Animal & Grassland Research and Innovation Centre
Moorepark

Moorepark Dairy Levy Research Update

Teagasc Shinagh Open Day

Moorepark Animal & Grassland Research and Innovation Centre

Thursday 15th September, 2016

Series 32

Teagasc CARBERY Barryroe Drinagh LISAVAIRD Agriculture, Food and the Marine AIB

FIND OUT ALL THE WAYS WE'RE BACKING FARMERS

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Agriculture and Food Development Authority

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Foreword

Donal Whelton

AIB Agri Advisor

It is widely accepted that we have entered a new era in Irish dairy farming – an era in which dairy farmers have the opportunity to exploit our competitive advantage in grass based production, but in an environment which is more volatile and where traditional EU policy supports are less prevalent.

As such, initiatives such as the Shinagh Dairy Farm and the Greenfield Dairy Farm in Kilkenny are very important to provide the roadmap and demonstrate best practices to farmers who are seeking to profitably grow their businesses.

We are all well aware that 2016 has been a challenging year for the sector. The theme of today's open day is resilient dairy farming and it is important that dairy farmers rebound quickly from periods of low prices and ensure that any downturn does not impact the long term profitability and viability of their farms.

AIB has a long history of supporting the sector and we are delighted to collaborate with Teagasc for today's Open Day. We are committed to playing our part in supporting the development of the sector and I would encourage you to approach AIB to see how we can assist you, if support is required. A number of my colleagues are here today, should you wish to speak to a representative from AIB.

I hope that you find todays open day useful and informative and that you attain some valuable insights which will be of benefit to you and your farming business through 2016 and beyond.

Dermot O'Leary

Carbery Chairman

Carbery Group are delighted to be associated with the Teagasc Monitor Farm Programme, and Shinagh Dairy Farm as part of that programme.

We have worked with Teagasc for over 15 years in a Joint Programme and appreciate fully the value of all Monitor Farms, in helping other farms improve their profitability.

Monitor farms such as Shinagh lead by example, in setting and meeting targets through efficient planning and excellent technical support from advisors.

Shinagh and all Monitor Farms are a guide to all Suppliers, irrespective of scale, in helping to Improve Profitability through Increased Yield and Reduced Costs. By focusing on our strengths such as our Grass Based and Environmentally Friendly Farming System we have a lucrative export future.

Carbery see the continuous improvement of Milk Quality, Increased Volume and milk composition and the implementation of Herd Health Programmes as key drivers of our industry. We endeavour to continue to promote profitable and environmentally sustainable dairy farming to take advantage of all opportunities.

Gerard Mc Carthy

Chairman Shinagh Estates

I am pleased to welcome you all here today on behalf of the Shinagh Estates Ltd. We are partners in this demonstration farm along with Teagasc. Shinagh Estates Ltd is made up of the four west Cork Co-ops: Bandon, Barryroe, Drinagh and Lisavaird.

This is a demonstration farm, and the aim is to see the issues related to operating a dairy herd, financial management, cows, people and grass to make it possible and above all, how to make a profit. By doing this and showing to you the issues that arise it will help all of us dairy farmers.

The farm is in its sixth year of operation and it has proved to be very profitable as you will see in this booklet. I would like to thank the team involved in the operation of the farm and in particular Kevin Ahern, Farm Manager. We are sure we have a resilient dairy business in Shinagh that can cope with the inevitable price fluctuations that are the reality of the world dairy markets. We hope you will learn and benefit from our experience. We hope you will increase the productivity and profitability of your own farms and in so doing enhance your own living standards and that of the whole rural community.

Introduction

Pat Dillon and Padraig French

Teagasc, Animal & Grassland Research and Innovation Centre, Moorepark Fermoy, Co. Cork

In 2010 Teagasc in conjunction with the owners of Shinagh estates, Drinagh, Bandon, Barryroe and Lisavaird Co-Op's and with the support of the Department of Agriculture, Food and Marine converted Shinagh farm to a new dairy demonstration farm. The objective was to demonstrate the setup, operation and financial performance of a dairy farm and identify the risks and demonstrate the risk management strategies associated with dairy expansion. The demonstration farm project has been an integral part of the Teagasc Carbery joint programme and is now completing its 6th year in production as part of a 15 year programme.

The objective of this Open Day is to update dairy farmers on both physical and financial performance of Shinagh Dairy Farm over the last six years; and to identify and examine the strategies used by the farm to cope with volatile milk prices. 2016 has been a challenging year for dairy farmers and while we are currently seeing some signs of recovery it is likely that we will have to cope with volatility for many years. A key strategy or coping with milk price volatility is to develop farm systems that are resilient that can still leave a positive margin even in low milk price years. A key focus of this open day is evaluating strategies that improve resilience on farms.

As part of a new project between Teagasc and the Shinagh shareholders a new demonstration farm has been set-up in 2016 on a 33 ha farm close to Shinagh. This farm is being operated under a share farming agreement with John Sexton and John will attend the open day to discuss the progress to date and the operation of a share farming agreement.

Shinagh resilient farm systems

Laurence Shalloo, John J. McNamara, Kevin Ahern and Liam Hanrahan

Teagasc, Animal & Grassland Research and Innovation Centre, Moorepark, Fermoy, Co. Cork

Summary

- Milk price volatility is a key feature of international dairy markets since 2007 and will continue into the future
- Resilient businesses are business's that have the potential to recover quickly from one form of adversity or another
- The Shinagh farm has made significant progress over the first five years, is extremely profitable and is generating substantial returns for the investments made in the business.
- Resilient business strategies include
  - » *On farm - matching grass growth with feed demand through stocking rate, operating a simple system, maintaining a high EBI crossbred herd, maintaining a simple labour efficient system*
  - » *Off farm - fixing a proportion of the milk price, fixing interest rates, maintaining a cash reserve, securing access to capital and evaluating all options to minimise input cost prices.*

Introduction

Milk price volatility is a key feature of dairy farming today and this is likely to continue as the world market responds to changes in product supply and demand. In the past various levels of protection, operating mainly at EU level, provided market support at times when there was an in-balance in the Global supply/demand dynamic. However, this protection has not operated at the market level to a large extent since 2007 (except in exceptional circumstances), which has meant that the milk price received by farmers is much more volatile now than experienced in the past (See Figure 1). Currently, milk price is in a significant trough, which is causing many problems for virtually all dairy industries around the world. Ireland's milk production represents approximately 0.8% of global production and irrespective of our scale or how much we expand; in general we are price takers. Therefore, the focus at farm level must be based on putting the farm in the best possible position to deal with a volatile price while availing of tools and mechanisms to stabilise price. It must also be recognised that most dairy farmers in Ireland this year will experience a cash deficit when they combine the cash generated from the dairy farm with their drawings and tax from the business. The rest of this paper will focus on building a resilient farm business that is best placed to deal with internal and external shocks to the farm.

Resilience can be defined as the capacity to recover quickly from difficulties; toughness. There are many challenges that can affect a dairy business from variable weather, issues with disease, issues with labour and external forces such as movements in milk prices, interest rates and/or input costs. The ability of the business to be able to cope with one or a combination of these different problems for many will define how successful the overall business will be in the longer term. Many of these issues will be compounded by larger herd sizes, increased pressure on labour with more hired labour and increased levels of debt on farm. The system operated on farm will by and large determine the ability of the business to be resilient to the various issues that may arise. A business that is resilient may not be the most profitable in any one year (depending on price) or have the greatest milk output per hectare, but a resilient business will be better placed to deal with challenges as and when they arise.

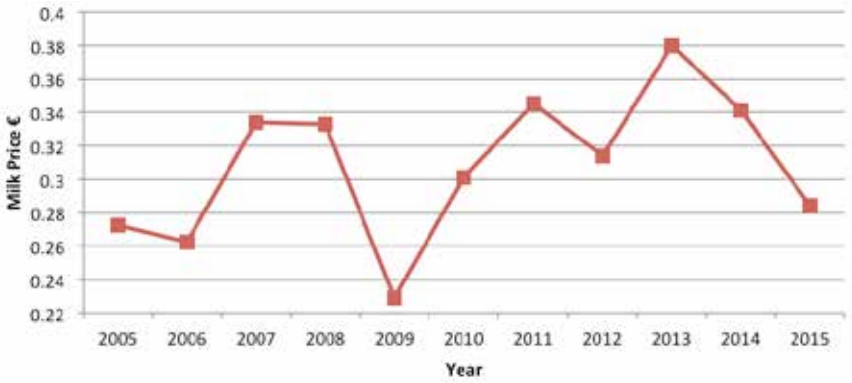

Figure 1. *Base milk price received by Irish farmers between 2005 and 2015.*

Resilient farm systems

a) Optimising farm profitability

The first and key step in ensuring the resilience of any business during periods of low milk prices centres on having the right system in place. The overall system operated on farm will be a key determinant of business resilience. A focus on a high EBI/crossbred cow within a system that maximises grass growth, matching grass growth and demand while minimising capital investment will result in a business that has a low overall cost base and will be best placed to deal with price volatility. Based on the analysis of National Farm Survey data, maximising grass utilisation, extending grazing season lengths and minimising purchased supplementary feed use will maximise farm profit per hectare and per kg MS produced (Table 1).The NFS data shows that every additional tonne of grass dry matter utilised increased net profit per hectare by €184 and gross margin per hectare by €257 when analysed across a seven year period. Every extra grazing day in the year increases net profit per hectare by €2.92. While, the use of bought in feed had negative returns on profit with every 10% increase in proportion of

bought in feed reducing net profit per hectare by €105 and net profit per kg MS by €0.36. Nationally, there is huge scope to increase grass utilisation and reduce the levels of bought in feed across the national dairy herd. Having the right type of robust cow capable of converting grass to milk in an efficient manner, producing high milk solids, with minimal supplementation and capable of withstanding short term fluctuations in feed supply, with a low replacement rate and associated with a reduced labour requirement are essential parts of a resilient business.

Table 1. Key performance indicators across a nationally representative group of farms across an eight year period

Year	Grass Utilised kg DM/Ha	Net Profit/ Ha	Net Profit/ Kg MS	Protein %	Fat %	Kg MS/ Ha
2015	7,935	1,961	2.18	3.50	4.03	960
2014	7,314	2,110	2.53	3.42	4.00	864
2013	6,887	1,921	2.4	3.38	3.96	826
2012	6,896	1,514	1.99	3.39	3.93	801
2011	7,223	2,066	2.74	3.37	3.9	788
2010	6,845	1,675	2.13	3.35	3.86	818
2009	6,971	887	1.34	3.35	3.84	687
2008	6,789	1,731	2.57	3.36	3.83	713

b) Shinagh farm resilience

Since the very inception of the Greenfield and the Shinagh projects that are operated by Teagasc, there was a realisation that there was a requirement that the systems operated needed to be resilient in order to be able to cope with different challenges as and when they arise. The physical and financial outputs from the Shinagh farm for the first five years are presented in Table 2 with projections included for 2016. The results show significant progress from year one of the business to year five with significant increases in grass growth, utilisation, stocking rate and milk output from the farm. Key drivers of resilience that have been focused on over the first five years centre around increasing grass growth, matching stocking rate to what is grown while minimising supplementary feeds and increasing the overall fertility status of the herd through concentrating on the six week calving rate.

This progress is reflected in the financial returns across the years with the farm generating significant levels of surplus cash and profitability over the past two to three years. Debt servicing for the farm was based on interest only for the first two years with capital and interest being paid since 2012. One of the key problems for most start up or expanding dairy businesses is around generating positive cash flows in the initial years. While a business may be profitable, this profitability may not result in a positive cash flow. However within the Shinagh farm cash flow was positive in each year with only one year when profitability was negative over the first five years of

the project. There are significant accumulated cash reserves now in the business after the first few years which puts the business in a very strong position to deal with different issues.

Table 2. Costs and Returns from the Shinagh farm to-date

	2011	2012	2013	2014	2015	2016*
Cows Milked	195	197	227	215	222	225
Stocking Rate (*LU/ha*)	3.12	2.84	2.89	2.89	2.79	2.90
Grass Grown (*t DM/Ha*)	12.25	11.53	12.4	13.2	15.6	15.0
Grass utilised (*t DM/Ha*)	10.0	9.5	10.5	10.8	12.4	12.3
6 week calving rate (%)	58	62	78	79	93	96
Empty Rate (%)	13	7	10	8	7	-
Mean calving Date	28-Feb	22-Feb	16-Feb	17-Feb	16-Feb	19-Feb
Kg MS/Ha	817	921	1,032	1,058	1,250	1,208
Milk Solids Sold (*kg*)	50,903	63,039	80,297	82,320	93,018	90,000
Milk Sales (€)	235,557	281,510	429,964	434,645	395,623	335,113
Livestock Sales (€)	33,429	37,906	62,276	77,092	72,565	83,032
Total Receipts (€)	268,986	319,416	492,240	511,737	468,188	418,145
Labour (€)	66,183	72,407	65,466	64,589	68,623	67,750
Land Lease (€)	35,530	35,530	35,530	35,530	35,530	35,530
Contract heifer Rearing (€)	-	20,054	37,025	36,203	33,908	48,286
Fertiliser (€)	19,537	27,142	34,232	28,457	35,166	33,407
Concentrate (€)	13,311	34,324	33,890	23,115	15,456	28,791
Contractor (€)	19,670	26,349	35,178	29,545	33,963	30,270
Bank interest (€)	11,411	12,658	11,507	9,242	8,520	11,700
Bank Capital (€)	-	-	38,088	37,627	38,291	34,880
Total Costs (€)	246,221	317,643	397,258	366,742	360,104	394,537
Cash Flow (€)	22,765	1,773	94,983	144,995	108,084	23,609
Profitability (€)	313	-33,316	132,457	135,721	123,276	22,309
**Return on Capital (€)	1.1%	-2.5%	17.9%	17.7%	16.2%	4.1%
***Return on Equity	0%	-13%	51%	46%	37%	6%

**Projected **Capital €820,000 including ***Equity €260,000*

A number of other metrics are used in addition to profitability to evaluate the financial performance of the Shinagh dairy farm. These include return on investment (ROI) and return on equity (ROE) both ROI and ROE calculations are completed for the farm annually and compared to projected figures. On average the ROI for the farm is running at just over 9% for the first five

years and including a projection for 2016. This corresponds to an ROI which is approximately 6.0% above the cost of funds. In relation to ROE, the farm is running at 21%. It is anticipated that the return on equity will drop over time as debt is repaid and as the equity proportion of the overall investment increases. Both ROE and ROI returns for the farm to date would compare very favourably with any investment that may be made in competing investments off farm.

c) Increasing the resilience of the Shinagh farm

i. *Breakeven Milk price*

The breakeven milk price is defined as the base milk price (3.30% protein, 3.60% butterfat, excluding VAT) where all cash commitments can be made for the farm including capital repayments and drawings. If the base milk price is below this figure then the farm will not be in a position to meet all of their cash commitments without increasing the farm debt position or drawing on reserves. It is individual to every farm, as the variables included in the calculation of the breakeven price vary from farm to farm. The calculation includes farm cash costs, livestock and other sales, the type of milk produced, capital and interest repayments, labour and taxation. For a family farm the calculation would also include the family drawings.

There has been a focus on the farm to reduce the cash breakeven milk price (i.e. the base milk price where all of the cash commitments can be made for the farm including capital repayments). Over the past number of years, the breakeven milk price has dropped from just over 29.5c/l (base price excluding vat @3.3% P and 3.6%F) to a budgeted breakeven price in 2016 of 23.0c/l (base price excluding vat @3.3% P and 3.6%F) and an actual breakeven price in 2015 of 20.6c/l. Below this base milk price, the farm would be expected to generate a cash deficit. The factors associated with this reduction can broadly be characterised by four main features

Reducing costs in a number of key areas
Total costs on the Shinagh dairy farm were €246,221, €317,643, €397,258, €366,742 and €360,104 in 2011, 2012, 2013, 2014 and 2015, respectively with budgeted costs for 2016 estimated to be €394,537. As can be seen from these numbers there was a big increase in total costs in 2013 driven by in general poor grass growing conditions throughout the year. There has been a focus on the farm to reduce total costs based on a focus on a number of key aspects of the business and this has resulted in total costs reducing from €397,258 to €360,104 between 2013 and 2015. There was a focus placed on a number of key areas to reduce costs by maximising the conversion of grass to milk, minimising supplementary feeding, breeding a cow for the system and operating with minimal investment in depreciating assets.

Maximising stock sales and value
There has been a significant increase in livestock sales from the farm, which has a significant impact on reducing the farm breakeven base milk price. There are a number of factors at play in increasing livestock sales which include low cow losses (deaths), a very low not in-calf rate, more cows sold

from the farm at higher values through being in-calf and finally a farm policy to retain surplus female calves in order to add value. In 2016 there has been 28 cows sold at close to €900 each (in-calf) and it is anticipated that there will be 24 cows sold not in-calf at €450 each. On top of this it is expected that 58 weanling heifer calves will be sold for €650 retained this spring. The remaining livestock sales originate from calf sales.

Increasing stocking rates to match increased grass growth
Over the past number of years there has been a consistent increase in grass growth which has been matched with a consistent increase in the number of cows managed on the farm. This trend will continue as grass growth levels increase from the farm. When compared against the average of the first two years of the business, the farm is now carrying a stocking rate that is 17% higher than was the case at the start of the venture. Virtually this entire higher stocking rate is being facilitated by increased grass growth from the farm. The additional milk sold as a result of the increased stocking rates is helping to dilute the high fixed on the farm. It is however important to note that the benefit from increasing the stocking rate only lasts while the additional stocking rates are being facilitated by increased grass supplies. Cost reduction per unit of output by increasing milk output will only continue when the additional milk originates from grazed grass on the farm.

Increase milk solids concentrations
Milk solids concentrations have increased from 3.52% protein and 4.24% fat in year 1 of this business to 3.73% Protein and 4.44% fat by 2015. This was as a result of a strong focus on grassland management and breeding strategies within the herd. This increase in solids is worth 3.2 c/l at a milk price of 29 c/l but even more importantly it is worth 2.8 c/l at a milk price of 23 c/l and has a substantial effect on reducing the milk price point at which the farm still generates a positive cash flow (breakeven) and substantially reduces the exposure of the business.

Between the four strategies operated to increase the resilience of the farm there has been a reduction of the breakeven point of the farm of over 8c/l between 2011 and 2015. In effect, the farm would have required a base price of over 29.5 c/l in 2012 whereas the corresponding figure for 2015 is closer to 20.6 c/l at 3.3% protein and 3.6% fat just to breakeven. Table 2 shows a detailed breakdown of the costs.

ii. Fixing milk price

The Shinagh farm has availed of the two Carbery fixed milk price schemes that have been offered to date. It's too early to evaluate the exact outcomes from these schemes albeit to say that to date they appear to be having a positive influence on returns. A recently published review of the Glanbia fixed price schemes (2011 to 2015) suggest that these schemes as operated are having a very positive influence on returns for the Greenfield farm. In that analysis it was estimated that for 2016, the fixed priced schemes could be worth approximately 2c/l across all milk with approximately 27% of the total milk supply fixed.

iii. Managing cash

As can be observed from Table 3 the farm has generated very healthy cash surpluses over the first five years. Some of these reserves have been used to create a cash buffer in the business to allow the farm deal with issues as and when they arise. The creation of the fund was made possible by a strong focus on cost control and discipline to generate the sink fund and was facilitated by the taxation structure of the Shinagh dairy farm (liable for corporation tax).

Table 3. Breakeven milk price for the Shinagh farm

	2011	2012	2013	2014	2015	2016*
Protein %	3.52	3.58	3.64	3.73	3.73	3.73
Fat %	4.24	4.28	4.28	4.64	4.44	4.44
Total costs €	246,221	317,643	397,258	366,742	360,104	394,537
Milk Sales L	646,363	794,089	974,503	950,191	1,120,624	1,069,800
Costs (c/l)	38.1	40.0	40.8	38.6	32.1	36.9
Livestock & other sales (c/l)	5.2	4.8	6.4	8.1	6.5	8.5
Solids and Vat c/l	4.9	5.7	5.4	6.4	5.0	5.4
Breakeven Price 3.3&3.6c/l excl Vat	28.0	29.5	29.1	24.1	20.6	23.0

Conclusion

The Shinagh farm is now in its sixth year in business and after the initial period where cash flow was extremely tight the farm is in a very sustainable position and capable of dealing with significant challenges if they arise in the future. The strategy employed will continue to focus on the overall resilience of the business. These strategies will include on farm strategies (matching grass growth with feed demand through stocking rate, operating a simple system, maintaining a crossbred herd, maintaining a simple labour efficient system) with off farm strategies (fixing a proportion of the milk price, maintaining a cash reserve and evaluating all options to minimise input cost prices).

Using grass to drive resilience

Padraig French[1], John J. McNamara[2] and Kevin Ahern[3]

[1]Teagasc, Animal & Grassland Research and Innovation Centre, Moorepark, Fermoy, Co. Cork; [2]Teagasc, Cork West Advisory Unit, [3] Farm Manager, Shinagh Dairy Farm.

Summary

- The two key technical focuses of Shinagh dairy farm are to maximise the amount of grass grown and utilised per hectare and to optimise the proportion of the cows' diet coming from grazed grass.
- The farm is soil tested every alternate year and lime, Phosphorous and Potassium is applied within environmental regulation limits to achieve optimum soil fertility.
- As grass growth has increased over the last 5 years the stocking rate has been increased to match it thereby maximising grass utilised per hectare.
- The target for the farm is to have >70% of the cows diet from grazed grass and this is achieved by adjusting stocking rate and calving date.

Grass production

The focus of the farm has always been to grow as much grass as possible and utilise as efficiently as possible as tonnage of grass utilised is the best predictor of profit. The key drivers of grass growth are soil fertility, grazing management and sward composition.

The farm is soil tested (Table 1) every alternate year and any paddock with less than 6.3 pH has adequate lime applied to achieve a pH>6.3. This amounted to 370 t in 2013 and 200 t in 2015 and with the current level of nitrogen application and rainfall it is anticipated that approximately 80 t/year or 1t/ha/year will be required for pH maintenance.

The target for the farm is to have all paddocks at least at index 3 or 4 for soil P and K, this is quite easily achieved for K as adequate K can be spread following soil testing to achieve soil index 3 and an annual maintenance of 40 kg/ha (32 units/acre). In order to comply with the Nitrates directive, the level of P application is limited to maintenance on index 3 soils and no P on index 4 soils, to ensure no paddocks are below index regular soil testing is necessary as this facilitates P application on index 1 and 2 soils. The farm receives approximately 250 kg/ha (200 units/acre) of artificial N per year.

Table 1. The soil test results for the farm for 2013 and 2015

	2013	2015
Ave. pH	6.01	6.15
Ave Soil P (*mg/l*)	6.51	8.13
% index 3 & 4 for P	75%	93%
Ave soil K (*mg/l*)	89.2	127
% index 3 & 4 for K	72%	82%

Grazing management Another key factor in determining grass production and utilisation is grazing management and to optimise grass growth the farm uses the 3 tools; the spring rotation planner (SRP), summer wedge and the autumn rotation planner. The SRP is set up to finish the first rotation on April 10'th when grass supply = demand (Figure 1) and post grazing residuals are generally <3.5 cm during the first rotation. During the summer the wedge is used and target pre-grazing yields of ~1400/kg/ha and 160 kg/cow farm cover are maintained and post grazing residual is ~4 cm. The autumn rotation is extended from early August to achieve a peak cover of 1200 kg/ha in late September and the last rotation will begin on October 5'th with a target of 55% grazed in October.

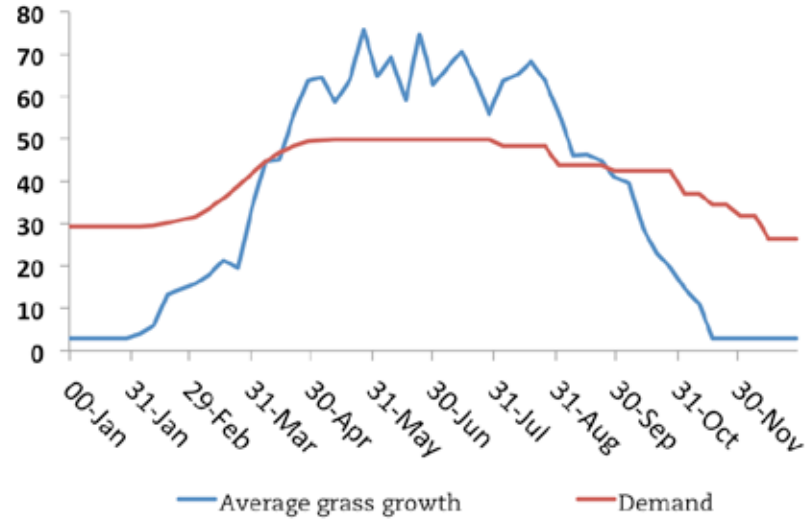

Figure 1. The average weekly grass growth (2011-2015) and the current feed demand on Shinagh farm

Achieving >70% of grazed grass in diet: Grass grown on the farm has increased since the project began and this has facilitated increased stocking (Table 2).

Table 2. Grass production and utilisation on Shinagh dairy Farm (*2011-2016*)

	2011	2012	2013	2014	2015	2016*
Cows Milked	195	197	227	215	222	225
Stocking Rate (*LU/ha*)	3.12	2.84	2.89	2.89	2.79	2.90
Grass Grown (*t DM/Ha*)	12.25	11.53	12.4	13.2	15.6	15.0
Grass utilised (*t DM/Ha*)	10.0	9.5	10.5	10.8	12.4	12.3
Mean calving Date	28-Feb	22-Feb	16-Feb	17-Feb	16-Feb	19-Feb
Kg MS/Ha	817	921	1,032	1,058	1,250	1,208
Milk Solids Sold (*kg*)	50,903	63,039	80,297	82,320	93,018	90,000

**Projected*

The farm has always targeted >70% of the cows diet coming from grazed grass as this has allowed the farm to be resilient to outside challenges from weather, milk price, cost inflation, etc. In high milk price years there may be a margin in operating higher stocking rates with more bought in feed but the extra output is produced at a loss in low milk price years and exposes the business to even greater volatility in cash and profit earnings. To achieve >70% of the diet from grazed grass has meant keeping the overall stocking rate <1 cow/4t pasture grown and a mean calving date of 15th-20 Feb. As calving has become more compact the planned start of calving has been delayed to ensure cows can be allocated adequate pasture in spring. Approximately 250 kg concentrate is budgeted to be fed in spring to fresh calvers to fill the feed budget deficit with all the rest of the milking cow deficits (350 kg DM/cow) filled with high quality bale silage. To achieve >70% of the diet as grazed grass requires that cows are fully fed on grass for 5 months and partially for another 5 months (Figure 2).

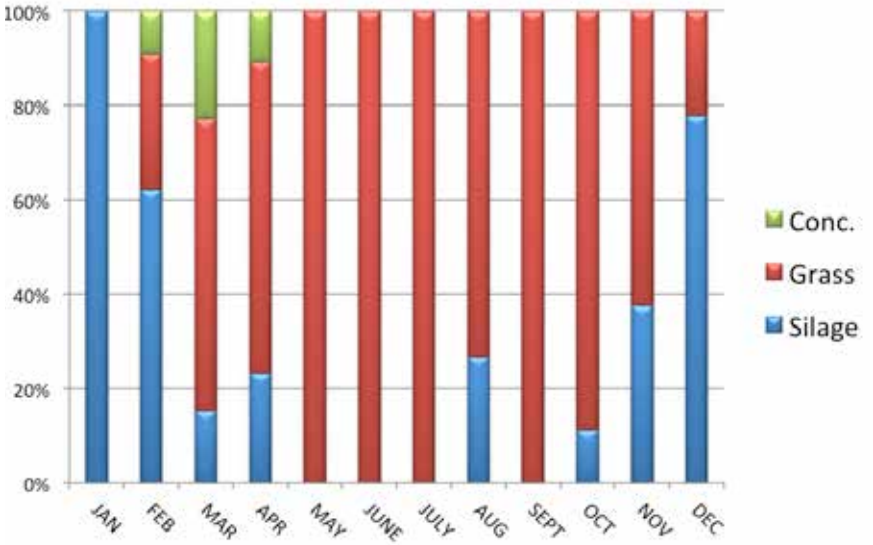

Figure 2. *The feed budget for Shinagh farm*

Shinagh dairy herd

John J. McNamara[1], Kevin Ahern[2] and Padraig French[3]

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Summary

- The initial high EBI stock with a high fertility sub index have delivered high physical and financial performance since the farm started in 2011
- The six week calving rate and not in calf rate has improved each year.
- This has been achieved with high grass utilisation and with low levels of inputs
- The herd is resilient with 31% of the original 2011 heifers still milking
- The high genetic potential for milk solids has delivered significant extra revenue for the farm
- Low involuntary culling rates has benefited the farm financially

Introduction

The Shinagh dairy herd was set up by buying in 200 in-calf heifers in 2010. They were bought on the basis of EBI and health status. The EBI requirement that was set was €100 with €50 of this for fertility. This objective was achieved with the herd ending up at €103 overall with €60 of this in the fertility sub index. This herd of heifers were milked for the first time in 2011. Their performance is shown in Table 1 below.

Table 1. Herd Performance Details

	2011	2012	2013	2014	2015	2016
Cows (*avg*)	195	197	227	215	222	229
Herd EBI	103	127	148	163	175	181
Kg / MS/Cow	265	326	354	381	425	400
6 week calving	58%	62%	78%	79%	93%	96%
Empty Rate	13%	7%	9.6%	8.2%	7%	8.7%
Mean Calving	28-Feb	22-Feb	16-Feb	17-Feb	16-Feb	19-Feb
Calving Interval		363 days	365 days	372 days	368 days	370 days

The advantage of starting with heifers is that they should all have low mammary infections. The disadvantage is that production will be lower in the initial years until the herd matures. The heifers were low on somatic cell count that first year and any heifer getting mastitis was dealt with quickly and effectively. In their second lactation their cell count actually dropped from the first year. Having an effective system to keep mastitis and cell counts under control and less than 150,000 pays off. Higher cell counts means loss of yield, loss of milk in the tank, higher veterinary bills and perhaps more important than all the above is the hardship in the parlour

dealing with high cell count cows. This is neither good for man or beast and has a negative effect on the morale of the team if cows are constantly breaking down with mastitis due to having high cell count cows in the herd spreading infection to other cows. See later section on the practises used on the farm to manage cell count.

Dairy herd performance

The herd of cows that started milking in 2011 were 50% Friesian / Holstein, 25% Jersey cross Fr/Hol and 25% Norwegian Red cross Fr/Hol. The complete EBI breakdown of the herd in 2015 is shown in Table 2. This herd produced 425 kg of milk solids per cow on a total concentrate input of 158kg per cow in 2015. Their predicted milk kg is -5kg and fat % +0.22 and protein% +0.13. They went back in calf and only 7% of them were not in calf after 12 weeks and 96% of them (including the new heifers) calved in 6 weeks in 2016. High EBI stock deliver high performance.

Breeding policy

We have sought to produce cross bred heifer calves for our replacements each year using the highest EBI bulls available. As a consequence the composition of the herd in 2016 is 33 % Friesian / Holstein, 33% Jersey cross, and 33% Norwegian Red cross. In the initial years we crossed Hol/Fr cows with Jersey, Jersey cross cows got Norwegian Red straws, and Norwegian Red cross cows got Jersey straws. This produced either two way or three way cross heifer calves. In 2016 we used more Fr/Hol straws due to the availability of high EBI bulls. We are continuing to use Jersey straws to produce two way cross heifer calves but have stopped using Norwegian Red straws to produce three way cross heifers because the gap between these bulls and the top Fr/Hol bulls is too big even when you allow for the heterosis effect gained by using the third breed. We used Fr/Hol straws on the Jersey cross cows. The incalf heifers are put in calf to Jersey AI for 10 days on a synchronised heat programme and after that Jersey stock bulls run with them.

Table 2. Herd Economic Breeding Index (*EBI*) Herd Summary August 2015

Animal Group	Num of Cows	Milk Kg Fat Protein	% %	Surv % CI Days	Milk % Cont	Fertility % Cont	Calv % Cont	Beef % Cont	Maint % Cont	Mgmt % Cont	Health % Cont	EBI €
Cows with EBI	225	-5			€52	€93	€26	€-20	€23	€2	€0	
Missing EBI* Total Cows	0 225	10.9 6.0	0.22 0.13	2.5 -5.1	24.1%	43%	12%	-9.4%	10.7%	0.8%	-0.1%	€175
1st Lactation	44	-11			€64	€83	€34	€-24	€26	€2	€-2	
		13.2 7.4	0.29 0.16	2.3 -4.5	27.3%	35.4%	14.3%	-10.3%	11.1%	0.9%	-0.7%	€182
2nd Lactation	25	41			€68	€89	€31	€-18	€17	€2	€0	
		14.8 8.5	0.26 0.14	2.3 -4.9	30.2%	39.5%	13.7%	-8.1%	7.6%	0.8%	0.1%	€188
3rd Lactation	36	-70			€65	€90	€31	€-27	€31	€3	€-1	
		14.7 6.6	0.35 0.18	2.6 -4.8	26.2%	36.3%	12.6%	-10.9%	12.5%	1.3%	-0.2%	€193
4th Lactation	27	42			€51	€94	€24	€-19	€23	€2	€-2	
		10.5 6.6	0.18 0.1	2.4 -5.3	23.7%	43.7%	11.3%	-8.7%	10.9%	1.1%	-0.7%	€175
5th Lactation (*)	93	-3			€37	€99	€19	€-17	€20	€1	€1	
		7.5 4.4	0.15 0.09	2.6 -5.5	19.2%	51.2%	9.9%	-8.6%	10.3%	0.4%	0.5%	€160

Preparing for breeding

This starts the previous autumn when cows are watched for condition score and are dried off first on condition score. If they are holding condition well then the next criteria is to give them a minimum of 8 weeks dry for cows and a minimum of 12 weeks dry for heifers. To ensure there is no difficult calvings and/or retained afterbirths AI sires are chosen with less than 3% calving difficulty for use on the cows and less than 1.4% proven calving difficulty for use on first calf heifers (only bulls with a calving survey are used on heifers). Adequate amounts of a good quality dry cow mineral (Co-op source) is fed daily before calving. Six weeks before breeding the herd is condition scored. Any thin cows (2.75 body condition score or less) are then put on a once a day milking regime. They are marked for once a day milking, stay in the main herd, come through the parlour twice a day as normal, but are only milked once a day. Within a day or two they adapt to this routine and do not drop milk at the milking they are not being milked. The one rule is, if by accident you handle or prepare the udder for milking (even though she should not have been milked that milking) then you continue through and milk that cow that milking.

All these management practises help ensure high submission rates in the first three and six weeks of breeding. 98% of the herd was submitted in 2016 in the first three weeks of the breeding season, and all cows were bred in the first 30 days.

High fertility cows last

The make-up of the herd in 2016 is shown in Table 3. The resilience of high EBI, high fertility cows can be seen in that 70 of the original herd that milked for the first time in 2011 are still milking. That's 35% of the original 200 heifers are still here. In Table 1 one can see the calving interval of the cows each year is on average of 367.5 days. This combined with our target of having as many heifers as possible calving in the first three weeks and all heifers calved in 6 weeks has driven the improvement in the 6 week calving rate on the farm to its current level of 96% of the herd calving in 6 weeks in 2016.

Table 3. Shinagh Dairy herd composition 2016

Number of cows	Lactation	% of herd
45	1	20%
39	2	17%
24	3	10%
29	4	13%
22	5	10%
70	6	30%
Total 229	Average 3.67 lactations	

High fertility durable cows last in the herd and are more likely to be sold out of the herd in-calf rather than as lower value cull cows. This has helped the farm maximise stock sales. Table 4 below gives the complete breakdown of cows leaving the herd since 2011. The level of involuntary culling for not being in calf and for bad feet, poor udders or high cell counts has been low. In the initial years surplus stock were kept to increase the herd size. Since the herd has stabilised at 229 cows we are now selling surplus in calf cows as well.

Table 4. Annual herd not in calf, mortality and voluntary culling

	2011	2012	2013	2014	2015	2016
Not in calf %	13%	7%	9.6%	8.2%	7%	8.7%
Number not in calf	25	15	21	18	16	20
Cows died	3	4	1	4	2	3
Late embryo losses		3	3	4	4	
Feet/Udders/SCC		1	2	9	3	
Sold in calf					10	18

One of the benefits in having durable fertile cows is that you need fewer replacements to sustain the herd. Table 5 below shows the number of heifers needed each year to hold the herd size. The extra heifers that joined the herd were used to increase the herd. The table costs the benefit of this lower replacement rate compared to the national average. If the cost of bringing a replacement heifer to milking is €1450 and the value of our cull cow out of the parlour is €550, then the net cost of each replacement is €900.

Table 5. Annual benefit of Shinagh lower replacement rate versus the national average

	2012	2013	2014	2015	2016
National Replacement Rate	22%	22%	22%	22%	22%
Shinagh Replacement Rate	19%	11%	14%	17%	20%
Difference	3%	11%	8%	5%	2%
No. of heifers difference	7	23	17	11	5
Nett cost per heifer	€900	€900	€900	€900	€900
Total farm benefit	€6,300	€20,700	€15,300	€9,900	€4,500

Milk composition

Table 6 gives the annual Co-op milk composition. The EBI of the herd as can be seen in Table 2 shows that the herd is strong on % fat and % protein. This genetic potential has been the basis for the milk composition achieved.

Table 6. Annual Milk composition and price compared to Co-op Average						
	2011	2012	2013	2014	2015	2016
Fat %	4.24	4.28	4.48	4.64	4.44	
Protein %	3.52	3.58	3.64	3.73	3.73	
SCC Average	142,000	108,000	109,000	155,000	135,000	
Nett Milk Price (c/l)	37.61	36.40	44.80	45.30	35.80	
Co-op Avg price (c/l)	35.54	34.66	40.93	38.46	31.99	
Price difference (c/l)	2.07	1.74	3.87	6.84	3.81	
Worth to the farm	€13,084	€13,443	€37,125	€64,979*	€42,148	

** The herd was milked once a day from Aug 1st, for quota management.*

Ensuring the herd are grazing the highest quality grass right through the lactation ensures the genetic potential is achieved. When there is a shortage of grass the grass supply will be supplemented with what is most practical and best value at that time, whether that is ration or silage. This milk composition plays a significant role in getting a higher milk price. In Table 6 the herd annual milk composition and the average milk price achieved compared to the Co-op average price is shown. The farm gets all the quality bonuses for TBC and SCC. This increased milk composition amounts to significant increased revenue.

Management practises used to keep somatic cell count low

The following are the key things done to keep the cell count low:

- Extreme care is taken to dry off cows hygienically and effectively
- Cubicles are cleaned down and dusted daily during the dry period
- After calving cows are both pre and post teat sprayed while they are in the colostrum group for the first 5 days
- Cows are stripped at every milking for the first 2 months after calving and stripped once a day for the next month
- This ensures early detection and treatment of mastitis which leads to better cure rates
- After these three months any clots in the filter or a high count text from the co-op will trigger all cows being stripped at the next milking to find the offending cow and quarter
- California Milk Test will be used to find the offending quarter if necessary
- If a quarter is repeatedly getting mastitis it will be dried off to prevent the spread of infection and the cow will continue to be milked on the remaining three quarters.
- Proper post milking teat spraying is done all year, ensuring full coverage of each teat with spray

Mature herds give more milk

We all know that mature cows give more milk than younger cows. Breeding cows that last in the herd ensures that the herd is more mature. The greater % of third calvers and above that is in the herd the higher the herd yield will be. Table 7 shows the predicted yields for the Shinagh herd for 2016 and the number of cows in each lactation. The low infertile rate and low involuntary culling rate has led to a low replacement rate and a mature herd.

Table 7. Predicted milk solids yields for Shinagh herd in 2016 per lactation

Lactation	1	2	3	4	5	6
Predicted MS kg	364	406	466	461	471	471
Yield as % of mature	77%	86%	98%	98%	100%	100%
Number of cows	45	39	24	29	22	70
% of herd	20%	17%	10%	13%	10%	31%

Labour efficiency on the Shinagh dairy farm

Kevin Ahern[1], John J. McNamara[2] and Paidi Kelly[3]

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Summary

- On farms where cow numbers are increasing or cows are calving more compactly, all aspects of labour efficiency must be reviewed to maintain a manageable workload for people on the farm.
- Having adequate people on the farm during the busy spring period is crucial. Approx. 50% of the total hours worked on the Shinagh farm occur in February, March and April.
- Ensure everyone (including the farmer/employer) gets adequate rest during calving – the Shinagh farm team take every second weekend off.
- The use of contractors for nearly all machinery jobs frees up huge time for the farm team to focus on the farm profit drivers– cows and grass.

This paper will discuss labour efficiency on the Shinagh farm. This is a topic of increasing importance for all Irish dairy farms. Improving labour efficiency leads to:

- A more enjoyable day to day workload
- More time for the farmer to spend make important decisions e.g. grazing decisions, investment decisions, etc.
- People have more time available for outside of farming e.g. time for hobbies or family.

Many farmers are increasing cow numbers and so must change some aspect of how work is done on the farm in order to manage the increasing total workload. There are a number of different aspects to labour efficiency e.g. system of production, the farm team, farm facilities, use of contractors and work organisation.

This paper will focus on the farm team and the interaction with a number of the above factors in managing the spring workload. Farm details of the Shinagh farm are outlined in earlier papers within this booklet. One of the most important stats on the farm affecting labour efficiency is compact calving. In 2016 96% of cows are calved in six weeks and half the herd calved in 12 days.

The farm team

Kevin Ahern has managed the farm since the Shinagh project began in 2011. He is a graduate of the former Farm Apprenticeship Board and had several

years of management experience before starting in Shinagh. Kevin's skill as farm manager and dedication to the job has been an essential element to the high performance to date in Shinagh.

Kevin is the only full time employee on the farm for the year. During February and March two other people (a local person and a student) work full time with Kevin to manage the intense calving workload. The three full time people in spring work a '12 days on, 2 days' off rota which means working every second weekend. Where possible the student will only work a half day either side of their weekend off to allow them extra rest. Students are expected to work 35 hours a week as part of their placement and for every extra hour worked over this the student in Shinagh receives a standard hourly rate. On average there are five days a week with three people on farm and two days a week with two people on farm (Table 1).

While Kevin rosters two days off for himself, in the spring he will usually get on farm during both of these days, even for as little as an hour, just to make sure everything is running smoothly. He won't milk during these days and uses them to rest and catch up on time with family.

In order for this rota to work a relief milker is needed every second weekend to allow two people take the weekend off. Kevin has two people who have worked on the farm before and are flexible to work these days. He feels every farm should have at least two other people who are trained in to how the farm works so as to have back-up help when needed.

Roles and responsibilities

A full time person who is essentially second in charge (2IC) on the farm is hired during February and March and also completes morning milkings with Kevin in May during AI (this person doesn't work on the farm during April at all – see Figure 1). The third full time person is a Level 5 student from Clonakilty doing their three month work placement. They are on farm from the start of February to the end of April.

The 2IC position suits a local person who is flexible with their work hours. For the first five years this person was Conor O Donovan. Outside of working in Shinagh, Conor farmed with his uncle and did relief milking. Conor is now working in New Zealand and Owen Sugrue has taken on the 2IC position for next spring. Owen is farming at home with his parents and has taken on the position as he is not needed at home full time (130 cows to calve in 2017).

Both Conor and Owen did their student placements in Shinagh. Kevin find's working with students a great way of building up a network of potential contacts to work on the farm in the future. The person organised for relief milking next spring is Sinead Minihane, who did her Level 5 placement on the farm last year. A Level 6 student from Clonakilty, Alice Copithorne, will do her three month placement on the farm this autumn which will be the first time the farm has had extra help at that time of the year.

Table 1. Weekly roster during the February – March calving period

Rota period: February - March														
Kevin, Owen and student full time - every second weekend off - relief milker every second weekend														
Days	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Person 1	Kevin	Kevin	Kevin	Kevin	Kevin	Kevin	Kevin	Kevin	Kevin	Kevin	Kevin	Kevin	X*	X*
Person 2	Owen	Owen	Owen	Owen	Owen	X	X	Owen	Owen	Owen	Owen	Owen	Owen	Owen
Person 3	Student	Student	Student	Student	Student	X	X	Student	Student	Student	Student	Student	Student	Student
Person 4	X	X	X	X	X	Relief	Relief	X	X	X	X	X	X	X
Note - The student only works a half day either side of their weekend off - so works on average 5 1/2 days a week														
X	Not rostered on													
X*	While Kevin is rostered off, he will usually spend 1-3 hours on farm every day during spring, but won't do any milking													

Teaching

Kevin enjoys working with students as he finds they are usually enthusiastic and keen to learn. He carefully plans their time on the farm and makes sure to schedule his own time for teaching and explaining things to the student as this is a key requirement of the host farmer.

Kevin encourages students to ask questions on any aspect of the business. He finds allowing the students to sit in on discussion group visits to Shinagh often leads to more questioning. Students are brought on the weekly grass walk also. Kevin is quick to encourage students to take responsibility for tasks e.g. calf rearing but is careful not to expect too much either.

Intense work periods

In a 36 hour period this spring 32 cows calved on the farm delivering 34 live calves (two sets of twins). Kevin feels this demonstrates how as numbers increase you must be as organised as possible so as to be able to cope with intense periods of work.

Contracting out all machinery work (silage feeding, fertilizer and slurry spreading, etc.) allows the farm team to stay 100% focused on looking after the calves and cows. The team use the days with three people on farm to get as prepared as possible e.g. having calf pens bedded and ready to go for new arrivals.

Adequate calving and calf rearing facilities are also a huge help in dealing with compact calving. As six week calving rate has increased, Shinagh Dairies has accessed more buildings on the Shinagh grounds which have provided extra room for cows and calves. These extra facilities would need to be built or rented on a commercial farm which may be a requirement as cow numbers increase.

Overall annual workload

Figure 1 and Table 2 gives a breakdown of the monthly workload of each person on the farm. In total approx. 4,300 hours are needed to run the farm per year which divided by 229 cows is 19 hours of work per cow per year. This includes Kevin's time hosting discussion groups etc. which is a feature of managing a demonstration farm.

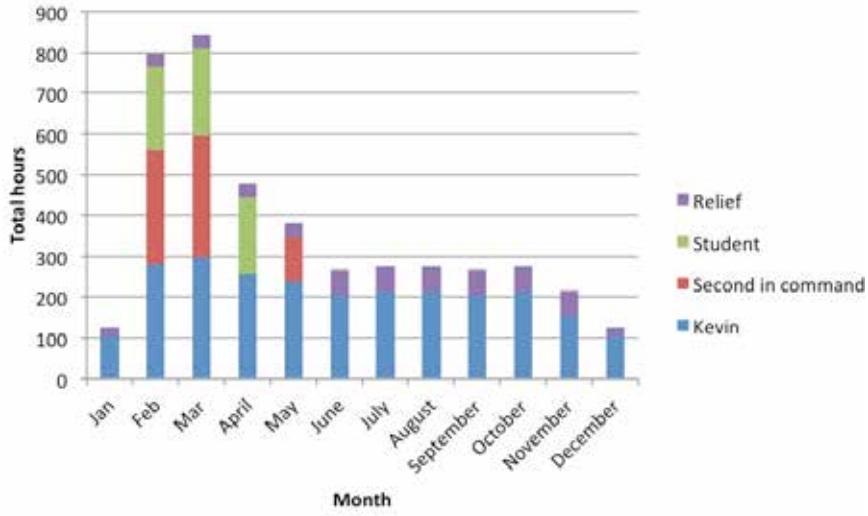

Figure 1. *Total hours worked per month in Shinagh for all people on farm*

Nearly 50% of the total hours on the farm are worked during February, March and April. For two of these months there are three people on the farm to manage the intense spring workload. The flexibility of local people and student is crucial to having help on the farm when needed.

Table 2. Annual breakdown of hours worked per person on the Shinagh farm													
People		Jan	Feb*	Mar.*	Apr.	May	Jun.	Jul.	Aug.	Sept.	Oct.	Nov.	Dec.
Kevin	Hrs/day	4	10.5	10.5	10	9	8	8	8	8	8	6	4
	Hrs/week	24	70	67	60	54	48	48	48	48	48	36	24
2IC	Hrs/day	0	10.5	10.5	0	4	0	0	0	0	0	0	0
	Hrs/week	0	70	67	0	24	0	0	0	0	0	0	0
Student	Hrs/day	0	8	8	8	0	0	0	0	0	0	0	0
	Hrs/week	0	51	48	44	0	0	0	0	0	0	0	0
Relief	Hrs/day	4	8	8	8	8	8	8	8	8	8	8	4
	Hrs/week	4	8	8	8	8	14	14	14	14	14	14	4
Total hours on farm per month		124	796	844	480	381	267	275	275	267	275	215	124
% of annual hours per month		3%	18%	20%	11%	9%	6%	6%	6%	6%	6%	5%	3%
Total hours on the farm	4322												
Cows milked	229												
Hours per cow	19												

Hrs per week in Feb and March are higher than the hours per day tally as extra hours are added for night time calving

Hours worked per week are greatest for everyone on the farm during February as the farm team is rotating every third night to do night checks. These only take place for two weeks in March which reduces the average hours per week between February and March.

Relief help is used more during the summer and autumn to give Kevin days off for annual leave than during the calving season. The use of contractors for all machinery work and the contract rearing of heifers means for eight months of the year Shinagh is a one man farm. Workload in December and January consists of pushing in silage, cleaning cubicles, herding and odd jobs.

Managing the spring workload

Calving management

Work practices in the spring are particularly crucial in Shinagh with such a high six week calving rate. The farm team must be efficient and organised in everything they do. Up to this year cows were fed by night only once they were drafted into the straw loose house (usually five days pre calving) which helped to reduce night-time calvings. However this year, as the six week calving rate is now 90%+, it was decided to discontinue this practice as there was not enough feed space to feed all cows close to calving together at night. After six weeks of calving night time feeding is again practiced.

During the calving season the team of three full time people operate a rota of every third night to do night time calving checks. The person on night-time calving is expected to feed and tag any calves born during the night. They also bring back in the milking herd if practicing on/off grazing.

The 2016 ICBF calving report shows that only 5% of cows needed assistance calving this year and Kevin puts this down to – well grown in calf heifers with good frames, using bulls of less than 3% calving difficulty for cows and less than 1.4% difficulty for heifers and easier care, crossbred cows.

Calving facilities on the farm consist of three indoors silo's which are bedded with straw. Kevin finds cows are very relaxed when calving in an open area. As calving progresses one silo will be used as accommodation for the colostrum and sick cows. These are kept indoors and milked once a day for five days after calving and then join the main herd.

As calving progresses further, another of the silos will be cleaned out and used for calf accommodation. If they have time one of the farm team will complete this job and if not a contractor will be used. In total bedding can take from an hour to 90 minutes a day between cows and calves.

Calf rearing

Calves get two feedings of colostrum after birth, by bottle if possible and if not by stomach tube. Initially calves are trained to the teat in groups of six and are then reared in groups of 10 till weanling.

Calves are fed after morning milking and enough milk is collected in the

morning to feed calves again later in the day. Calves are fed again at approx. 2.30pm. This means once evening milking is finished at approx. 5.30-6.00pm the day's work is over for everyone but the person on night time calving checks.

Heifer calves are reared on milk replacer and are fed once a day from four weeks of age. Once they are weaned they are sent to the contractor rearer in May. Bull calves are reared on transition milk and are collected twice a week from the farm which helps keep the workload manageable.

To date Shinagh has reared all heifer calves born on the farm which adds significantly to the workload but has also added to the farm's gross output. Heifer calves were sold at weaning in 2015. This year the plan was to sell heifer calves earlier but poor heifer calf price meant all calves were again reared and are now with a contract rearer. Having a cash flow budget for the year allowed the business to know it could afford to rear these animals and not just sell them at low milk prices in spring due to potential cash flow concerns.

Kevin's would ideally like the calf rearer to take calves from 10 days of age but in the current arrangement calves leave the farm weaned in May.

Cow management

Cows are turned out to grass as soon as they calve and on/off grazing is practiced in wet weather to try and keep some proportion of grass in the cow's diet. Poaching is avoided via using 12 hour grazings, back fencing and tracking the cows along narrow strips of ground in and out of paddocks. This takes a lot of work with reels but the return is higher production from cows and reduced feed costs. Hence the farm team is happy to put extra time into grazing management. Freeing up their time from other work e.g. slurry and fertilizer spreading in spring allows this to happen.

Cows are stripped twice daily before milking during February and March so as to pick up any mastitis cases as early as possible. They are stripped once daily in April and are no longer stripped routinely for the rest of the year. There are two people in the parlour full time up to the start of breeding in early May. From then on there are two people milking every morning as all cows are AI'd in mornings only (by a technician) and one person milks in the evening. From June on one there is only one person in the parlour.

Use of contractors

Shinagh is fortunate in that two local contractors cater for all machinery needs on the farm. The contractor that spreads fertilizer on the farm also feeds the cows silage during winter. Fertilizer is bulk spread for the first three rounds and spread weekly after the cows for the rest of the year. Silage is fed out every three days during the winter and in total takes about nine hours a week. The farm team push in the silage with their own tractor on the days the contractor isn't feeding. The contractor charges a per hour fee for his time so the farm team have the silage pit stripped and ready for feeding for the contractor.

The contractor that spreads slurry on the farm also does the silage and any reseeding work. Contractors are given as much notice as possible before jobs are to be done which requires good organisation. After a number of years working together a very good relationship has developed between the farm team and contractors. The silage feeding and fertilizer contractor is paid monthly while the other contractor is paid at regular intervals. Frequent payment of contractors is done to show how valued an asset they are to the Shinagh business.

Gurteen share farming arrangement

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Summary

- Share farming is one of a number of options including leasing and partnerships which can deliver both financial and lifestyle benefits to farm owners and skilled farmers.
- Share farming is based on a win/win principle where both parties interests are aligned – milk sales and expenses are split so both parties share the risk and reward
- A good working relationship is the fundamental requirement for a successful share farming arrangement.
- The Teagasc Dairy Share Farming contract can be used to set up a share farming arrangement

Introduction to share farming

Before going into detail on the Gurteen share farming arrangement it is important to discuss the principles of share farming and why it is being promoted by the West Cork Co-ops.

The core principle of share farming is that the land owner will provide the land and infrastructure (milking parlour, wintering facilities, roadways etc.) for dairying while the share farmer will provide some or all of the livestock, all the labour and take responsibility for running the farm. Machinery can be provided by either party.

As a return for providing these assets to the farm, each party gets a percentage of the milk cheque. This will vary from farm to farm but will typically be close to a 50/50 split where the share farmer provides all the cows (The split in Gurteen is 40/60 to the share farmer to ensure an adequate return). While the milk cheque is split, stock sales belong to whoever owns the cows and the Basic Payment Scheme is the farm owners.

Some costs are not split while others are. The farm owner will cover costs relating to their asset e.g. roadway repairs, while the share farmer covers costs relating to their asset e.g. animal health costs. Costs associated with producing milk from the farm on an annual basis e.g. feed and fertilizer costs are split in the same ratio as the milk cheque.

Share farming arrangements can last any period of time but typically contracts are signed for a minimum of three years. At the end of a contract the share farmer may want to move to a bigger farm and must give at least six months' notice if this is the case. The same notice period applies to the farm owner if they wish to end the contract.

Share farming provides numerous benefits to both parties.

Benefits to the farm owner are:

- Having a dairy farming business without having to invest in livestock or provide labour to run the farm
- Staying as an active farmer securing the Basic Payment Scheme
- Access to a motivated and skilled farmer who wants a share of the business instead of a wage.
- Share farming motivates this person to achieve the best possible farm performance as this affects both parties return.

Benefits to the share farmer are:

- Access to a developed farm
- Investing only in productive assets (livestock) which will increase in value over time
- Getting to run his/her own business (in conjunction with the farm owner)

From an industry view point, share farming and other forms of collaborative farming arrangements e.g. leasing and partnerships are seen as crucial for future success. Many older farmers are approaching retirement and have no successor – share farming could be a way for them to stay farming and to earn a far better return than getting out of dairying. For people that don't have access to a milking platform but have the skills to be successful farmers, it can allow them access to a farm on which to build a business. Providing career opportunities such as this to people is essential so as to attract people to work on dairy farms in the future.

It is intended to have an Open Day on the Gurteen Farm next year. This paper is a general introduction to the arrangement to-date.

Background of the farm

The Gurteen farm is in its first year of a share farming arrangement with John Sexton. The farm is owned by Shinagh Estates which in turn is owned by the four West Cork Co-ops. The farm is located 2km away from the Shinagh farm, outside the town of Bandon in Cork. It is 33ha in size and up to now was used by Shinagh Estates to contract rear heifers for the Shinagh farm. In the end of 2015 this farm was converted to dairying with the intention of going into a share farming arrangement with a skilled person who would provide approx. 100 cows and run the farm for a set term.

Shinagh Estates's objectives for this venture are:

- To generate more profit from the Gurteen farm by converting it to dairying
- To get a good return (>8.5%) on the investment required to convert to

dairying

- To do this with minimal hassle via working with a highly skilled share farmer
- To demonstrate a collaborative farming model which allows skilled people to start dairy farming without having to buy or lease land

The share farmer

After a detailed interview process John Sexton was selected as the share farmer for Gurteen farm. John is from a 28ha fragmented farm in Donoughmore, Cork.

John's career path to date is as follows:

- Level 6 Certificate in Dairy Herd Management, Clonakilty (two years)
- Farm assistant with William Kingston, Skibbereen – 220 cows
- Herd manager for Alastair and Sharon Rayne, New Zealand – 700 cows
- Herd manager for Grasslands, New Zealand – 850 cows
- Farm manager for Ed Dale, England – 450 cows

John prioritised working with excellent farmers and worked in different countries so as to improve his farming skill. A share farmer must have well developed skills in four key areas:

- Cow management – health, fertility, genetics etc.
- Grass management – soil fertility, grass measurement, grass allocation etc.
- Business management – cash flow budgeting, opportunity analysis etc.
- People management – working with the farm owner, relief help, etc.

John's objectives for this venture are:

- To start growing his equity by investing in cows and build towards securing a larger scale farm in the future
- To further develop his reputation by doing an excellent job in Gurteen, which will help to secure his next opportunity
- To continually improve his farming skill – he is a member of the Shared Vision discussion group and has completed the Teagasc Business Strategy course
- To enjoy a career dairy farming

How share farming works

The business relationship between the farm owner and share farmer is outlined in the share farming contract which is available on the Teagasc website.

This contract is the legal agreement binding both parties and outlines all

the necessary requirements that must be adhered to.

An extract of the Gurteen Share Farming Agreement is available at the end of this paper. This extract outlines how variable costs on the farm are split. It is important to note that share farming is flexible and each farm will have their own specific agreement e.g. in Gurteen the farm owner is paying for 50% of the milk recording to encourage the share farmer to complete this.

In practice costs are split in two ways:

- At source e.g. for milk sales the milk processor will issue a milk statement to both the share farmer and farm owner with their percentage of the milk for that month. Or for inputs the supplier may invoice each party for their share of the input e.g. if ordering six tonne of fertilizer, three tone will be invoiced to each party.
- At farm level e.g. the milk cheque is paid to the farm owner and he then passes this on to the share farmer recording the transaction with a short invoice and receipt. Or the fertilizer is charged to one account and at the end of the month the farm owner and share farmer meet up to keep accounts up to date.

On top of the legal agreement between the two parties there are other principles of how share farming works which need to be adhered to for a good working relationship e.g.

- Respect from the share farmer to look after the farm as if it were his/her own
- Respect from the farm owner to allow the share farmer manage the farm – while the farm owner have a say in the principles of how the farm is to be run the share farmer has the day to day management responsibility

To ensure a good working relationship it is advisable to have a third party e.g. a consultant/ adviser as an independent facilitator who will monitor how the farm is performing relative to targets and how well both parties are meeting the requirements of their position. This third party can help to resolve any issues or discussion points between share farmer and farm owner.

There will be a full open day on the Gurteen farm next year outlining initial start-up costs for both parties, year one performance and lessons learned to-date.

Extract from the Gurteen share farming contract

Division of Variable Costs

The Landowner and the Share Farmer agree the following proportions set out in which Variable Costs are to be discharged in accordance with Clause 48 of This Agreement.

Item	Landowner %	Share Farmer %
Purchased Concentrates	40	60
Purchased Forage	40	60
Nitrogen	40	60
Phosphorus & Potassium (*Build-up*)	100	0
Phosphorus & Potassium (*Maintenance*)	40	60
Ground Limestone	100	0
Veterinary		
TB Testing	0	100
Dry Cow Therapy	0	100
Vaccinations	0	100
Drugs	0	100
Call-Outs	0	100
AI / Breeding	0	100
Contractor		
Silage Cutting	40	60
Reseeding	100	0
Fertilizer for reseeding	40	60
Reclamation Work	100	0
Slurry Spreading	40	60
Fertiliser Spreading	40	60
Hedge Cutting	100	0
Feeding Stock during housing	40	60
Seed & Sprays	100	0
Milk Recording	50	50
Parlour Expenses	40	60
Detergents	40	60
Teat Spray	40	60
Liners & Rubber ware	40	60
Milk Socks	40	60
Annual IMQCS Milking Machine Test	40	60
Routine Maintenance	40	60
Major Repairs	100	0
Bulk Tank Maintenance	40	60
Routine Maintenance	40	60
Major Repairs	100	0
Cow minerals	40	60
Silage Additive & Polythene	40	60
Levies & Transport (*Stock*)	0	100
Straw	40	60
Animal Identification Tags	0	100
Sundry Variable Costs	0	100

Managing through a downturn

Padraig French[1], Tom O'Dwyer[1] and Fintan Phelan[2]

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- The critical aspect of managing a viable business through a downturn is to ensure the business has adequate cash available to continue to trade and operate efficiently
- To determine if your business has and will continue to have adequate cash available for the foreseeable future you will need to first determine your current position (Table 1) which is a list of all of your current liabilities.
- The second and more challenging task is to quantify all of your cash income and expenditure to the year end (Table 2), This will allow you to access if there is enough cash available to the business from now until year end, it would be prudent to be cautious on your predictions for cash sales and to allow for some unforeseen costs that may arise.
- Once an assessment is made of the size of any potential deficit a range of options can be examined to determine their impact on the short term cash position and the long term viability of the business

The following are potential areas to examine to try and bridge the gap between income & spending

- Prioritise essential living expenses
- Eliminate all non-essential expenditure
- Reduce Debt Repayment –
  - *Consolidate/ restructure several loans over a longer term or investigate "interest-only" BUT watch that interest rate is competitive*
  - *Investigate "payment holidays" on machinery lease payments*
  - *Negotiate with merchants to avoid paying excessive penalty interest on overdue accounts*
- Talk to your accountant NOW about your potential tax bill payable by 31st October – plan now to avoid another cash flow shock
- Reduce stocking rate to match the growth potential of the farm through sale of trading stock.

Target beef cattle, stores for sale, early sale of cull stock, excess replacement stock.

Table 1. List of all current debt as of today 15/09/2016

	Loan Name/ Debtor	Current Amount Outstanding	Remaining Loan Term (*years*)	Current Interest Rate	Total Repayment per year	Payments due before 1st Dec 2016
Term Loans (incl house mortgage)		€		%	€	€
		€		%	€	€
		€		%	€	€
		€		%	€	€
Overdraft & Stocking Loans		€		%	€	€
		€		%	€	€
		€		%	€	€
Merchant Co-Op Debt (+outstanding farm-to-farm debt)		€	-	%	-	€
		€	-	%	-	€
		€	-	%	-	€
		€	-	%	-	€
		€	-	%	-	€
Hire Purchase/ Finance		€		%	€	€
		€		%	€	€
Total Payments						€

Table 2. Cash Flow Assessment

Cash Out (*to 31st December 2016*)	Current Outstanding	From Today to 31st Dec., 2016	Total
Total Repayments From above	€	€	€
Feed & Fertiliser		€	€
Contractor	€	€	€
Vet	€	€	€
Other Operating Expenses	€	€	€
Health Ins/ Policies (Pension etc)	€	€	€
Tax	€	€	€
Living Expenses	€	€	€
Total Payments			€
Cash In [to 1st December 2016]	To Date		
Farm Sales (milk + other Sales less Exp. not included above)		€	€
Direct Payments (SFP, AEOS, SWCS)		€	€
Off Farm Income (Net)		€	€
Child Benefit, Pension, Farm Assist,		€	€
Total Net Income Available			€
Balance Surplus /Deficit (Deficit should not exceed available merchant credit and OD limit)			

Managing through 2016

Donal Whelton

Agri Advisor, AIB

To-date, 2016 has proven to be a difficult year on many Irish dairy farms. The relatively high average milk price experienced in recent years has declined by over 36% and it is clear, at this stage, that the average price in 2016 will not be anywhere near the prices achieved in 2013 and 2014.

This reduction in price has come at a disappointing time for the sector. It is the first year in which there are no limitations on milk production and a large portion of farmers have invested in livestock and facilities to expand output.

With prices likely to average around 25c/l for the year as a whole, some 13c/l below 2014, on an average farm milking 80 cows, yielding 5,000 litres per cow, this equates to a drop in farm revenue of €52,000, over the past two years, all other things remaining the same. It is difficult for any business to cope with a drop in turnover of this level.

While there are tentative signs of recovery in global dairy markets, it is likely that it will be next year before there will be any significant price increases for dairy farmers. Looking ahead, it is important that you understand your own financial position and assess the level of support, if any, you will require over the next 12 months to get you through this period.

Understanding your break-even price

A useful starting position for some is to review their most recent Profit and Loss accounts for the farm and ask 'What is the break-even milk price needed to cover farm costs, living expenses, bank repayments and income tax?'

Calculating a farm's break-even milk price (Table 1) is an entirely farm specific exercise. It is the milk price that your farm business needs to meet all cash commitments. The calculation includes both capital and interest financial repayments, drawings/household expenses and taxation. It excludes depreciation as this is a non-cash expense (the capital portion of repayments is included in its place). This exercise allows you to establish the milk price at which your business will be in a cash surplus/deficit.

I have included below an example of a break-even calculation for a dairy farm supplying 400,000 litres of milk. In this example the break-even milk price is 27.5c/litre of milk supplied, which is typical of many farms. It is important to note that this example doesn't include any capital development or change of stock values.

Table 1. Farmer supplying 400,000 litres of milk		
	€	C / litre
Farm costs (*excluding Depreciation and Bank Interest*)	85,000	21.25
Capital Expenditure from Cashflow	-	-
Bank Repayments	15,000	3.75
Drawings / Living expenses (*required from farm*)	35,000	8.75
Income Tax	5,000	1.25
Total costs	140,000	35.00
Less Income from non-milk sales (*calves / culls / beef / direct payments*)	-30,000	-7.50
Total Income required from milk sales	110,000	27.5c / litre
Break-even milk price	27.5c / litre	

Figures used for illustrative purposes only.

Completion of this exercise should highlight your farms existing position and whether or not you need to take further action such as reducing costs or adding value to your output, and how much action you need to take.

Some farmers are likely to experience periods of cashflow deficits this year and perhaps into the first half of 2017, and I believe that farmers should take a three step approach to dealing with cashflow pressure or even potential cashflow pressure. This will help ensure that you are not just treating the symptoms, but rather addressing the underlying root cause of the cashflow pressure giving you the opportunity to correct any issues that may exist.

Understand the cause of the cashflow pressure (or likely cashflow pressure)

It is important to understand the cause of cashflow pressure on your farm as this will give you a real insight into how your business is positioned for the medium term. While the low milk price may be the trigger for the cashflow pressure currently experienced or anticipated, there may also be other reasons impacting on the farms cashflow including:

- Building up livestock from cashflow
- Carrying out capital expenditure from cashflow (or a portion of it, from cashflow)
- High level of bank debt / high level of bank repayments
- Farm has a high cost of production
- High machinery costs
- Restricted herd / disease / other on farm issues
- Once off high costs

Once you have identified the cause (and/or causes), this will enable you to put a plan in place to take corrective action.

Estimate the size of support required

When you are planning for the coming year, it is important to estimate how much additional support your business will require, if any. You will need to make certain assumptions around output price, performance, costs and living expenses. In general, the best starting point is to review the previous year and estimate based on pervious performance. (It must be remembered that 2015 was a favourable year for animal performance and weather).

A cashflow projection for the coming year can help highlight how much of a shortfall will arise (if any) and when it will arise. This will enable you to put the most appropriate solution in place for your business at an early stage rather than continually reacting to cashflow problems during the year. A simple cashflow planning template is available at *www.aib.ie/farming*.

Develop a solution

From completing the cashflow projection you will now know how much of a shortfall your business is likely to incur and when it is likely to occur and therefore you can develop a solution. This will put you in a strong position if you are meeting your bank to seek support.

It is worth highlighting that the earlier you develop a solution the more options that may be available to you. There are a number of options that can be considered including holding off building up livestock numbers for a period or placing recent capital expenditure from cashflow on a term loan.

If you are experiencing or expect to experience cashflow difficulties, the important thing is to remember that are a number of support options available to you. Take the time to inform yourself, identify the cause or causes of the problem and estimate the level of support required. Solutions are best tailored at an early stage and early contact with your bank, if support is required, is key. It is important that dairy farmers rebound quickly from periods of low prices to ensure that any downturn does not impact the long term profitability and viability of their farm business.

For those of you who would like to speak to somebody in AIB on how we can help you and your business, contact your local AIB branch or call 1890 47 88 33 (available 8am-9pm on weekdays and 9am-6pm on Saturdays).

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Notes

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