t DM/ha
	Off-farm Grazing Eaten per graze ha	3.2	3.2	3.2	3.2	t DM/ha
	Total Feed Eaten per graze ha	18.0	18.2	17.5	19.0	t DM/ha
	Supplements and Grazing / Feed Eaten *	21.9	21.1	22.8	18.4	%
	Bought Feed / Feed Eaten *	10.5	9.8	10.8	7.2	%

(*) feed eaten by females > 20 months old / peak cows milked

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Pasture Eaten per Total Hectares

FARMAX

Compare Physical Summary

Jun 23 - May 24

		Basefile 2020/ 21 no Halter	Basefile 2021/ 22 no Halter	Basefile 2023/ 24 with Halter	Basefile 2024/ 25 with Halter	
Farm	Effective Area	173	173	173	173	ha
	Stocking Rate	2.7	2.8	2.8	2.9	cows/ha
	Comparative Stocking Rate	96.3	97.4	99.0	99.8	kg Lwt/t DM eaten
	Potential Pasture Growth	14.3	14.9	13.7	16.0	t DM/ha
	Nitrogen Use per total ha	78	75	106	77	kg N/ha
	Feed Conversion Efficiency (eaten)	13.6	13.6	14.0	13.2	kg DM eaten/kg MS
Herd	Cow Numbers (1st July)	480	484	487	505	cows
	Peak Cows Milked	475	479	482	500	cows
	Days in Milk	261	261	261	262	days
	Avg. BCS at calving	5.0	5.0	5.0	5.2	BCS
	Liveweight per total ha	1,306	1,336	1,290	1,412	kg/ha
Production	Milk Solids total	172,470	175,143	161,314	184,943	kg
(to Factory)	Milk Solids per total ha	997	1,012	932	1,069	kg/ha
	Milk Solids per cow	363	366	335	370	kg/cow
	Peak Milk Solids production	1.94	1.93	1.74	2.03	kg/cow/day
	Milk Solids as % of live weight	76.3	75.8	72.3	75.7	%
Feeding	Pasture Eaten per cow *	3.9	3.9	3.6	4.0	t DM/cow
	Supplements Eaten per cow *	1.0	0.9	0.9	0.9	t DM/cow
	Off-farm Grazing Eaten per cow *	0.1	0.1	0.1		t DM/cow
	Total Feed Eaten per cow *	4.9	5.0	4.7	4.9	t DM/cow
	Pasture Eaten per total ha	10.7	10.9	10.2	11.6	t DM/ha
	Supplements Eaten per total ha	3.1	3.0	3.1	3.1	t DM/ha
	Off-farm Grazing Eaten per total ha	3.0	3.0	3.0	3.0	t DM/ha
	Total Feed Eaten per total ha	16.8	16.9	16.3	17.7	t DM/ha
	Supplements and Grazing / Feed Eaten *	21.9	21.1	22.8	18.4	%
	Bought Feed / Feed Eaten *	10.5	9.8	10.8	7.2	%

(*) feed eaten by females > 20 months old / peak cows milked

Farmax Dairy 8.3.5.26

Profit and Loss

FARMAX

Compare Forecast Profit and Loss

Jun 23 - May 24

			Basefile 2020/ 21 no Halter	Basefile 2021/ 22 no Halter	Basefile 2023/ 24 with Halter	Basefile 2024/ 25 with Halter
Revenue	Stock	Net Milk Sales - this season	1,546,020	1,569,982	1,446,020	1,657,832
		Net Livestock Sales	166,820	166,870	166,807	166,836
		Total	1,712,840	1,736,852	1,612,827	1,824,668
	Total Revenue		**1,712,840**	**1,736,852**	**1,612,827**	**1,824,668**
Expenses	Wages	Wages	70,000	70,000	70,000	70,000
		Management Wage	110,000	110,000	110,000	110,000
	Stock	Animal Health	51,448	51,884	52,211	54,173
		Breeding	37,760	38,080	38,320	39,760
		Farm Dairy	13,688	13,804	13,891	14,413
		Electricity	25,488	25,704	25,866	26,838
	Feed/Crop	Pasture Conserved	10,500	10,500	10,500	10,500
		Feed Crop	24,900	24,900	24,900	47,300
		Bought Feed	131,048	116,954	126,286	87,758
		Calf Feed	3,805	3,805	3,805	3,805
	Grazing	Grazing	209,601	209,601	209,601	209,040
	Other Farm Working	Fertiliser (Excl. N)	56,398	56,398	56,398	56,398
		Nitrogen	28,944	27,636	39,172	28,421
		Regrassing	9,960	9,960	9,960	9,960
		Weed & Pest Control	7,266	7,266	7,266	7,266
		Vehicle Expenses	26,469	26,469	26,469	26,469
		Fuel	17,992	17,992	17,992	17,992
		R&M Land/Buildings	57,609	57,609	57,609	57,609
		R&M Plant/Equipment	20,760	20,760	20,760	20,760
		Freight & Cartage	8,304	8,304	8,304	8,304
		Other Expenses	7,439	7,439	88,415	91,439
	Overheads	Administration Expenses	41,866	41,866	41,866	41,866
		Insurance	22,317	22,317	22,317	22,317
		ACC Levies	4,671	4,671	4,671	4,671
		Rates	24,566	24,566	24,566	24,566
	Total Farm Working Expenses		**1,022,799**	**1,008,486**	**1,111,145**	**1,091,625**
	Depreciation		70,713	71,809	66,139	75,827
	Total Farm Expenses		**1,093,512**	**1,080,294**	**1,177,284**	**1,167,452**
Economic Farm Surplus (EFS)			**619,328**	**656,558**	**435,543**	**657,216**
Farm Profit before Tax			**619,328**	**656,558**	**435,543**	**657,216**
Farm Profit per ha before Tax			**3,580**	**3,795**	**2,518**	**3,799**

EFS is a measure of farm business profitability independent of ownership or funding, used to compare performance between farms.
EFS should include an adjustment for unpaid family labour and management. This can be added to the expense database as management wage.