BETTER Farm **Beef** Programme

End of Phase 2 Conference, Tullamore, 19 April 2016
"Improving Efficiency – Unlocking Potential"

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A TEAGASC/IRISH FARMERS JOURNAL INITIATIVE
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Outline of BETTER Farm Beef Conference
Date – 19th April
Venue – Tullamore Court Hotel

Time	Item	Speaker/Presenters
1.00pm - 1.45pm 2.00pm sharp	**Farmer Poster Presentations (1)**	Farmers/B&T advisors
2.00pm - 2.10pm	**Conference Introductory speech**	Professor Gerry Boyle
2.10pm - 2.30pm	**End of Programme results - Financial performance summary**	Alan Dillon
2.30pm - 2.55pm	**Interview + audience questions 1)Grassland**	Peter Lawrence (Interviewer) Tomas Murphy - East Des Beirne - North David Walsh -South
3.00pm - 3.25pm	**Interview + audience questions 2)Breeding**	Catherine Egan (Interviewer) Ger Dineen - South Marty Lenihan - West Tom Halpin - East
3.30pm - 4.00pm	**Interview+ audience questions 3) Health**	Nathan Tuffy (Interviewer) Patrick Grennan- South James Strain- West Heinz Eggert- East
4.00pm - 4.25pm	**Break & Farmer Poster presentations (2)**	Farmers/B&T advisors
4.30pm - 5.30pm	**Key note speaker**	Aidan O'Driscoll –Dept. of Agriculture Secretary General
5.30pm - 6.00pm	**Close of conference speeches**	Justin McCarthy
6.30pm	**Dinner for all involved in Phase 2**	

BETTER Farm Beef Programme

The Teagasc-Farmers Journal BETTER Farm beef programme aims to develop a road map for profitable beef production through improving technical efficiency within the farm gate. The lack of profit in beef production is often attributed solely to poor farm gate prices. The BETTER Farm programme will demonstrate to farmers that there are actually three factors driving the profitability of their enterprise:

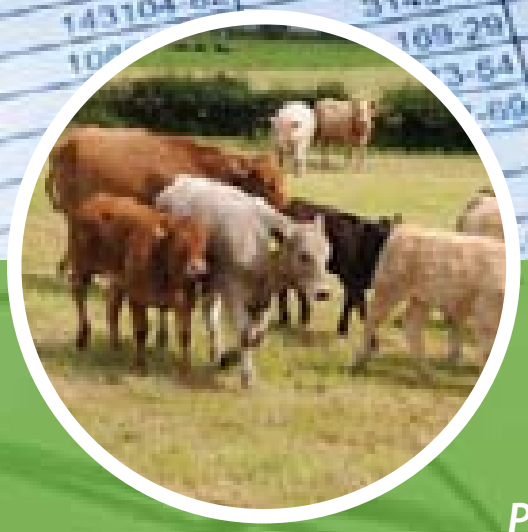
- Farm gate price;
- Production costs;
- Animal performance/beef output.

Higher prices alone will not address the serious profitability issues in beef production from the suckler herd – nor can we expect the industry simply to deliver higher prices to support inefficient producers.

The BETTER Farm programme will focus on

- Boosting profitability on farms by reducing production costs
- Increasing farm output through improved animal performance.
- All areas of the production system will be looked at . The latest technologies and research will be adopted to ensure maximum efficiency.

Contents



Farmers participating in Phase 2 of the BETTER Farm Programme have seen their gross margins increase by 53% since joining the programme in 2012.

Chapter 1.

Financial Management

Farmers participating in Phase 2 of the BETTER Farm Programme have seen their gross margins increase by 53% since joining the programme in 2012. Taking into account beef prices rising by 8% since 2012, and changes in input costs over the same period, it is calculated that 83% of gross margin improvement is from technical efficiency.

Gross margins have increased from a starting point of €675/ha to €1,029/ha over the course of three years. This breaks down to a gross margin of €715/ha for weanling producers compared to €363/ha, on average, nationally. Store traders in the BETTER Farm programme averaged €785/ha compared to €572/ha nationally.

Suckler to finishing farmers, which includes three different systems covering under 16 month bulls, under 20 month bulls and steers averaged €1241/ha compared to €532/ha nationally. Fig. 1.1 outlines how gross margins have improved since the beginning of Phase 1 of the BETTER Farm programme.

Figure 1.2 summarises the performance of BETTER Farm Programme participants in different systems against national figures. The suckler to finish system using under 16 month bulls performed best at a gross margin of €1,464/ha in 2015, followed by suckler to under 20 month bulls at €1,220/ha. Suckler to finish with steer systems achieved €1,083/ha.

Fig1.1. Phase 1 and 2 programme gross margin performance since 2009

Year	2015	2014	2013	2012	2011	2010	2009
Gross €/ha	1,029	837	579	675	553	405	286

This is as a result of increased output. A focus on grassland management, improved breeding strategies and herd health have contributed to cost reductions and increases in the kilos of liveweight leaving the farm gate every year.

Much of the increased output on farms has come from increasing stocking rates. This was achieved by a variety of methods, from purchasing extra cows with calves or in-calf heifers, purchasing extra finishing stock in the form of calves, weanlings or store cattle or through keeping on their own stock for longer i.e. moving from selling as weanlings to stores or finishing as bulls, heifers and steers. Farmers who went down the route of producing bulls had spoken with their processor beforehand.

When making the decision to increase farm output by any of these methods, a robust financial plan must be put in place. All farms at the beginning of the programme, with the assistance of the BETTER Farm Management team, put together a three year plan for their farm detailing how output would increase, what system they would work towards, and what farm improvements were needed to make this happen.

Farmers in the programme completed Teagasc eProfit Monitors annually to chart profitability. Cost Control Planners were used to monitor costings and ensure cashflow was adequate to run both the farm and the household. Completing financial analysis in the form of Profit Monitors which look back at the previous year's performance and Cost Control Planners which monitor cashflow and help plan the business for the year ahead are two of the most essential tools for any farmer who is considering expanding or increasing output.

Bringing extra stock into the system, whether through purchasing, breeding or changing system to store production or finishing, can put considerable strain on cashflow. A farmer who has been selling weanlings in the autumn and changes to under 16 month bull production not only has to contend with the lack of cash from autumn to spring but also has significant input costs to pay in the interim such as silage, meal and vet costs.

Budgeting and planning ahead can help identify these problems in the distance and help avoid unnecessary stress on the farm and the farmer himself. Budgets however must be revisited regularly as adverse weather, commodity price fluctuations and personal issues such as health may drastically change the outgoings on a farm from month to month.

Fig 1.2. BETTER Farm Gross Margin Performance

System Gross Margin	2013 €/ha Gross Margin	2014 €/ha Gross Margin	2015 €/ha Gross Margin	National Avg 2014 €/ha Gross Margin
Suckler to weanling/store	356	688	792	363
Suckler to finish (all systems)	739	962	1,241	532
Store traders	734	718	785	572

Fig 1.3. BETTER Farm Gross Margin Performance

Year	Ha	S.R. Lu/ha	Output kg/ha	Sales €/ha	Purch €/ha	Inventory €/ha	Gr Output €/ha	Feed €/ha	Fert/lime €/ha	Vet €/ha	Ai/ha €/ha	Contract €/ha	Other €/ha	Total vc €/ha	Gross Margin €/ha
2015	52.7	2.27	835	2,492	714	+136	1,914	296	226	107	16	129	110	886	1,029
2014	52.8	2.09	757	2,146	504	+66	1,708	296	210	106	15	136	107	871	837
2013	52.9	2.1	676	1,799	437	+201	1,583	358	245	97	14	144	107	966	597
2012	52.6	1.98	678	1,821	392	+71	1,500	307	166	112	19	121	99	825	675
2011	54.1	1.83	599	1,518	397	+91	1,212	187	162	97	18	119	76	659	553
2010	53.1	1.82	580	1,250	278	+39	1,010	174	145	79	12	122	73	605	405
2009	44.5	1.84	541	1,030	213	+64	885	185	129	85	11	113	71	595	286

Key points of financial management

- Carry out annual analysis of your farm performance and benchmark against your peers. The Teagasc eProfit Monitor is the ideal tool for this.
- Use your local discussion group as an additional platform to compare performance.
- Sit down with your advisor and put a 3-5 year plan in place for your farm. This will help you put a clearer picture of where you want your farm to go and what is achievable from both a personal point of view while also taking into account what resources are available to you, i.e. Land, infrastructure, stock, capital.
- Carry out a 12 month budget annually which estimates cash income and outgoings. Revisit this budget every couple of months to monitor progress. The Teagasc Cost Control Planner is a useful tool for this exercise and enables you to compare one year's financial data with another.
- Attend farm walks around the country which cover similar systems to your own and maybe some that are different. Take something home from them to apply on your own farm.
- Involve the family in financial decisions. They may be able to provide good input and may help with forming plans and budgets. While not everyone is comfortable with computer programmes or financial budgeting, there may be someone in the household that is i.e. spouse, child, nephew, niece etc.
- Revisit financial data annually. One year's performance means little. It's over a 4-5 year period that a clear picture of the farm's performance can be assessed.

Key Physical Targets on BETTER Beef Farms

- Aim for a stocking rate of over two LU/ha annually. Some of the drier farms in the south and east may be capable of up to 3.0 LU/ha while more of the heavier farms especially in the west may struggle past 1.8 LU/ha. The further below 2.0 LU/ha you go, the harder it is to achieve a reasonable level of output on the farm.
- Many of the BETTER Farms, especially those that are finishing stock, are aiming for an output of 1,000kg of liveweight produced per hectare. This becomes harder with weanling systems as the farm would need to carry roughly three suckler cows/ha producing weanlings of over 330kg at sale to hit this target. Finishing systems fared better, especially bull systems which had a signifi cant period of feeding indoors. This reduced pressure on the grazing block, while still contributing to the overall output on the farm.
- Ensure every animal on the farm is making you money. On your eProfit Monitor examine your output per Livestock Unit. Farmers in the BETTER Farm Programme have a target of 350 kg per livestock unit.
- Pick a system to suit your farm. On some of the programme's heavier farms the autumn calving system has fared better than spring calving. This is as a result of heavier farms generally having a later turnout date but are still able to make top quality silage once harvested early. This cuts the cost of maintaining the autumn cow over the winter. These autumn herds tend to use mostly AI also which gives access to the top bulls in the country. This allows a producer to breed replacements by selecting maternal bulls for suitable cows and heifers to breed replacements.

- Focus on the basics. Grass, breeding and herd health are the corner stones of production. Excess investment in machinery, extra leased land or buildings are no guarantee of extra profit.
- Weigh stock regularly. All farmers on the BETTER Farm programme weigh stock on a regular basis - up to four times annually. This is your barometer as to whether your stock will hit their target weight gains and also your target output. It will also help identify sick animals.

System analysis

Over the course of the BETTER Farm Programme we have examined a number of different systems. While some systems have shown large increases in profitability such as the suckler to under 16 month and 20 month bull system, other systems such as the trading system and spring weanling system have lagged behind with only moderate increases in gross margin.

Farmers in the suckler to under 16 month bull system such as Michael Dillane, Ger Dineen and Donal Scully, have achieved gross margins in excess of €1,500/ha. Suckler to under 20 month bull producers such as Willie Treacy, Pat O'Reilly and Donie Ahern have regularly achieved over €1,000/ha gross margin.

All of these farms are characterised by high outputs and high inputs in terms of concentrates but all farms have an extremely high grassland stocking rate, generally in excess of 2.5 LU/ha during the main grazing season and focus on early turnout and maintaining top quality swards to achieve high levels of weight gain from grass before the intensive indoor feeding period begins.

It should be noted that all bull producers have had regular contact with their processor prior to deciding to finish bulls. Carcass weights and timing of sale have been agreed in advance.

Suckler to weanling systems have achieved modest gross margin increases over the course of the programme. These farms typically had the lowest stocking rates and were located in the west of Ireland where this system is more traditionally practised.

Poor weather conditions hampered output in 2012, 2013 and 2015 on these farms causing delayed turnout, poorer thrive and increased costs due to repeated housing over the summer months.

Farmers such as Niall Patterson who farms on very heavy ground in Leitrim suffered heavily from this system in poor weather while Richard Jennings who farms an autumn calving herd targeting weanlings at the export market fared better due to timing of sale, drier land and higher weights in calves at sale combined with a higher price per kilo being achieved.

The trading system began well in 2012 and while both farm plans had demonstrated the ability to achieve gross margins in excess of €1,000/ha, significant increases in store prices over the past three years have reduced the margin per head. While the farms maintained or slightly increased their gross margin due to improved grassland management, increased output and market focus, they would have suffered significant drops in gross margin if changes hadn't been made.

Suckler to steer and heifer finishers performed well and have shown steady increases in gross margin over the past three years. These farms have had a slower build up in profitability than bull finishers due to the extra time required to bring steers and heifers to finish at 24-30 months. It is expected these farms will show further increases in efficiency in 2016.

Only two farmers remain in the suckler to forward store system. Both farmers have made significant progress in terms of increasing output from a very low base from a largely grass based system achieving an average gross margin of €869/ha. Both farmers will, however, change over to finishing all stock in the next 2-3 years due to greater performance of that system.

Fig 1.4 Financial Performance of systems on BETTER Farm 2015

Category	S.R Lu/ha	Output kg/ha	Output €/ha	Var Costs €/ha	Gross Margin €/ha
Weanlings	2.04	632	1,486	771	715
Under 16 Bulls	2.44	1,067	2,559	1,095	1,464
Under 20 month bulls	2.42	944	2,123	946	1,178
Steer Finish	2.36	814	1,847	830	1,017
Store Producer	2.18	719	1,550	681	869

Fig 1.5. Financial Targets on BETTER Farms

Target	Weanlings	Finishers	Store Traders
Stocking rate LU/ha	1.8-2	2.3-2.7	2.5
Output kg/ha	750	1,000	1,000
Output kg/lu	330	400	400
Output €/ha	1,600	2,500	2,200
Var. Costs €/ha	600	1,300	1,200
Gross Margin €/ha	1,000	1,200	1,000

David Walsh, Newcastle Co. Tipperary.

"When I joined the BETTER Farm Programme my farm had low stocking rates, low outputs, low inputs and a relied on subsidies to make a profit. With the disappearance of REPS, cuts to SFP, Suckler cow and Disadvantaged area schemes I found that my farm income was disappearing fast.

"Taking this into account along with the fact my wife lost her job and having a family of four to support, my cash reserves were starting to disappear. The farm plan obviously involved increasing output. Starting from a low stock base I was facing a big issue with cashflow due to the need to increase cow numbers, change from selling weanlings to selling heavy stores or finishing stock along with rearing a family.

"By measuring grass regularly during the first year I established that my farm had the potential to grow more grass and keep production costs down. Along with my advisor I drew up a six year business plan to draw down a farm loan, I also applied for a stocking loan and increased my overdraft in the short term.

"The first year I aimed to increase output was in 2013, during the fodder crisis. This left me under too much financial pressure and resulted in me selling stock off early out of the shed. It also resulted in a drop in gross margin over the previous year due to lower output and extra costs during the long winter. But it also taught me to persevere.

"If I had held on in 2013 an extra few weeks, the weather would have improved and I would have sold stock heavier off grass. Over the course of three years I have gradually seen my Profit Monitor show steady increases in gross margin to the point where I exceeded my target gross margin in 2015 of €1,000/ha. I feel I am not there yet and I will reach higher levels of profitability in years to come.

I have more confidence now in terms of managing cashflow difficulties and dealing with banks and I have a greater understanding of how to improve technical performance."

Good cow fertility is a key profit driver in the programme. One of the key aspects of running an efficient suckler system is good breeding management and herd fertility.

Chapter 2.
Breeding

One of the key aspects of running an efficient suckler system is good breeding management and herd fertility. Good cow fertility is a key profit driver in the programme.

Cow condition score, bull fertility, the incidence of difficult calving and herd health are some of the main factors that affect fertility in the herd. Having a defined compact calving period and setting out clear objectives for targeting a 365 day calving interval, 12 week calving spread and less than 2.5% mortality at birth and less than 5% mortality at 28 days is key.

There has been huge progress in breeding at farm level which has had a positive effect on farm output and profitability. By focusing on breeding efficiency it is possible to increase kg/ha, kg/Lu, calves/cow/year and overall output. The factors which influence output are: the number of calves produced, weight of calf weaned and quality of the calf.

Key fertility targets

- 365 Day Calving Interval
- 12 week calving spread
- 0.95 calf/cow/year
- Less than 2.5% mortality at birth
- Less than 5% mortality at 28 Days
- 60% of cows calved in the first month
- 80% of cows calved in the first two months

Calving Analysis

One of the most common ways of benchmarking suckler herds against each other is by using the calving reports. Since 2012, almost all farmers in the programme have made substantial changes to their farming systems in terms of removing non-performers, tightening the calving interval and tightening the calving spread.

In terms of the analysis, there are no real concrete differences between the performance of those farmers participating in the programme since phase one and those who joined in phase two. In previous years, a greater difference was evident as most of the phase 1 farmers had built up stock numbers and tightened calving interval since phase 1.

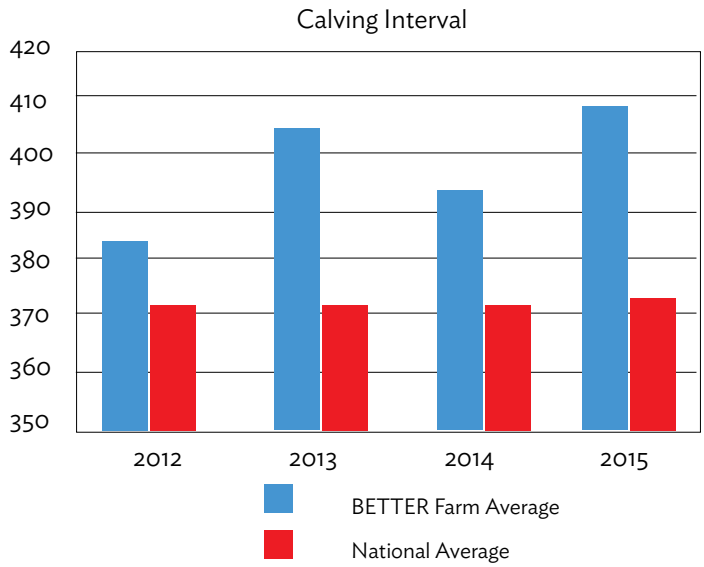
Calving every 365 days

The target on all farms should be to have a cow which calves every 365 days. In 2015 the national average was 407 days, while the average across the BETTER farm programme was 378 days. The average calving interval on the farms varies from 412 days at the top end to 355 days at the bottom end. In comparison in 2012 the variation across the farms across the farms was from 441 days at the top end to 342 at the bottom end. The BETTER farm average was consistently below the national average since 2012 as is evident in Figure 2.1.

Higher calving intervals in some herds in 2015 have been directly associated with issues such as infertile bulls running with cows last year and farms altering their calving periods. In the past, purchasing cows and letting cows slip from spring to autumn herd and vice versa were the main reasons.

The average calving interval has been reduced gradually or maintained while main i mprovements have been on an individual farm basis. Analysing individual cow data has been a major benefit here. Cows that consistently had higher calving intervals were culled and heifers with better fertility brought in to replace them.

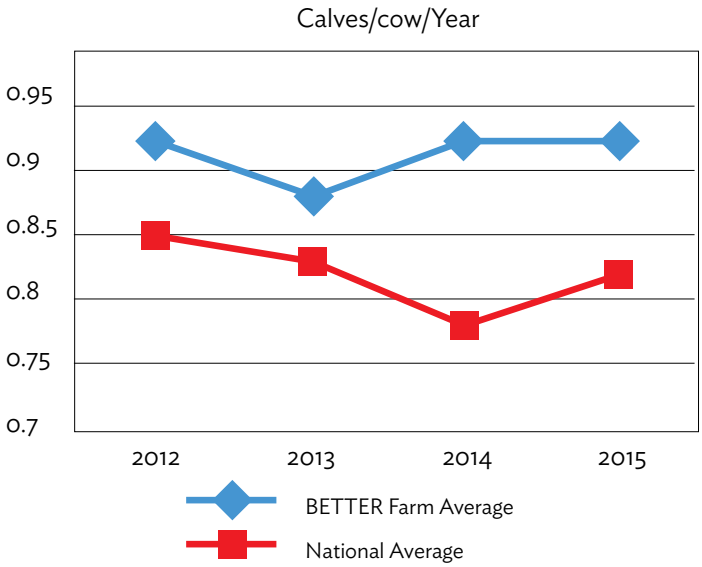
Figure 2.1: Average calving interval performance



Increasing farm output

Maximising output on the farm starts with maximising output per cow. The goal on every farm is to produce a live calf every year, of good quality, achieving a good weight for age. Over the course of the programme the target was to achieve 0.95 calves per cow per year. The participants averaged 0.92, just under of the target while the national average stands at 0.82 calves per cow per year as evident in Figure 2.2.

Figure 2.2: Calves/cow/year 2012-2015



Mortality

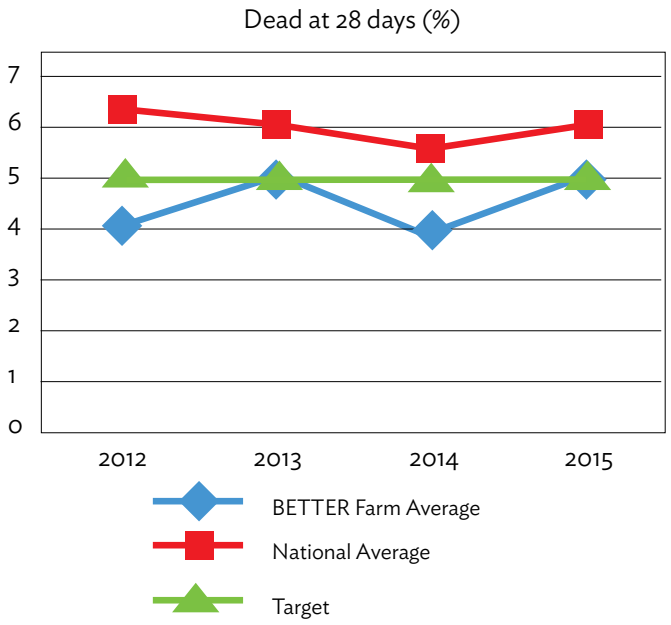
Mortality can, in many cases, be completely outside the farmer's control. However, if health issues arise and mortality increases, it will have a profound effect on farm output in subsequent years. The targets are to have mortality under 2.5% at birth and under 5% at 28 days.

The participants have had 2% dead at birth and 4.5% dead at 28 days. In comparison the national average herd was much higher with 4.7% dead at birth and 6% dead at 28 days. The range across the programme farms 0-10% dead at 28 days.

Careful management of animals at and after birth, selecting sires both to suit cow type, ease of calving for heifers and manipulating cow condition have all helped reduce mortality at calving on the farms. Although calf quality is important, even a poor quality calf is much more valuable than a dead one.

Figure 2.3 clearly shows these management tips in action with the BETTER farms achieving this target using these management tips for consecutive years.

Figure 2.3: Dead at 28 days (%) 2012-2015



Longevity

We all want a cow that is going to last in the herd. The average number of calvings per cow in the programme was 4.3, which is on par with the national average. This figure varied from 3.9 to 5.5 between the farms in 2015. In 2012 the variation was greater from 2.6 to 6.2 between the farms.

The average number of calvings has been lowest in fast expanding herds, where numerous heifers were brought in annually in recent years. Naturally, cull cow value must be taken into account here. When cull cow prices are high, higher levels of culling may be feasible, depending on replacement costs.

As a herd stabilises in terms of numbers, calvings per cow should increase. Where the survivability is high, this will allow the farmers to operate a more targeted culling programme as there will be less involuntary culling.

Calving spread

Regardless of when calving season starts, a key focus is to keep the calving pattern to a maximum of 12 weeks. A tight calving pattern allows for easier management of stock, reduced labour, fewer groups of stock and potentially less disease problems. On most farms there is increased focus and attention to detail at calving if it is compacted into 12 weeks.

Where both spring and autumn herds are present, there is a tendency by some farmers to recycle cows from one herd to another. Ideally, each herd should be maintained as a separate entity. Allowing cows to slip around also increases the calving spread.

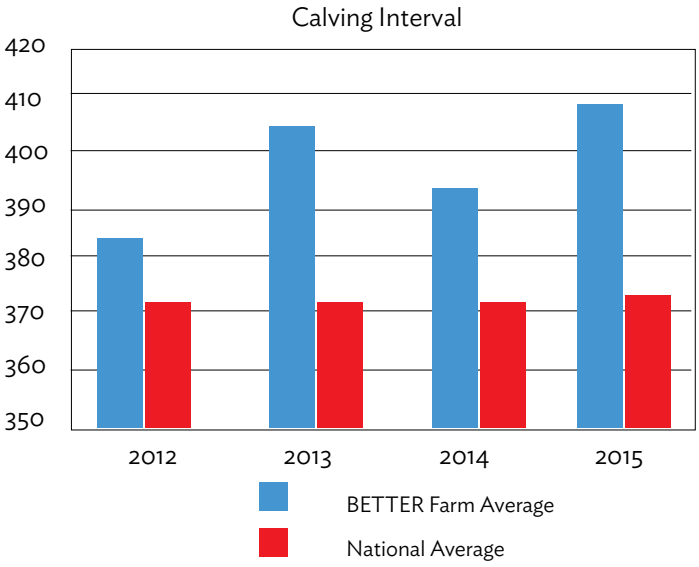
Land quality and climate conditions had an effect on calving interval, but also affected the calving spread. There is a more spread-out calving pattern in herds in the northwest and, to a lesser extent, herds in the southwest. Although this is not completely down to a land type and weather effect, it does have some impact.

Two-year-old calving

Heifers calving at two years old are more productive over their lifetime (more calves produced) with increased output. Stocking rate is reduced compared to calving heifers at older ages. Numbers of grazing groups of stock and costs are reduced.

The number of participants calving heifers at two years has increased significantly from just under a quarter of heifers calving in 2012 to 43% calving 22-26 months in 2015. By compar ison, the national average has remained stagnant with a mere 2% increase since 2012 to 18% of heifers calving from 22-26 months of age in 2015.

Figure 2.4: Heifers calved at 22-26 months of age 2012-2015



Five key steps to BETTER breeding

1.Have a plan

A simple action plan for the three year period with achievable breeding targets was the starting point on each farm. Selecting defined calving dates, sires with easy calving and high reliability and increasing maternal bloodlines in the herds was a key starting point on many of the farms.

The BETTER farm programme targeted culling poor performing cows. The ICBF Herdplus recorded individual cow breeding performance. This, along with the strategic weighing of progeny, allowed poor performers to be quickly identified.

As a result of identifying weaknesses and strengths on each farm from the ICBF HerdPlus reports breeding plans were put in place. In most cases the results only become evident in year four or five.

2.Tightening calving spread

Regardless of when calving season starts, a key focus is to keep the calving spread to a maximum of 12 weeks. A tight calving pattern allows for easier management of stock. All calves will be around the same age and can be managed as one group and grassland management is much easier.

Having defined breeding dates, pulling back of late calvers and breeding heifers two weeks before the main herd were all central to achieving this target. By removing the bull a fortnight earlier and culling cows that are calving outside the planned twelve week period it has been achieved on the majority of farms.

As shown in Figure 2.5 a calf born from the 1st-22nd February will result in a weaning weight of 310kg versus a calf in the herd born from 26th April-17th May with a four month calving interval. There is 93kg difference between the two calves at a value of €2.50/kg this is worth €232.50.

Fig 2.5: Impact of a prolonged calving spread

Date	Age @ Weaning(Days)	Weight @Weaning
1st Feb – 22nd Feb	245	310kg
22ndFeb–15th Mar	224	287kg
15th Mar-5th April	203	263kg
5th April-26th April	182	240kg
26thApril-17th May	161	217kg

3.Calving interval

Every day a cow is empty over 365 days is a cost to the system. By using suckler cow calving reports cows with a poor calving interval can be identified. Persistent offenders are often the problem. A poor calving interval can severely affect output on the farm and the number of calves produced by a cow over her lifetime.

As shown in Figure 2.6 Cow 1 has a calving interval of 367 days in comparison to Cow 2 with a calving interval of 444 days. Over the five year period Cow 1 will produce 1,600kg in comparison to Cow 2 only producing 822kg and one less calf. This is equivalent to 778kg @ €2.50/kg = €1,945/cow.

Fig 2.6: Effect of poor calving interval

Cow 1 Calving interval 367 Days		Cow 2 Calving interval 444 Days	
D.O.B	Calf Weight (kg)	D.O.B	Calf Weight (kg)
01/02/2008	324	01/02/2008	324
02/02/2009	322	02/04/2009	245
04/02/2010	320	08/07/2010	166
06/02/2011	318	25/09/2011	87
08/02/2012	316	01/11/2012	No calf
Output	1600kg (5 calves)	Output	822kg (4 calves)

•*Assuming 40kg Birthweight and 1.1kg ADG to weaning*

4.Calves/cow/year

This increase in output produced by farmers participating in the programme illustrates improved efficiency equating to €80/cow as seen in Figure 2.7. This means that the average BETTER farm participant with 60 cows is producing six more calves per year than the average suckler farmer. At an average sale value of €800/head, this equates to an additional €4,800 of output on a 60-cow farm. It is probably one of the most important targets farmers in the programme have worked towards.

Fig 2.7: Increase in Calves/cow/year

	National average	BETTER farm average
Calves per cow per year	0.92	0.82
Average sale value €	800	800
Output/Cow €	€736	€656
Difference	€80	

5.Calving heifers at two years

Heifers calving at two years old are more productive over their lifetime (more calves produced) with increased output. Stocking rate is reduced compared to calving heifers at older ages. Numbers of grazing groups of stock and overall costs are reduced.

Factors af ecting fertility

• Herd health

Herd health is a crucial to fertility. A proactive approach is essential. Diseases such as bovine viral diarrhoea (BVD) and leptospirosis in herds can have a devastating effect on fertility by increasing the calving interval, calving pattern and cost to the farmer. Get veterinary advice at the first sign of a problem. A herd health plan that includes bio-security, vaccinations and the culling of carrier animals, drawn up in consultation with your vet, is the best way to manage disease problems.

• Stock bull

Estimates suggest that up to 5% of bulls are completely infertile and a further 15-20% will be partially or periodically infertile. With bulls missing cows in heat the calving interval will be extended. Bulls need to be in good physical condition but not fat.

• Calving difficulty

It is important to avoid difficult calvings in the herd. Conception rates decrease as calving difficulty increases. Therefore it is important to choose sires that suit the cow to prevent difficult calvings. Use bulls with a high reliability score for calving difficulty percentage.

• Selecting replacements

Farmers breeding replacements on the farm use maternal bulls to increase milk in the herd. Reproductive and maternal traits of the dam should be considered. Replacements should be kept from the top performing cows in the herd. This will ensure a functional replacement heifer calving every 365 days, with good temperament, longevity, milk, calving ease and calf quality.

• Scanning

Scanning is a vital tool used on herds in the programme. The benefits of pregnancy scanning far exceed the cost. When you reach at least 35 days since the last cow in the herd has been served, consider scanning the cows. It offers many advantages:

Firstly, it will identify which cows are in calf and allow you to cull empty cows instead of expecting these cows to calve next year.

Secondly, most scanners are able to give you a good estimate of the number of weeks that each cow has been in calf. This is extremely helpful when a stock bull has been used rather than AI. You can use this information to predict the cow's due date which will influence how she is fed and when she is to be vaccinated.

Scanning allows you to pen cows according to their predicted calving date and pen late calvers together. These predicted late calvers could be selected for culling next year when their calves have been weaned. It is also possible to cull these predicted late calvers by selling them at the mart now, or prior to calving.

If the scanning reveals that more than 5% of your cows are empty there is a fertility problem in your herd. Maybe it was a bull issue or perhaps a mineral deficiency or a disease problem, either way it should prompt you to investigate further.

Marty Lenehan, Sligo:

"Scanning helps to identify cows that are not in calf early. I separate the empty cows from the main herd and sell them off grass. Provided cows haven't gone over 12 to 14 weeks in calf you are able to detect if any are carrying twins. This is a huge benefit as you can watch the condition of these individual cows in the run up to calving. You are also aware of what to expect at calving time. Overall, it makes breeding decisions easier on the farm."

Niall Patterson, Leitrim.

"When the cows are scanned it really helps predict the expected calving date. I cross reference this to my own records that I keep when the stock bull is turned out. At housing I pen cows according to their predicted calving date and pen late calvers together. I find this is a great help at calving as all the cows are being fed according to th*eir requirements and it's easier to monitor cows at calving time."*

Tomás Murphy, Laois

Tomás Murphy farms a mixed sheep, tillage and suckler farm near Durrow Co. Laois. Over the last three years Tomás has moved from a split calving herd (spring and autumn calving) to an all spring calving herd to streamline the work load on the farm and to take advantage of the grass growing season to reduce the costs of production.

The herd now consists of 70 sucker cows and replacement heifers. The cows are mainly Limousin cross and Simmental cross cows calving from late January to early April. Since joining the BETTER Farm programme Tomás is more focussed on using sires with strong maternal traits to help give him more choice when selecting suitable replacements heifers to breed from.

A Bawny T-Rex sired Simmental stock bull was purchased in 2015 to replace an older terminal Charolais stock bull. This Simmental bull has excellent maternal traits and is used on cows with good fertility records and good milk yield which can be determined from the calves' pre-weaning performance.

A Limousin stock bull is used on replacement heifers and cows not put to the Simmental sire. Tomás has purchased Limousin x Friesian and Simmental replacement heifers from farms and the marts to help build cow numbers and add more milk to the herd. However, Tomas aims to be able to breed from within the herd so he can reduce the risk of disease and have more control on the heifer he wants to breed as a replacement

Fig 2.8. Summary of Tomás Murphy breeding performance

	2011-2012	2012-2013	2013-2014	2014-2015	2015 National Average
Calvings	75	64	64	64	-
Calving interval	430	372	379	379	407
Calves per cow per year	0.87	1.02	0.94	0.94	0.82
Mortality at birth	0	1.5	0	0	4.7
Mortality at 28 days	1.3	1.5	3.1	3.1	6

Fig 2.9 shows the summary of the breeding performance of the suckler cows on the Murphy farm. The calving interval was very long at 430 days during the 2012-2013 breeding season and this is largely due to Tomás retaining cows that calved in the autumn herd and shifting them into the spring herd as he was phasing out his autumn calving herd.

Calving interval is now running at 379 days and he is now in a good position to get it closer to 365 days now that all cows are calving in spring time and his breeding season is 10 weeks. With the calving interval reduced by 61 days since 2012 to 379 days Tomás is still 28 days shorter than the average suckler cow in the country.

Recent data from ICBF indicates that each day is worth €7.50 and that would amount to €210 per cow on Tomás's farm versus the national average. Tomás has tightened his calving spread from calving both spring and autumn to a compact 10 week period from January-March. Tomas has managed to do this by culling late calvers and setting clear dates for the start and end of the breeding season.

The weanlings are grouped at weaning time for size, weight and age. Grassland management on the farm is much easier with fewer groups of animals. Mortality on the farm is below target at 0% at birth and 3.1% at 28 days. Over the last three years Tomás's cows have been consistently producing 0.94 calves per cow per year and this is due to selecting sires that are not difficult calving, ensuring that cows are fit at calving, good stockmanship at calving with a lot of emphasis on herd health and ensuring that calves consume the appropriate volume of colostrum soon after calving.

In 2015 the average suckler cow in Ireland was only producing 0.82calves/cow/year. On Tomás's farm this is equivalent to an extra eight weanlings per year. On a 350kg weanling valued at €2.50/kg liveweight this represents an additional €7,000 of output.

Key targets for two year old calving – James Strain, Donegal

Why does James calve heifers at two years?

- Heifers calving at two years old are more productive over their lifetime (more calves produced) with increased output
- Stocking rate is reduced compared to calving heifers at older ages
- Numbers of grazing groups of stock and costs are reduced

Why was James reluctant to try it in the past?

"One of the biggest issues with calving at 24 months amongst farmers is that they believe that if you calve them at 24 months then you have difficulty getting them to calve again at 36 months. However, I found heifers were not big enough to breed. They were not reaching their target weight for age prior to the breeding season.

Replacements heifers need to achieve a weight-for-age target. A high weaning weight should be achieved with a daily live weight gain of 1.1 kg/day up to weaning as achieved last year. As I calve from November to January calves are weaned in August. They need to achieve 0.6-0.7kg/hd/day from weaning to bulling in January/February to be 420kg at bulling.

Key points

Heifers that calve down at 24 months of age will:

- Be bred from top performing cows in the herd and sired by bulls with strong maternal traits
- Be bred to a known easy calving sire under 5% calving difficulty
- Be born early in the calving season to allow them to be heavier at bulling
- Need to achieve 1.1-1.3kg/day up to weaning
- Need to be kept on a high plane of nutrition from weaning to bulling in order to achieve 60-80 kg over this period
- Be turned out early in spring to grass to achieve good weight gain
- Need preferential treatment for a month or more after calving
- Have achieved 60% of their mature weight by bulling
- Have achieved 80% of their mature weight at calving (see Figure 2.10)

Fig 2.9: Key Target Weights

Mature Cow Weight	Weaning Wt	Bulling Wt.	Calving Wt.
Target % Mature Wt.		60%	80%
600kg	260-280kg	360kg	480kg
700kg	300-320kg	420kg	560kg

James Strain, Donegal

"Since joining the Teagasc/Irish Farmers Journal BETTER farm programme I have started calving my heifers at two years of age. Previously I would not have calved heifers until 36 months. Since I tried calving heifers at two years I would not go back. I started by trying out two heifers the first year and six the following year. It is important to achieve target weight gains in order to be able to serve heifers at 15 months. Heifers also need priority treatment after calving. It is vital to use an easy calving bull with high reliability. I would say to any farmer interested in trying it to start with a few heifers and see how it goes."

Key considerations when expanding - Charles Crawford, Donegal

"Over the course of the programme I have increased stock numbers on the farm with cow numbers increasing from 36 cows in 2012 and to 50 cows in 2015. Ewe numbers also increased to 150 ewes in 2015. The main aim of the farm plan was to increase output on the farm while controlling costs of production.

"This was done by focusing on a grass based system. In previous years, some replacement heifers were bred within the herd, however, in order to increase cow numbers I had to source suitable breeding stock from outside the herd.

"In addition, in 2013 I purchased Limousin cross heifers which I was very pleased with. I think the most important points to consider before purchasing a cow regardless of breed is that the cow has plenty of milk to be able to produce a quality calf with a good weanling weight. As with any system, reducing costs is always important and a cow that is easily fed is important especially as I operate a weanling system. A cow with a good temperament and produces a calf every year is a must. I look for cows with good conformation and that she has the ability to calve easily.

"I also culled a number of poorer performing cows and replaced them with better animals. I have a number of heifers kept from last year that I plan to calve down next year. Over the next 2/3 years I will see the changes even clearer as it takes four to five years to see breeding changes."

Using 100% AI - Ger Dineen, Co.Cork

"I have has used 100% artificial insemination (AI) on my herd for the past 15 years and focused on top maternal sires to ensure milk and fertility are retained in the herd. The vast majority of my cows are bred to Simmental and Limousin sires. In recent years, I have started experimenting with Salers and Angus on heifers and late-calving cows. My herd is completely closed, as replacements are bred from the top cows.

"The herd calved in less than 10 weeks in 2016, with the aim to reduce this further in 2017, to reduce workload. I suppose 100% AI in a spring-calving suckler herd is rare in Ireland, but I have a system whereby cows and calves are separated with calves only allowed to suckle cows for a short period morning and evening.

"At both these times, cows showing signs of heat are rounded up and brought into the yard for AI. Although this increases workload I find it is time well spent on the farm. If I had a stock bull I don't' think I would be able to keep my calving as compact. I also have access to the top genetics every year to further increase genetic gain of my herd annually.'

Top tips for using spring AI

- Separate cows and calves during the breeding season. Breaking the cow/calf bond will help cows return to heat quicker
- Have cows in good body condition
- Cows must be on a rising plane of nutrition to promote a positive energy balance by getting cows turned out to grass as soon as possible after calving
- Supplement with ration and/or top quality silage when poor ground conditions prevent grazing
- Using heat detection aids, such as scratch cards or tail painting, can help determine which cows are in heat. A vasectomised bull may also be an option

- Breed replacements from the most fertile cows. Fertility is hereditary and using heifers from late calvers or poor breeders will lead to lower herd fertility
- Check cows regularly. Cows may show very short periods of heat and require observing four to five times daily
- Good herd health is essential
- Having an up-to-date vaccination policy is crucial to ensure no upsets to fertility levels of the herd
- Use AI bulls suited to your cows
- Bulls with extremely hard calving traits will delay cows coming back into heat, which prolongs the breeding and calving period

Maternal breeding - Joe Murray, Roscommon.

"Working on heavier soils was used as an excuse to not reseed land or try to graze both early and late into the year. The lessons I have learned through the programme can be applied to many other farms working on a similar land type. Increasing the herd size has led to more cattle sales which have helped to increase kg liveweight/ha. In phase two of the programme, I changed my breeding programme to try and reduce cow size and breed cows with more maternal genetics.

"By reducing cow size, I am able to graze more cows per acre of land. Both the grazing demand and cow wintering costs will be lower and, most importantly, lighter cows will inflict less sward damage when grazing during wet conditions. As the herd is geared to producing 10 to 12-month old weanlings for sale, weight gain is crucial for output. Having cows with improved maternal genetics, so that they produce more milk from grass and can sustain milk production late into the grazing season will increase weaning weight.

"Autumn calving is more expensive, which is why I started using a Shorthorn bull to breed replacement heifers with the aim of reducing cow size. Reducing cow size from approximately 750kg to 650kg could reduce the silage intakes by 10kg to 12kg per cow. This would reduce the cost of feeding calved cows from €1.77/day to around €1.45/day.

"Over a 150-day period, this would amount to a cost saving of €48/cow. I hope that by introducing Shorthorn genetics I will not only reduce cow size, but improve milk production from similar input levels. With a traditional beef breed, I also hope that cows will gain body condition at grass which can be mobilised during the winter. The first group of heifers are scanned in calf and are due to calve down later this year."

Throughout the BETTER farm programme, much emphasis has been placed on improved grassland management as a means of increasing output and profitability.

Chapter 3.

BETTER Grassland Management

Benefits of grazed grass

Grazed grass is the cheapest source of feed in Irish livestock production systems. Throughout the BETTER farm programme, much emphasis has been placed on improved grassland management as a means of increasing output and profitability. The main objectives are to prolong the grazing season, reduce feed costs and increase animal performance.

There are a number of management tools which the programme participants have successfully employed on their farms that are significantly increasing the quantity and quality of grass grown and utilised throughout the grazing season. This facilitates increased stocking rates and hence increased output produced cost efficiently.

Getting the most from grazed grass on the BETTER farms

The key to successful grassland management is planning. Grassland management starts a season in advance of when grass is required. For example, planning for early spring grass starts in the autumn by closing up pastures in rotation from mid-October using the '60:40 autumn planner'.

Similarly, the programme farmers will use the '40:60 spring rotation planner' for their first rotation to ensure that they have sufficient grass covers on the farm for the 2nd rotation. Using a rotational grazing system maintains grass quality throughout the year and is an effective method of growing more grass. However, it is essential that the farm is walked on a weekly basis to measure grass growth and to assess the supply of grass.

This is one of the most important aspects of grassland management as it allows the farmer to budget grass to maintain enough grazing day's ahead, good utilisation and ultimately maintain a highly digestible leafy sward.

Grass budgeting using the "grass wedge" will identify if there is a shortage or surplus of grass coming and will allow the farmer to react in advance. The target pre-grazing yield is 1,300-1,600 kg DM/ha (8-10cm) and to graze paddocks down to 4 cm to ensure good utilisation.

Identifying poorly performing paddocks and implementing a reseeding programme is very important to maintaining productive swards. Swards with a high a content of perennial ryegrass are capable of growing more grass during the year to carry higher stocking rates and produce more digestible herbage to drive lightweight gain. Soil fertility is the foundation of grass production and plays a key role during spring growth.

Target spreading slurry and compound fertilisers to low index soils and maintain soil pH at 6.3 - 6.5.

Key Points on Improving Grassland Management

- Maximising the proportion of grazed grass in an animal's lifetime diet has the potential to increase farm output and profitability
- Have paddock divisions and water troughs in place
- You need to have 6-7 paddocks per grazing group
- Aim to graze each paddock for three days and allow it to grow for three weeks
- Walk the farm weekly to measure grass growth and assess farm covers
- Maintain pre-grazing yields at 1,300-1,600 kg DM/ha (8-10 cm) and graze down to 4cm
- Close up in rotation each autumn to avail of early turn out in spring
- Take soil samples and target slurry, farm yard manure and compound fertiliser to low index soils
- Identify poorly performing paddocks and implement a reseeding programme

Fig 3.1. Regional grazed grass yield on the BETTER Farms in 2015 and 2014

Figure 3.2 2015 vs 2014 grass growth on the Teagasc/Irish Farmers Journal BETTER Farms

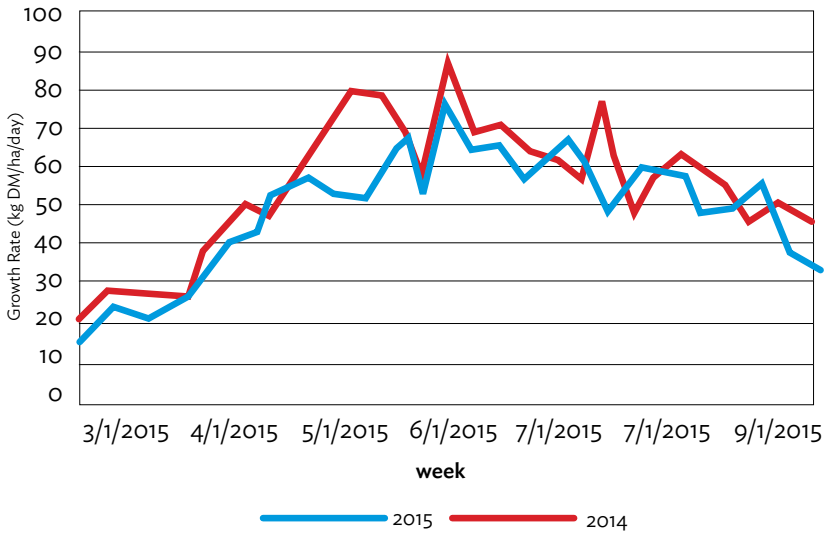


Fig 3.3 Stocking rates on BETTER Farms

Year	2015	2014	2013	2012
North West	2.02	2.03	2.09	2.01
South East	2.21	2.14	2.04	1.95
South West	2.6	2.41	2.22	2.02
North East	2.22	2.1	2.05	1.94
Average	2.27	2.17	2.1	1.94

Frank and Des Beirne, Longford

"Over the past number of years the number of grazing divisions on the farm has increased from 20 large fields to over 85 individual grazing paddocks. Paddocks are grazed in three days and are allowed to recover for three weeks.

"Paddocks allow for better control of grass, increased grass growth and improved animal performance. Cattle get used to being moved on a regular basis and this helps when they have to be brought to the yard over the course of the grazing season.

"When we were constructing paddocks, I started off with temporary paddocks with electric fences. Then we followed with permanent divisions when we were sure that the paddock size worked.

Benefits of measuring grass

"We find that measuring grass takes the guess work out of it. We can then plan a particular stocking rate to match supply to demand. We can identify lower growing paddocks for reseeding. As a consequence we increased silage quality as surplus grass is taken out in paddocks. They are fed to weanlings to maximise performance over the winter and reduce concentrate input."

Increasing growth on our farm

"We started off by visiting a high performing dairy farm to see the methods they used to increase growth. Initially we soil tested the whole farm. Investigating the pH and spreading lime to rectify deficits grew more grass. Lower index paddocks were targeted with slurry and farmyard manure. Out farms were targeted with compound fertiliser.

"By reseeding paddocks this has significantly increased grass growth. We prefer to reseed in June as we have tried different times of the year and this works best. We can get at least two grazings before closing for the autumn.

"Grass seed varieties are extremely important to increase growth rate. Selecting varieties that suit your soil type and system is essential. By adopting a combination of correcting soil fertility, reseeding old swards and moving cattle on to new paddocks every 1-2 days we have increased our grass production from 6,674 kg/ha in 2013 to around 11,000 kg/ha or more in 2014 and 2015 on the home farm at no major cost.

"This increase in production has meant we are now getting cattle out to grass earlier in spring-time and availing of cheaper weight gain and better animal performance during the grazing season. The increase in grass production has given the farm the capacity to increase the stocking rate from 1.90 LU/ha in 2012 to 2.17 LU/ha in 2015."

Improving utilisation on our farm

"Matching paddock size with group size to have a paddock grazed out in no longer than 36 hours increases utilisation. In addition grazing out paddocks tight to 4 cm or less ensures quality regrowth. Spreading slurry/FYM at the correct time to avoid grass going sour is worth considering."

Biggest changes made

Correcting soil indexes: All our fields increased by 1 index while feeding a higher stocking rate year on year.

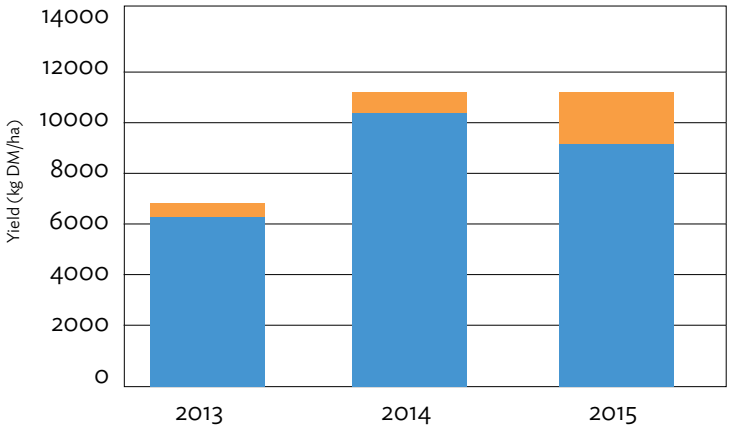
Paddocking and water supply: Starting with temporary fences to see what and where suits our herd size. A permanent fence can be set up with temporary reels as it helps increase control and utilisation.

Reseeding and surface drainage: Min till reseeding system combined with mole drainage has yielded best results.

Benchmarking: Comparing grass growth rates with top performing beef and dairy farms throughout the year has kept our skills sharper.

'You never know where the edge is in relation to how early/late or tight you can graze until you cross it. You must always push your boundaries.'

Figure 3.4. Annual grass growth on the Beirne farm



Billy Gilmore, Galway	
Farm Size	39.8 ha
SR	1.97
Kg Dm produced	10.8
No. Grazing groups	3 groups

"I operate a mixed grazing cattle and sheep farm with a small tillage enterprise. My cattle system has changed from suckling to weanling. I now sell replacement heifers in-calf and finish some on the farm. The sheep flock comprises of 150 ewes. A mixed system suits my farm well and has driven output on the farm.

"I have always had a keen interest managing grass and maximising utilisation. While I introduced paddocks decades ago on the farm, since joining the programme I have decreased the size of the paddocks further.

"The number of paddocks has increased from 17 to 35 paddocks. My main aim is to lamb to grass and avoid any meal feeding to ewes after turnout. The flock is grouped when closing for silage and rotationally grazed until weaning. One of the main advantages of mixing sheep and cattle is that it allows the majority of lambs to finish off grass."

"The sheep enterprise combines favourably with the cattle system as it increases farm output, lifts stocking rate at grass which in turn aids in improved grass utilisation, and contributes to and increase in farm gross margin."

Measuring grass has numerous benefits for me:

1. I can calculate the amount of grass on the farm and see how many days ahead I have with the current stocking rate.
2. I can make decisions faster and decide if I need to take out surplus grass.
3. I can Improve the quality of grass fed to priority stock during the grazing season.
4. The amount of grass each paddock is producing is calculated so I can identify poorer performing paddocks for reseeding.

Increasing grass growth on the farm

'I soil sampled the whole farm six years ago at the start of the programme. This alerted me to paddocks that were only index 1 and 2 for P and K. I applied lime to paddocks wherever was needed. I applied slurry to the paddocks with low index 1 and 2 and compound fertiliser to remaining paddocks.'

Over the past 10 years I have reseeded over 70% of the farm. This has increased growth in the spring and autumn time. There has also been an increase during the main grazing season from reseeded paddocks."

Improving utilisation

"Implementing a rotational grazing paddock system on the farm has increased utilisation significantly. I split larger fields into smaller paddocks. This allowed me to keep stock in a paddock for only three days and then move them on to the next paddock. As a result stock was not grazing the regrowth.

"Operating a mixed grazing system with cattle and sheep has also increased utilisation. Sheep and cattle complement each other as the sheep graze out paddocks tighter. Having sheep on the farm has allowed extended grazing in both spring and autumn. I favour three strands of electric fence to split paddocks. In the past I would have used the electrified netting and found it time consuming as the farm is so fragmented."

Main changes

The main grassland changes include:

- Improving P and K index's by focusing on using compound fertiliser and slurry efficiently
- Rotationally grazing stock
- Measuring grass weekly and inputting data into PastureBase
- Extend the grazing season on the farm
- More focus on cheaper weight gains from grass from cattle and sheep

Improving Land Drainage

As grazed grass is our cheapest feed one of the main objectives in the BETTER Farm Programme was to increase the production and utilisation of grazed grass on the participants' farms. However, depending on location, soil type and rainfall some farms are limited to what grass they can grow and utilise and consequently what stocking rate they can carry on the farm.

Some farmers in the BETTER Farm programme made significant investments on improving the drainage of their soils in order to increase the grass production and to extend the grazing season. Improving land drainage is costly and in order to maximise the benefits of the investment it is important that the drainage work is carefully planned, the correct drainage system is used for the particular soil type and that appropriate management strategies are put in place to protect the soil when it is wet. This is to ensure that the land will stay productive and that grass can be utilised effectively.

Niall Patterson, Leitrim

Niall Patterson farms a mixed mid-season ewe lambing flock and a spring calving suckler herd outside Carrigallen. Land type is extremely heavy, with the soil profile consisting of a heavy clay topsoil with a blue-grey daub sublayer, which has poor levels of permeability.

"After the very bad summer and spring of 2012 and 2013, we made a decision to drain three of the wettest paddocks. After careful planning, 3.5ha was drained extensively in early summer 2013. A further 3ha was drained in 2015.

"Most of the farm was drained in the early 1970s and had worked very well, but over the last decade, a lot of the old drains have broken down. We have been replacing the drainage systems on the worst-affected fields over the last number of years.

"Field drains have been cleaned and deepened where necessary, and hedges have been trimmed and cut down to allow in more light. Drains were installed at a depth of 0.8m (30in to 32in) and located at approximately 20 metre spacing's. We used 80mm land drainage pipes in the shores and these were filled to within 6in of the surface with 40mm clean stone.

"The shores were placed running across the slope and then a mole plough was pulled down the slope to catch as much water as possible. Fields were then ploughed and reseeded to level them out and complete the drainage work.

"The cost of carrying out drainage on land is high, but we are very happy with the results and now have land with a much higher potential to grow grass."

Costs	Total/ha
Digger work, mole plough and stone cart hire	€2,500
Drainage pipe	€312
Drainage stone	€1,995
Drainage cost	€4,807

Grass Silage production on the BETTER Farms

Grass Silage Production on BETTER Farms

Each year the BETTER Farm participants analyse their grass silage in order to plan and formulate their cattle diets for the winter ahead. Fig 3.5 gives a summary of the chemical composition of the first cut grass silage made on the BETTER Farms in 2015, 2014 and 2013.

The 2015 data is comprised of 38 individual silage samples taken from the 30 programme participants with all samples analysed in AFBI Hillsborough Laboratories. Some farmers who have moved to operating a more flexible baled silage system had different harvest dates so more than one sample was taken to assess the different batches of bales.

As can be seen from Table 2 silage quality has been very consistent across the programme farms over the last three years. The programme farmers have adopted best practice in grassland management and this is evident in the results of their silage analysis.

In 2015 the average harvest date across the farms was 5th June with the earliest silage made on 21st May and the latest first cut sampled on 30th June. Three different methods of silage harvesting were used on the farms with precision chop forage harvesters and wrapped bales being more widely used than silage wagons.

Fig 3.6 Average first cut silage analysis on BETTER Farms

Year	DM (%)	pH	Ammonia (% Total N)	Protein (% DM)	ME (MJ/kg DM)	DMD (% DM)
2015	30.9	4.25	9.49	11.29	11.01	72
2014	24.9	4.34	10.03	11.74	10.81	70
2013	29.3	4.44	8.58	12.39	11	71

Trevor Minion, Wicklow.

Trevor Minion operates a spring calving suckler calf-to-beef system and a dairy-calf-to beef system just outside Wicklow town. The suckler male progeny and purchased dairy calves are finished as steers at 24 months and the heifers at 22-23 months and on a silage based diet supplemented with 5-6 kg of concentrate.

Silage quality is very important for Trevor's system as he needs to produce high quality silage that is capable of achieving high dry matter intakes so that animals perform adequately. Finishing cattle is an expensive stage of the production system due to investments needed in facilities and feed.

Producing high quality silage helps Trevor reduce the need to purchase additional concentrates and helps him shorten the length of the finishing period so cattle will finish earlier. There are also growing weanlings housed over the winter period and these animals need to perform so they Trevor aims to grow his weanlings at 0.6 kg /day over the winter, on mostly grass silage. By feeding grass silage higher than 72 DMD Trevor needs very little purchased concentrates to achieve his target weight gains.

As can be seen in Figure 3.7 Trevor is consistently making high quality silage on a yearly basis. The most noticeable factor influencing Trevor's high DMD silage is the early cutting date. Ideally Trevor aims to cut his first cut silage in the last week of May to ensure maximum leaf content in the sward and to avoid fibrous stemmy material.

Trevor also grazes his silage ground tight in early spring with the yearling cattle to remove any poor quality dead material from the base of the sward. Silage fields are closed up in early April and crop fertiliser requirements are dictated by recent soil sample results. Trevor tries to use cattle slurry

Reseeding plays a big role on this farm maximising grass growth and helping to get stock out to grass early in spring time. Swards on silage ground are incorporated into the farm reseeding programme to ensure that there is a high content of perennial ryegrass in the sward and very few weeds and docks.

Fig 3.7 Average first cut silage on Trevor Minion's farm

Year	Harvest Date	DM	pH	NH_3	CP	ME	DMD	UFL	UFV
2015	28/05/2015	24	4	10	10.2	11.2	71	0.79	075
2014	31/05/2014	21.3	4	8	10.7	11	72	0.8	0.76
2013	02/06/2013	31.6	4.16	6	13.7	12.1	78	0.88	0.85
2012	29/05/2012	22.4	3.7	7	12.9	11.7	77	0.87	0.84
2011	06/06/2011	24.7	3.8	7	11	10.3	677	0.74	0.69

Herd health plays an important role in performance on beef cattle farms.Health problems in beef herds can have a detrimental impact on farm profitability.

Chapter 4

Herd Health

Herd health plays an important role in performance on beef cattle farms. In the same way as soil and silage are tested for nutrients, beef cattle can be tested for health related issues such as BVD, Leptospirosis, Rumen and Liver fluke and stomach worms.

Health problems in beef herds can have a detrimental impact on farm profitability. High animal mortality rates, poor thrive along with the cost of vet bills can lead to reduced output on farms and increased variable costs.

Farmers participating in the BETTER Farm programme have in some cases made significant changes in their approach to herd health. Many have changed from an approach of reacting to health issues to a proactive approach involving preventative vaccinations to avoid health issues occurring in the first place.

While this is a significant cost on the farms, initially it can reduce health costs overall by avoiding reduced levels of animal thrive, higher mortality and increased stress and labour on the part of the farmer.

Why improve herd health?

The effects of herd health problems on the profitability of suckler beef farms are manifested through animal mortality, ill-thrift, cost of treatment, cost of prevention and additional labour. A key component in prevention of herd health problems on suckler beef farms is the identification of those management factors that can significantly impact herd health status.

In Ireland, the recorded mortality rates for suckler beef calves at birth and in the first 28 days of life (includes mortality at birth) in 2015 were 4.7% and 6%, respectively. Considering that a target of 0.95 calves weaned per female mated is the desired production goal, this level of early calf mortality is a concern.

BETTER Farm Programme experience

During both phase 1 and phase 2 of the BETTER Farm programme, herd health has remained a key metric for profitability.

In phase 1, BVD was targeted on farms and from the 14 herds that used the ear notch test to detect PI's, 32 PI animals were found, with up to 10 PI animals in the more severely affected herds. Involvement of the local vet and regional veterinary laboratories and Animal Health Ireland has led to a more proactive approach in dealing with animal health issues on the farms.

During Phase 2, the programme has focused on areas such as liver and rumen fluke. Farmers in the programme carried out faecal sampling at housing. Tests were carried out on the samples for both rumen fluke and liver fluke and winter dosing plans were based on these results.

Stock showing negative or low infestations of fluke were left untreated and tested again subsequently to determine if any infestation had built up in the interim while stock showing positive or highly positive results were treated with a suitable product.

Each farmer took a pooled sample of five faecal tests from each group of stock on the farm, e.g. cows, weanlings, finishers and sent them to be tested.

Fig 4.1 Incidence of Liver and Rumen Fluke on BETTER Farms

	Rumen Fluke incidence			Liver Fluke incidence		
	Postive	Low Positive	Negative	Postive	Low Positive	Negative
South East	6	20	24	2	2	46
South West	7	9	13	0	0	28
North East	3	9	17	0	2	27
North West	14	6	9	3	1	25

Herd Health Planning

Why are farmers reluctance to do it?

- Don't see a problem with herd health
- Don't want the cost of carrying it out
- Prefer to spend money on medicines
- Don't see benefit of it

Why complete a Herd Health Plan?

- Plan your herd health program
- Investigate your herd health status
- Prevent introduction of disease
- Prevent spread of disease
- Monitor your herd

How a herd health plan helps your farm:

- It demonstrates methods of identifying animals carrying disease - BVD PI's identified by ear notching and blood sampling, Worm and fluke burdens identified by faecal sampling
- Identifies risk factors for bringing disease into herds and shows ways of controlling these i.e. aiming for a closed herd, quarantine any purchased in animals, vaccination programmes for breeding stock for scour, BVD, Leptospirosis, etc
- Identifies ways of improving herd health status without incurring extra cost on farm, i.e. having pens well bedded with straw, washing and disinfection of pens at calving, isolating purchased animals, clean water supply and having well fenced boundaries to avoid contact with other herds.
- Prevents Exposure to Disease. Health status of purchased animals is often unknown, thus quarantine procedures should be employed to decrease the likelihood of importing disease.

Impact of disease on herd performance

Diseases have a major impact on reproduction, growth, and performance. Negative impacts on any of these traits will affect the profitability of cow/calf beef operations.

When diseases occur and treatment is required, sometimes the effectiveness of the treatment may be poor and production losses have often already occurred. Depending on the disease or condition, other animals could become affected or infected before you have time to prevent it. Some diseases exist at "subclinical levels," where observable signs are not present, so losses continue undetected.

Fig 4.2 Example Herd Health Plan
Tick boxes as appropriate as tasks are carried out

Year 2014	Activities	Jan/Feb	Mar/Apr	May/ Jun	Jul/Aug	Sep/Oct
Vaccination prog cows	Lepto, BVD, Precalving Calf Scour					
Vaccination prog Calves	Calf Scour, IBR, Blackleg					
Vaccination prog Weanlings	IBR, Blackleg					
Vaccination prog Stores/Finishers	IBR					
Other	Grass tetany prevention					
Parasite prevention	Move calves to new grass, worm, fluke dose					
Weanlings	Liver Fluke, Rumen Fluke, Worms					
Stores/Replacements	Fluke/Worms/Lice					
Other	Mastitis, Redwater, Tetany, Minerals, Lamness					
Biosecurity	Disinfection points, Cleaning of feedstores, Quarantine of purchased stock, Ensuring boundaries are well fenced					
Veterinary tests	Trace elements, Faecal samples, TB/Brucellosis					

Michael Dillane, Liscullane, Kerry

Michael Dillane runs a 95 cow autumn calving herd on 59 hectares of predominantly very heavy land near Lixnaw in north Kerry. The herd calves from September to January. Previously a weanling producer, predominantly for the export market, Michael has changed to finishing bulls under 16 months and heifers at 16-20 months.

An extra 40 cattle between bulls and heifers are purchased for finishing also increasing output further. Profitability on this farm has increased substantially since joining the BETTER farm programme. In 2012 the farm had a negative gross margin of €-100/ha. By 2014 this gross margin had improved to €834 and is predicted to increase to over €1,300/ha in 2015.

One of the reasons for poor performance prior to joining the programme was the high cost of dealing with herd health issues on the farm. In 2012 the farm's vet bill was €16,360. By 2014 the vet bill was reduced to €7,026 and is expected to remain at similar levels for 2015 and beyond. This is a saving of €9,334 or €158/ha for the farm.

Health issues

In 2011 and 2012 during the calving period, IBR became an issue on the farm. In 2011, 10 calves died from the virus and significant vet bills were incurred to try and treat other sick calves in the herd. This involved a significant labour input and also lost thrive in calves that survived.

Action taken

A vaccination programme was implemented on the farm. A live vaccine was issued to the cows and a booster vaccine was given every six months afterwards. Calves are all vaccinated now at 30 days of age for IBR, Pneumonia and Blackleg. 30 days later calves are vaccinated again with pneumonia and for Blackleg.

When calves are being weaned at 8-9 months of age they are vaccinated again with a booster for IBR and pneumonia again. The initial IBR vaccinations are administered intra nasally and by intramuscular injection after that. While vaccinations are expensive, it should be noted that Mike has very few vet call outs with the majority of the vet bills consisting of cost of buying vaccinations.

Mike prevents milk fever and grass tetany by treating with magnesium plus trace elements in the water supply. This ensures that cows get a constant supply of the elements required through drinking water. The magnesium is supplied by a pump located in the farmyard and flow rate can be adjusted up or down or switched off altogether during low risk periods.

Mike treats animals with a pour on for fluke, worms and lice. He feels this is a more suitable method than white drenches as it puts less stress on both farmer and the livestock.

Breeding heifers are treated for Leptospirosis, Samonella and BVD and all are vaccinated twice before breeding begins with the final shot administered 30 days before breeding begins.

Cows and heifers are vaccinated for rotavirus to prevent scour 30 days before calving. Since joining the programme, Mike has invested significantly in vaccinations and while this cost is high and will continue on the farm into the future, given the low incidence of animal health issues, low vet call outs and very little set back in animal performance Mike feels it's a necessary cost on the farm.

Fig 4.3 Mike's vaccination plan

Month	Cows/Heifers	Weanlings/ Calves
Jan		
Feb		
Mar		
Apr	IBR	
May	Worms,	
June	Worms (Heifers)	IBR, Pneumonia
July		
Aug	Scour	
Sept		IBR, Pneumonia, Worms
Oct	IBR	IBR, Pneumonia, Blackleg
Nov	Salmonella, BVD, lepto	Blackleg
Dec	Fluke	Fluke

Fig 4.4 Mike's herd health costs

Year	Vet Callout €	Drugs €	Vacc/ Doses/ Test €	Total €
2011	3,431	8,600	4,329	16,360
2012	1,664	4,212	5,320	11,196
2013	760	1,912	5,377	8,049
2014	800	1,856	4,370	7,026
2015*	780	2,026	5,694	8,500

Ventilation - Marty Lenehan, Sligo

"Before joining the BETTER Farm Programme I thought it was normal on every farm to have issues with pneumonia in calves. I have since realised that this was not the case. On initial visits my local advisor Tom Coll, BETTER farm team, local vet and regional lab carried out tests on a few groups of cattle. A smoke test in the slatted shed detected poor ventilation. Tests results showed the calves had a virus due to poor circulation of air.

"We made a plan based on the results to rectify ventilation in the shed and a vaccination programme. Vented sheeting was taken off on half the side of the shed. This was replaced with space boarding. On the other hand we hinged the vented sheeting so they can be opened depending on weather.

"After making these changes we carried out the smoke test again. This proved ventilation improvement were satisfactory. Autumn born calves were vaccinated one month before housing to prevent virus. This has been a huge benefit.'

Herd health plan - Chris McCarthy, Westmeath

"Herd health plays a key role in optimising the output and profitability on my farm. The consequences of poor herd health include reduced thrive, higher mortality, additional labour and increased veterinary costs. As part of the farm plan, I sat down with the BETTER farm team and my local vet to draw up a herd health plan. This plan identified the key herd health risks and set out measures to address these potential risks.

"I vaccinate the cows with Rotovac prior to calving to prevent calf scour. All cows can be vaccinated together as calving is so compact. Before the breeding season starts, cows are vaccinated against Leptospirosis and BVD to help reduce the risk of any fertility issues in the herd. At turn out and again in autumn, cows are supplemented with magnesium to prevent grass tetany six to eight weeks after housing, cows are treated for liver fluke. Dry cow minerals are fed prior to calving.

"I put a lot of emphasis on having a clean environment at calving time. Hygiene plays a key role in minimising a calf's exposure to disease. Calving pens are disinfected and bedded with clean straw. Calf navels are dipped with iodine and I ensure that calves get adequate colostrum as soon as possible after birth.

"Calves and cows are turned out to grass as soon as weather conditions permit and this is important in reducing the risk of calf scour. During the grazing season, calves are treated for roundworm and hoose on three occasions, the 1st being in early June with a 2nd treatment in mid-July. A 3rd treatment is administered in early September two weeks prior to weaning."

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Farmers participating in the BETTER Farm programme have in some cases made significant changes in their approach to herd health.

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